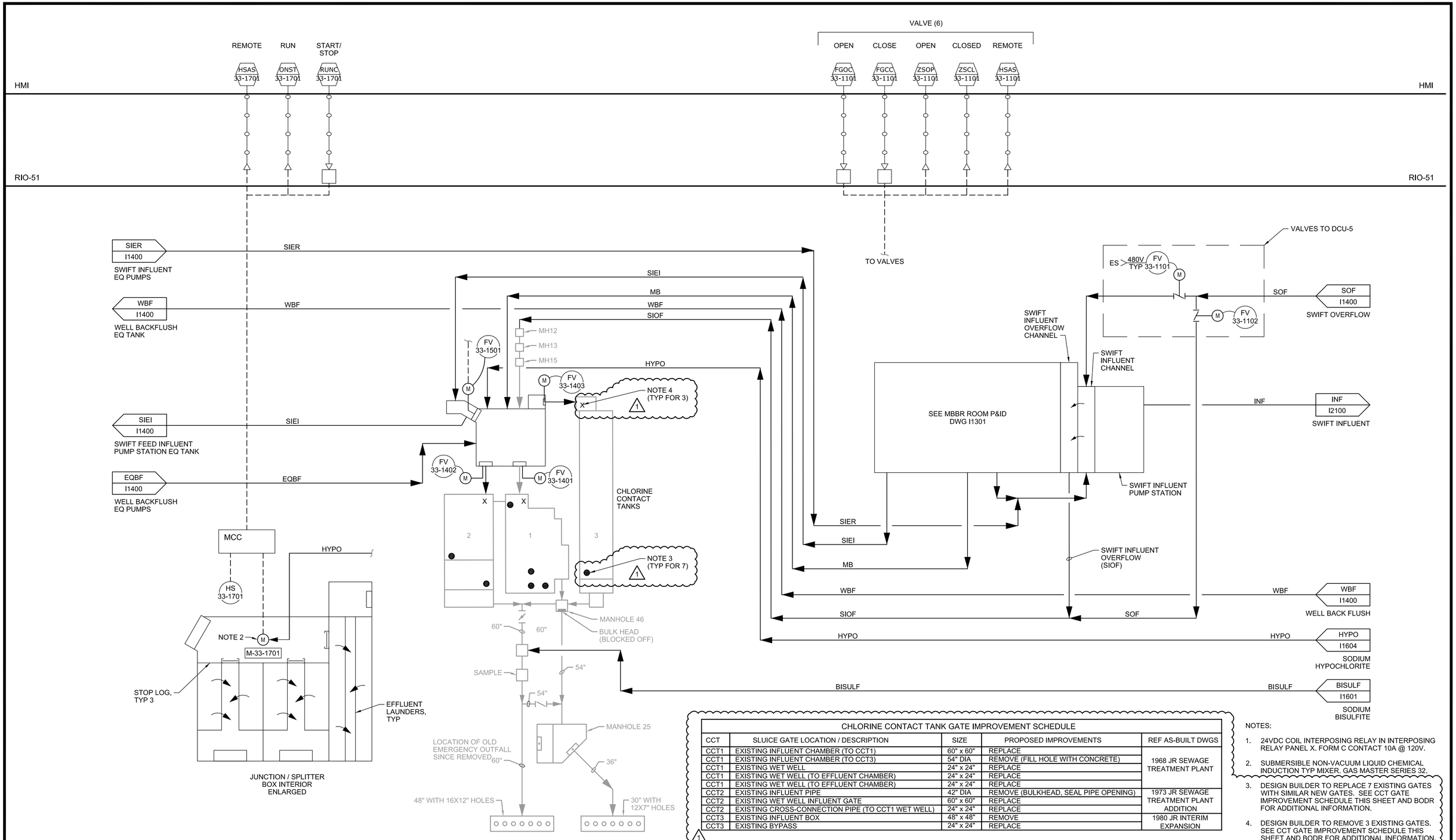


CHLORINE CONTACT TANK GATE IMPROVEMENT SCHEDULE				
CCT	SLUICE GATE LOCATION / DESCRIPTION	SIZE	PROPOSED IMPROVEMENTS	REF AS-BUILT DWGS
CCT1	EXISTING INFLUENT CHAMBER (TO CCT1)	60" x 60"	REPLACE	1968 JR SEWAGE TREATMENT PLANT
CCT1	EXISTING INFLUENT CHAMBER (TO CCT3)	54" DIA	REMOVE (FILL HOLE WITH CONCRETE)	
CCT1	EXISTING WET WELL	24" x 24"	REPLACE	
CCT1	EXISTING WET WELL (TO EFFLUENT CHAMBER)	24" x 24"	REPLACE	
CCT1	EXISTING WET WELL (TO EFFLUENT CHAMBER)	24" x 24"	REPLACE	
CCT2	EXISTING INFLUENT PIPE	42" DIA	REMOVE (BULKHEAD, SEAL PIPE OPENING)	1973 JR SEWAGE TREATMENT PLANT ADDITION
CCT2	EXISTING WET WELL INFLUENT GATE	60" x 60"	REPLACE	
CCT2	EXISTING CROSS-CONNECTION PIPE (TO CCT1 WET WELL)	24" x 24"	REPLACE	
CCT3	EXISTING INFLUENT BOX	48" x 48"	REMOVE	1980 JR INTERIM EXPANSION
CCT3	EXISTING BYPASS	24" x 24"	REPLACE	

1

NOTES:

1. 24VDC COIL INTERPOSING RELAY IN INTERPOSING RELAY PANEL X. FORM C CONTACT 10A @ 120V.
2. SUBMERSIBLE NON-VACUUM LIQUID CHEMICAL INDUCTION TYP MIXER. GAS MASTER SERIES 32.
3. DESIGN BUILDER TO REPLACE 7 EXISTING GATES WITH SIMILAR NEW GATES. SEE CCT GATE IMPROVEMENT SCHEDULE THIS SHEET AND BODR FOR ADDITIONAL INFORMATION.
4. DESIGN BUILDER TO REMOVE 3 EXISTING GATES. SEE CCT GATE IMPROVEMENT SCHEDULE THIS SHEET AND BODR FOR ADDITIONAL INFORMATION.

REV	ISSUED FOR	DATE	BY
1	ADDENDUM 4	7/06/2020	JM/LM
0	REQUEST FOR PROPOSAL	4/10/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PROJECT ENGINEER: G PALEN
DESIGNED BY: D. MUNZER
DRAWN BY: Z. HUNERS
CHECKED BY: N. JOHNSON

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

JACOBS

HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION
JUNCTION - SPLITTER BOX CCTS AND PLANT EFFLUENT PIPING

DATE: 2020
PROJECT NO.: 32480
CONTRACT NO.: -
DRAWING NUMBER: I1500

File: C:\BIDS\HAZEN-PW\D0150701\32480-I0024\I1500 Saved by lmaciak Save date: 7/6/2020 2:09 PM
PLOT DATE: 7/6/2020 2:12 PM BY: LMACIAK

REMOVE GATE

REPLACE GATES (3)

REPLACE GATE

REMOVE GATE

REPLACE GATE

REPLACE GATE

54" R.C. By-pass to be abandoned after completion of Modification

MANHOLE No. 46

Existing Effluent Chamber
Elev. 5.33

Existing Effluent Channel

24"x 24" Sluice Gate & Elev. 6.33

Existing 54" R.C. Plant Outfall

60" Bell Wall Fitting & Elev. 7.58

8" C.I. Plug & Elev. 0.92

24"x 24" C.I. Wall Thimble & Elev. 9.50

24" x 24" Sluice Gate

8" C.I. DI. P.C. Wall Pipe & Elev. 1.08

24" x 24" Sluice Gate & Elev. 4.25

8" C.I. Drain

18" Gate Valve with Valve Box above

Fiberglass Baffle, Top Elev. 14.78 2'-4" Deep

Elev. 3.25

Elev. 0.75

70'-0"

Existing Chlorine Contact Tank No. 1

Break into Existing Concrete Wall for Installation of Fittings and fill with Non-shrink Grout

Existing Wet Well

Elev. 3.25

60" R.C. Effluent & Elev. 7.83

30'-0"

60" R.C. Subaqueous Pipe

Limit of Contract

8" C.I. Vent

Existing 48" R.C. Final Effluent, for Continuation See Dwg. No. OP-1

54" ϕ Sluice Gate & Elev. 7.58

4" P.V.C. Chlorine Solution

4" P.V.C. Chlorine Diffuser Header

Existing Influent Chamber 5'-0" x 5'-0" Sluice Gate & Elev. 9.75

4" P.V.C. Chlorine Diffuser Header

℄ Elev. 15.50

24" C.I. Wall Sleeve & Elev. 9.50

Existing Electrical Manhole

12" C.I. Flange and Plain End Pipe

60" Bell Wall Fittings & Elev. 7.83

60" Butterfly Valve

60" Subaqueous Tee Facing Up

℄ Elev. 9.75

Remove Existing Plug

42" C.I. Pipe

24" C.I. Pipe

24" C.I. B & F. Main Pipe & Elev. 9.5

℄ Elev. 7.83

8" C.I. Drain & Elev. Varies

Plant Coordinates
x = 1908.00
y = 1322.00

12" C.I. B & F Wall Pipe & Elev. 9.75

12" C.I. Chlorinated Effluent, For Continuation see Dwg. No. OP-2

24" x 24" Sluice Gate

Note:
For Detail of Manhole No. 46 See Dwg. No. 438.34(6)-57

Slope

8'-0"

L.P. Elev. 2.92

7'-0"

9'-6"

EFFLUENT CHAMBER

H.P. Elev. 3.58

CHLORINE CONTACT TANK No. 2

5'-0" x 5'-0" Downward Opening Sluice Gate

REPLACE GATE

Elev. 2.92

WET WELL

Elev. 5.83

Weir Plate see Detail Dwg. No. AT-5

Concrete Encasement

25'-0"

LEGEND
Existing Work
New Work
Existing Work to be Removed
Existing Work to be Abandoned

3'-0" x 3'-0" Sump Btm. Elev. 0.98

Fiberglass Baffle

3'-0" x 5'-0" Wall Thimble & Elev. 11.50

8" C.I. D.I. P.E. Wall Pipe & Elev. 1.25

4" C.I. D.I. & B. Wall Pipe & Elev. 13.50

4" C.I. Drain & Elev. Varies

8" C.I. Drain & Elev. Varies

℄ Elev. 0.42

8" C.I. Plug

Plant Coordinates
x = 1876.50
y = 1322.00

14'-0"

29'-8"

℄ Expansion Joint

10" C.I. Non-Potable Water For Continuation See Dwg. No. OP-2

10" C.I. Flange & Plain End Pipe, & Elev. 13.00

8" C.I. Drain & Elev. Varies For Continuation See Dwg. No. OP-1

Roadway Crossing Pipe Encasement see Detail Dwg. No. MD-1

101'-3"

For Continuation See Dwg. No. OP-1

A

B

C

DRAWING No. 438.34(a)-CT-1

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT ADDITION

CHLORINE CONTACT TANK MODIFICATIONS

EQUIPMENT AND PIPING

SECTIONAL PLAN AT ELEV. 15.75

Buck, Seifert and Jost
Consulting Engineers
Englewood Cliffs, N.J.

Scale: 3/16" = 1'-0"

May, 1973

Drawn by: D.P.	Traced by: D.P.	Checked by: Y.K.	Examined by: GLM	Approved by: DVP
Revisions:	As Built: Jan 26, 1976			

Figure 2-1: Chlorine Contact Tank Gate Improvements Reference Drawing 1

AS-BUILT INFORMATION ADDED 12/80

FIELD CONNECTION OF 54" R.C.P. AT CHLORINE TANK NO. 3
(N.T.S.)
SEE LOCATION IN PLAN VIEW

2"x2"x 1/4" 90° LOCATIONS

BAND TIGHTENING LOCATION, ONE EACH SIDE

6" CONC. ENCASEMENT ALL AROUND JOINT

3 #5 BAR @ 12" ONE BAR OVER JOINT

2"x2"x 1/4", 90° (USE 4)

5/8" ANCHOR BOLT (TYP)

2 STRAPS EACH END OR 10 GUAGE GALV STRAP, 20" WIDE 1/8 NEOPRENE, 20" WIDE

54" I.D.

GROUT CAVITY AND COVER W/ 2 COATS, BITUMASTIC 50

1-1/2" ALUM. GRATING W/SUPPORT CHANNELS
HANDRAIL
ELEV.=17.00
4'-0"
RODNEY HUNT 4'-0" x 4'-0" SLUICE GATE OR APPROVED EQUAL.
54" ϕ WALL THIMBLE WITH BLIND FLANGE FOR FUTURE EXPANSION
℄ ELEV.=7.58
SLUICE GATE WALL SLEEVE ℄ ELEV.=7.33
ELEV.=4.00
1" EXPANSION JOINT (SEE TYP. DETAIL ON SH. 9 OF 27)
MAX. W.S. ELEV.=14.54
SLOPE
ELEV.=15.00
FLOOR STAND FOR RISING STEM WITH WITH ROLLER BEARINGS (TYP.)
STEM GUIDES (TYP.)
RODNEY HUNT HY-9 240L 2'-0" x 2'-0" SLUICE GATE OR APPROVED EQUAL.
ELEV.=2.75
FILL WITH ASPHALT
3'-0"x3'-0" SUMP INV. ELEV.=1.20
SLUICE GATE WALL SLEEVE
5'-0"
WEIR
ELEV=14.11
ELEV.=7.83
3'-9"
30" R.C.P. ℄ ELEV.=9.37
ELEV.=2.65
8" C.I. DRAIN (SHOWN FOR CLARITY)
60" ϕ WALL THIMBLE WITH BLIND FLANGE FOR FUTURE EXPANSION ℄ ELEV.=7.83
CONC. FILL BLOCK OUT FOR BOLTS W/BITUM. MATERIAL
ELEV.=4.33
PROPOSED 8" GATE VALVE WITH BOX ABOVE
℄ ELEV.=1.09

SECTION A-A
3/16"=1'-0"

CRUSHED STONE AND 6 MIL. POLYETHELYENE VAPOR BARRIER

NOTE: PILES NOT SHOWN FOR CLARITY

NOTE: EXIST. AND RELOCATED NON-POTABLE WATER SYSTEM NOT SHOWN. SEE SHEET 5 OF 27

144'-0"
48'-0"
48'-0"
48'-0"
124'-6"
9" 12"
7'-3"
9" 12"
ELEV.=4.00
16"
1" EXPANSION JOINT
5'-0"
SLOPE
7"
4'-9"
NEW CHLORINE CONTACT TANK NO. 3
TOP OF INTERIOR WALLS ELEV.=15.00
54" FLANGE & 54" BELL WALL FITTING- ℄ ELEV.=7.58
ELEV.=4.00
HANDRAIL
4'-0"
E
F
A
21'-7"
9'-0"
5'-12"
12'-9"
7'-2"
16'-7"
REMOVE GATE
54" BELL WALL FITTING ℄ ELEV.=7.58
PROPOSED 54" R.C.P.
FIELD JOINT CONNECTION-REPAIR ENCASED IN CONCRETE (SEE DETAIL ABOVE)
TURN EXISTING 90° ELBOW AND EXTEND 54" R.C.P. TO PROPOSED CHLORINE CONTACT TANK ℄ ELEV.=7.58
EXIST. 54" R.C.P. TO BE REMOVED
12'-3"
NOTE: EXISTING 8" N.P.W. NOT SHOWN FOR CLARITY
1 LENGTH LEFT IN PLACE
POURED CONCRETE PLUG SEE DETAIL, SHEET 7
INSIDE BOT. EL.=11.25
MAKE CONNECTION TO EXIST. FITTING. REMOVE EXIST. BLIND FLANGE WHEN PROPOSED TANK IS PLACED IN SERVICE.
INSIDE BOT. EL.=5.93
INSIDE BOT. EL.=3.25
INSIDE BOT. EL.=3.25
INSIDE BOT. EL.=-0.75
FOOTING BOT. EL.=3.0
NOTE: COVER EXISTING TANK WITH PLYWOOD TO PREVENT DEBRIS FROM FALLING IN DURING CONSTRUCTION.
EXISTING CHLORINE CONTACT TANK NO. 1
REMOVE GATE
EXISTING SLUICE GATE
CHLORINATED EFFLUENT FROM M.H. NO. 45
REPLACE GATE
B
C
D
H
ELEV.=2.90
ELEV.=2.80
UNDERFLOW BAFFLE
CONTROL JOINTS OMITTED FROM BAFFLE WALLS - THIS END
2'-0"
ELEV.=15.00
2'-6"
1'-0"
6'-4"
REPLACE GATE
ELEV.=2.70
12" 9"
6'-9"
12" 9"
60" FLANGE &
60" BELL WALL FITTING
3'-9"
THRUST BLOCK
18"
PROPOSED 60" R.C.P. ℄ ELEV.=7.83
PROPOSED 8" C.I. DRAIN
1'-3"
EXIST. M.H. NO. 46 INSIDE BOT. EL.=5.93
EXIST. PLANT OUTFALL 54" R.C.P.
CONNECT TO EXIST 8" C.I. TEE ℄ ELEV.=0.92
EXIST. PLANT OUTFALL 60" R.C.P.
3'-5"
9'-12"
18'-3"

FOR REINFORCING SEE SH. 8 OF 27
ELEV.=17.00
GROUND ELEV. VARIES
ELEV.=15.00
UNDERFLOW BAFFLE
ELEV.=11.55
6'-7 3/4" x 4'-9" OPENING
ELEV.=2.90

SECTION B-B
3/16"=1'-0"

PLAN
3/16"=1'-0"

HAMPTON ROADS SANITATION DISTRICT
JAMES RIVER INTERIM EXPANSION
CHLORINE CONTACT TANK NO. 3
PLAN AND SECTIONS

DESIGN	DRAWN	CHECKED	PROJ. MGR.
J.C.P.	D.K.D.	J.C.P.	J.C.P.
DATE 10/78	SCALE AS SHOWN		

APPROVED BY: [signature] DATE

BALDWIN AND GREGG
CONSULTING ENGINEERS FAIRFAX, VIRGINIA

COMMONWEALTH OF VIRGINIA
JAMES C. PHILLIPS, JR.
PROFESSIONAL ENGINEER

JOB NO. B-9895.00
DRAWING NO. 220-T-11721
SHEET 6 OF 27

Figure 2-2: Chlorine Contact Tank Gate Improvements Reference Drawing 2

Date: July 9, 2020

AMENDMENT/ADDENDUM NO. 4
to the PROPOSAL DOCUMENTS
for the Design-Build of
JAMES RIVER SWIFT FACILITY and
JAMES RIVER TREATMENT PLANT ADVANCED NUTRIENT REDUCTION IMPROVEMENTS
CIP No. GN016360 and JR013400
City of Newport News, Virginia

To All Proposers:

The following changes, additions and/or deletions are hereby made part of the Proposal Documents for the Design-Build of the JAMES RIVER SWIFT FACILITY and JAMES RIVER TREATMENT PLANT ADVANCED NUTRIENT REDUCTION IMPROVEMENTS, Newport News, Virginia, for HRSD dated April 2020, as fully and completely as if the same were fully set forth therein.

CHANGES TO VOLUME 1 OF 3

A. Request for Proposal, make the following changes:

1. ADD text to Article 22.02 Water Infrastructure Finance and Innovation Act (WIFIA) Program paragraph 'G' as follows:

   G. HRSD is preparing all documents for the WIFIA application including National Environmental Policy Act (NEPA) documentation.

2. ADD bold text and strikethrough to Article 22.03 Water Quality Improvement Fund (WQIF) Grant Program Requirements paragraph 'B' as follows:

   B. The Successful Proposer shall assist HRSD ~~will~~ **with** all documentation necessary to ~~receive funding through this Program~~ **comply with grant requirements. Documentation will include preparation of a Schedule of Values capturing grant eligible items and supplying monthly pay request that coincide with eligible costs.**

CHANGES TO VOLUME 2 OF 3

A. Basis of Design Report, make the following changes:

1. ADD text and Figures 2-1 and 2-2 to Section 2.4.7.4 Additional Design Considerations after the first paragraph:

   There are ten existing CCT sluice gates proposed as requiring replacement or removal during construction, for additional information refer to Drawing I1500 and Figures 2-1 Chlorine Contact Gate Improvements Reference Drawing 1 and Figure 2-2 Chlorine Contact Gate Improvements Reference Drawing 1.

2. MODIFY the following in Section 2.5.1.1 Process Summary:

   Table 2-23*:* REPLACE the second "Odor A Pumps" with "Odor B".

B. Basis of Design Drawings, make the following changes:

1. DELETE the following drawings and replace with the attached drawings:

   a. Drawing I1500

CHANGES TO VOLUME 3 OF 3

A. REPLACE text in Reference Document 30 Section 6.1.2 Shallow Foundation first paragraph first sentence as follows:

Structures other than those discussed in Section 6.1.1 are estimated to have less than 1-inch settlement and are suitable to be supported on shallow foundation. These structures include, but are not limited to, the Junction/Splitter Box, IFAS Effluent Channel, electrical transformer and other concrete pads, minor structures (manhole, junction boxes, etc.), duct banks, and yard piping.

CLARIFICATIONS

A. UV Influent Water Quality Parameters:

Alkalinity: 75 – 100 mg/L as mg/L as $CaCO_3$
pH: 6.8 – 7.5
Fe (total): <0.1 mg/L
Mn (total): 0 – 0.04 mg/L
Nitrite: Below Detection Limit
Nitrate: < 5 mg/L
TOC: 1 – 4 mg/L
Total Hardness: 66 – 108 mg/L as $CaCO_3$

B. Funding:

1. Virginia Clean Water Revolving Laon Fund (VCWRLF): Programmatic loan funding has been approved.
2. WIFIA: Funding submitted in March 2020 and loan expected to close in August 2020.
3. WQIF: The application for loan funding will be submitted by the Owner after Successful Proposer selection.

C. Temporary Hypochlorite, Bisulfite Storage and Feed System Building Foundations:

1. Temporary Hypochlorite, Bisulfite Storage and Feed System Building: Refer to BODR Section 2.5.1 Temporary JRTP Hypochlorite and Bisulfite Storage Feed System second paragraph.

ATTACHMENTS

A. Drawing I1500, Figures 2-1 and 2-2 as a .pdf.

PROPOSERS MUST ACKNOWLEDGE RECEIPT OF THIS AMENDMENT/ADDENDUM IN THE ONLINE SOLICITATION IN ORDER TO SUBMIT PROPOSAL. FAILURE TO ACKNOWLEDGE AMENDMENT WILL NOT ALLOW PROPOSER TO SUBMIT PROPOSAL.

Solicitation 404776,4

Title **JR SWIFT Facility (GN016360) and JRTP Advanced NRI (JR013400)**
Amendment Date **09-JUL-2020 13:04:27**
Amendment Description **Miscellaneous updates to Volumes 1, 2, and 3.**

Due Date **30-JUL-2020 11:00:00** Award Date **Not Specified**
Time Zone **Eastern Time**

Note **All Proposers are encouraged to attend a virtual pre-proposal conference, which will be held online on April 29, 2020 at 10:00 a.m. local time. Attendance at the pre-proposal conference shall not be mandatory for Proposers to submit a Technical Proposal or Price Proposal. The pre-proposal conference will include a review of the Project. A link to the virtual pre-proposal conference will be sent through HRSD's Online Oracle ERP system as an online discussion.**

All Proposers are scheduled to attend a virtual individual proprietary meeting, which will be held online on May 20, 2020, with HRSD and its Owner's Consultant. Each meeting would be private, in that only 1 Proposer would meet with HRSD at a time and is expected to last no longer than 2 hours per Proposer. Proposers are not required to accept an invitation to the Proprietary meeting. A link to the virtual pre-proposal conference will be sent through HRSD's Online Oracle ERP system as an online discussion.

The purpose of the Proprietary meetings is to give each Proposer, in a confidential setting, an opportunity to ask questions and discuss concerns related to the Project, details of the Project scope, administrative procedures and for the Proposer to discuss any proposed deviations to the RFP. The meetings are also intended to enable HRSD to express, among other things, whether the Proposer is pursuing an approach that will not meet the RFP Documents or is otherwise unacceptable to HRSD. At least 5 calendar days before each meeting the Proposer shall submit to the Contract Specialist, identified in Article 6.01.A, via email the names and functions of each of its attendees and the issues and questions to be discussed. No more than 5 team members may attend such meetings.

Site visits of the HRSD JRTP will be on May 28, 2020 at 8:30 a.m. or 1:00 p.m. To reinforce the Commonwealth's response to COVID-19 and in furtherance of Governor's Executive Order 55 (Temporary Stay at Home Order) minimizing in-person gatherings, site visits will be limited to 9 individuals from each Proposers team. Please refer to paragraph "Pre-Bid & Pre-Proposal Conferences, Site Visits, and other related meetings" in Attachment 1 – Copy of ERP Notification for the Centers for Disease Control and Prevention (CDC) guidelines. Please contact the Contract Specialist, identified in Article 6.01.A, to schedule a site visit. Times will be scheduled as requested on a first come basis. Site visits will be limited to a 4-hour duration from the scheduled start time. There will be no other site visits during the RFP process.

Interviews shall be held with each short-listed Proposer, which will be held virtually on August 19, 2020 with HRSD and its Owner's Consultant and is expected to last no longer than 2 hours. The initial 45 minutes of the interviews will be available for presentations by the Proposers. Presentations should be limited to items directly related to this Project with emphasis on qualifications, proposed services, relevant experience, and details of the Technical Proposal. The remainder of the time will be used for questions by the Committee.

Please submit your response online only:

Organization **HRSD**
Purchaser **Rice, Shannon**
Phone **(757) 460-7005**
Email **srice@hrsd.com**

Responses shall only be accepted online through Hampton Roads Sanitation District 's (HRSD) Oracle ERP system "iSupplier Portal" by the due date and time specified. Late responses and other types of responses shall not be accepted.

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1 Header Information

1.1 General Information

Title **JR SWIFT Facility (GN016360) and JRTP Advanced NRI (JR013400)**

Description **The Hampton Roads Sanitation District (HRSD) desires to contract with an experienced Design-Builder for the design, construction, and commission of 2 capital projects: JAMES RIVER SWIFT FACILITY (GN016360) and JAMES RIVER TREATMENT PLANT ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) (Project).**

HRSD (Owner) has reviewed Statement of Qualifications (SOQ) submitted in response to the RFQ issued on February 9, 2020 and is inviting only Design-Builders short-listed under the RFQ to submit Technical and Price Proposals in response to this RFP. Only Technical and Price Proposals from Design-Builders short-listed under the RFQ will be accepted. HRSD's Online Oracle Enterprise Resource Planning (ERP) system will not accept Technical and Price Proposals from any other Proposer.

A separate solicitation will be issued for the submission of Price Proposals.

Proposer must be aware of the Virginia Clean Water Revolving Loan Fund (VCWRLF) and the Water Infrastructure Finance and Innovation Act (WIFIA) and various Contract inserts in Volume 1 and statements have been added to the RFP.

Proposer must be certain to comply with the MBE/WBE requirements as stated in Article 22 of the RFP, other documents in Volume 1, and show proof of advertisement or contacts.

Amendment Date **09-JUL-2020 13:04:27**

Amendment Description **Miscellaneous updates to Volumes 1, 2, and 3.**

Due Date **30-JUL-2020 11:00:00** Award Date **Not Specified**

Purchaser **Rice, Shannon**

Email **srice@hrsd.com**

This is a Two-Step IFB and all responses will be evaluated in two stages - Technical and Price.

Note All Proposers are encouraged to attend a virtual pre-proposal conference, which will be held online on April 29, 2020 at 10:00 a.m. local time. Attendance at the pre-proposal conference shall not be mandatory for Proposers to submit a Technical Proposal or Price Proposal. The pre-proposal conference will include a review of the Project. A link to the virtual pre-proposal conference will be sent through HRSD's Online Oracle ERP system as an online discussion.

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The purpose of the Proprietary meetings is to give each Proposer, in a confidential setting, an opportunity to ask questions and discuss concerns related to the Project, details of the Project scope, administrative procedures and for the Proposer to discuss any proposed deviations to the RFP. The meetings are also intended to enable HRSD to express, among other things, whether the Proposer is pursuing an approach that will not meet the RFP Documents or is otherwise unacceptable to HRSD. At least 5 calendar

days before each meeting the Proposer shall submit to the Contract Specialist, identified in Article 6.01.A, via email the names and functions of each of its attendees and the issues and questions to be discussed. No more than 5 team members may attend such meetings.

Site visits of the HRSD JRTP will be on May 28, 2020 at 8:30 a.m. or 1:00 p.m. To reinforce the Commonwealth's response to COVID-19 and in furtherance of Governor's Executive Order 55 (Temporary Stay at Home Order) minimizing in-person gatherings, site visits will be limited to 9 individuals from each Proposers team. Please refer to paragraph "Pre-Bid & Pre-Proposal Conferences, Site Visits, and other related meetings" in Attachment 1 – Copy of ERP Notification for the Centers for Disease Control and Prevention (CDC) guidelines. Please contact the Contract Specialist, identified in Article 6.01.A, to schedule a site visit. Times will be scheduled as requested on a first come basis. Site visits will be limited to a 4-hour duration from the scheduled start time. There will be no other site visits during the RFP process.

Interviews shall be held with each short-listed Proposer, which will be held virtually on August 19, 2020 with HRSD and its Owner's Consultant and is expected to last no longer than 2 hours. The initial 45 minutes of the interviews will be available for presentations by the Proposers. Presentations should be limited to items directly related to this Project with emphasis on qualifications, proposed services, relevant experience, and details of the Technical Proposal. The remainder of the time will be used for questions by the Committee.

1.2 Terms

Ship-To Address	**Design-Const SWIFT** **1434 Air Rail Avenue** **Virginia Beach, VA 23455** **United States**	Bill-To Address	**Accounts Payable** **PO BOX 5915** **Virginia Beach, VA 23471-0915** **United States**
Payment Terms	**Net 30**	Carrier	**Best Way**
FOB	**Destination**	Freight Terms	**No Freight Terms Apply**

1.3 Requirements

Proposer Certification	**Solicitation Step - Technical**
By the submission of this online Proposal, the Proposer is duly authorized to bind the company and is familiar with all requirements detailed in the Proposal Documents. ..... Circle one from the response values below: YES NO	
Proposer's Acknowledgements	**Solicitation Step - Technical**
Proposer agrees, if this Technical Proposal is accepted and the Proposer is selected to enter into an Agreement with HRSD in the form included in the RFP, subject to modification after negotiation. ..... Circle one from the response values below: Yes No	
Proposer is aware of the Virginia Clean Water Revolving Loan Fund (VCWRLF) Program Requirements. ..... Circle one from the response values below: Yes No	
Proposer is aware of the Water Infrastructure Finance and Innovation Act (WIFIA) Program Requirements. ..... Circle one from the response values below:	

Proposer's Acknowledgements	Solicitation Step - Technical
Yes No	
Proposer is aware of the Water Quality Improvement Fund (WQIF) Grant Program Requirements. ..... Circle one from the response values below: YES NO	

1.4 Attachments

Name	Data Type	Description
Addendum #2: Attachment G	File	F&R CPT-03 output
Addendum #2: Attachment H	File	F&R CPT-01 output
Addendum #2: Attachment I	File	F&R CPT-02 output
Addendum #2: Attachment J	File	X0110-DWG.R1 F&R Drawing No. 2 update
Addendum #2	File	Miscellaneous updates to Volumes 2 & 3 and Clarifications
Addendum #2: Attachment K	File	PMI Survey – Geotech Relocation markup
Addendum #2: Attachment L	File	On-Plant recharge Well electrical loads
Addendum #2: Attachment M	File	JRTP SWIFT electrical load list
Addendum #2: Attachment N	File	Off-plant recharge well electrical loads
Addendum #2: Attachment O	File	JRTP total plant electrical load calculation
Addendum 3	File	Miscellaneous updates to Volumes 1, 2, and 3.
Addendum #3: Attachment H	File	Reference Document 33
Addendum #3: Attachment I	File	Riverview Farm Park topographic survey information
Addendum #4	File	Miscellaneous updates to Volumes 1, 2, and 3.
Addednum #4: Attachment A	File	Drawing I1500, Figures 2-1 and 2-2
Addendum #3: Attachment A	File	Figure 01 50 00-3 Proposed Location of Laydown and Staging on City Property
Addendum #3: Attachment B	File	Section 01 31 13 Project Coordination
Addendum #3: Attachment C	File	Appendix J JRTP Effluent Data Summary
Addendum #3: Attachment D	File	Basis of Design Drawings
Addendum #3: Attachment E	File	Reference Document 1
Addendum #3: Attachment F	File	Reference Document 22
Addendum #3: Attachment G	File	Reference Document 32
JR SWIFT Facility & JRTP Advanced NRI Volume 1 of 3	File	Volume 1 of 3
JR SWIFT Facility & JRTP Advanced NRI Volume 2 of 3	File	Volume 2 of 3
JR SWIFT Facility & JRTP Advanced NRI Volume 3 of 3	File	Volume 3 of 3
JR SWIFT Facility & JRTP Advanced NRI Agreement	File	Agreement for Transfer of Digital Model Files

Name	Data Type	Description
for Transfer of Digital Model Fi		
Baseline GHG Assessment Carbon Footprint Tool	File	Baseline GHG Assessment Carbon Footprint Tool
Addendum #1	File	Updates to the RFP - Proprietary Meeting Minutes due date (match RFQ language) and Interviews are now virtual.
Addendum #2: Attachment A	File	BODR Sections 2.4.4.1 Background and Treatment Objections and 2.4.4.2 Design Criteria
Addendum #2: Attachment B	File	James River Treatment Plant Dominion Power Billing Information
Addendum #2: Attachment C	File	Basis of Design Drawings
Addendum #2: Attachment D	File	James River Treatment Plant I/O list for existing DCU-1
Addendum #2: Attachment E	File	Existing James River Treatment Plant arc flash study
Addendum #2: Attachment F	File	James River Treatment Plant list of predefined two-digit UP designations for the entire project

2 Price Schedule

2.1 Line Information

Retainage

Retainage Attributes	Negotiable
Maximum Retainage Amount	No
Retainage Rate (%)	No

Line	Item, Rev	Target Quantity (N/A)	Unit	Unit Price	Amount	Promised Date
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Need-By Date **Not Specified**

NIGP Code (CURRENCY_CODE=USD) **Not Specified**

Ship-To Address **Eng**
1434 Air Rail Avenue
Virginia Beach, VA
23455
United States

Date: May 21, 2020

AMENDMENT/ADDENDUM NO. 1
to the PROPOSAL DOCUMENTS
for the Design-Build of
JAMES RIVER SWIFT FACILITY and
JAMES RIVER TREATMENT PLANT ADVANCED NUTRIENT REDUCTION IMPROVEMENTS
CIP No. GN016360 and JR013400
City of Newport News, Virginia

To All Proposers:

The following changes, additions and/or deletions are hereby made part of the Proposal Documents for the Design-Build of the JAMES RIVER SWIFT FACILITY and JAMES RIVER TREATMENT PLANT ADVANCED NUTRIENT REDUCTION IMPROVEMENTS, Newport News, Virginia, for HRSD dated April 2020, as fully and completely as if the same were fully set forth therein.

CHANGES TO THE PROPOSAL DOCUMENTS: VOLUME 1 OF 3

A. Request for Proposals, make the following changes:

1. Paragraph 3.01.C, CHANGE "within 5 calendar days" in the first sentence to "within 3 business days (Tuesday, May 26, 2020)".

2. Paragraph 15.02.D, UPDATE the first sentence to read, "Interviews shall be held with each short-listed Proposer, which will be held virtually on August 19, 2020 with HRSD and its Owner's Consultant and is expected to last no longer than 2 hours."

3. Paragraph 15.02.D, ADD to the end, "Each Proposer can choose between Skype or Microsoft Teams, whichever remote meeting software platform is best suited for the team. Please send the meeting invitation to the Committee and the Contract Specialist. Each Proposer will be required to video record the entire presentation including the question and answer session with the Committee as a backup plan in the event that 1 or more Committee members experience technical difficulties during the live presentation. If a technical difficulty occurs, as described, the affected Proposer will be requested to allow only the impacted Committee member(s) to view this video recording on the Proposer's secure site via a provided link for a specific date, time, or duration."

PROPOSERS MUST ACKNOWLEDGE RECEIPT OF THIS AMENDMENT/ADDENDUM IN THE ONLINE SOLICITATION IN ORDER TO SUBMIT PROPOSAL. FAILURE TO ACKNOWLEDGE AMENDMENT WILL NOT ALLOW PROPOSER TO SUBMIT PROPOSAL.

Solicitation 404776

Title	**JR SWIFT Facility (GN016360) and JRTP Advanced NRI (JR013400)**		
Due Date	**30-JUL-2020 11:00:00**	Award Date	**Not Specified**
Time Zone	**Eastern Time**	Event	**Not Specified**

Note **All Proposers are encouraged to attend a virtual pre-proposal conference, which will be held online on April 29, 2020 at 10:00 a.m. local time. Attendance at the pre-proposal conference shall not be mandatory for Proposers to submit a Technical Proposal or Price Proposal. The pre-proposal conference will include a review of the Project. A link to the virtual pre-proposal conference will be sent through HRSD's Online Oracle ERP system as an online discussion.**

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Site visits of the HRSD JRTP will be on May 28, 2020 at 8:30 a.m. or 1:00 p.m. To reinforce the Commonwealth's response to COVID-19 and in furtherance of Governor's Executive Order 55 (Temporary Stay at Home Order) minimizing in-person gatherings, site visits will be limited to 9 individuals from each Proposers team. Please refer to paragraph "Pre-Bid & Pre-Proposal Conferences, Site Visits, and other related meetings" in Attachment 1 – Copy of ERP Notification for the Centers for Disease Control and Prevention (CDC) guidelines. Please contact the Contract Specialist, identified in Article 6.01.A, to schedule a site visit. Times will be scheduled as requested on a first come basis. Site visits will be limited to a 4-hour duration from the scheduled start time. There will be no other site visits during the RFP process.

Interviews shall be held with each short-listed Proposer, which will be held at HRSD Main Office on August 19, 2020 with HRSD and its Owner's Consultant and is expected to last no longer than 2 hours. The initial 45 minutes of the interviews will be available for presentations by the Proposers. Presentations should be limited to items directly related to this Project with emphasis on qualifications, proposed services, relevant experience, and details of the Technical Proposal. The remainder of the time will be used for questions by the Committee.

Please submit your response online only:

Organization **HRSD**
Purchaser **Rice, Shannon**
Phone **(757) 460-7005**
Email **srice@hrsd.com**

Responses shall only be accepted online through Hampton Roads Sanitation District 's (HRSD) Oracle ERP system "iSupplier Portal" by the due date and time specified. Late responses and other types of responses shall not be accepted.

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1 Header Information

1.1 General Information

Title **JR SWIFT Facility (GN016360) and JRTP Advanced NRI (JR013400)**

Description **The Hampton Roads Sanitation District (HRSD) desires to contract with an experienced Design-Builder for the design, construction, and commission of 2 capital projects: JAMES RIVER SWIFT FACILITY (GN016360) and JAMES RIVER TREATMENT PLANT ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) (Project).**

HRSD (Owner) has reviewed Statement of Qualifications (SOQ) submitted in response to the RFQ issued on February 9, 2020 and is inviting only Design-Builders short-listed under the RFQ to submit Technical and Price Proposals in response to this RFP. Only Technical and Price Proposals from Design-Builders short-listed under the RFQ will be accepted. HRSD's Online Oracle Enterprise Resource Planning (ERP) system will not accept Technical and Price Proposals from any other Proposer.

A separate solicitation will be issued for the submission of Price Proposals.

Proposer must be aware of the Virginia Clean Water Revolving Loan Fund (VCWRLF) and the Water Infrastructure Finance and Innovation Act (WIFIA) and various Contract inserts in Volume 1 and statements have been added to the RFP.

Proposer must be certain to comply with the MBE/WBE requirements as stated in Article 22 of the RFP, other documents in Volume 1, and show proof of advertisement or contacts.

Due Date **30-JUL-2020 11:00:00** Award Date **Not Specified**

Purchaser **Rice, Shannon**

Email **srice@hrsd.com**

Event **Not Specified**

This is a Two-Step IFB and all responses will be evaluated in two stages - Technical and Price.

Note All Proposers are encouraged to attend a virtual pre-proposal conference, which will be held online on April 29, 2020 at 10:00 a.m. local time. Attendance at the pre-proposal conference shall not be mandatory for Proposers to submit a Technical Proposal or Price Proposal. The pre-proposal conference will include a review of the Project. A link to the virtual pre-proposal conference will be sent through HRSD's Online Oracle ERP system as an online discussion.

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meetings.

Site visits of the HRSD JRTP will be on May 28, 2020 at 8:30 a.m. or 1:00 p.m. To reinforce the Commonwealth's response to COVID-19 and in furtherance of Governor's Executive Order 55 (Temporary Stay at Home Order) minimizing in-person gatherings, site visits will be limited to 9 individuals from each Proposers team. Please refer to paragraph "Pre-Bid & Pre-Proposal Conferences, Site Visits, and other related meetings" in Attachment 1 – Copy of ERP Notification for the Centers for Disease Control and Prevention (CDC) guidelines. Please contact the Contract Specialist, identified in Article 6.01.A, to schedule a site visit. Times will be scheduled as requested on a first come basis. Site visits will be limited to a 4-hour duration from the scheduled start time. There will be no other site visits during the RFP process.

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1.2 Terms

Ship-To Address	**Design-Const SWIFT** **1434 Air Rail Avenue** **Virginia Beach, VA 23455** **United States**	Bill-To Address	**Accounts Payable** **PO BOX 5915** **Virginia Beach, VA 23471-0915** **United States**
Payment Terms	**Net 30**	Carrier	**Best Way**
FOB	**Destination**	Freight Terms	**No Freight Terms Apply**

1.3 Requirements

Proposer Certification	**Solicitation Step - Technical**
By the submission of this online Proposal, the Proposer is duly authorized to bind the company and is familiar with all requirements detailed in the Proposal Documents. ..... Circle one from the response values below: YES NO	
Proposer's Acknowledgements	**Solicitation Step - Technical**
Proposer agrees, if this Technical Proposal is accepted and the Proposer is selected to enter into an Agreement with HRSD in the form included in the RFP, subject to modification after negotiation. ..... Circle one from the response values below: Yes No	
Proposer is aware of the Virginia Clean Water Revolving Loan Fund (VCWRLF) Program Requirements. ..... Circle one from the response values below: Yes No	
Proposer is aware of the Water Infrastructure Finance and Innovation Act (WIFIA) Program Requirements. ..... Circle one from the response values below: Yes No	
Proposer is aware of the Water Quality Improvement Fund (WQIF) Grant Program Requirements.	

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Proposer's Acknowledgements	**Solicitation Step - Technical**
.....	
Circle one from the response values below: YES NO	

1.4 Attachments

Name	Data Type	Description
JR SWIFT Facility & JRTP Advanced NRI Volume 1 of 3	File	Volume 1 of 3
JR SWIFT Facility & JRTP Advanced NRI Volume 2 of 3	File	Volume 2 of 3
JR SWIFT Facility & JRTP Advanced NRI Volume 3 of 3	File	Volume 3 of 3
JR SWIFT Facility & JRTP Advanced NRI Agreement for Transfer of Digital Model Fi	File	Agreement for Transfer of Digital Model Files
Baseline GHG Assessment Carbon Footprint Tool	File	Baseline GHG Assessment Carbon Footprint Tool

Draft

2 Price Schedule

2.1 Line Information

Retainage

Retainage Attributes	Negotiable
Maximum Retainage Amount	No
Retainage Rate (%)	No

Line	Item, Rev	Target Quantity (N/A)	Unit	Unit Price	Amount	Promised Date
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Need-By Date **Not Specified**

NIGP Code (CURRENCY_CODE=USD) **Not Specified**

Ship-To Address **Eng**
1434 Air Rail Avenue
Virginia Beach, VA
23455
United States

Note Not Specified

Draft

Solicitation 404776,1

Title	**JR SWIFT Facility (GN016360) and JRTP Advanced NRI (JR013400)**
Amendment Date	**21-MAY-2020 16:34:15**
Amendment Description	**Updates to the RFP - Proprietary Meeting Minutes due date (match RFQ language) and Interviews are now virtual.**
Due Date	**30-JUL-2020 11:00:00**
Award Date	**Not Specified**
Time Zone	**Eastern Time**

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Please submit your response online only:

Organization **HRSD**
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1 Header Information

1.1 General Information

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Amendment Date **21-MAY-2020 16:34:15**

Amendment Description **Updates to the RFP - Proprietary Meeting Minutes due date (match RFQ language) and Interviews are now virtual.**

Due Date **30-JUL-2020 11:00:00** Award Date **Not Specified**

Purchaser **Rice, Shannon**

Email **srice@hrsd.com**

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Proposer's Acknowledgements	**Solicitation Step - Technical**
Yes No	
Proposer is aware of the Water Quality Improvement Fund (WQIF) Grant Program Requirements. ..... Circle one from the response values below: YES NO	

1.4 Attachments

Name	Data Type	Description
JR SWIFT Facility & JRTP Advanced NRI Volume 1 of 3	File	Volume 1 of 3
JR SWIFT Facility & JRTP Advanced NRI Volume 2 of 3	File	Volume 2 of 3
JR SWIFT Facility & JRTP Advanced NRI Volume 3 of 3	File	Volume 3 of 3
JR SWIFT Facility & JRTP Advanced NRI Agreement for Transfer of Digital Model Fi	File	Agreement for Transfer of Digital Model Files
Baseline GHG Assessment Carbon Footprint Tool	File	Baseline GHG Assessment Carbon Footprint Tool
Addendum #1	File	Updates to the RFP - Proprietary Meeting Minutes due date (match RFQ language) and Interviews are now virtual.

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2.1 Line Information

Retainage

Retainage Attributes	Negotiable
Maximum Retainage Amount	No
Retainage Rate (%)	No

Line	Item, Rev	Target Quantity (N/A)	Unit	Unit Price	Amount	Promised Date
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2.2 Line Details

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Need-By Date **Not Specified**

NIGP Code (CURRENCY_CODE=USD) **Not Specified**

Ship-To Address **Eng**
1434 Air Rail Avenue
Virginia Beach, VA
23455
United States

2.4.4 Moving Bed Biofilm Reactor (MBBR)

The purpose of the moving bed biofilm reactors (MBBRs) is to improve secondary effluent water quality before conveyance to the JR SWIFT project.

2.4.4.1 Background and Treatment Objectives

The MBBR is an attached-growth biological wastewater treatment process where microorganisms attach to a solid medium (plastic carrier media) providing tertiary nitrogen removal of the secondary effluent. The carrier media are kept suspended with a diffused aeration system for an aerobic process and mechanical mixing system for an anoxic or anaerobic process.

Table 2-10 and **Table 2-11** provide a summary of the design criteria for the post-denitrification MBBR treatment process.

Table 2-10 Post-Denitrification MBBR Basis of Design Criteria

Parameter	Value
Maximum Influent Flow	21 mgd
Temperature (minimum)	12.2°C
~~Media Specific Surface Area~~	~~800 m^2/m^3~~
Influent NH_3	1 mg N/L FDN (5 PdNA)(1)
Influent NO_x	7 mg N/L FDN (5 PdNA)(1)
~~Influent NOx Loading Rate~~	~~0.6 $g/m^2/d$ FDN (0.4 PdNA)(1)~~
~~Influent TIN Loading Rate~~	~~0.7 $g/m^2/d$ FDN (0.9 PdNA)(1)~~
Total Volume	1 million gallons
Biological Aeration Demand	1,600 SCFM(2)
Mixing / Sparging Aeration Demand	1,200 SCFM(2)
Total Aeration Demand	2,800 SCFM(2)

(1) The influent nitrogen to the post-denitrification MBBR depends on the operation strategy of the secondary system. In full denitrification (FDN) mode, the IFAS aeration strategy will target 1 NHx mg N/L and 7 NOx mg N/L. In partial denitrification with anammox (PdN-A) mode, the IFAS effluent will target 5 NHx mg N/L and 5 NOx mg N/L. The IFAS effluent is the MBBR influent.

(2) Aeration demands are estimated values for the purposes of preliminary equipment sizing. Aeration demands shall be determined by the system supplier and Design-Builder, in coordination with HRSD, as part of final system sizing and design.

Table 2-11: Post-Denitrification MBBR Basis of Design Criteria per Reactor Zone

Zones	Anoxic	Swing(1)	Anoxic	Aerobic
Aeration	No	Yes	No	Yes
Mixers (Top-Entry)	Yes	Yes	Yes	No
Screens(2)	Yes	Yes	Yes	Yes

% Volume	50.0%	16.7%	16.7%	16.7%
% Media Fill	**Max 50%**~~60%~~(3)	**Max 50%**~~60%~~(3)	**Max 50%**~~60%~~(3)	**Max 50%**~~60%~~(3)
Number of Cells per Zone	2	2	2	2

(1) Swing includes the ability to be aerobic or anoxic.

(2) Screen selection as determined by system supplier and approved by HRSD.

(3) The Design-Builder shall assume ~~60%~~**50%** media fill for the Contract Cost Limit. Final media fill percentage shall be determined in coordination with HRSD and its ongoing research studies. ~~HRSD may decide FDN becomes the Basis of Design in which case 20% media fill is sufficient.~~

Table 2-12 provides a process summary for the MBBR system.

Table 2-12: Process Summary for MBBR System

Element	Description/Requirement
Purpose	• Tertiary nitrogen removal
Operation Modes	• Full (conventional) denitrification (FDN) • Partial denitrification with anammox (PdN-A)
Redundancy	• One cell may be taken out of service while all remaining cells remain in service.
Design Approach	• Process capacity based on SWIFT, JRTP non-potable water (NPW), and outfall maintenance demands • MBBR influent flow exceeding MBBR treatment capacity passively diverted to CCTs • MBBR effluent flow in excess of SWIFT demands passively diverted to SWIFT Influent Equalization Tank or to CCTs if SWIFT Influent Equalization Tank is full
Operations and Control Philosophy	• All dry weather flow is normally treated by MBBR, but MBBR influent is controlled by a control valve and flowmeter in the MBBR room. • Secondary effluent flow above 21 mgd will passively divert around MBBR to CCTs. • Continuous discharge of up to 2.5 mgd to CCTs must be maintained to supply existing JRTP NPW system and provide a constant flow through the plant outfalls.
Facility Layout Concepts	• Four rows of two parallel cells. • First pair of cells are anoxic with two top-mounted mechanical mixers in each cell. • Second pair of cells are swing zones and provided with aeration grid systems and two top-mounted mechanical mixers in each cell. • Third pair of cells are anoxic zones and provided with two top-mounted mechanical mixers in each cell. • Fourth pair of cells are aerobic zones and provided with aeration grid systems but no mechanical mixing.

2.4.4.2 Design Criteria

Table 2-13 summarizes the major design criteria used for the MBBR treatment system.

Table 2-13: Major Design Criteria for MBBR Treatment System

Design Element		Value		
MBBR Cells (as shown)	Number	8 cells (4 anoxic, 2 swing, 2 aerobic)		
	Zone (Cells)	Length (feet)	Width (feet)	Volume (gal, each)
	1st anoxic (1A, 1B)	32	60	256,510
	Swing (2A, 2B)	20	32	86,170
	2nd anoxic (3A, 3B)	20	32	86,170
	Aerobic (4A, 4B)	20	32	86,170
	Side water depth	18 feet		
	Top of wall, elevation	22 feet		
	Total volume	1.03 million gallons		
MBBR Media Retention Screens	Purpose	Media retention prevents media from traveling between cells and/or to downstream processes.		
	Design type Anoxic zones Swing zones Aerobic zones	 ~~Perforated plate~~ **As Per Supplier** ~~Perforated plate~~ **As Per Supplier** ~~Cylindrical sieves~~ **As Per Supplier**		
	Installation type	Flat sieves and cylinder sieves		
	Material	316/316L stainless steel, minimum 14 gauge sheet		
	~~Screen opening size~~	~~5/8 inch with 13/16 inch centers~~		
	Locations	All cells		
	Maximum allowable wall screen headloss	Shall not exceed 3 inches in each cell at peak hydraulic condition		
MBBR Plastic Biofilm Carrier Media	Type	High density polyethylene carrier media, ~~AnoxKaldnes Media – K5, or equal~~ **as per supplier**		
	~~Effective surface area~~	~~800 m^2/m^3~~		
	~~Nominal diameter~~	~~25 mm~~		
	~~Height~~	~~3.7 mm~~		
	~~Thickness~~	~~4.0 mm~~		
	~~Nominal density~~	~~7.5 lb/cf~~		
	~~Nominal specific gravity~~	~~0.98~~		
	Media fill% by volume	~~60%~~ **Max 50%** (see **Table 2-11**, footnote 3)		
Mechanical Mixers	Products	~~Stamo~~ Top-entry dual blade mixers, or equivalent **as per supplier**		
	Quantity			
	1st anoxic cells	(2 mixers per cell) x (2 cells) = 4 units		
	Swing cells	(2 mixers per cell) x (2 cells) = 4 units		
	2nd anoxic cells	(2 mixers per cell) x (2 cells) = 4 units		

Design Element		Value
	Material (wetted parts)	AISI 329
	Number of impellers per shaft	2
	Minimum design requirements	• Each mixer shall consist of a variable speed motor-driven gear reducer directly connected to a vertical shaft equipped with axial flow turbine impeller. • Mixer shall be suitable for continuous outdoor operation with temperature from −35°F to 110°F. • Use of shaft stabilizer is not acceptable. • Design-Builder shall select mixers to operate efficiently and avoid damage to the carrier media.
	Operation	Variable speed motor
	Power	3 phase, 60 Hz, 460 volts
	Motor	Horizontal totally enclosed, fan-cooled (TEFC), squirrel cage induction units, Class F insulation, copper windings; National Electrical Manufacturers Association (NEMA) Design B in accordance with NEMA MG 1, Motors and Generators (2016).
	Horsepower, each	1st anoxic zone: 10 hp (estimated); swing and 2nd anoxic zones: 2 hp (estimated)
	Motor speed	1,800 rpm
Aeration System	Type	Medium-bubble aeration diffusers of type 316/316L stainless steel piping with 4 mm holes

	Minimum design requirements	• The aeration equipment systems shall be of the fixed header, diffused air type. The systems shall be suitable for installation as shown on the BODR drawings.
		• System shall be designed to meet both the minimum and maximum air demands to satisfy both mixing and oxygen transfer requirements.
		• Promote rolling-water circulation pattern that uniformly distributes plastic biofilm carriers.
		• The installed aeration system including supports shall be designed to withstand the weight force of the media and attached biofilm when the basin is drained and taken out of service.
		• Each aeration system designed and orifices sized so that at minimum and maximum airflows, the airflow rate when balanced of any two diffusers in the system shall not differ by more than 10% (based on the diffuser with the lower flow rate).
		• The distribution and balancing of air shall be controlled by the use of orifices or control valves and proper header size selection only.
		• Aeration system shall include:
		  ○ 316/316L stainless steel drop pipes for the aeration grid
		  ○ A 316/316L stainless steel grid system for each basin
		  ○ Drop pipe and aeration grid support system

	Airflow requirements	To be determined by the Design-Builder (see Table 2-10, note 2)

Design Element		Value
MBBR Drain System	Number	8 drains with screened opening (one per cell)
	Screen opening size	5/8 inch
	Drain pipe size	8 inches
MBBR Drain Pumps	Number	2 pumps (manual operation, 1 operating, 1 standby)
	Type	Vertical centrifugal
	Design capacity	650 gpm per pump
	Discharge head	20 feet (estimated)
	Motor horsepower	7.5 (estimated)
	Suction size	8 inches
	Discharge size	10 inches
Gates	Number	29
	Size	Width: 6 feet; height: 6 feet
	Material	Type 316/316L stainless steel
	Actuator	Electric, open-close with position indication
MBBR Blowers	Type	Rotary screw or approved alternate
	Number	3 (2 duty, 1 standby)
	Design capacity (each blower)	1,500 cfm (to be determined by the Design-Builder)
	Discharge pressure	To be determined by the Design-Builder
	Motor horsepower	To be determined by the Design-Builder

View Report

Account:

9136387504 - 111 City Farm Rd James River Treatment Plant

Account Name: Contact Rick Raike 353-5466

HRSD

Service Address:

111 CITY FARM RD

NEWPORT NEWS, VA 23602-7505

Mailing Address:

PO BOX 5915

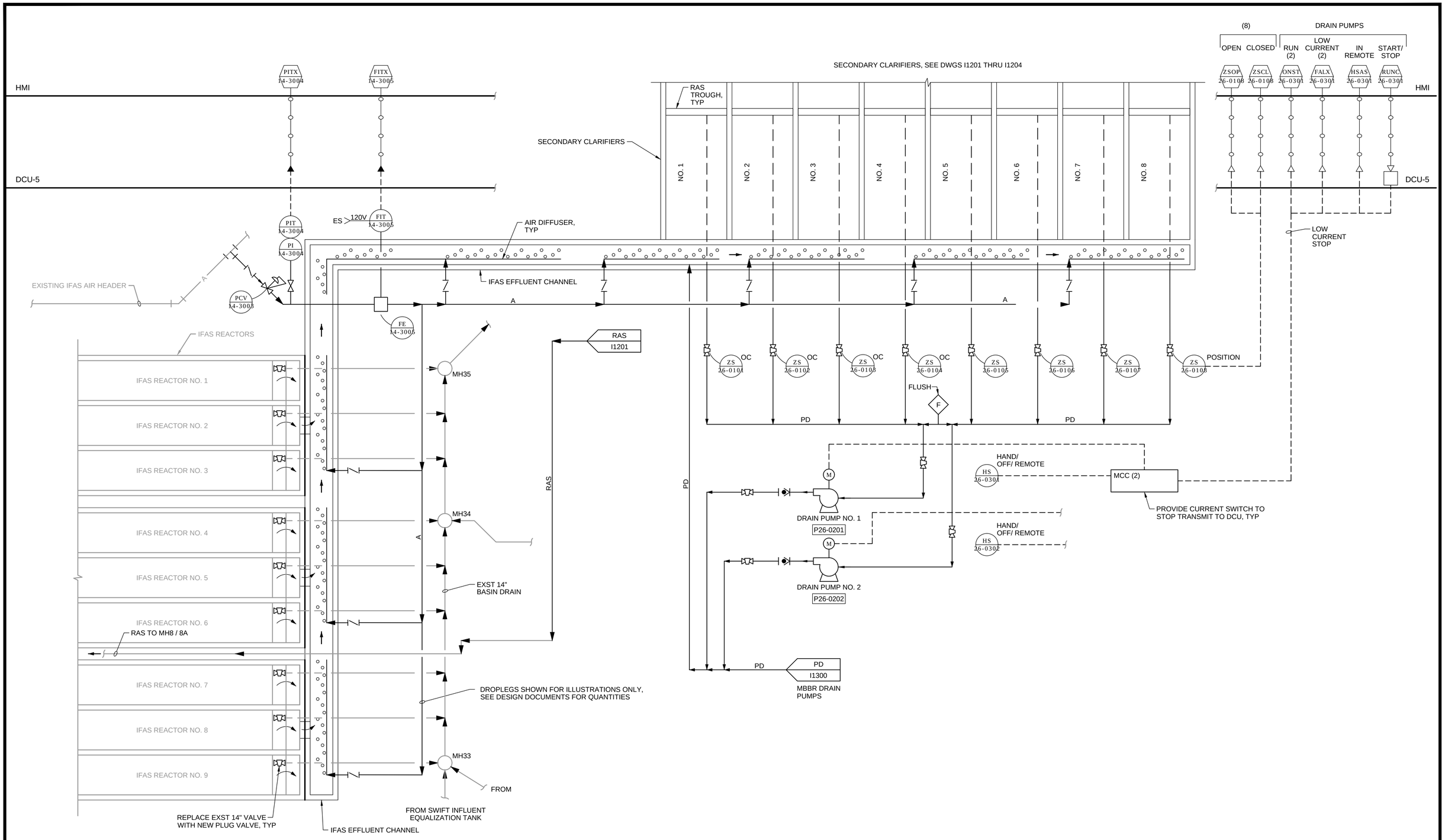
VIRGINIA BCH, VA 23471-0915

Report Type:

Combined Billing & Usage History

Read Date	Bill Days	Metered kW		Power Supply kW		Dist kW	RkVa	kWh		Total kWh
		On Peak	Off Peak	On Peak	Off Peak			On Peak	Off Peak	
5/6/2020	30	1,536	1,527	1,536	0	1,763	832	0	0	948,000
4/6/2020	31	1,669	1,687	1,669	0	1,763	926	0	0	1,044,000
3/6/2020	29	1,602	1,689	1,602	0	1,763	904	0	0	998,400
2/6/2020	28	1,672	1,676	1,672	0	1,763	745	0	0	942,000
1/9/2020	33	1,763	1,751	1,763	0	1,763	854	0	0	1,178,400
12/7/2019	32	1,626	1,601	1,626	0	1,735	898	0	0	1,084,800
11/5/2019	32	1,486	1,476	1,486	0	1,735	879	0	0	999,600
10/4/2019	29	1,471	1,469	1,471	0	1,735	857	0	0	906,000
9/5/2019	58	1,446	1,451	1,446	0	1,735	695	0	0	1,744,800
7/9/2019	33	1,465	1,472	1,465	0	1,735	837	0	0	1,044,000
6/6/2019	30	1,476	1,475	1,477	0	1,735	741	0	0	957,600
5/7/2019	32	1,521	1,536	1,521	0	1,735	871	0	0	1,046,400
4/5/2019	29	1,663	1,706	1,663	0	1,755	884	0	0	1,036,800

3/7/2019	29	1,694	1,708	1,694	0	1,927	798	0	0	1,059,600
2/6/2019	29	1,735	1,735	1,735	0	1,944	815	0	0	1,120,800
1/8/2019	33	1,701	1,694	1,701	0	2,009	789	0	0	1,236,000
12/6/2018	34	1,593	1,581	1,593	0	2,009	733	0	0	1,141,200
11/2/2018	29	1,455	1,478	1,477	0	2,009	724	0	0	844,800
10/4/2018	29	1,413	1,450	1,477	0	2,009	730	0	0	873,600
9/5/2018	30	1,426	1,462	1,477	0	2,009	740	0	0	916,800
8/6/2018	31	1,446	1,465	1,477	0	2,009	741	0	0	937,200
7/6/2018	30	1,642	1,590	1,642	0	2,009	698	0	0	970,800
6/6/2018	30	1,534	1,564	1,534	0	2,009	590	0	0	949,200
5/7/2018	28	1,755	1,744	1,755	0	2,009	666	0	0	962,400
4/9/2018	32	1,927	1,869	1,927	0	2,009	928	0	0	1,245,600
3/8/2018	29	1,865	1,944	1,865	0	2,009	749	0	0	1,171,200
2/7/2018	30	2,009	1,995	2,009	0	2,009	864	0	0	1,200,000
1/8/2018	31	1,891	1,879	1,891	0	1,891	856	0	0	1,191,600
12/8/2017	32	1,517	1,496	1,517	0	1,812	843	0	0	1,035,600
11/6/2017	31	1,617	1,653	1,617	0	1,812	858	0	0	982,800
10/6/2017	29	1,468	1,432	1,468	0	1,812	718	0	0	878,400
9/7/2017	30	1,420	1,398	1,452	0	1,812	728	0	0	933,600
8/8/2017	29	1,418	1,392	1,452	0	1,812	695	0	0	878,400
7/10/2017	33	1,346	1,359	1,458	0	1,812	674	0	0	979,200
6/7/2017	30	1,614	1,618	1,614	0	1,812	652	0	0	956,400
5/8/2017	32	1,621	1,683	1,621	0	1,812	675	0	0	1,035,600



REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0 1/2" 1")

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

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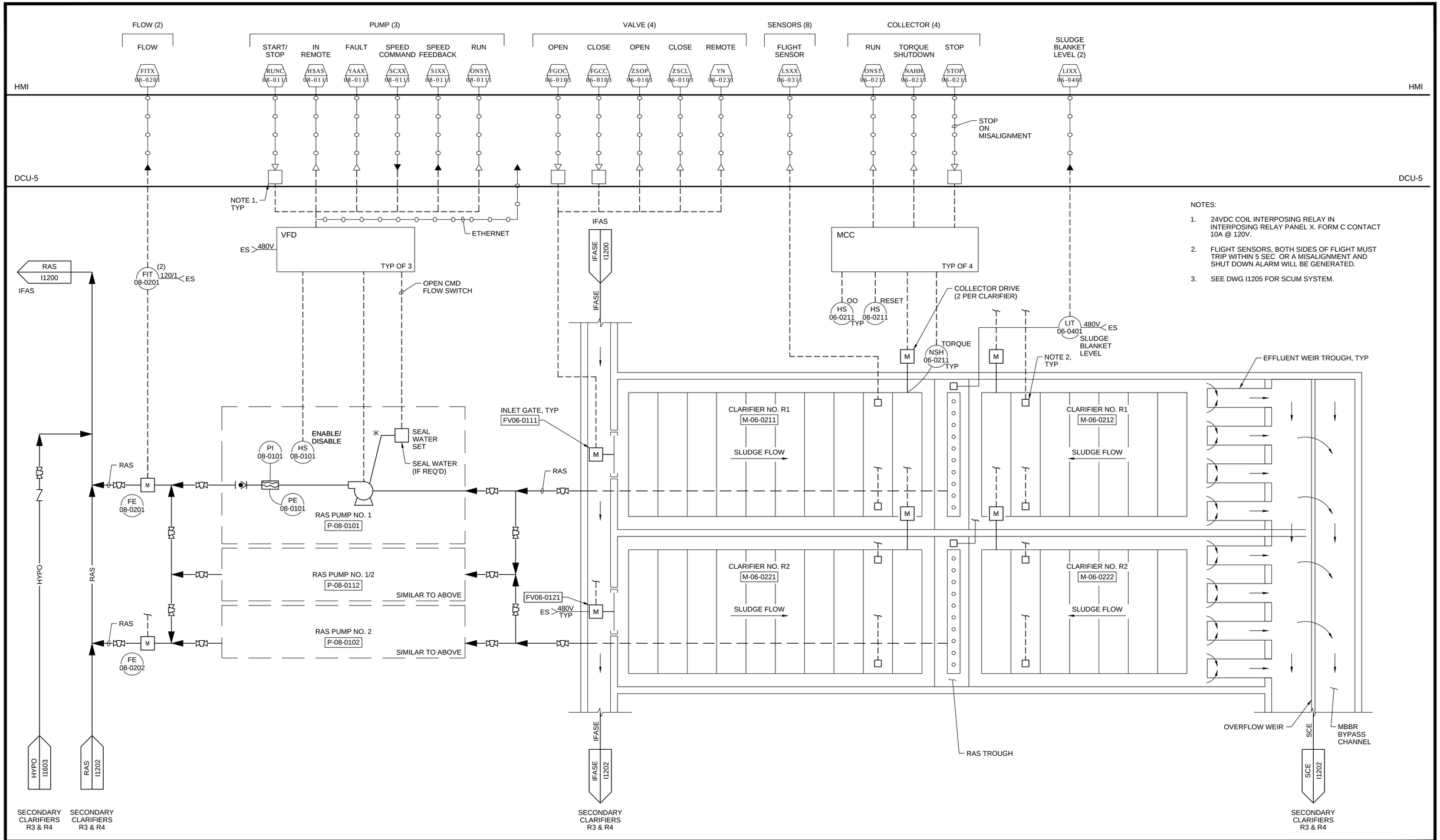
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION
IFAS EFFLUENT CHANNEL
AND SECONDARY CLARIFIER DRAIN PUMPS

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	I1200

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NOTES:

1. 24VDC COIL INTERPOSING RELAY IN INTERPOSING RELAY PANEL X. FORM C CONTACT 10A @ 120V.
2. FLIGHT SENSORS, BOTH SIDES OF FLIGHT MUST TRIP WITHIN 5 SEC OR A MISALIGNMENT AND SHUT DOWN ALARM WILL BE GENERATED.
3. SEE DWG I1205 FOR SCUM SYSTEM.

REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

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JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION SECONDARY CLARIFIERS NO. R1 AND R2

DATE:	2020
PROJECT NO.:	32480
CONTRACT N0.:	-
DRAWING NUMBER:	I1201

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FLOW (2)
FLOW
FITX 08-0203

PUMP (3)
START/ STOP — RUNC 08-1103
IN REMOTE — HSAS 08-1103
FAULT — YAAX 08-1103
SPEED COMMAND — SCXX 08-1103
SPEED FEEDBACK — SIXX 08-1103
RUN — ONST 08-1103

VALVE (4)
OPEN — FGOC 06-0131
CLOSE — FGCC 06-0131
OPEN — ZSOP 06-0131
CLOSE — ZSCL 06-0131
REMOTE — HSAS 06-0131

SENSORS (8)
FLIGHT SENSOR — LSXX 06-0331

COLLECTOR (4)
RUN — ONST 06-0231
TORQUE SHUTDOWN — NAHH 06-0231
STOP — STOP 06-0231

SLUDGE BLANKET LEVEL (2)
LIXX 06-0403

HMI

DCU-5

STOP ON MISALIGNMENT

NOTE 1, TYP

ETHERNET

VFD
ES 480V
TYP OF 3

OPEN CMD FLOW SWITCH

MCC
TYP OF 4

OO HS 06-0231 TYP
RESET HS 06-0231

COLLECTOR DRIVE (2 PER CLARIFIER)

TORQUE NSH 06-0231

LIT 06-0403 480V ES
SLUDGE BLANKET LEVEL

NOTES:

1. 24VDC COIL INTERPOSING RELAY IN INTERPOSING RELAY PANEL X. FORM C CONTACT 10A @ 120V.
2. FLIGHT SENSORS, BOTH SIDES OF FLIGHT MUST TRIP WITHIN 5 SEC OR A MISALIGNMENT AND SHUT DOWN ALARM WILL BE GENERATED.
3. SEE DRAWING I1205 FOR SCUM SYSTEM.

SECONDARY CLARIFIERS R1 & R2

RAS I1201

(2) FIT 08-0203 120/1 ES

IFASE I1201

SCE I1201

SECONDARY CLARIFIERS EFFLUENT CHANNEL

EFFLUENT WEIR TROUGH, TYP

NOTE 2, TYP

INLET GATE, TYP FV06-0131

CLARIFIER NO. R3 M-06-0231

SLUDGE FLOW

CLARIFIER NO. R3 M-06-0232

SLUDGE FLOW

ENABLE/ DISABLE

PI 08-0103

HS 08-0103

SEAL WATER SET

SEAL WATER (IF REQ'D)

RAS

FE 08-0203

PE 08-0103

RAS PUMP NO. 3 P-08-0103

RAS PUMP NO. 3/4 P-08-0134

SIMILAR TO ABOVE

FV06-0141

ES 480V TYP

RAS PUMP NO. 4 P-08-0104

FE 08-0204

CLARIFIER NO. R4 M-06-0241

SLUDGE FLOW

CLARIFIER NO. R4 M-06-0242

SLUDGE FLOW

RAS TROUGH

OVERFLOW WEIR

MBBR BYPASS CHANNEL

RAS I1203

SECONDARY CLARIFIERS R5 & R6

IFASE I1203

SECONDARY CLARIFIERS R5 & R6

SCE I1203

SECONDARY CLARIFIERS R5 & R6

REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

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DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

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JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION SECONDARY CLARIFIERS NO. R3 AND R4

DATE:	2020
PROJECT NO.:	32480
CONTRACT N0.:	-
DRAWING NUMBER:	I1202

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FLOW (2)

FLOW

PUMP (3)

START/ STOP

IN REMOTE

FAULT

SPEED COMMAND

SPEED FEEDBACK

RUN

VALVE (4)

OPEN

CLOSE

OPEN

CLOSE

REMOTE

SENSORS (8)

FLIGHT SENSOR

COLLECTOR (4)

RUN

TORQUE SHUTDOWN

STOP

SLUDGE BLANKET LEVEL (2)

HMI

FITX 08-0205

RUNC 08-1005

HSAS 08-1005

YAAX 08-1005

SCXX 08-1005

SIXX 08-1005

ONST 08-1005

FGOC 06-0151

FGCC 06-0151

ZSOP 06-0151

ZSCL 06-0151

HSAS 06-0151

LSXX 06-0351

ONST 06-0251

NAHH 06-0251

STOP 06-0251

LIXX 06-0405

HMI

STOP ON MISALIGNMENT

DCU-5

DCU-5

NOTE 1, TYP

ETHERNET

VFD

ES 480V

TYP OF 3

OPEN CMD FLOW SWITCH

MCC

TYP OF 4

OO

RESET

HS 06-0251

HS 06-0251

COLLECTOR DRIVE (2 PER CLARIFIER)

TORQUE

NSH 06-0251

LIT 06-0405

480V ES

SLUDGE BLANKET LEVEL

NOTES:

1. 24VDC COIL INTERPOSING RELAY IN INTERPOSING RELAY PANEL X. FORM C CONTACT 10A @ 120V.
2. FLIGHT SENSORS, BOTH SIDES OF FLIGHT MUST TRIP WITHIN 5 SEC OR A MISALIGNMENT AND SHUT DOWN ALARM WILL BE GENERATED.
3. SEE DRAWING I1205 FOR SCUM SYSTEM.

SECONDARY CLARIFIERS R3 & R4

RAS I1202

FIT 08-0205 (2) 120/1 ES

SECONDARY CLARIFIERS R3 & R4

IFASE I1202

IFASE

SECONDARY CLARIFIERS R3 & R4

SCE I1202

SCE

SECONDARY CLARIFIERS EFFLUENT CHANNEL

EFFLUENT WEIR TROUGH, TYP

NOTE 2, TYP

CLARIFIER NO. R5 M-06-0251

SLUDGE FLOW

CLARIFIER NO. R5 M-06-0252

SLUDGE FLOW

CLARIFIER NO. R6 M-06-0261

SLUDGE FLOW

CLARIFIER NO. R6 M-06-0262

SLUDGE FLOW

INLET GATE, TYP FV06-0151

FV06-0161

ES 480V TYP

PI 08-0105

HS 08-0105

ENABLE/ DISABLE

SEAL WATER SET

SEAL WATER

RAS

FE 08-0205

PE 08-0105

RAS PUMP NO. 5 P-08-0105

RAS PUMP NO. 5/6 P-08-0156

SIMILAR TO ABOVE

RAS PUMP NO. 6 P-08-0106

SIMILAR TO ABOVE

FE 08-0206

RAS TROUGH

OVERFLOW WEIR

MBBR BYPASS CHANNEL

RAS I1204

SECONDARY CLARIFIERS R7 & R8

IFASE I1204

SECONDARY CLARIFIERS R7 & R8

SCE I1204

SECONDARY CLARIFIERS R7 & R8

REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

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PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

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JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION SECONDARY CLARIFIERS NO. R5 AND R6

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	I1203

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FLOW (2)
FLOW
PUMP (3)
START/ STOP
IN REMOTE
FAULT
SPEED COMMAND
SPEED FEEDBACK
RUN
VALVE (4)
OPEN
CLOSE
OPEN
CLOSE
REMOTE
SENSORS (8)
FLIGHT SENSOR
COLLECTOR (4)
RUN
TORQUE SHUTDOWN
STOP
SLUDGE BLANKET LEVEL (2)

HMI — HMI

FI 08-0207
RUNC 08-1007
HSAS 08-1007
YAAX 08-1007
SCXX 08-1007
SIXX 08-1007
ONST 08-1007
FGOC 06-0171
FGCC 06-0171
ZSOP 06-0171
ZSCL 06-0171
HSAS 06-0171
LSXX 06-0371
ONST 06-0271
NAHH 06-0271
STOP 06-0271
LIXX 06-0407

STOP ON MISALIGNMENT

DCU-5 — DCU-5

NOTE 1, TYP

ETHERNET

SECONDARY CLARIFIERS R5 & R6

RAS I1203

(4) FIT 08-0207 120/1 ES

VFD
ES 480V
TYP OF 3

OPEN CMD FLOW SWITCH

SECONDARY CLARIFIERS R5 & R6

IFASE I1203

IFASE

MCC
TYP OF 4

OO HS 06-0271

RESET HS 06-0271

COLLECTOR DRIVE (2 PER CLARIFIER)

TORQUE NSH 06-0271

LIT 06-0407 480V ES
SLUDGE BLANKET LEVEL

NOTES:

1. 24VDC COIL INTERPOSING RELAY IN INTERPOSING RELAY PANEL X. FORM C CONTACT 10A @ 120V.
2. FLIGHT SENSORS, BOTH SIDES OF FLIGHT MUST TRIP WITHIN 5 SEC OR A MISALIGNMENT AND SHUT DOWN ALARM WILL BE GENERATED.
3. SEE DRAWING I1205 FOR SCUM SYSTEM.

SECONDARY CLARIFIERS R5 & R6

SCE I1203

SECONDARY CLARIFIERS EFFLUENT CHANNEL

SCE

NOTE 2, TYP

EFFLUENT WEIR TROUGH, TYP

PI 08-0107
HS 08-0107
ENABLE/ DISABLE

SEAL WATER SET

SEAL WATER (IF REQ'D)

RAS

FE 08-0207

PE 08-0107

RAS PUMP NO. 7
P-08-0107

INLET GATE, TYP
FV06-0171

CLARIFIER NO. R7
M-06-0271

SLUDGE FLOW

CLARIFIER NO. R7
M-06-0272

SLUDGE FLOW

RAS PUMP NO. 7/8
P-08-0178

SIMILAR TO ABOVE

FV06-0181

ES 480V TYP

CLARIFIER NO. R8
M-06-0281

SLUDGE FLOW

CLARIFIER NO. R8
M-06-0282

SLUDGE FLOW

RAS PUMP NO. 8
P-08-0108

SIMILAR TO ABOVE

FE 08-0208

RAS TROUGH

OVERFLOW WEIR

MBBR BYPASS CHANNEL

SCE I1301

MBBR

REV	ISSUED FOR	DATE	BY
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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

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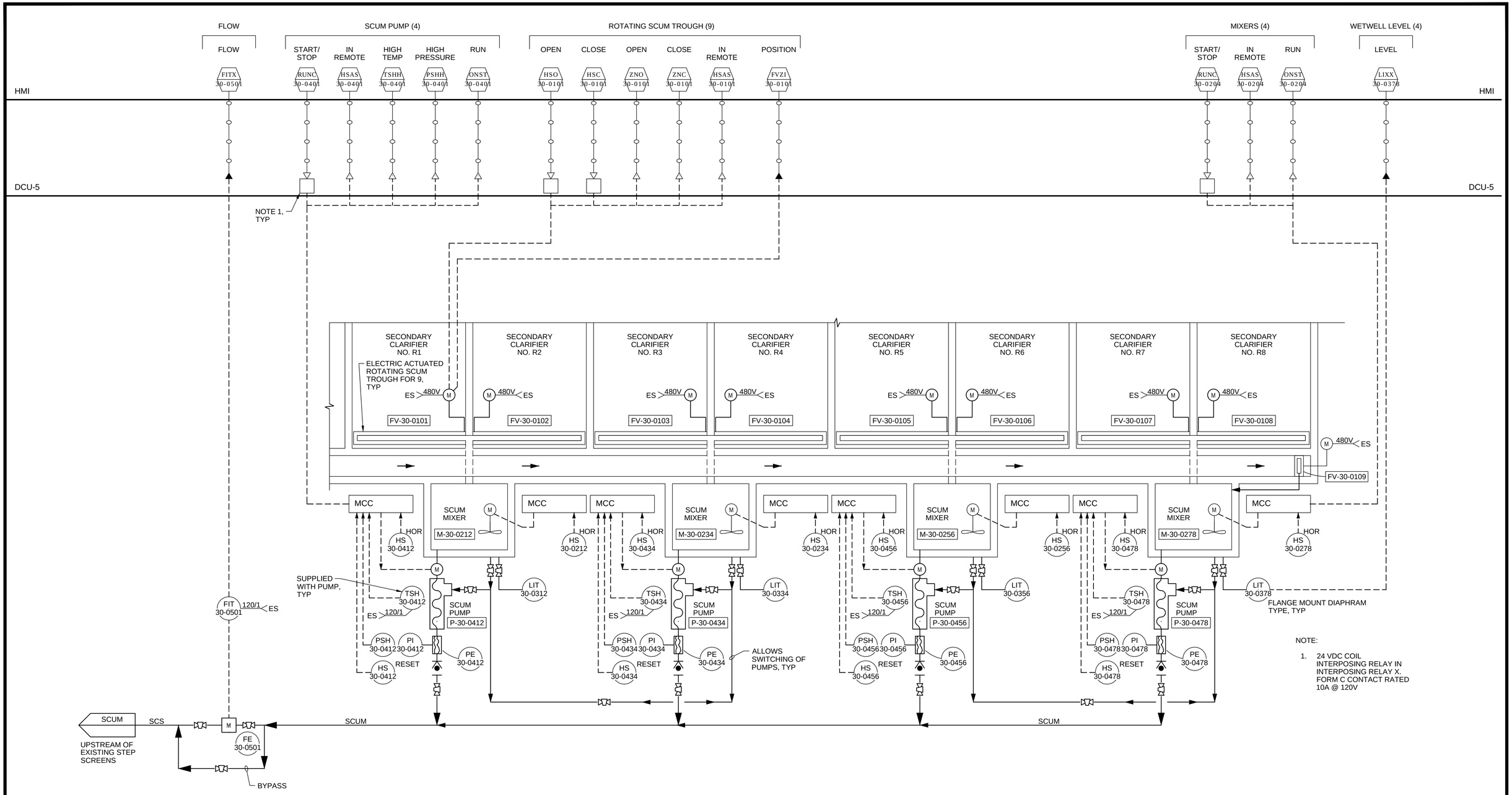
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION SECONDARY CLARIFIERS NO. R7 AND R8

DATE:	2020
PROJECT NO.:	32480
CONTRACT N0.:	-
DRAWING NUMBER:	I1204

File: C:\BMS\HAZEN-PW\D0158701\32480-000\I1204 Saved by Jhuners Save date: 4/2/2020 1:04 PM
PLOT DATE: 4/9/2020 10:53 AM BY: LMACGILL



REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0, 1/2", 1")

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

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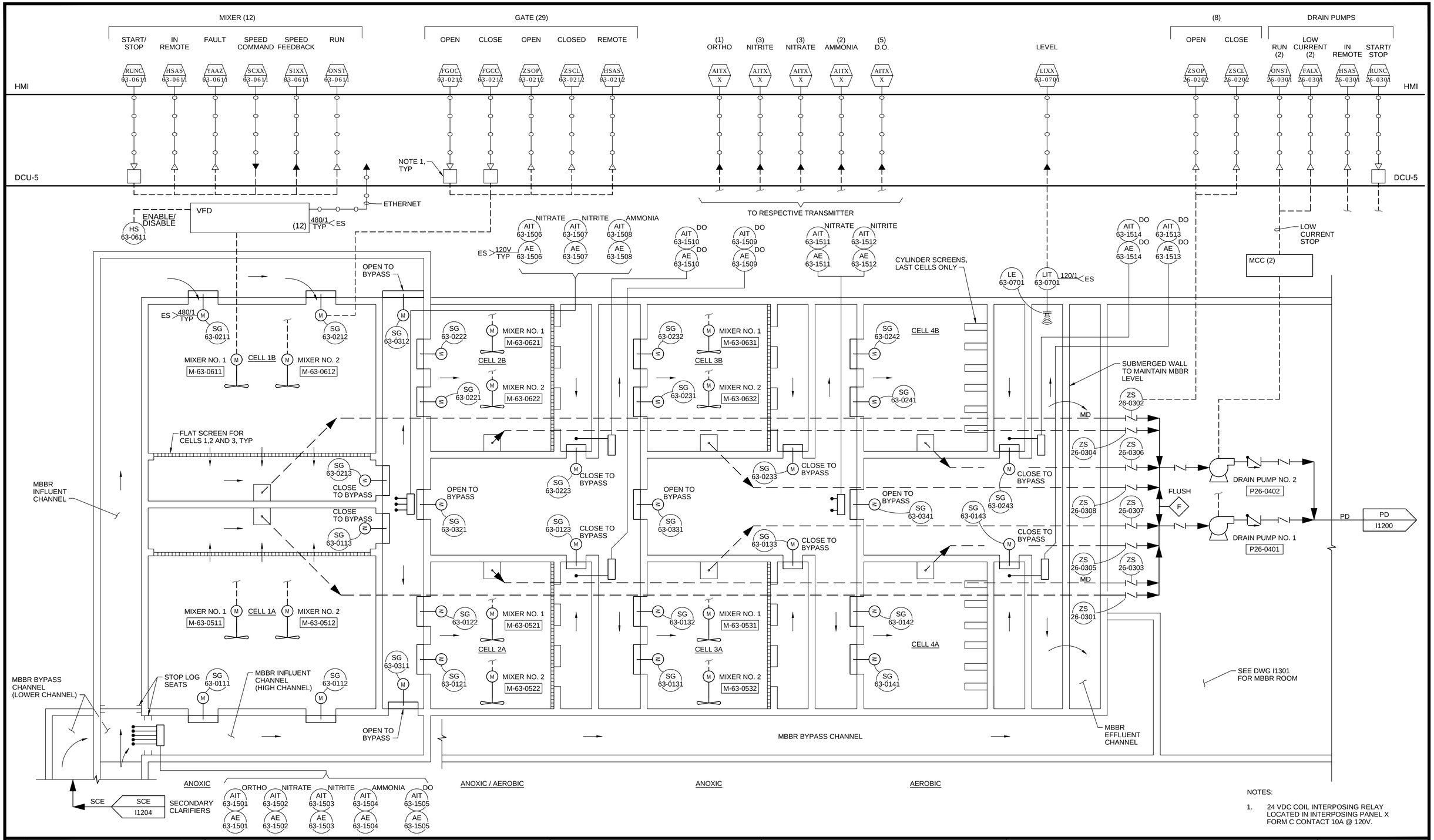
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION
SECONDARY CLARIFIERS
SCUM SYSTEM

DATE:	2020
PROJECT NO.:	32480
CONTRACT N0.:	-
DRAWING NUMBER:	I1205

File: C:\BIM\SHAZEN-PW\D0150701\32480-002-I1205 Saved by JHuners Save date: 3/31/2020 4:39 PM
PLOT DATE: 4/9/2020 10:57 AM BY: LMACGILL



NOTES:

1. 24 VDC COIL INTERPOSING RELAY LOCATED IN INTERPOSING PANEL X FORM C CONTACT 10A @ 120V.

REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0, 1/2", 1")

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

JACOBS®

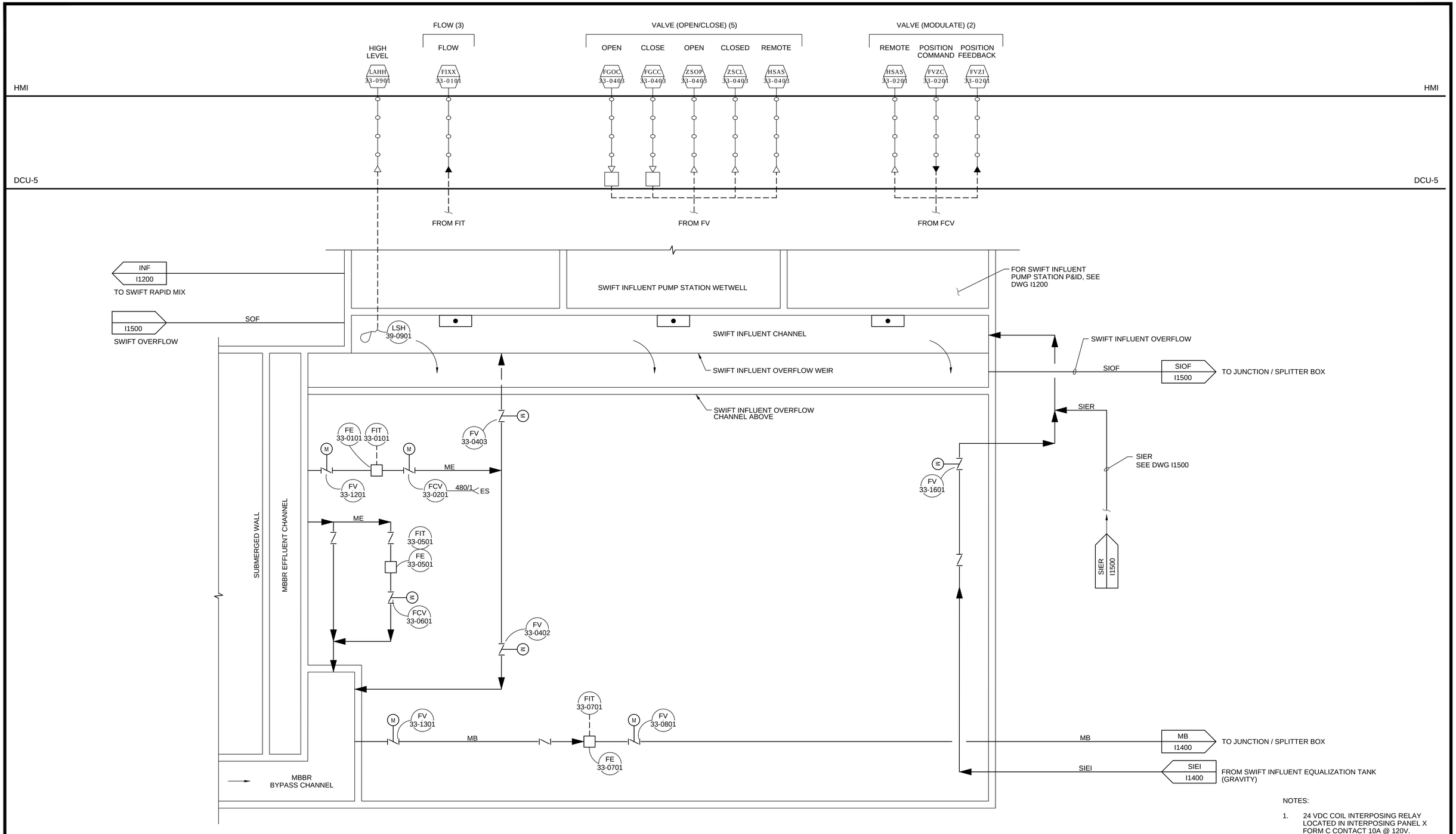
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION MBBR MIXERS AND VALVES IN BASINS AND ANALYZERS

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	I1300

File: C:\BMS\HAZEN-PW\I0155701\32480-I01300 Saved by zhuners Save date: 10/1/2020 4:39 PM
PLOT DATE: 4/9/2020 10:59 AM BY: LMACOLL



NOTES:

1. 24 VDC COIL INTERPOSING RELAY LOCATED IN INTERPOSING PANEL X FORM C CONTACT 10A @ 120V.

REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0 1/2" 1")

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

JACOBS®

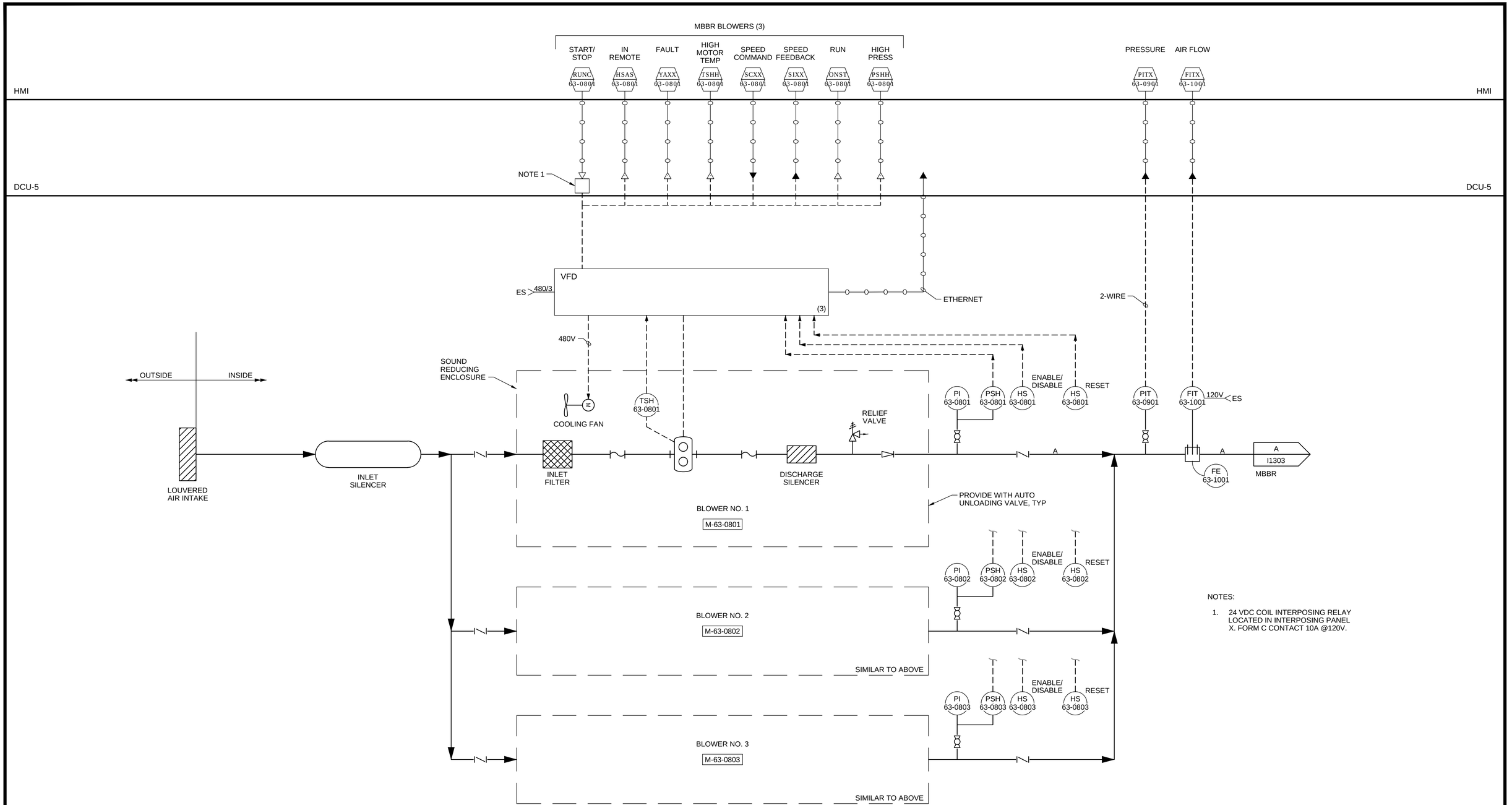
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION
MBBR ROOM

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	I1301

File: C:\BMS\HAZEN-PW\D0158703\I1324B-002-I1301 Saved by zhuners Save date: 3/31/2020 4:39 PM
PLOT DATE: 4/9/2020 11:00 AM BY: LMACGILL



NOTES:

1. 24 VDC COIL INTERPOSING RELAY LOCATED IN INTERPOSING PANEL X. FORM C CONTACT 10A @120V.

REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

JACOBS®

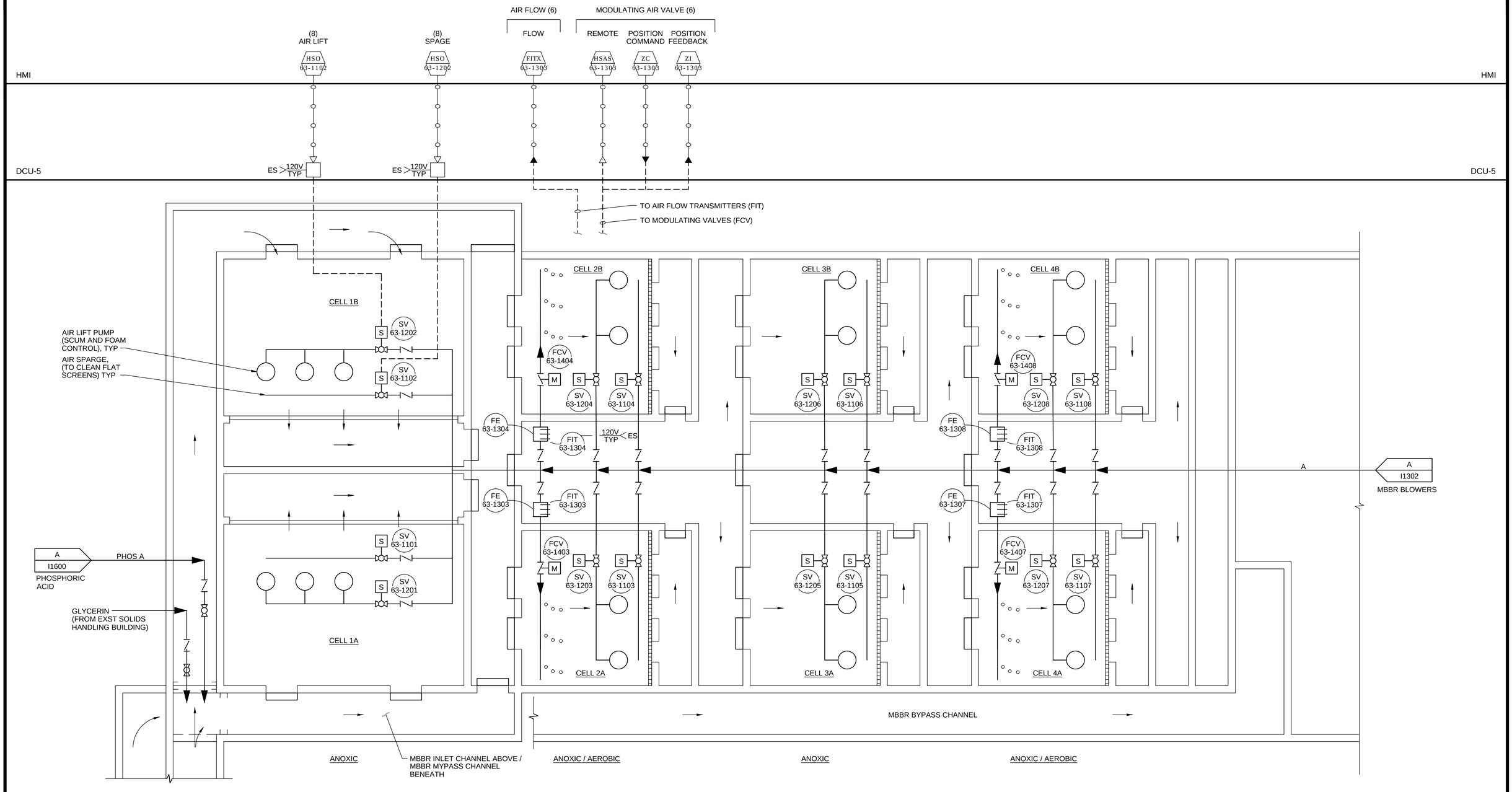
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION
MBBR BLOWERS

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	I1302

File: C:\BMSHAZEN-PW\D0158701\32480\002\I1302 Saved by lmacgill Save date: 4/8/2020 9:20 PM
PLOT DATE: 4/9/2020 11:01 AM BY: LMACGILL



NOTES:

1. 24 VDC OIL INTERPOSING RELAY LOCATED IN INTERPOSING PANEL X FORM C CONTACT 10A @ 120V.

REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0, 1/2", 1")

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

JACOBS®

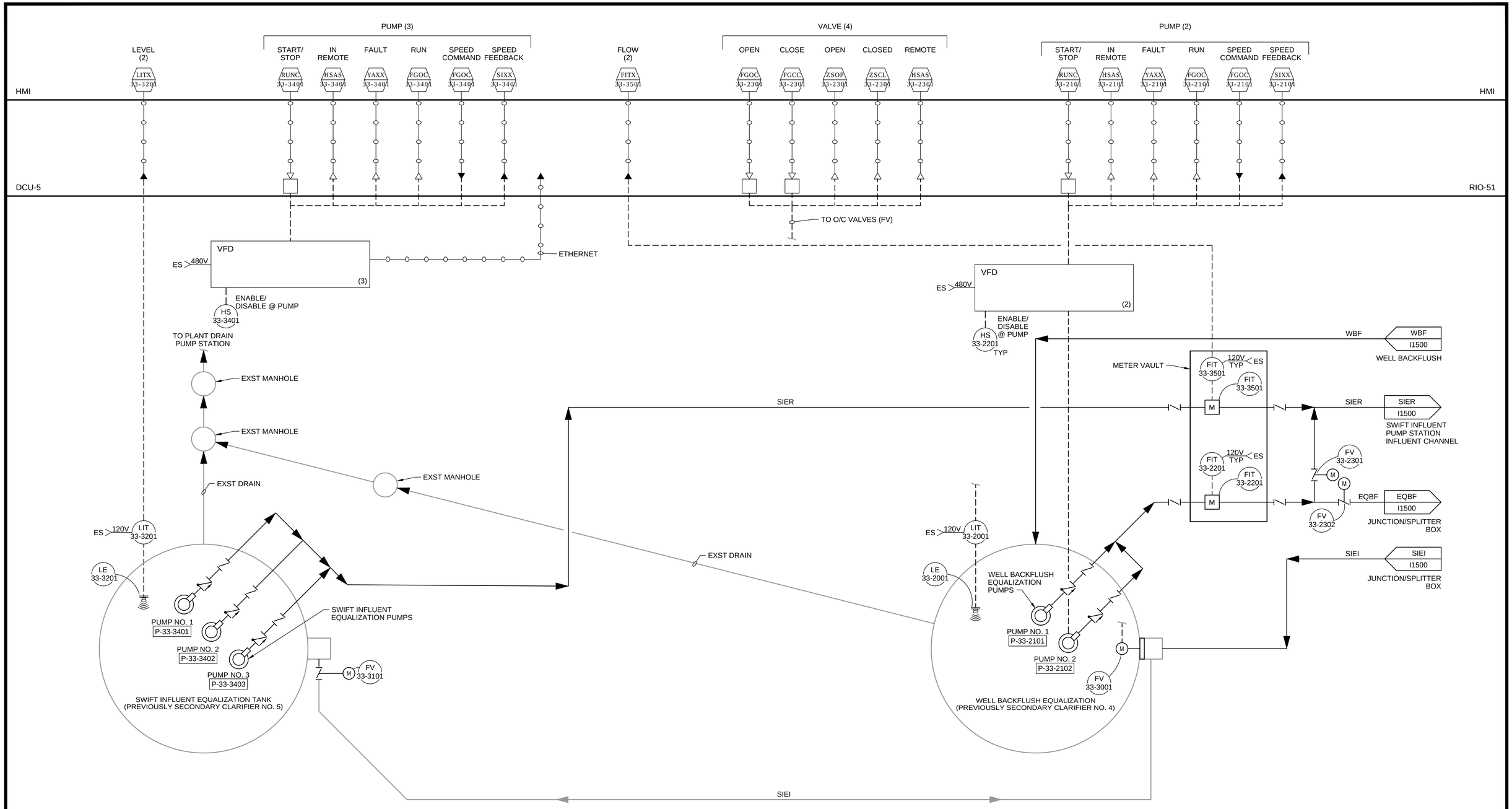
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION
MBBR AIR

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	I1303

File: C:\BMS\HAZEN-PW\00158701\32480-002-I1303 Saved by zhuners Save date: 3/31/2020 4:39 PM
PLOT DATE: 4/9/2020 11:02 AM BY: LMACGILL



REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0, 1/2", 1")

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

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HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION SWIFT INFLUENT EQUALIZATION & WELL BACK FLUSH EQUALIZATION TANKS

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	I1400

File: C:\EMS\HAZEN-PW\D0155701\32480-002\I1400 Saved by jhunews Save date: 10/1/2020 4:39 PM
PLOT DATE: 4/9/2020 11:04 AM BY: LMACOLL

HMI

REMOTE — HSAS 33-1701

RUN — ONST 33-1701

START/STOP — RUNC 33-1701

VALVE (6)

OPEN — FGOC 33-1101

CLOSE — FGCC 33-1101

OPEN — ZSOP 33-1101

CLOSED — ZSCL 33-1101

REMOTE — HSAS 33-1101

HMI

RIO-51

RIO-51

TO VALVES

SIER
I1400
SWIFT INFLUENT EQ PUMPS

WBF
I1400
WELL BACKFLUSH EQ TANK

SIEI
I1400
SWIFT FEED INFLUENT PUMP STATION EQ TANK

EQBF
I1400
WELL BACKFLUSH EQ PUMPS

MCC

HS 33-1701

HYPO

NOTE 2

M-33-1701

STOP LOG, TYP 3

EFFLUENT LAUNDERS, TYP

JUNCTION / SPLITTER BOX INTERIOR ENLARGED

SIER

SIEI

MB

WBF

SIOF

HYPO

EQBF

FV 33-1501

FV 33-1403

FV 33-1402

FV 33-1401

MH12

MH13

MH15

CHLORINE CONTACT TANKS

2

1

3

NOTE 3 (TYP FOR 8)

MANHOLE 46

BULK HEAD (BLOCKED OFF)

60"

60"

SAMPLE

54"

54"

MANHOLE 25

LOCATION OF OLD EMERGENCY OUTFALL SINCE REMOVED

60"

36"

48" WITH 16X12" HOLES

30" WITH 12X7" HOLES

VALVES TO DCU-5

ES

480V TYP 33-1101

FV 33-1101

FV 33-1102

SOF

SOF
I1400
SWIFT OVERFLOW

SWIFT INFLUENT OVERFLOW CHANNEL

SWIFT INFLUENT CHANNEL

SEE MBBR ROOM P&ID DWG I1301

INF

INF
I2100
SWIFT INFLUENT

SWIFT INFLUENT PUMP STATION

SIER

SIEI

MB

WBF

SIOF

SOF

SWIFT INFLUENT OVERFLOW (SIOF)

WBF
WBF
I1400
WELL BACK FLUSH

HYPO
HYPO
I1604
SODIUM HYPOCHLORITE

BISULF
BISULF
I1601
SODIUM BISULFITE

NOTES:

1. 24VDC COIL INTERPOSING RELAY IN INTERPOSING RELAY PANEL X. FORM C CONTACT 10A @ 120V.
2. SUBMERSIBLE NON-VACUUM LIQUID CHEMICAL INDUCTION TYP MIXER. GAS MASTER SERIES 32.
3. DESIGN BUILDER TO REPLACE 8 EXISTING GATES WITH SIMILAR NEW GATES.

REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE — 0 1/2" 1"

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

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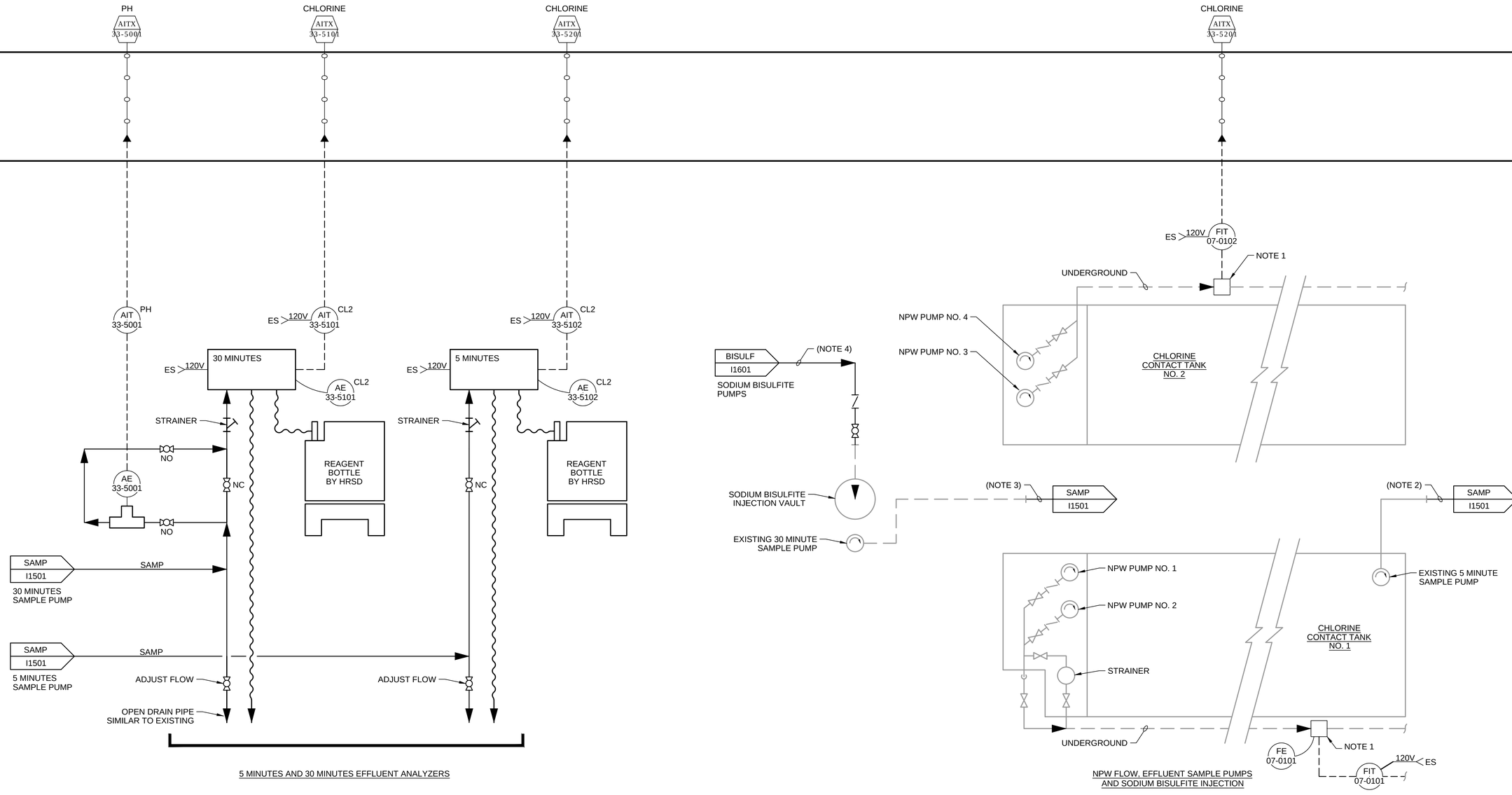
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION
JUNCTION - SPLITTER BOX CCTS AND PLANT EFFLUENT PIPING

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	I1500

File: C:\EMS\HAZEN-PW\00155701\32480-002-I1500 Saved by jhunees Save date: 10/1/2020 4:39 PM
PLOT DATE: 4/9/2020 11:05 AM BY: LMACOLL



NOTES:

1. DESIGN BUILDER TO INTERCEPT EXISTING NPW PUMPS DISCHARGE AND INSTALL NEW FLOWMETERS.
2. EXISTING SUBMERSIBLE SAMPLE PUMP CONNECTED TO MANUAL HOIST. INTERCEPT EXISTING SAMPLE LINE AND EXTEND TO NEW ANALYZERS.
3. EXISTING ABOVE GROUND SAMPLE PUMP INTERCEPT EXISTING SAMPLE LINE AND EXTEND TO ANALYZERS.
4. INTERCEPT EXISTING SODIUM BISULFITE FEED PIPE AND EXTEND TO NEW SODIUM BISULFITE PUMPS.

REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0, 1/2", 1")

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

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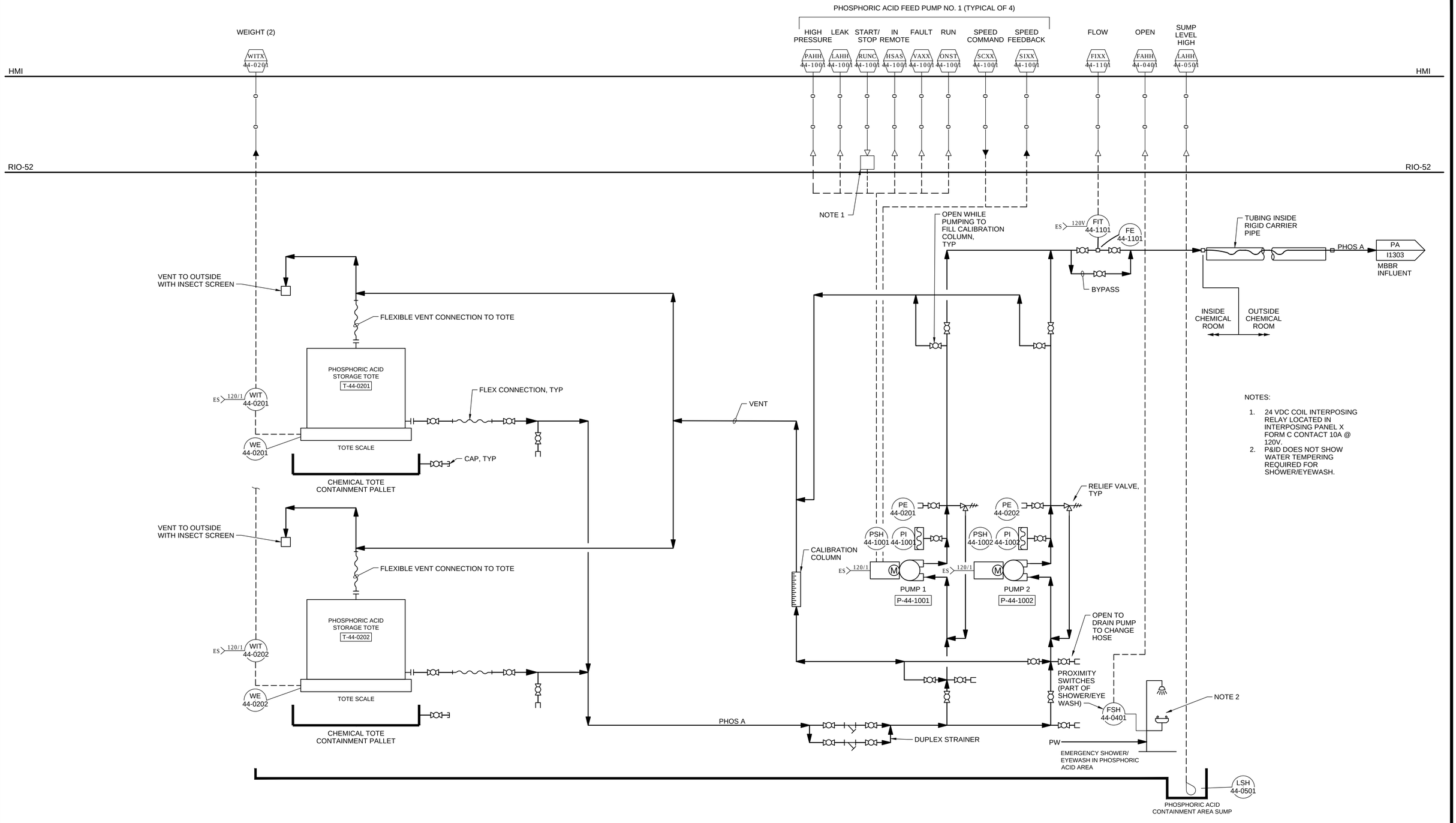
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

NPW FLOW, EFFLUENT SAMPLE PUMPS AND ANALYZERS

DATE:	2020
PROJECT NO.:	32480
CONTRACT N0.:	-
DRAWING NUMBER:	I1501

File: C:\BMS\HAZEN-PW\20155701\32480.002-I1501 Saved by jhuners Save date: 3/31/2020 4:43 PM
PLOT DATE: 4/9/2020 11:06 AM BY: LMACGILL



REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

PROJECT ENGINEER: G PALEN
DESIGNED BY: D. MUNZER
DRAWN BY: Z. HUNERS
CHECKED BY: N. JOHNSON

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

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JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION WWTP PHOSPHORIC ACID SYSTEM

DATE: 2020
PROJECT NO.: 32480
CONTRACT NO.: -
DRAWING NUMBER: I1600

File: C:\BM\SHAZEN-PW\D0153\D0153680-002-I1600 Saved by zhuners Save date: 3/31/2020 4:44 PM
PLOT DATE: 4/9/2020 11:09 AM BY: LMACGILL

VALVES (2)

FEED PUMP NO. 1 (TYPICAL OF 4)

OPEN FVOC N6-0301 | CLOSE FVCC N6-0301 | OPEN ZSOP N6-0301 | CLOSED ZSCL N6-0301 | REMOTE HSAS N6-0301 | LEVEL (2) LITX N6-0201 | HIGH PRESSURE PAHH N6-1001 | LEAK LAHH N6-1001 | START/ STOP RUNC N6-1001 | IN REMOTE HSAS N6-1001 | FAULT YAXX N6-1001 | RUN ONST N6-1001 | SPEED COMMAND SCXX N6-1001 | SPEED FEEDBACK SIXX N6-1001 | FLOW FITX N6-1101 | (2) IN USE FAHH N6-0401 | LEVEL HIGH LAHH N6-0501

HMI

RIO-52

NOTE 1

STROBE YLH 16-0200

AT TRUCK UNLOADING

SIL HS 16-0200 LI 16-0200 (2) HORN QA 16-0200

ES 120V

FIELD PANEL FP-16-0200

LIT 16-0201 120V ES

VENT TO OUTSIDE, TYP

USE TO TRAP WITH WATER, TYP

LE 16-0201 OF

CLEAR PVC TO VERIFY WATER

FLOOR

HOLES IN FILL PIPE, TYP

SIPHON BREAK

TRUCK UNLOADING, TYP

TANK NO. 1 T-16-0201

TANK DRAIN, TYP

M 120V ES

FLEX CONNECTION, TYP

FV-16-0301

CALIBRATION COLUMN

PE 16-1001 PE 16-1002 PE 16-1003 PE 16-1004

PSH 16-1001 PI 16-1001 PSH 16-1002 PI 16-1002 PSH 16-1003 PI 16-1003 PSH 16-1004 PI 16-1004

ES 120/1 M

PUMP 1 P-16-1001 | PUMP 2 P-16-1001 | PUMP 3 P-16-1001 | PUMP 4 P-16-1001

RELIEF VALVE, TYP

OPEN TO DRAIN PUMP TO CHANGE HOSE

ES 120V FIT 16-1101 FE 16-1101

BYPASS

BISULF

BISULF I1500

DISINFECTION

INSIDE CHEMICAL ROOM

OUTSIDE CHEMICAL ROOM

LE 16-0202 OF

FLOOR

TANK NO. 2 T-16-0202

M 120V ES

FV-16-0302

BISULF

DUPLEX STRAINER

PROXIMITY SWITCHES (PART OF SHOWER/EYE WASH)

AT TRUCK UNLOADING

FSH 16-0401

PW

EMERGENCY SHOWER/ EYEWASH IN SODIUM BISULFITE

PROXIMITY SWITCHES (PART OF SHOWER/EYE WASH)

FSH 16-0402

NOTE 2, TYP

PW

EMERGENCY SHOWER/ EYEWASH IN SODIUM BISULFITE AREA

LSH 16-0501

SODIUM BISULFITE CONTAINMENT AREA SUMP

NOTES:

1. 24 VDC COIL INTERPOSING RELAY LOCATED IN INTERPOSING PANEL X FORM C CONTACT 10A @ 120V.
2. P&ID DOES NOT SHOW WATER TEMPERING REQUIRED FOR SHOWER/EYEWASH.

REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

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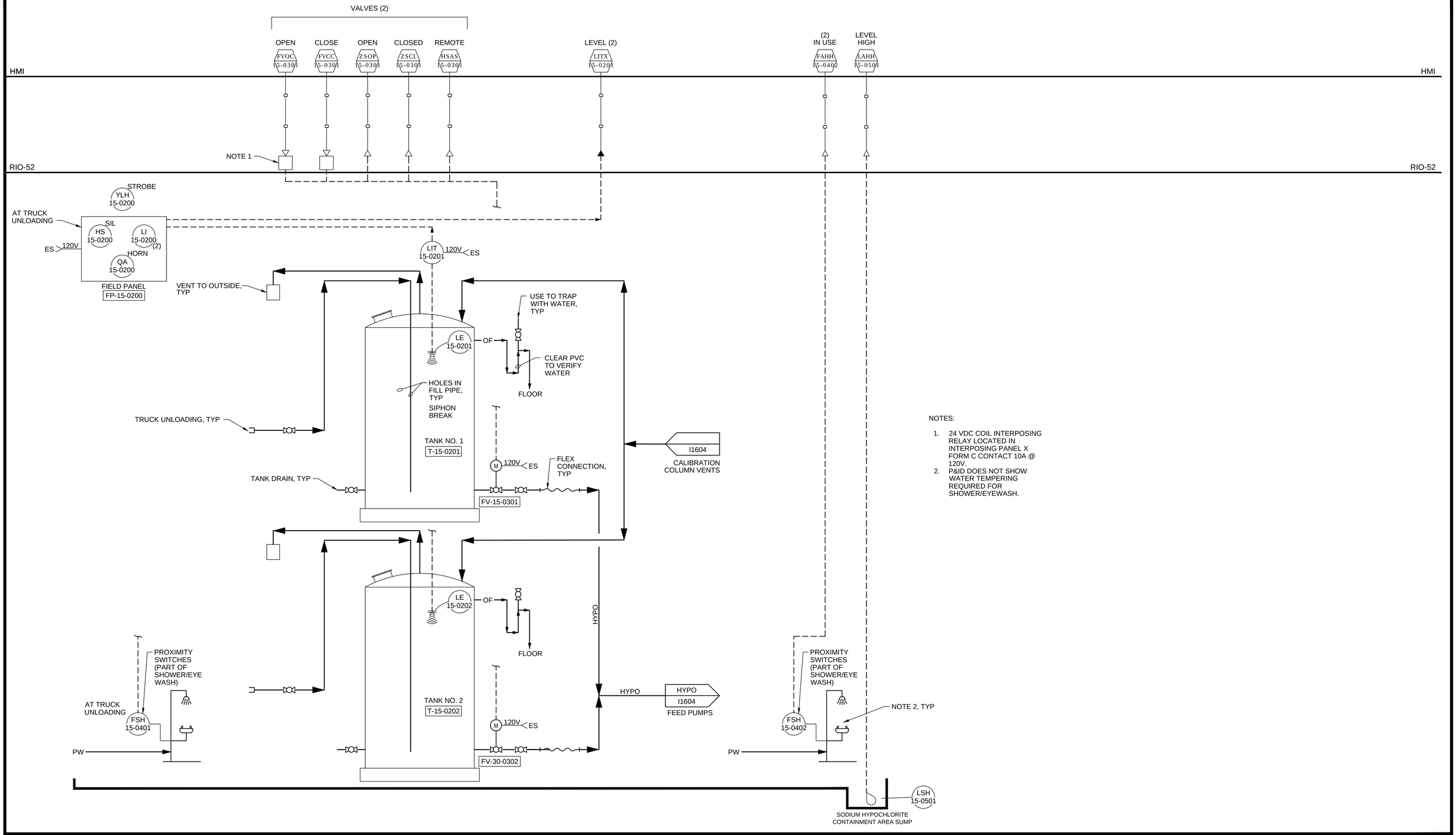
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION WWTP SODIUM BISULFITE TANKS AND FEED PUMPS

DATE:	2020
PROJECT NO.:	32480
CONTRACT N0.:	-
DRAWING NUMBER:	I1601

File: C:\BMS\HAZEN-PW\2015\703\13240\I0201601 Saved by zhuners Save date: 3/31/2020 4:44 PM
PLOT DATE: 4/9/2020 11:11 AM BY: UMCGILL



NOTES:

1. 24 VDC COIL INTERPOSING RELAY LOCATED IN INTERPOSING PANEL X FORM C CONTACT 10A @ 120V.
2. P&ID DOES NOT SHOW WATER TEMPERING REQUIRED FOR SHOWER/EYEWASH.

REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0 1/2" 1")

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

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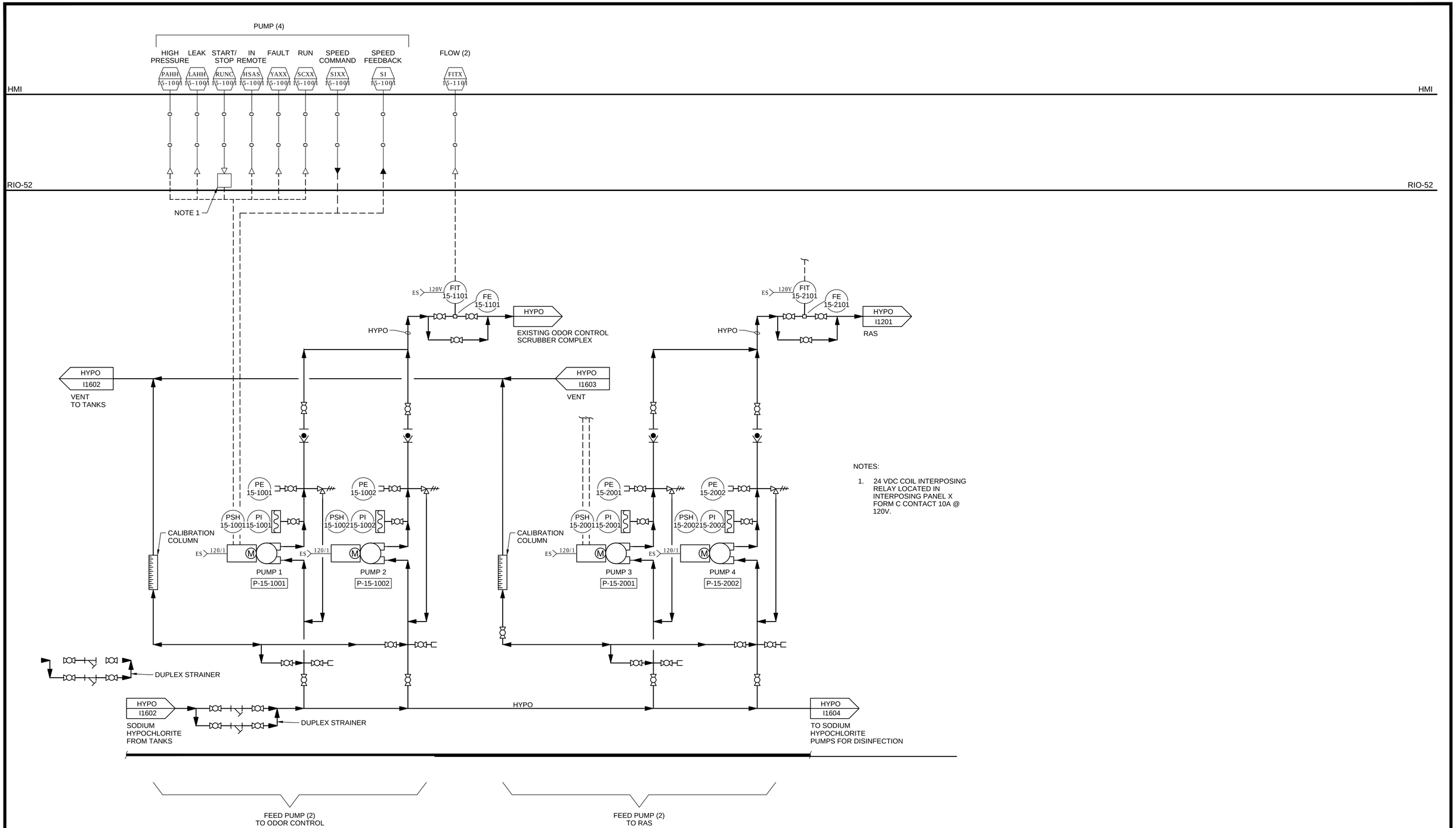
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION
WWTP SODIUM HYPOCHLORITE TANKS

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	I1602

File: C:\BMS\HAZEN-PW\00358701\32480-002-I1602 Saved by zhuners Save date: 3/31/2020 4:44 PM
PLOT DATE: 4/9/2020 11:10 AM BY: LMACGILL



NOTES:

1. 24 VDC COIL INTERPOSING RELAY LOCATED IN INTERPOSING PANEL X FORM C CONTACT 10A @ 120V.

REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0 1/2" 1")

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

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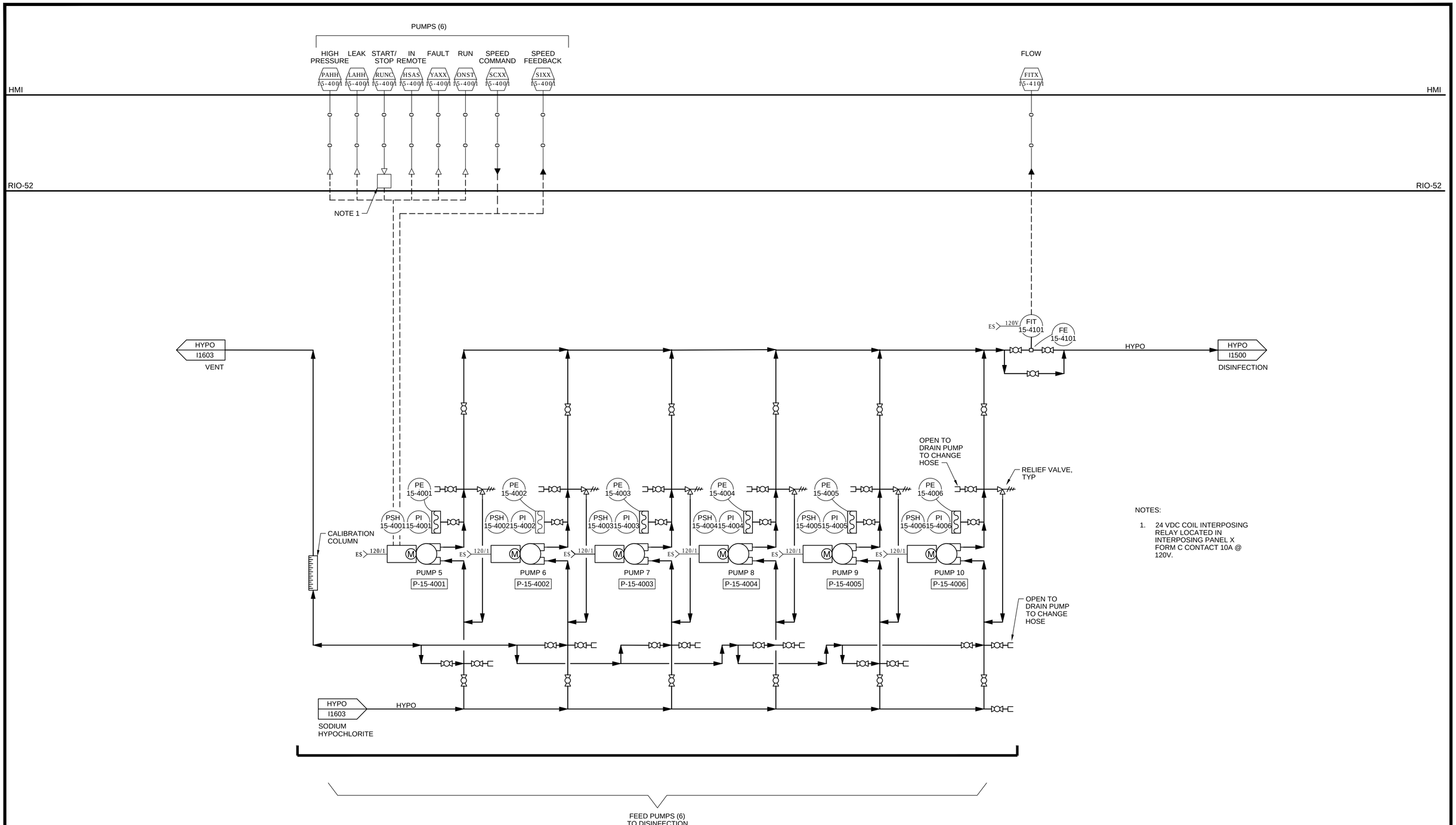
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION
WWTP SODIUM HYPOCHLORITE FEED PUMPS TO ODOR, RAS, AND IFAS

DATE:	2020
PROJECT NO.:	32480
CONTRACT N0.:	-
DRAWING NUMBER:	I1603

File: C:\BMSHAZEN-FW\2015\2013248\I-002-I1603 Saved by JHuners Save date: 3/31/2020 4:44 PM
PLOT DATE: 4/9/2020 11:12 AM BY: LMACGILL



NOTES:

1. 24 VDC COIL INTERPOSING RELAY LOCATED IN INTERPOSING PANEL X FORM C CONTACT 10A @ 120V.

REV	ISSUED FOR	DATE	BY
0	REQUEST FOR PROPOSAL	4/10/2020	--

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	D. MUNZER
DRAWN BY:	Z. HUNERS
CHECKED BY:	N. JOHNSON

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

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JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION
WWTP SODIUM HYPOCHLORITE FEED PUMPS AND DISINFECTION

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	I1604

File: C:\BMSHAZEN-PW\D0158701\32480\I01604.Saved by zhuners Save date: 3/31/2020 4:43 PM
PLOT DATE: 4/9/2020 11:13 AM By: LMACGILL

ObjectType	ObjectName	ParName_4	DESCRIPTION
PackedPoint	JRP01B00X0101-00	DROP1/DROP51	SCRN CHNL 1 MSTR STATUS PK
PackedPoint	JRP01B00X0102-00	DROP1/DROP51	SCRN CHNL 2 MSTR STATUS PK
PackedPoint	JRP01B00X0103-00	DROP1/DROP51	SCRN CHNL 3 MSTR STATUS PK
PackedPoint	JRP01B00X1001-00	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP01B00X1110-00	DROP1/DROP51	WASH PRESS 1 STATUS PK
PackedPoint	JRP01B00X1120-00	DROP1/DROP51	WASH PRESS 2 STATUS PK
PackedPoint	JRP01B00X1130-00	DROP1/DROP51	WASH PRESS 3 STATUS PK
PackedPoint	JRP01B00X1210-00	DROP1/DROP51	SCREEN 1 STATUS PK
PackedPoint	JRP01B00X1220-00	DROP1/DROP51	SCREEN 2 STATUS PK
PackedPoint	JRP01B00X1230-00	DROP1/DROP51	SCREEN 3 STATUS PK
PackedPoint	JRP01B00X2310-00	DROP1/DROP51	CHNL 1 INF GATE STATUS PK
PackedPoint	JRP01B00X2320-00	DROP1/DROP51	CHNL 2 INF GATE STATUS PK
PackedPoint	JRP01B00X2330-00	DROP1/DROP51	CHNL 3 INF GATE STATUS PK
PackedPoint	JRP01B00X2410-00	DROP1/DROP51	CHNL 1 EFF GATE STATUS PK
PackedPoint	JRP01B00X2420-00	DROP1/DROP51	CHNL 2 EFF GATE STATUS PK
PackedPoint	JRP01B00X2430-00	DROP1/DROP51	CHNL 3 EFF GATE STATUS PK
PackedPoint	JRP01B01X0101-00	DROP1/DROP51	SCREEN CHNL 1 AVAIL PK
PackedPoint	JRP01B01X0102-00	DROP1/DROP51	SCREEN CHNL 2 AVAIL PK
PackedPoint	JRP01B01X0103-00	DROP1/DROP51	SCREEN CHNL 3 AVAIL PK
PackedPoint	JRP01B01X1110-00	DROP1/DROP51	WASH PRESS 1 STAUS PK 2
PackedPoint	JRP01B01X1120-00	DROP1/DROP51	WASH PRESS 2 STAUS PK 2
PackedPoint	JRP01B01X1130-00	DROP1/DROP51	WASH PRESS 3 STAUS PK 2
PackedPoint	JRP01B01X1210-00	DROP1/DROP51	SCREEN 1 STATUS PK 2
PackedPoint	JRP01B01X1220-00	DROP1/DROP51	SCREEN 2 STATUS PK 2
PackedPoint	JRP01B01X1230-00	DROP1/DROP51	SCREEN 3 STATUS PK 2
PackedPoint	JRP01B01X2310-00	DROP1/DROP51	SCRN 1 INF GATE STATUS PK 2
PackedPoint	JRP01B01X2320-00	DROP1/DROP51	SCRN 2 INF GATE STATUS PK 2
PackedPoint	JRP01B01X2330-00	DROP1/DROP51	SCRN 3 INF GATE STATUS PK 2
PackedPoint	JRP01B01X2410-00	DROP1/DROP51	SCRN 1 EFF GATE STATUS PK 2
PackedPoint	JRP01B01X2420-00	DROP1/DROP51	SCRN 2 EFF GATE STATUS PK 2
PackedPoint	JRP01B01X2430-00	DROP1/DROP51	SCRN 3 EFF GATE STATUS PK 2
PackedPoint	JRP01B02X0100-CS	DROP1/DROP51	SCREEN MSTR AVAIL PK
PackedPoint	JRP01B02X1110-00	DROP1/DROP51	WASH PRESS 1 S/S REQ PK
PackedPoint	JRP01B02X1120-00	DROP1/DROP51	WASH PRESS 2 S/S REQ PK
PackedPoint	JRP01B02X1130-00	DROP1/DROP51	WASH PRESS 3 S/S REQ PK
PackedPoint	JRP01B03X0100-CS	DROP1/DROP51	SCREEN MSTR RANKING
PackedPoint	JRP01B08X0100-00	DROP1/DROP51	SCREEN MSTR OPER RANKING
PackedPoint	JRP01B09X0100-00	DROP1/DROP51	SCREEN MSTR OPER RANKING
PackedPoint	JRP01B09X1110-00	DROP1/DROP51	WASH PRESS 1 DV ALG PK
PackedPoint	JRP01B09X1120-00	DROP1/DROP51	WASH PRESS 2 DV ALG PK
PackedPoint	JRP01B09X1130-00	DROP1/DROP51	WASH PRESS 3 DV ALG PK
PackedPoint	JRP01B09X1210-00	DROP1/DROP51	SCREEN 1 DV ALG PK
PackedPoint	JRP01B09X1220-00	DROP1/DROP51	SCREEN 2 DV ALG PK
PackedPoint	JRP01B09X1230-00	DROP1/DROP51	SCREEN 3 DV ALG PK
PackedPoint	JRP01B09X2310-00	DROP1/DROP51	CHNL 1 INF GATE DV ALG PK
PackedPoint	JRP01B09X2320-00	DROP1/DROP51	CHNL 2 INF GATE DV ALG PK

PackedPoint	JRP01B09X2330-00	DROP1/DROP51	CHNL 3 INF GATE DV ALG PK
PackedPoint	JRP01B09X2410-00	DROP1/DROP51	CHNL 1 EFF GATE DV ALG PK
PackedPoint	JRP01B09X2420-00	DROP1/DROP51	CHNL 2 EFF GATE DV ALG PK
PackedPoint	JRP01B09X2430-00	DROP1/DROP51	CHNL 3 EFF GATE DV ALG PK
PackedPoint	JRP01B10X0100-00	DROP1/DROP51	SCREEN MASTER PWR FAIL RST
PackedPoint	JRP01B10X0100-PF	DROP1/DROP51	SCREEN PWR FAIL RSTRT MASTR PK
PackedPoint	JRP01B10X100-00	DROP1/DROP51	SCRUBR 1 INTAKE VLV STATUS PK
PackedPoint	JRP01B10X101-00	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP01B10X102-00	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP01CTRL1001-00	DROP1/DROP51	BYPASS VLV CTRL STATUS
PackedPoint	JRP01JMSQ1110-00	DROP1/DROP51	WASH PRESS 1 JAM SEQ PK
PackedPoint	JRP01JMSQ1120-00	DROP1/DROP51	WASH PRESS 2 JAM SEQ PK
PackedPoint	JRP01JMSQ1130-00	DROP1/DROP51	WASH PRESS 3 JAM SEQ PK
PackedPoint	JRP03B00X0101-00	DROP1/DROP51	GRIT PUMP 1 MSTR STATUS PK
PackedPoint	JRP03B00X0102-00	DROP1/DROP51	GRIT PUMP 2 MSTR STATUS PK
PackedPoint	JRP03B00X0103-00	DROP1/DROP51	GRIT PUMP 3 MSTR STATUS PK
PackedPoint	JRP03B00X0104-00	DROP1/DROP51	GRIT PUMP 4 MSTR STATUS PK
PackedPoint	JRP03B09X0101-00	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP03B09X0102-00	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP03B09X0103-00	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP03B09X0104-00	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP03B10X1400-PF	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP14B00X2004-00	DROP1/DROP51	BLOWER 4 STATUS PK
PackedPoint	JRP14B00X2005-00	DROP1/DROP51	BLOWER 5 STATUS PK
PackedPoint	JRP14B00X2006-00	DROP1/DROP51	BLOWER 6 STATUS PK
PackedPoint	JRP14B01X2004-00	DROP1/DROP51	BLOWER 4 AVAIL PK
PackedPoint	JRP14B01X2005-00	DROP1/DROP51	BLOWER 5 AVAIL PK
PackedPoint	JRP14B01X2006-00	DROP1/DROP51	BLOWER 6 AVAIL PK
PackedPoint	JRP14B02X1400-CS	DROP1/DROP51	BLOWER MSTR AVAIL PK
PackedPoint	JRP14B03X1400-CS	DROP1/DROP51	BLWR MSTR RANKING
PackedPoint	JRP14B08X1400-00	DROP1/DROP51	BLWR MSTR OPER RANKING
PackedPoint	JRP14B09X1400-00	DROP1/DROP51	BLWR MSTR OPER RANKING
PackedPoint	JRP14B09X2004-00	DROP1/DROP51	BLOWER 4 DV ALG PK
PackedPoint	JRP14B09X2005-00	DROP1/DROP51	BLOWER 5 DV ALG PK
PackedPoint	JRP14B09X2006-00	DROP1/DROP51	BLOWER 6 DV ALG PK
PackedPoint	JRP14B10X1400-00	DROP1/DROP51	BLOWER MASTER PWR FAIL RST
PackedPoint	JRP14CTRL2004-00	DROP1/DROP51	BLOWER 4 CTRL STATUS
PackedPoint	JRP14CTRL2005-00	DROP1/DROP51	BLOWER 5 CTRL STATUS
PackedPoint	JRP14CTRL2006-00	DROP1/DROP51	BLOWER 6 CTRL STATUS
PackedPoint	JRP14MSTR1400-MA	DROP1/DROP51	BLOWER MASTER MA STATUS PK
PackedPoint	JRP18B09X200-00	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP18B09X201-00	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP18B09X202-00	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP18B09X300-00	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP18B09X301-00	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP18B09X302-00	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP18B10X100-00	DROP1/DROP51	SCRUBR 1 INTAKE VLV STATUS PK

PackedPoint	JRP18B10X101-00	DROP1/DROP51	SCRUBR 1 BYPASS VLV STATUS PK
PackedPoint	JRP18B10X102-00	DROP1/DROP51	SCRUBR 1 EXHAUST VLV STATUS PK
PackedPoint	JRP18B10X200-00	DROP1/DROP51	SCRUBR 2 INTAKE VLV STATUS PK
PackedPoint	JRP18B10X201-00	DROP1/DROP51	SCRUBR 2 BYPASS VLV STATUS PK
PackedPoint	JRP18B10X202-00	DROP1/DROP51	SCRUBR 2 EXHAUST VLV STATUS PK
PackedPoint	JRP18B10X300-00	DROP1/DROP51	SCRUBR 3 INTAKE VLV STATUS PK
PackedPoint	JRP18B10X301-00	DROP1/DROP51	SCRUBR 3 BYPASS VLV STATUS PK
PackedPoint	JRP18B10X302-00	DROP1/DROP51	SCRUBR 3 EXHAUST VLV STATUS PK
PackedPoint	JRP26B00X1001-00	DROP1/DROP51	DRAIN PUMP 1 STATUS PK
PackedPoint	JRP26B00X2001-00	DROP1/DROP51	DRAIN PUMP 2 STATUS PK
PackedPoint	JRP26B10X0500-PF	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	TESTPACKED1	DROP1/DROP51	TESTPACKED1
PackedPoint	01AD005-MODE	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	0289005-MODE	DROP1/DROP51	@ Ovation Control Builder @
PackedPoint	JRP02B10X0001-00	DROP2/DROP52	@ Ovation Control Builder @
PackedPoint	JRP02B10X0002-00	DROP2/DROP52	@ Ovation Control Builder @
PackedPoint	JRP02B10X0003-00	DROP2/DROP52	@ Ovation Control Builder @
PackedPoint	JRP02B10X0004-00	DROP2/DROP52	@ Ovation Control Builder @
PackedPoint	JRP02B10X0005-00	DROP2/DROP52	@ Ovation Control Builder @
PackedPoint	JRP05B00X1001-00	DROP2/DROP52	TRN 1 MXR 1 STATUS PK
PackedPoint	JRP05B00X1002-00	DROP2/DROP52	TRN 2 MXR 1 STATUS PK
PackedPoint	JRP05B00X1003-00	DROP2/DROP52	TRN 3 MXR 1 STATUS PK
PackedPoint	JRP05B00X1004-00	DROP2/DROP52	TRN 4 MXR 1 STATUS PK
PackedPoint	JRP05B00X1005-00	DROP2/DROP52	TRN 5 MXR 1 STATUS PK
PackedPoint	JRP05B00X1006-00	DROP2/DROP52	TRN 6 MXR 1 STATUS PK
PackedPoint	JRP05B00X1007-00	DROP2/DROP52	TRN 7 MXR 1 STATUS PK
PackedPoint	JRP05B00X1008-00	DROP2/DROP52	TRN 8 MXR 1 STATUS PK
PackedPoint	JRP05B00X1009-00	DROP2/DROP52	TRN 9 MXR 1 STATUS PK
PackedPoint	JRP05B00X2001-00	DROP2/DROP52	TRN 1 MXR 2 STATUS PK
PackedPoint	JRP05B00X2002-00	DROP2/DROP52	TRN 2 MXR 2 STATUS PK
PackedPoint	JRP05B00X2003-00	DROP2/DROP52	TRN 3 MXR 2 STATUS PK
PackedPoint	JRP05B00X2004-00	DROP2/DROP52	TRN 4 MXR 2 STATUS PK
PackedPoint	JRP05B00X2005-00	DROP2/DROP52	TRN 5 MXR 2 STATUS PK
PackedPoint	JRP05B00X2006-00	DROP2/DROP52	TRN 6 MXR 2 STATUS PK
PackedPoint	JRP05B00X2007-00	DROP2/DROP52	TRN 7 MXR 2 STATUS PK
PackedPoint	JRP05B00X2008-00	DROP2/DROP52	TRN 8 MXR 2 STATUS PK
PackedPoint	JRP05B00X2009-00	DROP2/DROP52	TRN 9 MXR 2 STATUS PK
PackedPoint	JRP05B00X3001-00	DROP2/DROP52	TRN 1 MXR 3 STATUS PK
PackedPoint	JRP05B00X3002-00	DROP2/DROP52	TRN 2 MXR 3 STATUS PK
PackedPoint	JRP05B00X3003-00	DROP2/DROP52	TRN 3 MXR 3 STATUS PK
PackedPoint	JRP05B00X3004-00	DROP2/DROP52	TRN 4 MXR 3 STATUS PK
PackedPoint	JRP05B00X3005-00	DROP2/DROP52	TRN 5 MXR 3 STATUS PK
PackedPoint	JRP05B00X3006-00	DROP2/DROP52	TRN 6 MXR 3 STATUS PK
PackedPoint	JRP05B00X3007-00	DROP2/DROP52	TRN 7 MXR 3 STATUS PK
PackedPoint	JRP05B00X3008-00	DROP2/DROP52	TRN 8 MXR 3 STATUS PK
PackedPoint	JRP05B00X3009-00	DROP2/DROP52	TRN 9 MXR 3 STATUS PK
PackedPoint	JRP05B00X3101-00	DROP2/DROP52	TRN 1 NRCY PMP 1 STATUS PK

PackedPoint	JRP05B00X3102-00	DROP2/DROP52	TRN 2 NRCY PMP 1 STATUS PK
PackedPoint	JRP05B00X3103-00	DROP2/DROP52	TRN 3 NRCY PMP 1 STATUS PK
PackedPoint	JRP05B00X3104-00	DROP2/DROP52	TRN 4 NRCY PMP 1 STATUS PK
PackedPoint	JRP05B00X3105-00	DROP2/DROP52	TRN 5 NRCY PMP 1 STATUS PK
PackedPoint	JRP05B00X3106-00	DROP2/DROP52	TRN 6 NRCY PMP 1 STATUS PK
PackedPoint	JRP05B00X3107-00	DROP2/DROP52	TRN 7 NRCY PMP 1 STATUS PK
PackedPoint	JRP05B00X3108-00	DROP2/DROP52	TRN 8 NRCY PMP 1 STATUS PK
PackedPoint	JRP05B00X3109-00	DROP2/DROP52	TRN 9 NRCY PMP 1 STATUS PK
PackedPoint	JRP05B00X5001-00	DROP2/DROP52	TRN 1 MXR 4 STATUS PK
PackedPoint	JRP05B00X5002-00	DROP2/DROP52	TRN 2 MXR 4 STATUS PK
PackedPoint	JRP05B00X5003-00	DROP2/DROP52	TRN 3 MXR 4 STATUS PK
PackedPoint	JRP05B00X5004-00	DROP2/DROP52	TRN 4 MXR 4 STATUS PK
PackedPoint	JRP05B00X5005-00	DROP2/DROP52	TRN 5 MXR 4 STATUS PK
PackedPoint	JRP05B00X5006-00	DROP2/DROP52	TRN 6 MXR 4 STATUS PK
PackedPoint	JRP05B00X5007-00	DROP2/DROP52	TRN 7 MXR 4 STATUS PK
PackedPoint	JRP05B00X5008-00	DROP2/DROP52	TRN 8 MXR 4 STATUS PK
PackedPoint	JRP05B00X5009-00	DROP2/DROP52	TRN 9 MXR 4 STATUS PK
PackedPoint	JRP05B00X5101-00	DROP2/DROP52	TRN 1 NRCY PMP 2 STATUS PK
PackedPoint	JRP05B00X5102-00	DROP2/DROP52	TRN 2 NRCY PMP 2 STATUS PK
PackedPoint	JRP05B00X5103-00	DROP2/DROP52	TRN 3 NRCY PMP 2 STATUS PK
PackedPoint	JRP05B00X5104-00	DROP2/DROP52	TRN 4 NRCY PMP 2 STATUS PK
PackedPoint	JRP05B00X5105-00	DROP2/DROP52	TRN 5 NRCY PMP 2 STATUS PK
PackedPoint	JRP05B00X5106-00	DROP2/DROP52	TRN 6 NRCY PMP 2 STATUS PK
PackedPoint	JRP05B00X5107-00	DROP2/DROP52	TRN 7 NRCY PMP 2 STATUS PK
PackedPoint	JRP05B00X5108-00	DROP2/DROP52	TRN 8 NRCY PMP 2 STATUS PK
PackedPoint	JRP05B00X5109-00	DROP2/DROP52	TRN 9 NRCY PMP 2 STATUS PK
PackedPoint	JRP05B09X1001-00	DROP2/DROP52	TRN 1 MXR 1 DV ALG PK
PackedPoint	JRP05B09X1002-00	DROP2/DROP52	TRN 2 MXR 1 DV ALG PK
PackedPoint	JRP05B09X1003-00	DROP2/DROP52	TRN 3 MXR 1 DV ALG PK
PackedPoint	JRP05B09X1004-00	DROP2/DROP52	TRN 4 MXR 1 DV ALG PK
PackedPoint	JRP05B09X1005-00	DROP2/DROP52	TRN 5 MXR 1 DV ALG PK
PackedPoint	JRP05B09X1006-00	DROP2/DROP52	TRN 6 MXR 1 DV ALG PK
PackedPoint	JRP05B09X1007-00	DROP2/DROP52	TRN 7 MXR 1 DV ALG PK
PackedPoint	JRP05B09X1008-00	DROP2/DROP52	TRN 8 MXR 1 DV ALG PK
PackedPoint	JRP05B09X1009-00	DROP2/DROP52	TRN 9 MXR 1 DV ALG PK
PackedPoint	JRP05B09X2001-00	DROP2/DROP52	TRN 1 MXR 2 DV ALG PK
PackedPoint	JRP05B09X2002-00	DROP2/DROP52	TRN 2 MXR 2 DV ALG PK
PackedPoint	JRP05B09X2003-00	DROP2/DROP52	TRN 3 MXR 2 DV ALG PK
PackedPoint	JRP05B09X2004-00	DROP2/DROP52	TRN 4 MXR 2 DV ALG PK
PackedPoint	JRP05B09X2005-00	DROP2/DROP52	TRN 5 MXR 2 DV ALG PK
PackedPoint	JRP05B09X2006-00	DROP2/DROP52	TRN 6 MXR 2 DV ALG PK
PackedPoint	JRP05B09X2007-00	DROP2/DROP52	TRN 7 MXR 2 DV ALG PK
PackedPoint	JRP05B09X2008-00	DROP2/DROP52	TRN 8 MXR 2 DV ALG PK
PackedPoint	JRP05B09X2009-00	DROP2/DROP52	TRN 9 MXR 2 DV ALG PK
PackedPoint	JRP05B09X3001-00	DROP2/DROP52	TRN 1 MXR 3 DV ALG PK
PackedPoint	JRP05B09X3002-00	DROP2/DROP52	TRN 2 MXR 3 DV ALG PK
PackedPoint	JRP05B09X3003-00	DROP2/DROP52	TRN 3 MXR 3 DV ALG PK

PackedPoint	JRP05B09X3004-00	DROP2/DROP52	TRN 4 MXR 3 DV ALG PK
PackedPoint	JRP05B09X3005-00	DROP2/DROP52	TRN 5 MXR 3 DV ALG PK
PackedPoint	JRP05B09X3006-00	DROP2/DROP52	TRN 6 MXR 3 DV ALG PK
PackedPoint	JRP05B09X3007-00	DROP2/DROP52	TRN 7 MXR 3 DV ALG PK
PackedPoint	JRP05B09X3008-00	DROP2/DROP52	TRN 8 MXR 3 DV ALG PK
PackedPoint	JRP05B09X3009-00	DROP2/DROP52	TRN 9 MXR 3 DV ALG PK
PackedPoint	JRP05B09X3101-00	DROP2/DROP52	TRN 1 NRCY PMP 1 DV ALG PK
PackedPoint	JRP05B09X3102-00	DROP2/DROP52	TRN 2 NRCY PMP 1 DV ALG PK
PackedPoint	JRP05B09X3103-00	DROP2/DROP52	TRN 3 NRCY PMP 1 DV ALG PK
PackedPoint	JRP05B09X3104-00	DROP2/DROP52	TRN 4 NRCY PMP 1 DV ALG PK
PackedPoint	JRP05B09X3105-00	DROP2/DROP52	TRN 5 NRCY PMP 1 DV ALG PK
PackedPoint	JRP05B09X3106-00	DROP2/DROP52	TRN 6 NRCY PMP 1 DV ALG PK
PackedPoint	JRP05B09X3107-00	DROP2/DROP52	TRN 7 NRCY PMP 1 DV ALG PK
PackedPoint	JRP05B09X3108-00	DROP2/DROP52	TRN 8 NRCY PMP 1 DV ALG PK
PackedPoint	JRP05B09X3109-00	DROP2/DROP52	TRN 9 NRCY PMP 1 DV ALG PK
PackedPoint	JRP05B09X5001-00	DROP2/DROP52	TRN 1 MXR 4 DV ALG PK
PackedPoint	JRP05B09X5002-00	DROP2/DROP52	TRN 2 MXR 4 DV ALG PK
PackedPoint	JRP05B09X5003-00	DROP2/DROP52	TRN 3 MXR 4 DV ALG PK
PackedPoint	JRP05B09X5004-00	DROP2/DROP52	TRN 4 MXR 4 DV ALG PK
PackedPoint	JRP05B09X5005-00	DROP2/DROP52	TRN 5 MXR 4 DV ALG PK
PackedPoint	JRP05B09X5006-00	DROP2/DROP52	TRN 6 MXR 4 DV ALG PK
PackedPoint	JRP05B09X5007-00	DROP2/DROP52	TRN 7 MXR 4 DV ALG PK
PackedPoint	JRP05B09X5008-00	DROP2/DROP52	TRN 8 MXR 4 DV ALG PK
PackedPoint	JRP05B09X5009-00	DROP2/DROP52	TRN 9 MXR 4 DV ALG PK
PackedPoint	JRP05B09X5101-00	DROP2/DROP52	TRN 1 NRCY PMP 2 DV ALG PK
PackedPoint	JRP05B09X5102-00	DROP2/DROP52	TRN 2 NRCY PMP 2 DV ALG PK
PackedPoint	JRP05B09X5103-00	DROP2/DROP52	TRN 3 NRCY PMP 2 DV ALG PK
PackedPoint	JRP05B09X5104-00	DROP2/DROP52	TRN 4 NRCY PMP 2 DV ALG PK
PackedPoint	JRP05B09X5105-00	DROP2/DROP52	TRN 5 NRCY PMP 2 DV ALG PK
PackedPoint	JRP05B09X5106-00	DROP2/DROP52	TRN 6 NRCY PMP 2 DV ALG PK
PackedPoint	JRP05B09X5107-00	DROP2/DROP52	TRN 7 NRCY PMP 2 DV ALG PK
PackedPoint	JRP05B09X5108-00	DROP2/DROP52	TRN 8 NRCY PMP 2 DV ALG PK
PackedPoint	JRP05B09X5109-00	DROP2/DROP52	TRN 9 NRCY PMP 2 DV ALG PK
PackedPoint	JRP05B10X0500-PF	DROP2/DROP52	PWR FAIL RSTRT MSTR PK
PackedPoint	JRP05B11X0501-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 1 STP 1
PackedPoint	JRP05B11X0502-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 2 STP 1
PackedPoint	JRP05B11X0503-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 3 STP 1
PackedPoint	JRP05B11X0504-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 4 STP 1
PackedPoint	JRP05B11X0505-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 5 STP 1
PackedPoint	JRP05B11X0506-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 6 STP 1
PackedPoint	JRP05B11X0507-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 7 STP 1
PackedPoint	JRP05B11X0508-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 8 STP 1
PackedPoint	JRP05B11X0509-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 9 STP 1
PackedPoint	JRP05B12X0501-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 1 STP 2
PackedPoint	JRP05B12X0502-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 2 STP 2
PackedPoint	JRP05B12X0503-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 3 STP 2
PackedPoint	JRP05B12X0504-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 4 STP 2

PackedPoint	JRP05B12X0505-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 5 STP 2
PackedPoint	JRP05B12X0506-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 6 STP 2
PackedPoint	JRP05B12X0507-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 7 STP 2
PackedPoint	JRP05B12X0508-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 8 STP 2
PackedPoint	JRP05B12X0509-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 9 STP 2
PackedPoint	JRP05B13X0501-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 1 STP 3
PackedPoint	JRP05B13X0502-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 2 STP 3
PackedPoint	JRP05B13X0503-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 3 STP 3
PackedPoint	JRP05B13X0504-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 4 STP 3
PackedPoint	JRP05B13X0505-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 5 STP 3
PackedPoint	JRP05B13X0506-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 6 STP 3
PackedPoint	JRP05B13X0507-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 7 STP 3
PackedPoint	JRP05B13X0508-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 8 STP 3
PackedPoint	JRP05B13X0509-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 9 STP 3
PackedPoint	JRP05B14X0501-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 1 STP 4
PackedPoint	JRP05B14X0502-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 2 STP 4
PackedPoint	JRP05B14X0503-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 3 STP 4
PackedPoint	JRP05B14X0504-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 4 STP 4
PackedPoint	JRP05B14X0505-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 5 STP 4
PackedPoint	JRP05B14X0506-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 6 STP 4
PackedPoint	JRP05B14X0507-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 7 STP 4
PackedPoint	JRP05B14X0508-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 8 STP 4
PackedPoint	JRP05B14X0509-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 9 STP 4
PackedPoint	JRP05B15X0501-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 1 STP 5
PackedPoint	JRP05B15X0502-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 2 STP 5
PackedPoint	JRP05B15X0503-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 3 STP 5
PackedPoint	JRP05B15X0504-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 4 STP 5
PackedPoint	JRP05B15X0505-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 5 STP 5
PackedPoint	JRP05B15X0506-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 6 STP 5
PackedPoint	JRP05B15X0507-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 7 STP 5
PackedPoint	JRP05B15X0508-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 8 STP 5
PackedPoint	JRP05B15X0509-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 9 STP 5
PackedPoint	JRP05B16X0501-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 1 STP 6
PackedPoint	JRP05B16X0502-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 2 STP 6
PackedPoint	JRP05B16X0503-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 3 STP 6
PackedPoint	JRP05B16X0504-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 4 STP 6
PackedPoint	JRP05B16X0505-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 5 STP 6
PackedPoint	JRP05B16X0506-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 6 STP 6
PackedPoint	JRP05B16X0507-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 7 STP 6
PackedPoint	JRP05B16X0508-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 8 STP 6
PackedPoint	JRP05B16X0509-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 9 STP 6
PackedPoint	JRP05B17X0501-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 1 STP 7
PackedPoint	JRP05B17X0502-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 2 STP 7
PackedPoint	JRP05B17X0503-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 3 STP 7
PackedPoint	JRP05B17X0504-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 4 STP 7
PackedPoint	JRP05B17X0505-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 5 STP 7
PackedPoint	JRP05B17X0506-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 6 STP 7

PackedPoint	JRP05B17X0507-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 7 STP 7
PackedPoint	JRP05B17X0508-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 8 STP 7
PackedPoint	JRP05B17X0509-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 9 STP 7
PackedPoint	JRP05B18X0501-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 1 STP 8
PackedPoint	JRP05B18X0502-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 2 STP 8
PackedPoint	JRP05B18X0503-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 3 STP 8
PackedPoint	JRP05B18X0504-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 4 STP 8
PackedPoint	JRP05B18X0505-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 5 STP 8
PackedPoint	JRP05B18X0506-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 6 STP 8
PackedPoint	JRP05B18X0507-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 7 STP 8
PackedPoint	JRP05B18X0508-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 8 STP 8
PackedPoint	JRP05B18X0509-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 9 STP 8
PackedPoint	JRP05B19X0501-PF	DROP2/DROP52	IFAS PF RSTRT RCTR 1 STP 9
PackedPoint	JRP05CTRL3101-00	DROP2/DROP52	TRN 1 NRCY PMP 1 CTRL STATUS
PackedPoint	JRP05CTRL3102-00	DROP2/DROP52	TRN 2 NRCY PMP 1 CTRL STATUS
PackedPoint	JRP05CTRL3103-00	DROP2/DROP52	TRN 3 NRCY PMP 1 CTRL STATUS
PackedPoint	JRP05CTRL3104-00	DROP2/DROP52	TRN 4 NRCY PMP 1 CTRL STATUS
PackedPoint	JRP05CTRL3105-00	DROP2/DROP52	TRN 5 NRCY PMP 1 CTRL STATUS
PackedPoint	JRP05CTRL3106-00	DROP2/DROP52	TRN 6 NRCY PMP 1 CTRL STATUS
PackedPoint	JRP05CTRL3107-00	DROP2/DROP52	TRN 7 NRCY PMP 1 CTRL STATUS
PackedPoint	JRP05CTRL3108-00	DROP2/DROP52	TRN 8 NRCY PMP 1 CTRL STATUS
PackedPoint	JRP05CTRL3109-00	DROP2/DROP52	TRN 9 NRCY PMP 1 CTRL STATUS
PackedPoint	JRP05CTRL4121-00	DROP2/DROP52	TRN 1 AFCV 4A2 CTRL STATUS
PackedPoint	JRP05CTRL4122-00	DROP2/DROP52	TRN 2 AFCV 4A2 CTRL STATUS
PackedPoint	JRP05CTRL4123-00	DROP2/DROP52	TRN 3 AFCV 4A2 CTRL STATUS
PackedPoint	JRP05CTRL4124-00	DROP2/DROP52	TRN 4 AFCV 4A2 CTRL STATUS
PackedPoint	JRP05CTRL4125-00	DROP2/DROP52	TRN 5 AFCV 4A2 CTRL STATUS
PackedPoint	JRP05CTRL4126-00	DROP2/DROP52	TRN 6 AFCV 4A2 CTRL STATUS
PackedPoint	JRP05CTRL4127-00	DROP2/DROP52	TRN 7 AFCV 4A2 CTRL STATUS
PackedPoint	JRP05CTRL4128-00	DROP2/DROP52	TRN 8 AFCV 4A2 CTRL STATUS
PackedPoint	JRP05CTRL4129-00	DROP2/DROP52	TRN 9 AFCV 4A2 CTRL STATUS
PackedPoint	JRP05CTRL4201-00	DROP2/DROP52	TRN 1 AFCV 4B CTRL STATUS
PackedPoint	JRP05CTRL4202-00	DROP2/DROP52	TRN 2 AFCV 4B CTRL STATUS
PackedPoint	JRP05CTRL4203-00	DROP2/DROP52	TRN 3 AFCV 4B CTRL STATUS
PackedPoint	JRP05CTRL4204-00	DROP2/DROP52	TRN 4 AFCV 4B CTRL STATUS
PackedPoint	JRP05CTRL4205-00	DROP2/DROP52	TRN 5 AFCV 4B CTRL STATUS
PackedPoint	JRP05CTRL4206-00	DROP2/DROP52	TRN 6 AFCV 4B CTRL STATUS
PackedPoint	JRP05CTRL4207-00	DROP2/DROP52	TRN 7 AFCV 4B CTRL STATUS
PackedPoint	JRP05CTRL4208-00	DROP2/DROP52	TRN 8 AFCV 4B CTRL STATUS
PackedPoint	JRP05CTRL4209-00	DROP2/DROP52	TRN 9 AFCV 4B CTRL STATUS
PackedPoint	JRP05CTRL4301-00	DROP2/DROP52	TRN 1 AFCV 4C CTRL STATUS
PackedPoint	JRP05CTRL4302-00	DROP2/DROP52	TRN 2 AFCV 4C CTRL STATUS
PackedPoint	JRP05CTRL4303-00	DROP2/DROP52	TRN 3 AFCV 4C CTRL STATUS
PackedPoint	JRP05CTRL4304-00	DROP2/DROP52	TRN 4 AFCV 4C CTRL STATUS
PackedPoint	JRP05CTRL4305-00	DROP2/DROP52	TRN 5 AFCV 4C CTRL STATUS
PackedPoint	JRP05CTRL4306-00	DROP2/DROP52	TRN 6 AFCV 4C CTRL STATUS
PackedPoint	JRP05CTRL4307-00	DROP2/DROP52	TRN 7 AFCV 4C CTRL STATUS

PackedPoint	JRP05CTRL4308-00	DROP2/DROP52	TRN 8 AFCV 4C CTRL STATUS
PackedPoint	JRP05CTRL4309-00	DROP2/DROP52	TRN 9 AFCV 4C CTRL STATUS
PackedPoint	JRP05CTRL4411-00	DROP2/DROP52	TRN 1 AFCV 4D1 CTRL STATUS
PackedPoint	JRP05CTRL4412-00	DROP2/DROP52	TRN 2 AFCV 4D1 CTRL STATUS
PackedPoint	JRP05CTRL4413-00	DROP2/DROP52	TRN 3 AFCV 4D1 CTRL STATUS
PackedPoint	JRP05CTRL4414-00	DROP2/DROP52	TRN 4 AFCV 4D1 CTRL STATUS
PackedPoint	JRP05CTRL4415-00	DROP2/DROP52	TRN 5 AFCV 4D1 CTRL STATUS
PackedPoint	JRP05CTRL4416-00	DROP2/DROP52	TRN 6 AFCV 4D1 CTRL STATUS
PackedPoint	JRP05CTRL4417-00	DROP2/DROP52	TRN 7 AFCV 4D1 CTRL STATUS
PackedPoint	JRP05CTRL4418-00	DROP2/DROP52	TRN 8 AFCV 4D1 CTRL STATUS
PackedPoint	JRP05CTRL4419-00	DROP2/DROP52	TRN 9 AFCV 4D1 CTRL STATUS
PackedPoint	JRP05CTRL5101-00	DROP2/DROP52	TRN 1 NRCY PMP 2 CTRL STATUS
PackedPoint	JRP05CTRL5102-00	DROP2/DROP52	TRN 2 NRCY PMP 2 CTRL STATUS
PackedPoint	JRP05CTRL5103-00	DROP2/DROP52	TRN 3 NRCY PMP 2 CTRL STATUS
PackedPoint	JRP05CTRL5104-00	DROP2/DROP52	TRN 4 NRCY PMP 2 CTRL STATUS
PackedPoint	JRP05CTRL5105-00	DROP2/DROP52	TRN 5 NRCY PMP 2 CTRL STATUS
PackedPoint	JRP05CTRL5106-00	DROP2/DROP52	TRN 6 NRCY PMP 2 CTRL STATUS
PackedPoint	JRP05CTRL5107-00	DROP2/DROP52	TRN 7 NRCY PMP 2 CTRL STATUS
PackedPoint	JRP05CTRL5108-00	DROP2/DROP52	TRN 8 NRCY PMP 2 CTRL STATUS
PackedPoint	JRP05CTRL5109-00	DROP2/DROP52	TRN 9 NRCY PMP 2 CTRL STATUS
PackedPoint	JRP05CTRL9101-00	DROP2/DROP52	TRN 1 CHNL GATE CTRL STATUS
PackedPoint	JRP05CTRL9102-00	DROP2/DROP52	TRN 2 CHNL GATE CTRL STATUS
PackedPoint	JRP05CTRL9103-00	DROP2/DROP52	TRN 3 CHNL GATE CTRL STATUS
PackedPoint	JRP05CTRL9104-00	DROP2/DROP52	TRN 4 CHNL GATE CTRL STATUS
PackedPoint	JRP05CTRL9105-00	DROP2/DROP52	TRN 5 CHNL GATE CTRL STATUS
PackedPoint	JRP05CTRL9106-00	DROP2/DROP52	TRN 6 CHNL GATE CTRL STATUS
PackedPoint	JRP05CTRL9107-00	DROP2/DROP52	TRN 7 CHNL GATE CTRL STATUS
PackedPoint	JRP05CTRL9108-00	DROP2/DROP52	TRN 8 CHNL GATE CTRL STATUS
PackedPoint	JRP05CTRL9109-00	DROP2/DROP52	TRN 9 CHNL GATE CTRL STATUS
PackedPoint	JRP05MSTR0511-MA	DROP2/DROP52	TRN 1 AFCV MSTR1 MA STATUS PK
PackedPoint	JRP05MSTR0512-MA	DROP2/DROP52	TRN 2 AFCV MSTR1 MA STATUS PK
PackedPoint	JRP05MSTR0513-MA	DROP2/DROP52	TRN 3 AFCV MSTR1 MA STATUS PK
PackedPoint	JRP05MSTR0514-MA	DROP2/DROP52	TRN 4 AFCV MSTR1 MA STATUS PK
PackedPoint	JRP05MSTR0515-MA	DROP2/DROP52	TRN 5 AFCV MSTR1 MA STATUS PK
PackedPoint	JRP05MSTR0516-MA	DROP2/DROP52	TRN 6 AFCV MSTR1 MA STATUS PK
PackedPoint	JRP05MSTR0517-MA	DROP2/DROP52	TRN 7 AFCV MSTR1 MA STATUS PK
PackedPoint	JRP05MSTR0518-MA	DROP2/DROP52	TRN 8 AFCV MSTR1 MA STATUS PK
PackedPoint	JRP05MSTR0519-MA	DROP2/DROP52	TRN 9 AFCV MSTR1 MA STATUS PK
PackedPoint	JRP05MSTR0521-MA	DROP2/DROP52	TRN 1 AFCV MSTR2 MA STATUS PK
PackedPoint	JRP05MSTR0522-MA	DROP2/DROP52	TRN 2 AFCV MSTR2 MA STATUS PK
PackedPoint	JRP05MSTR0523-MA	DROP2/DROP52	TRN 3 AFCV MSTR2 MA STATUS PK
PackedPoint	JRP05MSTR0524-MA	DROP2/DROP52	TRN 4 AFCV MSTR2 MA STATUS PK
PackedPoint	JRP05MSTR0525-MA	DROP2/DROP52	TRN 5 AFCV MSTR2 MA STATUS PK
PackedPoint	JRP05MSTR0526-MA	DROP2/DROP52	TRN 6 AFCV MSTR2 MA STATUS PK
PackedPoint	JRP05MSTR0527-MA	DROP2/DROP52	TRN 7 AFCV MSTR2 MA STATUS PK
PackedPoint	JRP05MSTR0528-MA	DROP2/DROP52	TRN 8 AFCV MSTR2 MA STATUS PK
PackedPoint	JRP05MSTR0529-MA	DROP2/DROP52	TRN 9 AFCV MSTR2 MA STATUS PK

PackedPoint	JRP05PURGEAREQ	DROP2/DROP52	IFAS TNKS MODE A PURGE REQ
PackedPoint	JRP05PURGEBREQ	DROP2/DROP52	IFAS TNKS MODE B PURGE REQ
PackedPoint	JRP05PURGECMD	DROP2/DROP52	IFAS TANKS PURGE FLAG
PackedPoint	JRP05PURGELE	DROP2/DROP52	IFAS LOW ENERGY ZONE FV CTRL
PackedPoint	JRP14B00X1001-00	DROP2/DROP52	BLOWER 1 STATUS PK
PackedPoint	JRP14B00X1002-00	DROP2/DROP52	BLOWER 2 STATUS PK
PackedPoint	JRP14B00X1003-00	DROP2/DROP52	BLOWER 3 STATUS PK
PackedPoint	JRP14B09X1001-00	DROP2/DROP52	BLOWER 1 DV ALG PK
PackedPoint	JRP14B09X1002-00	DROP2/DROP52	BLOWER 2 DV ALG PK
PackedPoint	JRP14B09X1003-00	DROP2/DROP52	BLOWER 3 DV ALG PK
PackedPoint	JRP14B10X1001-00	DROP2/DROP52	BLOWER 1 PWR FAIL RST
PackedPoint	JRP14B10X1002-00	DROP2/DROP52	BLOWER 2 PWR FAIL RST
PackedPoint	JRP14B10X1003-00	DROP2/DROP52	BLOWER 3 PWR FAIL RST
PackedPoint	JRP14B10X1400-PF	DROP2/DROP52	BLWR PWR FAIL RSTRT MSTR PK
PackedPoint	JRP14CTRL1001-00	DROP2/DROP52	BLOWER 1 INLET VLV CTRL STATUS
PackedPoint	JRP14CTRL1002-00	DROP2/DROP52	BLOWER 2 INLET VLV CTRL STATUS
PackedPoint	JRP14CTRL1003-00	DROP2/DROP52	BLOWER 3 INLET VLV CTRL STATUS
PackedPoint	JRP14CTRL3002-00	DROP2/DROP52	PREAERATION VLV CTRL STATUS
PackedPoint	JRP14PBPT3001X-00	DROP2/DROP52	@ Ovation Control Builder @
PackedPoint	JRP18B00X1001-00	DROP2/DROP52	ODOR CTRL FAN 1 STATUS PK
PackedPoint	JRP18B00X1002-00	DROP2/DROP52	ODOR CTRL FAN 2 STATUS PK
PackedPoint	JRP18B09X1001-00	DROP2/DROP52	ODOR CTRL FAN 1 DV ALG PK
PackedPoint	JRP18B09X1002-00	DROP2/DROP52	ODOR CTRL FAN 2 DV ALG PK
PackedPoint	JRP18B10X1001-00	DROP2/DROP52	ODOR CTRL FAN 1 PWR FAIL RST
PackedPoint	JRP18B10X1002-00	DROP2/DROP52	ODOR CTRL FAN 2 PWR FAIL RST
PackedPoint	JRP18B10X1800-PF	DROP2/DROP52	ODOR PWR FAIL RSTRT MSTR PK
PackedPoint	JRP18B11X1800-PF	DROP2/DROP52	ODOR PWR FAIL RSTRT STEP 1 PK
PackedPoint	JRP18B12X1800-PF	DROP2/DROP52	ODOR PWR FAIL RSTRT STEP 2 PK
PackedPoint	JRP28B00X0101-00	DROP2/DROP52	CENTRATE EQ PUMP 1 STATUS PK
PackedPoint	JRP28B00X0102-00	DROP2/DROP52	CENTRATE EQ PUMP 2 STATUS PK
PackedPoint	JRP28B00X0201-00	DROP2/DROP52	CENTRATE VLT PUMP 1 STATUS PK
PackedPoint	JRP28B00X0202-00	DROP2/DROP52	CENTRATE VLT PUMP 2 STATUS PK
PackedPoint	JRP28B00X1001-00	DROP2/DROP52	CENTRATE EQ MIXER 1STATUS PK
PackedPoint	JRP28B00X1002-00	DROP2/DROP52	CENTRATE EQ MIXER 2 STATUS PK
PackedPoint	JRP28B01X0101-00	DROP2/DROP52	CENTRATE EQ PUMP 1 AVAIL
PackedPoint	JRP28B01X0102-00	DROP2/DROP52	CENTRATE EQ PUMP2 AVAIL
PackedPoint	JRP28B01X0201-00	DROP2/DROP52	CENTRATE VAULT PUMP 1 AVAIL
PackedPoint	JRP28B01X0202-00	DROP2/DROP52	CENTRATE VAULT PUMP 2 AVAIL
PackedPoint	JRP28B02X2700-CS	DROP2/DROP52	CENT VLT PMP MSTR AVAIL PK
PackedPoint	JRP28B02X2701-CS	DROP2/DROP52	CENTRATE EQ PMP MSTR AVAIL PK
PackedPoint	JRP28B03X2700-CS	DROP2/DROP52	CENTRATE VLT PUMP RANKING
PackedPoint	JRP28B03X2701-CS	DROP2/DROP52	CENTRATE EQ PUMP RANKING
PackedPoint	JRP28B08X2700-00	DROP2/DROP52	CENTRATE VLT MSTR OPER RANKING
PackedPoint	JRP28B08X2701-00	DROP2/DROP52	CENTRATE EQ MSTR OPER RANKING
PackedPoint	JRP28B09X0101-00	DROP2/DROP52	CENTRATE EQ PMP1 SV DV ALG PK
PackedPoint	JRP28B09X0102-00	DROP2/DROP52	CENTRATE EQ PMP2 SV DV ALG PK
PackedPoint	JRP28B09X0201-00	DROP2/DROP52	CENTRATE VLT PMP1 SV DV ALG PK

PackedPoint	JRP28B09X0202-00	DROP2/DROP52	CENTRATE VLT PMP2 SV DV ALG PK
PackedPoint	JRP28B09X1001-00	DROP2/DROP52	CENTRATE EQ MXR1 SV DV ALG PK
PackedPoint	JRP28B09X1002-00	DROP2/DROP52	CENTRATE EQ MXR2 SV DV ALG PK
PackedPoint	JRP28B09X2700-00	DROP2/DROP52	CENTRATE VLT PUMPS LVL
PackedPoint	JRP28B09X2701-00	DROP2/DROP52	CENTRATE EQ TANK PUMPS LVL
PackedPoint	JRP28B10X0001-00	DROP2/DROP52	IFAS RAS FV001 VLV STATUS PK
PackedPoint	JRP28B10X0002-00	DROP2/DROP52	IFAS RAS FV002 VLV STATUS PK
PackedPoint	JRP28B10X0003-00	DROP2/DROP52	IFAS RAS FV003 VLV STATUS PK
PackedPoint	JRP28B10X0004-00	DROP2/DROP52	IFAS RAS FV004 VLV STATUS PK
PackedPoint	JRP28B10X0005-00	DROP2/DROP52	IFAS RAS FV005 VLV STATUS PK
PackedPoint	JRP28B10X2700-00	DROP2/DROP52	@ Ovation Control Builder @
PackedPoint	JRP28B10X2700-PF	DROP2/DROP52	@ Ovation Control Builder @
PackedPoint	JRP28B10X2701-00	DROP2/DROP52	@ Ovation Control Builder @
PackedPoint	JRP28B10X2701-PF	DROP2/DROP52	@ Ovation Control Builder @
PackedPoint	JRP28CENEQMODE	DROP2/DROP52	CENTRATE EQ TANK SYS MODE
PackedPoint	JRP28CTRL0101-00	DROP2/DROP52	CENTRATE EQ PUMP 1
PackedPoint	JRP28CTRL0102-00	DROP2/DROP52	CENTRATE EQ PUMP 2
PackedPoint	JRP28CTRL0201-00	DROP2/DROP52	CENTRATE VAULT PUMP 1
PackedPoint	JRP28CTRL0202-00	DROP2/DROP52	CENTRATE VAULT PUMP 2
PackedPoint	JRP28CTRLFV05-00	DROP2/DROP52	IFAS RAS VALVE CONTROL
PackedPoint	JRP28MSTR2700-MA	DROP2/DROP52	CENTRATE VAULT SYS MSTR
PackedPoint	JRP28MSTR2701-MA	DROP2/DROP52	CENTRATE EQ SYS MSTR
PackedPoint	JRP31B00X5101-00	DROP2/DROP52	TRN 1 FOAM PMP STATUS PK
PackedPoint	JRP31B00X5102-00	DROP2/DROP52	TRN 2 FOAM PMP STATUS PK
PackedPoint	JRP31B00X5103-00	DROP2/DROP52	TRN 3 FOAM PMP STATUS PK
PackedPoint	JRP31B00X5104-00	DROP2/DROP52	TRN 4 FOAM PMP STATUS PK
PackedPoint	JRP31B00X5105-00	DROP2/DROP52	TRN 5 FOAM PMP STATUS PK
PackedPoint	JRP31B00X5106-00	DROP2/DROP52	TRN 6 FOAM PMP STATUS PK
PackedPoint	JRP31B00X5107-00	DROP2/DROP52	TRN 7 FOAM PMP STATUS PK
PackedPoint	JRP31B00X5108-00	DROP2/DROP52	TRN 8 FOAM PMP STATUS PK
PackedPoint	JRP31B00X5109-00	DROP2/DROP52	TRN 9 FOAM PMP STATUS PK
PackedPoint	JRP31B00X5201-00	DROP2/DROP52	TRN 1 FOAM SKMR STATUS PK
PackedPoint	JRP31B00X5202-00	DROP2/DROP52	TRN 2 FOAM SKMR STATUS PK
PackedPoint	JRP31B00X5203-00	DROP2/DROP52	TRN 3 FOAM SKMR STATUS PK
PackedPoint	JRP31B00X5204-00	DROP2/DROP52	TRN 4 FOAM SKMR STATUS PK
PackedPoint	JRP31B00X5205-00	DROP2/DROP52	TRN 5 FOAM SKMR STATUS PK
PackedPoint	JRP31B00X5206-00	DROP2/DROP52	TRN 6 FOAM SKMR STATUS PK
PackedPoint	JRP31B00X5207-00	DROP2/DROP52	TRN 7 FOAM SKMR STATUS PK
PackedPoint	JRP31B00X5208-00	DROP2/DROP52	TRN 8 FOAM SKMR STATUS PK
PackedPoint	JRP31B00X5209-00	DROP2/DROP52	TRN 9 FOAM SKMR STATUS PK
PackedPoint	JRP31B00X5301-00	DROP2/DROP52	TRN 1 FOAM SV STATUS PK
PackedPoint	JRP31B00X5302-00	DROP2/DROP52	TRN 2 FOAM SV STATUS PK
PackedPoint	JRP31B00X5303-00	DROP2/DROP52	TRN 3 FOAM SV STATUS PK
PackedPoint	JRP31B00X5304-00	DROP2/DROP52	TRN 4 FOAM SV STATUS PK
PackedPoint	JRP31B00X5305-00	DROP2/DROP52	TRN 5 FOAM SV STATUS PK
PackedPoint	JRP31B00X5306-00	DROP2/DROP52	TRN 6 FOAM SV STATUS PK
PackedPoint	JRP31B00X5307-00	DROP2/DROP52	TRN 7 FOAM SV STATUS PK

PackedPoint	JRP31B00X5308-00	DROP2/DROP52	TRN 8 FOAM SV STATUS PK
PackedPoint	JRP31B00X5309-00	DROP2/DROP52	TRN 9 FOAM SV STATUS PK
PackedPoint	JRP31B09X5201-00	DROP2/DROP52	TRN 1 FOAM SKMR DV ALG PK
PackedPoint	JRP31B09X5202-00	DROP2/DROP52	TRN 2 FOAM SKMR DV ALG PK
PackedPoint	JRP31B09X5203-00	DROP2/DROP52	TRN 3 FOAM SKMR DV ALG PK
PackedPoint	JRP31B09X5204-00	DROP2/DROP52	TRN 4 FOAM SKMR DV ALG PK
PackedPoint	JRP31B09X5205-00	DROP2/DROP52	TRN 5 FOAM SKMR DV ALG PK
PackedPoint	JRP31B09X5206-00	DROP2/DROP52	TRN 6 FOAM SKMR DV ALG PK
PackedPoint	JRP31B09X5207-00	DROP2/DROP52	TRN 7 FOAM SKMR DV ALG PK
PackedPoint	JRP31B09X5208-00	DROP2/DROP52	TRN 8 FOAM SKMR DV ALG PK
PackedPoint	JRP31B09X5209-00	DROP2/DROP52	TRN 9 FOAM SKMR DV ALG PK
PackedPoint	JRP31B09X5301-00	DROP2/DROP52	TRN 1 FOAM SV DV ALG PK
PackedPoint	JRP31B09X5302-00	DROP2/DROP52	TRN 2 FOAM SV DV ALG PK
PackedPoint	JRP31B09X5303-00	DROP2/DROP52	TRN 3 FOAM SV DV ALG PK
PackedPoint	JRP31B09X5304-00	DROP2/DROP52	TRN 4 FOAM SV DV ALG PK
PackedPoint	JRP31B09X5305-00	DROP2/DROP52	TRN 5 FOAM SV DV ALG PK
PackedPoint	JRP31B09X5306-00	DROP2/DROP52	TRN 6 FOAM SV DV ALG PK
PackedPoint	JRP31B09X5307-00	DROP2/DROP52	TRN 7 FOAM SV DV ALG PK
PackedPoint	JRP31B09X5308-00	DROP2/DROP52	TRN 8 FOAM SV DV ALG PK
PackedPoint	JRP31B09X5309-00	DROP2/DROP52	TRN 9 FOAM SV DV ALG PK
PackedPoint	JRP31B10X5101-00	DROP2/DROP52	TRN 1 FOAM PMP PWR FAIL RST
PackedPoint	JRP31B10X5102-00	DROP2/DROP52	TRN 2 FOAM PMP PWR FAIL RST
PackedPoint	JRP31B10X5103-00	DROP2/DROP52	TRN 3 FOAM PMP PWR FAIL RST
PackedPoint	JRP31B10X5104-00	DROP2/DROP52	TRN 4 FOAM PMP PWR FAIL RST
PackedPoint	JRP31B10X5105-00	DROP2/DROP52	TRN 5 FOAM PMP PWR FAIL RST
PackedPoint	JRP31B10X5106-00	DROP2/DROP52	TRN 6 FOAM PMP PWR FAIL RST
PackedPoint	JRP31B10X5107-00	DROP2/DROP52	TRN 7 FOAM PMP PWR FAIL RST
PackedPoint	JRP31B10X5108-00	DROP2/DROP52	TRN 8 FOAM PMP PWR FAIL RST
PackedPoint	JRP31B10X5109-00	DROP2/DROP52	TRN 9 FOAM PMP PWR FAIL RST
PackedPoint	JRP31B10X5201-00	DROP2/DROP52	TRN 1 FOAM SKMR PWR FAIL RST
PackedPoint	JRP31B10X5202-00	DROP2/DROP52	TRN 2 FOAM SKMR PWR FAIL RST
PackedPoint	JRP31B10X5203-00	DROP2/DROP52	TRN 3 FOAM SKMR PWR FAIL RST
PackedPoint	JRP31B10X5204-00	DROP2/DROP52	TRN 4 FOAM SKMR PWR FAIL RST
PackedPoint	JRP31B10X5205-00	DROP2/DROP52	TRN 5 FOAM SKMR PWR FAIL RST
PackedPoint	JRP31B10X5206-00	DROP2/DROP52	TRN 6 FOAM SKMR PWR FAIL RST
PackedPoint	JRP31B10X5207-00	DROP2/DROP52	TRN 7 FOAM SKMR PWR FAIL RST
PackedPoint	JRP31B10X5208-00	DROP2/DROP52	TRN 8 FOAM SKMR PWR FAIL RST
PackedPoint	JRP31B10X5209-00	DROP2/DROP52	TRN 9 FOAM SKMR PWR FAIL RST
PackedPoint	JRP31B10X5301-00	DROP2/DROP52	TRN 1 FOAM SV PWR FAIL RST
PackedPoint	JRP31B10X5302-00	DROP2/DROP52	TRN 2 FOAM SV PWR FAIL RST
PackedPoint	JRP31B10X5303-00	DROP2/DROP52	TRN 3 FOAM SV PWR FAIL RST
PackedPoint	JRP31B10X5304-00	DROP2/DROP52	TRN 4 FOAM SV PWR FAIL RST
PackedPoint	JRP31B10X5305-00	DROP2/DROP52	TRN 5 FOAM SV PWR FAIL RST
PackedPoint	JRP31B10X5306-00	DROP2/DROP52	TRN 6 FOAM SV PWR FAIL RST
PackedPoint	JRP31B10X5307-00	DROP2/DROP52	TRN 7 FOAM SV PWR FAIL RST
PackedPoint	JRP31B10X5308-00	DROP2/DROP52	TRN 8 FOAM SV PWR FAIL RST
PackedPoint	JRP31B10X5309-00	DROP2/DROP52	TRN 9 FOAM SV PWR FAIL RST

PackedPoint	JRP50B001X-00	DROP2/DROP52	CENTRATE VLV 1 DV ALG PK
PackedPoint	JRP50B002X-00	DROP2/DROP52	CENTRATE VLV 2 DV ALG PK
PackedPoint	JRP50B003X-00	DROP2/DROP52	ANMOX FD PMP DV ALG PK
PackedPoint	JRP50B00X1001-00	DROP2/DROP52	TRN 1 CRCY PMP STATUS PK
PackedPoint	JRP50B00X2001-00	DROP2/DROP52	IFAS INF. VLV STATUS PK
PackedPoint	JRP50B00X3001-00	DROP2/DROP52	CENTRATE TRTMNT VLV1 STATUS PK
PackedPoint	JRP50B00X4001-00	DROP2/DROP52	ANITAMOX FD PMP STATUS PK
PackedPoint	JRP50B00X5001-00	DROP2/DROP52	ANITAMOX MIXER#1 STATUS PK
PackedPoint	JRP50B00X6001-00	DROP2/DROP52	ANITAMOX MIXER#2 STATUS PK
PackedPoint	JRP50B00X7001-00	DROP2/DROP52	MANHOLE #1 SLIDE GT STATUS PK
PackedPoint	JRP50B00X8001-00	DROP2/DROP52	MANHOLE #5 SLIDE GT STATUS PK
PackedPoint	JRP50B09X1001-00	DROP2/DROP52	TRN 1 CRCY PMP DV ALG PK
PackedPoint	JRP50B09X1002-00	DROP2/DROP52	ANMOX MIXER #1 DV ALG PK
PackedPoint	JRP50B09X1003-00	DROP2/DROP52	ANMOX MIXER #2 DV ALG PK
PackedPoint	JRP50B09X7001-00	DROP2/DROP52	@ Ovation Control Builder @
PackedPoint	JRP50B09X8001-00	DROP2/DROP52	@ Ovation Control Builder @
PackedPoint	JRP50B10X1001-00	DROP2/DROP52	@ Ovation Control Builder @
PackedPoint	JRP50B10X1800-PF	DROP2/DROP52	ANITAMOX PWR FAIL RSTRT STEP 1
PackedPoint	JRP50B11X1800-PF	DROP2/DROP52	ANITAMOX PWR FAIL RSTRT STEP 2
PackedPoint	JRP50B12X1800-PF	DROP2/DROP52	ANITAMOX PWR FAIL MSTR PK
PackedPoint	JRP50B13X1800-PF	DROP2/DROP52	ANITAMOX PWR FAIL RSTRT STEP 3
PackedPoint	JRP50CTRL1001-00	DROP2/DROP52	TRN 1 CRCY PMP CTRL STATUS
PackedPoint	JRP50FLOATNDOSP	DROP2/DROP52	FLOATING DO SETPOINT
PackedPoint	JRP08B00XCFP1-00	DROP3/DROP53	CYCLONE FEED PMP 1 STATUS PK
PackedPoint	JRP08B00XCFP2-00	DROP3/DROP53	CYCLONE FEED PMP 2 STATUS PK
PackedPoint	JRP08CTRL5101-00	DROP3/DROP53	@ Ovation Control Builder @
PackedPoint	JRP08CTRLCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 CTRL STATUS
PackedPoint	JRP08CTRLCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 CTRL STATUS
PackedPoint	JRP08CTRLCYCSEL	DROP3/DROP53	CYCLONE SELECT INDICATION
PackedPoint	JRP12B10X0500-PF	DROP3/DROP53	@ Ovation Control Builder @
PackedPoint	JRP12CTRL5101-00	DROP3/DROP53	@ Ovation Control Builder @
PackedPoint	JRP46B00X2001-00	DROP3/DROP53	CRBN RECRC PMP 1 STATUS PK
PackedPoint	JRP46B00X2002-00	DROP3/DROP53	CRBN RECRC PMP 2 STATUS PK
PackedPoint	JRP46B00X3001-00	DROP3/DROP53	CRBN FEED PMP 1 STATUS PK
PackedPoint	JRP46B00X3002-00	DROP3/DROP53	CRBN FEED PMP 2 STATUS PK
PackedPoint	JRP46B00X3003-00	DROP3/DROP53	CRBN FEED PMP 3 STATUS PK
PackedPoint	JRP46B00X3004-00	DROP3/DROP53	CRBN FEED PMP 4 STATUS PK
PackedPoint	JRP46B00X3005-00	DROP3/DROP53	CRBN FEED PMP 5 STATUS PK
PackedPoint	JRP46B00X3006-00	DROP3/DROP53	CRBN FEED PMP 6 STATUS PK
PackedPoint	JRP46B00X3007-00	DROP3/DROP53	CRBN FEED PMP 7 STATUS PK
PackedPoint	JRP46B00X3008-00	DROP3/DROP53	CRBN FEED PMP 8 STATUS PK
PackedPoint	JRP46B00X3009-00	DROP3/DROP53	CRBN FEED PMP 9 STATUS PK
PackedPoint	JRP46B00X3010-00	DROP3/DROP53	CRBN FEED PMP 10 STATUS PK
PackedPoint	JRP46B00X3011-00	DROP3/DROP53	CRBN FEED PMP 11 STATUS PK
PackedPoint	JRP46B09X2001-00	DROP3/DROP53	CRBN RECRC PMP 1 DV ALG PK
PackedPoint	JRP46B09X2002-00	DROP3/DROP53	CRBN RECRC PMP 2 DV ALG PK
PackedPoint	JRP46B09X3001-00	DROP3/DROP53	CRBN FEED PMP 1 DV ALG PK

PackedPoint	JRP46B09X3002-00	DROP3/DROP53	CRBN FEED PMP 2 DV ALG PK
PackedPoint	JRP46B09X3003-00	DROP3/DROP53	CRBN FEED PMP 3 DV ALG PK
PackedPoint	JRP46B09X3004-00	DROP3/DROP53	CRBN FEED PMP 4 DV ALG PK
PackedPoint	JRP46B09X3005-00	DROP3/DROP53	CRBN FEED PMP 5 DV ALG PK
PackedPoint	JRP46B09X3006-00	DROP3/DROP53	CRBN FEED PMP 6 DV ALG PK
PackedPoint	JRP46B09X3007-00	DROP3/DROP53	CRBN FEED PMP 7 DV ALG PK
PackedPoint	JRP46B09X3008-00	DROP3/DROP53	CRBN FEED PMP 8 DV ALG PK
PackedPoint	JRP46B09X3009-00	DROP3/DROP53	CRBN FEED PMP 9 DV ALG PK
PackedPoint	JRP46B09X3010-00	DROP3/DROP53	CRBN FEED PMP 10 DV ALG PK
PackedPoint	JRP46B09X3011-00	DROP3/DROP53	CRBN FEED PMP 11 DV ALG PK
PackedPoint	JRP46B10X4600-PF	DROP3/DROP53	CRBN PWR FAIL RESTRT MSTR PK
PackedPoint	JRP46B11X4600-PF	DROP3/DROP53	CBRN PWR FAIL RESTRT STP 1 PK
PackedPoint	JRP46B12X4600-PF	DROP3/DROP53	CBRN PWR FAIL RESTRT STP 2 PK
PackedPoint	JRP46B13X4600-PF	DROP3/DROP53	CBRN PWR FAIL RESTRT STP 3 PK
PackedPoint	JRP46B14X4600-PF	DROP3/DROP53	CBRN PWR FAIL RESTRT STP 4 PK
PackedPoint	JRP46B15X4600-PF	DROP3/DROP53	CBRN PWR FAIL RESTRT STP 5 PK
PackedPoint	JRP46B16X4600-PF	DROP3/DROP53	CBRN PWR FAIL RESTRT STP 6 PK
PackedPoint	JRP46B17X4600-PF	DROP3/DROP53	CBRN PWR FAIL RESTRT STP 7 PK
PackedPoint	JRP46B18X4600-PF	DROP3/DROP53	CBRN PWR FAIL RESTRT STP 8 PK
PackedPoint	JRP46B19X4600-PF	DROP3/DROP53	CBRN PWR FAIL RESTRT STP 9 PK
PackedPoint	JRP46B20X4600-PF	DROP3/DROP53	CBRN PWR FAIL RESTRT STP 10 PK
PackedPoint	JRP46B21X4600-PF	DROP3/DROP53	CBRN PWR FAIL RESTRT STP 11 PK
PackedPoint	JRP46B22X4600-PF	DROP3/DROP53	CBRN PWR FAIL RESTRT STP 12 PK
PackedPoint	JRP46B23X4600-PF	DROP3/DROP53	CBRN PWR FAIL RESTRT STP 13 PK
PackedPoint	JRP46CTRL3001-00	DROP3/DROP53	CRBN FEED PMP 1 CTRL STATUS
PackedPoint	JRP46CTRL3002-00	DROP3/DROP53	CRBN FEED PMP 2 CTRL STATUS
PackedPoint	JRP46CTRL3003-00	DROP3/DROP53	CRBN FEED PMP 3 CTRL STATUS
PackedPoint	JRP46CTRL3004-00	DROP3/DROP53	CRBN FEED PMP 4 CTRL STATUS
PackedPoint	JRP46CTRL3005-00	DROP3/DROP53	CRBN FEED PMP 5 CTRL STATUS
PackedPoint	JRP46CTRL3006-00	DROP3/DROP53	CRBN FEED PMP 6 CTRL STATUS
PackedPoint	JRP46CTRL3007-00	DROP3/DROP53	CRBN FEED PMP 7 CTRL STATUS
PackedPoint	JRP46CTRL3008-00	DROP3/DROP53	CRBN FEED PMP 8 CTRL STATUS
PackedPoint	JRP46CTRL3009-00	DROP3/DROP53	CRBN FEED PMP 9 CTRL STATUS
PackedPoint	JRP46CTRL3010-00	DROP3/DROP53	CRBN FEED PMP 10 CTRL STATUS
PackedPoint	JRP46CTRL3011-00	DROP3/DROP53	CRBN FEED PMP 11 CTRL STATUS

ObjectType	ObjectName	ParName_4	DESCRIPTION
DigitalPoint	JR01ZSAX1210F	DROP1/DROP51	SCREEN 1 HOME LIMIT FAST IN
DigitalPoint	JRP01AMPMP1	DROP1/DROP51	AMMONIA PUMP #1 AVAILABLE
DigitalPoint	JRP01AMPMP2	DROP1/DROP51	AMMONIA PUMP #1 LOCKED OUT
DigitalPoint	JRP01AMPMP3	DROP1/DROP51	AMMONIA PUMP #1 IN SERVICE
DigitalPoint	JRP01AMPMP4	DROP1/DROP51	AMMONIA PUMP #2 AVAILABLE
DigitalPoint	JRP01AMPMP5	DROP1/DROP51	AMMONIA PUMP #2 LOCKED OUT
DigitalPoint	JRP01AMPMP6	DROP1/DROP51	AMMONIA PUMP #2 IN SERVICE
DigitalPoint	JRP01AMPNP1	DROP1/DROP51	AMMONIA PUMP #1 AVAILABLE
DigitalPoint	JRP01AMRJ1001-00	DROP1/DROP51	BYPASS VLV AUTO REJECT
DigitalPoint	JRP01AMTNK1	DROP1/DROP51	AMMONIA TANK #1 AVAILABLE
DigitalPoint	JRP01AMTNK2	DROP1/DROP51	AMOMONIA TANK #1 LOCKED OUT
DigitalPoint	JRP01AMTNK3	DROP1/DROP51	AMMONIA TANK #1 IN SERVICE
DigitalPoint	JRP01AMTNK4	DROP1/DROP51	AMMONIA TANK #2 AVAILABLE
DigitalPoint	JRP01AMTNK5	DROP1/DROP51	AMMONIA TANK #2 LOCKED OUT
DigitalPoint	JRP01AMTNK6	DROP1/DROP51	AMMONIA TANK #2 IN SERVICE
DigitalPoint	JRP01BISULPMP1	DROP1/DROP51	BISULFITE PUM[P #1 AVAILABLE
DigitalPoint	JRP01BISULPMP10	DROP1/DROP51	BISULFITE PUMP #4 AVAILABLE
DigitalPoint	JRP01BISULPMP11	DROP1/DROP51	BISULFITE PUMP #4 LOCKED OUT
DigitalPoint	JRP01BISULPMP12	DROP1/DROP51	BISULFITE PUMP #4 IN SERVICE
DigitalPoint	JRP01BISULPMP13	DROP1/DROP51	BISULFITE PUMP #5 AVAILABLE
DigitalPoint	JRP01BISULPMP14	DROP1/DROP51	BISULFITE PUMP #5 LOCKED OUT
DigitalPoint	JRP01BISULPMP15	DROP1/DROP51	BISULFITE PUMP #5 IN SERVICE
DigitalPoint	JRP01BISULPMP16	DROP1/DROP51	BISULFITE PUMP #6 AVAILABLE
DigitalPoint	JRP01BISULPMP17	DROP1/DROP51	BISULFITE PUMP #6 LOCKED OUT
DigitalPoint	JRP01BISULPMP18	DROP1/DROP51	BISULFITE PUMP #6 IN SERVICE
DigitalPoint	JRP01BISULPMP2	DROP1/DROP51	BISULFITE PUMP #1 LOCKED OUT
DigitalPoint	JRP01BISULPMP3	DROP1/DROP51	BISULFITE PUMP #1 IN SERVICE
DigitalPoint	JRP01BISULPMP4	DROP1/DROP51	BISULFITE PUMP #2 AVAILABLE
DigitalPoint	JRP01BISULPMP5	DROP1/DROP51	BISULFITE PUMP #2 LOCKED OUT
DigitalPoint	JRP01BISULPMP6	DROP1/DROP51	BISULFITE PUMP #2 IN SERVICE
DigitalPoint	JRP01BISULPMP7	DROP1/DROP51	BISULFITE PUMP #3 AVAILABLE
DigitalPoint	JRP01BISULPMP8	DROP1/DROP51	BISULFITE PUMP #3 LOCKED OUT
DigitalPoint	JRP01BISULPMP9	DROP1/DROP51	BISULFITE PUMP #3 IN SERVICE
DigitalPoint	JRP01BISULTNK1	DROP1/DROP51	BISULFITE TANK #1 AVAILABLE
DigitalPoint	JRP01BISULTNK2	DROP1/DROP51	BISULFITE TANK #1 LOCKED OUT
DigitalPoint	JRP01BISULTNK3	DROP1/DROP51	BISULFITE TANK #1 IN SERVICE
DigitalPoint	JRP01BISULTNK4	DROP1/DROP51	BISULFITE TANK #2 AVAILABLE
DigitalPoint	JRP01BISULTNK5	DROP1/DROP51	BISULFITE TANK #2 LOCKED OUT
DigitalPoint	JRP01BISULTNK6	DROP1/DROP51	BISULFITE TANK #2 IN SERIVCE
DigitalPoint	JRP01CAUSTICPMP1	DROP1/DROP51	CAUSTIC PUMP #1 AVAILABLE
DigitalPoint	JRP01CAUSTICPMP2	DROP1/DROP51	CAUSTIC PUMP #1 LOCKED OUT
DigitalPoint	JRP01CAUSTICPMP3	DROP1/DROP51	CAUSTIC PUMP #1 IN SERVICE
DigitalPoint	JRP01CAUSTICPMP4	DROP1/DROP51	CAUSTIC PUMP #2 AVAILABLE
DigitalPoint	JRP01CAUSTICPMP5	DROP1/DROP51	CAUSTIC PUMP #2 LOCKED OUT
DigitalPoint	JRP01CAUSTICPMP6	DROP1/DROP51	CAUSTIC PUMP #2 IN SERVICE
DigitalPoint	JRP01CAUSTICPMP7	DROP1/DROP51	CAUSTIC PUMP #3 AVAILABLE

DigitalPoint	JRP01CAUSTICPMP8	DROP1/DROP51	CAUSTIC PUMP #3 LOCKED OUT
DigitalPoint	JRP01CAUSTICPMP9	DROP1/DROP51	CAUSTIC PUMP #3 IN SERVICE
DigitalPoint	JRP01CAUSTICTNK1	DROP1/DROP51	CAUSTIC TANK #1 AVAILABLE
DigitalPoint	JRP01CAUSTICTNK2	DROP1/DROP51	CAUSTIC TANK #1 LOCKED OUT
DigitalPoint	JRP01CAUSTICTNK3	DROP1/DROP51	CAUSTIC TANK #1 IN SERVICE
DigitalPoint	JRP01CAUSTICTNK4	DROP1/DROP51	CAUSTIC TANK #2 AVAILABLE
DigitalPoint	JRP01CAUSTICTNK5	DROP1/DROP51	CAUSTIC TANK #2 LOCKED OUT
DigitalPoint	JRP01CAUSTICTNK6	DROP1/DROP51	CAUSTIC TANK #2 IN SERVICE
DigitalPoint	JRP01CL2PMP1	DROP1/DROP51	CL2 EFFLUENT PUMP #1 AVAIL
DigitalPoint	JRP01CL2PMP2	DROP1/DROP51	CL2 EFF PUMP #1 LOCKED OUT
DigitalPoint	JRP01CL2PMP3	DROP1/DROP51	CL2 EFF PUMP IN SERVICE
DigitalPoint	JRP01CL2PMP4	DROP1/DROP51	CL2 EFF PUMP #2 AVAILABLE
DigitalPoint	JRP01CL2PMP5	DROP1/DROP51	CL2 EFF PUMP #2 LOCKED OUT
DigitalPoint	JRP01CL2PMP6	DROP1/DROP51	CL2 EFF PUMP #2 IN SERVICE
DigitalPoint	JRP01CNTALM01	DROP1/DROP51	SCRN CHN.1 CONT RUN ALM
DigitalPoint	JRP01CNTALM02	DROP1/DROP51	SCRN CHN.2 CONT RUN ALM
DigitalPoint	JRP01CNTALM03	DROP1/DROP51	SCRN CHN.3 CONT RUN ALARM
DigitalPoint	JRP01CNTNK1	DROP1/DROP51	CONTACT TANK #1 AVAILABLE
DigitalPoint	JRP01CNTNK2	DROP1/DROP51	CONTACT TANK #1 LOCKED OUT
DigitalPoint	JRP01CNTNK3	DROP1/DROP51	CONTACT TANK #1 IN SERVICE
DigitalPoint	JRP01CNTNK4	DROP1/DROP51	CONTACT TANK #2 AVAILABLE
DigitalPoint	JRP01CNTNK5	DROP1/DROP51	CONTACT TANK #2 LOCKED OUT
DigitalPoint	JRP01CNTNK6	DROP1/DROP51	CONTACT TANK #2 IN SERVICE
DigitalPoint	JRP01CNTNK7	DROP1/DROP51	CONTACT TANK #3 AVAILABLE
DigitalPoint	JRP01CNTNK8	DROP1/DROP51	CONTACT TANK #3 LOCKED OUT
DigitalPoint	JRP01CNTNK9	DROP1/DROP51	CONTACT TANK #3 IN SERVICE
DigitalPoint	JRP01CPCX1210	DROP1/DROP51	SCREEN PNL 1 CTRL PWR ENABLED
DigitalPoint	JRP01CPCX1220	DROP1/DROP51	SCREEN PNL 2 CTRL PWR ENABLED
DigitalPoint	JRP01CPCX1230	DROP1/DROP51	SCREEN PNL 3 CTRL PWR ENABLED
DigitalPoint	JRP01CPSX1210	DROP1/DROP51	SCREEN PNL 1 PWR STATUS
DigitalPoint	JRP01CPSX1220	DROP1/DROP51	SCREEN PNL 2 PWR STATUS
DigitalPoint	JRP01CPSX1230	DROP1/DROP51	SCREEN PNL 3 PWR STATUS
DigitalPoint	JRP01CRBNPMP1	DROP1/DROP51	CARBON FEED PUMP #1 AVAILABLE
DigitalPoint	JRP01CRBNPMP10	DROP1/DROP51	CARBON FEED PUMP #4 AVAILABLE
DigitalPoint	JRP01CRBNPMP11	DROP1/DROP51	CARBON FEED PUMP #4 LOCKED OUT
DigitalPoint	JRP01CRBNPMP12	DROP1/DROP51	CARBON FEED PUMP #4 IN SERVICE
DigitalPoint	JRP01CRBNPMP13	DROP1/DROP51	CARBON FEED PUMP #5 AVAILABLE
DigitalPoint	JRP01CRBNPMP14	DROP1/DROP51	CARBON FEED PUMP #5
DigitalPoint	JRP01CRBNPMP15	DROP1/DROP51	CARBON FEED PUMP #5 IN SERVICE
DigitalPoint	JRP01CRBNPMP16	DROP1/DROP51	CARBON FEED PUMP #6 AVAILABLE
DigitalPoint	JRP01CRBNPMP17	DROP1/DROP51	CARBON FEED PUMP #6 LOCKED OUT
DigitalPoint	JRP01CRBNPMP18	DROP1/DROP51	CARBON FEED PUMP # 6 IN SERVIC
DigitalPoint	JRP01CRBNPMP19	DROP1/DROP51	CARBON FEED PUMP #7 AVAILABLE
DigitalPoint	JRP01CRBNPMP2	DROP1/DROP51	CARBON FEED PUMP #1 LOCKED OUT
DigitalPoint	JRP01CRBNPMP20	DROP1/DROP51	CARBON FEED PUMP #7 LOCKED OUT
DigitalPoint	JRP01CRBNPMP21	DROP1/DROP51	CARBON FEED PUMP #7 IN SERVICE
DigitalPoint	JRP01CRBNPMP22	DROP1/DROP51	CARBON FEED PUMP #8 AVAILABLE

DigitalPoint	JRP01CRBNPMP23	DROP1/DROP51	CARBON FEED PUMP #8 LOCKED OUT
DigitalPoint	JRP01CRBNPMP24	DROP1/DROP51	CARBON FEED PUMP #8 IN SERVICE
DigitalPoint	JRP01CRBNPMP25	DROP1/DROP51	CARBON FEED PUMP #9 AVAILABLE
DigitalPoint	JRP01CRBNPMP26	DROP1/DROP51	CARBON FEED PUMP #9 LOCKED OUT
DigitalPoint	JRP01CRBNPMP27	DROP1/DROP51	CARBON FEED PUMP #9 IN SERVICE
DigitalPoint	JRP01CRBNPMP28	DROP1/DROP51	CARBON FEED PUMP #10 AVAILABLE
DigitalPoint	JRP01CRBNPMP29	DROP1/DROP51	CARBON FEED PUMP #10 LOCKD OUT
DigitalPoint	JRP01CRBNPMP3	DROP1/DROP51	CARBON FEED PUMP #1 IN SERVICE
DigitalPoint	JRP01CRBNPMP30	DROP1/DROP51	CARBON FEED PUMP #10 IN SERVIC
DigitalPoint	JRP01CRBNPMP31	DROP1/DROP51	CARBON FEED PUMP #11 AVAILABLE
DigitalPoint	JRP01CRBNPMP32	DROP1/DROP51	CARBON FEED PUMP#11 LOCKED OUT
DigitalPoint	JRP01CRBNPMP33	DROP1/DROP51	CARBON FEED PUMP #11 IN SERVIC
DigitalPoint	JRP01CRBNPMP4	DROP1/DROP51	CARBON FEED PUMP #2 AVAILABLE
DigitalPoint	JRP01CRBNPMP5	DROP1/DROP51	CARBON FEED PUMP #2 LOCKED OUT
DigitalPoint	JRP01CRBNPMP6	DROP1/DROP51	CARBON FEED PUMP #2 IN SERVICE
DigitalPoint	JRP01CRBNPMP7	DROP1/DROP51	CARBON FEED PUMP #3 AVAILABLE
DigitalPoint	JRP01CRBNPMP8	DROP1/DROP51	CARBON FEED PUMP #3 LOCKED OUT
DigitalPoint	JRP01CRBNPMP9	DROP1/DROP51	CARBON FEED PUMP #3 IN SERVICE
DigitalPoint	JRP01CRBNTNK1	DROP1/DROP51	CARBON FEED TANK #1 AVAILABLE
DigitalPoint	JRP01CRBNTNK2	DROP1/DROP51	CARBON TANK #1 LOCKED OUT
DigitalPoint	JRP01CRBNTNK3	DROP1/DROP51	CARBON FEED TANK #1 IN SERVICE
DigitalPoint	JRP01CRBNTNK4	DROP1/DROP51	CARBON FEED TANK #2 AVAILABLE
DigitalPoint	JRP01CRBNTNK5	DROP1/DROP51	CARBON FEED TANK #2 LOCKED OUT
DigitalPoint	JRP01CRBNTNK6	DROP1/DROP51	CARBON FEED TANK #2 IN SERVICE
DigitalPoint	JRP01CTHYPOPMP1	DROP1/DROP51	HYPO PUMP #1 AVAILABLE
DigitalPoint	JRP01CTHYPOPMP10	DROP1/DROP51	HYPO PUMP #4 AVAILABLE
DigitalPoint	JRP01CTHYPOPMP11	DROP1/DROP51	HYPO PUMP #4 LOCKED OUT
DigitalPoint	JRP01CTHYPOPMP12	DROP1/DROP51	HYPO PUMP #4 IN SERVICE
DigitalPoint	JRP01CTHYPOPMP13	DROP1/DROP51	HYPO PUMP #5 AVAILABLE
DigitalPoint	JRP01CTHYPOPMP14	DROP1/DROP51	HYPO PUMP #5 LOCKED OUT
DigitalPoint	JRP01CTHYPOPMP15	DROP1/DROP51	HYPO PUMP #5 IN SERVICE
DigitalPoint	JRP01CTHYPOPMP16	DROP1/DROP51	HYPO PUMP #6 AVAILABLE
DigitalPoint	JRP01CTHYPOPMP17	DROP1/DROP51	HYPO PUMP #6 LOCKED OUT
DigitalPoint	JRP01CTHYPOPMP18	DROP1/DROP51	HYPO PUMP #6 IN SERVICE
DigitalPoint	JRP01CTHYPOPMP2	DROP1/DROP51	HYPO PUMP #1 LOCKED OUT
DigitalPoint	JRP01CTHYPOPMP3	DROP1/DROP51	HYPO PUMP #1 IN SERVICE
DigitalPoint	JRP01CTHYPOPMP4	DROP1/DROP51	HYPO PUMP #2 AVAILABLE
DigitalPoint	JRP01CTHYPOPMP5	DROP1/DROP51	HYPO PUMP #2 LOCKED OUT
DigitalPoint	JRP01CTHYPOPMP6	DROP1/DROP51	HYPO PUMP #2 IN SERVICE
DigitalPoint	JRP01CTHYPOPMP7	DROP1/DROP51	HYPO PUMP #3 AVAILABLE
DigitalPoint	JRP01CTHYPOPMP8	DROP1/DROP51	HYPO PUMP #3 LOCKED OUT
DigitalPoint	JRP01CTHYPOPMP9	DROP1/DROP51	HYPO PUMP #3 IN SERVICE
DigitalPoint	JRP01CYCS1210	DROP1/DROP51	SCREEN PNL 1 CYCLE START
DigitalPoint	JRP01CYCS1220	DROP1/DROP51	SCREEN PNL 2 CYCLE START
DigitalPoint	JRP01CYCS1230	DROP1/DROP51	SCREEN PNL 3 CYCLE START
DigitalPoint	JRP01DCHG	DROP1/DROP51	DAY CHANGE PULSE
DigitalPoint	JRP01DCSX1110-00	DROP1/DROP51	WASH PRESS 1 DCS MODE

DigitalPoint	JRP01DCSX1120-00	DROP1/DROP51	WASH PRESS 2 DCS MODE
DigitalPoint	JRP01DCSX1130-00	DROP1/DROP51	WASH PRESS 3 DCS MODE
DigitalPoint	JRP01DCSX1210-00	DROP1/DROP51	SCREEN 1 DCS MODE
DigitalPoint	JRP01DCSX1220-00	DROP1/DROP51	SCREEN 2 DCS MODE
DigitalPoint	JRP01DCSX1230-00	DROP1/DROP51	SCREEN 3 DCS MODE
DigitalPoint	JRP01DEVN1001-00	DROP1/DROP51	BYPASS VLV DEVN ALM
DigitalPoint	JRP01DIGSTR1	DROP1/DROP51	DIGESTER #1 AVAILABLE
DigitalPoint	JRP01DIGSTR2	DROP1/DROP51	DIGESTER #1 LOCKED OUT
DigitalPoint	JRP01DIGSTR3	DROP1/DROP51	DIGESTER #1 IN SERVICE
DigitalPoint	JRP01DIGSTR4	DROP1/DROP51	DIGESTER #2 AVAILABLE
DigitalPoint	JRP01DIGSTR5	DROP1/DROP51	DIGESTER #2 LOCKED OUT
DigitalPoint	JRP01DIGSTR6	DROP1/DROP51	DIGESTER #2 IN SERVICE
DigitalPoint	JRP01DLHX1210-00	DROP1/DROP51	SCRN CHNL 1 DIFF LVL HI
DigitalPoint	JRP01DLHX1220-00	DROP1/DROP51	SCRN CHNL 2 DIFF LVL HI
DigitalPoint	JRP01DLHX1230-00	DROP1/DROP51	SCRN CHNL 3 DIFF LVL HI
DigitalPoint	JRP01DMRJ100-00	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01DMRJ101-00	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01DMRJ102-00	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01DMRJ2310-00	DROP1/DROP51	SCRN 1 INF GATE MAN REJECT
DigitalPoint	JRP01DMRJ2320-00	DROP1/DROP51	SCRN 2 INF GATE MAN REJECT
DigitalPoint	JRP01DMRJ2330-00	DROP1/DROP51	SCRN 3 INF GATE MAN REJECT
DigitalPoint	JRP01DMRJ2410-00	DROP1/DROP51	SCRN 1 EFF GATE MAN REJECT
DigitalPoint	JRP01DMRJ2420-00	DROP1/DROP51	SCRN 2 EFF GATE MAN REJECT
DigitalPoint	JRP01DMRJ2430-00	DROP1/DROP51	SCRN 3 EFF GATE MAN REJECT
DigitalPoint	JRP01DST-A	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01DST-B	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01FAHX0000-00	DROP1/DROP51	HIGH FLOW TO PAGER
DigitalPoint	JRP01FALSE	DROP1/DROP51	DROP 1 ALWAYS FALSE
DigitalPoint	JRP01FCLS100-00	DROP1/DROP51	SCRUBR 1 INTAKE VLV FAIL CLOSE
DigitalPoint	JRP01FCLS101-00	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01FCLS102-00	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01FCLS2310-00	DROP1/DROP51	SCRN 1 INF GATE FAIL TO CLOSE
DigitalPoint	JRP01FCLS2320-00	DROP1/DROP51	SCRN 2 INF GATE FAIL TO CLOSE
DigitalPoint	JRP01FCLS2330-00	DROP1/DROP51	SCRN 3 INF GATE FAIL TO CLOSE
DigitalPoint	JRP01FCLS2410-00	DROP1/DROP51	SCRN 1 EFF GATE FAIL TO CLOSE
DigitalPoint	JRP01FCLS2420-00	DROP1/DROP51	SCRN 2 EFF GATE FAIL TO CLOSE
DigitalPoint	JRP01FCLS2430-00	DROP1/DROP51	SCRN 3 EFF GATE FAIL TO CLOSE
DigitalPoint	JRP01FERICTNK1	DROP1/DROP51	FERRIC TANK #1 AVAILABLE
DigitalPoint	JRP01FERICTNK10	DROP1/DROP51	FERRIC TANK #4 AVAILABLE
DigitalPoint	JRP01FERICTNK11	DROP1/DROP51	FERRIC TANK #4 LOCKED OUT
DigitalPoint	JRP01FERICTNK12	DROP1/DROP51	FERRIC TANK #4 IN SERVICE
DigitalPoint	JRP01FERICTNK2	DROP1/DROP51	FERRIC TANK #1 LOCKED OUT
DigitalPoint	JRP01FERICTNK3	DROP1/DROP51	FERRIC TANK #1 IN SERVICE
DigitalPoint	JRP01FERICTNK4	DROP1/DROP51	FERRIC TANK #1 AVAILABLE
DigitalPoint	JRP01FERICTNK5	DROP1/DROP51	FERRIC TANK #2 LOCKED OUT
DigitalPoint	JRP01FERICTNK6	DROP1/DROP51	FERRIC TANK #2 IN SERVICE
DigitalPoint	JRP01FERICTNK7	DROP1/DROP51	FERRIC TANK #3 AVAILABLE

DigitalPoint	JRP01FERICTNK8	DROP1/DROP51	FERRIC TANK #3 LOCKED OUT
DigitalPoint	JRP01FERICTNK9	DROP1/DROP51	FERRIC TANK #3 IN SERVICE
DigitalPoint	JRP01FGAS2310	DROP1/DROP51	SCRN 1 INFLUENT GATE IN AUTO
DigitalPoint	JRP01FGAS2320	DROP1/DROP51	SCRN 2 INFLUENT GATE IN AUTO
DigitalPoint	JRP01FGAS2330	DROP1/DROP51	SCRN 3 INFLUENT GATE IN AUTO
DigitalPoint	JRP01FGAS2410	DROP1/DROP51	SCRN 1 EFFLUENT GATE IN AUTO
DigitalPoint	JRP01FGAS2420	DROP1/DROP51	SCRN 2 EFFLUENT GATE IN AUTO
DigitalPoint	JRP01FGAS2430	DROP1/DROP51	SCRN 3 EFFLUENT GATE IN AUTO
DigitalPoint	JRP01FGCC2310	DROP1/DROP51	SCRN 1 INF GATE CLOSE CMD
DigitalPoint	JRP01FGCC2320	DROP1/DROP51	SCRN 2 INF GATE CLOSE CMD
DigitalPoint	JRP01FGCC2330	DROP1/DROP51	SCRN 3 INF GATE CLOSE CMD
DigitalPoint	JRP01FGCC2410	DROP1/DROP51	SCRN 1 EFF GATE CLOSE CMD
DigitalPoint	JRP01FGCC2420	DROP1/DROP51	SCRN 2 EFF GATE CLOSE CMD
DigitalPoint	JRP01FGCC2430	DROP1/DROP51	SCRN 3 EFF GATE CLOSE CMD
DigitalPoint	JRP01FGCS2310	DROP1/DROP51	SCRN 1 INF GATE CLSD STATUS
DigitalPoint	JRP01FGCS2320	DROP1/DROP51	SCRN 2 INF GATE CLSD STATUS
DigitalPoint	JRP01FGCS2330	DROP1/DROP51	SCRN 3 INF GATE CLSD STATUS
DigitalPoint	JRP01FGCS2410	DROP1/DROP51	SCRN 1 EFF GATE CLSD STATUS
DigitalPoint	JRP01FGCS2420	DROP1/DROP51	SCRN 2 EFF GATE CLSD STATUS
DigitalPoint	JRP01FGCS2430	DROP1/DROP51	SCRN 3 EFF GATE CLSD STATUS
DigitalPoint	JRP01FGOC2310	DROP1/DROP51	SCRN 1 INF GATE OPEN CMD
DigitalPoint	JRP01FGOC2320	DROP1/DROP51	SCRN 2 INF GATE OPEN CMD
DigitalPoint	JRP01FGOC2330	DROP1/DROP51	SCRN 3 INF GATE OPEN CMD
DigitalPoint	JRP01FGOC2410	DROP1/DROP51	SCRN 1 EFF GATE OPEN CMD
DigitalPoint	JRP01FGOC2420	DROP1/DROP51	SCRN 2 EFF GATE OPEN CMD
DigitalPoint	JRP01FGOC2430	DROP1/DROP51	SCRN 3 EFF GATE OPEN CMD
DigitalPoint	JRP01FGOS2310	DROP1/DROP51	SCRN 1 INF GATE OPEN STATUS
DigitalPoint	JRP01FGOS2320	DROP1/DROP51	SCRN 2 INF GATE OPEN STATUS
DigitalPoint	JRP01FGOS2330	DROP1/DROP51	SCRN 3 INF GATE OPEN STATUS
DigitalPoint	JRP01FGOS2410	DROP1/DROP51	SCRN 1 EFF GATE OPEN STATUS
DigitalPoint	JRP01FGOS2420	DROP1/DROP51	SCRN 2 EFF GATE OPEN STATUS
DigitalPoint	JRP01FGOS2430	DROP1/DROP51	SCRN 3 EFF GATE OPEN STATUS
DigitalPoint	JRP01FOPN100-00	DROP1/DROP51	SCRUBR 1 INTAKE VLV FAIL OPEN
DigitalPoint	JRP01FOPN101-00	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01FOPN102-00	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01FOPN2310-00	DROP1/DROP51	SCRN 1 INF GATE FAIL TO OPEN
DigitalPoint	JRP01FOPN2320-00	DROP1/DROP51	SCRN 2 INF GATE FAIL TO OPEN
DigitalPoint	JRP01FOPN2330-00	DROP1/DROP51	SCRN 3 INF GATE FAIL TO OPEN
DigitalPoint	JRP01FOPN2410-00	DROP1/DROP51	SCRN 1 EFF GATE FAIL TO OPEN
DigitalPoint	JRP01FOPN2420-00	DROP1/DROP51	SCRN 2 EFF GATE FAIL TO OPEN
DigitalPoint	JRP01FOPN2430-00	DROP1/DROP51	SCRN 3 EFF GATE FAIL TO OPEN
DigitalPoint	JRP01FSTP1110-00	DROP1/DROP51	WASH PRESS 1 FAIL TO STOP
DigitalPoint	JRP01FSTP1120-00	DROP1/DROP51	WASH PRESS 2 FAIL TO STOP
DigitalPoint	JRP01FSTP1130-00	DROP1/DROP51	WASH PRESS 3 FAIL TO STOP
DigitalPoint	JRP01FSTP1210-00	DROP1/DROP51	SCREEN 1 FAIL TO STOP
DigitalPoint	JRP01FSTP1220-00	DROP1/DROP51	SCREEN 2 FAIL TO STOP
DigitalPoint	JRP01FSTP1230-00	DROP1/DROP51	SCREEN 3 FAIL TO STOP

DigitalPoint	JRP01FSTR1110-00	DROP1/DROP51	WASH PRESS 1 FAIL TO START
DigitalPoint	JRP01FSTR1120-00	DROP1/DROP51	WASH PRESS 2 FAIL TO START
DigitalPoint	JRP01FSTR1130-00	DROP1/DROP51	WASH PRESS 3 FAIL TO START
DigitalPoint	JRP01FSTR1210-00	DROP1/DROP51	SCREEN 1 FAIL TO START
DigitalPoint	JRP01FSTR1220-00	DROP1/DROP51	SCREEN 2 FAIL TO START
DigitalPoint	JRP01FSTR1230-00	DROP1/DROP51	SCREEN 3 FAIL TO START
DigitalPoint	JRP01FVOS1001-00	DROP1/DROP51	BYPASS VALVE OPN
DigitalPoint	JRP01GBTSTAT1	DROP1/DROP51	GBT #1 AVAILABLE
DigitalPoint	JRP01GBTSTAT2	DROP1/DROP51	GBT #1 LOCKED OUT
DigitalPoint	JRP01GBTSTAT3	DROP1/DROP51	GBT #1 IN SERVICE
DigitalPoint	JRP01GBTSTAT4	DROP1/DROP51	GBT #2 AVAILABLE
DigitalPoint	JRP01GBTSTAT5	DROP1/DROP51	GBT #2 LOCKED OUT
DigitalPoint	JRP01GBTSTAT6	DROP1/DROP51	GBT #2 IN SERVICE
DigitalPoint	JRP01GRITCLSTAT1	DROP1/DROP51	GRIT CLASSIFIER #1 AVAIL
DigitalPoint	JRP01GRITCLSTAT2	DROP1/DROP51	GRIT CLASSIFIER #1 IN SERVICE
DigitalPoint	JRP01GRITCLSTAT3	DROP1/DROP51	GRIT CLASSIFIER #1 LOKD OUT
DigitalPoint	JRP01GRITCLSTAT4	DROP1/DROP51	GRIT CLASSIFIER #2 AVAIL
DigitalPoint	JRP01GRITCLSTAT5	DROP1/DROP51	GRIT CLASSIFIER #2 LOCKED OUT
DigitalPoint	JRP01GRITCLSTAT6	DROP1/DROP51	GRIT CLASSIFIER #2 IN SERVICE
DigitalPoint	JRP01GRITCLSTAT7	DROP1/DROP51	GRIT CLASSIFIER #3 AVAIL
DigitalPoint	JRP01GRITCLSTAT8	DROP1/DROP51	GRIT CLASSIFIER #3 LOCKED OUT
DigitalPoint	JRP01GRITCLSTAT9	DROP1/DROP51	GRIT CLASSIFIER #3 IN SERVICE
DigitalPoint	JRP01GRTHCK1	DROP1/DROP51	GRAVITY THICKENER #1 AVAILABLE
DigitalPoint	JRP01GRTHCK2	DROP1/DROP51	GRAVITY THICKENER #1 LOCKED
DigitalPoint	JRP01GRTHCK3	DROP1/DROP51	GRAVITY THICKENER #1 IN SERVIC
DigitalPoint	JRP01GRTHCK4	DROP1/DROP51	GRAVITY THICKENER #2 AVAILABLE
DigitalPoint	JRP01GRTHCK5	DROP1/DROP51	GRAVITY THICKENER #2 LOCKD OUT
DigitalPoint	JRP01GRTHCK6	DROP1/DROP51	GRAVITY THICKENER #2 IN SERVIC
DigitalPoint	JRP01GRTNKSTAT1	DROP1/DROP51	GRIT TANK #1 AVAILABLE
DigitalPoint	JRP01GRTNKSTAT10	DROP1/DROP51	GRIT TANK #4 AVAILABLE
DigitalPoint	JRP01GRTNKSTAT11	DROP1/DROP51	GRIT TANK #4 IN SERVICE
DigitalPoint	JRP01GRTNKSTAT12	DROP1/DROP51	GRIT TANK #4 LOCKED OUT
DigitalPoint	JRP01GRTNKSTAT2	DROP1/DROP51	GRIT TANK #1 IN SERVICE
DigitalPoint	JRP01GRTNKSTAT3	DROP1/DROP51	GRIT TANK #1 LOCKED OUT
DigitalPoint	JRP01GRTNKSTAT4	DROP1/DROP51	GRIT TANK #2 AVAILABLE
DigitalPoint	JRP01GRTNKSTAT5	DROP1/DROP51	GRIT TANK #2 IN SERVICE
DigitalPoint	JRP01GRTNKSTAT6	DROP1/DROP51	GRIT TANK #2 LOCKED OUT
DigitalPoint	JRP01GRTNKSTAT7	DROP1/DROP51	GRIT TANK #3 AVAILABLE
DigitalPoint	JRP01GRTNKSTAT8	DROP1/DROP51	GRIT TANK #3 IN SERVICE
DigitalPoint	JRP01GRTNKSTAT9	DROP1/DROP51	GRIT TANK #3 LOCKED OUT
DigitalPoint	JRP01HCHG	DROP1/DROP51	HOUR CHANGE PULSE
DigitalPoint	JRP01HSAS1000	DROP1/DROP51	SCUBR 1 INTAKE VLV AUTO STATUS
DigitalPoint	JRP01HSAS1001	DROP1/DROP51	BYPASS VLV AUTO STATUS
DigitalPoint	JRP01HSAS1010	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01HSAS1020	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01HSAS1110	DROP1/DROP51	WASH PRESS 1 IN AUTO
DigitalPoint	JRP01HSAS1120	DROP1/DROP51	WASH PRESS 2 IN AUTO

DigitalPoint	JRP01HSAS1130	DROP1/DROP51	WASH PRESS 3 IN AUTO
DigitalPoint	JRP01HSAS1210	DROP1/DROP51	SCREEN 1 IN AUTO
DigitalPoint	JRP01HSAS1220	DROP1/DROP51	SCREEN 2 IN AUTO
DigitalPoint	JRP01HSAS1230	DROP1/DROP51	SCREEN 3 IN AUTO
DigitalPoint	JRP01HWHILVL1	DROP1/DROP51	HEADWORKS HI LEVEL PAGE OUT
DigitalPoint	JRP01HYPOTNK1	DROP1/DROP51	HYPO TANK #1 AVAILABLE
DigitalPoint	JRP01HYPOTNK10	DROP1/DROP51	HYPO TANK #4 AVAILABLE
DigitalPoint	JRP01HYPOTNK11	DROP1/DROP51	HYPO TANK #4 LOCKED OUT
DigitalPoint	JRP01HYPOTNK12	DROP1/DROP51	HYPO TANK #4 IN SERVICE
DigitalPoint	JRP01HYPOTNK2	DROP1/DROP51	HYPO TANK #1 LOCKED OUT
DigitalPoint	JRP01HYPOTNK3	DROP1/DROP51	HYPO TANK #1 IN SERVICE
DigitalPoint	JRP01HYPOTNK4	DROP1/DROP51	HYPO TANK #2 AVAILABLE
DigitalPoint	JRP01HYPOTNK5	DROP1/DROP51	HYPO TANK #2 LOCKED OUT
DigitalPoint	JRP01HYPOTNK6	DROP1/DROP51	HYPO TANK #2 IN SERVICE
DigitalPoint	JRP01HYPOTNK7	DROP1/DROP51	HYPO TANK #3 AVAILABLE
DigitalPoint	JRP01HYPOTNK8	DROP1/DROP51	HYPO TANK #3 LOCKED OUT
DigitalPoint	JRP01HYPOTNK9	DROP1/DROP51	HYPO TANK #3 IN SERVICE
DigitalPoint	JRP01IAHX1110	DROP1/DROP51	WASH PRESS 1 HIGH CURRENT
DigitalPoint	JRP01IAHX1120	DROP1/DROP51	WASH PRESS 2 HIGH CURRENT
DigitalPoint	JRP01IAHX1130	DROP1/DROP51	WASH PRESS 3 HIGH CURRENT
DigitalPoint	JRP01IFASCPMP1	DROP1/DROP51	IFAS CAUSTIC PUMP#1 AVAILABLE
DigitalPoint	JRP01IFASCPMP2	DROP1/DROP51	IFAS CAUSTIC PUMP #1 LOCKD OUT
DigitalPoint	JRP01IFASCPMP3	DROP1/DROP51	IFAS CAUSTIC PMP#1 INSERVICE
DigitalPoint	JRP01IFASCPMP4	DROP1/DROP51	IFAS CUSTIC PMP#2 AVAILABLE
DigitalPoint	JRP01IFASCPMP5	DROP1/DROP51	IFAS CAUSTIC PUMP #2 LOCKD OUT
DigitalPoint	JRP01IFASCPMP6	DROP1/DROP51	IFAS CAUSTIC PUMP#2 IN SERVICE
DigitalPoint	JRP01IFASCTNK1	DROP1/DROP51	IFAS CAUSTIC TANK #1 AVAILABLE
DigitalPoint	JRP01IFASCTNK2	DROP1/DROP51	IFAS CAUSTIC TANK #1 LOCKD OUT
DigitalPoint	JRP01IFASCTNK3	DROP1/DROP51	IFAS CAUSTIC TANK #1 INSERVICE
DigitalPoint	JRP01IFASCTNK4	DROP1/DROP51	IFAS CAUSTIC TANK #2 AVAILABLE
DigitalPoint	JRP01IFASCTNK5	DROP1/DROP51	IFAS CAUSTIC TANK #2 LOCKD OUT
DigitalPoint	JRP01IFASCTNK6	DROP1/DROP51	IFAS CAUSTIC TANK #2 INSERVICE
DigitalPoint	JRP01IFASSTAT1	DROP1/DROP51	IFAS TANK #1 AVAILABLE
DigitalPoint	JRP01IFASSTAT10	DROP1/DROP51	IFAS TANK #4 AVAILABLE
DigitalPoint	JRP01IFASSTAT11	DROP1/DROP51	IFAS TANK #4 LOCKED OUT
DigitalPoint	JRP01IFASSTAT12	DROP1/DROP51	IFAS TANK #4 IN SERVICE
DigitalPoint	JRP01IFASSTAT13	DROP1/DROP51	IFAS TANK #5 AVAILABLE
DigitalPoint	JRP01IFASSTAT14	DROP1/DROP51	IFAS TANK #5 LOCKED OUT
DigitalPoint	JRP01IFASSTAT15	DROP1/DROP51	IFAS TANK #5 IN SERVICE
DigitalPoint	JRP01IFASSTAT16	DROP1/DROP51	IFAS TANK #6 AVAILABLE
DigitalPoint	JRP01IFASSTAT17	DROP1/DROP51	IFAS TANK #6 LOCKED OUT
DigitalPoint	JRP01IFASSTAT18	DROP1/DROP51	IFAS TANK #6 IN SERVICE
DigitalPoint	JRP01IFASSTAT19	DROP1/DROP51	IFAS TANK # 7 AVAILABLE
DigitalPoint	JRP01IFASSTAT2	DROP1/DROP51	IFAS TANK #1 LOCKED OUT
DigitalPoint	JRP01IFASSTAT20	DROP1/DROP51	IFAS TANK #7 LOCKED OUT
DigitalPoint	JRP01IFASSTAT21	DROP1/DROP51	IFAS TANK #7 IN SERVICE
DigitalPoint	JRP01IFASSTAT22	DROP1/DROP51	IFAS TANK # 8 AVAILABLE

DigitalPoint	JRP01IFASSTAT23	DROP1/DROP51	IFAS TANK #8 LOCKED OUT
DigitalPoint	JRP01IFASSTAT24	DROP1/DROP51	IFAS TANK #8 IN SERVICE
DigitalPoint	JRP01IFASSTAT25	DROP1/DROP51	IFAS TANK #9 AVAILABLE
DigitalPoint	JRP01IFASSTAT26	DROP1/DROP51	IFAS TANK #9 LOCKED OUT
DigitalPoint	JRP01IFASSTAT27	DROP1/DROP51	IFAS TANK #9 IN SERVICE
DigitalPoint	JRP01IFASSTAT3	DROP1/DROP51	IFAS TANK #1 IN SERVICE
DigitalPoint	JRP01IFASSTAT4	DROP1/DROP51	IFAS TANK #2 AVAILABLE
DigitalPoint	JRP01IFASSTAT5	DROP1/DROP51	IFAS TANK #2 LOCKED OUT
DigitalPoint	JRP01IFASSTAT6	DROP1/DROP51	IFAS TANK #2 IN SERVICE
DigitalPoint	JRP01IFASSTAT7	DROP1/DROP51	IFAS TANK #3 AVAILABLE
DigitalPoint	JRP01IFASSTAT8	DROP1/DROP51	IFAS TANK #3 LOCKED OUT
DigitalPoint	JRP01IFASSTAT9	DROP1/DROP51	IFAS TANK #3 IN SERVICE
DigitalPoint	JRP01M30CHG	DROP1/DROP51	30 minute change pulse VEPCO
DigitalPoint	JRP01MCHG	DROP1/DROP51	MINUTE CHANGE PULSE
DigitalPoint	JRP01MOCHG	DROP1/DROP51	MONTH CHANGE PULSE
DigitalPoint	JRP01NAHH1210	DROP1/DROP51	SCREEN 1 OVERTORQUE
DigitalPoint	JRP01NAHH1220	DROP1/DROP51	SCREEN 2 OVERTORQUE
DigitalPoint	JRP01NAHH1230	DROP1/DROP51	SCREEN 3 OVERTORQUE
DigitalPoint	JRP01NPWPMP1	DROP1/DROP51	NPW PUMP #1 AVAILABLE
DigitalPoint	JRP01NPWPMP10	DROP1/DROP51	NPW PUMP #4 AVAILABLE
DigitalPoint	JRP01NPWPMP11	DROP1/DROP51	NPW PUMP #4 LOCKED OUT
DigitalPoint	JRP01NPWPMP12	DROP1/DROP51	NPW PUMP #4 IN SERVICE
DigitalPoint	JRP01NPWPMP13	DROP1/DROP51	NPW PUMP #5 AVAILABLE
DigitalPoint	JRP01NPWPMP14	DROP1/DROP51	NPW PUMP #5 LOCKED OUT
DigitalPoint	JRP01NPWPMP15	DROP1/DROP51	NPW PUMP #5 IN SERVICE
DigitalPoint	JRP01NPWPMP2	DROP1/DROP51	NPW PUMP #1 LOCKED OUT
DigitalPoint	JRP01NPWPMP3	DROP1/DROP51	NPW PUMP #1 IN SERVICE
DigitalPoint	JRP01NPWPMP4	DROP1/DROP51	NPW PUMP #2 AVAILABLE
DigitalPoint	JRP01NPWPMP5	DROP1/DROP51	NPW PUMP #2 LOCKED OUT
DigitalPoint	JRP01NPWPMP6	DROP1/DROP51	NPW PUMP #2 IN SERVICE
DigitalPoint	JRP01NPWPMP7	DROP1/DROP51	NPW PUMP #3 AVAILABLE
DigitalPoint	JRP01NPWPMP8	DROP1/DROP51	NPW PUMP #3 LOCKED OUT
DigitalPoint	JRP01NPWPMP9	DROP1/DROP51	NPW PUMP #3 IN SERVICE
DigitalPoint	JRP01OCS1PMP1	DROP1/DROP51	OCS PUMP #1 AVAILABLE
DigitalPoint	JRP01OCS1PMP2	DROP1/DROP51	OCS PUMP #1 LOCKED OUT
DigitalPoint	JRP01OCS1PMP3	DROP1/DROP51	OCS PUMP #1 IN SERVICE
DigitalPoint	JRP01OCS1PMP4	DROP1/DROP51	OCS PUMP #2 AVAILABLE
DigitalPoint	JRP01OCS1PMP5	DROP1/DROP51	OCS PUMP #2 LOCKED OUT
DigitalPoint	JRP01OCS1PMP6	DROP1/DROP51	OCS PUMP #2 IN SERVICE
DigitalPoint	JRP01OCS2PMP1	DROP1/DROP51	2ND STAGE OCS PMP1 AVAILABLE
DigitalPoint	JRP01OCS2PMP2	DROP1/DROP51	2ND STAGE OCS PMP1 LOCKED
DigitalPoint	JRP01OCS2PMP3	DROP1/DROP51	2ND STAGE OCS PMP1 INSERVICE
DigitalPoint	JRP01OCS2PMP4	DROP1/DROP51	2ND STAGE OCS PMP2 AVAILABLE
DigitalPoint	JRP01OCS2PMP5	DROP1/DROP51	2ND STAGE OCS PMP2 LOCKED OUT
DigitalPoint	JRP01OCS2PMP6	DROP1/DROP51	2ND STAGE OCS PMP2 INSERVICE
DigitalPoint	JRP01OCSPMP1	DROP1/DROP51	ST OCS PUMP #1 AVAILABLE
DigitalPoint	JRP01OCSPMP10	DROP1/DROP51	SH OCS PUMP #2 AVAILABLE

DigitalPoint	JRP01OCSPMP11	DROP1/DROP51	SH OCS PUMP #2 LOCKED OUT
DigitalPoint	JRP01OCSPMP12	DROP1/DROP51	SH OCS PUMP #2 IN SERVICE
DigitalPoint	JRP01OCSPMP2	DROP1/DROP51	ST OCS PUMP #1 LOCKED OUT
DigitalPoint	JRP01OCSPMP3	DROP1/DROP51	ST OCS PUMP #1 IN SERVICE
DigitalPoint	JRP01OCSPMP4	DROP1/DROP51	ST OCS PUMP #2 AVAILABLE
DigitalPoint	JRP01OCSPMP5	DROP1/DROP51	ST OCS PUMP #2 LOCKED OUT
DigitalPoint	JRP01OCSPMP6	DROP1/DROP51	ST OCS PUMP #2 IN SERVICE
DigitalPoint	JRP01OCSPMP7	DROP1/DROP51	SH OCS PUMP #1 AVAILABLE
DigitalPoint	JRP01OCSPMP8	DROP1/DROP51	SH OCS PUMP #1 LOCKED OUT
DigitalPoint	JRP01OCSPMP9	DROP1/DROP51	SH OCS PUMP #1 IN SERVICE
DigitalPoint	JRP01ONCALL2001	DROP1/DROP51	JOE B ON CALL STATUS
DigitalPoint	JRP01ONCALL2002	DROP1/DROP51	STAN ON CALL STATUS
DigitalPoint	JRP01ONCALL2003	DROP1/DROP51	BOB T ON CALL
DigitalPoint	JRP01ONCALL2004	DROP1/DROP51	HARRY ON CALL STATUS
DigitalPoint	JRP01ONST1110-00	DROP1/DROP51	WASH PRESS 1 ON STATUS
DigitalPoint	JRP01ONST1120-00	DROP1/DROP51	WASH PRESS 2 ON STATUS
DigitalPoint	JRP01ONST1130-00	DROP1/DROP51	WASH PRESS 3 ON STATUS
DigitalPoint	JRP01ONST1210	DROP1/DROP51	SCREEN 1 SCREEN STATUS
DigitalPoint	JRP01ONST1220	DROP1/DROP51	SCREEN 2 SCREEN STATUS
DigitalPoint	JRP01ONST1230	DROP1/DROP51	SCREEN 3 SCREEN STATUS
DigitalPoint	JRP01PREAERSTATUS1	DROP1/DROP51	PRE-AERATION TANK #1 AVAIL
DigitalPoint	JRP01PREAERSTATUS2	DROP1/DROP51	PRE-AERATION TANK #1 INSERV
DigitalPoint	JRP01PREAERSTATUS3	DROP1/DROP51	PRE-AERATION TANK #1 LOCKED
DigitalPoint	JRP01PREAERSTATUS4	DROP1/DROP51	PRE-AERATION TANK #2 AVAIL
DigitalPoint	JRP01PREAERSTATUS5	DROP1/DROP51	PRE-AERATION TANK #2 IN SERVIC
DigitalPoint	JRP01PREAERSTATUS6	DROP1/DROP51	PRE-AERATION TANK #2 LOKD OUT
DigitalPoint	JRP01PREAERSTATUS7	DROP1/DROP51	PRE-AERATION TANK #3 AVAIL
DigitalPoint	JRP01PREAERSTATUS8	DROP1/DROP51	PRE-AERATION TANK #3 INSERV
DigitalPoint	JRP01PREAERSTATUS9	DROP1/DROP51	PRE-AERATION TANK #3 LOCKD OUT
DigitalPoint	JRP01PRICLRSTAT1	DROP1/DROP51	PRIMARY CLARIFIER #1 AVAIL
DigitalPoint	JRP01PRICLRSTAT10	DROP1/DROP51	PRIMARY CLARIFER #4 AVAIL
DigitalPoint	JRP01PRICLRSTAT11	DROP1/DROP51	PRIMARY CLARIFIER #4 IN SERVIC
DigitalPoint	JRP01PRICLRSTAT12	DROP1/DROP51	PRIMARY CLARIFIER #4 LOCKD OUT
DigitalPoint	JRP01PRICLRSTAT2	DROP1/DROP51	PRIMARY CLARIFIER #1 IN SERV
DigitalPoint	JRP01PRICLRSTAT3	DROP1/DROP51	PRIMARY CLARIFIER #1 LOCKD OUT
DigitalPoint	JRP01PRICLRSTAT4	DROP1/DROP51	PRIMARY CLARIFIER #2 AVAIL
DigitalPoint	JRP01PRICLRSTAT5	DROP1/DROP51	PRIMARY CLARIFIER #2 IN SERVIC
DigitalPoint	JRP01PRICLRSTAT6	DROP1/DROP51	PRIMARY CLARIFIER #2 LOCKD OUT
DigitalPoint	JRP01PRICLRSTAT7	DROP1/DROP51	PRIMARY CLARIFIER #3 AVAIL
DigitalPoint	JRP01PRICLRSTAT8	DROP1/DROP51	PRIMARY CLARIFER #3 IN SERVICE
DigitalPoint	JRP01PRICLRSTAT9	DROP1/DROP51	PRIMARY CLARIFIER #3 LOCKD OUT
DigitalPoint	JRP01PXSF1210-00	DROP1/DROP51	SCREEN 1 HOME PROX SWITCH FAIL
DigitalPoint	JRP01PXSF1220-00	DROP1/DROP51	SCREEN 2 HOME PROX SWITCH FAIL
DigitalPoint	JRP01PXSF1230-00	DROP1/DROP51	SCREEN 3 HOME PROX SWITCH FAIL
DigitalPoint	JRP01RECIRCPMP1	DROP1/DROP51	RECIRC PUMP #1 AVAILABLE
DigitalPoint	JRP01RECIRCPMP2	DROP1/DROP51	RECIRC PUMP #1 LOCKED OUT
DigitalPoint	JRP01RECIRCPMP3	DROP1/DROP51	RECIRC PUMP #1 IN SERVICE

DigitalPoint	JRP01RECIRCPMP4	DROP1/DROP51	RECIRC PUMP #2 AVAILABLE
DigitalPoint	JRP01RECIRCPMP5	DROP1/DROP51	RECIRC PUMP #2 LOCKED OUT
DigitalPoint	JRP01RECIRCPMP6	DROP1/DROP51	RECIRC PUMP #2 IN SERVICE
DigitalPoint	JRP01RFCX1110	DROP1/DROP51	WASH PRESS 1 RUN FWD CMD
DigitalPoint	JRP01RFCX1120	DROP1/DROP51	WASH PRESS 2 RUN FWD CMD
DigitalPoint	JRP01RFCX1130	DROP1/DROP51	WASH PRESS 3 RUN FWD CMD
DigitalPoint	JRP01RFSX1110	DROP1/DROP51	WASH PRESS 1 RUN FWD
DigitalPoint	JRP01RFSX1120	DROP1/DROP51	WASH PRESS 2 RUN FWD
DigitalPoint	JRP01RFSX1130	DROP1/DROP51	WASH PRESS 3 RUN FWD
DigitalPoint	JRP01RNKM0100-00	DROP1/DROP51	SCREEN RANK ALIGN STAT
DigitalPoint	JRP01RRCX1110	DROP1/DROP51	WASH PRESS 1 RUN REV CMD
DigitalPoint	JRP01RRCX1120	DROP1/DROP51	WASH PRESS 2 RUN REV CMD
DigitalPoint	JRP01RRCX1130	DROP1/DROP51	WASH PRESS 3 RUN REV CMD
DigitalPoint	JRP01RRSX1110	DROP1/DROP51	WASH PRESS 1 RUN REV
DigitalPoint	JRP01RRSX1120	DROP1/DROP51	WASH PRESS 2 RUN REV
DigitalPoint	JRP01RRSX1130	DROP1/DROP51	WASH PRESS 3 RUN REV
DigitalPoint	JRP01RUNC1110-00	DROP1/DROP51	WASH PRESS 1 RUN CMD
DigitalPoint	JRP01RUNC1120-00	DROP1/DROP51	WASH PRESS 2 RUN CMD
DigitalPoint	JRP01RUNC1130-00	DROP1/DROP51	WASH PRESS 3 RUN CMD
DigitalPoint	JRP01RUNC1210	DROP1/DROP51	SCREEN 1 RUN CMD
DigitalPoint	JRP01RUNC1220	DROP1/DROP51	SCREEN 2 RUN CMD
DigitalPoint	JRP01RUNC1230	DROP1/DROP51	SCREEN 3 RUN CMD
DigitalPoint	JRP01SCHG	DROP1/DROP51	SECOND CHANGE PULSE
DigitalPoint	JRP01SCRBFAN1	DROP1/DROP51	SCRUBBER FAN #1 AVAILABLE
DigitalPoint	JRP01SCRBFAN2	DROP1/DROP51	SCRUBBER FAN #1 LOCKED OUT
DigitalPoint	JRP01SCRBFAN3	DROP1/DROP51	SCRUBBER FAN #1 IN SERVICE
DigitalPoint	JRP01SCRBFAN4	DROP1/DROP51	SCRUBBER FAN #2 AVAILABLE
DigitalPoint	JRP01SCRBFAN5	DROP1/DROP51	SCRUBBER FAN #2 LOCKED OUT
DigitalPoint	JRP01SCRBFAN6	DROP1/DROP51	SCRUBBER FAN #2 IN SERVICE
DigitalPoint	JRP01SCRNSTATUS1	DROP1/DROP51	STEP SCREEN #1 AVAILABLE
DigitalPoint	JRP01SCRNSTATUS2	DROP1/DROP51	STEP SCREEN #1 IN SERVICE
DigitalPoint	JRP01SCRNSTATUS3	DROP1/DROP51	SCREEN 1 STATUS LOCKED OUT
DigitalPoint	JRP01SCRNSTATUS4	DROP1/DROP51	STEP SCREEN #2 AVAILABLE
DigitalPoint	JRP01SCRNSTATUS5	DROP1/DROP51	STEP SCREEN #2 IN SERVICE
DigitalPoint	JRP01SCRNSTATUS6	DROP1/DROP51	STEP SCREEN #2 LOCKED OUT
DigitalPoint	JRP01SCRNSTATUS7	DROP1/DROP51	STEP SCREEN #3 AVAILABLE
DigitalPoint	JRP01SCRNSTATUS8	DROP1/DROP51	STEP SCREEN #2 IN SERVICE
DigitalPoint	JRP01SCRNSTATUS9	DROP1/DROP51	STEP SCREEN #3 LOCKED OUT
DigitalPoint	JRP01SCROPMD1	DROP1/DROP51	SCRUBBER OPERATING MODE
DigitalPoint	JRP01SECCLRSTAT1	DROP1/DROP51	SECONDARY CLARIFIER #1 AVAIL
DigitalPoint	JRP01SECCLRSTAT10	DROP1/DROP51	SECONDARY CLARIFIER #4 AVAIL
DigitalPoint	JRP01SECCLRSTAT11	DROP1/DROP51	SECONDARY CLARIFIER #4 IN SERV
DigitalPoint	JRP01SECCLRSTAT12	DROP1/DROP51	SECONDARY CLARIFIER #4 LOCKD
DigitalPoint	JRP01SECCLRSTAT13	DROP1/DROP51	SECONDARY CLARIFIER #5 AVAIL
DigitalPoint	JRP01SECCLRSTAT14	DROP1/DROP51	SECONDARY CLARIFIER #5 IN SERV
DigitalPoint	JRP01SECCLRSTAT15	DROP1/DROP51	SECONDARY CLARIFIER #5 LOCKD
DigitalPoint	JRP01SECCLRSTAT2	DROP1/DROP51	SECONDARY CLARIFIER #1 IN SERV

DigitalPoint	JRP01SECCLRSTAT3	DROP1/DROP51	SECONDARY CLARIFIER #1 LOCKD
DigitalPoint	JRP01SECCLRSTAT4	DROP1/DROP51	SECONDARY CLARIFIER #2 AVAIL
DigitalPoint	JRP01SECCLRSTAT5	DROP1/DROP51	SECONDARY CLARIFIER #2 IN SERV
DigitalPoint	JRP01SECCLRSTAT6	DROP1/DROP51	SECONDARY CLARIFIER #2 LOCKD
DigitalPoint	JRP01SECCLRSTAT7	DROP1/DROP51	SECONDARY CLARIFIER #3 AVAIL
DigitalPoint	JRP01SECCLRSTAT8	DROP1/DROP51	SECONDARY CLARIFIER #3 IN SERV
DigitalPoint	JRP01SECCLRSTAT9	DROP1/DROP51	SECONDARY CLARIFIER #3 LOCKD
DigitalPoint	JRP01STSCRUB1	DROP1/DROP51	ST SCRUBBER #1 STATUS
DigitalPoint	JRP01STSCRUB2	DROP1/DROP51	ST SCRUBBER #2 STATUS
DigitalPoint	JRP01STSCRUB3	DROP1/DROP51	ST SCRUBBER #3 STATUS
DigitalPoint	JRP01SVAS1110A	DROP1/DROP51	WASH PRESS 1 ZONE WASH IN AUTO
DigitalPoint	JRP01SVAS1110B	DROP1/DROP51	WASH PRESS 1 PAN WASH IN AUTO
DigitalPoint	JRP01SVAS1110C	DROP1/DROP51	WASH PRESS 1 SHFT WASH IN AUTO
DigitalPoint	JRP01SVAS1120A	DROP1/DROP51	WASH PRESS 2 ZONE WASH IN AUTO
DigitalPoint	JRP01SVAS1120B	DROP1/DROP51	WASH PRESS 2 PAN WASH IN AUTO
DigitalPoint	JRP01SVAS1120C	DROP1/DROP51	WASH PRESS 2 SHFT WASH IN AUTO
DigitalPoint	JRP01SVAS1130A	DROP1/DROP51	WASH PRESS 3 ZONE WASH IN AUTO
DigitalPoint	JRP01SVAS1130B	DROP1/DROP51	WASH PRESS 3 PAN WASH IN AUTO
DigitalPoint	JRP01SVAS1130C	DROP1/DROP51	WASH PRESS 3 SHFT WASH IN AUTO
DigitalPoint	JRP01SVOC0100	DROP1/DROP51	SCRUBR 1 INTAKE VLV OPEN CMD
DigitalPoint	JRP01SVOC0101	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01SVOC0102	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01SVOC1110A	DROP1/DROP51	WASH PRES 1 ZONE WASH CMD
DigitalPoint	JRP01SVOC1110B	DROP1/DROP51	WASH PRES 1 PAN WASH CMD
DigitalPoint	JRP01SVOC1110C	DROP1/DROP51	WASH PRES 1 SHAFT WASH CMD
DigitalPoint	JRP01SVOC1120A	DROP1/DROP51	WASH PRES 2 ZONE WASH CMD
DigitalPoint	JRP01SVOC1120B	DROP1/DROP51	WASH PRES 2 PAN WASH CMD
DigitalPoint	JRP01SVOC1120C	DROP1/DROP51	WASH PRES 2 SHAFT WASH CMD
DigitalPoint	JRP01SVOC1130A	DROP1/DROP51	WASH PRES 3 ZONE WASH CMD
DigitalPoint	JRP01SVOC1130B	DROP1/DROP51	WASH PRES 3 PAN WASH CMD
DigitalPoint	JRP01SVOC1130C	DROP1/DROP51	WASH PRES 3 SHAFT WASH CMD
DigitalPoint	JRP01SVOC5301	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01SYSR1210	DROP1/DROP51	SCREEN PNL 1 SYSTEM RESET
DigitalPoint	JRP01SYSR1220	DROP1/DROP51	SCREEN PNL 2 SYSTEM RESET
DigitalPoint	JRP01SYSR1230	DROP1/DROP51	SCREEN PNL 3 SYSTEM RESET
DigitalPoint	JRP01TEST1B	DROP1/DROP51	
DigitalPoint	JRP01TRIP100-00	DROP1/DROP51	SCRUBR 1 INTAKE VLV TRIPPED
DigitalPoint	JRP01TRIP101-00	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01TRIP102-00	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01TRIP1110-00	DROP1/DROP51	WASH PRESS 1 TRIP
DigitalPoint	JRP01TRIP1120-00	DROP1/DROP51	WASH PRESS 2 TRIP
DigitalPoint	JRP01TRIP1130-00	DROP1/DROP51	WASH PRESS 3 TRIP
DigitalPoint	JRP01TRIP1210-00	DROP1/DROP51	SCREEN 1 TRIP
DigitalPoint	JRP01TRIP1220-00	DROP1/DROP51	SCREEN 2 TRIP
DigitalPoint	JRP01TRIP1230-00	DROP1/DROP51	SCREEN 3 TRIP
DigitalPoint	JRP01TRIP2310-00	DROP1/DROP51	CHNL 1 INF GATE TRIP
DigitalPoint	JRP01TRIP2320-00	DROP1/DROP51	CHNL 2 INF GATE TRIP

DigitalPoint	JRP01TRIP2330-00	DROP1/DROP51	CHNL 3 INF GATE TRIP
DigitalPoint	JRP01TRIP2410-00	DROP1/DROP51	CHNL 1 EFF GATE TRIP
DigitalPoint	JRP01TRIP2420-00	DROP1/DROP51	CHNL 2 EFF GATE TRIP
DigitalPoint	JRP01TRIP2430-00	DROP1/DROP51	CHNL 3 EFF GATE TRIP
DigitalPoint	JRP01TRUE	DROP1/DROP51	DROP 1 ALWAYS TRUE
DigitalPoint	JRP01UTC-DCHG	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01WEEK-CHANGE	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP01YACX1110	DROP1/DROP51	WASH PRESS 1 FAULT
DigitalPoint	JRP01YACX1110T	DROP1/DROP51	COMPACTOR 1 FAULT DISPLAY
DigitalPoint	JRP01YACX1120	DROP1/DROP51	WASH PRESS 2 FAULT
DigitalPoint	JRP01YACX1120T	DROP1/DROP51	COMPACTOR 2 FAULT DISPLAY
DigitalPoint	JRP01YACX1130	DROP1/DROP51	WASH PRESS 3 FAULT
DigitalPoint	JRP01YACX1130T	DROP1/DROP51	COMPACTOR 3 FAULT DISPLAY
DigitalPoint	JRP01YACX1210	DROP1/DROP51	SCREEN 1 FAULT
DigitalPoint	JRP01YACX1210T	DROP1/DROP51	COMBINED SCREEN 1 PERMISSIVES
DigitalPoint	JRP01YACX1220	DROP1/DROP51	SCREEN 2 FAULT
DigitalPoint	JRP01YACX1220T	DROP1/DROP51	COMBINED SCREEN 2 PERMISSIVES
DigitalPoint	JRP01YACX1230	DROP1/DROP51	SCREEN 3 FAULT
DigitalPoint	JRP01YACX1230T	DROP1/DROP51	COMBINED SCREEN 3 PERMISSIVES
DigitalPoint	JRP01YAJC1110	DROP1/DROP51	WASH PRESS 1 JAMMED
DigitalPoint	JRP01YAJC1120	DROP1/DROP51	WASH PRESS 2 JAMMED
DigitalPoint	JRP01YAJC1130	DROP1/DROP51	WASH PRESS 3 JAMMED
DigitalPoint	JRP01YAXC1110T	DROP1/DROP51	COMPACTOR 1 FALT DISPLAY
DigitalPoint	JRP01YGEN1110-00	DROP1/DROP51	WASH PRESS 1 GENERAL FAIL
DigitalPoint	JRP01YGEN1120-00	DROP1/DROP51	WASH PRESS 2 GENERAL FAIL
DigitalPoint	JRP01YGEN1130-00	DROP1/DROP51	WASH PRESS 3 GENERAL FAIL
DigitalPoint	JRP01YGEN1210-00	DROP1/DROP51	SCREEN 1 GENERAL FAIL
DigitalPoint	JRP01YGEN1220-00	DROP1/DROP51	SCREEN 2 GENERAL FAIL
DigitalPoint	JRP01YGEN1230-00	DROP1/DROP51	SCREEN 3 GENERAL FAIL
DigitalPoint	JRP01ZSAX1210	DROP1/DROP51	SCREEN 1 HOME PROX SWITCH
DigitalPoint	JRP01ZSAX1210F	DROP1/DROP51	SCREEN1 HOME LIMIT FAST INPUT
DigitalPoint	JRP01ZSAX1210T	DROP1/DROP51	PULSER1
DigitalPoint	JRP01ZSAX1220	DROP1/DROP51	SCREEN 2 HOME PROX SWITCH
DigitalPoint	JRP01ZSAX1220F	DROP1/DROP51	SCREEN 2 HOME LIMIT FAST IN
DigitalPoint	JRP01ZSAX1220T	DROP1/DROP51	PULSER 2
DigitalPoint	JRP01ZSAX1230	DROP1/DROP51	SCREEN 3 HOME PROX SWITCH
DigitalPoint	JRP01ZSAX1230F	DROP1/DROP51	SCREEN 3 HOME LIMIT FAST IN
DigitalPoint	JRP01ZSAX1230T	DROP1/DROP51	SCREN 3 PULSER
DigitalPoint	JRP01ZSDO1002	DROP1/DROP51	INFLUENT DIVERSION VLV OPEN
DigitalPoint	JRP03DCSX0101-00	DROP1/DROP51	GRIT PUMP 1 DCS MODE
DigitalPoint	JRP03DCSX0102-00	DROP1/DROP51	GRIT PUMP 2 DCS MODE
DigitalPoint	JRP03DCSX0103-00	DROP1/DROP51	GRIT PUMP 3 DCS MODE
DigitalPoint	JRP03DCSX0104-00	DROP1/DROP51	GRIT PUMP 4 DCS MODE
DigitalPoint	JRP03FSTP0101-00	DROP1/DROP51	GRIT PUMP 1 FAIL TO STOP
DigitalPoint	JRP03FSTP0102-00	DROP1/DROP51	GRIT PUMP 2 FAIL TO STOP
DigitalPoint	JRP03FSTP0103-00	DROP1/DROP51	GRIT PUMP 3 FAIL TO STOP
DigitalPoint	JRP03FSTP0104-00	DROP1/DROP51	GRIT PUMP 4 FAIL TO STOP

DigitalPoint	JRP03FSTR0101-00	DROP1/DROP51	GRIT PUMP 1 FAIL TO START
DigitalPoint	JRP03FSTR0102-00	DROP1/DROP51	GRIT PUMP 2 FAIL TO START
DigitalPoint	JRP03FSTR0103-00	DROP1/DROP51	GRIT PUMP 3 FAIL TO START
DigitalPoint	JRP03FSTR0104-00	DROP1/DROP51	GRIT PUMP 4 FAIL TO START
DigitalPoint	JRP03GRITCOMM	DROP1/DROP51	GRIT PUMPS COMMON ALARM
DigitalPoint	JRP03GRITP1P3ON	DROP1/DROP51	GRIT PUMPS ON TIME
DigitalPoint	JRP03GRITP2P4ON	DROP1/DROP51	GRIT PUMPS OFF TIME
DigitalPoint	JRP03HSAS0101	DROP1/DROP51	GRIT PUMP 1 IN AUTO
DigitalPoint	JRP03HSAS0102	DROP1/DROP51	GRIT PUMP 2 IN AUTO
DigitalPoint	JRP03HSAS0103	DROP1/DROP51	GRIT PUMP 3 IN AUTO
DigitalPoint	JRP03HSAS0104	DROP1/DROP51	GRIT PUMP 4 IN AUTO
DigitalPoint	JRP03NAHH1001	DROP1/DROP51	GRIT COLLECTOR SWEEP NO. 1
DigitalPoint	JRP03NAHH1002	DROP1/DROP51	GRIT COLLECTOR SWEEP NO. 2
DigitalPoint	JRP03NAHH1003	DROP1/DROP51	GRIT COLLECTOR SWEEP NO. 3
DigitalPoint	JRP03NAHH1004	DROP1/DROP51	GRIT COLLECTOR SWEEP NO. 4
DigitalPoint	JRP03ONST0101	DROP1/DROP51	GRIT PUMP 1 RUN STATUS
DigitalPoint	JRP03ONST0102	DROP1/DROP51	GRIT PUMP 2 RUN STATUS
DigitalPoint	JRP03ONST0103	DROP1/DROP51	GRIT PUMP 3 RUN STATUS
DigitalPoint	JRP03ONST0104	DROP1/DROP51	GRIT PUMP 4 RUN STATUS
DigitalPoint	JRP03RUNC0101	DROP1/DROP51	GRIT PUMP 1 RUN CMD
DigitalPoint	JRP03RUNC0102	DROP1/DROP51	GRIT PUMP 2 RUN CMD
DigitalPoint	JRP03RUNC0103	DROP1/DROP51	GRIT PUMP 3 RUN CMD
DigitalPoint	JRP03RUNC0104	DROP1/DROP51	GRIT PUMP 4 RUN CMD
DigitalPoint	JRP03TRIP0101-00	DROP1/DROP51	GRIT PUMP 1 TRIP
DigitalPoint	JRP03TRIP0102-00	DROP1/DROP51	GRIT PUMP 2 TRIP
DigitalPoint	JRP03TRIP0103-00	DROP1/DROP51	GRIT PUMP 3 TRIP
DigitalPoint	JRP03TRIP0104-00	DROP1/DROP51	GRIT PUMP 4 TRIP
DigitalPoint	JRP03YACX0101	DROP1/DROP51	GRIT PUMP 1 FAIL
DigitalPoint	JRP03YACX0102	DROP1/DROP51	GRIT PUMP 2 FAIL
DigitalPoint	JRP03YACX0103	DROP1/DROP51	GRIT PUMP 3 FAIL
DigitalPoint	JRP03YACX0104	DROP1/DROP51	GRIT PUMP 4 FAIL
DigitalPoint	JRP04NAHH1001	DROP1/DROP51	PRIMARY CLARIFIER SWEEP NO. 1
DigitalPoint	JRP04NAHH1002	DROP1/DROP51	PRIMARY CLARIFIER SWEEP NO. 2
DigitalPoint	JRP04NAHH1003	DROP1/DROP51	PRIMARY CLARIFIER SWEEP NO. 3
DigitalPoint	JRP04NAHH1004	DROP1/DROP51	PRIMARY CLARIFIER SWEEP NO. 4
DigitalPoint	JRP05NRCY2ALM	DROP1/DROP51	NRCY PUMP 2 OFF PAGE OUT
DigitalPoint	JRP06NAHH1001	DROP1/DROP51	SECNDRY CLARIFIER SWEEP NO. 1
DigitalPoint	JRP06NAHH1002	DROP1/DROP51	SECNDRY CLARIFIER SWEEP NO. 2
DigitalPoint	JRP08YACX1001	DROP1/DROP51	RETURN BIOSOLIDS BLDG NO. 1
DigitalPoint	JRP08YACX1002	DROP1/DROP51	RETURN BIOSOLIDS BLDG NO. 2
DigitalPoint	JRP11NAHH1001	DROP1/DROP51	GRAVITY THICKENER SWEEP NO. 1
DigitalPoint	JRP11NAHH1002	DROP1/DROP51	GRAVITY THICKENER SWEEP NO. 2
DigitalPoint	JRP14AMRJ2004-00	DROP1/DROP51	BLOWER 4 AUTO REJECT
DigitalPoint	JRP14AMRJ2005-00	DROP1/DROP51	BLOWER 5 AUTO REJECT
DigitalPoint	JRP14AMRJ2006-00	DROP1/DROP51	BLOWER 6 AUTO REJECT
DigitalPoint	JRP14DCSX2004-00	DROP1/DROP51	BLOWER 4 DCS MODE
DigitalPoint	JRP14DCSX2005-00	DROP1/DROP51	BLOWER 5 DCS MODE

DigitalPoint	JRP14DCSX2006-00	DROP1/DROP51	BLOWER 6 DCS MODE
DigitalPoint	JRP14DEVN2004-00	DROP1/DROP51	BLOWER 4 DEVN ALM
DigitalPoint	JRP14DEVN2005-00	DROP1/DROP51	BLOWER 5 DEVN ALM
DigitalPoint	JRP14DEVN2006-00	DROP1/DROP51	BLOWER 6 DEVN ALM
DigitalPoint	JRP14FGOS2004-00	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP14FGOS2005-00	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP14FGOS2006-00	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP14FSTP2004-00	DROP1/DROP51	BLOWER 4 FAIL TO STOP
DigitalPoint	JRP14FSTP2005-00	DROP1/DROP51	BLOWER 5 FAIL TO STOP
DigitalPoint	JRP14FSTP2006-00	DROP1/DROP51	BLOWER 6 FAIL TO STOP
DigitalPoint	JRP14FSTR2004-00	DROP1/DROP51	BLOWER 4 FAIL TO START
DigitalPoint	JRP14FSTR2005-00	DROP1/DROP51	BLOWER 5 FAIL TO START
DigitalPoint	JRP14FSTR2006-00	DROP1/DROP51	BLOWER 6 FAIL TO START
DigitalPoint	JRP14HSAS2004	DROP1/DROP51	BLWR 4 LOCAL/DCS
DigitalPoint	JRP14HSAS2005	DROP1/DROP51	BLWR 5 LOCAL/DCS
DigitalPoint	JRP14HSAS2006	DROP1/DROP51	BLWR 6 LOCAL/DCS
DigitalPoint	JRP14MMRJ1400-00	DROP1/DROP51	BLOWER MASTER MAN REJECT
DigitalPoint	JRP14NOBLWR1	DROP1/DROP51	IFAS LOSS OF AIR PAGE OUT
DigitalPoint	JRP14ONST2004	DROP1/DROP51	BLWR 4 RUN STATUS
DigitalPoint	JRP14ONST2005	DROP1/DROP51	BLWR 5 RUN STATUS
DigitalPoint	JRP14ONST2006	DROP1/DROP51	BLWR 6 RUN STATUS
DigitalPoint	JRP14PAHH3001X-CS	DROP1/DROP51	BLOWER MSTR HDR PRESS HI HI
DigitalPoint	JRP14PAHX3001X-00	DROP1/DROP51	BLOWER MASTER PSIG HIGH
DigitalPoint	JRP14PAHX3001X-CS	DROP1/DROP51	BLOWER MSTR HDR PRESS HIGH
DigitalPoint	JRP14PALL3001X-CS	DROP1/DROP51	BLOWER MSTR HDR PRESS LO LO
DigitalPoint	JRP14PALX3001X-00	DROP1/DROP51	BLOWER MASTER PSIG LOW
DigitalPoint	JRP14PALX3001X-CS	DROP1/DROP51	BLOWER MSTR HDR PRESS LOW
DigitalPoint	JRP14RNKM1400-00	DROP1/DROP51	BLOWER RANK ALIGN STAT
DigitalPoint	JRP14RUNC2004	DROP1/DROP51	BLWR 4 RUN CMD
DigitalPoint	JRP14RUNC2005	DROP1/DROP51	BLWR 5 RUN CMD
DigitalPoint	JRP14RUNC2006	DROP1/DROP51	BLWR 6 RUN CMD
DigitalPoint	JRP14TRIP2004-00	DROP1/DROP51	BLOWER 4 TRIP
DigitalPoint	JRP14TRIP2005-00	DROP1/DROP51	BLOWER 5 TRIP
DigitalPoint	JRP14TRIP2006-00	DROP1/DROP51	BLOWER 6 TRIP
DigitalPoint	JRP14YACX2004	DROP1/DROP51	BLWR 4 FAULT
DigitalPoint	JRP14YACX2004-MODE	DROP1/DROP51	BLWR 4 IMPROPER MODE ALERT
DigitalPoint	JRP14YACX2005	DROP1/DROP51	BLWR 5 FAULT
DigitalPoint	JRP14YACX2005-MODE	DROP1/DROP51	BLWR 5 IMPROPER MODE ALERT
DigitalPoint	JRP14YACX2006	DROP1/DROP51	BLWR 6 FAULT
DigitalPoint	JRP14YACX2006-MODE	DROP1/DROP51	BLWR 6 IMPROPER MODE ALERT
DigitalPoint	JRP15CMBMODE	DROP1/DROP51	HYPO CTRL IN CMBN MODE
DigitalPoint	JRP15FINALPHLO	DROP1/DROP51	PAGE ALARM FINAL PH LOW
DigitalPoint	JRP15FLOPCMODE	DROP1/DROP51	HYPO CTRL IN FLO PACE MODE
DigitalPoint	JRP15HYPOLOFLO1	DROP1/DROP51	LOW HYPO FLOW
DigitalPoint	JRP15HYPONAUTO	DROP1/DROP51	HYPO CONTROL N AUTO
DigitalPoint	JRP15MAINTMODE1	DROP1/DROP51	HYPO CTRL IN MAINT MODE
DigitalPoint	JRP15RESMODE	DROP1/DROP51	HYPO CONTROL IN RESIDUAL MODE

DigitalPoint	JRP16BISULFLOFLO1	DROP1/DROP51	BISULFITE LO FLOW PAGE OUT
DigitalPoint	JRP16BSCMBMODE	DROP1/DROP51	BISULF CTRL N COMBINED MODE
DigitalPoint	JRP16BSFLOPCMODE	DROP1/DROP51	BISULF CTRL N FLO PACE MODE
DigitalPoint	JRP16BSRESMODE	DROP1/DROP51	BISULF CTRL N RES MODE
DigitalPoint	JRP16BSSPDNAUTO1	DROP1/DROP51	BISULF CTRL IN AUTO
DigitalPoint	JRP16YACX9001	DROP1/DROP51	DECHLORINATION BUILDING ALARM
DigitalPoint	JRP18BPCC101	DROP1/DROP51	SCRBR#1 BYPSS VLV CLS CMD
DigitalPoint	JRP18BPVCC201	DROP1/DROP51	SCRUBR BYPASS VLV CLOSE CMD
DigitalPoint	JRP18BPVCC301	DROP1/DROP51	SCRUBR 3 BYPASS VLV CLOSE CMD
DigitalPoint	JRP18BPVCS0100	DROP1/DROP51	SCRUBR 1 INTK VLV CLOSED LIMIT
DigitalPoint	JRP18BPVCS0102	DROP1/DROP51	SCRUBR 1 BYPASS VLV CLOSED
DigitalPoint	JRP18BPVCS201	DROP1/DROP51	SCRUBR 2 BYPASS VLV CLOSED
DigitalPoint	JRP18BPVCS301	DROP1/DROP51	SCRUBR 3 BYPASS VLV CLOSED
DigitalPoint	JRP18BPVOC101	DROP1/DROP51	SCRBE#1 BYPASS VLV OPEN CMD
DigitalPoint	JRP18BPVOC201	DROP1/DROP51	SCRUBR BYPASS VLV OPEN CMD
DigitalPoint	JRP18BPVOC301	DROP1/DROP51	SCRUBR 3 BYPASS VLV OPEN CMD
DigitalPoint	JRP18BPVOS0100	DROP1/DROP51	SCRUBR 1 INTK VLV OPEN LIMIT
DigitalPoint	JRP18BPVOS0102	DROP1/DROP51	SCRUBR 1 BYPASS VLV OPENED
DigitalPoint	JRP18BPVOS201	DROP1/DROP51	SCRUBR 2 BYPASS VLV OPENED
DigitalPoint	JRP18BPVOS301	DROP1/DROP51	SCRUBR 3 BYPASS VLV OPENED
DigitalPoint	JRP18DMRJ100-00	DROP1/DROP51	SCRUBR 1 INTK VLV MAN REJECT
DigitalPoint	JRP18DMRJ101-00	DROP1/DROP51	SCRUBR 1 BYPASS VLV MAN REJECT
DigitalPoint	JRP18DMRJ102-00	DROP1/DROP51	SCRUBR 1EXHAUST VLV MAN REJECT
DigitalPoint	JRP18DMRJ200-00	DROP1/DROP51	SCRUBR 2 INTK VLV MAN REJECT
DigitalPoint	JRP18DMRJ201-00	DROP1/DROP51	SCRUBR 2 BYPASS VLV MAN REJECT
DigitalPoint	JRP18DMRJ202-00	DROP1/DROP51	SCRUBR2 EXHAUST VLV MAN REJECT
DigitalPoint	JRP18DMRJ300-00	DROP1/DROP51	SCRUBR 3 INTK VLV MAN REJECT
DigitalPoint	JRP18DMRJ301-00	DROP1/DROP51	SCRUBR 3 BYPASS VLV MAN REJECT
DigitalPoint	JRP18DMRJ302-00	DROP1/DROP51	SCRUBR3 EXHAUST VLV MAN REJECT
DigitalPoint	JRP18EVCC102	DROP1/DROP51	SCRBR#1 EXHAUST VLV CLS CMD
DigitalPoint	JRP18EVCC202	DROP1/DROP51	SCRUBR 2 EXHAUST VLV CLOSE CMD
DigitalPoint	JRP18EVCC302	DROP1/DROP51	SCRUBR 3 EXAUST VLV CLOSED CMD
DigitalPoint	JRP18EVCS102	DROP1/DROP51	SCRBR#1 EXHAUST VLV CLOSED
DigitalPoint	JRP18EVCS202	DROP1/DROP51	SCRBR#2 EXHAUST VLV CLOSED
DigitalPoint	JRP18EVCS302	DROP1/DROP51	SCRUBR 3 EXHAUST VLV CLOSED
DigitalPoint	JRP18EVOC102	DROP1/DROP51	SCRBR#1 EHAUST VLV OPEN CMD
DigitalPoint	JRP18EVOC202	DROP1/DROP51	SCRUBR 2 EXHAUST VLV OPEN CMD
DigitalPoint	JRP18EVOC302	DROP1/DROP51	SCRUBR 3 EXHAUST VLV OPEN CMD
DigitalPoint	JRP18EVOS102	DROP1/DROP51	SCRUBR 1 EXHAUST VLV OPENED
DigitalPoint	JRP18EVOS202	DROP1/DROP51	SCRUBR 2 EXHAUST VLV OPENED
DigitalPoint	JRP18EVOS302	DROP1/DROP51	SCRUBR 3 EXHAUST VLV OPENED
DigitalPoint	JRP18FCLS100-00	DROP1/DROP51	SCRUBR 1 INTK VLV FAIL TO CLOS
DigitalPoint	JRP18FCLS101-00	DROP1/DROP51	SCRUBR 1 BYPAS VLV FAIL TO CLS
DigitalPoint	JRP18FCLS102-00	DROP1/DROP51	SCRUBR 1 EXAUST VLV FL TO CLS
DigitalPoint	JRP18FCLS200-00	DROP1/DROP51	SCRUBR 2 INTK VLV FAIL TO CLOS
DigitalPoint	JRP18FCLS201-00	DROP1/DROP51	SCRUBR 2 BYPASS VLV FAIL 2 CLS
DigitalPoint	JRP18FCLS202-00	DROP1/DROP51	SCRUBR 2 EXHAUS VLV FAIL 2 OPN

DigitalPoint	JRP18FCLS300-00	DROP1/DROP51	SCRUBR 3 INTK VLV FAIL TO CLOS
DigitalPoint	JRP18FCLS301-00	DROP1/DROP51	SCRUBR 3 BP VLV FAIL TO CLOSE
DigitalPoint	JRP18FCLS302-00	DROP1/DROP51	SCRUBR 3 EXHAUST FAIL TO CLOSE
DigitalPoint	JRP18FGAS2310	DROP1/DROP51	SCRUBR 2 INTAKE VLV IN AUTO
DigitalPoint	JRP18FOPN100-00	DROP1/DROP51	SCRUBR 1 INTK VLV FAIL TO OPEN
DigitalPoint	JRP18FOPN101-00	DROP1/DROP51	SCRUBR 1 BYPAS VLV FAIL TO OPN
DigitalPoint	JRP18FOPN102-00	DROP1/DROP51	SCRUBR 1 EXHAUST VLV FL TO OPN
DigitalPoint	JRP18FOPN200-00	DROP1/DROP51	SCRUBR 2 INTK VLV FAIL TO OPN
DigitalPoint	JRP18FOPN201-00	DROP1/DROP51	SCRUBR 2 BYPASS VLV FAIL 2 OPN
DigitalPoint	JRP18FOPN202-00	DROP1/DROP51	SCRUBR 2 EXHAUS VLV FAIL 2 CLS
DigitalPoint	JRP18FOPN300-00	DROP1/DROP51	SCRUBR 3 INTK VLV FAIL TO OPEN
DigitalPoint	JRP18FOPN301-00	DROP1/DROP51	SCRUBR 3 BP VLV FAIL TO OPEN
DigitalPoint	JRP18FOPN302-00	DROP1/DROP51	SCRUBR 3 EXAST VLV FAIL TO OPN
DigitalPoint	JRP18HSAS1000	DROP1/DROP51	SCRUBR 1 INTAKE VALVE IN AUTO
DigitalPoint	JRP18HSAS1010	DROP1/DROP51	SCRUBR 1 BYPASS VLV IN AUTO
DigitalPoint	JRP18HSAS1020	DROP1/DROP51	SCRUBR 1 EXHAUST VLV IN AUTO
DigitalPoint	JRP18HSAS1030	DROP1/DROP51	SCRBR#2 VLV IN AUTO
DigitalPoint	JRP18HSAS201	DROP1/DROP51	SCRUBR 2 BYPASS VLV IN AUTO
DigitalPoint	JRP18HSAS202	DROP1/DROP51	SCUBR 2 EXAUST VLV IN AUTO
DigitalPoint	JRP18HSAS300	DROP1/DROP51	SCRUBR 3 INTAKE VLV IN AUTO
DigitalPoint	JRP18HSAS301	DROP1/DROP51	SCRUBR 3 BYPASS VLV IN AUTO
DigitalPoint	JRP18HSAS302	DROP1/DROP51	SCRUBR 3 EXHAUST VLV IN AUTO
DigitalPoint	JRP18ITVCC100	DROP1/DROP51	SCRBR#1 INTAKE VLV CLOSE CMD
DigitalPoint	JRP18ITVCC200	DROP1/DROP51	SCRUBE 2 INTAKE VLV CLOSE CMD
DigitalPoint	JRP18ITVCS100	DROP1/DROP51	SCRUBR 1 INTK VLV CLOSED LIMIT
DigitalPoint	JRP18ITVCS200	DROP1/DROP51	SCRUBR 2 INTAKE VLV VLV CLOSED
DigitalPoint	JRP18ITVOC100	DROP1/DROP51	SCRUBR 1 INTAKE VLV OPEN CMD
DigitalPoint	JRP18ITVOC200	DROP1/DROP51	SCRUBR 2 INTAKE VLV OPEN CMD
DigitalPoint	JRP18ITVOS100	DROP1/DROP51	SCRUBR 1 INTK VLV OPEN LIMIT
DigitalPoint	JRP18ITVOS200	DROP1/DROP51	SCRUBR 2 INTAKE VLV OPEN LIMIT
DigitalPoint	JRP18IVCC100	DROP1/DROP51	SCRUBBER 1 INTK VALVE CLS CMD
DigitalPoint	JRP18IVCC300	DROP1/DROP51	SCRUBR 3 INTAKE VLV CLOSE CMD
DigitalPoint	JRP18IVCS300	DROP1/DROP51	SCRUBR 3 INTAKE VLVCLOSED
DigitalPoint	JRP18IVOC300	DROP1/DROP51	SCRUBR 3 INTAKE VLV OPEN CMD
DigitalPoint	JRP18IVOS300	DROP1/DROP51	SCRUBR 3 INTAKE VLV OPENED
DigitalPoint	JRP18SCRB1OFFLINE	DROP1/DROP51	SCRUBBER 1 OFFLINE REQUEST
DigitalPoint	JRP18SCRB1ONLINE	DROP1/DROP51	SCRUBBER 1 ONLINE REQUEST
DigitalPoint	JRP18SCRB2OFFLINE	DROP1/DROP51	SCRUBBER 2 OFFLINE REQUEST
DigitalPoint	JRP18SCRB2ONLINE	DROP1/DROP51	SCRUBBER 2 ONLINE REQUEST
DigitalPoint	JRP18SCRB3OFFLINE	DROP1/DROP51	SCRUBBER 3 OFFLINE REQUEST
DigitalPoint	JRP18SCRB3ONLINE	DROP1/DROP51	SCRUBBER 3 ONLINE REQUEST
DigitalPoint	JRP18SVOC0100	DROP1/DROP51	SCRUBR 1 INTAKE VLV OPEN CMD
DigitalPoint	JRP18SVOC0101	DROP1/DROP51	SCRUBR 1 BYPASS VALV OPEN CMD
DigitalPoint	JRP18SVOC0102	DROP1/DROP51	SCRUBR 1 EXHAUST VLV OPEN CMD
DigitalPoint	JRP18TRIP100-00	DROP1/DROP51	SCRUBR 1 INTAKE VLV TRIPPED
DigitalPoint	JRP18TRIP101-00	DROP1/DROP51	SCRUBR 1 BYPASS VALV TRIPPED
DigitalPoint	JRP18TRIP102-00	DROP1/DROP51	SCRUBR 1 EXHAUST VLV TRIPPED

DigitalPoint	JRP18TRIP200-00	DROP1/DROP51	SCRUBR 2 INTAKE VALVE TRIPPED
DigitalPoint	JRP18TRIP201-00	DROP1/DROP51	SCRUBR 2 BYPASS VLV TRIPPED
DigitalPoint	JRP18TRIP202-00	DROP1/DROP51	SCRUBR 2 EXHAUST VLV TRIPPED
DigitalPoint	JRP18TRIP300-00	DROP1/DROP51	SCRUBR 3 INTAKE VLV TRIPPED
DigitalPoint	JRP18TRIP301-00	DROP1/DROP51	SCRUBR 3 BYPASS VLV TRIPPED
DigitalPoint	JRP18TRIP302-00	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP19LAHH1001	DROP1/DROP51	DRAIN PMP STATION COMMON ALARM
DigitalPoint	JRP26DCSX1001	DROP1/DROP51	DRAIN PUMP 1 IN DCS MODE
DigitalPoint	JRP26DCSX2001	DROP1/DROP51	DRAIN PUMP 2 IN DCS MODE
DigitalPoint	JRP26FSTP1001	DROP1/DROP51	DRAIN PUMP 1 FAIL TO STOP
DigitalPoint	JRP26FSTP2001	DROP1/DROP51	DRAIN PUMP 2 FAIL TO STOP
DigitalPoint	JRP26FSTR1001	DROP1/DROP51	DRAIN PUMP 1 FAIL TO START
DigitalPoint	JRP26FSTR2001	DROP1/DROP51	DRAIN PUMP 2 FAIL TO START
DigitalPoint	JRP26HSAS1001	DROP1/DROP51	DRAIN PUMP 1 IN LOCAL
DigitalPoint	JRP26HSAS2001	DROP1/DROP51	DRAIN PUMP 2 IN LOCAL
DigitalPoint	JRP26LAHX0000-DP	DROP1/DROP51	DRAIN PUMP STATION HIGH LEVEL
DigitalPoint	JRP26LALX0000-DP	DROP1/DROP51	DRAIN PUMP STATION LOW LEVEL
DigitalPoint	JRP26ONST1001	DROP1/DROP51	PDPS PUMP 1 RUN STATUS
DigitalPoint	JRP26ONST2001	DROP1/DROP51	PDPS PUMP 2 RUN STATUS
DigitalPoint	JRP26RUNC1001	DROP1/DROP51	PDPS PUMP 1 RUN CMD
DigitalPoint	JRP26RUNC2001	DROP1/DROP51	PDPS PUMP 2 RUN CMD
DigitalPoint	JRP26TRIP1001	DROP1/DROP51	DRAIN PUMP 1 TRIP
DigitalPoint	JRP26TRIP2001	DROP1/DROP51	DRAIN PUMP 2 TRIP
DigitalPoint	JRP26YACX0000	DROP1/DROP51	DRAIN PUMP STATION COM ALARM
DigitalPoint	JRP26YACX0001	DROP1/DROP51	DPS COMMON ALARM OUTPUT
DigitalPoint	JRP40LAHH1001	DROP1/DROP51	DIESEL DAY TANK OVERFLOW
DigitalPoint	JRP40VEPA1000-ENP	DROP1/DROP51	VEPCO USAGE TOT EST NEAR PEAK
DigitalPoint	JRP40VEPA1000-EOP	DROP1/DROP51	VEPCO USAGE TOT EST OVER PEAK
DigitalPoint	JRP40VEPA1000-NP	DROP1/DROP51	VEPCO USAGE TOT NEAR PEAK
DigitalPoint	JRP40VEPA1000-OP	DROP1/DROP51	VEPCO USAGE TOT OVER PEAK
DigitalPoint	JRP40VEPP1000	DROP1/DROP51	VEPCO USAGE PULSE
DigitalPoint	JRP41PWRAVAIL1	DROP1/DROP51	LOSS OF UTILITY PWR PAGE OUT
DigitalPoint	JRP41PWRLOSS1	DROP1/DROP51	UTILITY FAIL PAGE OUT
DigitalPoint	JRP41VEPA1000-ENP	DROP1/DROP51	VEPCO USAGE TOT EST NEAR PEAK
DigitalPoint	JRP41VEPA1000-EOP	DROP1/DROP51	VEPCO USAGE TOT EST OVER PEAK
DigitalPoint	JRP41VEPA1000-NP	DROP1/DROP51	VEPCO USAGE TOT NEAR PEAK
DigitalPoint	JRP41VEPA1000-OP	DROP1/DROP51	VEPCO USAGE TOT OVER PEAK
DigitalPoint	JRP41VEPP1000	DROP1/DROP51	VEPCO USAGE PULSE
DigitalPoint	JRP41VEPP1001	DROP1/DROP51	NET METERING PULSE OUTPUT
DigitalPoint	JRP41YAHH1001	DROP1/DROP51	VA POWER PEAK
DigitalPoint	JRP47YACX9001	DROP1/DROP51	PHOSPHORUS REMOVAL FACILITY
DigitalPoint	JRP50MNHL5HILVL1	DROP1/DROP51	MANHOLE 5 HI LEVEL PAGE OUT
DigitalPoint	JRP50YACXAMOX	DROP1/DROP51	AMOX COMMON ALARM
DigitalPoint	JRP99NETWCTRL001	DROP1/DROP51	Web Port Disable
DigitalPoint	JRP99NETWCTRL002	DROP1/DROP51	WEB Port Disable Graphic Ind
DigitalPoint	JRP99PLTBUSHOT	DROP1/DROP51	PLANT SIDE OF XFER SW HOT
DigitalPoint	JRP99YAAX0101	DROP1/DROP51	DCU1 UPS FAULT

DigitalPoint	JRP99YAAX0102	DROP1/DROP51	DCU1 UPS SUMMARY ALARM
DigitalPoint	JRP99YAAX0103	DROP1/DROP51	DCU1 UPS LOW BATTERY
DigitalPoint	JRP99YAAX0104	DROP1/DROP51	DCU1 UPS ON BATTERY
DigitalPoint	JRP99YAAX0105	DROP1/DROP51	DCU1 UPS ON BYPASS
DigitalPoint	JRP99YAAX0106	DROP1/DROP51	DCU1 UPS ON UPS
DigitalPoint	JRP99YAAX0107	DROP1/DROP51	DCU1 CABINET 1 DOOR SWITCH
DigitalPoint	JRP99YAAX0108	DROP1/DROP51	COMMS CABINET 1 DOOR SWITCH
DigitalPoint	JRP99YAAX1401	DROP1/DROP51	RIO14 UPS FAULT
DigitalPoint	JRP99YAAX1402	DROP1/DROP51	RIO14 UPS SUMMARY ALARM
DigitalPoint	JRP99YAAX1403	DROP1/DROP51	RIO14 UPS LOW BATTERY
DigitalPoint	JRP99YAAX1404	DROP1/DROP51	RIO14 UPS ON BATTERY
DigitalPoint	JRP99YAAX1405	DROP1/DROP51	RIO14 UPS ON BYPASS
DigitalPoint	JRP99YAAX1406	DROP1/DROP51	RIO14 UPS ON UPS
DigitalPoint	JRP99YAAX1407	DROP1/DROP51	RIO14 CABINET 1 DOOR SWITCH
DigitalPoint	JRPO1ZSAX1210F	DROP1/DROP51	SCREEN 3 HOME LIMIT FAST IN
DigitalPoint	TESTDIG1	DROP1/DROP51	
DigitalPoint	TESTDIG2	DROP1/DROP51	TESTDIG2
DigitalPoint	TESTDIG3	DROP1/DROP51	TESTDIG4
DigitalPoint	01BC016-OUT	DROP1/DROP51	@ Ovation Control Builder @
DigitalPoint	JRP03GTENABLE	DROP1/DROP51	GRIT TIMER ENABLED
DigitalPoint	JRP01DOALM1	DROP2/DROP52	TRN1 MEDIA INF ZONE DO PROBE
DigitalPoint	JRP01TEST1A	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP01TEST1C	DROP2/DROP52	
DigitalPoint	JRP02DCHG	DROP2/DROP52	DAY CHANGE PULSE
DigitalPoint	JRP02FALSE	DROP2/DROP52	DROP 1 ALWAYS FALSE
DigitalPoint	JRP02FALSE2	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP02HRCHG	DROP2/DROP52	DROP 2 HOUR CHANGE PULSE
DigitalPoint	JRP02MCHG	DROP2/DROP52	MINUTE CHANGE PULSE
DigitalPoint	JRP02MOCHG	DROP2/DROP52	DROP 2 MONTH CHANGE PULSE
DigitalPoint	JRP02SCHG	DROP2/DROP52	SECOND CHANGE PULSE
DigitalPoint	JRP02TEST1A	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP02TRUE	DROP2/DROP52	DROP 2 ALWAYS TRUE
DigitalPoint	JRP05AAHX4201-00	DROP2/DROP52	TRN 1 AFCV MSTR1 DO HIGH
DigitalPoint	JRP05AAHX4202-00	DROP2/DROP52	TRN 2 AFCV MSTR1 DO HIGH
DigitalPoint	JRP05AAHX4203-00	DROP2/DROP52	TRN 3 AFCV MSTR1 DO HIGH
DigitalPoint	JRP05AAHX4204-00	DROP2/DROP52	TRN 4 AFCV MSTR1 DO HIGH
DigitalPoint	JRP05AAHX4205-00	DROP2/DROP52	TRN 5 AFCV MSTR1 DO HIGH
DigitalPoint	JRP05AAHX4206-00	DROP2/DROP52	TRN 6 AFCV MSTR1 DO HIGH
DigitalPoint	JRP05AAHX4207-00	DROP2/DROP52	TRN 7 AFCV MSTR1 DO HIGH
DigitalPoint	JRP05AAHX4208-00	DROP2/DROP52	TRN 8 AFCV MSTR1 DO HIGH
DigitalPoint	JRP05AAHX4209-00	DROP2/DROP52	TRN 9 AFCV MSTR1 DO HIGH
DigitalPoint	JRP05AAHX4301-00	DROP2/DROP52	TRN 1 AFCV MSTR2 DO HIGH
DigitalPoint	JRP05AAHX4302-00	DROP2/DROP52	TRN 2 AFCV MSTR2 DO HIGH
DigitalPoint	JRP05AAHX4303-00	DROP2/DROP52	TRN 3 AFCV MSTR2 DO HIGH
DigitalPoint	JRP05AAHX4304-00	DROP2/DROP52	TRN 4 AFCV MSTR2 DO HIGH
DigitalPoint	JRP05AAHX4305-00	DROP2/DROP52	TRN 5 AFCV MSTR2 DO HIGH
DigitalPoint	JRP05AAHX4306-00	DROP2/DROP52	TRN 6 AFCV MSTR2 DO HIGH

DigitalPoint	JRP05AAHX4307-00	DROP2/DROP52	TRN 7 AFCV MSTR2 DO HIGH
DigitalPoint	JRP05AAHX4308-00	DROP2/DROP52	TRN 8 AFCV MSTR2 DO HIGH
DigitalPoint	JRP05AAHX4309-00	DROP2/DROP52	TRN 9 AFCV MSTR2 DO HIGH
DigitalPoint	JRP05AALX4201-00	DROP2/DROP52	TRN 1 AFCV MSTR1 DO LOW
DigitalPoint	JRP05AALX4202-00	DROP2/DROP52	TRN 2 AFCV MSTR1 DO LOW
DigitalPoint	JRP05AALX4203-00	DROP2/DROP52	TRN 3 AFCV MSTR1 DO LOW
DigitalPoint	JRP05AALX4204-00	DROP2/DROP52	TRN 4 AFCV MSTR1 DO LOW
DigitalPoint	JRP05AALX4205-00	DROP2/DROP52	TRN 5 AFCV MSTR1 DO LOW
DigitalPoint	JRP05AALX4206-00	DROP2/DROP52	TRN 6 AFCV MSTR1 DO LOW
DigitalPoint	JRP05AALX4207-00	DROP2/DROP52	TRN 7 AFCV MSTR1 DO LOW
DigitalPoint	JRP05AALX4208-00	DROP2/DROP52	TRN 8 AFCV MSTR1 DO LOW
DigitalPoint	JRP05AALX4209-00	DROP2/DROP52	TRN 9 AFCV MSTR1 DO LOW
DigitalPoint	JRP05AALX4301-00	DROP2/DROP52	TRN 1 AFCV MSTR2 DO LOW
DigitalPoint	JRP05AALX4302-00	DROP2/DROP52	TRN 2 AFCV MSTR2 DO LOW
DigitalPoint	JRP05AALX4303-00	DROP2/DROP52	TRN 3 AFCV MSTR2 DO LOW
DigitalPoint	JRP05AALX4304-00	DROP2/DROP52	TRN 4 AFCV MSTR2 DO LOW
DigitalPoint	JRP05AALX4305-00	DROP2/DROP52	TRN 5 AFCV MSTR2 DO LOW
DigitalPoint	JRP05AALX4306-00	DROP2/DROP52	TRN 6 AFCV MSTR2 DO LOW
DigitalPoint	JRP05AALX4307-00	DROP2/DROP52	TRN 7 AFCV MSTR2 DO LOW
DigitalPoint	JRP05AALX4308-00	DROP2/DROP52	TRN 8 AFCV MSTR2 DO LOW
DigitalPoint	JRP05AALX4309-00	DROP2/DROP52	TRN 9 AFCV MSTR2 DO LOW
DigitalPoint	JRP05ACSELECT123	DROP2/DROP52	IFAS CLUSTER 1 DO/AS SELECT
DigitalPoint	JRP05ACSELECT456	DROP2/DROP52	IFAS CLUSTER 2 DO/AS SELECT
DigitalPoint	JRP05ACSELECT789	DROP2/DROP52	IFAS CLUSTER 3 DO/AS SELECT
DigitalPoint	JRP05AMRJ3101-00	DROP2/DROP52	TRN 1 NRCY PMP 1 AUTO REJECT
DigitalPoint	JRP05AMRJ3102-00	DROP2/DROP52	TRN 2 NRCY PMP 1 AUTO REJECT
DigitalPoint	JRP05AMRJ3103-00	DROP2/DROP52	TRN 3 NRCY PMP 1 AUTO REJECT
DigitalPoint	JRP05AMRJ3104-00	DROP2/DROP52	TRN 4 NRCY PMP 1 AUTO REJECT
DigitalPoint	JRP05AMRJ3105-00	DROP2/DROP52	TRN 5 NRCY PMP 1 AUTO REJECT
DigitalPoint	JRP05AMRJ3106-00	DROP2/DROP52	TRN 6 NRCY PMP 1 AUTO REJECT
DigitalPoint	JRP05AMRJ3107-00	DROP2/DROP52	TRN 7 NRCY PMP 1 AUTO REJECT
DigitalPoint	JRP05AMRJ3108-00	DROP2/DROP52	TRN 8 NRCY PMP 1 AUTO REJECT
DigitalPoint	JRP05AMRJ3109-00	DROP2/DROP52	TRN 9 NRCY PMP 1 AUTO REJECT
DigitalPoint	JRP05AMRJ4121-00	DROP2/DROP52	TRN 1 AFCV 4A2 AUTO REJECT
DigitalPoint	JRP05AMRJ4122-00	DROP2/DROP52	TRN 2 AFCV 4A2 AUTO REJECT
DigitalPoint	JRP05AMRJ4123-00	DROP2/DROP52	TRN 3 AFCV 4A2 AUTO REJECT
DigitalPoint	JRP05AMRJ4124-00	DROP2/DROP52	TRN 4 AFCV 4A2 AUTO REJECT
DigitalPoint	JRP05AMRJ4125-00	DROP2/DROP52	TRN 5 AFCV 4A2 AUTO REJECT
DigitalPoint	JRP05AMRJ4126-00	DROP2/DROP52	TRN 6 AFCV 4A2 AUTO REJECT
DigitalPoint	JRP05AMRJ4127-00	DROP2/DROP52	TRN 7 AFCV 4A2 AUTO REJECT
DigitalPoint	JRP05AMRJ4128-00	DROP2/DROP52	TRN 8 AFCV 4A2 AUTO REJECT
DigitalPoint	JRP05AMRJ4129-00	DROP2/DROP52	TRN 9 AFCV 4A2 AUTO REJECT
DigitalPoint	JRP05AMRJ4201-00	DROP2/DROP52	TRN 1 AFCV 4B AUTO REJECT
DigitalPoint	JRP05AMRJ4202-00	DROP2/DROP52	TRN 2 AFCV 4B AUTO REJECT
DigitalPoint	JRP05AMRJ4203-00	DROP2/DROP52	TRN 3 AFCV 4B AUTO REJECT
DigitalPoint	JRP05AMRJ4204-00	DROP2/DROP52	TRN 4 AFCV 4B AUTO REJECT
DigitalPoint	JRP05AMRJ4205-00	DROP2/DROP52	TRN 5 AFCV 4B AUTO REJECT

DigitalPoint	JRP05AMRJ4206-00	DROP2/DROP52	TRN 6 AFCV 4B AUTO REJECT
DigitalPoint	JRP05AMRJ4207-00	DROP2/DROP52	TRN 7 AFCV 4B AUTO REJECT
DigitalPoint	JRP05AMRJ4208-00	DROP2/DROP52	TRN 8 AFCV 4B AUTO REJECT
DigitalPoint	JRP05AMRJ4209-00	DROP2/DROP52	TRN 9 AFCV 4B AUTO REJECT
DigitalPoint	JRP05AMRJ4301-00	DROP2/DROP52	TRN 1 AFCV 4C AUTO REJECT
DigitalPoint	JRP05AMRJ4302-00	DROP2/DROP52	TRN 2 AFCV 4C AUTO REJECT
DigitalPoint	JRP05AMRJ4303-00	DROP2/DROP52	TRN 3 AFCV 4C AUTO REJECT
DigitalPoint	JRP05AMRJ4304-00	DROP2/DROP52	TRN 4 AFCV 4C AUTO REJECT
DigitalPoint	JRP05AMRJ4305-00	DROP2/DROP52	TRN 5 AFCV 4C AUTO REJECT
DigitalPoint	JRP05AMRJ4306-00	DROP2/DROP52	TRN 6 AFCV 4C AUTO REJECT
DigitalPoint	JRP05AMRJ4307-00	DROP2/DROP52	TRN 7 AFCV 4C AUTO REJECT
DigitalPoint	JRP05AMRJ4308-00	DROP2/DROP52	TRN 8 AFCV 4C AUTO REJECT
DigitalPoint	JRP05AMRJ4309-00	DROP2/DROP52	TRN 9 AFCV 4C AUTO REJECT
DigitalPoint	JRP05AMRJ4411-00	DROP2/DROP52	TRN 1 AFCV 4D1 AUTO REJECT
DigitalPoint	JRP05AMRJ4412-00	DROP2/DROP52	TRN 2 AFCV 4D1 AUTO REJECT
DigitalPoint	JRP05AMRJ4413-00	DROP2/DROP52	TRN 3 AFCV 4D1 AUTO REJECT
DigitalPoint	JRP05AMRJ4414-00	DROP2/DROP52	TRN 4 AFCV 4D1 AUTO REJECT
DigitalPoint	JRP05AMRJ4415-00	DROP2/DROP52	TRN 5 AFCV 4D1 AUTO REJECT
DigitalPoint	JRP05AMRJ4416-00	DROP2/DROP52	TRN 6 AFCV 4D1 AUTO REJECT
DigitalPoint	JRP05AMRJ4417-00	DROP2/DROP52	TRN 7 AFCV 4D1 AUTO REJECT
DigitalPoint	JRP05AMRJ4418-00	DROP2/DROP52	TRN 8 AFCV 4D1 AUTO REJECT
DigitalPoint	JRP05AMRJ4419-00	DROP2/DROP52	TRN 9 AFCV 4D1 AUTO REJECT
DigitalPoint	JRP05AMRJ5101-00	DROP2/DROP52	TRN 1 NRCY PMP 2 AUTO REJECT
DigitalPoint	JRP05AMRJ5102-00	DROP2/DROP52	TRN 2 NRCY PMP 2 AUTO REJECT
DigitalPoint	JRP05AMRJ5103-00	DROP2/DROP52	TRN 3 NRCY PMP 2 AUTO REJECT
DigitalPoint	JRP05AMRJ5104-00	DROP2/DROP52	TRN 4 NRCY PMP 2 AUTO REJECT
DigitalPoint	JRP05AMRJ5105-00	DROP2/DROP52	TRN 5 NRCY PMP 2 AUTO REJECT
DigitalPoint	JRP05AMRJ5106-00	DROP2/DROP52	TRN 6 NRCY PMP 2 AUTO REJECT
DigitalPoint	JRP05AMRJ5107-00	DROP2/DROP52	TRN 7 NRCY PMP 2 AUTO REJECT
DigitalPoint	JRP05AMRJ5108-00	DROP2/DROP52	TRN 8 NRCY PMP 2 AUTO REJECT
DigitalPoint	JRP05AMRJ5109-00	DROP2/DROP52	TRN 9 NRCY PMP 2 AUTO REJECT
DigitalPoint	JRP05AMRJ9101-00	DROP2/DROP52	TRN 1 CHNL GATE AUTO REJECT
DigitalPoint	JRP05AMRJ9102-00	DROP2/DROP52	TRN 2 CHNL GATE AUTO REJECT
DigitalPoint	JRP05AMRJ9103-00	DROP2/DROP52	TRN 3 CHNL GATE AUTO REJECT
DigitalPoint	JRP05AMRJ9104-00	DROP2/DROP52	TRN 4 CHNL GATE AUTO REJECT
DigitalPoint	JRP05AMRJ9105-00	DROP2/DROP52	TRN 5 CHNL GATE AUTO REJECT
DigitalPoint	JRP05AMRJ9106-00	DROP2/DROP52	TRN 6 CHNL GATE AUTO REJECT
DigitalPoint	JRP05AMRJ9107-00	DROP2/DROP52	TRN 7 CHNL GATE AUTO REJECT
DigitalPoint	JRP05AMRJ9108-00	DROP2/DROP52	TRN 8 CHNL GATE AUTO REJECT
DigitalPoint	JRP05AMRJ9109-00	DROP2/DROP52	TRN 9 CHNL GATE AUTO REJECT
DigitalPoint	JRP05C1NRCYMODE-01	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C1NRCYMODE-02	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C1NRCYMODE-03	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C1NRCYMODE-04	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C1NRCYMODE-05	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C1NRCYMODE-06	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C1NRCYMODE-10	DROP2/DROP52	@ Ovation Control Builder @

DigitalPoint	JRP05C1NRCYMODE-11	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C2NRCYMODE-01	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C2NRCYMODE-02	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C2NRCYMODE-03	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C2NRCYMODE-04	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C2NRCYMODE-05	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C2NRCYMODE-06	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C2NRCYMODE-10	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C2NRCYMODE-11	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C3NRCYMODE-01	DROP2/DROP52	C3 NRCY CONTROL PF MODE
DigitalPoint	JRP05C3NRCYMODE-02	DROP2/DROP52	C3 NRCY NO3 MODE
DigitalPoint	JRP05C3NRCYMODE-03	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C3NRCYMODE-04	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C3NRCYMODE-05	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C3NRCYMODE-06	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C3NRCYMODE-10	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05C3NRCYMODE-11	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05DCSX1001-00	DROP2/DROP52	TRN 1 MXR 1 DCS MODE
DigitalPoint	JRP05DCSX1002-00	DROP2/DROP52	TRN 2 MXR 1 DCS MODE
DigitalPoint	JRP05DCSX1003-00	DROP2/DROP52	TRN 3 MXR 1 DCS MODE
DigitalPoint	JRP05DCSX1004-00	DROP2/DROP52	TRN 4 MXR 1 DCS MODE
DigitalPoint	JRP05DCSX1005-00	DROP2/DROP52	TRN 5 MXR 1 DCS MODE
DigitalPoint	JRP05DCSX1006-00	DROP2/DROP52	TRN 6 MXR 1 DCS MODE
DigitalPoint	JRP05DCSX1007-00	DROP2/DROP52	TRN 7 MXR 1 DCS MODE
DigitalPoint	JRP05DCSX1008-00	DROP2/DROP52	TRN 8 MXR 1 DCS MODE
DigitalPoint	JRP05DCSX1009-00	DROP2/DROP52	TRN 9 MXR 1 DCS MODE
DigitalPoint	JRP05DCSX2001-00	DROP2/DROP52	TRN 1 MXR 2 DCS MODE
DigitalPoint	JRP05DCSX2002-00	DROP2/DROP52	TRN 2 MXR 2 DCS MODE
DigitalPoint	JRP05DCSX2003-00	DROP2/DROP52	TRN 3 MXR 2 DCS MODE
DigitalPoint	JRP05DCSX2004-00	DROP2/DROP52	TRN 4 MXR 2 DCS MODE
DigitalPoint	JRP05DCSX2005-00	DROP2/DROP52	TRN 5 MXR 2 DCS MODE
DigitalPoint	JRP05DCSX2006-00	DROP2/DROP52	TRN 6 MXR 2 DCS MODE
DigitalPoint	JRP05DCSX2007-00	DROP2/DROP52	TRN 7 MXR 2 DCS MODE
DigitalPoint	JRP05DCSX2008-00	DROP2/DROP52	TRN 8 MXR 2 DCS MODE
DigitalPoint	JRP05DCSX2009-00	DROP2/DROP52	TRN 9 MXR 2 DCS MODE
DigitalPoint	JRP05DCSX3001-00	DROP2/DROP52	TRN 1 MXR 3 DCS MODE
DigitalPoint	JRP05DCSX3002-00	DROP2/DROP52	TRN 2 MXR 3 DCS MODE
DigitalPoint	JRP05DCSX3003-00	DROP2/DROP52	TRN 3 MXR 3 DCS MODE
DigitalPoint	JRP05DCSX3004-00	DROP2/DROP52	TRN 4 MXR 3 DCS MODE
DigitalPoint	JRP05DCSX3005-00	DROP2/DROP52	TRN 5 MXR 3 DCS MODE
DigitalPoint	JRP05DCSX3006-00	DROP2/DROP52	TRN 6 MXR 3 DCS MODE
DigitalPoint	JRP05DCSX3007-00	DROP2/DROP52	TRN 7 MXR 3 DCS MODE
DigitalPoint	JRP05DCSX3008-00	DROP2/DROP52	TRN 8 MXR 3 DCS MODE
DigitalPoint	JRP05DCSX3009-00	DROP2/DROP52	TRN 9 MXR 3 DCS MODE
DigitalPoint	JRP05DCSX3101-00	DROP2/DROP52	TRN 1 NRCY PMP 1 DCS MODE
DigitalPoint	JRP05DCSX3102-00	DROP2/DROP52	TRN 2 NRCY PMP 1 DCS MODE
DigitalPoint	JRP05DCSX3103-00	DROP2/DROP52	TRN 3 NRCY PMP 1 DCS MODE

DigitalPoint	JRP05DCSX3104-00	DROP2/DROP52	TRN 4 NRCY PMP 1 DCS MODE
DigitalPoint	JRP05DCSX3105-00	DROP2/DROP52	TRN 5 NRCY PMP 1 DCS MODE
DigitalPoint	JRP05DCSX3106-00	DROP2/DROP52	TRN 6 NRCY PMP 1 DCS MODE
DigitalPoint	JRP05DCSX3107-00	DROP2/DROP52	TRN 7 NRCY PMP 1 DCS MODE
DigitalPoint	JRP05DCSX3108-00	DROP2/DROP52	TRN 8 NRCY PMP 1 DCS MODE
DigitalPoint	JRP05DCSX3109-00	DROP2/DROP52	TRN 9 NRCY PMP 1 DCS MODE
DigitalPoint	JRP05DCSX5001-00	DROP2/DROP52	TRN 1 MXR 4 DCS MODE
DigitalPoint	JRP05DCSX5002-00	DROP2/DROP52	TRN 2 MXR 4 DCS MODE
DigitalPoint	JRP05DCSX5003-00	DROP2/DROP52	TRN 3 MXR 4 DCS MODE
DigitalPoint	JRP05DCSX5004-00	DROP2/DROP52	TRN 4 MXR 4 DCS MODE
DigitalPoint	JRP05DCSX5005-00	DROP2/DROP52	TRN 5 MXR 4 DCS MODE
DigitalPoint	JRP05DCSX5006-00	DROP2/DROP52	TRN 6 MXR 4 DCS MODE
DigitalPoint	JRP05DCSX5007-00	DROP2/DROP52	TRN 7 MXR 4 DCS MODE
DigitalPoint	JRP05DCSX5008-00	DROP2/DROP52	TRN 8 MXR 4 DCS MODE
DigitalPoint	JRP05DCSX5009-00	DROP2/DROP52	TRN 9 MXR 4 DCS MODE
DigitalPoint	JRP05DCSX5101-00	DROP2/DROP52	TRN 1 NRCY PMP 2 DCS MODE
DigitalPoint	JRP05DCSX5102-00	DROP2/DROP52	TRN 2 NRCY PMP 2 DCS MODE
DigitalPoint	JRP05DCSX5103-00	DROP2/DROP52	TRN 3 NRCY PMP 2 DCS MODE
DigitalPoint	JRP05DCSX5104-00	DROP2/DROP52	TRN 4 NRCY PMP 2 DCS MODE
DigitalPoint	JRP05DCSX5105-00	DROP2/DROP52	TRN 5 NRCY PMP 2 DCS MODE
DigitalPoint	JRP05DCSX5106-00	DROP2/DROP52	TRN 6 NRCY PMP 2 DCS MODE
DigitalPoint	JRP05DCSX5107-00	DROP2/DROP52	TRN 7 NRCY PMP 2 DCS MODE
DigitalPoint	JRP05DCSX5108-00	DROP2/DROP52	TRN 8 NRCY PMP 2 DCS MODE
DigitalPoint	JRP05DCSX5109-00	DROP2/DROP52	TRN 9 NRCY PMP 2 DCS MODE
DigitalPoint	JRP05DEVN3101-00	DROP2/DROP52	TRN 1 NRCY PMP 1 DEVN ALM
DigitalPoint	JRP05DEVN3102-00	DROP2/DROP52	TRN 2 NRCY PMP 1 DEVN ALM
DigitalPoint	JRP05DEVN3103-00	DROP2/DROP52	TRN 3 NRCY PMP 1 DEVN ALM
DigitalPoint	JRP05DEVN3104-00	DROP2/DROP52	TRN 4 NRCY PMP 1 DEVN ALM
DigitalPoint	JRP05DEVN3105-00	DROP2/DROP52	TRN 5 NRCY PMP 1 DEVN ALM
DigitalPoint	JRP05DEVN3106-00	DROP2/DROP52	TRN 6 NRCY PMP 1 DEVN ALM
DigitalPoint	JRP05DEVN3107-00	DROP2/DROP52	TRN 7 NRCY PMP 1 DEVN ALM
DigitalPoint	JRP05DEVN3108-00	DROP2/DROP52	TRN 8 NRCY PMP 1 DEVN ALM
DigitalPoint	JRP05DEVN3109-00	DROP2/DROP52	TRN 9 NRCY PMP 1 DEVN ALM
DigitalPoint	JRP05DEVN4121-00	DROP2/DROP52	TRN 1 AFCV 4A2 DEVN ALM
DigitalPoint	JRP05DEVN4122-00	DROP2/DROP52	TRN 2 AFCV 4A2 DEVN ALM
DigitalPoint	JRP05DEVN4123-00	DROP2/DROP52	TRN 3 AFCV 4A2 DEVN ALM
DigitalPoint	JRP05DEVN4124-00	DROP2/DROP52	TRN 4 AFCV 4A2 DEVN ALM
DigitalPoint	JRP05DEVN4125-00	DROP2/DROP52	TRN 5 AFCV 4A2 DEVN ALM
DigitalPoint	JRP05DEVN4126-00	DROP2/DROP52	TRN 6 AFCV 4A2 DEVN ALM
DigitalPoint	JRP05DEVN4127-00	DROP2/DROP52	TRN 7 AFCV 4A2 DEVN ALM
DigitalPoint	JRP05DEVN4128-00	DROP2/DROP52	TRN 8 AFCV 4A2 DEVN ALM
DigitalPoint	JRP05DEVN4129-00	DROP2/DROP52	TRN 9 AFCV 4A2 DEVN ALM
DigitalPoint	JRP05DEVN4201-00	DROP2/DROP52	TRN 1 AFCV 4B DEVN ALM
DigitalPoint	JRP05DEVN4202-00	DROP2/DROP52	TRN 2 AFCV 4B DEVN ALM
DigitalPoint	JRP05DEVN4203-00	DROP2/DROP52	TRN 3 AFCV 4B DEVN ALM
DigitalPoint	JRP05DEVN4204-00	DROP2/DROP52	TRN 4 AFCV 4B DEVN ALM
DigitalPoint	JRP05DEVN4205-00	DROP2/DROP52	TRN 5 AFCV 4B DEVN ALM

DigitalPoint	JRP05DEVN4206-00	DROP2/DROP52	TRN 6 AFCV 4B DEVN ALM
DigitalPoint	JRP05DEVN4207-00	DROP2/DROP52	TRN 7 AFCV 4B DEVN ALM
DigitalPoint	JRP05DEVN4208-00	DROP2/DROP52	TRN 8 AFCV 4B DEVN ALM
DigitalPoint	JRP05DEVN4209-00	DROP2/DROP52	TRN 9 AFCV 4B DEVN ALM
DigitalPoint	JRP05DEVN4301-00	DROP2/DROP52	TRN 1 AFCV 4C DEVN ALM
DigitalPoint	JRP05DEVN4302-00	DROP2/DROP52	TRN 2 AFCV 4C DEVN ALM
DigitalPoint	JRP05DEVN4303-00	DROP2/DROP52	TRN 3 AFCV 4C DEVN ALM
DigitalPoint	JRP05DEVN4304-00	DROP2/DROP52	TRN 4 AFCV 4C DEVN ALM
DigitalPoint	JRP05DEVN4305-00	DROP2/DROP52	TRN 5 AFCV 4C DEVN ALM
DigitalPoint	JRP05DEVN4306-00	DROP2/DROP52	TRN 6 AFCV 4C DEVN ALM
DigitalPoint	JRP05DEVN4307-00	DROP2/DROP52	TRN 7 AFCV 4C DEVN ALM
DigitalPoint	JRP05DEVN4308-00	DROP2/DROP52	TRN 8 AFCV 4C DEVN ALM
DigitalPoint	JRP05DEVN4309-00	DROP2/DROP52	TRN 9 AFCV 4C DEVN ALM
DigitalPoint	JRP05DEVN4411-00	DROP2/DROP52	TRN 1 AFCV 4D1 DEVN ALM
DigitalPoint	JRP05DEVN4412-00	DROP2/DROP52	TRN 2 AFCV 4D1 DEVN ALM
DigitalPoint	JRP05DEVN4413-00	DROP2/DROP52	TRN 3 AFCV 4D1 DEVN ALM
DigitalPoint	JRP05DEVN4414-00	DROP2/DROP52	TRN 4 AFCV 4D1 DEVN ALM
DigitalPoint	JRP05DEVN4415-00	DROP2/DROP52	TRN 5 AFCV 4D1 DEVN ALM
DigitalPoint	JRP05DEVN4416-00	DROP2/DROP52	TRN 6 AFCV 4D1 DEVN ALM
DigitalPoint	JRP05DEVN4417-00	DROP2/DROP52	TRN 7 AFCV 4D1 DEVN ALM
DigitalPoint	JRP05DEVN4418-00	DROP2/DROP52	TRN 8 AFCV 4D1 DEVN ALM
DigitalPoint	JRP05DEVN4419-00	DROP2/DROP52	TRN 9 AFCV 4D1 DEVN ALM
DigitalPoint	JRP05DEVN5101-00	DROP2/DROP52	TRN 1 NRCY PMP 2 DEVN ALM
DigitalPoint	JRP05DEVN5102-00	DROP2/DROP52	TRN 2 NRCY PMP 2 DEVN ALM
DigitalPoint	JRP05DEVN5103-00	DROP2/DROP52	TRN 3 NRCY PMP 2 DEVN ALM
DigitalPoint	JRP05DEVN5104-00	DROP2/DROP52	TRN 4 NRCY PMP 2 DEVN ALM
DigitalPoint	JRP05DEVN5105-00	DROP2/DROP52	TRN 5 NRCY PMP 2 DEVN ALM
DigitalPoint	JRP05DEVN5106-00	DROP2/DROP52	TRN 6 NRCY PMP 2 DEVN ALM
DigitalPoint	JRP05DEVN5107-00	DROP2/DROP52	TRN 7 NRCY PMP 2 DEVN ALM
DigitalPoint	JRP05DEVN5108-00	DROP2/DROP52	TRN 8 NRCY PMP 2 DEVN ALM
DigitalPoint	JRP05DEVN5109-00	DROP2/DROP52	TRN 9 NRCY PMP 2 DEVN ALM
DigitalPoint	JRP05DEVN9101-00	DROP2/DROP52	TRN 1 CHNL GATE DEVN ALM
DigitalPoint	JRP05DEVN9102-00	DROP2/DROP52	TRN 2 CHNL GATE DEVN ALM
DigitalPoint	JRP05DEVN9103-00	DROP2/DROP52	TRN 3 CHNL GATE DEVN ALM
DigitalPoint	JRP05DEVN9104-00	DROP2/DROP52	TRN 4 CHNL GATE DEVN ALM
DigitalPoint	JRP05DEVN9105-00	DROP2/DROP52	TRN 5 CHNL GATE DEVN ALM
DigitalPoint	JRP05DEVN9106-00	DROP2/DROP52	TRN 6 CHNL GATE DEVN ALM
DigitalPoint	JRP05DEVN9107-00	DROP2/DROP52	TRN 7 CHNL GATE DEVN ALM
DigitalPoint	JRP05DEVN9108-00	DROP2/DROP52	TRN 8 CHNL GATE DEVN ALM
DigitalPoint	JRP05DEVN9109-00	DROP2/DROP52	TRN 9 CHNL GATE DEVN ALM
DigitalPoint	JRP05DOALM1	DROP2/DROP52	TRN1 MEDIA INF ZONE DO PROBE
DigitalPoint	JRP05DOALM10	DROP2/DROP52	TRN5 MEDIA EFF ZONE DO PROBE
DigitalPoint	JRP05DOALM11	DROP2/DROP52	TRN6 MEDIA INF ZONE DO PROBE
DigitalPoint	JRP05DOALM12	DROP2/DROP52	TRN6 MEDIA EFF ZONE DO PROBE
DigitalPoint	JRP05DOALM13	DROP2/DROP52	TRN7 MEDIA INF ZONE DO PROBE
DigitalPoint	JRP05DOALM14	DROP2/DROP52	TRN7 MEDIA EFF ZONE DO PROBE
DigitalPoint	JRP05DOALM15	DROP2/DROP52	TRN8 MEDIA INF ZONE DO PROBE

DigitalPoint	JRP05DOALM16	DROP2/DROP52	TRN8 MEDIA EFF ZONE DO PROBE
DigitalPoint	JRP05DOALM17	DROP2/DROP52	TRN9 MEDIA INF ZONE DO PROBE
DigitalPoint	JRP05DOALM18	DROP2/DROP52	TRN9 MEDIA EFF ZONE DO PROBE
DigitalPoint	JRP05DOALM2	DROP2/DROP52	TRN1 MEDIA EFF ZONE DO PROBE
DigitalPoint	JRP05DOALM3	DROP2/DROP52	TRN2 MEDIA INF ZONE DO PROBE
DigitalPoint	JRP05DOALM4	DROP2/DROP52	TRN2 MEDIA EFF ZONE DO PROBE
DigitalPoint	JRP05DOALM5	DROP2/DROP52	TRN3 MEDIA INF ZONE DO PROBE
DigitalPoint	JRP05DOALM6	DROP2/DROP52	TRN3 MEDIA EFF ZONE DO PROBE
DigitalPoint	JRP05DOALM7	DROP2/DROP52	TRN4 MEDIA INF ZONE DO PROBE
DigitalPoint	JRP05DOALM8	DROP2/DROP52	TRN4 MEDIA EFF ZONE DO PROBE
DigitalPoint	JRP05DOALM9	DROP2/DROP52	TRN5 MEDIA INF ZONE DO PROBE
DigitalPoint	JRP05FGAS9101	DROP2/DROP52	TRN 1 CHNL CTRL GATE IN AUTO
DigitalPoint	JRP05FGAS9102	DROP2/DROP52	TRN 2 CHNL CTRL GATE IN AUTO
DigitalPoint	JRP05FGAS9103	DROP2/DROP52	TRN 3 CHNL CTRL GATE IN AUTO
DigitalPoint	JRP05FGAS9104	DROP2/DROP52	TRN 4 CHNL CTRL GATE IN AUTO
DigitalPoint	JRP05FGAS9105	DROP2/DROP52	TRN 5 CHNL CTRL GATE IN AUTO
DigitalPoint	JRP05FGAS9106	DROP2/DROP52	TRN 6 CHNL CTRL GATE IN AUTO
DigitalPoint	JRP05FGAS9107	DROP2/DROP52	TRN 7 CHNL CTRL GATE IN AUTO
DigitalPoint	JRP05FGAS9108	DROP2/DROP52	TRN 8 CHNL CTRL GATE IN AUTO
DigitalPoint	JRP05FGAS9109	DROP2/DROP52	TRN 9 CHNL CTRL GATE IN AUTO
DigitalPoint	JRP05FGOS9101-00	DROP2/DROP52	TRN 1 CHNL GATE OPN
DigitalPoint	JRP05FGOS9102-00	DROP2/DROP52	TRN 2 CHNL GATE OPN
DigitalPoint	JRP05FGOS9103-00	DROP2/DROP52	TRN 3 CHNL GATE OPN
DigitalPoint	JRP05FGOS9104-00	DROP2/DROP52	TRN 4 CHNL GATE OPN
DigitalPoint	JRP05FGOS9105-00	DROP2/DROP52	TRN 5 CHNL GATE OPN
DigitalPoint	JRP05FGOS9106-00	DROP2/DROP52	TRN 6 CHNL GATE OPN
DigitalPoint	JRP05FGOS9107-00	DROP2/DROP52	TRN 7 CHNL GATE OPN
DigitalPoint	JRP05FGOS9108-00	DROP2/DROP52	TRN 8 CHNL GATE OPN
DigitalPoint	JRP05FGOS9109-00	DROP2/DROP52	TRN 9 CHNL GATE OPN
DigitalPoint	JRP05FSTP1001-00	DROP2/DROP52	TRN 1 MXR 1 FAIL TO STOP
DigitalPoint	JRP05FSTP1002-00	DROP2/DROP52	TRN 2 MXR 1 FAIL TO STOP
DigitalPoint	JRP05FSTP1003-00	DROP2/DROP52	TRN 3 MXR 1 FAIL TO STOP
DigitalPoint	JRP05FSTP1004-00	DROP2/DROP52	TRN 4 MXR 1 FAIL TO STOP
DigitalPoint	JRP05FSTP1005-00	DROP2/DROP52	TRN 5 MXR 1 FAIL TO STOP
DigitalPoint	JRP05FSTP1006-00	DROP2/DROP52	TRN 6 MXR 1 FAIL TO STOP
DigitalPoint	JRP05FSTP1007-00	DROP2/DROP52	TRN 7 MXR 1 FAIL TO STOP
DigitalPoint	JRP05FSTP1008-00	DROP2/DROP52	TRN 8 MXR 1 FAIL TO STOP
DigitalPoint	JRP05FSTP1009-00	DROP2/DROP52	TRN 9 MXR 1 FAIL TO STOP
DigitalPoint	JRP05FSTP2001-00	DROP2/DROP52	TRN 1 MXR 2 FAIL TO STOP
DigitalPoint	JRP05FSTP2002-00	DROP2/DROP52	TRN 2 MXR 2 FAIL TO STOP
DigitalPoint	JRP05FSTP2003-00	DROP2/DROP52	TRN 3 MXR 2 FAIL TO STOP
DigitalPoint	JRP05FSTP2004-00	DROP2/DROP52	TRN 4 MXR 2 FAIL TO STOP
DigitalPoint	JRP05FSTP2005-00	DROP2/DROP52	TRN 5 MXR 2 FAIL TO STOP
DigitalPoint	JRP05FSTP2006-00	DROP2/DROP52	TRN 6 MXR 2 FAIL TO STOP
DigitalPoint	JRP05FSTP2007-00	DROP2/DROP52	TRN 7 MXR 2 FAIL TO STOP
DigitalPoint	JRP05FSTP2008-00	DROP2/DROP52	TRN 8 MXR 2 FAIL TO STOP
DigitalPoint	JRP05FSTP2009-00	DROP2/DROP52	TRN 9 MXR 2 FAIL TO STOP

DigitalPoint	JRP05FSTP3001-00	DROP2/DROP52	TRN 1 MXR 3 FAIL TO STOP
DigitalPoint	JRP05FSTP3002-00	DROP2/DROP52	TRN 2 MXR 3 FAIL TO STOP
DigitalPoint	JRP05FSTP3003-00	DROP2/DROP52	TRN 3 MXR 3 FAIL TO STOP
DigitalPoint	JRP05FSTP3004-00	DROP2/DROP52	TRN 4 MXR 3 FAIL TO STOP
DigitalPoint	JRP05FSTP3005-00	DROP2/DROP52	TRN 5 MXR 3 FAIL TO STOP
DigitalPoint	JRP05FSTP3006-00	DROP2/DROP52	TRN 6 MXR 3 FAIL TO STOP
DigitalPoint	JRP05FSTP3007-00	DROP2/DROP52	TRN 7 MXR 3 FAIL TO STOP
DigitalPoint	JRP05FSTP3008-00	DROP2/DROP52	TRN 8 MXR 3 FAIL TO STOP
DigitalPoint	JRP05FSTP3009-00	DROP2/DROP52	TRN 9 MXR 3 FAIL TO STOP
DigitalPoint	JRP05FSTP3101-00	DROP2/DROP52	TRN 1 NRCY PMP 1 FAIL TO STOP
DigitalPoint	JRP05FSTP3102-00	DROP2/DROP52	TRN 2 NRCY PMP 1 FAIL TO STOP
DigitalPoint	JRP05FSTP3103-00	DROP2/DROP52	TRN 3 NRCY PMP 1 FAIL TO STOP
DigitalPoint	JRP05FSTP3104-00	DROP2/DROP52	TRN 4 NRCY PMP 1 FAIL TO STOP
DigitalPoint	JRP05FSTP3105-00	DROP2/DROP52	TRN 5 NRCY PMP 1 FAIL TO STOP
DigitalPoint	JRP05FSTP3106-00	DROP2/DROP52	TRN 6 NRCY PMP 1 FAIL TO STOP
DigitalPoint	JRP05FSTP3107-00	DROP2/DROP52	TRN 7 NRCY PMP 1 FAIL TO STOP
DigitalPoint	JRP05FSTP3108-00	DROP2/DROP52	TRN 8 NRCY PMP 1 FAIL TO STOP
DigitalPoint	JRP05FSTP3109-00	DROP2/DROP52	TRN 9 NRCY PMP 1 FAIL TO STOP
DigitalPoint	JRP05FSTP5001-00	DROP2/DROP52	TRN 1 MXR 4 FAIL TO STOP
DigitalPoint	JRP05FSTP5002-00	DROP2/DROP52	TRN 2 MXR 4 FAIL TO STOP
DigitalPoint	JRP05FSTP5003-00	DROP2/DROP52	TRN 3 MXR 4 FAIL TO STOP
DigitalPoint	JRP05FSTP5004-00	DROP2/DROP52	TRN 4 MXR 4 FAIL TO STOP
DigitalPoint	JRP05FSTP5005-00	DROP2/DROP52	TRN 5 MXR 4 FAIL TO STOP
DigitalPoint	JRP05FSTP5006-00	DROP2/DROP52	TRN 6 MXR 4 FAIL TO STOP
DigitalPoint	JRP05FSTP5007-00	DROP2/DROP52	TRN 7 MXR 4 FAIL TO STOP
DigitalPoint	JRP05FSTP5008-00	DROP2/DROP52	TRN 8 MXR 4 FAIL TO STOP
DigitalPoint	JRP05FSTP5009-00	DROP2/DROP52	TRN 9 MXR 4 FAIL TO STOP
DigitalPoint	JRP05FSTP5101-00	DROP2/DROP52	TRN 1 NRCY PMP 2 FAIL TO STOP
DigitalPoint	JRP05FSTP5102-00	DROP2/DROP52	TRN 2 NRCY PMP 2 FAIL TO STOP
DigitalPoint	JRP05FSTP5103-00	DROP2/DROP52	TRN 3 NRCY PMP 2 FAIL TO STOP
DigitalPoint	JRP05FSTP5104-00	DROP2/DROP52	TRN 4 NRCY PMP 2 FAIL TO STOP
DigitalPoint	JRP05FSTP5105-00	DROP2/DROP52	TRN 5 NRCY PMP 2 FAIL TO STOP
DigitalPoint	JRP05FSTP5106-00	DROP2/DROP52	TRN 6 NRCY PMP 2 FAIL TO STOP
DigitalPoint	JRP05FSTP5107-00	DROP2/DROP52	TRN 7 NRCY PMP 2 FAIL TO STOP
DigitalPoint	JRP05FSTP5108-00	DROP2/DROP52	TRN 8 NRCY PMP 2 FAIL TO STOP
DigitalPoint	JRP05FSTP5109-00	DROP2/DROP52	TRN 9 NRCY PMP 2 FAIL TO STOP
DigitalPoint	JRP05FSTR1001-00	DROP2/DROP52	TRN 1 MXR 1 FAIL TO START
DigitalPoint	JRP05FSTR1002-00	DROP2/DROP52	TRN 2 MXR 1 FAIL TO START
DigitalPoint	JRP05FSTR1003-00	DROP2/DROP52	TRN 3 MXR 1 FAIL TO START
DigitalPoint	JRP05FSTR1004-00	DROP2/DROP52	TRN 4 MXR 1 FAIL TO START
DigitalPoint	JRP05FSTR1005-00	DROP2/DROP52	TRN 5 MXR 1 FAIL TO START
DigitalPoint	JRP05FSTR1006-00	DROP2/DROP52	TRN 6 MXR 1 FAIL TO START
DigitalPoint	JRP05FSTR1007-00	DROP2/DROP52	TRN 7 MXR 1 FAIL TO START
DigitalPoint	JRP05FSTR1008-00	DROP2/DROP52	TRN 8 MXR 1 FAIL TO START
DigitalPoint	JRP05FSTR1009-00	DROP2/DROP52	TRN 9 MXR 1 FAIL TO START
DigitalPoint	JRP05FSTR2001-00	DROP2/DROP52	TRN 1 MXR 2 FAIL TO START
DigitalPoint	JRP05FSTR2002-00	DROP2/DROP52	TRN 2 MXR 2 FAIL TO START

DigitalPoint	JRP05FSTR2003-00	DROP2/DROP52	TRN 3 MXR 2 FAIL TO START
DigitalPoint	JRP05FSTR2004-00	DROP2/DROP52	TRN 4 MXR 2 FAIL TO START
DigitalPoint	JRP05FSTR2005-00	DROP2/DROP52	TRN 5 MXR 2 FAIL TO START
DigitalPoint	JRP05FSTR2006-00	DROP2/DROP52	TRN 6 MXR 2 FAIL TO START
DigitalPoint	JRP05FSTR2007-00	DROP2/DROP52	TRN 7 MXR 2 FAIL TO START
DigitalPoint	JRP05FSTR2008-00	DROP2/DROP52	TRN 8 MXR 2 FAIL TO START
DigitalPoint	JRP05FSTR2009-00	DROP2/DROP52	TRN 9 MXR 2 FAIL TO START
DigitalPoint	JRP05FSTR3001-00	DROP2/DROP52	TRN 1 MXR 3 FAIL TO START
DigitalPoint	JRP05FSTR3002-00	DROP2/DROP52	TRN 2 MXR 3 FAIL TO START
DigitalPoint	JRP05FSTR3003-00	DROP2/DROP52	TRN 3 MXR 3 FAIL TO START
DigitalPoint	JRP05FSTR3004-00	DROP2/DROP52	TRN 4 MXR 3 FAIL TO START
DigitalPoint	JRP05FSTR3005-00	DROP2/DROP52	TRN 5 MXR 3 FAIL TO START
DigitalPoint	JRP05FSTR3006-00	DROP2/DROP52	TRN 6 MXR 3 FAIL TO START
DigitalPoint	JRP05FSTR3007-00	DROP2/DROP52	TRN 7 MXR 3 FAIL TO START
DigitalPoint	JRP05FSTR3008-00	DROP2/DROP52	TRN 8 MXR 3 FAIL TO START
DigitalPoint	JRP05FSTR3009-00	DROP2/DROP52	TRN 9 MXR 3 FAIL TO START
DigitalPoint	JRP05FSTR3101-00	DROP2/DROP52	TRN 1 NRCY PMP 1 FAIL TO START
DigitalPoint	JRP05FSTR3102-00	DROP2/DROP52	TRN 2 NRCY PMP 1 FAIL TO START
DigitalPoint	JRP05FSTR3103-00	DROP2/DROP52	TRN 3 NRCY PMP 1 FAIL TO START
DigitalPoint	JRP05FSTR3104-00	DROP2/DROP52	TRN 4 NRCY PMP 1 FAIL TO START
DigitalPoint	JRP05FSTR3105-00	DROP2/DROP52	TRN 5 NRCY PMP 1 FAIL TO START
DigitalPoint	JRP05FSTR3106-00	DROP2/DROP52	TRN 6 NRCY PMP 1 FAIL TO START
DigitalPoint	JRP05FSTR3107-00	DROP2/DROP52	TRN 7 NRCY PMP 1 FAIL TO START
DigitalPoint	JRP05FSTR3108-00	DROP2/DROP52	TRN 8 NRCY PMP 1 FAIL TO START
DigitalPoint	JRP05FSTR3109-00	DROP2/DROP52	TRN 9 NRCY PMP 1 FAIL TO START
DigitalPoint	JRP05FSTR5001-00	DROP2/DROP52	TRN 1 MXR 4 FAIL TO START
DigitalPoint	JRP05FSTR5002-00	DROP2/DROP52	TRN 2 MXR 4 FAIL TO START
DigitalPoint	JRP05FSTR5003-00	DROP2/DROP52	TRN 3 MXR 4 FAIL TO START
DigitalPoint	JRP05FSTR5004-00	DROP2/DROP52	TRN 4 MXR 4 FAIL TO START
DigitalPoint	JRP05FSTR5005-00	DROP2/DROP52	TRN 5 MXR 4 FAIL TO START
DigitalPoint	JRP05FSTR5006-00	DROP2/DROP52	TRN 6 MXR 4 FAIL TO START
DigitalPoint	JRP05FSTR5007-00	DROP2/DROP52	TRN 7 MXR 4 FAIL TO START
DigitalPoint	JRP05FSTR5008-00	DROP2/DROP52	TRN 8 MXR 4 FAIL TO START
DigitalPoint	JRP05FSTR5009-00	DROP2/DROP52	TRN 9 MXR 4 FAIL TO START
DigitalPoint	JRP05FSTR5101-00	DROP2/DROP52	TRN 1 NRCY PMP 2 FAIL TO START
DigitalPoint	JRP05FSTR5102-00	DROP2/DROP52	TRN 2 NRCY PMP 2 FAIL TO START
DigitalPoint	JRP05FSTR5103-00	DROP2/DROP52	TRN 3 NRCY PMP 2 FAIL TO START
DigitalPoint	JRP05FSTR5104-00	DROP2/DROP52	TRN 4 NRCY PMP 2 FAIL TO START
DigitalPoint	JRP05FSTR5105-00	DROP2/DROP52	TRN 5 NRCY PMP 2 FAIL TO START
DigitalPoint	JRP05FSTR5106-00	DROP2/DROP52	TRN 6 NRCY PMP 2 FAIL TO START
DigitalPoint	JRP05FSTR5107-00	DROP2/DROP52	TRN 7 NRCY PMP 2 FAIL TO START
DigitalPoint	JRP05FSTR5108-00	DROP2/DROP52	TRN 8 NRCY PMP 2 FAIL TO START
DigitalPoint	JRP05FSTR5109-00	DROP2/DROP52	TRN 9 NRCY PMP 2 FAIL TO START
DigitalPoint	JRP05FVAS4121	DROP2/DROP52	TRN 1 ZONE 4A2 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4122	DROP2/DROP52	TRN 2 ZONE 4A2 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4123	DROP2/DROP52	TRN 3 ZONE 4A2 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4124	DROP2/DROP52	TRN 4 ZONE 4A2 AIR FCV IN AUTO

DigitalPoint	JRP05FVAS4125	DROP2/DROP52	TRN 5 ZONE 4A2 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4126	DROP2/DROP52	TRN 6 ZONE 4A2 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4127	DROP2/DROP52	TRN 7 ZONE 4A2 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4128	DROP2/DROP52	TRN 8 ZONE 4A2 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4129	DROP2/DROP52	TRN 9 ZONE 4A2 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4201	DROP2/DROP52	TRN 1 ZONE 4B AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4202	DROP2/DROP52	TRN 2 ZONE 4B AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4203	DROP2/DROP52	TRN 3 ZONE 4B AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4204	DROP2/DROP52	TRN 4 ZONE 4B AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4205	DROP2/DROP52	TRN 5 ZONE 4B AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4206	DROP2/DROP52	TRN 6 ZONE 4B AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4207	DROP2/DROP52	TRN 7 ZONE 4B AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4208	DROP2/DROP52	TRN 8 ZONE 4B AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4209	DROP2/DROP52	TRN 9 ZONE 4B AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4301	DROP2/DROP52	TRN 1 ZONE 4C AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4302	DROP2/DROP52	TRN 2 ZONE 4C AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4303	DROP2/DROP52	TRN 3 ZONE 4C AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4304	DROP2/DROP52	TRN 4 ZONE 4C AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4305	DROP2/DROP52	TRN 5 ZONE 4C AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4306	DROP2/DROP52	TRN 6 ZONE 4C AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4307	DROP2/DROP52	TRN 7 ZONE 4C AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4308	DROP2/DROP52	TRN 8 ZONE 4C AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4309	DROP2/DROP52	TRN 9 ZONE 4C AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4411	DROP2/DROP52	TRN 1 ZONE 4D1 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4412	DROP2/DROP52	TRN 2 ZONE 4D1 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4413	DROP2/DROP52	TRN 3 ZONE 4D1 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4414	DROP2/DROP52	TRN 4 ZONE 4D1 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4415	DROP2/DROP52	TRN 5 ZONE 4D1 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4416	DROP2/DROP52	TRN 6 ZONE 4D1 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4417	DROP2/DROP52	TRN 7 ZONE 4D1 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4418	DROP2/DROP52	TRN 8 ZONE 4D1 AIR FCV IN AUTO
DigitalPoint	JRP05FVAS4419	DROP2/DROP52	TRN 9 ZONE 4D1 AIR FCV IN AUTO
DigitalPoint	JRP05FVOS4121-00	DROP2/DROP52	TRN 1 AFCV 4A2 OPN
DigitalPoint	JRP05FVOS4122-00	DROP2/DROP52	TRN 2 AFCV 4A2 OPN
DigitalPoint	JRP05FVOS4123-00	DROP2/DROP52	TRN 3 AFCV 4A2 OPN
DigitalPoint	JRP05FVOS4124-00	DROP2/DROP52	TRN 4 AFCV 4A2 OPN
DigitalPoint	JRP05FVOS4125-00	DROP2/DROP52	TRN 5 AFCV 4A2 OPN
DigitalPoint	JRP05FVOS4126-00	DROP2/DROP52	TRN 6 AFCV 4A2 OPN
DigitalPoint	JRP05FVOS4127-00	DROP2/DROP52	TRN 7 AFCV 4A2 OPN
DigitalPoint	JRP05FVOS4128-00	DROP2/DROP52	TRN 8 AFCV 4A2 OPN
DigitalPoint	JRP05FVOS4129-00	DROP2/DROP52	TRN 9 AFCV 4A2 OPN
DigitalPoint	JRP05FVOS4201-00	DROP2/DROP52	TRN 1 AFCV 4B OPN
DigitalPoint	JRP05FVOS4202-00	DROP2/DROP52	TRN 2 AFCV 4B OPN
DigitalPoint	JRP05FVOS4203-00	DROP2/DROP52	TRN 3 AFCV 4B OPN
DigitalPoint	JRP05FVOS4204-00	DROP2/DROP52	TRN 4 AFCV 4B OPN
DigitalPoint	JRP05FVOS4205-00	DROP2/DROP52	TRN 5 AFCV 4B OPN
DigitalPoint	JRP05FVOS4206-00	DROP2/DROP52	TRN 6 AFCV 4B OPN

DigitalPoint	JRP05FVOS4207-00	DROP2/DROP52	TRN 7 AFCV 4B OPN
DigitalPoint	JRP05FVOS4208-00	DROP2/DROP52	TRN 8 AFCV 4B OPN
DigitalPoint	JRP05FVOS4209-00	DROP2/DROP52	TRN 9 AFCV 4B OPN
DigitalPoint	JRP05FVOS4301-00	DROP2/DROP52	TRN 1 AFCV 4C OPN
DigitalPoint	JRP05FVOS4302-00	DROP2/DROP52	TRN 2 AFCV 4C OPN
DigitalPoint	JRP05FVOS4303-00	DROP2/DROP52	TRN 3 AFCV 4C OPN
DigitalPoint	JRP05FVOS4304-00	DROP2/DROP52	TRN 4 AFCV 4C OPN
DigitalPoint	JRP05FVOS4305-00	DROP2/DROP52	TRN 5 AFCV 4C OPN
DigitalPoint	JRP05FVOS4306-00	DROP2/DROP52	TRN 6 AFCV 4C OPN
DigitalPoint	JRP05FVOS4307-00	DROP2/DROP52	TRN 7 AFCV 4C OPN
DigitalPoint	JRP05FVOS4308-00	DROP2/DROP52	TRN 8 AFCV 4C OPN
DigitalPoint	JRP05FVOS4309-00	DROP2/DROP52	TRN 9 AFCV 4C OPN
DigitalPoint	JRP05FVOS4411-00	DROP2/DROP52	TRN 1 AFCV 4D1 OPN
DigitalPoint	JRP05FVOS4412-00	DROP2/DROP52	TRN 2 AFCV 4D1 OPN
DigitalPoint	JRP05FVOS4413-00	DROP2/DROP52	TRN 3 AFCV 4D1 OPN
DigitalPoint	JRP05FVOS4414-00	DROP2/DROP52	TRN 4 AFCV 4D1 OPN
DigitalPoint	JRP05FVOS4415-00	DROP2/DROP52	TRN 5 AFCV 4D1 OPN
DigitalPoint	JRP05FVOS4416-00	DROP2/DROP52	TRN 6 AFCV 4D1 OPN
DigitalPoint	JRP05FVOS4417-00	DROP2/DROP52	TRN 7 AFCV 4D1 OPN
DigitalPoint	JRP05FVOS4418-00	DROP2/DROP52	TRN 8 AFCV 4D1 OPN
DigitalPoint	JRP05FVOS4419-00	DROP2/DROP52	TRN 9 AFCV 4D1 OPN
DigitalPoint	JRP05HSAS1001	DROP2/DROP52	TRN 1 ZONE R1 MXR IN AUTO
DigitalPoint	JRP05HSAS1002	DROP2/DROP52	TRN 2 ZONE R1 MXR IN AUTO
DigitalPoint	JRP05HSAS1003	DROP2/DROP52	TRN 3 ZONE R1 MXR IN AUTO
DigitalPoint	JRP05HSAS1004	DROP2/DROP52	TRN 4 ZONE R1 MXR IN AUTO
DigitalPoint	JRP05HSAS1005	DROP2/DROP52	TRN 5 ZONE R1 MXR IN AUTO
DigitalPoint	JRP05HSAS1006	DROP2/DROP52	TRN 6 ZONE R1 MXR IN AUTO
DigitalPoint	JRP05HSAS1007	DROP2/DROP52	TRN 7 ZONE R1 MXR IN AUTO
DigitalPoint	JRP05HSAS1008	DROP2/DROP52	TRN 8 ZONE R1 MXR IN AUTO
DigitalPoint	JRP05HSAS1009	DROP2/DROP52	TRN 9 ZONE R1 MXR IN AUTO
DigitalPoint	JRP05HSAS2001	DROP2/DROP52	TRN 1 ZONE R2 MXR IN AUTO
DigitalPoint	JRP05HSAS2002	DROP2/DROP52	TRN 2 ZONE R2 MXR IN AUTO
DigitalPoint	JRP05HSAS2003	DROP2/DROP52	TRN 3 ZONE R2 MXR IN AUTO
DigitalPoint	JRP05HSAS2004	DROP2/DROP52	TRN 4 ZONE R2 MXR IN AUTO
DigitalPoint	JRP05HSAS2005	DROP2/DROP52	TRN 5 ZONE R2 MXR IN AUTO
DigitalPoint	JRP05HSAS2006	DROP2/DROP52	TRN 6 ZONE R2 MXR IN AUTO
DigitalPoint	JRP05HSAS2007	DROP2/DROP52	TRN 7 ZONE R2 MXR IN AUTO
DigitalPoint	JRP05HSAS2008	DROP2/DROP52	TRN 8 ZONE R2 MXR IN AUTO
DigitalPoint	JRP05HSAS2009	DROP2/DROP52	TRN 9 ZONE R2 MXR IN AUTO
DigitalPoint	JRP05HSAS3001	DROP2/DROP52	TRN 1 ZONE R3 MXR IN AUTO
DigitalPoint	JRP05HSAS3002	DROP2/DROP52	TRN 2 ZONE R3 MXR IN AUTO
DigitalPoint	JRP05HSAS3003	DROP2/DROP52	TRN 3 ZONE R3 MXR IN AUTO
DigitalPoint	JRP05HSAS3004	DROP2/DROP52	TRN 4 ZONE R3 MXR IN AUTO
DigitalPoint	JRP05HSAS3005	DROP2/DROP52	TRN 5 ZONE R3 MXR IN AUTO
DigitalPoint	JRP05HSAS3006	DROP2/DROP52	TRN 6 ZONE R3 MXR IN AUTO
DigitalPoint	JRP05HSAS3007	DROP2/DROP52	TRN 7 ZONE R3 MXR IN AUTO
DigitalPoint	JRP05HSAS3008	DROP2/DROP52	TRN 8 ZONE R3 MXR IN AUTO

DigitalPoint	JRP05HSAS3009	DROP2/DROP52	TRN 9 ZONE R3 MXR IN AUTO
DigitalPoint	JRP05HSAS3101	DROP2/DROP52	TRN 1 NRCY PMP NO1 IN AUTO
DigitalPoint	JRP05HSAS3102	DROP2/DROP52	TRN 2 NRCY PMP NO1 IN AUTO
DigitalPoint	JRP05HSAS3103	DROP2/DROP52	TRN 3 NRCY PMP NO1 IN AUTO
DigitalPoint	JRP05HSAS3104	DROP2/DROP52	TRN 4 NRCY PMP NO1 IN AUTO
DigitalPoint	JRP05HSAS3105	DROP2/DROP52	TRN 5 NRCY PMP NO1 IN AUTO
DigitalPoint	JRP05HSAS3106	DROP2/DROP52	TRN 6 NRCY PMP NO1 IN AUTO
DigitalPoint	JRP05HSAS3107	DROP2/DROP52	TRN 7 NRCY PMP NO1 IN AUTO
DigitalPoint	JRP05HSAS3108	DROP2/DROP52	TRN 8 NRCY PMP NO1 IN AUTO
DigitalPoint	JRP05HSAS3109	DROP2/DROP52	TRN 9 NRCY PMP NO1 IN AUTO
DigitalPoint	JRP05HSAS5001	DROP2/DROP52	TRN 1 ZONE R5 MXR IN AUTO
DigitalPoint	JRP05HSAS5002	DROP2/DROP52	TRN 2 ZONE R5 MXR IN AUTO
DigitalPoint	JRP05HSAS5003	DROP2/DROP52	TRN 3 ZONE R5 MXR IN AUTO
DigitalPoint	JRP05HSAS5004	DROP2/DROP52	TRN 4 ZONE R5 MXR IN AUTO
DigitalPoint	JRP05HSAS5005	DROP2/DROP52	TRN 5 ZONE R5 MXR IN AUTO
DigitalPoint	JRP05HSAS5006	DROP2/DROP52	TRN 6 ZONE R5 MXR IN AUTO
DigitalPoint	JRP05HSAS5007	DROP2/DROP52	TRN 7 ZONE R5 MXR IN AUTO
DigitalPoint	JRP05HSAS5008	DROP2/DROP52	TRN 8 ZONE R5 MXR IN AUTO
DigitalPoint	JRP05HSAS5009	DROP2/DROP52	TRN 9 ZONE R5 MXR IN AUTO
DigitalPoint	JRP05HSAS5101	DROP2/DROP52	TRN 1 NRCY PMP NO2 IN AUTO
DigitalPoint	JRP05HSAS5102	DROP2/DROP52	TRN 2 NRCY PMP NO2 IN AUTO
DigitalPoint	JRP05HSAS5103	DROP2/DROP52	TRN 3 NRCY PMP NO2 IN AUTO
DigitalPoint	JRP05HSAS5104	DROP2/DROP52	TRN 4 NRCY PMP NO2 IN AUTO
DigitalPoint	JRP05HSAS5105	DROP2/DROP52	TRN 5 NRCY PMP NO2 IN AUTO
DigitalPoint	JRP05HSAS5106	DROP2/DROP52	TRN 6 NRCY PMP NO2 IN AUTO
DigitalPoint	JRP05HSAS5107	DROP2/DROP52	TRN 7 NRCY PMP NO2 IN AUTO
DigitalPoint	JRP05HSAS5108	DROP2/DROP52	TRN 8 NRCY PMP NO2 IN AUTO
DigitalPoint	JRP05HSAS5109	DROP2/DROP52	TRN 9 NRCY PMP NO2 IN AUTO
DigitalPoint	JRP05IFAS0001-MODE	DROP2/DROP52	IFAS RCTR 1 MODE
DigitalPoint	JRP05IFAS0001-SEL	DROP2/DROP52	IFAS REACTOR 1 MODE SELECTION
DigitalPoint	JRP05LOFLOENA-01	DROP2/DROP52	NRCY T1P1 LOW FLOW MODE ON
DigitalPoint	JRP05LOFLOENA-02	DROP2/DROP52	NRCY T2P1 LO FLOW MODE ON
DigitalPoint	JRP05LOFLOENA-03	DROP2/DROP52	NRCY T3P1 LO FLOW MODE ON
DigitalPoint	JRP05LOFLOENA-04	DROP2/DROP52	NRCY T4P1 LO FLOW MODE ON
DigitalPoint	JRP05LOFLOENA-05	DROP2/DROP52	NRCY T5P1 LO FLOW MODE ON
DigitalPoint	JRP05LOFLOENA-06	DROP2/DROP52	NRCY T6P1 LO FLOW MODE ON
DigitalPoint	JRP05LOFLOENA-07	DROP2/DROP52	NRCY T7P1 LO FLOW MODE ON
DigitalPoint	JRP05LOFLOENA-08	DROP2/DROP52	NRCY T8P1 LO FLOW MODE ON
DigitalPoint	JRP05LOFLOENA-09	DROP2/DROP52	NRCY T9P1 LO FLOW MODE ON
DigitalPoint	JRP05MMRJ0511-00	DROP2/DROP52	TRN 1 AFCV MSTR1 MAN REJECT
DigitalPoint	JRP05MMRJ0512-00	DROP2/DROP52	TRN 2 AFCV MSTR1 MAN REJECT
DigitalPoint	JRP05MMRJ0513-00	DROP2/DROP52	TRN 3 AFCV MSTR1 MAN REJECT
DigitalPoint	JRP05MMRJ0514-00	DROP2/DROP52	TRN 4 AFCV MSTR1 MAN REJECT
DigitalPoint	JRP05MMRJ0515-00	DROP2/DROP52	TRN 5 AFCV MSTR1 MAN REJECT
DigitalPoint	JRP05MMRJ0516-00	DROP2/DROP52	TRN 6 AFCV MSTR1 MAN REJECT
DigitalPoint	JRP05MMRJ0517-00	DROP2/DROP52	TRN 7 AFCV MSTR1 MAN REJECT
DigitalPoint	JRP05MMRJ0518-00	DROP2/DROP52	TRN 8 AFCV MSTR1 MAN REJECT

DigitalPoint	JRP05MMRJ0519-00	DROP2/DROP52	TRN 9 AFCV MSTR1 MAN REJECT
DigitalPoint	JRP05MMRJ0521-00	DROP2/DROP52	TRN 1 AFCV MSTR2 MAN REJECT
DigitalPoint	JRP05MMRJ0522-00	DROP2/DROP52	TRN 2 AFCV MSTR2 MAN REJECT
DigitalPoint	JRP05MMRJ0523-00	DROP2/DROP52	TRN 3 AFCV MSTR2 MAN REJECT
DigitalPoint	JRP05MMRJ0524-00	DROP2/DROP52	TRN 4 AFCV MSTR2 MAN REJECT
DigitalPoint	JRP05MMRJ0525-00	DROP2/DROP52	TRN 5 AFCV MSTR2 MAN REJECT
DigitalPoint	JRP05MMRJ0526-00	DROP2/DROP52	TRN 6 AFCV MSTR2 MAN REJECT
DigitalPoint	JRP05MMRJ0527-00	DROP2/DROP52	TRN 7 AFCV MSTR2 MAN REJECT
DigitalPoint	JRP05MMRJ0528-00	DROP2/DROP52	TRN 8 AFCV MSTR2 MAN REJECT
DigitalPoint	JRP05MMRJ0529-00	DROP2/DROP52	TRN 9 AFCV MSTR2 MAN REJECT
DigitalPoint	JRP05MXERSOFF-IM	DROP2/DROP52	IFAS MIXERS OFF INTERMIT MODE
DigitalPoint	JRP05MXRLVLSTRT1	DROP2/DROP52	IFAS 1 MIXER LEVEL START CMD
DigitalPoint	JRP05MXRSON-IM	DROP2/DROP52	IFAS MIXERS ON INTERMIT MODE
DigitalPoint	JRP05MXRSTOP1001	DROP2/DROP52	IFAS MIXER MASTER STOP
DigitalPoint	JRP05NH4SAFELIM	DROP2/DROP52	ABAC & AVN COMMON SAFETY
DigitalPoint	JRP05NRCYHIFLOW	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05NRCYOOS1	DROP2/DROP52	TRAIN 1 NRCY 2 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS1A	DROP2/DROP52	TRAIN 1 NRCY 1 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS2	DROP2/DROP52	TRAIN 2 NRCY 2 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS2A	DROP2/DROP52	TRAIN 2 NRCY 1 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS3	DROP2/DROP52	TRAIN 3 NRCY 2 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS3A	DROP2/DROP52	TRAIN 3 NRCY 1 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS4	DROP2/DROP52	TRAIN 4 NRCY 2 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS4A	DROP2/DROP52	TRAIN 4 NRCY 1 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS5	DROP2/DROP52	TRAIN 5 NRCY 2 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS5A	DROP2/DROP52	TRAIN 5 NRCY 1 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS6	DROP2/DROP52	TRAIN 6 NRCY 2 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS6A	DROP2/DROP52	TRAIN 6 NRCY 1 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS7	DROP2/DROP52	TRAIN 7 NRCY 2 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS7A	DROP2/DROP52	TRAIN 7 NRCY 1 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS8	DROP2/DROP52	TRAIN 8 NRCY 2 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS8A	DROP2/DROP52	TRAIN 8 NRCY 1 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS9	DROP2/DROP52	TRAIN 9 NRCY 2 OUT OF SERVICE
DigitalPoint	JRP05NRCYOOS9A	DROP2/DROP52	TRAIN 9 NRCY 1 OUT OF SERVICE
DigitalPoint	JRP05ONST1001	DROP2/DROP52	TRN 1 ZONE R1 MXR STATUS
DigitalPoint	JRP05ONST1002	DROP2/DROP52	TRN 2 ZONE R1 MXR STATUS
DigitalPoint	JRP05ONST1003	DROP2/DROP52	TRN 3 ZONE R1 MXR STATUS
DigitalPoint	JRP05ONST1004	DROP2/DROP52	TRN 4 ZONE R1 MXR STATUS
DigitalPoint	JRP05ONST1005	DROP2/DROP52	TRN 5 ZONE R1 MXR STATUS
DigitalPoint	JRP05ONST1006	DROP2/DROP52	TRN 6 ZONE R1 MXR STATUS
DigitalPoint	JRP05ONST1007	DROP2/DROP52	TRN 7 ZONE R1 MXR STATUS
DigitalPoint	JRP05ONST1008	DROP2/DROP52	TRN 8 ZONE R1 MXR STATUS
DigitalPoint	JRP05ONST1009	DROP2/DROP52	TRN 9 ZONE R1 MXR STATUS
DigitalPoint	JRP05ONST2001	DROP2/DROP52	TRN 1 ZONE R2 MXR STATUS
DigitalPoint	JRP05ONST2002	DROP2/DROP52	TRN 2 ZONE R2 MXR STATUS
DigitalPoint	JRP05ONST2003	DROP2/DROP52	TRN 3 ZONE R2 MXR STATUS
DigitalPoint	JRP05ONST2004	DROP2/DROP52	TRN 4 ZONE R2 MXR STATUS

DigitalPoint	JRP05ONST2005	DROP2/DROP52	TRN 5 ZONE R2 MXR STATUS
DigitalPoint	JRP05ONST2006	DROP2/DROP52	TRN 6 ZONE R2 MXR STATUS
DigitalPoint	JRP05ONST2007	DROP2/DROP52	TRN 7 ZONE R2 MXR STATUS
DigitalPoint	JRP05ONST2008	DROP2/DROP52	TRN 8 ZONE R2 MXR STATUS
DigitalPoint	JRP05ONST2009	DROP2/DROP52	TRN 9 ZONE R2 MXR STATUS
DigitalPoint	JRP05ONST3001	DROP2/DROP52	TRN 1 ZONE R3 MXR STATUS
DigitalPoint	JRP05ONST3002	DROP2/DROP52	TRN 2 ZONE R3 MXR STATUS
DigitalPoint	JRP05ONST3003	DROP2/DROP52	TRN 3 ZONE R3 MXR STATUS
DigitalPoint	JRP05ONST3004	DROP2/DROP52	TRN 4 ZONE R3 MXR STATUS
DigitalPoint	JRP05ONST3005	DROP2/DROP52	TRN 5 ZONE R3 MXR STATUS
DigitalPoint	JRP05ONST3006	DROP2/DROP52	TRN 6 ZONE R3 MXR STATUS
DigitalPoint	JRP05ONST3007	DROP2/DROP52	TRN 7 ZONE R3 MXR STATUS
DigitalPoint	JRP05ONST3008	DROP2/DROP52	TRN 8 ZONE R3 MXR STATUS
DigitalPoint	JRP05ONST3009	DROP2/DROP52	TRN 9 ZONE R3 MXR STATUS
DigitalPoint	JRP05ONST3101	DROP2/DROP52	TRN 1 NRCY PMP NO1 STATUS
DigitalPoint	JRP05ONST3102	DROP2/DROP52	TRN 2 NRCY PMP NO1 STATUS
DigitalPoint	JRP05ONST3103	DROP2/DROP52	TRN 3 NRCY PMP NO1 STATUS
DigitalPoint	JRP05ONST3104	DROP2/DROP52	TRN 4 NRCY PMP NO1 STATUS
DigitalPoint	JRP05ONST3105	DROP2/DROP52	TRN 5 NRCY PMP NO1 STATUS
DigitalPoint	JRP05ONST3106	DROP2/DROP52	TRN 6 NRCY PMP NO1 STATUS
DigitalPoint	JRP05ONST3107	DROP2/DROP52	TRN 7 NRCY PMP NO1 STATUS
DigitalPoint	JRP05ONST3108	DROP2/DROP52	TRN 8 NRCY PMP NO1 STATUS
DigitalPoint	JRP05ONST3109	DROP2/DROP52	TRN 9 NRCY PMP NO1 STATUS
DigitalPoint	JRP05ONST5001	DROP2/DROP52	TRN 1 ZONE R5 MXR STATUS
DigitalPoint	JRP05ONST5002	DROP2/DROP52	TRN 2 ZONE R5 MXR STATUS
DigitalPoint	JRP05ONST5003	DROP2/DROP52	TRN 3 ZONE R5 MXR STATUS
DigitalPoint	JRP05ONST5004	DROP2/DROP52	TRN 4 ZONE R5 MXR STATUS
DigitalPoint	JRP05ONST5005	DROP2/DROP52	TRN 5 ZONE R5 MXR STATUS
DigitalPoint	JRP05ONST5006	DROP2/DROP52	TRN 6 ZONE R5 MXR STATUS
DigitalPoint	JRP05ONST5007	DROP2/DROP52	TRN 7 ZONE R5 MXR STATUS
DigitalPoint	JRP05ONST5008	DROP2/DROP52	TRN 8 ZONE R5 MXR STATUS
DigitalPoint	JRP05ONST5009	DROP2/DROP52	TRN 9 ZONE R5 MXR STATUS
DigitalPoint	JRP05ONST5101	DROP2/DROP52	TRN 1 NRCY PMP NO2 STATUS
DigitalPoint	JRP05ONST5102	DROP2/DROP52	TRN 2 NRCY PMP NO2 STATUS
DigitalPoint	JRP05ONST5103	DROP2/DROP52	TRN 3 NRCY PMP NO2 STATUS
DigitalPoint	JRP05ONST5104	DROP2/DROP52	TRN 4 NRCY PMP NO2 STATUS
DigitalPoint	JRP05ONST5105	DROP2/DROP52	TRN 5 NRCY PMP NO2 STATUS
DigitalPoint	JRP05ONST5106	DROP2/DROP52	TRN 6 NRCY PMP NO2 STATUS
DigitalPoint	JRP05ONST5107	DROP2/DROP52	TRN 7 NRCY PMP NO2 STATUS
DigitalPoint	JRP05ONST5108	DROP2/DROP52	TRN 8 NRCY PMP NO2 STATUS
DigitalPoint	JRP05ONST5109	DROP2/DROP52	TRN 9 NRCY PMP NO2 STATUS
DigitalPoint	JRP05PURGECLEAR	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05RUNC1001	DROP2/DROP52	TRN 1 ZONE R1 MXR RUN CMD
DigitalPoint	JRP05RUNC1002	DROP2/DROP52	TRN 2 ZONE R1 MXR RUN CMD
DigitalPoint	JRP05RUNC1003	DROP2/DROP52	TRN 3 ZONE R1 MXR RUN CMD
DigitalPoint	JRP05RUNC1004	DROP2/DROP52	TRN 4 ZONE R1 MXR RUN CMD
DigitalPoint	JRP05RUNC1005	DROP2/DROP52	TRN 5 ZONE R1 MXR RUN CMD

DigitalPoint	JRP05RUNC1006	DROP2/DROP52	TRN 6 ZONE R1 MXR RUN CMD
DigitalPoint	JRP05RUNC1007	DROP2/DROP52	TRN 7 ZONE R1 MXR RUN CMD
DigitalPoint	JRP05RUNC1008	DROP2/DROP52	TRN 8 ZONE R1 MXR RUN CMD
DigitalPoint	JRP05RUNC1009	DROP2/DROP52	TRN 9 ZONE R1 MXR RUN CMD
DigitalPoint	JRP05RUNC2001	DROP2/DROP52	TRN 1 ZONE R2 MXR RUN CMD
DigitalPoint	JRP05RUNC2002	DROP2/DROP52	TRN 2 ZONE R2 MXR RUN CMD
DigitalPoint	JRP05RUNC2003	DROP2/DROP52	TRN 3 ZONE R2 MXR RUN CMD
DigitalPoint	JRP05RUNC2004	DROP2/DROP52	TRN 4 ZONE R2 MXR RUN CMD
DigitalPoint	JRP05RUNC2005	DROP2/DROP52	TRN 5 ZONE R2 MXR RUN CMD
DigitalPoint	JRP05RUNC2006	DROP2/DROP52	TRN 6 ZONE R2 MXR RUN CMD
DigitalPoint	JRP05RUNC2007	DROP2/DROP52	TRN 7 ZONE R2 MXR RUN CMD
DigitalPoint	JRP05RUNC2008	DROP2/DROP52	TRN 8 ZONE R2 MXR RUN CMD
DigitalPoint	JRP05RUNC2009	DROP2/DROP52	TRN 9 ZONE R2 MXR RUN CMD
DigitalPoint	JRP05RUNC3001	DROP2/DROP52	TRN 1 ZONE R3 MXR RUN CMD
DigitalPoint	JRP05RUNC3002	DROP2/DROP52	TRN 2 ZONE R3 MXR RUN CMD
DigitalPoint	JRP05RUNC3003	DROP2/DROP52	TRN 3 ZONE R3 MXR RUN CMD
DigitalPoint	JRP05RUNC3004	DROP2/DROP52	TRN 4 ZONE R3 MXR RUN CMD
DigitalPoint	JRP05RUNC3005	DROP2/DROP52	TRN 5 ZONE R3 MXR RUN CMD
DigitalPoint	JRP05RUNC3006	DROP2/DROP52	TRN 6 ZONE R3 MXR RUN CMD
DigitalPoint	JRP05RUNC3007	DROP2/DROP52	TRN 7 ZONE R3 MXR RUN CMD
DigitalPoint	JRP05RUNC3008	DROP2/DROP52	TRN 8 ZONE R3 MXR RUN CMD
DigitalPoint	JRP05RUNC3009	DROP2/DROP52	TRN 9 ZONE R3 MXR RUN CMD
DigitalPoint	JRP05RUNC3101	DROP2/DROP52	TRN 1 NRCY PMP NO1 RUN CMD
DigitalPoint	JRP05RUNC3102	DROP2/DROP52	TRN 2 NRCY PMP NO1 RUN CMD
DigitalPoint	JRP05RUNC3103	DROP2/DROP52	TRN 3 NRCY PMP NO1 RUN CMD
DigitalPoint	JRP05RUNC3104	DROP2/DROP52	TRN 4 NRCY PMP NO1 RUN CMD
DigitalPoint	JRP05RUNC3105	DROP2/DROP52	TRN 5 NRCY PMP NO1 RUN CMD
DigitalPoint	JRP05RUNC3106	DROP2/DROP52	TRN 6 NRCY PMP NO1 RUN CMD
DigitalPoint	JRP05RUNC3107	DROP2/DROP52	TRN 7 NRCY PMP NO1 RUN CMD
DigitalPoint	JRP05RUNC3108	DROP2/DROP52	TRN 8 NRCY PMP NO1 RUN CMD
DigitalPoint	JRP05RUNC3109	DROP2/DROP52	TRN 9 NRCY PMP NO1 RUN CMD
DigitalPoint	JRP05RUNC5001	DROP2/DROP52	TRN 1 ZONE R5 MXR RUN CMD
DigitalPoint	JRP05RUNC5002	DROP2/DROP52	TRN 2 ZONE R5 MXR RUN CMD
DigitalPoint	JRP05RUNC5003	DROP2/DROP52	TRN 3 ZONE R5 MXR RUN CMD
DigitalPoint	JRP05RUNC5004	DROP2/DROP52	TRN 4 ZONE R5 MXR RUN CMD
DigitalPoint	JRP05RUNC5005	DROP2/DROP52	TRN 5 ZONE R5 MXR RUN CMD
DigitalPoint	JRP05RUNC5006	DROP2/DROP52	TRN 6 ZONE R5 MXR RUN CMD
DigitalPoint	JRP05RUNC5007	DROP2/DROP52	TRN 7 ZONE R5 MXR RUN CMD
DigitalPoint	JRP05RUNC5008	DROP2/DROP52	TRN 8 ZONE R5 MXR RUN CMD
DigitalPoint	JRP05RUNC5009	DROP2/DROP52	TRN 9 ZONE R5 MXR RUN CMD
DigitalPoint	JRP05RUNC5101	DROP2/DROP52	TRN 1 NRCY PMP NO2 RUN CMD
DigitalPoint	JRP05RUNC5102	DROP2/DROP52	TRN 2 NRCY PMP NO2 RUN CMD
DigitalPoint	JRP05RUNC5103	DROP2/DROP52	TRN 3 NRCY PMP NO2 RUN CMD
DigitalPoint	JRP05RUNC5104	DROP2/DROP52	TRN 4 NRCY PMP NO2 RUN CMD
DigitalPoint	JRP05RUNC5105	DROP2/DROP52	TRN 5 NRCY PMP NO2 RUN CMD
DigitalPoint	JRP05RUNC5106	DROP2/DROP52	TRN 6 NRCY PMP NO2 RUN CMD
DigitalPoint	JRP05RUNC5107	DROP2/DROP52	TRN 7 NRCY PMP NO2 RUN CMD

DigitalPoint	JRP05RUNC5108	DROP2/DROP52	TRN 8 NRCY PMP NO2 RUN CMD
DigitalPoint	JRP05RUNC5109	DROP2/DROP52	TRN 9 NRCY PMP NO2 RUN CMD
DigitalPoint	JRP05SCXXLOWT1-01	DROP2/DROP52	NRCY T1P1 SPEED LOW
DigitalPoint	JRP05SCXXLOWT2-01	DROP2/DROP52	NRCY T2P1 SPEED LOW
DigitalPoint	JRP05SCXXLOWT3-01	DROP2/DROP52	NRCY T3P1 SPEED LOW
DigitalPoint	JRP05SCXXLOWT4-01	DROP2/DROP52	NRCY T4P1 SPEED LOW
DigitalPoint	JRP05SCXXLOWT5-01	DROP2/DROP52	NRCY T5P1 SPEED LOW
DigitalPoint	JRP05SCXXLOWT6-01	DROP2/DROP52	NRCY T6P1 SPEED LOW
DigitalPoint	JRP05SCXXLOWT7-01	DROP2/DROP52	NRCY T7P1 SPEED LOW
DigitalPoint	JRP05SCXXLOWT8-01	DROP2/DROP52	NRCY T8P1 LOW SPEED
DigitalPoint	JRP05SCXXLOWT9-01	DROP2/DROP52	NRCY T9P1 SPEED LOW
DigitalPoint	JRP05STPTGLOBAL-NR	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05STPTGLOBAL-NRC1	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05STPTGLOBAL-NRC2	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05T1N1INDMODE	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05T2N1INDMODE	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05T3N1INDMODE	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05T4N1INDMODE	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05T5N1INDMODE	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05T6N1INDMODE	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05T7N1INDMODE	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05T8N1INDMODE	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05T9N1INDMODE	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05TRIP1001-00	DROP2/DROP52	TRN 1 MXR 1 TRIP
DigitalPoint	JRP05TRIP1002-00	DROP2/DROP52	TRN 2 MXR 1 TRIP
DigitalPoint	JRP05TRIP1003-00	DROP2/DROP52	TRN 3 MXR 1 TRIP
DigitalPoint	JRP05TRIP1004-00	DROP2/DROP52	TRN 4 MXR 1 TRIP
DigitalPoint	JRP05TRIP1005-00	DROP2/DROP52	TRN 5 MXR 1 TRIP
DigitalPoint	JRP05TRIP1006-00	DROP2/DROP52	TRN 6 MXR 1 TRIP
DigitalPoint	JRP05TRIP1007-00	DROP2/DROP52	TRN 7 MXR 1 TRIP
DigitalPoint	JRP05TRIP1008-00	DROP2/DROP52	TRN 8 MXR 1 TRIP
DigitalPoint	JRP05TRIP1009-00	DROP2/DROP52	TRN 9 MXR 1 TRIP
DigitalPoint	JRP05TRIP2001-00	DROP2/DROP52	TRN 1 MXR 2 TRIP
DigitalPoint	JRP05TRIP2002-00	DROP2/DROP52	TRN 2 MXR 2 TRIP
DigitalPoint	JRP05TRIP2003-00	DROP2/DROP52	TRN 3 MXR 2 TRIP
DigitalPoint	JRP05TRIP2004-00	DROP2/DROP52	TRN 4 MXR 2 TRIP
DigitalPoint	JRP05TRIP2005-00	DROP2/DROP52	TRN 5 MXR 2 TRIP
DigitalPoint	JRP05TRIP2006-00	DROP2/DROP52	TRN 6 MXR 2 TRIP
DigitalPoint	JRP05TRIP2007-00	DROP2/DROP52	TRN 7 MXR 2 TRIP
DigitalPoint	JRP05TRIP2008-00	DROP2/DROP52	TRN 8 MXR 2 TRIP
DigitalPoint	JRP05TRIP2009-00	DROP2/DROP52	TRN 9 MXR 2 TRIP
DigitalPoint	JRP05TRIP3001-00	DROP2/DROP52	TRN 1 MXR 3 TRIP
DigitalPoint	JRP05TRIP3002-00	DROP2/DROP52	TRN 2 MXR 3 TRIP
DigitalPoint	JRP05TRIP3003-00	DROP2/DROP52	TRN 3 MXR 3 TRIP
DigitalPoint	JRP05TRIP3004-00	DROP2/DROP52	TRN 4 MXR 3 TRIP
DigitalPoint	JRP05TRIP3005-00	DROP2/DROP52	TRN 5 MXR 3 TRIP
DigitalPoint	JRP05TRIP3006-00	DROP2/DROP52	TRN 6 MXR 3 TRIP

DigitalPoint	JRP05TRIP3007-00	DROP2/DROP52	TRN 7 MXR 3 TRIP
DigitalPoint	JRP05TRIP3008-00	DROP2/DROP52	TRN 8 MXR 3 TRIP
DigitalPoint	JRP05TRIP3009-00	DROP2/DROP52	TRN 9 MXR 3 TRIP
DigitalPoint	JRP05TRIP3101-00	DROP2/DROP52	TRN 1 NRCY PMP 1 TRIP
DigitalPoint	JRP05TRIP3102-00	DROP2/DROP52	TRN 2 NRCY PMP 1 TRIP
DigitalPoint	JRP05TRIP3103-00	DROP2/DROP52	TRN 3 NRCY PMP 1 TRIP
DigitalPoint	JRP05TRIP3104-00	DROP2/DROP52	TRN 4 NRCY PMP 1 TRIP
DigitalPoint	JRP05TRIP3105-00	DROP2/DROP52	TRN 5 NRCY PMP 1 TRIP
DigitalPoint	JRP05TRIP3106-00	DROP2/DROP52	TRN 6 NRCY PMP 1 TRIP
DigitalPoint	JRP05TRIP3107-00	DROP2/DROP52	TRN 7 NRCY PMP 1 TRIP
DigitalPoint	JRP05TRIP3108-00	DROP2/DROP52	TRN 8 NRCY PMP 1 TRIP
DigitalPoint	JRP05TRIP3109-00	DROP2/DROP52	TRN 9 NRCY PMP 1 TRIP
DigitalPoint	JRP05TRIP5001-00	DROP2/DROP52	TRN 1 MXR 4 TRIP
DigitalPoint	JRP05TRIP5002-00	DROP2/DROP52	TRN 2 MXR 4 TRIP
DigitalPoint	JRP05TRIP5003-00	DROP2/DROP52	TRN 3 MXR 4 TRIP
DigitalPoint	JRP05TRIP5004-00	DROP2/DROP52	TRN 4 MXR 4 TRIP
DigitalPoint	JRP05TRIP5005-00	DROP2/DROP52	TRN 5 MXR 4 TRIP
DigitalPoint	JRP05TRIP5006-00	DROP2/DROP52	TRN 6 MXR 4 TRIP
DigitalPoint	JRP05TRIP5007-00	DROP2/DROP52	TRN 7 MXR 4 TRIP
DigitalPoint	JRP05TRIP5008-00	DROP2/DROP52	TRN 8 MXR 4 TRIP
DigitalPoint	JRP05TRIP5009-00	DROP2/DROP52	TRN 9 MXR 4 TRIP
DigitalPoint	JRP05TRIP5101-00	DROP2/DROP52	TRN 1 NRCY PMP 2 TRIP
DigitalPoint	JRP05TRIP5102-00	DROP2/DROP52	TRN 2 NRCY PMP 2 TRIP
DigitalPoint	JRP05TRIP5103-00	DROP2/DROP52	TRN 3 NRCY PMP 2 TRIP
DigitalPoint	JRP05TRIP5104-00	DROP2/DROP52	TRN 4 NRCY PMP 2 TRIP
DigitalPoint	JRP05TRIP5105-00	DROP2/DROP52	TRN 5 NRCY PMP 2 TRIP
DigitalPoint	JRP05TRIP5106-00	DROP2/DROP52	TRN 6 NRCY PMP 2 TRIP
DigitalPoint	JRP05TRIP5107-00	DROP2/DROP52	TRN 7 NRCY PMP 2 TRIP
DigitalPoint	JRP05TRIP5108-00	DROP2/DROP52	TRN 8 NRCY PMP 2 TRIP
DigitalPoint	JRP05TRIP5109-00	DROP2/DROP52	TRN 9 NRCY PMP 2 TRIP
DigitalPoint	JRP05YACX1001	DROP2/DROP52	TRN 1 ZONE R1 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX1002	DROP2/DROP52	TRN 2 ZONE R1 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX1003	DROP2/DROP52	TRN 3 ZONE R1 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX1004	DROP2/DROP52	TRN 4 ZONE R1 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX1005	DROP2/DROP52	TRN 5 ZONE R1 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX1006	DROP2/DROP52	TRN 6 ZONE R1 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX1007	DROP2/DROP52	TRN 7 ZONE R1 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX1008	DROP2/DROP52	TRN 8 ZONE R1 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX1009	DROP2/DROP52	TRN 9 ZONE R1 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX2001	DROP2/DROP52	TRN 1 ZONE R2 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX2002	DROP2/DROP52	TRN 2 ZONE R2 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX2003	DROP2/DROP52	TRN 3 ZONE R2 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX2004	DROP2/DROP52	TRN 4 ZONE R2 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX2005	DROP2/DROP52	TRN 5 ZONE R2 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX2006	DROP2/DROP52	TRN 6 ZONE R2 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX2007	DROP2/DROP52	TRN 7 ZONE R2 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX2008	DROP2/DROP52	TRN 8 ZONE R2 MXR LK/TEMP CMD

DigitalPoint	JRP05YACX2009	DROP2/DROP52	TRN 9 ZONE R2 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX3001	DROP2/DROP52	TRN 1 ZONE R3 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX3002	DROP2/DROP52	TRN 2 ZONE R3 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX3003	DROP2/DROP52	TRN 3 ZONE R3 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX3004	DROP2/DROP52	TRN 4 ZONE R3 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX3005	DROP2/DROP52	TRN 5 ZONE R3 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX3006	DROP2/DROP52	TRN 6 ZONE R3 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX3007	DROP2/DROP52	TRN 7 ZONE R3 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX3008	DROP2/DROP52	TRN 8 ZONE R3 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX3009	DROP2/DROP52	TRN 9 ZONE R3 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX3101	DROP2/DROP52	TRN 1 NRCY PMP NO1 ALM COND
DigitalPoint	JRP05YACX3102	DROP2/DROP52	TRN 2 NRCY PMP NO1 ALM COND
DigitalPoint	JRP05YACX3103	DROP2/DROP52	TRN 3 NRCY PMP NO1 ALM COND
DigitalPoint	JRP05YACX3104	DROP2/DROP52	TRN 4 NRCY PMP NO1 ALM COND
DigitalPoint	JRP05YACX3105	DROP2/DROP52	TRN 5 NRCY PMP NO1 ALM COND
DigitalPoint	JRP05YACX3106	DROP2/DROP52	TRN 6 NRCY PMP NO1 ALM COND
DigitalPoint	JRP05YACX3107	DROP2/DROP52	TRN 7 NRCY PMP NO1 ALM COND
DigitalPoint	JRP05YACX3108	DROP2/DROP52	TRN 8 NRCY PMP NO1 ALM COND
DigitalPoint	JRP05YACX3109	DROP2/DROP52	TRN 9 NRCY PMP NO1 ALM COND
DigitalPoint	JRP05YACX5001	DROP2/DROP52	TRN 1 ZONE R5 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX5002	DROP2/DROP52	TRN 2 ZONE R5 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX5003	DROP2/DROP52	TRN 3 ZONE R5 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX5004	DROP2/DROP52	TRN 4 ZONE R5 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX5005	DROP2/DROP52	TRN 5 ZONE R5 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX5006	DROP2/DROP52	TRN 6 ZONE R5 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX5007	DROP2/DROP52	TRN 7 ZONE R5 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX5008	DROP2/DROP52	TRN 8 ZONE R5 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX5009	DROP2/DROP52	TRN 9 ZONE R5 MXR LK/TEMP CMD
DigitalPoint	JRP05YACX5101	DROP2/DROP52	TRN 1 NRCY PMP NO2 ALM COND
DigitalPoint	JRP05YACX5102	DROP2/DROP52	TRN 2 NRCY PMP NO2 ALM COND
DigitalPoint	JRP05YACX5103	DROP2/DROP52	TRN 3 NRCY PMP NO2 ALM COND
DigitalPoint	JRP05YACX5104	DROP2/DROP52	TRN 4 NRCY PMP NO2 ALM COND
DigitalPoint	JRP05YACX5105	DROP2/DROP52	TRN 5 NRCY PMP NO2 ALM COND
DigitalPoint	JRP05YACX5106	DROP2/DROP52	TRN 6 NRCY PMP NO2 ALM COND
DigitalPoint	JRP05YACX5107	DROP2/DROP52	TRN 7 NRCY PMP NO2 ALM COND
DigitalPoint	JRP05YACX5108	DROP2/DROP52	TRN 8 NRCY PMP NO2 ALM COND
DigitalPoint	JRP05YACX5109	DROP2/DROP52	TRN 9 NRCY PMP NO2 ALM COND
DigitalPoint	JRP05YACXAC-01	DROP2/DROP52	IFAS NH4 PROBE HI
DigitalPoint	JRP05YACXAC-02	DROP2/DROP52	IFAS NOX PROBE HI
DigitalPoint	JRP05YACXAC-03	DROP2/DROP52	IFAS NOX AVG HI
DigitalPoint	JRP05YACXAC-04	DROP2/DROP52	IFAS NH4 AVG HI
DigitalPoint	JRP05YACXAC-05	DROP2/DROP52	IFAS AC INFLUENT FLOW HI
DigitalPoint	JRP05YACXNH4-00	DROP2/DROP52	NH4 2 PROBES OR MORE BAD
DigitalPoint	JRP05YACXNOX-00	DROP2/DROP52	NOX 2 OR MORE PROBES BAD
DigitalPoint	JRP14AMRJ1001-00	DROP2/DROP52	BLOWER 1 INLET VLV AUTO REJECT
DigitalPoint	JRP14AMRJ1002-00	DROP2/DROP52	BLOWER 2 INLET VLV AUTO RJCT
DigitalPoint	JRP14AMRJ1003-00	DROP2/DROP52	BLOWER 3 INLET VLV AUTO RJCT

DigitalPoint	JRP14AMRJ3002-00	DROP2/DROP52	PREAERATION VLV AUTO REJECT
DigitalPoint	JRP14DCSX1001-00	DROP2/DROP52	BLOWER 1 DCS MODE
DigitalPoint	JRP14DCSX1002-00	DROP2/DROP52	BLOWER 2 DCS MODE
DigitalPoint	JRP14DCSX1003-00	DROP2/DROP52	BLOWER 3 DCS MODE
DigitalPoint	JRP14DEVN1001-00	DROP2/DROP52	BLOWER 1 INLET VLV DEVN ALM
DigitalPoint	JRP14DEVN1002-00	DROP2/DROP52	BLOWER 2 INLET VLV DEVN ALM
DigitalPoint	JRP14DEVN1003-00	DROP2/DROP52	BLOWER 3 INLET VLV DEVN ALM
DigitalPoint	JRP14DEVN3002-00	DROP2/DROP52	PREAERATION VLV DEVN ALM
DigitalPoint	JRP14FSTP1001-00	DROP2/DROP52	BLOWER 1 FAIL TO STOP
DigitalPoint	JRP14FSTP1002-00	DROP2/DROP52	BLOWER 2 FAIL TO STOP
DigitalPoint	JRP14FSTP1003-00	DROP2/DROP52	BLOWER 3 FAIL TO STOP
DigitalPoint	JRP14FSTR1001-00	DROP2/DROP52	BLOWER 1 FAIL TO START
DigitalPoint	JRP14FSTR1002-00	DROP2/DROP52	BLOWER 2 FAIL TO START
DigitalPoint	JRP14FSTR1003-00	DROP2/DROP52	BLOWER 3 FAIL TO START
DigitalPoint	JRP14FVAS3002	DROP2/DROP52	PREAERATION AIR FLOW VLV AUTO
DigitalPoint	JRP14FVOS1001-00	DROP2/DROP52	BLOWER 1 INLET VLV OPN
DigitalPoint	JRP14FVOS1002-00	DROP2/DROP52	BLOWER 2 INLET VLV OPN
DigitalPoint	JRP14FVOS1003-00	DROP2/DROP52	BLOWER 3 INLET VLV OPN
DigitalPoint	JRP14FVOS3002-00	DROP2/DROP52	PREARATION VALVE OPN
DigitalPoint	JRP14HSAS1001	DROP2/DROP52	BLOWER 1 IN AUTO
DigitalPoint	JRP14HSAS1002	DROP2/DROP52	BLOWER 2 IN AUTO
DigitalPoint	JRP14HSAS1003	DROP2/DROP52	BLOWER 3 IN AUTO
DigitalPoint	JRP14ONST1001	DROP2/DROP52	BLOWER 1 RUN STATUS
DigitalPoint	JRP14ONST1002	DROP2/DROP52	BLOWER 2 RUN STATUS
DigitalPoint	JRP14ONST1003	DROP2/DROP52	BLOWER 3 RUN STATUS
DigitalPoint	JRP14RUNC1001	DROP2/DROP52	BLOWER 1 RUN CMD
DigitalPoint	JRP14RUNC1002	DROP2/DROP52	BLOWER 2 RUN CMD
DigitalPoint	JRP14RUNC1003	DROP2/DROP52	BLOWER 3 RUN CMD
DigitalPoint	JRP14TRIP1001-00	DROP2/DROP52	BLOWER 1 TRIP
DigitalPoint	JRP14TRIP1002-00	DROP2/DROP52	BLOWER 2 TRIP
DigitalPoint	JRP14TRIP1003-00	DROP2/DROP52	BLOWER 3 TRIP
DigitalPoint	JRP14YACX1001	DROP2/DROP52	BLOWER 1 FAIL
DigitalPoint	JRP14YACX1002	DROP2/DROP52	BLOWER 2 FAIL
DigitalPoint	JRP14YACX1003	DROP2/DROP52	BLOWER 3 FAIL
DigitalPoint	JRP18DCSX1001-00	DROP2/DROP52	ODOR CTRL FAN 1 DCS MODE
DigitalPoint	JRP18DCSX1002-00	DROP2/DROP52	ODOR CTRL FAN 2 DCS MODE
DigitalPoint	JRP18DPAH1001-00	DROP2/DROP52	ODOR CTRL FAN 1 HI DP
DigitalPoint	JRP18DPAH1002-00	DROP2/DROP52	ODOR CTRL FAN 2 HI DP
DigitalPoint	JRP18FSTP1001-00	DROP2/DROP52	ODOR CTRL FAN 1 FAIL TO STOP
DigitalPoint	JRP18FSTP1002-00	DROP2/DROP52	ODOR CTRL FAN 2 FAIL TO STOP
DigitalPoint	JRP18FSTR1001-00	DROP2/DROP52	ODOR CTRL FAN 1 FAIL TO START
DigitalPoint	JRP18FSTR1002-00	DROP2/DROP52	ODOR CTRL FAN 2 FAIL TO START
DigitalPoint	JRP18HSAS1001	DROP2/DROP52	ODOR CTRL FAN NO1 AUTO STATUS
DigitalPoint	JRP18HSAS1002	DROP2/DROP52	ODOR CTRL FAN NO2 AUTO STATUS
DigitalPoint	JRP18ONST1001	DROP2/DROP52	ODOR CTRL FAN NO1 STATUS
DigitalPoint	JRP18ONST1002	DROP2/DROP52	ODOR CTRL FAN NO2 STATUS
DigitalPoint	JRP18RUNC1001	DROP2/DROP52	ODOR CTRL FAN NO1 RUN CMD

DigitalPoint	JRP18RUNC1002	DROP2/DROP52	ODOR CTRL FAN NO2 RUN CMD
DigitalPoint	JRP18TRIP1001-00	DROP2/DROP52	ODOR CTRL FAN 1 TRIP
DigitalPoint	JRP18TRIP1002-00	DROP2/DROP52	ODOR CTRL FAN 2 TRIP
DigitalPoint	JRP22BDNIXX1A	DROP2/DROP52	GATE TORQUE1 SP SATISFIED
DigitalPoint	JRP22BDNIXX2A	DROP2/DROP52	GATE TORQUE2 SP SATISFIED
DigitalPoint	JRP22BDNIXX3A	DROP2/DROP52	GATE TORQUE3 SP SATISFIED
DigitalPoint	JRP28AMRJ0101-00	DROP2/DROP52	CENTRATE EQ SYS P1 AUTO REJ
DigitalPoint	JRP28AMRJ0102-00	DROP2/DROP52	CENTRATE EQ SYS P2 AUTO REJ
DigitalPoint	JRP28AMRJ0201-00	DROP2/DROP52	CENTRATE VLT SYS P1 AUTO REJ
DigitalPoint	JRP28AMRJ0202-00	DROP2/DROP52	CENTRATE VLT SYS P2 AUTO REJ
DigitalPoint	JRP28CENTEQPMPOOS1	DROP2/DROP52	CENTRATE EQ PUMP 1 OOS
DigitalPoint	JRP28CENTEQPMPOOS2	DROP2/DROP52	CENTRATE EQ PUMP 2 OOS
DigitalPoint	JRP28CENTPMPOOS1	DROP2/DROP52	CENTRATE VLT PUMP 1 OOS
DigitalPoint	JRP28CENTPMPOOS2	DROP2/DROP52	CENTRATE VLT PUMP 2 OOS
DigitalPoint	JRP28DCSX0101-00	DROP2/DROP52	CENTRATE EQ P1 IN DCS MODE
DigitalPoint	JRP28DCSX0102-00	DROP2/DROP52	CENTRATE EQ P2 IN DCS MODE
DigitalPoint	JRP28DCSX0201-00	DROP2/DROP52	CENTRATE VLT P1 IN DCS MODE
DigitalPoint	JRP28DCSX0202-00	DROP2/DROP52	CENTRATE VLT P2 IN DCS MODE
DigitalPoint	JRP28DCSX1001-00	DROP2/DROP52	CENTRATE EQ MXR 1 IN DCS MODE
DigitalPoint	JRP28DCSX1002-00	DROP2/DROP52	CENTRATE EQ MXR 2 IN DCS MODE
DigitalPoint	JRP28DEVN0101-00	DROP2/DROP52	CENTRATE EQ P1 SPD DEVIATION
DigitalPoint	JRP28DEVN0102-00	DROP2/DROP52	CENTRATE EQ P2 SPD DEVIATION
DigitalPoint	JRP28DEVN0201-00	DROP2/DROP52	CENTRATE VLT P1 SPD DEVIATION
DigitalPoint	JRP28DEVN0202-00	DROP2/DROP52	CENTRATE VLT P2 SPD DEVIATION
DigitalPoint	JRP28DMRJ0001-00	DROP2/DROP52	IFAS RAS VLV FV001 MAN REJ
DigitalPoint	JRP28DMRJ0002-00	DROP2/DROP52	IFAS RAS VLV FV002 MAN REJ
DigitalPoint	JRP28DMRJ0003-00	DROP2/DROP52	IFAS RAS VLV FV003 MAN REJ
DigitalPoint	JRP28DMRJ0004-00	DROP2/DROP52	IFAS RAS VLV FV004 MAN REJ
DigitalPoint	JRP28DMRJ0005-00	DROP2/DROP52	IFAS RAS VLV FV005 MAN REJ
DigitalPoint	JRP28FCLS0001-00	DROP2/DROP52	IFAS RAS VLV FV001 FAIL TO CLS
DigitalPoint	JRP28FCLS0002-00	DROP2/DROP52	IFAS RAS VLV FV002 FAIL TO CLS
DigitalPoint	JRP28FCLS0003-00	DROP2/DROP52	IFAS RAS VLV FV003 FAIL TO CLS
DigitalPoint	JRP28FCLS0004-00	DROP2/DROP52	IFAS RAS VLV FV004 FAIL TO CLS
DigitalPoint	JRP28FCLS0005-00	DROP2/DROP52	IFAS RAS VLV FV005 FAIL TO CLS
DigitalPoint	JRP28FOPN0001-00	DROP2/DROP52	IFAS RAS VLV FV001 FAIL TO OPN
DigitalPoint	JRP28FOPN0002-00	DROP2/DROP52	IFAS RAS VLV FV002 FAIL TO OPN
DigitalPoint	JRP28FOPN0003-00	DROP2/DROP52	IFAS RAS VLV FV003 FAIL TO OPN
DigitalPoint	JRP28FOPN0004-00	DROP2/DROP52	IFAS RAS VLV FV004 FAIL TO OPN
DigitalPoint	JRP28FOPN0005-00	DROP2/DROP52	IFAS RAS VLV FV005 FAIL TO OPN
DigitalPoint	JRP28FSTP0101-00	DROP2/DROP52	CENTRATE EQ PMP 1 FAIL TO STP
DigitalPoint	JRP28FSTP0102-00	DROP2/DROP52	CENTRATE EQ PMP 2 FAIL TO STP
DigitalPoint	JRP28FSTP0201-00	DROP2/DROP52	CENTRATE VLT PMP 1 FAIL TO STP
DigitalPoint	JRP28FSTP0202-00	DROP2/DROP52	CENTRATE VLT PMP 2 FAIL TO STP
DigitalPoint	JRP28FSTP1001-00	DROP2/DROP52	CENTRATE EQ MXR1 FAIL TO STP
DigitalPoint	JRP28FSTP1002-00	DROP2/DROP52	CENTRATE EQ MXR2 FAIL TO STP
DigitalPoint	JRP28FSTR0101-00	DROP2/DROP52	CENTRATE EQ MXR1 FAIL TO STR
DigitalPoint	JRP28FSTR0102-00	DROP2/DROP52	CENTRATE EQ MXR2 FAIL TO STR

DigitalPoint	JRP28FSTR0201-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP28FSTR0202-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP28FSTR1001-00	DROP2/DROP52	CENTRATE EQ MXR1 FAIL TO STR
DigitalPoint	JRP28FSTR1002-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP28FV05NORMAL-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP28FVCC0001	DROP2/DROP52	IFAS RAS VALVE 1 CLOSE COMMAND
DigitalPoint	JRP28FVCC0002	DROP2/DROP52	IFAS RAS VALVE 2 CLOSE COMMAND
DigitalPoint	JRP28FVCC0003	DROP2/DROP52	IFAS RAS VALVE 3 CLOSE COMMAND
DigitalPoint	JRP28FVCC0004	DROP2/DROP52	IFAS RAS VALVE 4 CLOSE COMMAND
DigitalPoint	JRP28FVCC0005	DROP2/DROP52	IFAS RAS VALVE 5 CLOSE COMMAND
DigitalPoint	JRP28FVOC0001	DROP2/DROP52	IFAS RAS VALVE 1 OPEN COMMAND
DigitalPoint	JRP28FVOC0002	DROP2/DROP52	IFAS RAS VALVE 2 OPEN COMMAND
DigitalPoint	JRP28FVOC0003	DROP2/DROP52	IFAS RAS VALVE 3 OPEN COMMAND
DigitalPoint	JRP28FVOC0004	DROP2/DROP52	IFAS RAS VALVE 4 OPEN COMMAND
DigitalPoint	JRP28FVOC0005	DROP2/DROP52	IFAS RAS VALVE 5 OPEN COMMAND
DigitalPoint	JRP28HSAS0001	DROP2/DROP52	IFAS RAS VALVE 1 IN REMOTE
DigitalPoint	JRP28HSAS0002	DROP2/DROP52	IFAS RAS VALVE 2 IN REMOTE
DigitalPoint	JRP28HSAS0003	DROP2/DROP52	IFAS RAS VALVE 3 IN REMOTE
DigitalPoint	JRP28HSAS0004	DROP2/DROP52	IFAS RAS VALVE 4 IN REMOTE
DigitalPoint	JRP28HSAS0005	DROP2/DROP52	IFAS RAS VALVE 5 IN REMOTE
DigitalPoint	JRP28HSAS0101	DROP2/DROP52	CENTRATE EQ TNK1 PUMP1 REMOTE
DigitalPoint	JRP28HSAS0102	DROP2/DROP52	CENTRATE EQ TNK2 PUMP2 REMOTE
DigitalPoint	JRP28HSAS0201	DROP2/DROP52	CENTRATE VAULT PUMP 1 REMOTE
DigitalPoint	JRP28HSAS0202	DROP2/DROP52	CENTRATE VAULT PUMP 2 REMOTE
DigitalPoint	JRP28HSAS1001	DROP2/DROP52	CENTRATE EQ TNK1 MXR1 REMOTE
DigitalPoint	JRP28HSAS1002	DROP2/DROP52	CENTRATE EQ TNK2 MXR2 REMOTE
DigitalPoint	JRP28LAHX0101X-00	DROP2/DROP52	CENTRATE VAULT LEVEL HIGH
DigitalPoint	JRP28LAHX0201	DROP2/DROP52	CENTRATE EQ TANK 1 HI LEVEL
DigitalPoint	JRP28LAHX0202	DROP2/DROP52	CENTRATE EQ TANK 2 HI LEVEL
DigitalPoint	JRP28LALX0101X-00	DROP2/DROP52	CENTRATE VAULT LEVEL LOW
DigitalPoint	JRP28LALX0101X-01	DROP2/DROP52	CENTRATE EQ TANK LOW LEVEL
DigitalPoint	JRP28LALX0201	DROP2/DROP52	CENTRATE EQ TANK 1 LOW LEVEL
DigitalPoint	JRP28LALX0202	DROP2/DROP52	CENTRATE EQ TANK 2 LOW LEVEL
DigitalPoint	JRP28LITXSEL-EQ	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP28MMRJ2700-00	DROP2/DROP52	CENTRATE VLT SYS MSTR MAN REJ
DigitalPoint	JRP28MMRJ2701-00	DROP2/DROP52	CENTRATE EQ SYS MSTR MAN REJ
DigitalPoint	JRP28ONST0101	DROP2/DROP52	CENTRATE EQ TNK1 PUMP1 RUNNING
DigitalPoint	JRP28ONST0102	DROP2/DROP52	CENTRATE EQ TNK2 PUMP2 RUNNING
DigitalPoint	JRP28ONST0201	DROP2/DROP52	CENTRATE VAULT PUMP 1 RUNNING
DigitalPoint	JRP28ONST0202	DROP2/DROP52	CENTRATE VAULT PUMP 2 RUNNING
DigitalPoint	JRP28ONST1001	DROP2/DROP52	CENTRATE EQ TNK1 MXR1 RUNNING
DigitalPoint	JRP28ONST1002	DROP2/DROP52	CENTRATE EQ TNK2 MXR2 RUNNING
DigitalPoint	JRP28RNKM2700-00	DROP2/DROP52	CENTRATE VLT SYS RANK ALIGN ON
DigitalPoint	JRP28RNKM2701-00	DROP2/DROP52	CENTRATE EQ SYS RANK ALIGN ON
DigitalPoint	JRP28RUNC0101	DROP2/DROP52	CENTRATE EQ TNK1 PUMP1 RUN CMD
DigitalPoint	JRP28RUNC0102	DROP2/DROP52	CENTRATE EQ TNK2 PUMP2 RUN CMD
DigitalPoint	JRP28RUNC0201	DROP2/DROP52	CENTRATE VAULT PUMP 1 RUN CMD

DigitalPoint	JRP28RUNC0202	DROP2/DROP52	CENTRATE VAULT PUMP 2 RUN CMD
DigitalPoint	JRP28RUNC1001	DROP2/DROP52	CENTRATE EQ TNK1 MXR1 RUN CMD
DigitalPoint	JRP28RUNC1002	DROP2/DROP52	CENTRATE EQ TNK2 MXR2 RUN CMD
DigitalPoint	JRP28TRIP0001-00	DROP2/DROP52	IFAS RAS VALVE FV001 TRIP
DigitalPoint	JRP28TRIP0002-00	DROP2/DROP52	IFAS RAS VALVE FV002 TRIP
DigitalPoint	JRP28TRIP0003-00	DROP2/DROP52	IFAS RAS VALVE FV003 TRIP
DigitalPoint	JRP28TRIP0004-00	DROP2/DROP52	IFAS RAS VALVE FV004 TRIP
DigitalPoint	JRP28TRIP0005-00	DROP2/DROP52	IFAS RAS VALVE FV005 TRIP
DigitalPoint	JRP28TRIP0101-00	DROP2/DROP52	CENTRATE EQ PUMP 1 TRIP
DigitalPoint	JRP28TRIP0102-00	DROP2/DROP52	CENTRATE EQ PUMP 2 TRIP
DigitalPoint	JRP28TRIP0201-00	DROP2/DROP52	CENTRATE VLT PUMP 1 TRIP
DigitalPoint	JRP28TRIP0202-00	DROP2/DROP52	CENTRATE VLT PUMP 2 TRIP
DigitalPoint	JRP28TRIP1001-00	DROP2/DROP52	CENTRATE EQ MIXER 1 TRIP
DigitalPoint	JRP28TRIP1002-00	DROP2/DROP52	CENTRATE EQ MIXER 2 TRIP
DigitalPoint	JRP28YACX0001	DROP2/DROP52	IFAS RAS VALVE 1 FAIL
DigitalPoint	JRP28YACX0002	DROP2/DROP52	IFAS RAS VALVE 2 FAIL
DigitalPoint	JRP28YACX0003	DROP2/DROP52	IFAS RAS VALVE 3 FAIL
DigitalPoint	JRP28YACX0004	DROP2/DROP52	IFAS RAS VALVE 4 FAIL
DigitalPoint	JRP28YACX0005	DROP2/DROP52	IFAS RAS VALVE 5 FAIL
DigitalPoint	JRP28YACX0101	DROP2/DROP52	CENTRATE EQ TNK1 PUMP1 FAIL
DigitalPoint	JRP28YACX0102	DROP2/DROP52	CENTRATE EQ TNK2 PUMP2 FAIL
DigitalPoint	JRP28YACX0201	DROP2/DROP52	CENTRATE VAULT PUMP 1 FAIL
DigitalPoint	JRP28YACX0202	DROP2/DROP52	CENTRATE VAULT PUMP 2 FAIL
DigitalPoint	JRP28YACX1001	DROP2/DROP52	CENTRATE EQ TNK1 MXR1 FAIL
DigitalPoint	JRP28YACX1002	DROP2/DROP52	CENTRATE EQ TNK2 MXR2 FAIL
DigitalPoint	JRP28ZSCL0001	DROP2/DROP52	IFAS RAS VALVE 1 CLOSED
DigitalPoint	JRP28ZSCL0002	DROP2/DROP52	IFAS RAS VALVE 2 CLOSED
DigitalPoint	JRP28ZSCL0003	DROP2/DROP52	IFAS RAS VALVE 3 CLOSED
DigitalPoint	JRP28ZSCL0004	DROP2/DROP52	IFAS RAS VALVE 4 CLOSED
DigitalPoint	JRP28ZSCL0005	DROP2/DROP52	IFAS RAS VALVE 5 CLOSED
DigitalPoint	JRP28ZSDO0001	DROP2/DROP52	IFAS RAS VALVE 1 OPEN
DigitalPoint	JRP28ZSDO0002	DROP2/DROP52	IFAS RAS VALVE 2 OPEN
DigitalPoint	JRP28ZSDO0003	DROP2/DROP52	IFAS RAS VALVE 3 OPEN
DigitalPoint	JRP28ZSDO0004	DROP2/DROP52	IFAS RAS VALVE 4 OPEN
DigitalPoint	JRP28ZSDO0005	DROP2/DROP52	IFAS RAS VALVE 5 OPEN
DigitalPoint	JRP31DCSX5101-00	DROP2/DROP52	TRN 1 FOAM PMP DCS MODE
DigitalPoint	JRP31DCSX5102-00	DROP2/DROP52	TRN 2 FOAM PMP DCS MODE
DigitalPoint	JRP31DCSX5103-00	DROP2/DROP52	TRN 3 FOAM PMP DCS MODE
DigitalPoint	JRP31DCSX5104-00	DROP2/DROP52	TRN 4 FOAM PMP DCS MODE
DigitalPoint	JRP31DCSX5105-00	DROP2/DROP52	TRN 5 FOAM PMP DCS MODE
DigitalPoint	JRP31DCSX5106-00	DROP2/DROP52	TRN 6 FOAM PMP DCS MODE
DigitalPoint	JRP31DCSX5107-00	DROP2/DROP52	TRN 7 FOAM PMP DCS MODE
DigitalPoint	JRP31DCSX5108-00	DROP2/DROP52	TRN 8 FOAM PMP DCS MODE
DigitalPoint	JRP31DCSX5109-00	DROP2/DROP52	TRN 9 FOAM PMP DCS MODE
DigitalPoint	JRP31DCSX5201-00	DROP2/DROP52	TRN 1 FOAM SKMR DCS MODE
DigitalPoint	JRP31DCSX5202-00	DROP2/DROP52	TRN 2 FOAM SKMR DCS MODE
DigitalPoint	JRP31DCSX5203-00	DROP2/DROP52	TRN 3 FOAM SKMR DCS MODE

DigitalPoint	JRP31DCSX5204-00	DROP2/DROP52	TRN 4 FOAM SKMR DCS MODE
DigitalPoint	JRP31DCSX5205-00	DROP2/DROP52	TRN 5 FOAM SKMR DCS MODE
DigitalPoint	JRP31DCSX5206-00	DROP2/DROP52	TRN 6 FOAM SKMR DCS MODE
DigitalPoint	JRP31DCSX5207-00	DROP2/DROP52	TRN 7 FOAM SKMR DCS MODE
DigitalPoint	JRP31DCSX5208-00	DROP2/DROP52	TRN 8 FOAM SKMR DCS MODE
DigitalPoint	JRP31DCSX5209-00	DROP2/DROP52	TRN 9 FOAM SKMR DCS MODE
DigitalPoint	JRP31DMRJ5301-00	DROP2/DROP52	TRN 1 FOAM SV MAN REJECT
DigitalPoint	JRP31DMRJ5302-00	DROP2/DROP52	TRN 2 FOAM SV MAN REJECT
DigitalPoint	JRP31DMRJ5303-00	DROP2/DROP52	TRN 3 FOAM SV MAN REJECT
DigitalPoint	JRP31DMRJ5304-00	DROP2/DROP52	TRN 4 FOAM SV MAN REJECT
DigitalPoint	JRP31DMRJ5305-00	DROP2/DROP52	TRN 5 FOAM SV MAN REJECT
DigitalPoint	JRP31DMRJ5306-00	DROP2/DROP52	TRN 6 FOAM SV MAN REJECT
DigitalPoint	JRP31DMRJ5307-00	DROP2/DROP52	TRN 7 FOAM SV MAN REJECT
DigitalPoint	JRP31DMRJ5308-00	DROP2/DROP52	TRN 8 FOAM SV MAN REJECT
DigitalPoint	JRP31DMRJ5309-00	DROP2/DROP52	TRN 9 FOAM SV MAN REJECT
DigitalPoint	JRP31FCLS5301-00	DROP2/DROP52	TRN 1 FOAM SV FAIL TO CLOSE
DigitalPoint	JRP31FCLS5302-00	DROP2/DROP52	TRN 2 FOAM SV FAIL TO CLOSE
DigitalPoint	JRP31FCLS5303-00	DROP2/DROP52	TRN 3 FOAM SV FAIL TO CLOSE
DigitalPoint	JRP31FCLS5304-00	DROP2/DROP52	TRN 4 FOAM SV FAIL TO CLOSE
DigitalPoint	JRP31FCLS5305-00	DROP2/DROP52	TRN 5 FOAM SV FAIL TO CLOSE
DigitalPoint	JRP31FCLS5306-00	DROP2/DROP52	TRN 6 FOAM SV FAIL TO CLOSE
DigitalPoint	JRP31FCLS5307-00	DROP2/DROP52	TRN 7 FOAM SV FAIL TO CLOSE
DigitalPoint	JRP31FCLS5308-00	DROP2/DROP52	TRN 8 FOAM SV FAIL TO CLOSE
DigitalPoint	JRP31FCLS5309-00	DROP2/DROP52	TRN 9 FOAM SV FAIL TO CLOSE
DigitalPoint	JRP31FOPN5301-00	DROP2/DROP52	TRN 1 FOAM SV FAIL TO OPEN
DigitalPoint	JRP31FOPN5302-00	DROP2/DROP52	TRN 2 FOAM SV FAIL TO OPEN
DigitalPoint	JRP31FOPN5303-00	DROP2/DROP52	TRN 3 FOAM SV FAIL TO OPEN
DigitalPoint	JRP31FOPN5304-00	DROP2/DROP52	TRN 4 FOAM SV FAIL TO OPEN
DigitalPoint	JRP31FOPN5305-00	DROP2/DROP52	TRN 5 FOAM SV FAIL TO OPEN
DigitalPoint	JRP31FOPN5306-00	DROP2/DROP52	TRN 6 FOAM SV FAIL TO OPEN
DigitalPoint	JRP31FOPN5307-00	DROP2/DROP52	TRN 7 FOAM SV FAIL TO OPEN
DigitalPoint	JRP31FOPN5308-00	DROP2/DROP52	TRN 8 FOAM SV FAIL TO OPEN
DigitalPoint	JRP31FOPN5309-00	DROP2/DROP52	TRN 9 FOAM SV FAIL TO OPEN
DigitalPoint	JRP31FSTP5101-00	DROP2/DROP52	TRN 1 FOAM PMP FAIL TO STOP
DigitalPoint	JRP31FSTP5102-00	DROP2/DROP52	TRN 2 FOAM PMP FAIL TO STOP
DigitalPoint	JRP31FSTP5103-00	DROP2/DROP52	TRN 3 FOAM PMP FAIL TO STOP
DigitalPoint	JRP31FSTP5104-00	DROP2/DROP52	TRN 4 FOAM PMP FAIL TO STOP
DigitalPoint	JRP31FSTP5105-00	DROP2/DROP52	TRN 5 FOAM PMP FAIL TO STOP
DigitalPoint	JRP31FSTP5106-00	DROP2/DROP52	TRN 6 FOAM PMP FAIL TO STOP
DigitalPoint	JRP31FSTP5107-00	DROP2/DROP52	TRN 7 FOAM PMP FAIL TO STOP
DigitalPoint	JRP31FSTP5108-00	DROP2/DROP52	TRN 8 FOAM PMP FAIL TO STOP
DigitalPoint	JRP31FSTP5109-00	DROP2/DROP52	TRN 9 FOAM PMP FAIL TO STOP
DigitalPoint	JRP31FSTP5201-00	DROP2/DROP52	TRN 1 FOAM SKMR FAIL TO STOP
DigitalPoint	JRP31FSTP5202-00	DROP2/DROP52	TRN 2 FOAM SKMR FAIL TO STOP
DigitalPoint	JRP31FSTP5203-00	DROP2/DROP52	TRN 3 FOAM SKMR FAIL TO STOP
DigitalPoint	JRP31FSTP5204-00	DROP2/DROP52	TRN 4 FOAM SKMR FAIL TO STOP
DigitalPoint	JRP31FSTP5205-00	DROP2/DROP52	TRN 5 FOAM SKMR FAIL TO STOP

DigitalPoint	JRP31FSTP5206-00	DROP2/DROP52	TRN 6 FOAM SKMR FAIL TO STOP
DigitalPoint	JRP31FSTP5207-00	DROP2/DROP52	TRN 7 FOAM SKMR FAIL TO STOP
DigitalPoint	JRP31FSTP5208-00	DROP2/DROP52	TRN 8 FOAM SKMR FAIL TO STOP
DigitalPoint	JRP31FSTP5209-00	DROP2/DROP52	TRN 9 FOAM SKMR FAIL TO STOP
DigitalPoint	JRP31FSTR5101-00	DROP2/DROP52	TRN 1 FOAM PMP FAIL TO START
DigitalPoint	JRP31FSTR5102-00	DROP2/DROP52	TRN 2 FOAM PMP FAIL TO START
DigitalPoint	JRP31FSTR5103-00	DROP2/DROP52	TRN 3 FOAM PMP FAIL TO START
DigitalPoint	JRP31FSTR5104-00	DROP2/DROP52	TRN 4 FOAM PMP FAIL TO START
DigitalPoint	JRP31FSTR5105-00	DROP2/DROP52	TRN 5 FOAM PMP FAIL TO START
DigitalPoint	JRP31FSTR5106-00	DROP2/DROP52	TRN 6 FOAM PMP FAIL TO START
DigitalPoint	JRP31FSTR5107-00	DROP2/DROP52	TRN 7 FOAM PMP FAIL TO START
DigitalPoint	JRP31FSTR5108-00	DROP2/DROP52	TRN 8 FOAM PMP FAIL TO START
DigitalPoint	JRP31FSTR5109-00	DROP2/DROP52	TRN 9 FOAM PMP FAIL TO START
DigitalPoint	JRP31FSTR5201-00	DROP2/DROP52	TRN 1 FOAM SKMR FAIL TO START
DigitalPoint	JRP31FSTR5202-00	DROP2/DROP52	TRN 2 FOAM SKMR FAIL TO START
DigitalPoint	JRP31FSTR5203-00	DROP2/DROP52	TRN 3 FOAM SKMR FAIL TO START
DigitalPoint	JRP31FSTR5204-00	DROP2/DROP52	TRN 4 FOAM SKMR FAIL TO START
DigitalPoint	JRP31FSTR5205-00	DROP2/DROP52	TRN 5 FOAM SKMR FAIL TO START
DigitalPoint	JRP31FSTR5206-00	DROP2/DROP52	TRN 6 FOAM SKMR FAIL TO START
DigitalPoint	JRP31FSTR5207-00	DROP2/DROP52	TRN 7 FOAM SKMR FAIL TO START
DigitalPoint	JRP31FSTR5208-00	DROP2/DROP52	TRN 8 FOAM SKMR FAIL TO START
DigitalPoint	JRP31FSTR5209-00	DROP2/DROP52	TRN 9 FOAM SKMR FAIL TO START
DigitalPoint	JRP31HSAS5101	DROP2/DROP52	TRN 1 FOAM PMP IN AUTO
DigitalPoint	JRP31HSAS5102	DROP2/DROP52	TRN 2 FOAM PMP IN AUTO
DigitalPoint	JRP31HSAS5103	DROP2/DROP52	TRN 3 FOAM PMP IN AUTO
DigitalPoint	JRP31HSAS5104	DROP2/DROP52	TRN 4 FOAM PMP IN AUTO
DigitalPoint	JRP31HSAS5105	DROP2/DROP52	TRN 5 FOAM PMP IN AUTO
DigitalPoint	JRP31HSAS5106	DROP2/DROP52	TRN 6 FOAM PMP IN AUTO
DigitalPoint	JRP31HSAS5107	DROP2/DROP52	TRN 7 FOAM PMP IN AUTO
DigitalPoint	JRP31HSAS5108	DROP2/DROP52	TRN 8 FOAM PMP IN AUTO
DigitalPoint	JRP31HSAS5109	DROP2/DROP52	TRN 9 FOAM PMP IN AUTO
DigitalPoint	JRP31HSAS5201	DROP2/DROP52	TRN 1 FOAM SKMR IN AUTO
DigitalPoint	JRP31HSAS5202	DROP2/DROP52	TRN 2 FOAM SKMR IN AUTO
DigitalPoint	JRP31HSAS5203	DROP2/DROP52	TRN 3 FOAM SKMR IN AUTO
DigitalPoint	JRP31HSAS5204	DROP2/DROP52	TRN 4 FOAM SKMR IN AUTO
DigitalPoint	JRP31HSAS5205	DROP2/DROP52	TRN 5 FOAM SKMR IN AUTO
DigitalPoint	JRP31HSAS5206	DROP2/DROP52	TRN 6 FOAM SKMR IN AUTO
DigitalPoint	JRP31HSAS5207	DROP2/DROP52	TRN 7 FOAM SKMR IN AUTO
DigitalPoint	JRP31HSAS5208	DROP2/DROP52	TRN 8 FOAM SKMR IN AUTO
DigitalPoint	JRP31HSAS5209	DROP2/DROP52	TRN 9 FOAM SKMR IN AUTO
DigitalPoint	JRP31NAHH5201	DROP2/DROP52	TRN 1 FOAM SKMR HIGH TORQUE
DigitalPoint	JRP31NAHH5202	DROP2/DROP52	TRN 2 FOAM SKMR HIGH TORQUE
DigitalPoint	JRP31NAHH5203	DROP2/DROP52	TRN 3 FOAM SKMR HIGH TORQUE
DigitalPoint	JRP31NAHH5204	DROP2/DROP52	TRN 4 FOAM SKMR HIGH TORQUE
DigitalPoint	JRP31NAHH5205	DROP2/DROP52	TRN 5 FOAM SKMR HIGH TORQUE
DigitalPoint	JRP31NAHH5206	DROP2/DROP52	TRN 6 FOAM SKMR HIGH TORQUE
DigitalPoint	JRP31NAHH5207	DROP2/DROP52	TRN 7 FOAM SKMR HIGH TORQUE

DigitalPoint	JRP31NAHH5208	DROP2/DROP52	TRN 8 FOAM SKMR HIGH TORQUE
DigitalPoint	JRP31NAHH5209	DROP2/DROP52	TRN 9 FOAM SKMR HIGH TORQUE
DigitalPoint	JRP31OFDD5101-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31OFDD5102-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31OFDD5103-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31OFDD5104-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31OFDD5105-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31OFDD5106-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31OFDD5107-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31OFDD5108-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31OFDD5109-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31ONDD3100-00	DROP2/DROP52	FOAM PMP MSTR ONST DIGDRUM INC
DigitalPoint	JRP31ONDD5101-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31ONDD5102-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31ONDD5103-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31ONDD5104-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31ONDD5105-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31ONDD5106-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31ONDD5107-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31ONDD5108-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31ONDD5109-00	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31ONST5101	DROP2/DROP52	TRN 1 FOAM PMP RUN STATUS
DigitalPoint	JRP31ONST5102	DROP2/DROP52	TRN 2 FOAM PMP RUN STATUS
DigitalPoint	JRP31ONST5103	DROP2/DROP52	TRN 3 FOAM PMP RUN STATUS
DigitalPoint	JRP31ONST5104	DROP2/DROP52	TRN 4 FOAM PMP RUN STATUS
DigitalPoint	JRP31ONST5105	DROP2/DROP52	TRN 5 FOAM PMP RUN STATUS
DigitalPoint	JRP31ONST5106	DROP2/DROP52	TRN 6 FOAM PMP RUN STATUS
DigitalPoint	JRP31ONST5107	DROP2/DROP52	TRN 7 FOAM PMP RUN STATUS
DigitalPoint	JRP31ONST5108	DROP2/DROP52	TRN 8 FOAM PMP RUN STATUS
DigitalPoint	JRP31ONST5109	DROP2/DROP52	TRN 9 FOAM PMP RUN STATUS
DigitalPoint	JRP31ONST5201	DROP2/DROP52	TRN 1 FOAM SKMR RUN STATUS
DigitalPoint	JRP31ONST5202	DROP2/DROP52	TRN 2 FOAM SKMR RUN STATUS
DigitalPoint	JRP31ONST5203	DROP2/DROP52	TRN 3 FOAM SKMR RUN STATUS
DigitalPoint	JRP31ONST5204	DROP2/DROP52	TRN 4 FOAM SKMR RUN STATUS
DigitalPoint	JRP31ONST5205	DROP2/DROP52	TRN 5 FOAM SKMR RUN STATUS
DigitalPoint	JRP31ONST5206	DROP2/DROP52	TRN 6 FOAM SKMR RUN STATUS
DigitalPoint	JRP31ONST5207	DROP2/DROP52	TRN 7 FOAM SKMR RUN STATUS
DigitalPoint	JRP31ONST5208	DROP2/DROP52	TRN 8 FOAM SKMR RUN STATUS
DigitalPoint	JRP31ONST5209	DROP2/DROP52	TRN 9 FOAM SKMR RUN STATUS
DigitalPoint	JRP31RUNC5101	DROP2/DROP52	TRN 1 FOAM PMP RUN CMD
DigitalPoint	JRP31RUNC5101-MAN	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31RUNC5102	DROP2/DROP52	TRN 2 FOAM PMP RUN CMD
DigitalPoint	JRP31RUNC5102-MAN	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31RUNC5103	DROP2/DROP52	TRN 3 FOAM PMP RUN CMD
DigitalPoint	JRP31RUNC5103-MAN	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31RUNC5104	DROP2/DROP52	TRN 4 FOAM PMP RUN CMD
DigitalPoint	JRP31RUNC5104-MAN	DROP2/DROP52	@ Ovation Control Builder @

DigitalPoint	JRP31RUNC5105	DROP2/DROP52	TRN 5 FOAM PMP RUN CMD
DigitalPoint	JRP31RUNC5105-MAN	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31RUNC5106	DROP2/DROP52	TRN 6 FOAM PMP RUN CMD
DigitalPoint	JRP31RUNC5106-MAN	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31RUNC5107	DROP2/DROP52	TRN 7 FOAM PMP RUN CMD
DigitalPoint	JRP31RUNC5107-MAN	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31RUNC5108	DROP2/DROP52	TRN 8 FOAM PMP RUN CMD
DigitalPoint	JRP31RUNC5108-MAN	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31RUNC5109	DROP2/DROP52	TRN 9 FOAM PMP RUN CMD
DigitalPoint	JRP31RUNC5109-MAN	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP31RUNC5201	DROP2/DROP52	TRN 1 FOAM SKMR RUN CMD
DigitalPoint	JRP31RUNC5202	DROP2/DROP52	TRN 2 FOAM SKMR RUN CMD
DigitalPoint	JRP31RUNC5203	DROP2/DROP52	TRN 3 FOAM SKMR RUN CMD
DigitalPoint	JRP31RUNC5204	DROP2/DROP52	TRN 4 FOAM SKMR RUN CMD
DigitalPoint	JRP31RUNC5205	DROP2/DROP52	TRN 5 FOAM SKMR RUN CMD
DigitalPoint	JRP31RUNC5206	DROP2/DROP52	TRN 6 FOAM SKMR RUN CMD
DigitalPoint	JRP31RUNC5207	DROP2/DROP52	TRN 7 FOAM SKMR RUN CMD
DigitalPoint	JRP31RUNC5208	DROP2/DROP52	TRN 8 FOAM SKMR RUN CMD
DigitalPoint	JRP31RUNC5209	DROP2/DROP52	TRN 9 FOAM SKMR RUN CMD
DigitalPoint	JRP31SVAS5301	DROP2/DROP52	TRN 1 FOAM SPRAY VLV IN AUTO
DigitalPoint	JRP31SVAS5302	DROP2/DROP52	TRN 2 FOAM SPRAY VLV IN AUTO
DigitalPoint	JRP31SVAS5303	DROP2/DROP52	TRN 3 FOAM SPRAY VLV IN AUTO
DigitalPoint	JRP31SVAS5304	DROP2/DROP52	TRN 4 FOAM SPRAY VLV IN AUTO
DigitalPoint	JRP31SVAS5305	DROP2/DROP52	TRN 5 FOAM SPRAY VLV IN AUTO
DigitalPoint	JRP31SVAS5306	DROP2/DROP52	TRN 6 FOAM SPRAY VLV IN AUTO
DigitalPoint	JRP31SVAS5307	DROP2/DROP52	TRN 7 FOAM SPRAY VLV IN AUTO
DigitalPoint	JRP31SVAS5308	DROP2/DROP52	TRN 8 FOAM SPRAY VLV IN AUTO
DigitalPoint	JRP31SVAS5309	DROP2/DROP52	TRN 9 FOAM SPRAY VLV IN AUTO
DigitalPoint	JRP31SVOC5301	DROP2/DROP52	TRN 1 FOAM SPRAY VLV OPEN CMD
DigitalPoint	JRP31SVOC5302	DROP2/DROP52	TRN 2 FOAM SPRAY VLV OPEN CMD
DigitalPoint	JRP31SVOC5303	DROP2/DROP52	TRN 3 FOAM SPRAY VLV OPEN CMD
DigitalPoint	JRP31SVOC5304	DROP2/DROP52	TRN 4 FOAM SPRAY VLV OPEN CMD
DigitalPoint	JRP31SVOC5305	DROP2/DROP52	TRN 5 FOAM SPRAY VLV OPEN CMD
DigitalPoint	JRP31SVOC5306	DROP2/DROP52	TRN 6 FOAM SPRAY VLV OPEN CMD
DigitalPoint	JRP31SVOC5307	DROP2/DROP52	TRN 7 FOAM SPRAY VLV OPEN CMD
DigitalPoint	JRP31SVOC5308	DROP2/DROP52	TRN 8 FOAM SPRAY VLV OPEN CMD
DigitalPoint	JRP31SVOC5309	DROP2/DROP52	TRN 9 FOAM SPRAY VLV OPEN CMD
DigitalPoint	JRP31TRIP5101-00	DROP2/DROP52	TRN 1 FOAM PMP TRIP
DigitalPoint	JRP31TRIP5102-00	DROP2/DROP52	TRN 2 FOAM PMP TRIP
DigitalPoint	JRP31TRIP5103-00	DROP2/DROP52	TRN 3 FOAM PMP TRIP
DigitalPoint	JRP31TRIP5104-00	DROP2/DROP52	TRN 4 FOAM PMP TRIP
DigitalPoint	JRP31TRIP5105-00	DROP2/DROP52	TRN 5 FOAM PMP TRIP
DigitalPoint	JRP31TRIP5106-00	DROP2/DROP52	TRN 6 FOAM PMP TRIP
DigitalPoint	JRP31TRIP5107-00	DROP2/DROP52	TRN 7 FOAM PMP TRIP
DigitalPoint	JRP31TRIP5108-00	DROP2/DROP52	TRN 8 FOAM PMP TRIP
DigitalPoint	JRP31TRIP5109-00	DROP2/DROP52	TRN 9 FOAM PMP TRIP
DigitalPoint	JRP31TRIP5201-00	DROP2/DROP52	TRN 1 FOAM SKMR TRIP

DigitalPoint	JRP31TRIP5202-00	DROP2/DROP52	TRN 2 FOAM SKMR TRIP
DigitalPoint	JRP31TRIP5203-00	DROP2/DROP52	TRN 3 FOAM SKMR TRIP
DigitalPoint	JRP31TRIP5204-00	DROP2/DROP52	TRN 4 FOAM SKMR TRIP
DigitalPoint	JRP31TRIP5205-00	DROP2/DROP52	TRN 5 FOAM SKMR TRIP
DigitalPoint	JRP31TRIP5206-00	DROP2/DROP52	TRN 6 FOAM SKMR TRIP
DigitalPoint	JRP31TRIP5207-00	DROP2/DROP52	TRN 7 FOAM SKMR TRIP
DigitalPoint	JRP31TRIP5208-00	DROP2/DROP52	TRN 8 FOAM SKMR TRIP
DigitalPoint	JRP31TRIP5209-00	DROP2/DROP52	TRN 9 FOAM SKMR TRIP
DigitalPoint	JRP31TRIP5301-00	DROP2/DROP52	TRN 1 FOAM SV TRIP
DigitalPoint	JRP31TRIP5302-00	DROP2/DROP52	TRN 2 FOAM SV TRIP
DigitalPoint	JRP31TRIP5303-00	DROP2/DROP52	TRN 3 FOAM SV TRIP
DigitalPoint	JRP31TRIP5304-00	DROP2/DROP52	TRN 4 FOAM SV TRIP
DigitalPoint	JRP31TRIP5305-00	DROP2/DROP52	TRN 5 FOAM SV TRIP
DigitalPoint	JRP31TRIP5306-00	DROP2/DROP52	TRN 6 FOAM SV TRIP
DigitalPoint	JRP31TRIP5307-00	DROP2/DROP52	TRN 7 FOAM SV TRIP
DigitalPoint	JRP31TRIP5308-00	DROP2/DROP52	TRN 8 FOAM SV TRIP
DigitalPoint	JRP31TRIP5309-00	DROP2/DROP52	TRN 9 FOAM SV TRIP
DigitalPoint	JRP31YACX5101	DROP2/DROP52	TRN 1 FOAM PMP LK/TEMP COND
DigitalPoint	JRP31YACX5102	DROP2/DROP52	TRN 2 FOAM PMP LK/TEMP COND
DigitalPoint	JRP31YACX5103	DROP2/DROP52	TRN 3 FOAM PMP LK/TEMP COND
DigitalPoint	JRP31YACX5104	DROP2/DROP52	TRN 4 FOAM PMP LK/TEMP COND
DigitalPoint	JRP31YACX5105	DROP2/DROP52	TRN 5 FOAM PMP LK/TEMP COND
DigitalPoint	JRP31YACX5106	DROP2/DROP52	TRN 6 FOAM PMP LK/TEMP COND
DigitalPoint	JRP31YACX5107	DROP2/DROP52	TRN 7 FOAM PMP LK/TEMP COND
DigitalPoint	JRP31YACX5108	DROP2/DROP52	TRN 8 FOAM PMP LK/TEMP COND
DigitalPoint	JRP31YACX5109	DROP2/DROP52	TRN 9 FOAM PMP LK/TEMP COND
DigitalPoint	JRP50AFCVARJ1001	DROP2/DROP52	ANITAMOX AFV AUTO REJECT
DigitalPoint	JRP50AFCVDOMD	DROP2/DROP52	AMOX AIR FLO CTRL IN DO MODE
DigitalPoint	JRP50AFCVINTCLSD	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP50AFCVINTOPN	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP50AFCVMD2	DROP2/DROP52	AMOX IN SCFM CONTROL MODE
DigitalPoint	JRP50AFCVMODE	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP50AFCVPHMD	DROP2/DROP52	AMOX AIR FLO CTRL IN PH MODE
DigitalPoint	JRP50AFMCARJ1001	DROP2/DROP52	ANITAMOX AFV MSTR CTRL AUTO RJ
DigitalPoint	JRP50AFVINTMD1	DROP2/DROP52	AMOX AFCV IN RESUME MODE
DigitalPoint	JRP50AFVINTMD2	DROP2/DROP52	AMOX AFCV INTERMITTENT CLOSED
DigitalPoint	JRP50AFVRSDLAY1	DROP2/DROP52	INTERMITTENT RESUME SP DELAY
DigitalPoint	JRP50AIROFF1069	DROP2/DROP52	ANITAMOX AIR OFF COMMAND
DigitalPoint	JRP50AMOXAFVMD	DROP2/DROP52	INTERMITTENT MODE ENABLED
DigitalPoint	JRP50AMOXALM1	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP50AMOXALM2	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP50AMOXRNMD	DROP2/DROP52	AMOX PMP RUN MODE
DigitalPoint	JRP50AMRJ1001-00	DROP2/DROP52	TRN 1 CRCY PMP AUTO REJECT
DigitalPoint	JRP50AMRJ4001-00	DROP2/DROP52	ANITAMOX SPD AUTO REJECT
DigitalPoint	JRP50ANMXDCSX-00	DROP2/DROP52	ANITAMOX FD PMP DCS MODE
DigitalPoint	JRP50ARJ1061	DROP2/DROP52	ANITAMOX AFV AUTO REJECT
DigitalPoint	JRP50CNTRTVLVALM1	DROP2/DROP52	BOTH CENTRATE VALVES CLOSED

DigitalPoint	JRP50CNTRTVLVALM1A	DROP2/DROP52	BOTH CENTRATE VALVES CLOSED
DigitalPoint	JRP50CPSX1210	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP50CTRL4001-00	DROP2/DROP52	AMOX FD PMP SPD IN AUTO
DigitalPoint	JRP50CTRL4101-00	DROP2/DROP52	AMOX FD PMP SPD WAS IN AUTO
DigitalPoint	JRP50CTRL5001-00	DROP2/DROP52	ANITAMOX AFV IN AUTO MODE
DigitalPoint	JRP50CTRL5101-00	DROP2/DROP52	ANITAMOX AFV WAS IN AUTO
DigitalPoint	JRP50DCSX1001-00	DROP2/DROP52	TRN 1 CRCY PMP DCS MODE
DigitalPoint	JRP50DEVN1001-00	DROP2/DROP52	TRN 1 CRCY PMP DEVN ALM
DigitalPoint	JRP50DEVN4001-00	DROP2/DROP52	AMOX FD PMP SPD DEVN ALM
DigitalPoint	JRP50DEVN5001-00	DROP2/DROP52	ANITAMOX AFV DEVN ALM
DigitalPoint	JRP50DMRJ7001-00	DROP2/DROP52	MANHOLE #1 MANUAL REJECT
DigitalPoint	JRP50DMRJ8001-00	DROP2/DROP52	MANHOLE #5 MANUAL REJECT
DigitalPoint	JRP50DOSLCT1	DROP2/DROP52	HACH-YSI DO SELECTION
DigitalPoint	JRP50DOSPOOR1	DROP2/DROP52	FLOTN DO SP OUT OF RANGE(HI)
DigitalPoint	JRP50DOSPOOR2	DROP2/DROP52	FLOTN DO SP OUT OF RANGE(LO)
DigitalPoint	JRP50EQLOLVLALM1	DROP2/DROP52	IFAS 1 LOW LEVEL
DigitalPoint	JRP50FALSE	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP50FALSE1	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP50FALSE2	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP50FALX1061	DROP2/DROP52	AMOX FEED LOW FLOW ALARM
DigitalPoint	JRP50FCLOS101-00	DROP2/DROP52	CENTRATE VALVE #1 FAIL TO CLOS
DigitalPoint	JRP50FCLOS201-00	DROP2/DROP52	CENTRATE VALVE #2 FAIL TO CLOS
DigitalPoint	JRP50FCLS7001-00	DROP2/DROP52	MANHOLE #1 FAILED TO CLOSE
DigitalPoint	JRP50FCLS8001-00	DROP2/DROP52	MANHOLE #5 FAILED TO CLOSE
DigitalPoint	JRP50FLOTNDOMODE	DROP2/DROP52	AMOX IN FLOATING DO MODE
DigitalPoint	JRP50FLOTNDOPERM1	DROP2/DROP52	FLOTN DO FLOW PERMISSIVE
DigitalPoint	JRP50FLOTNDOPERMNM1	DROP2/DROP52	FLOTN DO PERRMISSIVE MET
DigitalPoint	JRP50FOPN100-00	DROP2/DROP52	CENTRATE VALVE #1 FAIL TO OPEN
DigitalPoint	JRP50FOPN200-00	DROP2/DROP52	CENTRATE VALVE #2 FAIL TO OPEN
DigitalPoint	JRP50FOPN7001-00	DROP2/DROP52	MANHOLE #1 FAILED TO OPEN
DigitalPoint	JRP50FOPN8001-00	DROP2/DROP52	MANHOLE #5 FAILED TO OPEN
DigitalPoint	JRP50FORCEVALU1	DROP2/DROP52	FORCE EQ TANK NH4 VALUE
DigitalPoint	JRP50FORCEVALU2	DROP2/DROP52	FORCE REACTOR NH4 VALUE
DigitalPoint	JRP50FORCEVALU3	DROP2/DROP52	FORCE REACTOR NO3 VALUE
DigitalPoint	JRP50FORCEZERO1	DROP2/DROP52	FORCE REACTOR NO3 VALUE
DigitalPoint	JRP50FSTART2001-00	DROP2/DROP52	ANITAMOX MIXER#2 FAIL TO START
DigitalPoint	JRP50FSTOP1001-00	DROP2/DROP52	ANITAMOX MIXER#1 FAIL TO STOP
DigitalPoint	JRP50FSTOP2001-00	DROP2/DROP52	ANITAMOX MIXER#1 FAIL TO STOP
DigitalPoint	JRP50FSTOP4001-00	DROP2/DROP52	ANITAMOX FD PMP FAIL TO STOP
DigitalPoint	JRP50FSTP1001-00	DROP2/DROP52	TRN 1 CRCY PMP FAIL TO STOP
DigitalPoint	JRP50FSTR1001-00	DROP2/DROP52	TRN 1 CRCY PMP FAIL TO START
DigitalPoint	JRP50FSTRT1001-00	DROP2/DROP52	ANITAMOX MIXER#1 FAIL TO START
DigitalPoint	JRP50FSTRT4001-00	DROP2/DROP52	ANITAMOX FD PMP FAIL TO START
DigitalPoint	JRP50FVAS1019	DROP2/DROP52	ANITAMOX AFV IN AUTO
DigitalPoint	JRP50FVOS1060	DROP2/DROP52	ANITAMOX AFV OPEN
DigitalPoint	JRP50FVZI1002	DROP2/DROP52	IFAS INF. VALVE OPEN
DigitalPoint	JRP50FVZI1003	DROP2/DROP52	IFAS INF. VALVE CLOSED

DigitalPoint	JRP50FVZI1005	DROP2/DROP52	CENTRATE TREATMENT VALVE OPEN
DigitalPoint	JRP50FVZI1006	DROP2/DROP52	CENTRATE TREATMNT VALVE CLSD
DigitalPoint	JRP50GVZI1050	DROP2/DROP52	MANHOLE 1 GATE OPENED
DigitalPoint	JRP50GVZI1051	DROP2/DROP52	MANHOLE 1 SLIDE GATE CLOSED
DigitalPoint	JRP50GVZI1055	DROP2/DROP52	MANHOLE 5 GATE OPENED
DigitalPoint	JRP50GVZI1056	DROP2/DROP52	MANHOLE 5 GATE CLOSED
DigitalPoint	JRP50HIAIRFLO100	DROP2/DROP52	ANITAMOX HI AIR FLOW STPT MET
DigitalPoint	JRP50HIDOALM1	DROP2/DROP52	ANITAMOX HI DO ALARM
DigitalPoint	JRP50HILVLSTRTPRM	DROP2/DROP52	AMOX TNK HI LVL START PERM
DigitalPoint	JRP50HSAS1001	DROP2/DROP52	CENTRATE RECYCLE PMP IN AUTO
DigitalPoint	JRP50HSAS1004	DROP2/DROP52	CENTRATE TREATMNT VLV IN AUTO
DigitalPoint	JRP50HSAS1017	DROP2/DROP52	ANITAMOX FEED PUMP #1 IN AUTO
DigitalPoint	JRP50HSAS1049	DROP2/DROP52	MANHOLE 1 SLIDE GATE IN AUTO
DigitalPoint	JRP50HSAS1054	DROP2/DROP52	MANHOLE 5 SLIDE GATE IN AUTO
DigitalPoint	JRP50HSAS1063	DROP2/DROP52	AMOX MIXER #1 IN AUTO
DigitalPoint	JRP50HSAS1064	DROP2/DROP52	AMOX MIXER #2 IN AUTO
DigitalPoint	JRP50HSAS2001	DROP2/DROP52	IFAS INF. VALVE IN AUTO
DigitalPoint	JRP50INTSWOVR	DROP2/DROP52	INTMTNT DO SWITCHOVER
DigitalPoint	JRP50LAHX1002-00	DROP2/DROP52	TRN 1 ZONE R2 LEVEL HI
DigitalPoint	JRP50LALL1002-00	DROP2/DROP52	TRN 1 ZONE R2 LEVEL LO LO
DigitalPoint	JRP50LALX1001-00	DROP2/DROP52	TRN 1 ZONE R2 LEVEL LOW
DigitalPoint	JRP50LALX1002-00	DROP2/DROP52	TRN 1 ZONE R2 LEVEL LOW
DigitalPoint	JRP50LOAIRFLO100	DROP2/DROP52	ANITAMOX AIR FLOW LOW
DigitalPoint	JRP50LODOALM1	DROP2/DROP52	ANITAMOX LO DO ALARM
DigitalPoint	JRP50LOFLOMODE1	DROP2/DROP52	LO AIR FLO MODE ENABLED
DigitalPoint	JRP50LOPHSHUTOFF1	DROP2/DROP52	AMOX LO PH AIR SHUTOFF
DigitalPoint	JRP50LOPHSHUTOFF1B	DROP2/DROP52	AMOX LO PH AIR SHUTOFF
DigitalPoint	JRP50LSH1062	DROP2/DROP52	AMOX TANK LEVEL HIGH
DigitalPoint	JRP50LSHX1060	DROP2/DROP52	MANHOLE 1 FLOAT SWITCH
DigitalPoint	JRP50LVLPMPSTOP1	DROP2/DROP52	HI/LO LEVEL AMOX PMP STOP
DigitalPoint	JRP50MH1HILVL	DROP2/DROP52	MANHOLE 1 HIGH LEVEL
DigitalPoint	JRP50MRJ1000-00	DROP2/DROP52	ANITAMOX AFV MAN REJ.
DigitalPoint	JRP50MRJ1001-00	DROP2/DROP52	ANITAMOX AFV MANUAL REJECT
DigitalPoint	JRP50MSTR1001-MA	DROP2/DROP52	AMOX AIR FLO VLV MSTR IN AUTO
DigitalPoint	JRP50MSTR1002-MA	DROP2/DROP52	ANITAMOX AFCV WAS IN AUTO
DigitalPoint	JRP50N03ALM1	DROP2/DROP52	NITRATE ANALYZER ALARM
DigitalPoint	JRP50NH4ALM1	DROP2/DROP52	NH4 ANALYZER ALARM
DigitalPoint	JRP50ONST1001	DROP2/DROP52	CENTRATE RECYCLE PMP STATUS
DigitalPoint	JRP50ONST1018	DROP2/DROP52	ANITAMOX FD PUMP #1 ON STATUS
DigitalPoint	JRP50ONST1020	DROP2/DROP52	ANITAMOX FD PUMP #2 ON STATUS
DigitalPoint	JRP50ONST1040	DROP2/DROP52	ANITAMOX MIXER 1 ON STATUS
DigitalPoint	JRP50ONST1041	DROP2/DROP52	ANITAMOX MIXER 2 ON STATUS
DigitalPoint	JRP50ONST1067	DROP2/DROP52	HEATER #1 ON STATUS
DigitalPoint	JRP50ONST1068	DROP2/DROP52	HEATER #2 ON STATUS
DigitalPoint	JRP50OPNMH5GT	DROP2/DROP52	HI FLO OPEN MANHOLE #5
DigitalPoint	JRP50PHBAD1001	DROP2/DROP52	ANITAMOX PH BAD QUALITY
DigitalPoint	JRP50RUNC1001	DROP2/DROP52	CENTRATE RECYCLE PMP RUN CMD

DigitalPoint	JRP50RUNC1023	DROP2/DROP52	ANITAMOX FD PMP #1 RUN CMD
DigitalPoint	JRP50RUNC1024	DROP2/DROP52	ANITAMOX MIXER #1RUN CMD
DigitalPoint	JRP50RUNC1065	DROP2/DROP52	ANITAMOX MIXER #2 RUN CMD
DigitalPoint	JRP50SGCC1008	DROP2/DROP52	
DigitalPoint	JRP50SGCC1010	DROP2/DROP52	MANHOLE 5 SLIDE GATE CLOSE CMD
DigitalPoint	JRP50SGOC1007	DROP2/DROP52	MANHOLE 1 SLIDE GATE OPEN CMD
DigitalPoint	JRP50SGOC1009	DROP2/DROP52	MANHOLE 5 SLIDE GATE OPEN CMD
DigitalPoint	JRP50TRIP1001-00	DROP2/DROP52	TRN 1 CRCY PMP TRIP
DigitalPoint	JRP50TRIP2001-00	DROP2/DROP52	ANITAMOX MIXER #1 TRIP
DigitalPoint	JRP50TRIP3001-00	DROP2/DROP52	ANITAMOX MIXER #2 TRIP
DigitalPoint	JRP50TRIP4001-00	DROP2/DROP52	ANITAMOX FD PMP TRIP
DigitalPoint	JRP50TRIP7001-00	DROP2/DROP52	MANHOLE #1 GATE TRIPPED
DigitalPoint	JRP50TRIP8001-00	DROP2/DROP52	MANHOLE #5 GATE TRIPPED
DigitalPoint	JRP50YAAX1021	DROP2/DROP52	ANITAMOX FD PMP #1 VFD FAIL
DigitalPoint	JRP50YAAX1022	DROP2/DROP52	ANITAMOX FD PMP #2 VFD FAIL
DigitalPoint	JRP50YAAX1042	DROP2/DROP52	ANITAMOX MIXER 1 ALARM
DigitalPoint	JRP50YAAX1043	DROP2/DROP52	ANITAMOX MIXER 2 ALARM
DigitalPoint	JRP50YACX1001	DROP2/DROP52	CENTRATE RECYCLE PMP ALM COND
DigitalPoint	JRP50ZCXX1013	DROP2/DROP52	IFAS INF. VALVE OPEN CMD
DigitalPoint	JRP50ZCXX1014	DROP2/DROP52	CENTRATE TREATMNT VLV OPEN CMD
DigitalPoint	JRP50ZCXX1015	DROP2/DROP52	IFAS INF. VALVE CLOSE CMD
DigitalPoint	JRP50ZCXX1016	DROP2/DROP52	CENTRATE TRTMNT VLV CLOSE CMD
DigitalPoint	JRP99YAAX0201	DROP2/DROP52	DCU2 UPS FAULT
DigitalPoint	JRP99YAAX0202	DROP2/DROP52	DCU2 UPS SUMMARY ALARM
DigitalPoint	JRP99YAAX0203	DROP2/DROP52	DCU2 UPS LOW BATTERY
DigitalPoint	JRP99YAAX0204	DROP2/DROP52	DCU2 UPS ON BATTERY
DigitalPoint	JRP99YAAX0205	DROP2/DROP52	DCU2 UPS ON BYPASS
DigitalPoint	JRP99YAAX0206	DROP2/DROP52	DCU2 UPS ON UPS
DigitalPoint	JRP99YAAX0207	DROP2/DROP52	DCU2 CABINET 1 DOOR SWITCH
DigitalPoint	JRP99YAAX0208	DROP2/DROP52	COMMS CAB #2 DOOR SWITCH ALARM
DigitalPoint	JRP99YAAX1201	DROP2/DROP52	RIO12 UPS FAULT
DigitalPoint	JRP99YAAX1202	DROP2/DROP52	RIO12 UPS SUMMARY ALARM
DigitalPoint	JRP99YAAX1203	DROP2/DROP52	RIO12 UPS LOW BATTERY
DigitalPoint	JRP99YAAX1204	DROP2/DROP52	RIO12 UPS ON BATTERY
DigitalPoint	JRP99YAAX1205	DROP2/DROP52	RIO12 UPS ON BYPASS
DigitalPoint	JRP99YAAX1206	DROP2/DROP52	RIO12 UPS ON UPS
DigitalPoint	JRP99YAAX1207	DROP2/DROP52	RIO12 CABINET 1 DOOR SWITCH
DigitalPoint	JRP99YAAX1301	DROP2/DROP52	RIO13 UPS FAULT
DigitalPoint	JRP99YAAX1302	DROP2/DROP52	RIO13 UPS SUMMARY ALARM
DigitalPoint	JRP99YAAX1303	DROP2/DROP52	RIO13 UPS LOW BATTERY
DigitalPoint	JRP99YAAX1304	DROP2/DROP52	RIO13 UPS ON BATTERY
DigitalPoint	JRP99YAAX1305	DROP2/DROP52	RIO13 UPS ON BYPASS
DigitalPoint	JRP99YAAX1306	DROP2/DROP52	RIO13 UPS ON UPS
DigitalPoint	JRP99YAAX1307	DROP2/DROP52	RIO13 CABINET 1 DOOR SWITCH
DigitalPoint	JRPLOPHAIRONSP1	DROP2/DROP52	@ Ovation Control Builder @
DigitalPoint	JRP05FCVRATIO	DROP2/DROP52	IFAS 2 FCV RATIO Enable
DigitalPoint	JRP05FCVRATIO1	DROP2/DROP52	FCV RATIO ENABLED IFAS T1

DigitalPoint	JRP05FCVRATIO3	DROP2/DROP52	FCV RATIO IFAS T3 ENABLED
DigitalPoint	JRP05FCVRATIO4	DROP2/DROP52	FCV RATIO IFAS T4 ENABLED
DigitalPoint	JRP05FCVRATIO5	DROP2/DROP52	FCV RATIO IFAS T5 ENABLED
DigitalPoint	JRP05FCVRATIO6	DROP2/DROP52	FCV RATIO IFAS T6 ENABLE
DigitalPoint	JRP05FCVRATIO7	DROP2/DROP52	FCV RATIO IFAS T7 ENABLED
DigitalPoint	JRP05FCVRATIO8	DROP2/DROP52	IFAS T8 FCV RATIO ENABLED
DigitalPoint	JRP05FCVRATIO9	DROP2/DROP52	IFAS T9 FCV RATIO ENABLED
DigitalPoint	JRP05NH4OVERIDE	DROP2/DROP52	NO3 MODE NH4 REJECT TO NORMAL MODE
DigitalPoint	JRP05NH4OVERIDE-C2	DROP2/DROP52	N03 MODE NH4 REJECT TO NORMAL C2
DigitalPoint	JRP05NH4OVERIDE-C3	DROP2/DROP52	N03 MODE NH4 REJECT TO NORMAL C3
DigitalPoint	JRP50AMOXALARM1	DROP2/DROP52	AMOX CONT MODE LOW FLOW ALARM
DigitalPoint	JRP50AMOXDODWN	DROP2/DROP52	ALLOW SMALL DO DECREASE
DigitalPoint	JRP50AMOXDOUP	DROP2/DROP52	ALLOW SMALL DO INCREASE
DigitalPoint	JRP50AMOXRULE-2	DROP2/DROP52	AMOX SLOPE RULE 2
DigitalPoint	JRP50AMOXRULE-3	DROP2/DROP52	AMOX SLOPE RULE 3
DigitalPoint	JRP50AMOXSLOPE-ER	DROP2/DROP52	AMOX pH SLOPE MAJOR ERROR POS
DigitalPoint	JRP50AMOXSLOPE-ER2	DROP2/DROP52	AMOX pH SLOPE MAJOR ERROR NEG
DigitalPoint	JRP50AMOXSLOPE-ER3	DROP2/DROP52	AMOX pH SLOPE MINOR ERROR
DigitalPoint	JRP50PHERRORNEG	DROP2/DROP52	AMOX PH ERROR NEGATIVE
DigitalPoint	JRP50PHERRORPOS	DROP2/DROP52	AMOX PH ERROR POSITIVE
DigitalPoint	JRP50RUNC1066	DROP2/DROP52	AMOX HEATER RUN CMD
DigitalPoint	JRP50SLOPEDISABL	DROP2/DROP52	AMOX SLOPE ADJUST DISABLE
DigitalPoint	JRP03DCHG	DROP3/DROP53	DAY CHANGE PULSE
DigitalPoint	JRP03FALSE	DROP3/DROP53	DROP 3 ALWAYS FALSE
DigitalPoint	JRP03HCHG	DROP3/DROP53	HOUR CHANGE PULSE
DigitalPoint	JRP03MCHG	DROP3/DROP53	MINUTE CHANGE PULSE
DigitalPoint	JRP03MOCHG	DROP3/DROP53	MONTH CHANGE PULSE
DigitalPoint	JRP03SCHG	DROP3/DROP53	SECOND CHANGE PULSE
DigitalPoint	JRP03TRUE	DROP3/DROP53	DROP 3 ALWAYS TRUE
DigitalPoint	JRP08AMRJ5001-00	DROP3/DROP53	@ Ovation Control Builder @
DigitalPoint	JRP08AMRJCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 AUTO REJECT
DigitalPoint	JRP08AMRJCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 AUTO REJECT
DigitalPoint	JRP08CFP1HIPRESS	DROP3/DROP53	CYCLONE FD PMP 1 HI PRESS
DigitalPoint	JRP08CFP2HIPRESS	DROP3/DROP53	CYCLONE FD PMP 2 HI PRESS
DigitalPoint	JRP08DCSXCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 DCS MODE
DigitalPoint	JRP08DCSXCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 DCS MODE
DigitalPoint	JRP08DEVN5101-00	DROP3/DROP53	@ Ovation Control Builder @
DigitalPoint	JRP08DEVNCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 DEVN ALM
DigitalPoint	JRP08DEVNCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 DEVN ALM
DigitalPoint	JRP08FSTPCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 FAIL TO STP
DigitalPoint	JRP08FSTPCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 FAIL TO STP
DigitalPoint	JRP08FSTRCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 FAIL TO STR
DigitalPoint	JRP08FSTRCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 FAIL TO STR
DigitalPoint	JRP08GBT1OR2	DROP3/DROP53	GBT 1 OR 2 RUNNING
DigitalPoint	JRP08HSASCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 IN AUTO
DigitalPoint	JRP08HSASCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 IN AUTO
DigitalPoint	JRP08LAHX1000	DROP3/DROP53	CYCLONE TANK HIGH LEVEL

DigitalPoint	JRP08ONSTCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 STATUS
DigitalPoint	JRP08ONSTCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 STATUS
DigitalPoint	JRP08RUNCCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 RUN CMD
DigitalPoint	JRP08RUNCCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 RUN CMD
DigitalPoint	JRP08TRIPCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 TRIP
DigitalPoint	JRP08TRIPCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 TRIP
DigitalPoint	JRP08YACXCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 FAULT
DigitalPoint	JRP08YACXCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 FAULT
DigitalPoint	JRP12AMRJ5001-00	DROP3/DROP53	@ Ovation Control Builder @
DigitalPoint	JRP12DCSX5101-00	DROP3/DROP53	@ Ovation Control Builder @
DigitalPoint	JRP12DEVN5101-00	DROP3/DROP53	@ Ovation Control Builder @
DigitalPoint	JRP12ONST5101	DROP3/DROP53	@ Ovation Control Builder @
DigitalPoint	JRP22ALM1	DROP3/DROP53	CENTRIFUGE #1 COMMON ALARM
DigitalPoint	JRP22ALM2	DROP3/DROP53	CENTRIFUGE #2 COMMON ALARM
DigitalPoint	JRP22ALM3	DROP3/DROP53	CENTRIFUGE #3 COMMON ALARM
DigitalPoint	JRP22BDFAIL1	DROP3/DROP53	CENT. #1 BACKDRIVE FAIL
DigitalPoint	JRP22BDFAIL2	DROP3/DROP53	CENT.#2 BACKDRIVE FAIL
DigitalPoint	JRP22BDFAIL3	DROP3/DROP53	CENT.#3 BACKDRIVE FAIL
DigitalPoint	JRP22BDONST1	DROP3/DROP53	CENT.#1 BACK DRIVE RUN STATUS
DigitalPoint	JRP22BDONST2	DROP3/DROP53	CENT.#2 BACK DRIVE RUN STATUS
DigitalPoint	JRP22BDONST3	DROP3/DROP53	CENT.#3 BACK DRIVE RUN STATUS
DigitalPoint	JRP22BPGATE1	DROP3/DROP53	CENT.#1 BYPASS GATE CENTRATE
DigitalPoint	JRP22BPGATE2	DROP3/DROP53	CENT.#2 BYPASS GATE CENTRATE
DigitalPoint	JRP22BPGATE3	DROP3/DROP53	CENT.#3 BYPASS GATE CENTRATE
DigitalPoint	JRP22BPSLD1	DROP3/DROP53	CENT.#1 BYPASS GATE SOLIDS
DigitalPoint	JRP22BPSLD2	DROP3/DROP53	CENT.#2 BYPASS GATE SOLIDS
DigitalPoint	JRP22BPSLD3	DROP3/DROP53	CENT.#3 BYPASS GATE SOLIDS
DigitalPoint	JRP22BWLSPDLO1	DROP3/DROP53	CENT#1 BOWL SPEED LOW
DigitalPoint	JRP22BWLSPDLO2	DROP3/DROP53	CENT#2 BOWL SPEED LOW
DigitalPoint	JRP22BWLSPDLO3	DROP3/DROP53	CENT#3 BOWL SPEED LOW
DigitalPoint	JRP22CENT1STOP-W	DROP3/DROP53	CENTRIFUGE 1 STOP CMD WRITE
DigitalPoint	JRP22CENTONST1	DROP3/DROP53	CENT#1 RUN STATUS
DigitalPoint	JRP22CENTONST2	DROP3/DROP53	CENT#2 RUN STATUS
DigitalPoint	JRP22CENTONST3	DROP3/DROP53	CENT#3 RUN STATUS
DigitalPoint	JRP22CIPON1	DROP3/DROP53	CENT#1 CLEAN IN PLACE ACTIVE
DigitalPoint	JRP22CIPON2	DROP3/DROP53	CENT#2 CLEAN IN PLACE ACTIVE
DigitalPoint	JRP22CIPON3	DROP3/DROP53	CENT#3 CLEAN IN PLACE ACTIVE
DigitalPoint	JRP22CMNALM1	DROP3/DROP53	CENT#1 COMMON ALARM
DigitalPoint	JRP22CMNALM2	DROP3/DROP53	CENT#2 COMMON ALARM
DigitalPoint	JRP22CMNALM3	DROP3/DROP53	CENT#3 COMMON ALARM
DigitalPoint	JRP22CTLMD1	DROP3/DROP53	CENT#1 CONTROL MODE
DigitalPoint	JRP22CTLMD2	DROP3/DROP53	CENT#2 CONTROL MODE
DigitalPoint	JRP22CTLMD3	DROP3/DROP53	CENT#3 CONTROL MODE
DigitalPoint	JRP22DELTAMD1	DROP3/DROP53	CENT#1 DELTA MODE
DigitalPoint	JRP22DELTAMD2	DROP3/DROP53	CENT#2 DELTA MODE
DigitalPoint	JRP22DELTAMD3	DROP3/DROP53	CENT#3 DELTA MODE
DigitalPoint	JRP22DIFFLO1	DROP3/DROP53	CENT#1 DIFFERENTIAL SPEED LOW

DigitalPoint	JRP22DIFFLO2	DROP3/DROP53	CENT#2 DIFFERENTIAL SPEED LOW
DigitalPoint	JRP22DIFFLO3	DROP3/DROP53	CENT#3 DIFFERENTIAL SPEED LOW
DigitalPoint	JRP22ESTOP1	DROP3/DROP53	CENT#1 ESTOP
DigitalPoint	JRP22ESTOP2	DROP3/DROP53	CENT#2 ESTOP
DigitalPoint	JRP22ESTOP3	DROP3/DROP53	CENT#3 ESTOP
DigitalPoint	JRP22FBTMPALM1	DROP3/DROP53	CENT1 FRNT BRNG TEMP ALARM
DigitalPoint	JRP22FBTMPALM2	DROP3/DROP53	CENT2 FRNT BRNG TEMP ALARM
DigitalPoint	JRP22FBTMPALM3	DROP3/DROP53	CENT3 FRNT BRNG TEMP ALARM
DigitalPoint	JRP22GTCLSFLT1	DROP3/DROP53	CENT#1 GATE CLOSED FAULT
DigitalPoint	JRP22GTCLSFLT2	DROP3/DROP53	CENT#2 GATE CLOSED FAULT
DigitalPoint	JRP22GTCLSFLT3	DROP3/DROP53	CENT#3 GATE CLOSED FAULT
DigitalPoint	JRP22GTOPNFLT1	DROP3/DROP53	CENT#1 GATE OPEN FAULT
DigitalPoint	JRP22GTOPNFLT2	DROP3/DROP53	CENT#2 GATE OPEN FAULT
DigitalPoint	JRP22GTOPNFLT3	DROP3/DROP53	CENT#3 GATE OPEN FAULT
DigitalPoint	JRP22HOPR1ALM	DROP3/DROP53	CENT#1 HI HOPPER ALARM
DigitalPoint	JRP22HOPR1ALM-PLC	DROP3/DROP53	#1 HI HOPPER ALM TO PLC
DigitalPoint	JRP22HOPR2ALM	DROP3/DROP53	CENT#2 HI HOPPER ALARM
DigitalPoint	JRP22HOPR2ALM-PLC	DROP3/DROP53	#2 HI HOPPER ALM TO PLC
DigitalPoint	JRP22HOPR3ALM	DROP3/DROP53	CENT#3 HI HOPPER ALARM
DigitalPoint	JRP22HOPR3ALM-PLC	DROP3/DROP53	#3 HI HOPPER ALM TO PLC
DigitalPoint	JRP22HOPRCMNALM	DROP3/DROP53	CENT. HI HOPPER ALARM
DigitalPoint	JRP22LFTOILFLOLO1	DROP3/DROP53	CENT#1 LEFT OIL FLO LOW
DigitalPoint	JRP22LFTOILFLOLO2	DROP3/DROP53	CENT#2 LEFT OIL FLO LOW
DigitalPoint	JRP22LFTOILFLOLO3	DROP3/DROP53	CENT#3 LEFT OIL FLO LOW
DigitalPoint	JRP22LOADMD1	DROP3/DROP53	CENT#1 LOAD MODE
DigitalPoint	JRP22LOADMD2	DROP3/DROP53	CENT#2 LOAD MODE
DigitalPoint	JRP22LOADMD3	DROP3/DROP53	CENT#3 LOAD MODE
DigitalPoint	JRP22LOPMPFAIL1	DROP3/DROP53	CENT#1 LUBE OIL PUMP FAIL
DigitalPoint	JRP22LOPMPFAIL2	DROP3/DROP53	CENT#2 LUBE OIL PUMP FAIL
DigitalPoint	JRP22LOPMPFAIL3	DROP3/DROP53	CENT#3 LUBE OIL PUMP FAIL
DigitalPoint	JRP22LOPONST1	DROP3/DROP53	CENT#1 LUBE OIL PMP RUN STATUS
DigitalPoint	JRP22LOPONST2	DROP3/DROP53	CENT#2 LUBE OIL PMP RUN STATUS
DigitalPoint	JRP22LOPONST3	DROP3/DROP53	CENT#3 LUBE OIL PMP RUN STATUS
DigitalPoint	JRP22MNDRHITMP1	DROP3/DROP53	CENT#1 MAIN DR HI TEMP
DigitalPoint	JRP22MNDRHITMP2	DROP3/DROP53	CENT#2 MAIN DRIVE HI TEMP
DigitalPoint	JRP22MNDRHITMP3	DROP3/DROP53	CENT#3 MAIN DRIVE HI TEMP
DigitalPoint	JRP22MNDROL1	DROP3/DROP53	CENT#1 MAIN DRIVE OL
DigitalPoint	JRP22MNDROL2	DROP3/DROP53	CENT#2 MAIN DRIVE OL
DigitalPoint	JRP22MNDROL3	DROP3/DROP53	CENT#3 MAIN DRIVE OL
DigitalPoint	JRP22NAHH1	DROP3/DROP53	CENT#1 HI HI TORQUE ALARM
DigitalPoint	JRP22NAHH2	DROP3/DROP53	CENT#2 HI HI TORQUE ALARM
DigitalPoint	JRP22NAHH3	DROP3/DROP53	CENT#3 HI HI TORQUE ALARM
DigitalPoint	JRP22NAHX1	DROP3/DROP53	CENT#1 HI TORQUE ALARM
DigitalPoint	JRP22NAHX2	DROP3/DROP53	CENT#2 HI TORQUE ALARM
DigitalPoint	JRP22NAHX3	DROP3/DROP53	CENT#3 HI TORQUE ALARM
DigitalPoint	JRP22ONSTDBS1	DROP3/DROP53	CENT 1 DBS PUMP RUN STATUS
DigitalPoint	JRP22ONSTDBS2	DROP3/DROP53	CENT 2 DBS PUMP RUN STATUS

DigitalPoint	JRP22ONSTDBS3	DROP3/DROP53	CENT 3 DBS PUMP RUN STATUS
DigitalPoint	JRP22PINMODE1	DROP3/DROP53	CENT#1 PINION MODE
DigitalPoint	JRP22PINMODE2	DROP3/DROP53	CENT#2 PINION MODE
DigitalPoint	JRP22PINMODE3	DROP3/DROP53	CENT#3 PINION MODE
DigitalPoint	JRP22POLYPMPFAIL1	DROP3/DROP53	POLYMER PUMP #1 FAIL
DigitalPoint	JRP22POLYPMPFAIL2	DROP3/DROP53	POLYMER PUMP #2 FAIL
DigitalPoint	JRP22POLYPMPFAIL3	DROP3/DROP53	POLYMER PUMP #3 FAIL
DigitalPoint	JRP22RBRNGTMPALM1	DROP3/DROP53	CENT #1 REAR BEARING TMP ALARM
DigitalPoint	JRP22RBRNGTMPALM2	DROP3/DROP53	CENT#2 REAR BRNG TEMP ALARM
DigitalPoint	JRP22RBRNGTMPALM3	DROP3/DROP53	CENT#3 REAR BRNG TEMP ALARM
DigitalPoint	JRP22RTOILFLO1	DROP3/DROP53	CENT#1 RT OIL FLO LOW
DigitalPoint	JRP22RTOILFLO2	DROP3/DROP53	CENT#2 RT OIL FLO LOW
DigitalPoint	JRP22RTOILFLO3	DROP3/DROP53	CENT#3 RT OIL FLO LOW
DigitalPoint	JRP22SLPMPFAIL1	DROP3/DROP53	SLUDGE PUMP #1 FAIL
DigitalPoint	JRP22SLPMPFAIL2	DROP3/DROP53	SLUDGE PUMP #2 FAIL
DigitalPoint	JRP22SLPMPFAIL3	DROP3/DROP53	SLUDGE PUMP#3 FAIL
DigitalPoint	JRP22VIBHI1	DROP3/DROP53	CENT#1 HIGH VIBRATION
DigitalPoint	JRP22VIBHI2	DROP3/DROP53	CENT#2 HIGH VIBRATION
DigitalPoint	JRP22VIBHI3	DROP3/DROP53	CENT#3 HIGH VIBRATION
DigitalPoint	JRP22VIBHIHI1	DROP3/DROP53	CENT#1 VIBRATION SHUTDOWN
DigitalPoint	JRP22VIBHIHI2	DROP3/DROP53	CENT#2 VIBRATION SHUTDOWN
DigitalPoint	JRP22VIBHIHI3	DROP3/DROP53	CENT#3 VIBRATION SHUTDOWN
DigitalPoint	JRP46DCSX2001-00	DROP3/DROP53	CRBN RECRC PMP 1 DCS MODE
DigitalPoint	JRP46DCSX2002-00	DROP3/DROP53	CRBN RECRC PMP 2 DCS MODE
DigitalPoint	JRP46DCSX3001-00	DROP3/DROP53	CRBN FEED PMP 1 DCS MODE
DigitalPoint	JRP46DCSX3002-00	DROP3/DROP53	CRBN FEED PMP 2 DCS MODE
DigitalPoint	JRP46DCSX3003-00	DROP3/DROP53	CRBN FEED PMP 3 DCS MODE
DigitalPoint	JRP46DCSX3004-00	DROP3/DROP53	CRBN FEED PMP 4 DCS MODE
DigitalPoint	JRP46DCSX3005-00	DROP3/DROP53	CRBN FEED PMP 5 DCS MODE
DigitalPoint	JRP46DCSX3006-00	DROP3/DROP53	CRBN FEED PMP 6 DCS MODE
DigitalPoint	JRP46DCSX3007-00	DROP3/DROP53	CRBN FEED PMP 7 DCS MODE
DigitalPoint	JRP46DCSX3008-00	DROP3/DROP53	CRBN FEED PMP 8 DCS MODE
DigitalPoint	JRP46DCSX3009-00	DROP3/DROP53	CRBN FEED PMP 9 DCS MODE
DigitalPoint	JRP46DCSX3010-00	DROP3/DROP53	CRBN FEED PMP 10 DCS MODE
DigitalPoint	JRP46DCSX3011-00	DROP3/DROP53	CRBN FEED PMP 11 DCS MODE
DigitalPoint	JRP46DEVN3001-00	DROP3/DROP53	CRBN FEED PMP 1 SPD DEVN ALM
DigitalPoint	JRP46DEVN3002-00	DROP3/DROP53	CRBN FEED PMP 2 SPD DEVN ALM
DigitalPoint	JRP46DEVN3003-00	DROP3/DROP53	CRBN FEED PMP 3 SPD DEVN ALM
DigitalPoint	JRP46DEVN3004-00	DROP3/DROP53	CRBN FEED PMP 4 SPD DEVN ALM
DigitalPoint	JRP46DEVN3005-00	DROP3/DROP53	CRBN FEED PMP 5 SPD DEVN ALM
DigitalPoint	JRP46DEVN3006-00	DROP3/DROP53	CRBN FEED PMP 6 SPD DEVN ALM
DigitalPoint	JRP46DEVN3007-00	DROP3/DROP53	CRBN FEED PMP 7 SPD DEVN ALM
DigitalPoint	JRP46DEVN3008-00	DROP3/DROP53	CRBN FEED PMP 8 SPD DEVN ALM
DigitalPoint	JRP46DEVN3009-00	DROP3/DROP53	CRBN FEED PMP 9 SPD DEVN ALM
DigitalPoint	JRP46DEVN3010-00	DROP3/DROP53	CRBN FEED PMP 10 SPD DEVN ALM
DigitalPoint	JRP46DEVN3011-00	DROP3/DROP53	CRBN FEED PMP 11 SPD DEVN ALM
DigitalPoint	JRP46ESTP1000-LL	DROP3/DROP53	CRBN STRG TNK PMP TRIP COND

DigitalPoint	JRP46FSTP2001-00	DROP3/DROP53	CRBN RECRC PMP 1 FAIL TO STOP
DigitalPoint	JRP46FSTP2002-00	DROP3/DROP53	CRBN RECRC PMP 2 FAIL TO STOP
DigitalPoint	JRP46FSTP3001-00	DROP3/DROP53	CRBN FEED PMP 1 FAIL TO STOP
DigitalPoint	JRP46FSTP3002-00	DROP3/DROP53	CRBN FEED PMP 2 FAIL TO STOP
DigitalPoint	JRP46FSTP3003-00	DROP3/DROP53	CRBN FEED PMP 3 FAIL TO STOP
DigitalPoint	JRP46FSTP3004-00	DROP3/DROP53	CRBN FEED PMP 4 FAIL TO STOP
DigitalPoint	JRP46FSTP3005-00	DROP3/DROP53	CRBN FEED PMP 5 FAIL TO STOP
DigitalPoint	JRP46FSTP3006-00	DROP3/DROP53	CRBN FEED PMP 6 FAIL TO STOP
DigitalPoint	JRP46FSTP3007-00	DROP3/DROP53	CRBN FEED PMP 7 FAIL TO STOP
DigitalPoint	JRP46FSTP3008-00	DROP3/DROP53	CRBN FEED PMP 8 FAIL TO STOP
DigitalPoint	JRP46FSTP3009-00	DROP3/DROP53	CRBN FEED PMP 9 FAIL TO STOP
DigitalPoint	JRP46FSTP3010-00	DROP3/DROP53	CRBN FEED PMP 10 FAIL TO STOP
DigitalPoint	JRP46FSTP3011-00	DROP3/DROP53	CRBN FEED PMP 11 FAIL TO STOP
DigitalPoint	JRP46FSTR2001-00	DROP3/DROP53	CRBN RECRC PMP 1 FAIL TO START
DigitalPoint	JRP46FSTR2002-00	DROP3/DROP53	CRBN RECRC PMP 2 FAIL TO START
DigitalPoint	JRP46FSTR3001-00	DROP3/DROP53	CRBN FEED PMP 1 FAIL TO START
DigitalPoint	JRP46FSTR3002-00	DROP3/DROP53	CRBN FEED PMP 2 FAIL TO START
DigitalPoint	JRP46FSTR3003-00	DROP3/DROP53	CRBN FEED PMP 3 FAIL TO START
DigitalPoint	JRP46FSTR3004-00	DROP3/DROP53	CRBN FEED PMP 4 FAIL TO START
DigitalPoint	JRP46FSTR3005-00	DROP3/DROP53	CRBN FEED PMP 5 FAIL TO START
DigitalPoint	JRP46FSTR3006-00	DROP3/DROP53	CRBN FEED PMP 6 FAIL TO START
DigitalPoint	JRP46FSTR3007-00	DROP3/DROP53	CRBN FEED PMP 7 FAIL TO START
DigitalPoint	JRP46FSTR3008-00	DROP3/DROP53	CRBN FEED PMP 8 FAIL TO START
DigitalPoint	JRP46FSTR3009-00	DROP3/DROP53	CRBN FEED PMP 9 FAIL TO START
DigitalPoint	JRP46FSTR3010-00	DROP3/DROP53	CRBN FEED PMP 10 FAIL TO START
DigitalPoint	JRP46FSTR3011-00	DROP3/DROP53	CRBN FEED PMP 11 FAIL TO START
DigitalPoint	JRP46HSAS2001	DROP3/DROP53	CARBON RECIRC PMP 1 IN AUTO
DigitalPoint	JRP46HSAS2002	DROP3/DROP53	CARBON RECIRC PMP 2 IN AUTO
DigitalPoint	JRP46HSAS3001	DROP3/DROP53	CARBON FEED PMP 1 IN AUTO
DigitalPoint	JRP46HSAS3002	DROP3/DROP53	CARBON FEED PMP 2 IN AUTO
DigitalPoint	JRP46HSAS3003	DROP3/DROP53	CARBON FEED PMP 3 IN AUTO
DigitalPoint	JRP46HSAS3004	DROP3/DROP53	CARBON FEED PMP 4 IN AUTO
DigitalPoint	JRP46HSAS3005	DROP3/DROP53	CARBON FEED PMP 5 IN AUTO
DigitalPoint	JRP46HSAS3006	DROP3/DROP53	CARBON FEED PMP 6 IN AUTO
DigitalPoint	JRP46HSAS3007	DROP3/DROP53	CARBON FEED PMP 7 IN AUTO
DigitalPoint	JRP46HSAS3008	DROP3/DROP53	CARBON FEED PMP 8 IN AUTO
DigitalPoint	JRP46HSAS3009	DROP3/DROP53	CARBON FEED PMP 9 IN AUTO
DigitalPoint	JRP46HSAS3010	DROP3/DROP53	CARBON FEED PMP 10 IN AUTO
DigitalPoint	JRP46HSAS3011	DROP3/DROP53	CARBON FEED PMP 11 IN AUTO
DigitalPoint	JRP46LALX1001-00	DROP3/DROP53	CRBN STRG TNK 1 ENGR LOW LVL
DigitalPoint	JRP46LALX1002-00	DROP3/DROP53	CRBN STRG TNK 2 ENGR LOW LVL
DigitalPoint	JRP46LSHX1001	DROP3/DROP53	CARBON STRG TNK 1 HI LVL (DO)
DigitalPoint	JRP46LSHX1002	DROP3/DROP53	CARBON STRG TNK 2 HI LVL (DO)
DigitalPoint	JRP46LSLX1001-00	DROP3/DROP53	CARBON STRG TNK 1 LOW LVL
DigitalPoint	JRP46LSLX1002-00	DROP3/DROP53	CARBON STRG TNK 2 LOW LVL
DigitalPoint	JRP46ONLN1000-NONE	DROP3/DROP53	CRBN STRG TNKS NONE ONLINE
DigitalPoint	JRP46ONLN1001-00	DROP3/DROP53	CARBON STRG TANK 1 ONLINE

DigitalPoint	JRP46ONLN1002-00	DROP3/DROP53	CARBON STRG TANK 2 ONLINE
DigitalPoint	JRP46ONST2001	DROP3/DROP53	CARBON RECIRC PMP 1 STATUS
DigitalPoint	JRP46ONST2002	DROP3/DROP53	CARBON RECIRC PMP 2 STATUS
DigitalPoint	JRP46ONST3001	DROP3/DROP53	CARBON FEED PMP 1 STATUS
DigitalPoint	JRP46ONST3002	DROP3/DROP53	CARBON FEED PMP 2 STATUS
DigitalPoint	JRP46ONST3003	DROP3/DROP53	CARBON FEED PMP 3 STATUS
DigitalPoint	JRP46ONST3004	DROP3/DROP53	CARBON FEED PMP 4 STATUS
DigitalPoint	JRP46ONST3005	DROP3/DROP53	CARBON FEED PMP 5 STATUS
DigitalPoint	JRP46ONST3006	DROP3/DROP53	CARBON FEED PMP 6 STATUS
DigitalPoint	JRP46ONST3007	DROP3/DROP53	CARBON FEED PMP 7 STATUS
DigitalPoint	JRP46ONST3008	DROP3/DROP53	CARBON FEED PMP 8 STATUS
DigitalPoint	JRP46ONST3009	DROP3/DROP53	CARBON FEED PMP 9 STATUS
DigitalPoint	JRP46ONST3010	DROP3/DROP53	CARBON FEED PMP 10 STATUS
DigitalPoint	JRP46ONST3011	DROP3/DROP53	CARBON FEED PMP 11 STATUS
DigitalPoint	JRP46RUNC2001	DROP3/DROP53	CARBON RECIRC PMP 1 RUN CMD
DigitalPoint	JRP46RUNC2002	DROP3/DROP53	CARBON RECIRC PMP 2 RUN CMD
DigitalPoint	JRP46RUNC3001	DROP3/DROP53	CARBON FEED PMP 1 RUN CMD
DigitalPoint	JRP46RUNC3002	DROP3/DROP53	CARBON FEED PMP 2 RUN CMD
DigitalPoint	JRP46RUNC3003	DROP3/DROP53	CARBON FEED PMP 3 RUN CMD
DigitalPoint	JRP46RUNC3004	DROP3/DROP53	CARBON FEED PMP 4 RUN CMD
DigitalPoint	JRP46RUNC3005	DROP3/DROP53	CARBON FEED PMP 5 RUN CMD
DigitalPoint	JRP46RUNC3006	DROP3/DROP53	CARBON FEED PMP 6 RUN CMD
DigitalPoint	JRP46RUNC3007	DROP3/DROP53	CARBON FEED PMP 7 RUN CMD
DigitalPoint	JRP46RUNC3008	DROP3/DROP53	CARBON FEED PMP 8 RUN CMD
DigitalPoint	JRP46RUNC3009	DROP3/DROP53	CARBON FEED PMP 9 RUN CMD
DigitalPoint	JRP46RUNC3010	DROP3/DROP53	CARBON FEED PMP 10 RUN CMD
DigitalPoint	JRP46RUNC3011	DROP3/DROP53	CARBON FEED PMP 11 RUN CMD
DigitalPoint	JRP46STRP3001-00	DROP3/DROP53	CRBN FEED PMP 1 START PERM
DigitalPoint	JRP46STRP3002-00	DROP3/DROP53	CRBN FEED PMP 2 START PERM
DigitalPoint	JRP46STRP3003-00	DROP3/DROP53	CRBN FEED PMP 3 START PERM
DigitalPoint	JRP46STRP3004-00	DROP3/DROP53	CRBN FEED PMP 4 START PERM
DigitalPoint	JRP46STRP3005-00	DROP3/DROP53	CRBN FEED PMP 5 START PERM
DigitalPoint	JRP46STRP3006-00	DROP3/DROP53	CRBN FEED PMP 6 START PERM
DigitalPoint	JRP46STRP3007-00	DROP3/DROP53	CRBN FEED PMP 7 START PERM
DigitalPoint	JRP46STRP3008-00	DROP3/DROP53	CRBN FEED PMP 8 START PERM
DigitalPoint	JRP46STRP3009-00	DROP3/DROP53	CRBN FEED PMP 9 START PERM
DigitalPoint	JRP46STRP3010-00	DROP3/DROP53	CRBN FEED PMP 10 START PERM
DigitalPoint	JRP46STRP3011-00	DROP3/DROP53	CRBN FEED PMP 11 START PERM
DigitalPoint	JRP46TRIP2001-00	DROP3/DROP53	CRBN RECRC PMP 1 TRIP
DigitalPoint	JRP46TRIP2002-00	DROP3/DROP53	CRBN RECRC PMP 2 TRIP
DigitalPoint	JRP46TRIP3001-00	DROP3/DROP53	CRBN FEED PMP 1 TRIP
DigitalPoint	JRP46TRIP3002-00	DROP3/DROP53	CRBN FEED PMP 2 TRIP
DigitalPoint	JRP46TRIP3003-00	DROP3/DROP53	CRBN FEED PMP 3 TRIP
DigitalPoint	JRP46TRIP3004-00	DROP3/DROP53	CRBN FEED PMP 4 TRIP
DigitalPoint	JRP46TRIP3005-00	DROP3/DROP53	CRBN FEED PMP 5 TRIP
DigitalPoint	JRP46TRIP3006-00	DROP3/DROP53	CRBN FEED PMP 6 TRIP
DigitalPoint	JRP46TRIP3007-00	DROP3/DROP53	CRBN FEED PMP 7 TRIP

DigitalPoint	JRP46TRIP3008-00	DROP3/DROP53	CRBN FEED PMP 8 TRIP
DigitalPoint	JRP46TRIP3009-00	DROP3/DROP53	CRBN FEED PMP 9 TRIP
DigitalPoint	JRP46TRIP3010-00	DROP3/DROP53	CRBN FEED PMP 10 TRIP
DigitalPoint	JRP46TRIP3011-00	DROP3/DROP53	CRBN FEED PMP 11 TRIP
DigitalPoint	JRP46YACX3001	DROP3/DROP53	CARBON FEED PMP 1 FAIL
DigitalPoint	JRP46YACX3002	DROP3/DROP53	CARBON FEED PMP 2 FAIL
DigitalPoint	JRP46YACX3003	DROP3/DROP53	CARBON FEED PMP 3 FAIL
DigitalPoint	JRP46YACX3004	DROP3/DROP53	CARBON FEED PMP 4 FAIL
DigitalPoint	JRP46YACX3005	DROP3/DROP53	CARBON FEED PMP 5 FAIL
DigitalPoint	JRP46YACX3006	DROP3/DROP53	CARBON FEED PMP 6 FAIL
DigitalPoint	JRP46YACX3007	DROP3/DROP53	CARBON FEED PMP 7 FAIL
DigitalPoint	JRP46YACX3008	DROP3/DROP53	CARBON FEED PMP 8 FAIL
DigitalPoint	JRP46YACX3009	DROP3/DROP53	CARBON FEED PMP 9 FAIL
DigitalPoint	JRP46YACX3010	DROP3/DROP53	CARBON FEED PMP 10 FAIL
DigitalPoint	JRP46YACX3011	DROP3/DROP53	CARBON FEED PMP 11 FAIL
DigitalPoint	JRP50LSHX1000	DROP3/DROP53	SOLIDS HANDLING MANHOLE HI LVL
DigitalPoint	JRP99YAAX0301	DROP3/DROP53	DCU3 UPS FAULT
DigitalPoint	JRP99YAAX0302	DROP3/DROP53	DCU3 UPS SUMMARY ALARM
DigitalPoint	JRP99YAAX0303	DROP3/DROP53	DCU3 UPS LOW BATTERY
DigitalPoint	JRP99YAAX0304	DROP3/DROP53	DCU3 UPS ON BATTERY
DigitalPoint	JRP99YAAX0305	DROP3/DROP53	DCU3 UPS ON BYPASS
DigitalPoint	JRP99YAAX0306	DROP3/DROP53	DCU3 UPS ON UPS
DigitalPoint	JRP99YAAX0307	DROP3/DROP53	DCU3 CABINET DOOR SWITCH
DigitalPoint	01A2013-OUT	DROP3/DROP53	@ Ovation Control Builder @
DigitalPoint	JRP08YAAX1000	DROP3/DROP53	MAG PUMP FEED INTERLOCK
DigitalPoint	JRP28YAAX1000	DROP3/DROP53	CENTRATE PUMP FEED INTERLOCK
DigitalPoint	JRP17LAHH8103	DROP212	TNK 1 HIGH HIGH LEVEL ALARM
DigitalPoint	JRP17LAHH8203	DROP212	TNK 2 HIGH HIGH LEVEL ALARM
DigitalPoint	JRP17LALL8101	DROP212	TNK 1 LOW LOW LEVEL ALARM
DigitalPoint	JRP17LALL8201	DROP212	TNK 2 LOW LOW LEVEL ALARM
DigitalPoint	JRP17LALX8300	DROP212	LOW HOPPER ALARM
DigitalPoint	JRP17PAHX8302	DROP212	POLY HIGH DISCHARGE PRESSURE
DigitalPoint	JRP17PALX8102	DROP212	TNK 1 LOW WATER PRESSURE
DigitalPoint	JRP17PALX8202	DROP212	TNK 2 LOW WATER PRESSURE
DigitalPoint	JRP17TAHX8303	DROP212	POLY PMP STATOR HIGH TEMP
DigitalPoint	JRP17YAAX8104	DROP212	TNK 1 DILUTION INLET VLV JAM
DigitalPoint	JRP17YAAX8105	DROP212	TNK 1 LIQUID POLY VLV JAM
DigitalPoint	JRP17YAAX8106	DROP212	TNK 1 DRY POLY VLV JAM
DigitalPoint	JRP17YAAX8107	DROP212	TNK 1 RAPID FILL VLV JAM
DigitalPoint	JRP17YAAX8108	DROP212	TNK 1 OUTLET VLV JAM
DigitalPoint	JRP17YAAX8109	DROP212	TNK 1 MIXER FAILURE
DigitalPoint	JRP17YAAX8204	DROP212	TNK 2 INLET VLV JAM
DigitalPoint	JRP17YAAX8205	DROP212	TNK 2 LIQUID POLY VLV JAM
DigitalPoint	JRP17YAAX8206	DROP212	TNK 2 DRY POLY VLV JAM
DigitalPoint	JRP17YAAX8207	DROP212	TNK 2 RAPID FILL VLV JAM
DigitalPoint	JRP17YAAX8208	DROP212	TNK 2 OUTLET VLV JAM
DigitalPoint	JRP17YAAX8209	DROP212	TANK 2 MIXER FAILURE

DigitalPoint	JRP17YAAX8301	DROP212	BLOCKED FEED FUNNEL ALARM
DigitalPoint	JRP17YAAX8304	DROP212	POLY PUMP STARTER FAILURE
DigitalPoint	JRP17YAAX8306	DROP212	SURGE SUPRESSOR ALARM
DigitalPoint	JRP17YAAX8307	DROP212	POWER MONITOR ALARM
DigitalPoint	JRP17YAAX8308	DROP212	INVALID BATCH ALARM
DigitalPoint	JRP17YAAX8309	DROP212	BLOWER MOTOR FAILURE
DigitalPoint	JRP17YAAX8310	DROP212	BOTH OUTLET VALVES CLOSED
DigitalPoint	JRP17YACX8000	DROP212	CENTRIFUGE POLY COMMON ALM
DigitalPoint	JRP17YAXX8305	DROP212	EMERGENCY STOP ALARM

SET_DESCRIPTION	RESET_DESCRIPTION	IO_TYPE	IO_LOCATION
HOMED	NOHOME	R	4.1.1.1
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOVKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		

LOCKED			
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
ALARM	NORMAL		
ALARM	NORMAL		
ALARM	NORMAL		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OUT		
LOCKED	OK		
INSERV	OUT		
ENABLD	DSABLD	R	4.1.2.6
ENABLD	DSABLD	R	4.1.2.7
ENABLD	DSABLD	R	4.1.2.8
ON	E-STOP	R	4.1.1.1
ON	E-STOP	R	4.1.1.3
ON	E-STOP	R	4.1.1.5
AVAIL	OFF		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		

LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
START	NORMAL	R	4.1.1.2
START	NORMAL	R	4.1.1.4
START	NORMAL	R	4.1.1.2

AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
HIGH	NORMAL	R	1.1.5
TRUE	FALSE		
FAIL	NORMAL		
TRUE	FALSE		
TRUE	FALSE		
AVAIL	OFF		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		

LOCKED	OK		
INSERV	OUT		
DCS	LOCAL	R	4.1.1.1
DCS	LOCAL	R	4.1.1.3
DCS	LOCAL	R	4.1.1.5
DCS	LOCAL	R	4.1.1.1
DCS	LOCAL	R	4.1.1.3
DCS	LOCAL	R	4.1.1.5
CLOSE	OFF	R	4.1.2.6
CLOSE	OFF	R	4.1.2.7
CLOSE	OFF	R	4.1.2.8
CLOSE	OFF	R	4.1.2.6
CLOSE	OFF	R	4.1.2.7
CLOSE	OFF	R	4.1.2.8
CLOSED	NCLSD	R	4.1.1.1
CLOSED	NCLSD	R	4.1.1.3
CLOSED	NCLSD	R	4.1.1.5
CLOSED	NCLSD	R	4.1.1.1
CLOSED	NCLSD	R	4.1.1.3
CLOSED	NCLSD	R	4.1.1.5
OPEN	OFF	R	4.1.2.6
OPEN	OFF	R	4.1.2.7
OPEN	OFF	R	4.1.2.8
OPEN	OFF	R	4.1.2.6
OPEN	OFF	R	4.1.2.7
OPEN	OFF	R	4.1.2.8
OPENED	NOPND	R	4.1.1.1
OPENED	NOPND	R	4.1.1.3
OPENED	NOPND	R	4.1.1.5
OPENED	NOPND	R	4.1.1.1
OPENED	NOPND	R	4.1.1.3
OPENED	NOPND	R	4.1.1.5
FAIL	NORMAL		
TRUE	FALSE		
TRUE	FALSE		

ALARM	NORMAL	R	1.1.5
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
INSERV	OUT		
LOCKED	OK		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
AVAIL	OFF		
INSERV	OUT		
LOCKED	OK		
INSERV	OUT		
LOCKD	OK		
AVAIL	OUT		
INSERV	OUT		
LOCKD	OK		
AVAIL	OUT		
INSERV	OUT		
LOCKD	OK		
TRUE	FALSE		
AUTO	LOCAL		
DCS	LOCAL	R	4.1.1.1
TRUE	FALSE		
TRUE	FALSE		
DCS	LOCAL	R	4.1.1.2
DCS	LOCAL	R	4.1.1.4

DCS	LOCAL	R	4.1.1.2
DCS	LOCAL	R	4.1.1.1
DCS	LOCAL	R	4.1.1.3
DCS	LOCAL	R	4.1.1.5
ALARM	NORMAL	R	1.1.5
AVAIL	OFF		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
HIGH	NORMAL	R	4.1.1.2
TRUE	FALSE	R	4.1.1.4
TRUE	FALSE	R	4.1.1.2
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		

LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
TRUE	FALSE		
TRUE	FALSE		
FAIL	NORMAL	R	4.1.1.1
FAIL	NORMAL	R	4.1.1.3
FAIL	NORMAL	R	4.1.1.5
AVAIL	OFF		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
AVAIL			
LOCKED	OK		
INSERV	OUT		
AVAIL	OFF		
AVAIL	OFF		

LOCKED	OK
INSERV	OUT
LOCKED	OK
INSERV	OUT
AVAIL	OFF
LOCKED	OK
INSERV	OUT
AVAIL	OFF
LOCKED	OK
INSERV	OUT
ONCALL	OFF
ONCALL	OFF
ONCALL	OFF
ONCALL	OFF

ON	OFF	R	4.1.1.1
ON	OFF	R	4.1.1.3
ON	OFF	R	4.1.1.5
AVAIL	OFF		
INSERV	OUT		
LOCKD	OK		
AVAIL	OFF		
INSERV	OUT		
LOCKD	OK		
AVAIL	OFF		
INSERV	OUT		
LOCKD	OK		
AVAIL	OFF		
AVAIL	OFF		
INSERV	OUT		
LOCKD	OK		
INSERV	OUT		
LOCKED	OK		
AVAIL	OFF		
INSERV	OUT		
LOCKED	OK		
AVAIL	OFF		
INSERV	OUT		
LOCKED	OK		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		

AVAIL	OFF		
LOCKED	OK		
INSERV	OUT		
FWD	NFWD	R	4.1.2.6
FWD	NFWD	R	4.1.2.7
FWD	NFWD	R	4.1.2.8
FWD	NFWD	R	4.1.1.2
FWD	NFWD	R	4.1.1.4
FWD	NFWD	R	4.1.1.2
ON	OFF		
REV	NREV	R	4.1.2.6
REV	NREV	R	4.1.2.7
REV	NREV	R	4.1.2.8
REV	NREV	R	4.1.1.2
REV	NREV	R	4.1.1.4
REV	NREV	R	4.1.1.2

RUN	STOP	R	4.1.2.6
RUN	STOP	R	4.1.2.7
RUN	STOP	R	4.1.2.8

AVAIL	OUT
LOCKED	OK
INSERV	OUT
AVAIL	OFF
LOCKED	OK
INSERV	OUT
READY	OFF
READY	OFF
READY	OFF
READY	OFF
INSERV	OUT
LOCKED	READY
READY	OFF
INSERV	OUT
LOKD	READY
VAPEX	PH
AVAIL	OFF
AVAIL	OFF
INSERV	OUT
LOCKD	OK
AVAIL	OFF
INSERV	OUT
LOCKD	OK
INSERV	OUT

LOCKD	OK		
AVAIL	OFF		
INSERV	OUT		
LOCKD	OK		
AVAIL	OFF		
INSERV	OUT		
LOCKD	OK		
CLEAN	INSERV		
CLEAN	INSERV		
CLEAN	INSERV		
DCS	LOCAL	R	4.1.1.2
DCS	LOCAL	R	4.1.1.2
DCS	LOCAL	R	4.1.1.2
DCS	LOCAL	R	4.1.1.3
DCS	LOCAL	R	4.1.1.3
DCS	LOCAL	R	4.1.1.3
DCS	LOCAL	R	4.1.1.5
DCS	LOCAL	R	4.1.1.5
DCS	LOCAL	R	4.1.1.5
OPEN	NOPND		
TRUE	FALSE		
TRUE	FALSE		
OPENED	NOPND	R	4.1.2.6
OPENED	NOPND	R	4.1.2.6
OPENED	NOPND	R	4.1.2.6
OPENED	NOPND	R	4.1.2.7
OPENED	NOPND	R	4.1.2.7
OPENED	NOPND	R	4.1.2.7
OPENED	NOPND	R	4.1.2.8
OPENED	NOPND	R	4.1.2.8
OPENED	NOPND	R	4.1.2.8
TRUE	FALSE		
RESET	OK	R	4.1.1.1
TRUE	FALSE	R	4.1.1.3
TRUE	FALSE	R	4.1.1.5
ALARM	NORMAL		
TRIP	NORMAL		
TRUE	FALSE		
TRUE	FALSE		

TRUE	FALSE		
TRUE	FALSE		
FAIL	NORMAL	R	4.1.1.2
FAULT	!FAULT		
TRUE	FALSE	R	4.1.1.4
FAULT	!FAULT		
TRUE	FALSE	R	4.1.1.2
FAULT	!FAULT		
FAIL	NORMAL	R	4.1.1.1
FAULT	!FAULT		
TRUE	FALSE	R	4.1.1.3
FAULT	!FAULT		
TRUE	FALSE	R	4.1.1.5
JAMMED	NORMAL	R	4.1.2.6
TRUE	FALSE	R	4.1.2.7
TRUE	FALSE	R	4.1.2.8
FAULT	!FAULT		

LIMIT	NO LMT	R	4.1.1.1
HOME	NOHOME	R	4.1.1.1
HOME	NOHOME		
LIMIT	NO LMT	R	4.1.1.3
HOME	NOHOME	R	4.1.1.3
HOME	NOHOME		
LIMIT	NO LMT	R	4.1.1.5
HOME	NOHOME	R	4.1.1.5
HOME	NOHOME		
OPEN	CLOSD		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		

TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
NORMAL	FAIL	R	4.1.1.4
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE	R	4.1.1.1
TRUE	FALSE	R	4.1.1.1
TRUE	FALSE	R	4.1.1.2
TRUE	FALSE	R	4.1.1.6
FAIL	NORMAL	R	1.1.1
FAIL	NORMAL	R	1.1.2
FAIL	NORMAL	R	1.1.1
FAIL	NORMAL	R	1.1.2
TRUE	FALSE	R	4.1.2.5
TRUE	FALSE	R	4.1.2.5
TRUE	FALSE	R	4.1.2.5
TRUE	FALSE	R	4.1.2.5
TRUE	FALSE	R	4.1.2.7
TRUE	FALSE	R	4.1.2.7
TRUE	FALSE	R	4.1.2.8
TRUE	FALSE	R	4.1.2.8
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
FAIL	NORMAL	R	1.1.1
FAIL	NORMAL	R	1.1.2
FAIL	NORMAL	R	1.1.1
FAIL	NORMAL	R	1.1.2
ALARM	NORMAL	R	1.1.5
FAIL	NORMAL	R	1.1.1
FAIL	NORMAL	R	1.1.2
FAIL	NORMAL	R	1.1.1
FAIL	NORMAL	R	1.1.2
FAIL	NORMAL	R	1.1.1
FAIL	NORMAL	R	1.1.2

TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
DCS	LOCAL		
DCS	LOCAL		
DCS	LOCAL		
ALARM	NORMAL	R	1.1.5
RUN	STOP		
RUN	STOP		
RUN	STOP		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
ON	OFF		
RUN	STOP	T	6
RUN	STOP	T	6
RUN	STOP	T	6
FAIL	NORMAL		
ALERT	NORMAL		
FAIL	NORMAL		
ALERT	NORMAL		
FAIL	NORMAL		
ALERT	NORMAL		
CMBND	OFF		
ALARM	NORMAL	R	1.1.5
FLOPAC	OFF		
ALARM	NORMAL	R	1.1.5
AUTO	MAN		
TRUE	FALSE		
RES	OFF		

ALARM	NORMAL	R	1.1.5
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
AUTO	MAN		
FAIL	NORMAL	R	1.1.1
TRUE	FALSE	R	4.1.1.7
CLOSE	OFF	R	4.1.1.7
CLOSE	OFF	R	4.1.1.7
CLOSE	NTCLS		
CLOSED	NTCLOS	R	4.1.1.6
CLOSED	NTCLSD	R	4.1.1.6
CLOSED	NTCLSD	R	4.1.2.5
OPEN	OFF	R	4.1.1.7
OPEN	OFF	R	4.1.1.7
OPEN	OFF	R	4.1.1.7
OPEN	NTOPN		
OPEN	NTOPEN	R	4.1.1.6
OPEN	NTOPN	R	4.1.1.6
OPEN	NTOPN	R	4.1.2.5
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE	R	4.1.1.7
CLOSE	OFF	R	4.1.1.7
CLOSE	OFF	R	4.1.1.8
TRUE	FALSE	R	4.1.1.6
TRUE	FALSE	R	4.1.2.5
CLOSED	NTCLSD	R	4.1.2.5
OPEN	OFF	R	4.1.1.7
OPEN	OFF	R	4.1.1.7
TRUE	FALSE	R	4.1.1.8
TRUE	FALSE	R	4.1.1.6
TRUE	FALSE	R	4.1.2.5
OPENED	NTOPN	R	4.1.2.5
FAIL	NORMAL		
FAIL	NORMAL		
FAIL	NORMAL		
FAIL	NORMAL		
TRUE	FALSE		
FAIL	NORMAL		

FAIL	NORMAL		
FAIL	NORMAL		
FAIL	NORMAL		
AUTO	LOCAL		
FAIL	NORMAL		
FAIL	NORMAL		
FAIL	NORMAL		
FAIL	NORMAL		
TRUE	FALSE		
FAIL	NORMAL		
FAIL	NORMAL		
FAIL	NORMAL		
FAIL	NORMAL		
AUTO	LOCAL	R	4.1.1.6
AUTO	LOCAL	R	4.1.1.6
AUTO	LOCAL	R	4.1.1.6
TRUE	FALSE	R	4.1.1.6
AUTO	LOCAL	R	4.1.1.6
AUTO	LOCAL	R	4.1.2.5
AUTO	LOCAL	R	4.1.2.5
AUTO	LOCAL	R	4.1.2.5
AUTO	LOCAL	R	4.1.2.5
		R	4.1.1.7
CLOSE	OFF	R	4.1.1.7
CLOSED	NTCLSD	R	4.1.1.6
CLOSE	NTCLOS	R	4.1.1.6
		R	4.1.1.7
OPEN	OFF	R	4.1.1.7
OPEN	NTOPEN	R	4.1.1.6
OPEN	NTOPN	R	4.1.1.6
TRUE	FALSE		
CLOSE	OFF	R	4.1.1.7
CLOSED	NTCLSD	R	4.1.2.5
OPEN	OFF	R	4.1.1.7
OPEN	NTOPN	R	4.1.2.5
OFFLIN	ONLINE		
ONLINE	OFF		
OFFLIN	ONLINE		
ONLINE	OFF		
OFFLIN	ONLINE		
ONLINE	OFF		
OPEN	OFF		
OPEN	OFF		
OPEN	OFF		
TRIP	NORMAL		
TRIP	NORMAL		
TRIP	NORMAL		

TRIP	NORMAL		
TRIP	NORMAL		
TRIP	NORMAL		
TRIP	NORMAL		
TRIP	NORMAL		
TRUE	FALSE		
HIGH	NORMAL	R	1.1.1
TRUE	FALSE		
TRUE	FALSE		
FAIL	NORMAL		
FAIL	NORMAL		
FAIL	NORMAL		
FAIL	NORMAL		
LOCAL	DCS		
LOCAL	DCS		
HIGH	NORMAL		
LOW	NORMAL		
ON	OFF	R	4.1.1.4
ON	OFF	R	4.1.1.4
RUN	OFF	R	4.1.2.6
RUN	OFF	R	4.1.2.6
FAIL	NORMAL		
FAIL	NORMAL		
ALARM	NORMAL	R	4.1.1.4
ALARM	NORMAL	R	4.1.2.6
FAIL	NORMAL	R	1.1.2
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
ALARM	NORMAL		
ALARM	NORMAL	R	1.1.5
NR PK	OK		
OVR PK	OK		
NR PK	OK		
OVR PK	OK		
ON	OFF	R	1.1.3
PULSE	OFF	R	1.1.5
HIGH	NORMAL	R	1.1.1
FAIL	NORMAL	R	1.1.2
ALARM	NORMAL	R	1.1.5
ALARM	NORMAL	R	1.1.5
On	Off	R	1.1.5
OFF	ON		
BUS ON	FAIL	R	1.1.2
ALARM	NORMAL	R	1.1.3

ALARM	NORMAL	R	1.1.3
ALARM	NORMAL	R	1.1.3
ALARM	NORMAL	R	1.1.3
ALARM	NORMAL	R	1.1.3
NORMAL	ALARM	R	1.1.3
CLOSED	OPENED	R	1.1.3
CLOSED	OPEN	R	1.1.3
ALARM	NORMAL	R	4.1.1.4
ALARM	NORMAL		
ALARM	NORMAL	R	4.1.1.4
ALARM	NORMAL	R	4.1.1.4
ALARM	NORMAL	R	4.1.1.4
NORMAL	ALARM	R	4.1.1.4
CLOSED	OPENED	R	4.1.1.4
HOME	NOHOME	R	4.1.1.3

true	false
true	false
ALARM	NORMAL
TRUE	FALSE
ALARM	NORMAL
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE

TRUE	FALSE
TRUE	FALSE
TRUE	FALSE

TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE

TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
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TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE

ALARM	NORMAL
ALARM	NORMAL
ALARM	NORMAL
ALARM	NORMAL
ALARM	NORMAL
ALARM	NORMAL
ALARM	NORMAL

ALARM	NORMAL		
ALARM	NORMAL		
ALARM	NORMAL		
ALARM	NORMAL		
ALARM	NORMAL		
ALARM	NORMAL		
ALARM	NORMAL		
ALARM	NORMAL		
ALARM	NORMAL		
ALARM	NORMAL		
ALARM	NORMAL		
DCS	LOCAL	R	1.1.1
DCS	LOCAL	R	1.1.2
DCS	LOCAL	R	1.1.3
DCS	LOCAL	R	4.1.1.1
DCS	LOCAL	R	4.1.1.3
DCS	LOCAL	R	4.1.1.5
DCS	LOCAL	R	4.2.1.1
DCS	LOCAL	R	4.2.1.3
DCS	LOCAL	R	4.2.1.5

DCS	LOCAL	R	1.1.7
DCS	LOCAL	R	1.1.7
DCS	LOCAL	R	1.1.7
DCS	LOCAL	R	4.1.1.2

DCS	LOCAL	R	4.1.1.4
DCS	LOCAL	R	4.1.1.6
DCS	LOCAL	R	4.2.1.2
DCS	LOCAL	R	4.2.1.4
DCS	LOCAL	R	4.2.1.6
DCS	LOCAL	R	1.1.7
DCS	LOCAL	R	1.1.7
DCS	LOCAL	R	1.1.7
DCS	LOCAL	R	4.1.1.2
DCS	LOCAL	R	4.1.1.4
DCS	LOCAL	R	4.1.1.6
DCS	LOCAL	R	4.2.1.2
DCS	LOCAL	R	4.2.1.4
DCS	LOCAL	R	4.2.1.6
DCS	LOCAL	R	1.1.7
DCS	LOCAL	R	1.1.7
DCS	LOCAL	R	1.1.7
DCS	LOCAL	R	4.1.1.2
DCS	LOCAL	R	4.1.1.4
DCS	LOCAL	R	4.1.1.6
DCS	LOCAL	R	4.2.1.2
DCS	LOCAL	R	4.2.1.4
DCS	LOCAL	R	4.2.1.6
DCS	LOCAL	R	1.1.7
DCS	LOCAL	R	1.1.7
DCS	LOCAL	R	1.1.7
DCS	LOCAL	R	4.1.1.2
DCS	LOCAL	R	4.1.1.4
DCS	LOCAL	R	4.1.1.6
DCS	LOCAL	R	4.2.1.2
DCS	LOCAL	R	4.2.1.4
DCS	LOCAL	R	4.2.1.6

DCS	LOCAL	R	1.1.4
DCS	LOCAL	R	1.1.5
DCS	LOCAL	R	1.1.6
DCS	LOCAL	R	4.1.1.2
DCS	LOCAL	R	4.1.1.4
DCS	LOCAL	R	4.1.1.6
DCS	LOCAL	R	4.2.1.2
DCS	LOCAL	R	4.2.1.4
DCS	LOCAL	R	4.2.1.6
DCS	LOCAL	R	1.1.4
DCS	LOCAL	R	1.1.5
DCS	LOCAL	R	1.1.6
DCS	LOCAL	R	4.1.1.2
DCS	LOCAL	R	4.1.1.4
DCS	LOCAL	R	4.1.1.6
DCS	LOCAL	R	4.2.1.2
DCS	LOCAL	R	4.2.1.4
DCS	LOCAL	R	4.2.1.6
DCS	LOCAL	R	1.1.4
DCS	LOCAL	R	1.1.5
DCS	LOCAL	R	1.1.6
DCS	LOCAL	R	4.1.1.2
DCS	LOCAL	R	4.1.1.4
DCS	LOCAL	R	4.1.1.6
DCS	LOCAL	R	4.2.1.2
DCS	LOCAL	R	4.2.1.4

DCS	LOCAL	R	4.2.1.6
DCS	LOCAL	R	1.1.1
DCS	LOCAL	R	1.1.2
DCS	LOCAL	R	1.1.3
DCS	LOCAL	R	4.1.1.1
DCS	LOCAL	R	4.1.1.3
DCS	LOCAL	R	4.1.1.5
DCS	LOCAL	R	4.2.1.1
DCS	LOCAL	R	4.2.1.3
DCS	LOCAL	R	4.2.1.5
DCS	LOCAL	R	1.1.4
DCS	LOCAL	R	1.1.5
DCS	LOCAL	R	1.1.6
DCS	LOCAL	R	4.1.1.2
DCS	LOCAL	R	4.1.1.4
DCS	LOCAL	R	4.1.1.6
DCS	LOCAL	R	4.2.1.2
DCS	LOCAL	R	4.2.1.4
DCS	LOCAL	R	4.2.1.6
DCS	LOCAL	R	1.1.1
DCS	LOCAL	R	1.1.2
DCS	LOCAL	R	1.1.3
DCS	LOCAL	R	4.1.1.1
DCS	LOCAL	R	4.1.1.3
DCS	LOCAL	R	4.1.1.5
DCS	LOCAL	R	4.2.1.1
DCS	LOCAL	R	4.2.1.3
DCS	LOCAL	R	4.2.1.5
CENTRT	NORMAL		
CENTRT	NORMAL		

START	OFF		
STOP	FALSE		
TRUE	FALSE		
TRUE	FALSE		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
OOS	INSERV		
ON	OFF	R	1.1.4
ON	OFF	R	1.1.5
ON	OFF	R	1.1.6
ON	OFF	R	4.1.1.2
ON	OFF	R	4.1.1.4
ON	OFF	R	4.1.1.6
ON	OFF	R	4.2.1.2
ON	OFF	R	4.2.1.4
ON	OFF	R	4.2.1.6
ON	OFF	R	1.1.4
ON	OFF	R	1.1.5
ON	OFF	R	1.1.6
ON	OFF	R	4.1.1.2

ON	OFF	R	4.1.1.4
ON	OFF	R	4.1.1.6
ON	OFF	R	4.2.1.2
ON	OFF	R	4.2.1.4
ON	OFF	R	4.2.1.6
ON	OFF	R	1.1.4
ON	OFF	R	1.1.5
ON	OFF	R	1.1.6
ON	OFF	R	4.1.1.2
ON	OFF	R	4.1.1.4
ON	OFF	R	4.1.1.6
ON	OFF	R	4.2.1.2
ON	OFF	R	4.2.1.4
ON	OFF	R	4.2.1.6
ON	OFF	R	1.1.1
ON	OFF	R	1.1.2
ON	OFF	R	1.1.3
ON	OFF	R	4.1.1.1
ON	OFF	R	4.1.1.3
ON	OFF	R	4.1.1.5
ON	OFF	R	4.2.1.1
ON	OFF	R	4.2.1.3
ON	OFF	R	4.2.1.5
ON	OFF	R	1.1.4
ON	OFF	R	1.1.5
ON	OFF	R	1.1.6
ON	OFF	R	4.1.1.2
ON	OFF	R	4.1.1.4
ON	OFF	R	4.1.1.6
ON	OFF	R	4.2.1.2
ON	OFF	R	4.2.1.4
ON	OFF	R	4.2.1.6
ON	OFF	R	1.1.1
ON	OFF	R	1.1.2
ON	OFF	R	1.1.3
ON	OFF	R	4.1.1.1
ON	OFF	R	4.1.1.3
ON	OFF	R	4.1.1.5
ON	OFF	R	4.2.1.1
ON	OFF	R	4.2.1.3
ON	OFF	R	4.2.1.5
TRUE	FALSE		
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.4
RUN	STOP	R	1.2.5
RUN	STOP	R	4.1.2.4
RUN	STOP	R	4.1.2.3

RUN	STOP	R	4.1.2.2
RUN	STOP	R	4.2.2.4
RUN	STOP	R	4.2.2.3
RUN	STOP	R	4.2.2.2
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.4
RUN	STOP	R	1.2.5
RUN	STOP	R	4.1.2.4
RUN	STOP	R	4.1.2.3
RUN	STOP	R	4.1.2.2
RUN	STOP	R	4.2.2.4
RUN	STOP	R	4.2.2.3
RUN	STOP	R	4.2.2.2
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.4
RUN	STOP	R	1.2.5
RUN	STOP	R	4.1.2.4
RUN	STOP	R	4.1.2.3
RUN	STOP	R	4.1.2.2
RUN	STOP	R	4.2.2.4
RUN	STOP	R	4.2.2.3
RUN	STOP	R	4.2.2.2
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.4
RUN	STOP	R	1.2.5
RUN	STOP	R	4.1.2.4
RUN	STOP	R	4.1.2.3
RUN	STOP	R	4.1.2.2
RUN	STOP	R	4.2.2.4
RUN	STOP	R	4.2.2.3
RUN	STOP	R	4.2.2.2
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.4
RUN	STOP	R	1.2.5
RUN	STOP	R	4.1.2.4
RUN	STOP	R	4.1.2.3
RUN	STOP	R	4.1.2.2
RUN	STOP	R	4.2.2.4
RUN	STOP	R	4.2.2.3
RUN	STOP	R	4.2.2.2
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.4
RUN	STOP	R	1.2.5
RUN	STOP	R	4.1.2.4
RUN	STOP	R	4.1.2.3
RUN	STOP	R	4.1.2.2
RUN	STOP	R	4.2.2.4
RUN	STOP	R	4.2.2.3
RUN	STOP	R	4.2.2.2
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.4
RUN	STOP	R	1.2.5
RUN	STOP	R	4.1.2.4
RUN	STOP	R	4.1.2.3
RUN	STOP	R	4.1.2.2
RUN	STOP	R	4.2.2.4

RUN	STOP	R	4.2.2.3
RUN	STOP	R	4.2.2.2

TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE

NORMAL	FAIL	R	1.1.4
NORMAL	FAIL	R	1.1.5
NORMAL	FAIL	R	1.1.6
NORMAL	FAIL	R	4.1.1.2
NORMAL	FAIL	R	4.1.1.4
NORMAL	FAIL	R	4.1.1.6
NORMAL	FAIL	R	4.2.1.2
NORMAL	FAIL	R	4.2.1.4
NORMAL	FAIL	R	4.2.1.6
NORMAL	FAIL	R	1.1.4
NORMAL	FAIL	R	1.1.5
NORMAL	FAIL	R	1.1.6
NORMAL	FAIL	R	4.1.1.2
NORMAL	FAIL	R	4.1.1.4
NORMAL	FAIL	R	4.1.1.6
NORMAL	FAIL	R	4.2.1.2
NORMAL	FAIL	R	4.2.1.4

NORMAL	FAIL	R	4.2.1.6
NORMAL	FAIL	R	1.1.4
NORMAL	FAIL	R	1.1.5
NORMAL	FAIL	R	1.1.6
NORMAL	FAIL	R	4.1.1.2
NORMAL	FAIL	R	4.1.1.4
NORMAL	FAIL	R	4.1.1.6
NORMAL	FAIL	R	4.2.1.2
NORMAL	FAIL	R	4.2.1.4
NORMAL	FAIL	R	4.2.1.6
FAIL	NORMAL	R	1.1.1
FAIL	NORMAL	R	1.1.2
FAIL	NORMAL	R	1.1.3
FAIL	NORMAL	R	4.1.1.1
FAIL	NORMAL	R	4.1.1.3
FAIL	NORMAL	R	4.1.1.5
FAIL	NORMAL	R	4.2.1.1
FAIL	NORMAL	R	4.2.1.3
FAIL	NORMAL	R	4.2.1.5
NORMAL	FAIL	R	1.1.4
NORMAL	FAIL	R	1.1.5
NORMAL	FAIL	R	1.1.6
NORMAL	FAIL	R	4.1.1.2
NORMAL	FAIL	R	4.1.1.4
NORMAL	FAIL	R	4.1.1.6
NORMAL	FAIL	R	4.2.1.2
NORMAL	FAIL	R	4.2.1.4
NORMAL	FAIL	R	4.2.1.6
FAIL	NORMAL	R	1.1.1
FAIL	NORMAL	R	1.1.2
FAIL	NORMAL	R	1.1.3
FAIL	NORMAL	R	4.1.1.1
FAIL	NORMAL	R	4.1.1.3
FAIL	NORMAL	R	4.1.1.5
FAIL	NORMAL	R	4.2.1.1
FAIL	NORMAL	R	4.2.1.3
FAIL	NORMAL	R	4.2.1.5

TRUE	FALSE
TRUE	FALSE

DCS	LOCAL	R	1.1.7
DCS	LOCAL	R	1.1.4
DCS	LOCAL	R	1.1.5
DCS	LOCAL	R	1.1.6
RUN	STOP	R	1.1.4
RUN	STOP	R	1.1.5
RUN	STOP	R	1.1.6
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.4
RUN	STOP	R	1.2.5
FAIL	NORMAL	R	1.1.4
FAIL	NORMAL	R	1.1.5
FAIL	NORMAL	R	1.1.6
DCS	LOCAL	R	1.1.8
DCS	LOCAL	R	1.1.8
ON	OFF	R	1.1.8
ON	OFF	R	1.1.8
RUN	STOP	R	1.2.4

RUN	STOP	R	1.2.5

ON	OFF
ON	OFF
ON	OFF
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE

TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
		R	4.1.2.2
		R	4.1.2.3
		R	4.2.2.2
		R	4.2.2.2
		R	4.2.2.3
		R	4.1.2.2
		R	4.1.2.3
		R	4.2.2.2
		R	4.2.2.2
		R	4.2.2.3
		R	4.1.1.7
		R	4.1.1.8
		R	4.2.1.7
		R	4.2.1.7
		R	4.2.1.8
		R	1.1.3
		R	1.1.7
		R	1.2.2
		R	1.1.2
		R	1.2.1
		R	1.2.1
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
		R	1.1.3
		R	1.1.7
		R	1.2.2
		R	1.1.8
		R	1.2.1
		R	1.2.1
TRUE	FALSE		
TRUE	FALSE		
		R	1.2.4
		R	1.2.4
		R	1.2.3

		R	1.2.3
		R	1.2.3
		R	1.2.4
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
		R	4.1.1.7
		R	4.1.1.8
		R	4.2.1.7
		R	4.2.1.7
		R	4.2.1.8
		R	1.1.6
		R	1.1.7
		R	1.1.4
		R	1.1.5
		R	1.2.1
		R	1.2.1
		R	4.1.1.7
		R	4.1.1.8
		R	4.2.1.7
		R	4.2.1.7
		R	4.2.1.8
		R	4.1.1.7
		R	4.1.1.8
		R	4.2.1.7
		R	4.2.1.7
		R	4.2.1.8

DCS	LOCAL	R	1.1.1
DCS	LOCAL	R	1.1.2
DCS	LOCAL	R	1.1.3
DCS	LOCAL	R	4.1.1.1
DCS	LOCAL	R	4.1.1.3
DCS	LOCAL	R	4.1.1.5
DCS	LOCAL	R	4.2.1.1
DCS	LOCAL	R	4.2.1.3
DCS	LOCAL	R	4.2.1.5
DCS	LOCAL	R	1.1.1
DCS	LOCAL	R	1.1.2
DCS	LOCAL	R	1.1.3
DCS	LOCAL	R	4.1.1.1
DCS	LOCAL	R	4.1.1.3
DCS	LOCAL	R	4.1.1.5
DCS	LOCAL	R	4.2.1.1
DCS	LOCAL	R	4.2.1.3
DCS	LOCAL	R	4.2.1.5
HIGH	NORMAL	R	1.1.1
HIGH	NORMAL	R	1.1.2
HIGH	NORMAL	R	1.1.3
HIGH	NORMAL	R	4.1.1.1
HIGH	NORMAL	R	4.1.1.3
HIGH	NORMAL	R	4.1.1.5
HIGH	NORMAL	R	4.2.1.1

HIGH	NORMAL	R	4.2.1.3
HIGH	NORMAL	R	4.2.1.5
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
RUN	STOP	R	1.1.1
RUN	STOP	R	1.1.2
RUN	STOP	R	1.1.3
RUN	STOP	R	4.1.1.1
RUN	STOP	R	4.1.1.3
RUN	STOP	R	4.1.1.5
RUN	STOP	R	4.2.1.1
RUN	STOP	R	4.2.1.3
RUN	STOP	R	4.2.1.5
RUN	STOP	R	1.1.1
RUN	STOP	R	1.1.2
RUN	STOP	R	1.1.3
RUN	STOP	R	4.1.1.1
RUN	STOP	R	4.1.1.3
RUN	STOP	R	4.1.1.5
RUN	STOP	R	4.2.1.1
RUN	STOP	R	4.2.1.3
RUN	STOP	R	4.2.1.5
RUN	STOP	R	1.2.3
TRUE	FALSE		
RUN	STOP	R	1.2.4
TRUE	FALSE		
RUN	STOP	R	1.2.5
TRUE	FALSE		
RUN	STOP	R	4.1.2.4
TRUE	FALSE		

RUN	STOP	R	4.1.2.3
TRUE	FALSE		
RUN	STOP	R	4.1.2.2
TRUE	FALSE		
RUN	STOP	R	4.2.2.4
TRUE	FALSE		
RUN	STOP	R	4.2.2.3
TRUE	FALSE		
RUN	STOP	R	4.2.2.2
TRUE	FALSE		
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.4
RUN	STOP	R	1.2.5
RUN	STOP	R	4.1.2.4
RUN	STOP	R	4.1.2.3
RUN	STOP	R	4.1.2.2
RUN	STOP	R	4.2.2.4
RUN	STOP	R	4.2.2.3
RUN	STOP	R	4.2.2.2
DCS	LOCAL	R	1.1.1
DCS	LOCAL	R	1.1.2
DCS	LOCAL	R	1.1.3
DCS	LOCAL	R	4.1.1.1
DCS	LOCAL	R	4.1.1.3
DCS	LOCAL	R	4.1.1.5
DCS	LOCAL	R	4.2.1.1
DCS	LOCAL	R	4.2.1.3
DCS	LOCAL	R	4.2.1.5
OPENED	NOPND	R	1.2.3
OPENED	NOPND	R	1.2.4
OPENED	NOPND	R	1.2.5
OPENED	NOPND	R	4.1.2.4
OPENED	NOPND	R	4.1.2.3
OPENED	NOPND	R	4.1.2.2
OPENED	NOPND	R	4.2.2.4
OPENED	NOPND	R	4.2.2.3
OPENED	NOPND	R	4.2.2.2

NORMAL	FAIL	R	1.1.1
NORMAL	FAIL	R	1.1.2
NORMAL	FAIL	R	1.1.3
NORMAL	FAIL	R	4.1.1.1
NORMAL	FAIL	R	4.1.1.3
NORMAL	FAIL	R	4.1.1.5
NORMAL	FAIL	R	4.2.1.1
NORMAL	FAIL	R	4.2.1.3
NORMAL	FAIL	R	4.2.1.5
TRUE	FALSE		
DO	OFF		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
PH	OFF		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		

OFF	ON
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
INT	CONT

DCS	LOCAL
AUTO	
ALARM	OK

ALARM	OK		
TRUE	FALSE		
AUTO	MAN		
AUTO	MAN		
AUTO	MAN		

ALARM	NORMAL		
ALARM	NORMAL		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
LOFLO	NORMAL		
FAIL	NORMAL		
FAIL	NORMAL		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
FAIL	NORMAL		
FAIL	NORMAL		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
FAIL	NORMAL		
FAIL	NORMAL		
FAIL	NORMAL		
FAIL	NORMAL		

FAIL	NORMAL		
FAIL	NORMAL		
AUTO	LOCAL	R	1.2.2
OPEN	NTOPN		
OPEN	NOTOPN	R	1.2.2
CLOSED	NTCLSD	R	1.2.2

OPEN	NOTOPN	R	1.2.2
CLOSED	NTCLSD	R	1.2.2
OPEN	NTOPN	R	1.2.1
CLOSED	NTCLSD	R	1.2.1
OPEN	NTOPN	R	1.2.1
CLOSED	NTCLSD	R	1.2.1
HIGH	OK		
ALARM	OK		
OK	NOSTRT		
DCS	LOCAL	R	1.1.8
AUTO	LOCAL	R	1.2.2
AUTO	LOCAL		
AUTO	LOCAL	R	1.2.1
AUTO	LOCAL	R	1.2.1
DCS	LOCAL	R	1.2.2
DCS	LOCAL	R	1.2.2
AUTO	LOCAL	R	1.2.2
SWICHD	SCFM		
HIGH	NORMAL		
LOWLOW	NORMAL		
ALARM	NORMAL		
LOW	NORMAL		
LOW	OK		
ALARM	OK		
OFF	ENABLE		
TRUE	FALSE		
TRUE	FALSE		
HIGH	NORMAL	R	1.2.1
HIGH	NORMAL	R	1.2.1
STOP	OK		
TRUE	FALSE		
MAN			
AUTO	MAN		
TRUE	FALSE		
TRUE	FALSE		
ON	OFF		
ON	OFF		
ON	OFF		
ON	OFF	R	1.2.2
ON	OFF	R	1.2.2
ON	OFF	R	1.2.1
ON	OFF	R	1.2.1
TRUE	FALSE		
BAD	GOOD		
RUN	STOP	R	1.2.3

RUN	STOP	R	1.2.6
RUN	STOP	R	1.2.6
TRUE	FALSE	R	1.2.6
		R	1.2.6
		R	1.2.6
		R	1.2.6
		R	1.2.6
TRIP	NORMAL		
TRIP	NORMAL		
TRIP	NORMAL		
TRUE	FALSE		
TRUE	FALSE		
FAIL	NORMAL	R	1.2.2
NORMAL	FAIL		
NORMAL	ALARM	R	1.2.2
NORMAL	ALARM	R	1.2.2
FAIL	NORMAL	R	1.1.8
OPEN	IDLE	R	1.2.6
OPEN	IDLE	R	1.2.6
CLOSE	OFF	R	1.2.6
CLOSE	OFF	R	1.2.6
ALARM	NORMAL	R	1.1.8
ALARM	NORMAL	R	1.1.8
ALARM	NORMAL	R	1.1.8
ALARM	NORMAL	R	1.1.8
ALARM	NORMAL	R	1.1.8
NORMAL	ALARM	R	1.1.8
CLOSED	OPENED	R	1.1.8
CLOSED	OPEN	R	1.1.8
ALARM	NORMAL	R	4.1.2.1
ALARM	NORMAL	R	4.1.2.1
ALARM	NORMAL	R	4.1.2.1
ALARM	NORMAL	R	4.1.2.1
ALARM	NORMAL	R	4.1.2.1
NORMAL	ALARM	R	4.1.2.1
CLOSED	OPENED	R	4.1.2.1
ALARM	NORMAL	R	4.2.1.7
ALARM	NORMAL	R	4.2.1.7
ALARM	NORMAL	R	4.2.1.7
ALARM	NORMAL	R	4.2.1.7
ALARM	NORMAL	R	4.2.1.7
NORMAL	ALARM	R	4.2.1.7
CLOSED	OPEN	R	4.2.1.7
TRUE	FALSE		
true	false		
true	false		

true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
true	false		
ON	OFF	R	1.2.6
true	false		
TRUE	FALSE		
ALARM	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	ALARM		
TRUE	FALSE		
HIGH	NORMAL		
HIGH	NORMAL		
TRUE	FALSE		
GBT 1	GBT 2	R	1.1.4
AUTO	HAND	R	1.1.4
AUTO	HAND	R	1.1.4
HI	NORMAL		

RUN	OFF	R	1.1.4
RUN	OFF	R	1.1.4
RUN	OFF	R	1.2.2
RUN	OFF	R	1.2.3
FAULT	NORMAL	R	1.1.4
FAULT	NORMAL	R	1.1.4
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
TRUE	FALSE		
ALARM	NORMAL	T	5
ALARM	NORMAL	T	5
ALARM	NORMAL	T	5
FAIL	NORMAL	T	5
FAIL	NORMAL	T	5
FAIL	NORMAL	T	5
RUN	OFF	T	5
RUN	OFF	T	5
RUN	OFF	T	5
CNTRAT		T	5
CNTRAT		T	5
CNTRAT		T	5
SOLIDS		T	5
SOLIDS		T	5
SOLIDS		T	5
LOW	NORMAL	T	5
LOW	NORMAL	T	5
LOW	NORMAL	T	5
RUN	OFF	T	5
RUN	OFF	T	5
RUN	OFF	T	5
CIP	OFF	T	5
CIP	OFF	T	5
CIP ON	OFF	T	5
ALARM	NORMAL		
ALARM	NORMAL		
ALARM	NORMAL		
ON	OFF		
ON	OFF		
ON	OFF		
DELTA	OFF	T	5
DELTA	OFF	T	5
DELTA	OTHER	T	5
LOW	NORMAL	T	5

LOW	NORMAL	T	5
LOW	NORMAL	T	5
ESTOP	NORMAL	T	5
ESTOP	NORMAL	T	5
ESTOP	NORMAL	T	5
		T	5
		T	5
		T	5
FAULT	NORMAL	T	5
FAULT	NORMAL	T	5
FAULT	NORMAL	T	5
FAULT	NORMAL	T	5
FAULT	NORMAL	T	5
FAULT	NORMAL	T	5
ALARM	OK	R	1.1.4
TRUE	FALSE	T	5
ALARM	OK	R	1.1.4
TRUE	FALSE	T	5
ALARM	OK	R	1.1.4
TRUE	FALSE	T	5
ALARM	OK		
LOW	NORMAL	T	5
LOW	NORMAL	T	5
LOW	NORMAL	T	5
LOAD	OTHER	T	5
LOAD	OTHER	T	5
LOAD	OTHER	T	5
FAIL	NORMAL	T	5
FAIL	NORMAL	T	5
FAIL	NORMAL	T	5
RUN	OFF	T	5
RUN	OFF	T	5
RUN	OFF	T	5
HIGH	NORMAL	T	5
HIGH	NORMAL	T	5
HIGH	NORMAL	T	5
OL	NORMAL	T	5
OL	NORMAL	T	5
OL	NORMAL	T	5
HITORQ	NORMAL	T	5
HITORQ	NORMAL	T	5
HITORQ	NORMAL	T	5
HITORQ	NORMAL	T	5
HITORQ	NORMAL	T	5
HITORQ	NORMAL	T	5
ON	OFF		
RUN	OFF		

RUN	OFF		
PINION	OTHER	T	5
PINION	OTHER	T	5
PINION	OTHER	T	5
FAIL	NORMAL	T	5
FAIL	NORMAL	T	5
FAIL	NORMAL	T	5
ALARM	NORMAL	T	5
ALARM	NORMAL	T	5
ALARM	NORMAL	T	5
LOW	NORMAL	T	5
LOW	NORMAL	T	5
LOW	NORMAL	T	5
		T	5
FAIL	NORMAL	T	5
		T	5
HIGH	NORMAL	T	5
HIGH	NORMAL	T	5
HIGH	NORMAL	T	5
HIGH	NORMAL	T	5
HIGH	NORMAL	T	5
HIGH	NORMAL	T	5

TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE
TRUE	FALSE

DCS	LOCAL	R	1.1.3
DCS	LOCAL	R	1.1.3
DCS	LOCAL	R	1.1.1
DCS	LOCAL	R	1.1.1
DCS	LOCAL	R	1.1.1
DCS	LOCAL	R	1.1.1
DCS	LOCAL	R	1.1.1
DCS	LOCAL	R	1.1.2
DCS	LOCAL	R	1.1.2
DCS	LOCAL	R	1.1.2
DCS	LOCAL	R	1.1.2
DCS	LOCAL	R	1.1.2
DCS	LOCAL	R	1.1.3
LOW	NORMAL		
LOW	NORMAL		
HIGH	NORMAL	R	1.2.2
HIGH	NORMAL	R	1.2.2
NORMAL	LOW		
NORMAL	LOW		
NONLN	NORMAL		
ON	OFF		

ON	OFF		
ON	OFF	R	1.1.3
ON	OFF	R	1.1.3
ON	OFF	R	1.1.1
ON	OFF	R	1.1.1
ON	OFF	R	1.1.1
ON	OFF	R	1.1.1
ON	OFF	R	1.1.1
ON	OFF	R	1.1.2
ON	OFF	R	1.1.2
ON	OFF	R	1.1.2
ON	OFF	R	1.1.2
ON	OFF	R	1.1.2
ON	OFF	R	1.1.3
RUN	STOP	R	1.2.2
RUN	STOP	R	1.2.2
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.3
RUN	STOP	R	1.2.3
PERM	NPERM		
PERM	NPERM		
PERM	NPERM		
PERM	NPERM		
PERM	NPERM		
PERM	NPERM		
PERM	NPERM		
PERM	NPERM		
PERM	NPERM		
PERM	NPERM		
PERM	NPERM		

NORMAL	FAIL	R	1.1.1
NORMAL	FAIL	R	1.1.1
NORMAL	FAIL	R	1.1.1
NORMAL	FAIL	R	1.1.1
NORMAL	FAIL	R	1.1.1
NORMAL	FAIL	R	1.1.2
NORMAL	FAIL	R	1.1.2
NORMAL	FAIL	R	1.1.2
NORMAL	FAIL	R	1.1.2
NORMAL	FAIL	R	1.1.2
NORMAL	FAIL	R	1.1.3
1	0	R	1.1.3
ALARM	NORMAL	R	1.1.3
ALARM	NORMAL	R	1.1.3
ALARM	NORMAL	R	1.1.3
ALARM	NORMAL	R	1.1.3
ALARM	NORMAL	R	1.1.3
NORMAL	FAIL	R	1.1.3
NORMAL	ALARM	R	1.1.3
true	false		
true	false	R	1.2.3
true	false		

ALARM NORMAL

ObjectType	ObjectName	ParName_4	DESCRIPTION
AnalogPoint	JPR01CNTR1220	DROP1/DROP51	SCREEN 2 CYCLE COUNT
AnalogPoint	JR01CNTR236A	DROP1/DROP51	Screen 3 Test Counter A
AnalogPoint	JRP01AMSTPT1	DROP1/DROP51	AMMONIA SETPOINT #1
AnalogPoint	JRP01AMSTPT2	DROP1/DROP51	
AnalogPoint	JRP01AV0	DROP1/DROP51	DROP CONSTANT = 0
AnalogPoint	JRP01AV1	DROP1/DROP51	DROP CONSTANT = 1
AnalogPoint	JRP01AV10	DROP1/DROP51	DROP CONSTANT = 10
AnalogPoint	JRP01AV2	DROP1/DROP51	DROP CONSTANT = 2
AnalogPoint	JRP01AV3	DROP1/DROP51	DROP CONSTANT = 3
AnalogPoint	JRP01AV4	DROP1/DROP51	DROP CONSTANT = 4
AnalogPoint	JRP01AV60	DROP1/DROP51	DROP CONSTANT = 60
AnalogPoint	JRP01CNTR1210	DROP1/DROP51	SCREEN 1 CYCLE COUNT
AnalogPoint	JRP01CNTR1220	DROP1/DROP51	SCREEN 2 CYCLE COUNT
AnalogPoint	JRP01CNTR1230	DROP1/DROP51	SCREEN 3 CYCLE COUNT
AnalogPoint	JRP01CNTR216A	DROP1/DROP51	Screen 1 Test Counter A
AnalogPoint	JRP01CNTR226A	DROP1/DROP51	Screen 2 Test counter A
AnalogPoint	JRP01CNTR236A	DROP1/DROP51	Screen 3 Test Counter A
AnalogPoint	JRP01CNTTNK1	DROP1/DROP51	CENTRATE TANK FERRIC SP
AnalogPoint	JRP01CRBNSTPT1	DROP1/DROP51	CARBON FEED SETPOINT #1
AnalogPoint	JRP01CRBNSTPT2	DROP1/DROP51	CARBON FEED SETPOINT #2
AnalogPoint	JRP01CTDN0100-CS	DROP1/DROP51	SCREEN MSTR ALTRN COUNTDOWN
AnalogPoint	JRP01DAY-OF-WEEK	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01DGCOMP1	DROP1/DROP51	DIGESTER COMPRESSOR ON
AnalogPoint	JRP01DGCOMP2	DROP1/DROP51	DIGESTER COMPRESSOR OFF
AnalogPoint	JRP01DGCOMP3	DROP1/DROP51	DIGESTER COMPRESSOR ON
AnalogPoint	JRP01DGCOMP4	DROP1/DROP51	DIGESTER COMPRESSOR OFF
AnalogPoint	JRP01DGCOMP5	DROP1/DROP51	DIGESTER COMPRESSOR ON
AnalogPoint	JRP01DGCOMP6	DROP1/DROP51	DIGESTER COMPRESSOR OFF
AnalogPoint	JRP01DGCOMP7	DROP1/DROP51	DIGESTER COMPRESSOR ON
AnalogPoint	JRP01DGCOMP8	DROP1/DROP51	DIGESTER COMPRESSOR OFF
AnalogPoint	JRP01DGTEMP1	DROP1/DROP51	DIGESTER TEMPERATURE LOW
AnalogPoint	JRP01DGTEMP2	DROP1/DROP51	DIGESTER TEMPERATURE HIGH
AnalogPoint	JRP01DLXX1210-00	DROP1/DROP51	SCRN CHNL 1 DIFF LEVEL
AnalogPoint	JRP01DLXX1210-SP	DROP1/DROP51	SCREEN 1 DIFF LEVEL STPT
AnalogPoint	JRP01DLXX1220-00	DROP1/DROP51	SCRN CHNL 2 DIFF LEVEL
AnalogPoint	JRP01DLXX1220-SP	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01DLXX1230-00	DROP1/DROP51	SCRN CHNL 3 DIFF LEVEL
AnalogPoint	JRP01DLXX1230-SP	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01DMPHW1	DROP1/DROP51	HW DUMPSTER SCHEDULE MONTH
AnalogPoint	JRP01DMPHW2	DROP1/DROP51	HW DUMPSTER SCHEDULE DAY
AnalogPoint	JRP01DMPYRD1	DROP1/DROP51	YARD DUMPSTER SCHEDULE MONTH
AnalogPoint	JRP01DMPYRD2	DROP1/DROP51	YARD DUMPSTER SCHEDULE DAY
AnalogPoint	JRP01EST-DAY	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01EST-HOUR	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01EST-MIN	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01EST-MONTH	DROP1/DROP51	@ Ovation Control Builder @

AnalogPoint	JRP01FATX0100-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01FGZI1002	DROP1/DROP51	INFLUENT DIVERSION VLV POS
AnalogPoint	JRP01FITT1000-CD	DROP1/DROP51	RAW FLOW CURR DAILY TOTAL
AnalogPoint	JRP01FITT1000-CM	DROP1/DROP51	RAW FLOW CURR MNTHYL TOTAL
AnalogPoint	JRP01FITT1000-PD	DROP1/DROP51	RAW FLOW PREV DAILY TOTAL
AnalogPoint	JRP01FITT1000-PM	DROP1/DROP51	RAW FLOW PREV MNTHLY TOTAL
AnalogPoint	JRP01FITX1000	DROP1/DROP51	RAW INFLUENT FLOW (VENTURI)
AnalogPoint	JRP01FITX1000-AVG	DROP1/DROP51	PLANT FLOW - TIME FILTERED
AnalogPoint	JRP01FITX1001	DROP1/DROP51	FILTERED PLANT FLOW
AnalogPoint	JRP01FITX1002	DROP1/DROP51	FILTERED PLANT FLOW
AnalogPoint	JRP01FITX1003	DROP1/DROP51	FILTERED PLANT FLOW
AnalogPoint	JRP01FITX1004	DROP1/DROP51	MAIN FLOW SMOOTHED VALUE
AnalogPoint	JRP01FVZC1001	DROP1/DROP51	BYPASS VALVE POS CMD
AnalogPoint	JRP01FVZC1002	DROP1/DROP51	INFLUENT DIVERSION VLV DMD
AnalogPoint	JRP01FVZI1001	DROP1/DROP51	BYPASS VALVE POS
AnalogPoint	JRP01FWTR1110-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01FWTR1120-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01FWTR1130-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01GBTTIMOFF	DROP1/DROP51	GBT TIME OFF
AnalogPoint	JRP01GBTTIMON	DROP1/DROP51	GBT TIME ON
AnalogPoint	JRP01GBTWR1	DROP1/DROP51	GBT#1 WASTE RATE
AnalogPoint	JRP01GBTWR2	DROP1/DROP51	GBT #2 WASTE RATE
AnalogPoint	JRP01GMT-DAY	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01GMT-HOUR	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01GMT-MONTH	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01GRTM1001	DROP1/DROP51	#1 GRIT PUMP ON TIME
AnalogPoint	JRP01GRTM1002	DROP1/DROP51	GRIT PUMP #1 OFF TIME
AnalogPoint	JRP01GRTM1003	DROP1/DROP51	GRIT PUMP #2 ON TIME
AnalogPoint	JRP01GRTM1004	DROP1/DROP51	GRIT PUMP #2 OFF TIME
AnalogPoint	JRP01GRTM1005	DROP1/DROP51	GRIT PUMP #3 ON TIME
AnalogPoint	JRP01GRTM1006	DROP1/DROP51	GRIT PUMP #3 OFF TIME
AnalogPoint	JRP01GRTM1007	DROP1/DROP51	GRIT PUMP #4 ON TIME
AnalogPoint	JRP01GRTM1008	DROP1/DROP51	GRIT PUMP #4 OFF TIME
AnalogPoint	JRP01GTPMP1	DROP1/DROP51	GRAVITY THICKENER PUMP #
AnalogPoint	JRP01GTPMP2	DROP1/DROP51	GRAVITY THICKENER PUMP #
AnalogPoint	JRP01GTPMPTIM1	DROP1/DROP51	GRAVITY THICKENER PUMP TIME
AnalogPoint	JRP01GTPMPTIM2	DROP1/DROP51	GRAVITY THICKENER PUMP TIME
AnalogPoint	JRP01H2SAI1	DROP1/DROP51	STEP SCREEN ROOM H2S
AnalogPoint	JRP01HYPOPMPSP1	DROP1/DROP51	HYPO PUMP SETPOINT #1
AnalogPoint	JRP01HYPOPMPSP2	DROP1/DROP51	HYPO PUMP SETPOINT #2
AnalogPoint	JRP01HYPOPMPSP3	DROP1/DROP51	HYPO PUMP SETPOINT #3
AnalogPoint	JRP01JBONCALL	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01LITD1210	DROP1/DROP51	SCREEN 1 DOWNSTREAM LEVEL
AnalogPoint	JRP01LITD1220	DROP1/DROP51	SCREEN 2 DOWNSTREAM LEVEL
AnalogPoint	JRP01LITD1230	DROP1/DROP51	SCREEN 3 DOWNSTREAM LEVEL
AnalogPoint	JRP01LITU1210	DROP1/DROP51	SCREEN 1 UPSTREAM LEVEL
AnalogPoint	JRP01LITU1220	DROP1/DROP51	SCREEN 2 UPSTREAM LEVEL

AnalogPoint	JRP01LITU1230	DROP1/DROP51	SCREEN 3 UPSTREAM LEVEL
AnalogPoint	JRP01LITX3001	DROP1/DROP51	SCREEN INFLUENT WELL LEVEL
AnalogPoint	JRP01LITX3002	DROP1/DROP51	SCREEN EFFLUENT WELL LEVEL
AnalogPoint	JRP01MISCPMP1	DROP1/DROP51	MISC HYPO PUMP #1
AnalogPoint	JRP01MISCPMP2	DROP1/DROP51	MISC HYPO PUMP#2
AnalogPoint	JRP01MISCPMP3	DROP1/DROP51	MISC HYPO PUMP #3
AnalogPoint	JRP01OFTR1110-00	DROP1/DROP51	WASH PRESS 1 OFF CYCLE TIMER
AnalogPoint	JRP01OFTR1110A-00	DROP1/DROP51	WASH PRESS 1 ZONE WASH OFF TMR
AnalogPoint	JRP01OFTR1110C-00	DROP1/DROP51	WASH PRESS 1 SHFT WASH OFF TMR
AnalogPoint	JRP01OFTR1120-00	DROP1/DROP51	WASH PRESS 2 OFF CYCLE TIMER
AnalogPoint	JRP01OFTR1120A-00	DROP1/DROP51	WASH PRESS 2 ZONE WASH OFF TMR
AnalogPoint	JRP01OFTR1120C-00	DROP1/DROP51	WASH PRESS 2 SHFT WASH OFF TMR
AnalogPoint	JRP01OFTR1130-00	DROP1/DROP51	WASH PRESS 3 OFF CYCLE TIMER
AnalogPoint	JRP01OFTR1130A-00	DROP1/DROP51	WASH PRESS 3 ZONE WASH OFF TMR
AnalogPoint	JRP01OFTR1130C-00	DROP1/DROP51	WASH PRESS 3 SHFT WASH OFF TMR
AnalogPoint	JRP01ONTR1110A-00	DROP1/DROP51	WASH PRESS 1 ZONE WASH ON TMR
AnalogPoint	JRP01ONTR1110C-00	DROP1/DROP51	WASH PRESS 1 SHFT WASH ON TMR
AnalogPoint	JRP01ONTR1120A-00	DROP1/DROP51	WASH PRESS 2 ZONE WASH ON TMR
AnalogPoint	JRP01ONTR1120C-00	DROP1/DROP51	WASH PRESS 2 SHFT WASH ON TMR
AnalogPoint	JRP01ONTR1130A-00	DROP1/DROP51	WASH PRESS 3 ZONE WASH ON TMR
AnalogPoint	JRP01ONTR1130C-00	DROP1/DROP51	WASH PRESS 3 SHFT WASH ON TMR
AnalogPoint	JRP01OPRK0100-01	DROP1/DROP51	SCREEN MSTR RANK 1
AnalogPoint	JRP01OPRK0100-02	DROP1/DROP51	SCREEN MSTR RANK 2
AnalogPoint	JRP01OPRK0100-03	DROP1/DROP51	SCREEN MSTR RANK 3
AnalogPoint	JRP01PHRNG1	DROP1/DROP51	IFAS TANK PH RANGE 1
AnalogPoint	JRP01PHRNG2	DROP1/DROP51	IFAS TANK PH RANGE 2
AnalogPoint	JRP01PRICL1	DROP1/DROP51	PRIMARY CLARIFIER FERRIC SP
AnalogPoint	JRP01PRIPMP1	DROP1/DROP51	PRIMARY PUMP # SELECTION
AnalogPoint	JRP01PRIPMP2	DROP1/DROP51	PRIMARY PUMP # SELECTION 2
AnalogPoint	JRP01REQT0100-00	DROP1/DROP51	TOTAL SCRN CHNL REQUIRED
AnalogPoint	JRP01RSEL0100-00	DROP1/DROP51	SCREEN MSTR RANK SELECTION
AnalogPoint	JRP01SECCL1	DROP1/DROP51	SECONDARY CLARIFIER FERRIC SP
AnalogPoint	JRP01SECCLRPMP1	DROP1/DROP51	SECONDARY CLARIFIER PUMP #
AnalogPoint	JRP01SECCLRPMP2	DROP1/DROP51	SECONDARY CLARIFIER #2 PUMP #
AnalogPoint	JRP01SECCLRPMP3	DROP1/DROP51	SECONDARY CLARIFIER #3 PUMP #
AnalogPoint	JRP01SECCLRPMP4	DROP1/DROP51	SECONDARY CLARIFIER #4 PUMP #
AnalogPoint	JRP01SECCLRPMP5	DROP1/DROP51	SECONDARY CLARIFIER #5 PUMP #
AnalogPoint	JRP01STPT0100-F1	DROP1/DROP51	SCRN CHNL SEQ TEIR 1 FLOW STPT
AnalogPoint	JRP01STPT0100-F2	DROP1/DROP51	SCRN CHNL SEQ TEIR 2 FLOW STPT
AnalogPoint	JRP01STPT0100-F3	DROP1/DROP51	SCRN CHNL SEQ TEIR 3 FLOW STPT
AnalogPoint	JRP01STPT0100-L1	DROP1/DROP51	SCRN CHNL SEQ TEIR 1 LVL STPT
AnalogPoint	JRP01STPT0100-L2	DROP1/DROP51	SCRN CHNL SEQ TEIR 2 LVL STPT
AnalogPoint	JRP01STPT0100-L3	DROP1/DROP51	SCRN CHNL SEQ TEIR 3 LVL STPT
AnalogPoint	JRP01STPT1001-L	DROP1/DROP51	BYPASS VALVE LEVEL SETPOINT
AnalogPoint	JRP01TFQF1000-00	DROP1/DROP51	RAW INFL PREV 24 HR FLOW TOTAL
AnalogPoint	JRP01TFQH1000-00	DROP1/DROP51	RAW INFL CURR HRLY FLOW TOTAL
AnalogPoint	JRP01TFQM1000-00	DROP1/DROP51	RAW INFL PREV MONTH FLOW TOTAL

AnalogPoint	JRP01TFQO1000	DROP1/DROP51	INFL CURR 24HR TO TELOG
AnalogPoint	JRP01TFQO1000-00	DROP1/DROP51	RAW INFL CURR 24 HR FLOW TOTAL
AnalogPoint	JRP01TFQP1000-00	DROP1/DROP51	RAW INFL PREV HRLY FLOW TOTAL
AnalogPoint	JRP01TFQZ1000-00	DROP1/DROP51	RAW INFL CURR MONTH FLOW TOTAL
AnalogPoint	JRP01TITX0001	DROP1/DROP51	INFLUENT TEMPERATURE
AnalogPoint	JRP01TOTL0100-CS	DROP1/DROP51	SCREEN MSTR TOTAL RUNNING
AnalogPoint	JRP01TRTM1110-HR	DROP1/DROP51	WASH PRESS 1 MAINT RTME
AnalogPoint	JRP01TRTM1120-HR	DROP1/DROP51	WASH PRESS 2 MAINT RTME
AnalogPoint	JRP01TRTM1130-HR	DROP1/DROP51	WASH PRESS 3 MAINT RTME
AnalogPoint	JRP01TRTM1210-HR	DROP1/DROP51	SCREEN 1 MAINT RTME
AnalogPoint	JRP01TRTM1220-HR	DROP1/DROP51	SCREEN 2 MAINT RTME
AnalogPoint	JRP01TRTM1230-HR	DROP1/DROP51	SCREEN 3 MAINT RTME
AnalogPoint	JRP01TRTY1110-00	DROP1/DROP51	WASH PRESS 1 RTME MIN
AnalogPoint	JRP01TRTY1120-00	DROP1/DROP51	WASH PRESS 2 RTME MIN
AnalogPoint	JRP01TRTY1130-00	DROP1/DROP51	WASH PRESS 3 RTME MIN
AnalogPoint	JRP01TRTY1210-00	DROP1/DROP51	SCREEN 1 RTME MIN
AnalogPoint	JRP01TRTY1220-00	DROP1/DROP51	SCREEN 2 RTME MIN
AnalogPoint	JRP01TRTY1230-00	DROP1/DROP51	SCREEN 3 RTME MIN
AnalogPoint	JRP01TRTZ100-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01TRTZ101-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01TRTZ102-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP01TRTZ1110-HR	DROP1/DROP51	WASH PRESS 1 CUR RTME
AnalogPoint	JRP01TRTZ1120-HR	DROP1/DROP51	WASH PRESS 2 CUR RTME
AnalogPoint	JRP01TRTZ1130-HR	DROP1/DROP51	WASH PRESS 3 CUR RTME
AnalogPoint	JRP01TRTZ1210-HR	DROP1/DROP51	SCREEN 1 CUR RTME
AnalogPoint	JRP01TRTZ1220-HR	DROP1/DROP51	SCREEN 2 CUR RTME
AnalogPoint	JRP01TRTZ1230-HR	DROP1/DROP51	SCREEN 3 CUR RTME
AnalogPoint	JRP01TRTZ2310-00	DROP1/DROP51	CHNL 1 INF GATE CUR RTME
AnalogPoint	JRP01TRTZ2320-00	DROP1/DROP51	CHNL 2 INF GATE CUR RTME
AnalogPoint	JRP01TRTZ2330-00	DROP1/DROP51	CHNL 3 INF GATE CUR RTME
AnalogPoint	JRP01TRTZ2410-00	DROP1/DROP51	CHNL 1 EFF GATE CUR RTME
AnalogPoint	JRP01TRTZ2420-00	DROP1/DROP51	CHNL 2 EFF GATE CUR RTME
AnalogPoint	JRP01TRTZ2430-00	DROP1/DROP51	CHNL 3 EFF GATE CUR RTME
AnalogPoint	JRP03AITX0001	DROP1/DROP51	INFLUENT CONDUCTIVITY METER
AnalogPoint	JRP03GRITP1P3ON-AT	DROP1/DROP51	GRIT PUMPS ON TIME
AnalogPoint	JRP03GRITP2P4ON-AT	DROP1/DROP51	GRIT PUMPS OFF TIME
AnalogPoint	JRP03TRTM0101-HR	DROP1/DROP51	GRIT PUMP 1 MAINT RUN TIME
AnalogPoint	JRP03TRTM0102-HR	DROP1/DROP51	GRIT PUMP 2 MAINT RUN TIME
AnalogPoint	JRP03TRTM0103-HR	DROP1/DROP51	GRIT PUMP 3 MAINT RUN TIME
AnalogPoint	JRP03TRTM0104-HR	DROP1/DROP51	GRIT PUMP 4 MAINT RUN TIME
AnalogPoint	JRP03TRTY0101-00	DROP1/DROP51	GRIT PUMP 1 RUN TIME MINUTES
AnalogPoint	JRP03TRTY0102-00	DROP1/DROP51	GRIT PUMP 2 RUN TIME MINUTES
AnalogPoint	JRP03TRTY0103-00	DROP1/DROP51	GRIT PUMP 3 RUN TIME MINUTES
AnalogPoint	JRP03TRTY0104-00	DROP1/DROP51	GRIT PUMP 4 RUN TIME MINUTES
AnalogPoint	JRP03TRTZ0101-HR	DROP1/DROP51	GRIT PUMP 1 CURR RUN TIME
AnalogPoint	JRP03TRTZ0102-HR	DROP1/DROP51	GRIT PUMP 2 CURR RUN TIME
AnalogPoint	JRP03TRTZ0103-HR	DROP1/DROP51	GRIT PUMP 3 CURR RUN TIME

AnalogPoint	JRP03TRTZ0104-HR	DROP1/DROP51	GRIT PUMP 4 CURR RUN TIME
AnalogPoint	JRP04FITX1001	DROP1/DROP51	PRIMARY BIOSOLIDS FLOW
AnalogPoint	JRP04TFQF1001-00	DROP1/DROP51	PRI BIOS PREV 24 HR FLOW TOTAL
AnalogPoint	JRP04TFQH1001-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP04TFQM1001-00	DROP1/DROP51	PRI BIOS PREV MONTH FLOW TOTAL
AnalogPoint	JRP04TFQO1001-00	DROP1/DROP51	PRI BIOS CURR 24 HR FLOW TOTAL
AnalogPoint	JRP04TFQP1004-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP04TFQZ1001-00	DROP1/DROP51	PRI BIOS CURR MONTH FLOW TOTAL
AnalogPoint	JRP08FITX1004	DROP1/DROP51	CAUSTIC FLOW
AnalogPoint	JRP08FITX1005	DROP1/DROP51	CRCY 5 FLOW
AnalogPoint	JRP08FITX1012	DROP1/DROP51	CRCY 1 AND 2 FLOW
AnalogPoint	JRP08FITX1034	DROP1/DROP51	CRCY 3, 4, AND 5 FLOW
AnalogPoint	JRP08TFQF1004	DROP1/DROP51	PREVIOUS 24 HR CAUSTIC FLOW
AnalogPoint	JRP08TFQF1005-00	DROP1/DROP51	CRCY 5 PREV 24 HR FLOW TOTAL
AnalogPoint	JRP08TFQF1012-00	DROP1/DROP51	CRCY 1-2 PREV 24 HR FLOW TOTAL
AnalogPoint	JRP08TFQF1034-00	DROP1/DROP51	CRCY 3-4 PREV 24 HR FLOW TOTAL
AnalogPoint	JRP08TFQH1004-00	DROP1/DROP51	
AnalogPoint	JRP08TFQH1005-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP08TFQH1012-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP08TFQH1034-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP08TFQM1004	DROP1/DROP51	PREVIOUS MONTH CAUSTIC FLOW
AnalogPoint	JRP08TFQM1005-00	DROP1/DROP51	CRCY 5 PREV MONTH FLOW TOTAL
AnalogPoint	JRP08TFQM1012-00	DROP1/DROP51	CRCY 1-2 PREV MONTH FLOW TOTAL
AnalogPoint	JRP08TFQM1034-00	DROP1/DROP51	CRCY 3-4 PREV MONTH FLOW TOTAL
AnalogPoint	JRP08TFQO1004	DROP1/DROP51	CURRENT 24 HR CAUSTIC FLOW
AnalogPoint	JRP08TFQO1005-00	DROP1/DROP51	CRCY 5 CURR 24 HR FLOW TOTAL
AnalogPoint	JRP08TFQO1012-00	DROP1/DROP51	CRCY 1-2 CURR 24 HR FLOW TOTAL
AnalogPoint	JRP08TFQO1034-00	DROP1/DROP51	CRCY 3-4 CURR 24 HR FLOW TOTAL
AnalogPoint	JRP08TFQP1004-00	DROP1/DROP51	
AnalogPoint	JRP08TFQP1005-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP08TFQP1012-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP08TFQP1034-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP08TFQZ1004	DROP1/DROP51	CURRENT MONTHLY CAUSTIC FLOW
AnalogPoint	JRP08TFQZ1005-00	DROP1/DROP51	CRCY 5 CURR MONTH FLOW TOTAL
AnalogPoint	JRP08TFQZ1012-00	DROP1/DROP51	CRCY 1-2 CURR MONTH FLOW TOTAL
AnalogPoint	JRP08TFQZ1034-00	DROP1/DROP51	CRCY3-4 CURR MONTH FLOW TOTAL
AnalogPoint	JRP10FITG3001	DROP1/DROP51	DIGESTER GAS FLOW NO. 1
AnalogPoint	JRP10FITG3002	DROP1/DROP51	DIGESTER GAS FLOW NO. 2
AnalogPoint	JRP10FITG4001	DROP1/DROP51	WASTE GAS FLOW
AnalogPoint	JRP10TFQF3001-00	DROP1/DROP51	DIG GAS 1 PREV 24 HR FLO TOTAL
AnalogPoint	JRP10TFQF3002-00	DROP1/DROP51	DIG GAS 2 PREV 24 HR FLO TOTAL
AnalogPoint	JRP10TFQF4001-00	DROP1/DROP51	WSTE GAS PREV 24 HR FLOW TOTAL
AnalogPoint	JRP10TFQH3001-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP10TFQH3002-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP10TFQH4001-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP10TFQM3001-00	DROP1/DROP51	DIG GAS 1 PREV MONTH FLO TOTAL
AnalogPoint	JRP10TFQM3002-00	DROP1/DROP51	DIG GAS 2 PREV MONTH FLO TOTAL

AnalogPoint	JRP10TFQM4001-00	DROP1/DROP51	WSTE GAS PREV MONTH FLOW TOTAL
AnalogPoint	JRP10TFQO3001-00	DROP1/DROP51	DIG GAS 1 CURR 24 HR FLO TOTAL
AnalogPoint	JRP10TFQO3002-00	DROP1/DROP51	DIG GAS 2 CURR 24 HR FLO TOTAL
AnalogPoint	JRP10TFQO4001-00	DROP1/DROP51	WSTE GAS CURR 24 HR FLOW TOTAL
AnalogPoint	JRP10TFQP3001-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP10TFQP3002-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP10TFQP4001-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP10TFQZ3001-00	DROP1/DROP51	DIG GAS 1 CURR MONTH FLO TOTAL
AnalogPoint	JRP10TFQZ3002-00	DROP1/DROP51	DIG GAS 2 CURR MONTH FLO TOTAL
AnalogPoint	JRP10TFQZ4001-00	DROP1/DROP51	WSTE GAS CURR MONTH FLOW TOTAL
AnalogPoint	JRP11FITX1001	DROP1/DROP51	GRAVITY THKND BIOSOLIDS FLOW
AnalogPoint	JRP11TFQF1001-00	DROP1/DROP51	GT BIOS PREV 24 HR FLOW TOTAL
AnalogPoint	JRP11TFQH1001-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP11TFQM1001-00	DROP1/DROP51	GT BIOS PREV MONTH FLOW TOTAL
AnalogPoint	JRP11TFQO1001-00	DROP1/DROP51	GT BIOS CURR 24 HR FLOW TOTAL
AnalogPoint	JRP11TFQP1004-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP11TFQZ1001-00	DROP1/DROP51	GT BIOS CURR MONTH FLOW TOTAL
AnalogPoint	JRP14CTDN1400-CS	DROP1/DROP51	BLWR MSTR ALTRN COUNTDOWN
AnalogPoint	JRP14CTLM2004	DROP1/DROP51	BLWR 4 CONTROL MODE
AnalogPoint	JRP14CTLM2005	DROP1/DROP51	BLWR 5 CONTROL MODE
AnalogPoint	JRP14CTLM2006	DROP1/DROP51	BLWR 6 CONTROL MODE
AnalogPoint	JRP14FATX1400-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP14FLTV2004	DROP1/DROP51	BLWR 4 FAULT CODE
AnalogPoint	JRP14FLTV2005	DROP1/DROP51	BLWR 5 FAULT CODE
AnalogPoint	JRP14FLTV2006	DROP1/DROP51	BLWR 6 FAULT CODE
AnalogPoint	JRP14HTBT2004	DROP1/DROP51	BLWR 4 PLC HEARTBEAT
AnalogPoint	JRP14HTBT2004-DCS	DROP1/DROP51	BLWR 4 DCS HEARTBEAT
AnalogPoint	JRP14HTBT2005	DROP1/DROP51	BLWR 5 PLC HEARTBEAT
AnalogPoint	JRP14HTBT2005-DCS	DROP1/DROP51	BLWR 5DCS HEARBEAT
AnalogPoint	JRP14HTBT2006	DROP1/DROP51	BLWR 6 PLC HEARTBEAT
AnalogPoint	JRP14HTBT2006-DCS	DROP1/DROP51	BLWR 6 DCS HEARBEAT
AnalogPoint	JRP14MINX2004-SP	DROP1/DROP51	BLWR 4 MIN PCT
AnalogPoint	JRP14MINX2005-SP	DROP1/DROP51	BLWR 5 MIN PCT
AnalogPoint	JRP14MINX2006-SP	DROP1/DROP51	BLWR 6 MIN PCT
AnalogPoint	JRP14MSTR1400-00	DROP1/DROP51	BLOWER MASTER BLNCD CO
AnalogPoint	JRP14MSTR1400-CO	DROP1/DROP51	BLOWER MASTER CTRL OUTPUT
AnalogPoint	JRP14N1XX2004	DROP1/DROP51	BLWR 4 MOTOR SPEED - RPM
AnalogPoint	JRP14N1XX2005	DROP1/DROP51	BLWR 5 MOTOR SPEED - RPM
AnalogPoint	JRP14N1XX2006	DROP1/DROP51	BLWR 6 MOTOR SPEED - RPM
AnalogPoint	JRP14NCLM2004	DROP1/DROP51	BLWR 4 MAX SPD @ SUCTION TEMP
AnalogPoint	JRP14NCLM2005	DROP1/DROP51	BLWR 5 MAX SPD @ SUCTION TEMP
AnalogPoint	JRP14NCLM2006	DROP1/DROP51	BLWR 6 MAX SPD @ SUCTION TEMP
AnalogPoint	JRP14NMLM2004	DROP1/DROP51	BLWR 4 MOTOR SPEED LIMIT
AnalogPoint	JRP14NMLM2005	DROP1/DROP51	BLWR 5 MOTOR SPEED LIMIT
AnalogPoint	JRP14NMLM2006	DROP1/DROP51	BLWR 6 MOTOR SPEED LIMIT
AnalogPoint	JRP14OPRK1400-01	DROP1/DROP51	BLWR MSTR RANK 1
AnalogPoint	JRP14OPRK1400-02	DROP1/DROP51	BLWR MSTR RANK 2

AnalogPoint	JRP14OPRK1400-03	DROP1/DROP51	BLWR MSTR RANK 3
AnalogPoint	JRP14OPRK1400-04	DROP1/DROP51	BLWR MSTR RANK 4
AnalogPoint	JRP14PDLM2004	DROP1/DROP51	BLWR 4 DISCHARGE PRESS LIMIT
AnalogPoint	JRP14PDLM2005	DROP1/DROP51	BLWR 5 DISCHARGE PRESS LIMIT
AnalogPoint	JRP14PDLM2006	DROP1/DROP51	BLWR 6 DISCHARGE PRESS LIMIT
AnalogPoint	JRP14PDXX2004	DROP1/DROP51	BLWR 4 DISCHARGE PRESS
AnalogPoint	JRP14PDXX2005	DROP1/DROP51	BLWR 5 DISCHARGE PRESS
AnalogPoint	JRP14PDXX2006	DROP1/DROP51	BLWR 6 DISCHARGE PRESS
AnalogPoint	JRP14PITA3001A	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP14PITA3001B	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP14PSLM2004	DROP1/DROP51	BLWR 4 FLTR DROP PRESS LIMIT
AnalogPoint	JRP14PSLM2005	DROP1/DROP51	BLWR 5 FLTR DROP PRESS LIMIT
AnalogPoint	JRP14PSLM2006	DROP1/DROP51	BLWR 6 FLTR DROP PRESS LIMIT
AnalogPoint	JRP14PSXX2004	DROP1/DROP51	BLWR 4 FILTR DROP PRESS
AnalogPoint	JRP14PSXX2005	DROP1/DROP51	BLWR 5 FILTR DROP PRESS
AnalogPoint	JRP14PSXX2006	DROP1/DROP51	BLWR 6 FILTR DROP PRESS
AnalogPoint	JRP14QXXX2004	DROP1/DROP51	BLWR 4 SUCTION FLOW RATE
AnalogPoint	JRP14QXXX2005	DROP1/DROP51	BLWR 5 SUCTION FLOW RATE
AnalogPoint	JRP14QXXX2006	DROP1/DROP51	BLWR 6 SUCTION FLOW RATE
AnalogPoint	JRP14RMTM2004	DROP1/DROP51	BLWR 4 REMOTE MODE
AnalogPoint	JRP14RMTM2005	DROP1/DROP51	BLWR 5 REMOTE MODE
AnalogPoint	JRP14RMTM2006	DROP1/DROP51	BLWR 6 REMOTE MODE
AnalogPoint	JRP14RSEL1400-00	DROP1/DROP51	BLWR MSTR RANK SELECTION
AnalogPoint	JRP14RTHC2004	DROP1/DROP51	BLWR 4 CURRENT RUNTIME - HOURS
AnalogPoint	JRP14RTHC2005	DROP1/DROP51	BLWR 5 CURRENT RUNTIME - HOURS
AnalogPoint	JRP14RTHC2006	DROP1/DROP51	BLWR 6 CURRENT RUNTIME - HOURS
AnalogPoint	JRP14RTHT2004	DROP1/DROP51	BLWR 4 TOTAL RUNTIME - HOURS
AnalogPoint	JRP14RTHT2005	DROP1/DROP51	BLWR 5 TOTAL RUNTIME - HOURS
AnalogPoint	JRP14RTHT2006	DROP1/DROP51	BLWR 6 TOTAL RUNTIME - HOURS
AnalogPoint	JRP14SCXX2004	DROP1/DROP51	BLWR 4 SPEED CMD
AnalogPoint	JRP14SCXX2005	DROP1/DROP51	BLWR 5 SPEED CMD
AnalogPoint	JRP14SCXX2006	DROP1/DROP51	BLWR 6 SPEED CMD
AnalogPoint	JRP14SIXX2004	DROP1/DROP51	BLWR 4 SPEED
AnalogPoint	JRP14SIXX2005	DROP1/DROP51	BLWR 5 SPEED
AnalogPoint	JRP14SIXX2006	DROP1/DROP51	BLWR 6 SPEED
AnalogPoint	JRP14STAT2004	DROP1/DROP51	BLWR 4 STATUS WORD
AnalogPoint	JRP14STAT2005	DROP1/DROP51	BLWR 5 STATUS WORD
AnalogPoint	JRP14STAT2006	DROP1/DROP51	BLWR 6 STATUS WORD
AnalogPoint	JRP14STPT1400-L	DROP1/DROP51	BLOWER MASTER SETPOINT
AnalogPoint	JRP14STPT3001X-01	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP14STPT3001X-02	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP14STPT3001X-03	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP14STPT3001X-04	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP14SURG1400-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP14SURG2004	DROP1/DROP51	BLWR 4 SURGE PCT
AnalogPoint	JRP14SURG2005	DROP1/DROP51	BLWR 5 SURGE PCT
AnalogPoint	JRP14SURG2006	DROP1/DROP51	BLWR 6 SURGE PCT

AnalogPoint	JRP14TBLM2004	DROP1/DROP51	BLWR 4 BEARING TEMP LIMIT
AnalogPoint	JRP14TBLM2005	DROP1/DROP51	BLWR 5 BEARING TEMP LIMIT
AnalogPoint	JRP14TBLM2006	DROP1/DROP51	BLWR 6 BEARING TEMP LIMIT
AnalogPoint	JRP14TBXX2004	DROP1/DROP51	BLWR 4 BEARING TEMP
AnalogPoint	JRP14TBXX2005	DROP1/DROP51	BLWR 5 BEARING TEMP
AnalogPoint	JRP14TBXX2006	DROP1/DROP51	BLWR 6 BEARING TEMP
AnalogPoint	JRP14TDLM2004	DROP1/DROP51	BLWR 4 DISCHARGE TEMP LIMIT
AnalogPoint	JRP14TDLM2005	DROP1/DROP51	BLWR 5 DISCHARGE TEMP LIMIT
AnalogPoint	JRP14TDLM2006	DROP1/DROP51	BLWR 6 DISCHARGE TEMP LIMIT
AnalogPoint	JRP14TDXX2004	DROP1/DROP51	BLWR 4 DISCHARGE TEMP
AnalogPoint	JRP14TDXX2005	DROP1/DROP51	BLWR 5 DISCHARGE TEMP
AnalogPoint	JRP14TDXX2006	DROP1/DROP51	BLWR 6 DISCHARGE TEMP
AnalogPoint	JRP14TMLM2004	DROP1/DROP51	BLWR 4 MOTOR TEMP LIMIT
AnalogPoint	JRP14TMLM2005	DROP1/DROP51	BLWR 5 MOTOR TEMP LIMIT
AnalogPoint	JRP14TMLM2006	DROP1/DROP51	BLWR 6 MOTOR TEMP LIMIT
AnalogPoint	JRP14TMXX2004	DROP1/DROP51	BLWR 4 MOTOR TEMP
AnalogPoint	JRP14TMXX2005	DROP1/DROP51	BLWR 5 MOTOR TEMP
AnalogPoint	JRP14TMXX2006	DROP1/DROP51	BLWR 6 MOTOR TEMP
AnalogPoint	JRP14TOTL1400-CS	DROP1/DROP51	BLOWER MSTR TOTAL RUNNING
AnalogPoint	JRP14TRTM2004-HR	DROP1/DROP51	BLWR 4 MAINT RTME
AnalogPoint	JRP14TRTM2005-HR	DROP1/DROP51	BLWR 5 MAINT RTME
AnalogPoint	JRP14TRTM2006-HR	DROP1/DROP51	BLWR 6 MAINT RTME
AnalogPoint	JRP14TRTY2004-00	DROP1/DROP51	BLWR 4 RTME MIN
AnalogPoint	JRP14TRTY2005-00	DROP1/DROP51	BLWR 5 RTME MIN
AnalogPoint	JRP14TRTY2006-00	DROP1/DROP51	BLWR 6 RTME MIN
AnalogPoint	JRP14TRTZ2004-HR	DROP1/DROP51	BLWR 4 CUR RTME
AnalogPoint	JRP14TRTZ2005-HR	DROP1/DROP51	BLWR 5 CUR RTME
AnalogPoint	JRP14TRTZ2006-HR	DROP1/DROP51	BLWR 6 CUR RTME
AnalogPoint	JRP14TSLM2004	DROP1/DROP51	BLWR 4 SUCTION TEMP LIMIT
AnalogPoint	JRP14TSLM2005	DROP1/DROP51	BLWR 5 SUCTION TEMP LIMIT
AnalogPoint	JRP14TSLM2006	DROP1/DROP51	BLWR 6 SUCTION TEMP LIMIT
AnalogPoint	JRP14TSXX2004	DROP1/DROP51	BLWR 4 SUCTION TEMP
AnalogPoint	JRP14TSXX2005	DROP1/DROP51	BLWR 5 SUCTION TEMP
AnalogPoint	JRP14TSXX2006	DROP1/DROP51	BLWR 6 SUCTION TEMP
AnalogPoint	JRP14WMLM2004	DROP1/DROP51	BLWR 4 MOTOR POWER LIMIT
AnalogPoint	JRP14WMLM2005	DROP1/DROP51	BLWR 5 MOTOR POWER LIMIT
AnalogPoint	JRP14WMLM2006	DROP1/DROP51	BLWR 6 MOTOR POWER LIMIT
AnalogPoint	JRP14WMXX2004	DROP1/DROP51	BLWR 4 MOTOR POWER
AnalogPoint	JRP14WMXX2005	DROP1/DROP51	BLWR 5 MOTOR POWER
AnalogPoint	JRP14WMXX2006	DROP1/DROP51	BLWR 6 MOTOR POWER
AnalogPoint	JRP14XMLM2004	DROP1/DROP51	BLWR 4 ROTOR VIBRATION LIMIT
AnalogPoint	JRP14XMLM2005	DROP1/DROP51	BLWR 5 ROTOR VIBRATION LIMIT
AnalogPoint	JRP14XMLM2006	DROP1/DROP51	BLWR 6 ROTOR VIBRATION LIMIT
AnalogPoint	JRP14XMXX2004	DROP1/DROP51	BLWR 4 ROTOR VIBRATION
AnalogPoint	JRP14XMXX2005	DROP1/DROP51	BLWR 5 ROTOR VIBRATION
AnalogPoint	JRP14XMXX2006	DROP1/DROP51	BLWR 6 ROTOR VIBRATION
AnalogPoint	JRP1530MIN	DROP1/DROP51	HYPO 30 MIN ANALYZER

AnalogPoint	JRP155MIN	DROP1/DROP51	HYPO 5 MIN ANALYZER
AnalogPoint	JRP15FINALPH	DROP1/DROP51	FINAL PH
AnalogPoint	JRP15FINALTEMP	DROP1/DROP51	FINAL TEMPERATURE
AnalogPoint	JRP15FITX1000	DROP1/DROP51	HYPOCHLORITE FLOW
AnalogPoint	JRP15FLOPSP	DROP1/DROP51	HYPO CTRL FLOW SETPOINT
AnalogPoint	JRP15HYPOCONTROL	DROP1/DROP51	HYPO PMP SPEED OUTPUT
AnalogPoint	JRP15HYPOMANSP	DROP1/DROP51	HYPO MANUAL SETPOINT
AnalogPoint	JRP15RMSP	DROP1/DROP51	HYPO CTRL RES MODE SP
AnalogPoint	JRP15TFQF1000	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP15TFQH1000-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP15TFQM1000	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP15TFQO1000	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP15TFQP1000-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP15TFQZ1000	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP16BISULFCTRL	DROP1/DROP51	BISULF PUMP SPEED OUTPUT
AnalogPoint	JRP16BISULFMANSP	DROP1/DROP51	BISULF CTRL MAN SETPOINT
AnalogPoint	JRP16BISULFSP	DROP1/DROP51	BISULF COMBINED MODE SETPOINT
AnalogPoint	JRP16FITX1001	DROP1/DROP51	BISULFITE FLOW
AnalogPoint	JRP16FLOPACESP	DROP1/DROP51	BISULFITE FLO PACE SETPOINT
AnalogPoint	JRP16TFQF1001-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP16TFQH1001-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP16TFQM1001-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP16TFQO1001-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP16TFQP1001-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP16TFQZ1001-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP18FITX1001	DROP1/DROP51	HYPO FLOW TO SCRUBBER
AnalogPoint	JRP18TFQF4001-00	DROP1/DROP51	HYPO SCRBR FLO PREV 24 HR TOTL
AnalogPoint	JRP18TFQH4001-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP18TFQM4001-00	DROP1/DROP51	HYPO SCRBR FLO PREV MONTH TOTL
AnalogPoint	JRP18TFQO4001-00	DROP1/DROP51	HYPO SCRBR FLO CURR 24 HR FLOW
AnalogPoint	JRP18TFQP4001-00	DROP1/DROP51	HYPO SCRBR FLO PREV HOUR TOTL
AnalogPoint	JRP18TFQZ4001-00	DROP1/DROP51	HYPO SCRBR FLO CURR MONTH
AnalogPoint	JRP18TRTZ100-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP18TRTZ101-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP18TRTZ200-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP18TRTZ201-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP18TRTZ202-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP18TRTZ300-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP18TRTZ301-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP18TRTZ302-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP19WDIX1000	DROP1/DROP51	WIND DIRECTION
AnalogPoint	JRP19WSIX1001	DROP1/DROP51	WIND SPEED INDICATION
AnalogPoint	JRP19WSIX1001-00	DROP1/DROP51	WIND SPEED INDICATION MPH
AnalogPoint	JRP26LITX0001	DROP1/DROP51	PLANT DRAIN PMP STATION LEVEL
AnalogPoint	JRP26LITX0001-00	DROP1/DROP51	PDPS LEVEL IN INCHES
AnalogPoint	JRP26STPTOFF-LD	DROP1/DROP51	PDPS LEAD OFF SET POINT
AnalogPoint	JRP26STPTOFF-LG	DROP1/DROP51	PDPS LAG OFF SET POINT

AnalogPoint	JRP26STPTON-LD	DROP1/DROP51	PDPS LEAD ON SET POINT
AnalogPoint	JRP26STPTON-LG	DROP1/DROP51	PDPS LAG ON SET POINT
AnalogPoint	JRP26TRTM1001	DROP1/DROP51	DRAIN PUMP 1 MAINT RUN TIME
AnalogPoint	JRP26TRTM2001	DROP1/DROP51	DRAIN PUMP 2 MAINT RUN TIME
AnalogPoint	JRP26TRTY1001	DROP1/DROP51	DRAIN PUMP 1 RUN TME MIN
AnalogPoint	JRP26TRTY2001	DROP1/DROP51	DRAIN PUMP 2 RUN TIME MIN
AnalogPoint	JRP26TRTZ1001	DROP1/DROP51	DRAIN PUMP 1 CURR RUN TIME
AnalogPoint	JRP26TRTZ2001	DROP1/DROP51	DRAIN PUMP 2 CURR RUN TIME
AnalogPoint	JRP40VEPT1000-CHH	DROP1/DROP51	VEPCO CURRENT HALF HOUR USAGE
AnalogPoint	JRP40VEPT1000-CMP	DROP1/DROP51	VEPCO CURRENT MAX PEAK USAGE
AnalogPoint	JRP40VEPT1000-PHH	DROP1/DROP51	VEPCO PREVIOUS HALF HOUR USAGE
AnalogPoint	JRP41APPA1000	DROP1/DROP51	APPARENT POWER - PHASE A
AnalogPoint	JRP41APPB1000	DROP1/DROP51	APPARENT POWER - PHASE B
AnalogPoint	JRP41APPC1000	DROP1/DROP51	APPARENT POWER - PHASE C
AnalogPoint	JRP41APPT1000	DROP1/DROP51	APPARENT POWER - TOTAL
AnalogPoint	JRP41FREQ1000	DROP1/DROP51	FREQUENCY
AnalogPoint	JRP41IAXX1000	DROP1/DROP51	PHASE A CURRENT
AnalogPoint	JRP41IBXX1000	DROP1/DROP51	PHASE B CURRENT
AnalogPoint	JRP41ICXX1000	DROP1/DROP51	PHASE C CURRENT
AnalogPoint	JRP41IGXX1000	DROP1/DROP51	GROUND PHASE CURRENT
AnalogPoint	JRP41INXX1000	DROP1/DROP51	NUETRAL PHASE CURRENT
AnalogPoint	JRP41PFAA1000	DROP1/DROP51	APPARENT POWER FACTOR - PHASE
AnalogPoint	JRP41PFAB1000	DROP1/DROP51	APPARENT POWER FACTOR - PHASE
AnalogPoint	JRP41PFAC1000	DROP1/DROP51	APPARENT POWER FACTOR - PHASE
AnalogPoint	JRP41PFAT1000	DROP1/DROP51	APPARENT POWER FACTOR - TOTAL
AnalogPoint	JRP41RCPA1000	DROP1/DROP51	REACTIVE POWER - PHASE A
AnalogPoint	JRP41RCPB1000	DROP1/DROP51	REACTIVE POWER - PHASE B
AnalogPoint	JRP41RCPC1000	DROP1/DROP51	REACTIVE POWER - PHASE C
AnalogPoint	JRP41RCPT1000	DROP1/DROP51	REACTIVE POWER - TOTAL
AnalogPoint	JRP41RLPA1000	DROP1/DROP51	REAL POWER - PHASE A
AnalogPoint	JRP41RLPB1000	DROP1/DROP51	REAL POWER - PHASE B
AnalogPoint	JRP41RLPC1000	DROP1/DROP51	REAL POWER - PHASE C
AnalogPoint	JRP41RLPT1000	DROP1/DROP51	REAL POWER - TOTAL
AnalogPoint	JRP41TUQF1000-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP41TUQH1000-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP41TUQM1000-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP41TUQO1000-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP41TUQZ1000-00	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP41VABX1000	DROP1/DROP51	PHASE A-B VOLTAGE
AnalogPoint	JRP41VANX1000	DROP1/DROP51	PHASE A-N VOLTAGE
AnalogPoint	JRP41VBCX1000	DROP1/DROP51	PHASE B-C VOLTAGE
AnalogPoint	JRP41VBNX1000	DROP1/DROP51	PHASE B-N VOLTAGE
AnalogPoint	JRP41VCAX1000	DROP1/DROP51	PHASE C-A VOLTAGE
AnalogPoint	JRP41VCNX1000	DROP1/DROP51	PHASE C-N VOLTAGE
AnalogPoint	JRP41VEPT1000-CHH	DROP1/DROP51	VEPCO CURRENT HALF HOUR USAGE
AnalogPoint	JRP41VEPT1000-CMP	DROP1/DROP51	VEPCO CURRENT MAX PEAK USAGE
AnalogPoint	JRP41VEPT1000-PHH	DROP1/DROP51	VEPCO PREVIOUS HALF HOUR USAGE

AnalogPoint	JRP41WHXX1000	DROP1/DROP51	USAGE - WATT-HOURS
AnalogPoint	01D0018-OUT	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	01D0019-OUT	DROP1/DROP51	@ Ovation Control Builder @
AnalogPoint	JRP03GRITSTEP	DROP1/DROP51	GRIT ROTATION STEP
AnalogPoint	DROP2TESTIN	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	DROP2TESTOUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP01FITX1000-GPM	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP02AV0	DROP2/DROP52	DROP CONSTANT = 0
AnalogPoint	JRP02AV1	DROP2/DROP52	DROP CONSTANT = 1
AnalogPoint	JRP02AV10	DROP2/DROP52	DROP CONSTANT = 10
AnalogPoint	JRP02AV2	DROP2/DROP52	DROP CONSTANT = 2
AnalogPoint	JRP02AV3	DROP2/DROP52	DROP CONSTANT = 3
AnalogPoint	JRP02AV4	DROP2/DROP52	DROP CONSTANT = 4
AnalogPoint	JRP02AV60	DROP2/DROP52	DROP CONSTANT = 60
AnalogPoint	JRP05ACCT0500-00	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05ACMODESP123	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05ACMODESP456	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05ACMODESP789	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05AITA6001	DROP2/DROP52	TRN 1 ZONE R6 AMMONIA
AnalogPoint	JRP05AITA60010JRP	DROP2/DROP52	TRN 2 AMMONIA
AnalogPoint	JRP05AITA60011	DROP2/DROP52	TRN 5 AMMONIA
AnalogPoint	JRP05AITA60012	DROP2/DROP52	TRN 8 AMMONIA
AnalogPoint	JRP05AITA6002	DROP2/DROP52	TRN 2 ZONE R6 AMMONIA
AnalogPoint	JRP05AITA6003	DROP2/DROP52	TRN 3 ZONE R6 AMMONIA
AnalogPoint	JRP05AITA6004	DROP2/DROP52	TRN 4 ZONE R6 AMMONIA
AnalogPoint	JRP05AITA6005	DROP2/DROP52	TRN 5 ZONE R6 AMMONIA
AnalogPoint	JRP05AITA6006	DROP2/DROP52	TRN 6 ZONE R6 AMMONIA
AnalogPoint	JRP05AITA6007	DROP2/DROP52	TRN 7 ZONE R6 AMMONIA
AnalogPoint	JRP05AITA6008	DROP2/DROP52	TRN 8 ZONE R6 AMMONIA
AnalogPoint	JRP05AITA6009	DROP2/DROP52	TRN 9 ZONE R6 AMMONIA
AnalogPoint	JRP05AITD4201	DROP2/DROP52	TRN 1 ZONE 4B DO
AnalogPoint	JRP05AITD4202	DROP2/DROP52	TRN 2 ZONE 4B DO
AnalogPoint	JRP05AITD4203	DROP2/DROP52	TRN 3 ZONE 4B DO
AnalogPoint	JRP05AITD4204	DROP2/DROP52	TRN 4 ZONE 4B DO
AnalogPoint	JRP05AITD4205	DROP2/DROP52	TRN 5 ZONE 4B DO
AnalogPoint	JRP05AITD4206	DROP2/DROP52	TRN 6 ZONE 4B DO
AnalogPoint	JRP05AITD4207	DROP2/DROP52	TRN 7 ZONE 4B DO
AnalogPoint	JRP05AITD4208	DROP2/DROP52	TRN 8 ZONE 4B DO
AnalogPoint	JRP05AITD4209	DROP2/DROP52	TRN 9 ZONE 4B DO
AnalogPoint	JRP05AITD4210	DROP2/DROP52	TRN 6 ZONE4B DO
AnalogPoint	JRP05AITD4212	DROP2/DROP52	TRN 8 NRCY1 DO
AnalogPoint	JRP05AITD4301	DROP2/DROP52	TRN 1 ZONE 4C DO
AnalogPoint	JRP05AITD4302	DROP2/DROP52	TRN 2 ZONE 4C DO
AnalogPoint	JRP05AITD4303	DROP2/DROP52	TRN 3 ZONE 4C DO
AnalogPoint	JRP05AITD4304	DROP2/DROP52	TRN 4 ZONE 4C DO
AnalogPoint	JRP05AITD4305	DROP2/DROP52	TRN 5 ZONE 4C DO
AnalogPoint	JRP05AITD4306	DROP2/DROP52	TRN 6 ZONE 4C DO

AnalogPoint	JRP05AITD4307	DROP2/DROP52	TRN 7 ZONE 4C DO
AnalogPoint	JRP05AITD4308	DROP2/DROP52	TRN 8 ZONE 4C DO
AnalogPoint	JRP05AITD4309	DROP2/DROP52	TRN 9 ZONE 4C DO
AnalogPoint	JRP05AITD6001	DROP2/DROP52	TRN 1 ZONE R6 DO
AnalogPoint	JRP05AITD6002	DROP2/DROP52	TRN 2 ZONE R6 TEMP
AnalogPoint	JRP05AITD6003	DROP2/DROP52	TRN 3 ZONE R6 DO
AnalogPoint	JRP05AITD6004	DROP2/DROP52	TRN 4 ZONE R6 DO
AnalogPoint	JRP05AITD6005	DROP2/DROP52	TRN 5 ZONE R6 TEMP
AnalogPoint	JRP05AITD6006	DROP2/DROP52	TRN 6 ZONE R6 DO
AnalogPoint	JRP05AITD6007	DROP2/DROP52	TRN 7 ZONE R6 DO
AnalogPoint	JRP05AITD6008	DROP2/DROP52	TANK 8 NRCY2 DO
AnalogPoint	JRP05AITD6009	DROP2/DROP52	TRN 9 ZONE R6 DO
AnalogPoint	JRP05AITN3001	DROP2/DROP52	TRN 1 ZONE R3 NITRATE
AnalogPoint	JRP05AITN3002	DROP2/DROP52	TRN 2 ZONE R3 NITRATE
AnalogPoint	JRP05AITN3004	DROP2/DROP52	TRN 4 ZONE R3 NITRATE
AnalogPoint	JRP05AITN3005	DROP2/DROP52	TRN 5 ZONE R3 NITRATE
AnalogPoint	JRP05AITN3006	DROP2/DROP52	TRN 6 ZONE R3 NITRATE
AnalogPoint	JRP05AITN3007	DROP2/DROP52	TRN 7 ZONE R3 NITRATE
AnalogPoint	JRP05AITN3008	DROP2/DROP52	TRN 8 ZONE R3 NITRATE
AnalogPoint	JRP05AITN3009	DROP2/DROP52	TRN 9 ZONE R3 NITRATE
AnalogPoint	JRP05AITN5001	DROP2/DROP52	TRN 1 ZONE R5 NITRATE
AnalogPoint	JRP05AITN5002	DROP2/DROP52	TRN 2 ZONE R5 NITRATE
AnalogPoint	JRP05AITN5003	DROP2/DROP52	TRN 3 ZONE R5 NITRATE
AnalogPoint	JRP05AITN5004	DROP2/DROP52	TRN 4 ZONE R5 NITRATE
AnalogPoint	JRP05AITN5005	DROP2/DROP52	TRN 5 ZONE R5 NITRATE
AnalogPoint	JRP05AITN5006	DROP2/DROP52	TRN 6 ZONE R5 NITRATE
AnalogPoint	JRP05AITN5007	DROP2/DROP52	TRN 7 ZONE R5 NITRATE
AnalogPoint	JRP05AITN5008	DROP2/DROP52	TRN 8 ZONE R5 NITRATE
AnalogPoint	JRP05AITN5009	DROP2/DROP52	TRN 9 ZONE R5 NITRATE
AnalogPoint	JRP05AITP5001	DROP2/DROP52	TRN 1 ZONE R5 pH
AnalogPoint	JRP05AITP5002	DROP2/DROP52	TRN 2 ZONE R5 pH
AnalogPoint	JRP05AITP5003	DROP2/DROP52	TRN 3 ZONE R5 pH
AnalogPoint	JRP05AITP5004	DROP2/DROP52	TRN 4 ZONE R5 pH
AnalogPoint	JRP05AITP5005	DROP2/DROP52	TRN 5 ZONE R5 pH
AnalogPoint	JRP05AITP5006	DROP2/DROP52	TRN 6 ZONE R5 pH
AnalogPoint	JRP05AITP5007	DROP2/DROP52	TRN 7 ZONE R5 pH
AnalogPoint	JRP05AITP5008	DROP2/DROP52	TRN 8 ZONE R5 pH
AnalogPoint	JRP05AITP5009	DROP2/DROP52	TRN 9 ZONE R5 pH
AnalogPoint	JRP05AVNRATIO123	DROP2/DROP52	AVN RATIO FOR TANKS 1 2 3
AnalogPoint	JRP05AVNRATIO456	DROP2/DROP52	AVN MODE RATIO CALCULATION 456
AnalogPoint	JRP05AVNRATIO789	DROP2/DROP52	AVN RATIO FOR TANKS 789
AnalogPoint	JRP05C1NRCYPFM-SP	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05C2NRCYPFM-SP	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05C3NRCYPFM-SP	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0501-S1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0501-S2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0501-S3	DROP2/DROP52	@ Ovation Control Builder @

AnalogPoint	JRP05CTDN0501-S4	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0501-S5	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0501-S6	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0501-S7	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0501-S8	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0502-S1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0502-S2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0502-S3	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0502-S4	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0502-S5	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0502-S6	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0502-S7	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0502-S8	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0503-S1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0503-S2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0503-S3	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0503-S4	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0503-S5	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0503-S6	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0503-S7	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0503-S8	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0504-S1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0504-S2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0504-S3	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0504-S4	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0504-S5	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0504-S6	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0504-S7	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0504-S8	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0505-S1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0505-S2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0505-S3	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0505-S4	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0505-S5	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0505-S6	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0505-S7	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0505-S8	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0506-S1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0506-S2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0506-S3	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0506-S4	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0506-S5	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0506-S6	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0506-S7	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0506-S8	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0507-S1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0507-S2	DROP2/DROP52	@ Ovation Control Builder @

AnalogPoint	JRP05CTDN0507-S3	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0507-S4	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0507-S5	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0507-S6	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0507-S7	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0507-S8	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0508-S1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0508-S2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0508-S3	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0508-S4	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0508-S5	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0508-S6	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0508-S7	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0508-S8	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0509-S1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0509-S2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0509-S3	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0509-S4	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0509-S5	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0509-S6	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0509-S7	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05CTDN0509-S8	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05DGAIN571-1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05DGAIN571-2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05DGAIN571-3	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05FGZC9101	DROP2/DROP52	TRN 1 CHNL CTRL GATE POS CMD
AnalogPoint	JRP05FGZC9102	DROP2/DROP52	TRN 2 CHNL CTRL GATE POS CMD
AnalogPoint	JRP05FGZC9103	DROP2/DROP52	TRN 3 CHNL CTRL GATE POS CMD
AnalogPoint	JRP05FGZC9104	DROP2/DROP52	TRN 4 CHNL CTRL GATE POS CMD
AnalogPoint	JRP05FGZC9105	DROP2/DROP52	TRN 5 CHNL CTRL GATE POS CMD
AnalogPoint	JRP05FGZC9106	DROP2/DROP52	TRN 6 CHNL CTRL GATE POS CMD
AnalogPoint	JRP05FGZC9107	DROP2/DROP52	TRN 7 CHNL CTRL GATE POS CMD
AnalogPoint	JRP05FGZC9108	DROP2/DROP52	TRN 8 CHNL CTRL GATE POS CMD
AnalogPoint	JRP05FGZC9109	DROP2/DROP52	TRN 9 CHNL CTRL GATE POS CMD
AnalogPoint	JRP05FGZI9101	DROP2/DROP52	TRN 1 CHNL CTRL GATE POS
AnalogPoint	JRP05FGZI9102	DROP2/DROP52	TRN 2 CHNL CTRL GATE POS
AnalogPoint	JRP05FGZI9103	DROP2/DROP52	TRN 3 CHNL CTRL GATE POS
AnalogPoint	JRP05FGZI9104	DROP2/DROP52	TRN 4 CHNL CTRL GATE POS
AnalogPoint	JRP05FGZI9105	DROP2/DROP52	TRN 5 CHNL CTRL GATE POS
AnalogPoint	JRP05FGZI9106	DROP2/DROP52	TRN 6 CHNL CTRL GATE POS
AnalogPoint	JRP05FGZI9107	DROP2/DROP52	TRN 7 CHNL CTRL GATE POS
AnalogPoint	JRP05FGZI9108	DROP2/DROP52	TRN 8 CHNL CTRL GATE POS
AnalogPoint	JRP05FGZI9109	DROP2/DROP52	TRN 9 CHNL CTRL GATE POS
AnalogPoint	JRP05FVZC4121	DROP2/DROP52	TRN 1 ZONE 4A2 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4122	DROP2/DROP52	TRN 2 ZONE 4A2 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4123	DROP2/DROP52	TRN 3 ZONE 4A2 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4124	DROP2/DROP52	TRN 4 ZONE 4A2 AIR FCV POS CMD

AnalogPoint	JRP05FVZC4125	DROP2/DROP52	TRN 5 ZONE 4A2 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4126	DROP2/DROP52	TRN 6 ZONE 4A2 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4127	DROP2/DROP52	TRN 7 ZONE 4A2 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4128	DROP2/DROP52	TRN 8 ZONE 4A2 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4129	DROP2/DROP52	TRN 9 ZONE 4A2 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4201	DROP2/DROP52	TRN 1 ZONE 4B AIR FCV POS CMD
AnalogPoint	JRP05FVZC4202	DROP2/DROP52	TRN 2 ZONE 4B AIR FCV POS CMD
AnalogPoint	JRP05FVZC4203	DROP2/DROP52	TRN 3 ZONE 4B AIR FCV POS CMD
AnalogPoint	JRP05FVZC4204	DROP2/DROP52	TRN 4 ZONE 4B AIR FCV POS CMD
AnalogPoint	JRP05FVZC4205	DROP2/DROP52	TRN 5 ZONE 4B AIR FCV POS CMD
AnalogPoint	JRP05FVZC4206	DROP2/DROP52	TRN 6 ZONE 4B AIR FCV POS CMD
AnalogPoint	JRP05FVZC4207	DROP2/DROP52	TRN 7 ZONE 4B AIR FCV POS CMD
AnalogPoint	JRP05FVZC4208	DROP2/DROP52	TRN 8 ZONE 4B AIR FCV POS CMD
AnalogPoint	JRP05FVZC4209	DROP2/DROP52	TRN 9 ZONE 4B AIR FCV POS CMD
AnalogPoint	JRP05FVZC4301	DROP2/DROP52	TRN 1 ZONE 4C AIR FCV POS CMD
AnalogPoint	JRP05FVZC4302	DROP2/DROP52	TRN 2 ZONE 4C AIR FCV POS CMD
AnalogPoint	JRP05FVZC4303	DROP2/DROP52	TRN 3 ZONE 4C AIR FCV POS CMD
AnalogPoint	JRP05FVZC4304	DROP2/DROP52	TRN 4 ZONE 4C AIR FCV POS CMD
AnalogPoint	JRP05FVZC4305	DROP2/DROP52	TRN 5 ZONE 4C AIR FCV POS CMD
AnalogPoint	JRP05FVZC4306	DROP2/DROP52	TRN 6 ZONE 4C AIR FCV POS CMD
AnalogPoint	JRP05FVZC4307	DROP2/DROP52	TRN 7 ZONE 4C AIR FCV POS CMD
AnalogPoint	JRP05FVZC4308	DROP2/DROP52	TRN 8 ZONE 4C AIR FCV POS CMD
AnalogPoint	JRP05FVZC4309	DROP2/DROP52	TRN 9 ZONE 4C AIR FCV POS CMD
AnalogPoint	JRP05FVZC4411	DROP2/DROP52	TRN 1 ZONE 4D1 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4412	DROP2/DROP52	TRN 2 ZONE 4D1 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4413	DROP2/DROP52	TRN 3 ZONE 4D1 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4414	DROP2/DROP52	TRN 4 ZONE 4D1 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4415	DROP2/DROP52	TRN 5 ZONE 4D1 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4416	DROP2/DROP52	TRN 6 ZONE 4D1 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4417	DROP2/DROP52	TRN 7 ZONE 4D1 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4418	DROP2/DROP52	TRN 8 ZONE 4D1 AIR FCV POS CMD
AnalogPoint	JRP05FVZC4419	DROP2/DROP52	TRN 9 ZONE 4D1 AIR FCV POS CMD
AnalogPoint	JRP05FVZI4121	DROP2/DROP52	TRN 1 ZONE 4A2 AIR FCV POS
AnalogPoint	JRP05FVZI4122	DROP2/DROP52	TRN 2 ZONE 4A2 AIR FCV POS
AnalogPoint	JRP05FVZI4123	DROP2/DROP52	TRN 3 ZONE 4A2 AIR FCV POS
AnalogPoint	JRP05FVZI4124	DROP2/DROP52	TRN 4 ZONE 4A2 AIR FCV POS
AnalogPoint	JRP05FVZI4125	DROP2/DROP52	TRN 5 ZONE 4A2 AIR FCV POS
AnalogPoint	JRP05FVZI4126	DROP2/DROP52	TRN 6 ZONE 4A2 AIR FCV POS
AnalogPoint	JRP05FVZI4127	DROP2/DROP52	TRN 7 ZONE 4A2 AIR FCV POS
AnalogPoint	JRP05FVZI4128	DROP2/DROP52	TRN 8 ZONE 4A2 AIR FCV POS
AnalogPoint	JRP05FVZI4129	DROP2/DROP52	TRN 9 ZONE 4A2 AIR FCV POS
AnalogPoint	JRP05FVZI4201	DROP2/DROP52	TRN 1 ZONE 4B AIR FCV POS
AnalogPoint	JRP05FVZI4202	DROP2/DROP52	TRN 2 ZONE 4B AIR FCV POS
AnalogPoint	JRP05FVZI4203	DROP2/DROP52	TRN 3 ZONE 4B AIR FCV POS
AnalogPoint	JRP05FVZI4204	DROP2/DROP52	TRN 4 ZONE 4B AIR FCV POS
AnalogPoint	JRP05FVZI4205	DROP2/DROP52	TRN 5 ZONE 4B AIR FCV POS
AnalogPoint	JRP05FVZI4206	DROP2/DROP52	TRN 6 ZONE 4B AIR FCV POS

AnalogPoint	JRP05FVZI4207	DROP2/DROP52	TRN 7 ZONE 4B AIR FCV POS
AnalogPoint	JRP05FVZI4208	DROP2/DROP52	TRN 8 ZONE 4B AIR FCV POS
AnalogPoint	JRP05FVZI4209	DROP2/DROP52	TRN 9 ZONE 4B AIR FCV POS
AnalogPoint	JRP05FVZI4301	DROP2/DROP52	TRN 1 ZONE 4C AIR FCV POS
AnalogPoint	JRP05FVZI4302	DROP2/DROP52	TRN 2 ZONE 4C AIR FCV POS
AnalogPoint	JRP05FVZI4303	DROP2/DROP52	TRN 3 ZONE 4C AIR FCV POS
AnalogPoint	JRP05FVZI4304	DROP2/DROP52	TRN 4 ZONE 4C AIR FCV POS
AnalogPoint	JRP05FVZI4305	DROP2/DROP52	TRN 5 ZONE 4C AIR FCV POS
AnalogPoint	JRP05FVZI4306	DROP2/DROP52	TRN 6 ZONE 4C AIR FCV POS
AnalogPoint	JRP05FVZI4307	DROP2/DROP52	TRN 7 ZONE 4C AIR FCV POS
AnalogPoint	JRP05FVZI4308	DROP2/DROP52	TRN 8 ZONE 4C AIR FCV POS
AnalogPoint	JRP05FVZI4309	DROP2/DROP52	TRN 9 ZONE 4C AIR FCV POS
AnalogPoint	JRP05FVZI4411	DROP2/DROP52	TRN 1 ZONE 4D1 AIR FCV POS
AnalogPoint	JRP05FVZI4412	DROP2/DROP52	TRN 2 ZONE 4D1 AIR FCV POS
AnalogPoint	JRP05FVZI4413	DROP2/DROP52	TRN 3 ZONE 4D1 AIR FCV POS
AnalogPoint	JRP05FVZI4414	DROP2/DROP52	TRN 4 ZONE 4D1 AIR FCV POS
AnalogPoint	JRP05FVZI4415	DROP2/DROP52	TRN 5 ZONE 4D1 AIR FCV POS
AnalogPoint	JRP05FVZI4416	DROP2/DROP52	TRN 6 ZONE 4D1 AIR FCV POS
AnalogPoint	JRP05FVZI4417	DROP2/DROP52	TRN 7 ZONE 4D1 AIR FCV POS
AnalogPoint	JRP05FVZI4418	DROP2/DROP52	TRN 8 ZONE 4D1 AIR FCV POS
AnalogPoint	JRP05FVZI4419	DROP2/DROP52	TRN 9 ZONE 4D1 AIR FCV POS
AnalogPoint	JRP05GATESOPEN-C1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05GATESOPEN-C2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05GATESOPEN-C3	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05INT571-1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05INT571-2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05INT571-3	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05MINX4121-SP	DROP2/DROP52	TRN 1 AFCV 4A2 MIN PCT
AnalogPoint	JRP05MINX4122-SP	DROP2/DROP52	TRN 2 AFCV 4A2 MIN PCT
AnalogPoint	JRP05MINX4123-SP	DROP2/DROP52	TRN 3 AFCV 4A2 MIN PCT
AnalogPoint	JRP05MINX4124-SP	DROP2/DROP52	TRN 4 AFCV 4A2 MIN PCT
AnalogPoint	JRP05MINX4125-SP	DROP2/DROP52	TRN 5 AFCV 4A2 MIN PCT
AnalogPoint	JRP05MINX4126-SP	DROP2/DROP52	TRN 6 AFCV 4A2 MIN PCT
AnalogPoint	JRP05MINX4127-SP	DROP2/DROP52	TRN 7 AFCV 4A2 MIN PCT
AnalogPoint	JRP05MINX4128-SP	DROP2/DROP52	TRN 8 AFCV 4A2 MIN PCT
AnalogPoint	JRP05MINX4129-SP	DROP2/DROP52	TRN 9 AFCV 4A2 MIN PCT
AnalogPoint	JRP05MINX4201-SP	DROP2/DROP52	TRN 1 AFCV 4B MIN PCT
AnalogPoint	JRP05MINX4202-SP	DROP2/DROP52	TRN 2 AFCV 4B MIN PCT
AnalogPoint	JRP05MINX4203-SP	DROP2/DROP52	TRN 3 AFCV 4B MIN PCT
AnalogPoint	JRP05MINX4204-SP	DROP2/DROP52	TRN 4 AFCV 4B MIN PCT
AnalogPoint	JRP05MINX4205-SP	DROP2/DROP52	TRN 5 AFCV 4B MIN PCT
AnalogPoint	JRP05MINX4206-SP	DROP2/DROP52	TRN 6 AFCV 4B MIN PCT
AnalogPoint	JRP05MINX4207-SP	DROP2/DROP52	TRN 7 AFCV 4B MIN PCT
AnalogPoint	JRP05MINX4208-SP	DROP2/DROP52	TRN 8 AFCV 4B MIN PCT
AnalogPoint	JRP05MINX4209-SP	DROP2/DROP52	TRN 9 AFCV 4B MIN PCT
AnalogPoint	JRP05MINX4301-SP	DROP2/DROP52	TRN 1 AFCV 4C MIN PCT
AnalogPoint	JRP05MINX4302-SP	DROP2/DROP52	TRN 2 AFCV 4C MIN PCT

AnalogPoint	JRP05MINX4303-SP	DROP2/DROP52	TRN 3 AFCV 4C MIN PCT
AnalogPoint	JRP05MINX4304-SP	DROP2/DROP52	TRN 4 AFCV 4C MIN PCT
AnalogPoint	JRP05MINX4305-SP	DROP2/DROP52	TRN 5 AFCV 4C MIN PCT
AnalogPoint	JRP05MINX4306-SP	DROP2/DROP52	TRN 6 AFCV 4C MIN PCT
AnalogPoint	JRP05MINX4307-SP	DROP2/DROP52	TRN 7 AFCV 4C MIN PCT
AnalogPoint	JRP05MINX4308-SP	DROP2/DROP52	TRN 8 AFCV 4C MIN PCT
AnalogPoint	JRP05MINX4309-SP	DROP2/DROP52	TRN 9 AFCV 4C MIN PCT
AnalogPoint	JRP05MINX4411-SP	DROP2/DROP52	TRN 1 AFCV 4D1 MIN PCT
AnalogPoint	JRP05MINX4412-SP	DROP2/DROP52	TRN 2 AFCV 4D1 MIN PCT
AnalogPoint	JRP05MINX4413-SP	DROP2/DROP52	TRN 3 AFCV 4D1 MIN PCT
AnalogPoint	JRP05MINX4414-SP	DROP2/DROP52	TRN 4 AFCV 4D1 MIN PCT
AnalogPoint	JRP05MINX4415-SP	DROP2/DROP52	TRN 5 AFCV 4D1 MIN PCT
AnalogPoint	JRP05MINX4416-SP	DROP2/DROP52	TRN 6 AFCV 4D1 MIN PCT
AnalogPoint	JRP05MINX4417-SP	DROP2/DROP52	TRN 7 AFCV 4D1 MIN PCT
AnalogPoint	JRP05MINX4418-SP	DROP2/DROP52	TRN 8 AFCV 4D1 MIN PCT
AnalogPoint	JRP05MINX4419-SP	DROP2/DROP52	TRN 9 AFCV 4D1 MIN PCT
AnalogPoint	JRP05MINX9101-SP	DROP2/DROP52	TRN 1 CHNL GATE MIN PCT
AnalogPoint	JRP05MINX9102-SP	DROP2/DROP52	TRN 2 CHNL GATE MIN PCT
AnalogPoint	JRP05MINX9103-SP	DROP2/DROP52	TRN 3 CHNL GATE MIN PCT
AnalogPoint	JRP05MINX9104-SP	DROP2/DROP52	TRN 4 CHNL GATE MIN PCT
AnalogPoint	JRP05MINX9105-SP	DROP2/DROP52	TRN 5 CHNL GATE MIN PCT
AnalogPoint	JRP05MINX9106-SP	DROP2/DROP52	TRN 6 CHNL GATE MIN PCT
AnalogPoint	JRP05MINX9107-SP	DROP2/DROP52	TRN 7 CHNL GATE MIN PCT
AnalogPoint	JRP05MINX9108-SP	DROP2/DROP52	TRN 8 CHNL GATE MIN PCT
AnalogPoint	JRP05MINX9109-SP	DROP2/DROP52	TRN 9 CHNL GATE MIN PCT
AnalogPoint	JRP05MSTR0511-00	DROP2/DROP52	TRN 1 AFCV MSTR1 BLNCD CO
AnalogPoint	JRP05MSTR0511-CO	DROP2/DROP52	TRN 1 AFCV MSTR1 CTRL OUTPUT
AnalogPoint	JRP05MSTR0512-00	DROP2/DROP52	TRN 2 AFCV MSTR1 BLNCD CO
AnalogPoint	JRP05MSTR0512-CO	DROP2/DROP52	TRN 2 AFCV MSTR1 CTRL OUTPUT
AnalogPoint	JRP05MSTR0513-00	DROP2/DROP52	TRN 3 AFCV MSTR1 BLNCD CO
AnalogPoint	JRP05MSTR0513-CO	DROP2/DROP52	TRN 3 AFCV MSTR1 CTRL OUTPUT
AnalogPoint	JRP05MSTR0514-00	DROP2/DROP52	TRN 4 AFCV MSTR1 BLNCD CO
AnalogPoint	JRP05MSTR0514-CO	DROP2/DROP52	TRN 4 AFCV MSTR1 CTRL OUTPUT
AnalogPoint	JRP05MSTR0515-00	DROP2/DROP52	TRN 5 AFCV MSTR1 BLNCD CO
AnalogPoint	JRP05MSTR0515-CO	DROP2/DROP52	TRN 5 AFCV MSTR1 CTRL OUTPUT
AnalogPoint	JRP05MSTR0516-00	DROP2/DROP52	TRN 6 AFCV MSTR1 BLNCD CO
AnalogPoint	JRP05MSTR0516-CO	DROP2/DROP52	TRN 6 AFCV MSTR1 CTRL OUTPUT
AnalogPoint	JRP05MSTR0517-00	DROP2/DROP52	TRN 7 AFCV MSTR1 BLNCD CO
AnalogPoint	JRP05MSTR0517-CO	DROP2/DROP52	TRN 7 AFCV MSTR1 CTRL OUTPUT
AnalogPoint	JRP05MSTR0518-00	DROP2/DROP52	TRN 8 AFCV MSTR1 BLNCD CO
AnalogPoint	JRP05MSTR0518-CO	DROP2/DROP52	TRN 8 AFCV MSTR1 CTRL OUTPUT
AnalogPoint	JRP05MSTR0519-00	DROP2/DROP52	TRN 9 AFCV MSTR1 BLNCD CO
AnalogPoint	JRP05MSTR0519-CO	DROP2/DROP52	TRN 9 AFCV MSTR1 CTRL OUTPUT
AnalogPoint	JRP05MSTR0521-00	DROP2/DROP52	TRN 1 AFCV MSTR2 BLNCD CO
AnalogPoint	JRP05MSTR0521-CO	DROP2/DROP52	TRN 1 AFCV MSTR2 CTRL OUTPUT
AnalogPoint	JRP05MSTR0522-00	DROP2/DROP52	TRN 2 AFCV MSTR2 BLNCD CO
AnalogPoint	JRP05MSTR0522-CO	DROP2/DROP52	TRN 2 AFCV MSTR2 CTRL OUTPUT

AnalogPoint	JRP05MSTR0523-00	DROP2/DROP52	TRN 3 AFCV MSTR2 BLNCD CO
AnalogPoint	JRP05MSTR0523-CO	DROP2/DROP52	TRN 3 AFCV MSTR2 CTRL OUTPUT
AnalogPoint	JRP05MSTR0524-00	DROP2/DROP52	TRN 4 AFCV MSTR2 BLNCD CO
AnalogPoint	JRP05MSTR0524-CO	DROP2/DROP52	TRN 4 AFCV MSTR2 CTRL OUTPUT
AnalogPoint	JRP05MSTR0525-00	DROP2/DROP52	TRN 5 AFCV MSTR2 BLNCD CO
AnalogPoint	JRP05MSTR0525-CO	DROP2/DROP52	TRN 5 AFCV MSTR2 CTRL OUTPUT
AnalogPoint	JRP05MSTR0526-00	DROP2/DROP52	TRN 6 AFCV MSTR2 BLNCD CO
AnalogPoint	JRP05MSTR0526-CO	DROP2/DROP52	TRN 6 AFCV MSTR2 CTRL OUTPUT
AnalogPoint	JRP05MSTR0527-00	DROP2/DROP52	TRN 7 AFCV MSTR2 BLNCD CO
AnalogPoint	JRP05MSTR0527-CO	DROP2/DROP52	TRN 7 AFCV MSTR2 CTRL OUTPUT
AnalogPoint	JRP05MSTR0528-00	DROP2/DROP52	TRN 8 AFCV MSTR2 BLNCD CO
AnalogPoint	JRP05MSTR0528-CO	DROP2/DROP52	TRN 8 AFCV MSTR2 CTRL OUTPUT
AnalogPoint	JRP05MSTR0529-00	DROP2/DROP52	TRN 9 AFCV MSTR2 BLNCD CO
AnalogPoint	JRP05MSTR0529-CO	DROP2/DROP52	TRN 9 AFCV MSTR2 CTRL OUTPUT
AnalogPoint	JRP05MXERSOFF-AT	DROP2/DROP52	IFAS MXERS OFF ACC TIME
AnalogPoint	JRP05MXRONSP-00	DROP2/DROP52	IFAS MXR INT MODE ON SP
AnalogPoint	JRP05MXRSON-AT	DROP2/DROP52	IFAS MXRS ON ACC TIME
AnalogPoint	JRP05N2AVG1002	DROP2/DROP52	NRCY PMP2 FLOW AVG
AnalogPoint	JRP05NFLAVG1001	DROP2/DROP52	NRCY PMP 1 FLOW AVG
AnalogPoint	JRP05NH4AVG	DROP2/DROP52	IFAS NH4 AVERAGE
AnalogPoint	JRP05NH4LOAD-T2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05NH4LOAD-T5	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05NH4LOAD-T8	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05NOXAVG	DROP2/DROP52	IFAS NOX AVERAGE
AnalogPoint	JRP05NRCYT1P1-GPM	DROP2/DROP52	NRCY T1 P1 CALCULATED GPM
AnalogPoint	JRP05NRCYT1P1-MGD	DROP2/DROP52	NRCY T1 P1 CALCULATED MGD
AnalogPoint	JRP05NRCYT1P2-GPM	DROP2/DROP52	NRCY T1 P2 CALCULATED GPM
AnalogPoint	JRP05NRCYT1P2-MGD	DROP2/DROP52	NRCY T1 P2 CALCULATED MGD
AnalogPoint	JRP05NRCYT2P1-GPM	DROP2/DROP52	NRCY T2 P1 CALCULATED GPM
AnalogPoint	JRP05NRCYT2P1-MGD	DROP2/DROP52	NRCY T2 P1 CALCULATED MGD
AnalogPoint	JRP05NRCYT2P2-GPM	DROP2/DROP52	NRCY T2 P2 CALCULATED GPM
AnalogPoint	JRP05NRCYT2P2-MGD	DROP2/DROP52	NRCY T2 P2 CALCULATED MGD
AnalogPoint	JRP05NRCYT3P1-GPM	DROP2/DROP52	NRCY T3 P1 CALCULATED GPM
AnalogPoint	JRP05NRCYT3P1-MGD	DROP2/DROP52	NRCY T3 P1 CALCULATED MGD
AnalogPoint	JRP05NRCYT3P2-GPM	DROP2/DROP52	NRCY T3 P2 CALCULATED GPM
AnalogPoint	JRP05NRCYT3P2-MGD	DROP2/DROP52	NRCY T3 P2 CALCULATED MGD
AnalogPoint	JRP05NRCYT4P1-GPM	DROP2/DROP52	NRCY T4 P1 CALCULATED GPM
AnalogPoint	JRP05NRCYT4P1-MGD	DROP2/DROP52	NRCY T4 P1 CALCULATED MGD
AnalogPoint	JRP05NRCYT4P2-GPM	DROP2/DROP52	NRCY T4 P2 CALCULATED GPM
AnalogPoint	JRP05NRCYT4P2-MGD	DROP2/DROP52	NRCY T4 P2 CALCULATED MGD
AnalogPoint	JRP05NRCYT5P1-GPM	DROP2/DROP52	NRCY T5 P1 CALCULATED GPM
AnalogPoint	JRP05NRCYT5P1-MGD	DROP2/DROP52	NRCY T5 P1 CALCULATED MGD
AnalogPoint	JRP05NRCYT5P2-GPM	DROP2/DROP52	NRCY T5 P2 CALCULATED GPM
AnalogPoint	JRP05NRCYT5P2-MGD	DROP2/DROP52	NRCY T5 P2 CALCULATED MGD
AnalogPoint	JRP05NRCYT6P1-GPM	DROP2/DROP52	NRCY T6 P1 CALCULATED GPM
AnalogPoint	JRP05NRCYT6P1-MGD	DROP2/DROP52	NRCY T6 P1 CALCULATED MGD
AnalogPoint	JRP05NRCYT6P2-GPM	DROP2/DROP52	NRCY T6 P2 CALCULATED GPM

AnalogPoint	JRP05NRCYT6P2-MGD	DROP2/DROP52	NRCY T6 P2 CALCULATED MGD
AnalogPoint	JRP05NRCYT7P1-GPM	DROP2/DROP52	NRCY T7 P1 CALCULATED GPM
AnalogPoint	JRP05NRCYT7P1-MGD	DROP2/DROP52	NRCY T7 P1 CALCULATED MGD
AnalogPoint	JRP05NRCYT7P2-GPM	DROP2/DROP52	NRCY T7 P2 CALCULATED GPM
AnalogPoint	JRP05NRCYT7P2-MGD	DROP2/DROP52	NRCY T7 P2 CALCULATED MGD
AnalogPoint	JRP05NRCYT8P1-GPM	DROP2/DROP52	NRCY T8 P1 CALCULATED GPM
AnalogPoint	JRP05NRCYT8P1-MGD	DROP2/DROP52	NRCY T8 P1 CALCULATED MGD
AnalogPoint	JRP05NRCYT8P2-GPM	DROP2/DROP52	NRCY T8 P2 CALCULATED GPM
AnalogPoint	JRP05NRCYT8P2-MGD	DROP2/DROP52	NRCY T8 P2 CALCULATED MGD
AnalogPoint	JRP05NRCYT9P1-GPM	DROP2/DROP52	NRCY T9 P1 CALCULATED GPM
AnalogPoint	JRP05NRCYT9P1-MGD	DROP2/DROP52	NRCY T9 P1 CALCULATED MGD
AnalogPoint	JRP05NRCYT9P2-GPM	DROP2/DROP52	NRCY T9 P2 CALCULATED GPM
AnalogPoint	JRP05NRCYT9P2-MGD	DROP2/DROP52	NRCY T9 P2 CALCULATED MGD
AnalogPoint	JRP05PGAIN-1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PGAIN-2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PGAIN-3	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX3101-00	DROP2/DROP52	TRN 1 NRCY PMP 1 CTRL PV
AnalogPoint	JRP05PVXX3101-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX3102-00	DROP2/DROP52	TRN 2 NRCY PMP 1 CTRL PV
AnalogPoint	JRP05PVXX3102-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX3103-00	DROP2/DROP52	TRN 3 NRCY PMP 1 CTRL PV
AnalogPoint	JRP05PVXX3103-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX3104-00	DROP2/DROP52	TRN 4 NRCY PMP 1 CTRL PV
AnalogPoint	JRP05PVXX3104-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX3105-00	DROP2/DROP52	TRN 5 NRCY PMP 1 CTRL PV
AnalogPoint	JRP05PVXX3105-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX3106-00	DROP2/DROP52	TRN 6 NRCY PMP 1 CTRL PV
AnalogPoint	JRP05PVXX3106-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX3107-00	DROP2/DROP52	TRN 7 NRCY PMP 1 CTRL PV
AnalogPoint	JRP05PVXX3107-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX3108-00	DROP2/DROP52	TRN 8 NRCY PMP 1 CTRL PV
AnalogPoint	JRP05PVXX3108-01	DROP2/DROP52	% OF PLANT FLOW
AnalogPoint	JRP05PVXX3109-00	DROP2/DROP52	TRN 9 NRCY PMP 1 CTRL PV
AnalogPoint	JRP05PVXX3109-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX5101-00	DROP2/DROP52	TRN 1 NRCY PMP 2 CTRL PV
AnalogPoint	JRP05PVXX5101-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX5102-00	DROP2/DROP52	TRN 2 NRCY PMP 2 CTRL PV
AnalogPoint	JRP05PVXX5102-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX5103-00	DROP2/DROP52	TRN 3 NRCY PMP 2 CTRL PV
AnalogPoint	JRP05PVXX5103-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX5104-00	DROP2/DROP52	TRN 4 NRCY PMP 2 CTRL PV
AnalogPoint	JRP05PVXX5104-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX5105-00	DROP2/DROP52	TRN 5 NRCY PMP 2 CTRL PV
AnalogPoint	JRP05PVXX5105-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX5106-00	DROP2/DROP52	TRN 6 NRCY PMP 2 CTRL PV
AnalogPoint	JRP05PVXX5106-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX5107-00	DROP2/DROP52	TRN 7 NRCY PMP 2 CTRL PV

AnalogPoint	JRP05PVXX5107-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05PVXX5108-00	DROP2/DROP52	TRN 8 NRCY PMP 2 CTRL PV
AnalogPoint	JRP05PVXX5108-01	DROP2/DROP52	% OF PLANT FLOW NRCY 2 T8
AnalogPoint	JRP05PVXX5109-00	DROP2/DROP52	TRN 9 NRCY PMP 2 CTRL PV
AnalogPoint	JRP05PVXX5109-01	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SCXX3101	DROP2/DROP52	TRN 1 NRCY PMP NO1 SPEED CMD
AnalogPoint	JRP05SCXX3102	DROP2/DROP52	TRN 2 NRCY PMP NO1 SPEED CMD
AnalogPoint	JRP05SCXX3103	DROP2/DROP52	TRN 3 NRCY PMP NO1 SPEED CMD
AnalogPoint	JRP05SCXX3104	DROP2/DROP52	TRN 4 NRCY PMP NO1 SPEED CMD
AnalogPoint	JRP05SCXX3105	DROP2/DROP52	TRN 5 NRCY PMP NO1 SPEED CMD
AnalogPoint	JRP05SCXX3106	DROP2/DROP52	TRN 6 NRCY PMP NO1 SPEED CMD
AnalogPoint	JRP05SCXX3107	DROP2/DROP52	TRN 7 NRCY PMP NO1 SPEED CMD
AnalogPoint	JRP05SCXX3108	DROP2/DROP52	TRN 8 NRCY PMP NO1 SPEED CMD
AnalogPoint	JRP05SCXX3109	DROP2/DROP52	TRN 9 NRCY PMP NO1 SPEED CMD
AnalogPoint	JRP05SCXX5101	DROP2/DROP52	TRN 1 NRCY PMP NO2 SPEED CMD
AnalogPoint	JRP05SCXX5102	DROP2/DROP52	TRN 2 NRCY PMP NO2 SPEED CMD
AnalogPoint	JRP05SCXX5103	DROP2/DROP52	TRN 3 NRCY PMP NO2 SPEED CMD
AnalogPoint	JRP05SCXX5104	DROP2/DROP52	TRN 4 NRCY PMP NO2 SPEED CMD
AnalogPoint	JRP05SCXX5105	DROP2/DROP52	TRN 5 NRCY PMP NO2 SPEED CMD
AnalogPoint	JRP05SCXX5106	DROP2/DROP52	TRN 6 NRCY PMP NO2 SPEED CMD
AnalogPoint	JRP05SCXX5107	DROP2/DROP52	TRN 7 NRCY PMP NO2 SPEED CMD
AnalogPoint	JRP05SCXX5108	DROP2/DROP52	TRN 8 NRCY PMP NO2 SPEED CMD
AnalogPoint	JRP05SCXX5109	DROP2/DROP52	TRN 9 NRCY PMP NO2 SPEED CMD
AnalogPoint	JRP05SIXX3101	DROP2/DROP52	TRN 1 NRCY PMP NO1 SPEED
AnalogPoint	JRP05SIXX3101-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3101-VOL	DROP2/DROP52	TRN 1 NRCY PMP 1 CALCD FLOW
AnalogPoint	JRP05SIXX3101-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3102	DROP2/DROP52	TRN 2 NRCY PMP NO1 SPEED
AnalogPoint	JRP05SIXX3102-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3102-VOL	DROP2/DROP52	TRN 2 NRCY PMP 1 CALCD FLOW
AnalogPoint	JRP05SIXX3102-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3103	DROP2/DROP52	TRN 3 NRCY PMP NO1 SPEED
AnalogPoint	JRP05SIXX3103-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3103-VOL	DROP2/DROP52	TRN 3 NRCY PMP 1 CALCD FLOW
AnalogPoint	JRP05SIXX3103-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3104	DROP2/DROP52	TRN 4 NRCY PMP NO1 SPEED
AnalogPoint	JRP05SIXX3104-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3104-VOL	DROP2/DROP52	TRN 4 NRCY PMP 1 CALCD FLOW
AnalogPoint	JRP05SIXX3104-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3105	DROP2/DROP52	TRN 5 NRCY PMP NO1 SPEED
AnalogPoint	JRP05SIXX3105-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3105-VOL	DROP2/DROP52	TRN 5 NRCY PMP 1 CALCD FLOW
AnalogPoint	JRP05SIXX3105-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3106	DROP2/DROP52	TRN 6 NRCY PMP NO1 SPEED
AnalogPoint	JRP05SIXX3106-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3106-VOL	DROP2/DROP52	TRN 6 NRCY PMP 1 CALCD FLOW
AnalogPoint	JRP05SIXX3106-VOL2	DROP2/DROP52	@ Ovation Control Builder @

AnalogPoint	JRP05SIXX3107	DROP2/DROP52	TRN 7 NRCY PMP NO1 SPEED
AnalogPoint	JRP05SIXX3107-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3107-VOL	DROP2/DROP52	TRN 7 NRCY PMP 1 CALCD FLOW
AnalogPoint	JRP05SIXX3107-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3108	DROP2/DROP52	TRN 8 NRCY PMP NO1 SPEED
AnalogPoint	JRP05SIXX3108-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3108-VOL	DROP2/DROP52	TRN 8 NRCY PMP 1 CALCD FLOW
AnalogPoint	JRP05SIXX3108-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3109	DROP2/DROP52	TRN 9 NRCY PMP NO1 SPEED
AnalogPoint	JRP05SIXX3109-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX3109-VOL	DROP2/DROP52	TRN 9 NRCY PMP 1 CALCD FLOW
AnalogPoint	JRP05SIXX3109-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5101	DROP2/DROP52	TRN 1 NRCY PMP NO2 SPEED
AnalogPoint	JRP05SIXX5101-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5101-VOL	DROP2/DROP52	TRN 1 NRCY PMP 2 CALCD FLOW
AnalogPoint	JRP05SIXX5101-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5102	DROP2/DROP52	TRN 2 NRCY PMP NO2 SPEED
AnalogPoint	JRP05SIXX5102-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5102-VOL	DROP2/DROP52	TRN 2 NRCY PMP 2 CALCD FLOW
AnalogPoint	JRP05SIXX5102-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5103	DROP2/DROP52	TRN 3 NRCY PMP NO2 SPEED
AnalogPoint	JRP05SIXX5103-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5103-VOL	DROP2/DROP52	TRN 3 NRCY PMP 2 CALCD FLOW
AnalogPoint	JRP05SIXX5103-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5104	DROP2/DROP52	TRN 4 NRCY PMP NO2 SPEED
AnalogPoint	JRP05SIXX5104-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5104-VOL	DROP2/DROP52	TRN 4 NRCY PMP 2 CALCD FLOW
AnalogPoint	JRP05SIXX5104-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5105	DROP2/DROP52	TRN 5 NRCY PMP NO2 SPEED
AnalogPoint	JRP05SIXX5105-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5105-VOL	DROP2/DROP52	TRN 5 NRCY PMP 2 CALCD FLOW
AnalogPoint	JRP05SIXX5105-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5106	DROP2/DROP52	TRN 6 NRCY PMP NO2 SPEED
AnalogPoint	JRP05SIXX5106-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5106-VOL	DROP2/DROP52	TRN 6 NRCY PMP 2 CALCD FLOW
AnalogPoint	JRP05SIXX5106-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5107	DROP2/DROP52	TRN 7 NRCY PMP NO2 SPEED
AnalogPoint	JRP05SIXX5107-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5107-VOL	DROP2/DROP52	TRN 7 NRCY PMP 2 CALCD FLOW
AnalogPoint	JRP05SIXX5107-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5108	DROP2/DROP52	TRN 8 NRCY PMP NO2 SPEED
AnalogPoint	JRP05SIXX5108-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5108-VOL	DROP2/DROP52	TRN 8 NRCY PMP 2 CALCD FLOW
AnalogPoint	JRP05SIXX5108-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5109	DROP2/DROP52	TRN 9 NRCY PMP NO2 SPEED
AnalogPoint	JRP05SIXX5109-HZ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SIXX5109-VOL	DROP2/DROP52	TRN 9 NRCY PMP 2 CALCD FLOW

AnalogPoint	JRP05SIXX5109-VOL2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX0001-C1	DROP2/DROP52	CLUSTER 1 NO3 MODE GEN SP
AnalogPoint	JRP05SPCX0002-C1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX0002-C2	DROP2/DROP52	CLUSTER 2 NO3 MODE GEN SP
AnalogPoint	JRP05SPCX0003-C3	DROP2/DROP52	CLUSTER 3 NO3 MODE GEN SP
AnalogPoint	JRP05SPCX3101A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3101B	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3102A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3102B	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3103A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3103B	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3104A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3104B	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3105A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3105B	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3106A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3106B	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3107A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3107B	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3108A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3108B	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3109A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX3109B	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX5101A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX5102A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX5103A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX5104A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX5105A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX5106A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX5107A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX5108A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPCX5109A	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05SPTPNRCY-LO	DROP2/DROP52	NRCY LO SPD TIME SP
AnalogPoint	JRP05SPTPNRCY-OFF	DROP2/DROP52	NRCY LO FLO MODE MGD OFF SP
AnalogPoint	JRP05SPTPNRCY-ON	DROP2/DROP52	NRCY LO FLO MODE MGD ON SP
AnalogPoint	JRP05STEP0510	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STEP0520	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STEP0530	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT0180-1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT0180-2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT0180-3	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT0183-1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT0183-2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT0511-L	DROP2/DROP52	TRN 1 AFCV MSTR1 SETPOINT
AnalogPoint	JRP05STPT0512-L	DROP2/DROP52	TRN 2 AFCV MSTR1 SETPOINT
AnalogPoint	JRP05STPT0513-L	DROP2/DROP52	TRN 3 AFCV MSTR1 SETPOINT
AnalogPoint	JRP05STPT0514-L	DROP2/DROP52	TRN 4 AFCV MSTR1 SETPOINT

AnalogPoint	JRP05STPT0515-L	DROP2/DROP52	TRN 5 AFCV MSTR1 SETPOINT
AnalogPoint	JRP05STPT0516-L	DROP2/DROP52	TRN 6 AFCV MSTR1 SETPOINT
AnalogPoint	JRP05STPT0517-L	DROP2/DROP52	TRN 7 AFCV MSTR1 SETPOINT
AnalogPoint	JRP05STPT0518-L	DROP2/DROP52	TRN 8 AFCV MSTR1 SETPOINT
AnalogPoint	JRP05STPT0519-L	DROP2/DROP52	TRN 9 AFCV MSTR1 SETPOINT
AnalogPoint	JRP05STPT0521-L	DROP2/DROP52	TRN 1 AFCV MSTR2 SETPOINT
AnalogPoint	JRP05STPT0522-C	DROP2/DROP52	CAL DO SP FOR ABAC TNK 123
AnalogPoint	JRP05STPT0522-L	DROP2/DROP52	TRN 2 AFCV MSTR2 SETPOINT
AnalogPoint	JRP05STPT0523-L	DROP2/DROP52	TRN 3 AFCV MSTR2 SETPOINT
AnalogPoint	JRP05STPT0524-L	DROP2/DROP52	TRN 4 AFCV MSTR2 SETPOINT
AnalogPoint	JRP05STPT0525-C	DROP2/DROP52	CAL DO SP FOR ABAC TNK 456
AnalogPoint	JRP05STPT0525-L	DROP2/DROP52	TRN 5 AFCV MSTR2 SETPOINT
AnalogPoint	JRP05STPT0526-L	DROP2/DROP52	TRN 6 AFCV MSTR2 SETPOINT
AnalogPoint	JRP05STPT0527-L	DROP2/DROP52	TRN 7 AFCV MSTR2 SETPOINT
AnalogPoint	JRP05STPT0528-C	DROP2/DROP52	CAL DO SP FOR ABAC TNK 789
AnalogPoint	JRP05STPT0528-L	DROP2/DROP52	TRN 8 AFCV MSTR2 SETPOINT
AnalogPoint	JRP05STPT0529-L	DROP2/DROP52	TRN 9 AFCV MSTR2 SETPOINT
AnalogPoint	JRP05STPT0571-N	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT3101-L	DROP2/DROP52	TRN 1 NRCY PMP 1 STPT
AnalogPoint	JRP05STPT3102-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT3103-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT3104-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT3105-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT3106-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT3107-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT3108-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT3109-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT5002	DROP2/DROP52	TANKS 1-2-3 NH4 SETPOINT ABAC
AnalogPoint	JRP05STPT5002-D	DROP2/DROP52	ABAC MODE PID D VALUE SP C1
AnalogPoint	JRP05STPT5002-I	DROP2/DROP52	ABAC MODE PID I VALUE SP C1
AnalogPoint	JRP05STPT5002-P	DROP2/DROP52	ABAC MODE PID P VALUE SP C1
AnalogPoint	JRP05STPT5005	DROP2/DROP52	TANKS 4-5-6 NH4 SETPOINT ABAC
AnalogPoint	JRP05STPT5005-D	DROP2/DROP52	ABAC MODE PID D VALUE SP C2
AnalogPoint	JRP05STPT5005-I	DROP2/DROP52	ABAC MODE PID I VALUE SP C2
AnalogPoint	JRP05STPT5005-P	DROP2/DROP52	ABAC MODE PID P VALUE SP C2
AnalogPoint	JRP05STPT5008	DROP2/DROP52	TANKS 7-8-9 NH4 SETPOINT ABAC
AnalogPoint	JRP05STPT5008-D	DROP2/DROP52	ABAC MODE PID D VALUE SP C3
AnalogPoint	JRP05STPT5008-I	DROP2/DROP52	ABAC MODE PID I VALUE SP C3
AnalogPoint	JRP05STPT5008-P	DROP2/DROP52	ABAC MODE PID P VALUE SP C3
AnalogPoint	JRP05STPT5101-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT5102-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT5103-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT5104-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT5105-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT5106-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT5107-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT5108-C	DROP2/DROP52	@ Ovation Control Builder @

AnalogPoint	JRP05STPT5108-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT5109-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT5712-N	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT5713-N	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT6002-C	DROP2/DROP52	AVN AUTO GENERATED DO SP 123
AnalogPoint	JRP05STPT6002-D	DROP2/DROP52	AVN MODE PID D VALUE SP C1
AnalogPoint	JRP05STPT6002-I	DROP2/DROP52	AVN MODE PID I VALUE SP C1
AnalogPoint	JRP05STPT6002-P	DROP2/DROP52	AVN MODE PID P VALUE SP C1
AnalogPoint	JRP05STPT6005-C	DROP2/DROP52	AVN AUTO GENERATED DP SP 456
AnalogPoint	JRP05STPT6005-D	DROP2/DROP52	AVN MODE PID D VALUE SP C2
AnalogPoint	JRP05STPT6005-I	DROP2/DROP52	AVN MODE PID I VALUE SP C2
AnalogPoint	JRP05STPT6005-P	DROP2/DROP52	AVN MODE PID P VALUE SP C2
AnalogPoint	JRP05STPT6008-C	DROP2/DROP52	AVN AUTO GENERATD DO SP 789
AnalogPoint	JRP05STPT6008-D	DROP2/DROP52	AVN MODE PID D VALUE SP C3
AnalogPoint	JRP05STPT6008-I	DROP2/DROP52	AVN MODE PID I VALUE SP C3
AnalogPoint	JRP05STPT6008-P	DROP2/DROP52	AVN MODE PID P VALUE SP C3
AnalogPoint	JRP05STPTAC-01	DROP2/DROP52	IFAS TRAIN 2 NH4 SAFETY SP
AnalogPoint	JRP05STPTAC-02	DROP2/DROP52	IFAS TRAIN 5 NH4 SAFETY SP
AnalogPoint	JRP05STPTAC-03	DROP2/DROP52	IFAS TRAIN 8 NH4 SAFETY SP
AnalogPoint	JRP05STPTAC-04	DROP2/DROP52	IFAS TRAIN 2 NOX SAFETY SP
AnalogPoint	JRP05STPTAC-05	DROP2/DROP52	IFAS TRAIN 5 NOX SAFETY SP
AnalogPoint	JRP05STPTAC-06	DROP2/DROP52	IFAS TRAIN 8 NOX SAFETY SP
AnalogPoint	JRP05STPTAC-07	DROP2/DROP52	IFAS NH4 SAFETY TIME ENTRY
AnalogPoint	JRP05STPTAC-08	DROP2/DROP52	NOX SAFETY TIME ENTRY
AnalogPoint	JRP05STPTAC-09	DROP2/DROP52	NOX AVERAGE SAFETY TIME ENTRY
AnalogPoint	JRP05STPTAC-10	DROP2/DROP52	IFAS NOX AVERAGE SAFETY SP
AnalogPoint	JRP05STPTAC-11	DROP2/DROP52	IFAS NH4 AVERAGE SAFETY SP
AnalogPoint	JRP05STPTAC-12	DROP2/DROP52	IFAS AC INF FLOW SAFETY SP
AnalogPoint	JRP05STPTAC-13	DROP2/DROP52	IFAS NH4 AVG SAFETY TIME ENTRY
AnalogPoint	JRP05STPTAC-14	DROP2/DROP52	IFAS AC INF FLOW SAFETY TIME E
AnalogPoint	JRP05STPTAC-15	DROP2/DROP52	IFAS PURGE SWITCH TO A SP
AnalogPoint	JRP05STPTAC-16	DROP2/DROP52	IFAS PURGE SWITCH TO A TIME
AnalogPoint	JRP05STPTAC-17	DROP2/DROP52	IFAS PURGE SWITCH TO B SP
AnalogPoint	JRP05STPTAC-18	DROP2/DROP52	IFAS PURGE SWITCH TO B TIME
AnalogPoint	JRP05STPTAC-19	DROP2/DROP52	IFAS PURGE A MODE SP
AnalogPoint	JRP05STPTAC-20	DROP2/DROP52	IFAS PURGE MODE B SP
AnalogPoint	JRP05STPTAC-21	DROP2/DROP52	IFAS PURGE A OR B TIME DELAY
AnalogPoint	JRP05STPTAC-22	DROP2/DROP52	IFAS PURGE TIME
AnalogPoint	JRP05STPTAC-23	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTAC-24	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTAC-25	DROP2/DROP52	LOW ENERGY ZONE PURGE SP
AnalogPoint	JRP05STPTAVN123	DROP2/DROP52	AVN RATIO SP TANKS 1 2 3
AnalogPoint	JRP05STPTAVN456	DROP2/DROP52	AVN RATIO SP TANKS 4 5 6
AnalogPoint	JRP05STPTAVN789	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTAVNDY-C1	DROP2/DROP52	IFAS C1 AVN DYNAMIC SET POINT
AnalogPoint	JRP05STPTAVNDY-C2	DROP2/DROP52	IFAS C2 AVN DYNAMIC SET POINT
AnalogPoint	JRP05STPTAVNDY-C3	DROP2/DROP52	IFAS C3 AVN DYNAMIC SET POINT

AnalogPoint	JRP05STPTAVNDYF-C1	DROP2/DROP52	AVN DYNAMIC SP FLOW BASED C1
AnalogPoint	JRP05STPTAVNDYF-C2	DROP2/DROP52	AVN DYNAMIC SP FLOW BASED C2
AnalogPoint	JRP05STPTAVNDYF-C3	DROP2/DROP52	AVN DYNAMIC SP FLOW BASED C3
AnalogPoint	JRP05STPTFCVAC-TEST	DROP2/DROP52	Test Analog
AnalogPoint	JRP05STPTFCVMIN-00	DROP2/DROP52	IFAS AFCV MIN OUT IN DO MODE
AnalogPoint	JRP05STPTMXROFF-00	DROP2/DROP52	INT MODE MIXER OFF SP
AnalogPoint	JRP05STPTNRCY-31	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-32	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-33	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-34	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-35	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-36	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-37	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-38	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-39	DROP2/DROP52	NRCY T8 SET POINT
AnalogPoint	JRP05STPTNRCY-40	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-41	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-42	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-43	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-44	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-45	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-46	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-47	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTNRCY-48	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTT1N1-C	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTT2N1-C	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTT3N1-C	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTT4N1-C	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTT5N1-C	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTT6N1-C	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTT7N1-C	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTT8N1-C	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPTT9N1-C	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05TRTM1001-HR	DROP2/DROP52	TRN 1 MXR 1 MAINT RTME
AnalogPoint	JRP05TRTM1002-HR	DROP2/DROP52	TRN 2 MXR 1 MAINT RTME
AnalogPoint	JRP05TRTM1003-HR	DROP2/DROP52	TRN 3 MXR 1 MAINT RTME
AnalogPoint	JRP05TRTM1004-HR	DROP2/DROP52	TRN 4 MXR 1 MAINT RTME
AnalogPoint	JRP05TRTM1005-HR	DROP2/DROP52	TRN 5 MXR 1 MAINT RTME
AnalogPoint	JRP05TRTM1006-HR	DROP2/DROP52	TRN 6 MXR 1 MAINT RTME
AnalogPoint	JRP05TRTM1007-HR	DROP2/DROP52	TRN 7 MXR 1 MAINT RTME
AnalogPoint	JRP05TRTM1008-HR	DROP2/DROP52	TRN 8 MXR 1 MAINT RTME
AnalogPoint	JRP05TRTM1009-HR	DROP2/DROP52	TRN 9 MXR 1 MAINT RTME
AnalogPoint	JRP05TRTM2001-HR	DROP2/DROP52	TRN 1 MXR 2 MAINT RTME
AnalogPoint	JRP05TRTM2002-HR	DROP2/DROP52	TRN 2 MXR 2 MAINT RTME
AnalogPoint	JRP05TRTM2003-HR	DROP2/DROP52	TRN 3 MXR 2 MAINT RTME
AnalogPoint	JRP05TRTM2004-HR	DROP2/DROP52	TRN 4 MXR 2 MAINT RTME
AnalogPoint	JRP05TRTM2005-HR	DROP2/DROP52	TRN 5 MXR 2 MAINT RTME

AnalogPoint	JRP05TRTM2006-HR	DROP2/DROP52	TRN 6 MXR 2 MAINT RTME
AnalogPoint	JRP05TRTM2007-HR	DROP2/DROP52	TRN 7 MXR 2 MAINT RTME
AnalogPoint	JRP05TRTM2008-HR	DROP2/DROP52	TRN 8 MXR 2 MAINT RTME
AnalogPoint	JRP05TRTM2009-HR	DROP2/DROP52	TRN 9 MXR 2 MAINT RTME
AnalogPoint	JRP05TRTM3001-HR	DROP2/DROP52	TRN 1 MXR 3 MAINT RTME
AnalogPoint	JRP05TRTM3002-HR	DROP2/DROP52	TRN 2 MXR 3 MAINT RTME
AnalogPoint	JRP05TRTM3003-HR	DROP2/DROP52	TRN 3 MXR 3 MAINT RTME
AnalogPoint	JRP05TRTM3004-HR	DROP2/DROP52	TRN 4 MXR 3 MAINT RTME
AnalogPoint	JRP05TRTM3005-HR	DROP2/DROP52	TRN 5 MXR 3 MAINT RTME
AnalogPoint	JRP05TRTM3006-HR	DROP2/DROP52	TRN 6 MXR 3 MAINT RTME
AnalogPoint	JRP05TRTM3007-HR	DROP2/DROP52	TRN 7 MXR 3 MAINT RTME
AnalogPoint	JRP05TRTM3008-HR	DROP2/DROP52	TRN 8 MXR 3 MAINT RTME
AnalogPoint	JRP05TRTM3009-HR	DROP2/DROP52	TRN 9 MXR 3 MAINT RTME
AnalogPoint	JRP05TRTM3101-HR	DROP2/DROP52	TRN 1 NRCY PMP 1 MAINT RTME
AnalogPoint	JRP05TRTM3102-HR	DROP2/DROP52	TRN 2 NRCY PMP 1 MAINT RTME
AnalogPoint	JRP05TRTM3103-HR	DROP2/DROP52	TRN 3 NRCY PMP 1 MAINT RTME
AnalogPoint	JRP05TRTM3104-HR	DROP2/DROP52	TRN 4 NRCY PMP 1 MAINT RTME
AnalogPoint	JRP05TRTM3105-HR	DROP2/DROP52	TRN 5 NRCY PMP 1 MAINT RTME
AnalogPoint	JRP05TRTM3106-HR	DROP2/DROP52	TRN 6 NRCY PMP 1 MAINT RTME
AnalogPoint	JRP05TRTM3107-HR	DROP2/DROP52	TRN 7 NRCY PMP 1 MAINT RTME
AnalogPoint	JRP05TRTM3108-HR	DROP2/DROP52	TRN 8 NRCY PMP 1 MAINT RTME
AnalogPoint	JRP05TRTM3109-HR	DROP2/DROP52	TRN 9 NRCY PMP 1 MAINT RTME
AnalogPoint	JRP05TRTM5001-HR	DROP2/DROP52	TRN 1 MXR 4 MAINT RTME
AnalogPoint	JRP05TRTM5002-HR	DROP2/DROP52	TRN 2 MXR 4 MAINT RTME
AnalogPoint	JRP05TRTM5003-HR	DROP2/DROP52	TRN 3 MXR 4 MAINT RTME
AnalogPoint	JRP05TRTM5004-HR	DROP2/DROP52	TRN 4 MXR 4 MAINT RTME
AnalogPoint	JRP05TRTM5005-HR	DROP2/DROP52	TRN 5 MXR 4 MAINT RTME
AnalogPoint	JRP05TRTM5006-HR	DROP2/DROP52	TRN 6 MXR 4 MAINT RTME
AnalogPoint	JRP05TRTM5007-HR	DROP2/DROP52	TRN 7 MXR 4 MAINT RTME
AnalogPoint	JRP05TRTM5008-HR	DROP2/DROP52	TRN 8 MXR 4 MAINT RTME
AnalogPoint	JRP05TRTM5009-HR	DROP2/DROP52	TRN 9 MXR 4 MAINT RTME
AnalogPoint	JRP05TRTM5101-HR	DROP2/DROP52	TRN 1 NRCY PMP 2 MAINT RTME
AnalogPoint	JRP05TRTM5102-HR	DROP2/DROP52	TRN 2 NRCY PMP 2 MAINT RTME
AnalogPoint	JRP05TRTM5103-HR	DROP2/DROP52	TRN 3 NRCY PMP 2 MAINT RTME
AnalogPoint	JRP05TRTM5104-HR	DROP2/DROP52	TRN 4 NRCY PMP 2 MAINT RTME
AnalogPoint	JRP05TRTM5105-HR	DROP2/DROP52	TRN 5 NRCY PMP 2 MAINT RTME
AnalogPoint	JRP05TRTM5106-HR	DROP2/DROP52	TRN 6 NRCY PMP 2 MAINT RTME
AnalogPoint	JRP05TRTM5107-HR	DROP2/DROP52	TRN 7 NRCY PMP 2 MAINT RTME
AnalogPoint	JRP05TRTM5108-HR	DROP2/DROP52	TRN 8 NRCY PMP 2 MAINT RTME
AnalogPoint	JRP05TRTM5109-HR	DROP2/DROP52	TRN 9 NRCY PMP 2 MAINT RTME
AnalogPoint	JRP05TRTY1001-00	DROP2/DROP52	TRN 1 MXR 1 RTME MIN
AnalogPoint	JRP05TRTY1002-00	DROP2/DROP52	TRN 2 MXR 1 RTME MIN
AnalogPoint	JRP05TRTY1003-00	DROP2/DROP52	TRN 3 MXR 1 RTME MIN
AnalogPoint	JRP05TRTY1004-00	DROP2/DROP52	TRN 4 MXR 1 RTME MIN
AnalogPoint	JRP05TRTY1005-00	DROP2/DROP52	TRN 5 MXR 1 RTME MIN
AnalogPoint	JRP05TRTY1006-00	DROP2/DROP52	TRN 6 MXR 1 RTME MIN
AnalogPoint	JRP05TRTY1007-00	DROP2/DROP52	TRN 7 MXR 1 RTME MIN

AnalogPoint	JRP05TRTY1008-00	DROP2/DROP52	TRN 8 MXR 1 RTME MIN
AnalogPoint	JRP05TRTY1009-00	DROP2/DROP52	TRN 9 MXR 1 RTME MIN
AnalogPoint	JRP05TRTY2001-00	DROP2/DROP52	TRN 1 MXR 2 RTME MIN
AnalogPoint	JRP05TRTY2002-00	DROP2/DROP52	TRN 2 MXR 2 RTME MIN
AnalogPoint	JRP05TRTY2003-00	DROP2/DROP52	TRN 3 MXR 2 RTME MIN
AnalogPoint	JRP05TRTY2004-00	DROP2/DROP52	TRN 4 MXR 2 RTME MIN
AnalogPoint	JRP05TRTY2005-00	DROP2/DROP52	TRN 5 MXR 2 RTME MIN
AnalogPoint	JRP05TRTY2006-00	DROP2/DROP52	TRN 6 MXR 2 RTME MIN
AnalogPoint	JRP05TRTY2007-00	DROP2/DROP52	TRN 7 MXR 2 RTME MIN
AnalogPoint	JRP05TRTY2008-00	DROP2/DROP52	TRN 8 MXR 2 RTME MIN
AnalogPoint	JRP05TRTY2009-00	DROP2/DROP52	TRN 9 MXR 2 RTME MIN
AnalogPoint	JRP05TRTY3001-00	DROP2/DROP52	TRN 1 MXR 3 RTME MIN
AnalogPoint	JRP05TRTY3002-00	DROP2/DROP52	TRN 2 MXR 3 RTME MIN
AnalogPoint	JRP05TRTY3003-00	DROP2/DROP52	TRN 3 MXR 3 RTME MIN
AnalogPoint	JRP05TRTY3004-00	DROP2/DROP52	TRN 4 MXR 3 RTME MIN
AnalogPoint	JRP05TRTY3005-00	DROP2/DROP52	TRN 5 MXR 3 RTME MIN
AnalogPoint	JRP05TRTY3006-00	DROP2/DROP52	TRN 6 MXR 3 RTME MIN
AnalogPoint	JRP05TRTY3007-00	DROP2/DROP52	TRN 7 MXR 3 RTME MIN
AnalogPoint	JRP05TRTY3008-00	DROP2/DROP52	TRN 8 MXR 3 RTME MIN
AnalogPoint	JRP05TRTY3009-00	DROP2/DROP52	TRN 9 MXR 3 RTME MIN
AnalogPoint	JRP05TRTY3101-00	DROP2/DROP52	TRN 1 NRCY PMP 1 RTME MIN
AnalogPoint	JRP05TRTY3102-00	DROP2/DROP52	TRN 2 NRCY PMP 1 RTME MIN
AnalogPoint	JRP05TRTY3103-00	DROP2/DROP52	TRN 3 NRCY PMP 1 RTME MIN
AnalogPoint	JRP05TRTY3104-00	DROP2/DROP52	TRN 4 NRCY PMP 1 RTME MIN
AnalogPoint	JRP05TRTY3105-00	DROP2/DROP52	TRN 5 NRCY PMP 1 RTME MIN
AnalogPoint	JRP05TRTY3106-00	DROP2/DROP52	TRN 6 NRCY PMP 1 RTME MIN
AnalogPoint	JRP05TRTY3107-00	DROP2/DROP52	TRN 7 NRCY PMP 1 RTME MIN
AnalogPoint	JRP05TRTY3108-00	DROP2/DROP52	TRN 8 NRCY PMP 1 RTME MIN
AnalogPoint	JRP05TRTY3109-00	DROP2/DROP52	TRN 9 NRCY PMP 1 RTME MIN
AnalogPoint	JRP05TRTY5001-00	DROP2/DROP52	TRN 1 MXR 4 RTME MIN
AnalogPoint	JRP05TRTY5002-00	DROP2/DROP52	TRN 2 MXR 4 RTME MIN
AnalogPoint	JRP05TRTY5003-00	DROP2/DROP52	TRN 3 MXR 4 RTME MIN
AnalogPoint	JRP05TRTY5004-00	DROP2/DROP52	TRN 4 MXR 4 RTME MIN
AnalogPoint	JRP05TRTY5005-00	DROP2/DROP52	TRN 5 MXR 4 RTME MIN
AnalogPoint	JRP05TRTY5006-00	DROP2/DROP52	TRN 6 MXR 4 RTME MIN
AnalogPoint	JRP05TRTY5007-00	DROP2/DROP52	TRN 7 MXR 4 RTME MIN
AnalogPoint	JRP05TRTY5008-00	DROP2/DROP52	TRN 8 MXR 4 RTME MIN
AnalogPoint	JRP05TRTY5009-00	DROP2/DROP52	TRN 9 MXR 4 RTME MIN
AnalogPoint	JRP05TRTY5101-00	DROP2/DROP52	TRN 1 NRCY PMP 2 RTME MIN
AnalogPoint	JRP05TRTY5102-00	DROP2/DROP52	TRN 2 NRCY PMP 2 RTME MIN
AnalogPoint	JRP05TRTY5103-00	DROP2/DROP52	TRN 3 NRCY PMP 2 RTME MIN
AnalogPoint	JRP05TRTY5104-00	DROP2/DROP52	TRN 4 NRCY PMP 2 RTME MIN
AnalogPoint	JRP05TRTY5105-00	DROP2/DROP52	TRN 5 NRCY PMP 2 RTME MIN
AnalogPoint	JRP05TRTY5106-00	DROP2/DROP52	TRN 6 NRCY PMP 2 RTME MIN
AnalogPoint	JRP05TRTY5107-00	DROP2/DROP52	TRN 7 NRCY PMP 2 RTME MIN
AnalogPoint	JRP05TRTY5108-00	DROP2/DROP52	TRN 8 NRCY PMP 2 RTME MIN
AnalogPoint	JRP05TRTY5109-00	DROP2/DROP52	TRN 9 NRCY PMP 2 RTME MIN

AnalogPoint	JRP05TRTZ1001-HR	DROP2/DROP52	TRN 1 MXR 1 CUR RTME
AnalogPoint	JRP05TRTZ1002-HR	DROP2/DROP52	TRN 2 MXR 1 CUR RTME
AnalogPoint	JRP05TRTZ1003-HR	DROP2/DROP52	TRN 3 MXR 1 CUR RTME
AnalogPoint	JRP05TRTZ1004-HR	DROP2/DROP52	TRN 4 MXR 1 CUR RTME
AnalogPoint	JRP05TRTZ1005-HR	DROP2/DROP52	TRN 5 MXR 1 CUR RTME
AnalogPoint	JRP05TRTZ1006-HR	DROP2/DROP52	TRN 6 MXR 1 CUR RTME
AnalogPoint	JRP05TRTZ1007-HR	DROP2/DROP52	TRN 7 MXR 1 CUR RTME
AnalogPoint	JRP05TRTZ1008-HR	DROP2/DROP52	TRN 8 MXR 1 CUR RTME
AnalogPoint	JRP05TRTZ1009-HR	DROP2/DROP52	TRN 9 MXR 1 CUR RTME
AnalogPoint	JRP05TRTZ2001-HR	DROP2/DROP52	TRN 1 MXR 2 CUR RTME
AnalogPoint	JRP05TRTZ2002-HR	DROP2/DROP52	TRN 2 MXR 2 CUR RTME
AnalogPoint	JRP05TRTZ2003-HR	DROP2/DROP52	TRN 3 MXR 2 CUR RTME
AnalogPoint	JRP05TRTZ2004-HR	DROP2/DROP52	TRN 4 MXR 2 CUR RTME
AnalogPoint	JRP05TRTZ2005-HR	DROP2/DROP52	TRN 5 MXR 2 CUR RTME
AnalogPoint	JRP05TRTZ2006-HR	DROP2/DROP52	TRN 6 MXR 2 CUR RTME
AnalogPoint	JRP05TRTZ2007-HR	DROP2/DROP52	TRN 7 MXR 2 CUR RTME
AnalogPoint	JRP05TRTZ2008-HR	DROP2/DROP52	TRN 8 MXR 2 CUR RTME
AnalogPoint	JRP05TRTZ2009-HR	DROP2/DROP52	TRN 9 MXR 2 CUR RTME
AnalogPoint	JRP05TRTZ3001-HR	DROP2/DROP52	TRN 1 MXR 3 CUR RTME
AnalogPoint	JRP05TRTZ3002-HR	DROP2/DROP52	TRN 2 MXR 3 CUR RTME
AnalogPoint	JRP05TRTZ3003-HR	DROP2/DROP52	TRN 3 MXR 3 CUR RTME
AnalogPoint	JRP05TRTZ3004-HR	DROP2/DROP52	TRN 4 MXR 3 CUR RTME
AnalogPoint	JRP05TRTZ3005-HR	DROP2/DROP52	TRN 5 MXR 3 CUR RTME
AnalogPoint	JRP05TRTZ3006-HR	DROP2/DROP52	TRN 6 MXR 3 CUR RTME
AnalogPoint	JRP05TRTZ3007-HR	DROP2/DROP52	TRN 7 MXR 3 CUR RTME
AnalogPoint	JRP05TRTZ3008-HR	DROP2/DROP52	TRN 8 MXR 3 CUR RTME
AnalogPoint	JRP05TRTZ3009-HR	DROP2/DROP52	TRN 9 MXR 3 CUR RTME
AnalogPoint	JRP05TRTZ3101-HR	DROP2/DROP52	TRN 1 NRCY PMP 1 CUR RTME
AnalogPoint	JRP05TRTZ3102-HR	DROP2/DROP52	TRN 2 NRCY PMP 1 CUR RTME
AnalogPoint	JRP05TRTZ3103-HR	DROP2/DROP52	TRN 3 NRCY PMP 1 CUR RTME
AnalogPoint	JRP05TRTZ3104-HR	DROP2/DROP52	TRN 4 NRCY PMP 1 CUR RTME
AnalogPoint	JRP05TRTZ3105-HR	DROP2/DROP52	TRN 5 NRCY PMP 1 CUR RTME
AnalogPoint	JRP05TRTZ3106-HR	DROP2/DROP52	TRN 6 NRCY PMP 1 CUR RTME
AnalogPoint	JRP05TRTZ3107-HR	DROP2/DROP52	TRN 7 NRCY PMP 1 CUR RTME
AnalogPoint	JRP05TRTZ3108-HR	DROP2/DROP52	TRN 8 NRCY PMP 1 CUR RTME
AnalogPoint	JRP05TRTZ3109-HR	DROP2/DROP52	TRN 9 NRCY PMP 1 CUR RTME
AnalogPoint	JRP05TRTZ5001-HR	DROP2/DROP52	TRN 1 MXR 4 CUR RTME
AnalogPoint	JRP05TRTZ5002-HR	DROP2/DROP52	TRN 2 MXR 4 CUR RTME
AnalogPoint	JRP05TRTZ5003-HR	DROP2/DROP52	TRN 3 MXR 4 CUR RTME
AnalogPoint	JRP05TRTZ5004-HR	DROP2/DROP52	TRN 4 MXR 4 CUR RTME
AnalogPoint	JRP05TRTZ5005-HR	DROP2/DROP52	TRN 5 MXR 4 CUR RTME
AnalogPoint	JRP05TRTZ5006-HR	DROP2/DROP52	TRN 6 MXR 4 CUR RTME
AnalogPoint	JRP05TRTZ5007-HR	DROP2/DROP52	TRN 7 MXR 4 CUR RTME
AnalogPoint	JRP05TRTZ5008-HR	DROP2/DROP52	TRN 8 MXR 4 CUR RTME
AnalogPoint	JRP05TRTZ5009-HR	DROP2/DROP52	TRN 9 MXR 4 CUR RTME
AnalogPoint	JRP05TRTZ5101-HR	DROP2/DROP52	TRN 1 NRCY PMP 2 CUR RTME
AnalogPoint	JRP05TRTZ5102-HR	DROP2/DROP52	TRN 2 NRCY PMP 2 CUR RTME

AnalogPoint	JRP05TRTZ5103-HR	DROP2/DROP52	TRN 3 NRCY PMP 2 CUR RTME
AnalogPoint	JRP05TRTZ5104-HR	DROP2/DROP52	TRN 4 NRCY PMP 2 CUR RTME
AnalogPoint	JRP05TRTZ5105-HR	DROP2/DROP52	TRN 5 NRCY PMP 2 CUR RTME
AnalogPoint	JRP05TRTZ5106-HR	DROP2/DROP52	TRN 6 NRCY PMP 2 CUR RTME
AnalogPoint	JRP05TRTZ5107-HR	DROP2/DROP52	TRN 7 NRCY PMP 2 CUR RTME
AnalogPoint	JRP05TRTZ5108-HR	DROP2/DROP52	TRN 8 NRCY PMP 2 CUR RTME
AnalogPoint	JRP05TRTZ5109-HR	DROP2/DROP52	TRN 9 NRCY PMP 2 CUR RTME
AnalogPoint	JRP06AITX0001	DROP2/DROP52	SEC CLAR INF SCI PO4-P
AnalogPoint	JRP06AITX0002	DROP2/DROP52	TSS SENSOR
AnalogPoint	JRP14FITT3002-CD	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP14FITT3002-CM	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP14FITT3002-PD	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP14FITT3002-PM	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP14FITX3002	DROP2/DROP52	PREAERATION AIR FLOW
AnalogPoint	JRP14FITX3002-AVG	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP14FVZC1001	DROP2/DROP52	BLOWER 1 INLET VALVE POS CMD
AnalogPoint	JRP14FVZC1002	DROP2/DROP52	BLOWER 2 INLET VALVE POS CMD
AnalogPoint	JRP14FVZC1003	DROP2/DROP52	BLOWER 3 INLET VALVE POS CMD
AnalogPoint	JRP14FVZC3002	DROP2/DROP52	PREAERATION AIR FLOW VLV CMD
AnalogPoint	JRP14FVZI1001	DROP2/DROP52	BLOWER 1 INLET VALVE POS
AnalogPoint	JRP14FVZI1002	DROP2/DROP52	BLOWER 2 INLET VALVE POS
AnalogPoint	JRP14FVZI1003	DROP2/DROP52	BLOWER 3 INLET VALVE POS
AnalogPoint	JRP14FVZI3002	DROP2/DROP52	PREAERATION AIR FLOW VLV POS
AnalogPoint	JRP14IITX1001	DROP2/DROP52	BLOWER 1 MOTOR CURRENT
AnalogPoint	JRP14IITX1002	DROP2/DROP52	BLOWER 2 MOTOR CURRENT
AnalogPoint	JRP14IITX1003	DROP2/DROP52	BLOWER 3 MOTOR CURRENT
AnalogPoint	JRP14MINX1001-SP	DROP2/DROP52	BLOWER 1 INLET VLV MIN PCT
AnalogPoint	JRP14MINX1002-SP	DROP2/DROP52	BLOWER 2 INLET VLV MIN PCT
AnalogPoint	JRP14MINX1003-SP	DROP2/DROP52	BLOWER 3 INLET VLV MIN PCT
AnalogPoint	JRP14PITX3001A	DROP2/DROP52	MAIN AIR HEADER PRESS
AnalogPoint	JRP14PITX3001B	DROP2/DROP52	MAIN AIR HEADER PRESS
AnalogPoint	JRP14PITX3001X-00	DROP2/DROP52	AIR HEADER MASTER PRESSURE
AnalogPoint	JRP14STPT3002-L	DROP2/DROP52	PREAERATION FLOW SETPOINT
AnalogPoint	JRP14TFQF3002-00	DROP2/DROP52	PREAERATION FLOW PREV 24HR TOT
AnalogPoint	JRP14TFQM3002-00	DROP2/DROP52	PREAERATION FLOW PREV MNTH TOT
AnalogPoint	JRP14TFQO3002-00	DROP2/DROP52	PREAERATION FLO CURR 24HR TOT
AnalogPoint	JRP14TFQZ3002-00	DROP2/DROP52	PREAERATION FLOW CURR MNTH TOT
AnalogPoint	JRP14TITX3001	DROP2/DROP52	MAIN AIR HEADER TEMP
AnalogPoint	JRP14TRTM1001-HR	DROP2/DROP52	BLOWER 1 MAINT RTME
AnalogPoint	JRP14TRTM1002-HR	DROP2/DROP52	BLOWER 2 MAINT RTME
AnalogPoint	JRP14TRTM1003-HR	DROP2/DROP52	BLOWER 3 MAINT RTME
AnalogPoint	JRP14TRTY1001-00	DROP2/DROP52	BLOWER 1 RTME MIN
AnalogPoint	JRP14TRTY1002-00	DROP2/DROP52	BLOWER 2 RTME MIN
AnalogPoint	JRP14TRTY1003-00	DROP2/DROP52	BLOWER 3 RTME MIN
AnalogPoint	JRP14TRTZ1001-HR	DROP2/DROP52	BLOWER 1 CUR RTME
AnalogPoint	JRP14TRTZ1002-HR	DROP2/DROP52	BLOWER 2 CUR RTME
AnalogPoint	JRP14TRTZ1003-HR	DROP2/DROP52	BLOWER 3 CUR RTME

AnalogPoint	JRP18CTDN1800-S1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP18CTDN1800-S2	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP18DPIT1001	DROP2/DROP52	ODOR CTRL FAN NO1 DIFF PRESS
AnalogPoint	JRP18DPIT1002	DROP2/DROP52	ODOR CTRL FAN NO2 DIFF PRESS
AnalogPoint	JRP18STEP1800-PF	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP18TRTM1001-HR	DROP2/DROP52	ODOR CTRL FAN 1 MAINT RTME
AnalogPoint	JRP18TRTM1002-HR	DROP2/DROP52	ODOR CTRL FAN 2 MAINT RTME
AnalogPoint	JRP18TRTY1001-00	DROP2/DROP52	ODOR CTRL FAN 1 RTME MIN
AnalogPoint	JRP18TRTY1002-00	DROP2/DROP52	ODOR CTRL FAN 2 RTME MIN
AnalogPoint	JRP18TRTZ1001-HR	DROP2/DROP52	ODOR CTRL FAN 1 CUR RTME
AnalogPoint	JRP18TRTZ1002-HR	DROP2/DROP52	ODOR CTRL FAN 2 CUR RTME
AnalogPoint	JRP28CENEQ-MODE	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP28CTDN0200-CS	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP28FITX0200-00	DROP2/DROP52	CENTRATE EQ TNK SELECTED FLOW
AnalogPoint	JRP28FITX0201	DROP2/DROP52	CENTRATE REACTOR 1 FLOW
AnalogPoint	JRP28FITX0202	DROP2/DROP52	CENTRATE REACTOR 2 FLOW
AnalogPoint	JRP28LITX0101	DROP2/DROP52	CENTRATE VAULT LEVEL
AnalogPoint	JRP28LITX0200-00	DROP2/DROP52	CENTRATE EQ TNKS SELECTED LVL
AnalogPoint	JRP28LITX0201	DROP2/DROP52	CENTRATE EQ TANK 1 LEVEL
AnalogPoint	JRP28LITX0202	DROP2/DROP52	CENTRATE EQ TANK 2 LEVEL
AnalogPoint	JRP28MSTR2700-00	DROP2/DROP52	CENTRATE VLT SYS MSTR CTRL OUT
AnalogPoint	JRP28MSTR2700-CO	DROP2/DROP52	CENTRATE VAULT SYS MSTR OUT
AnalogPoint	JRP28MSTR2701-00	DROP2/DROP52	CENTRATE EQ SYS MSTR CTRL OUT
AnalogPoint	JRP28MSTR2701-CO	DROP2/DROP52	CENTRATE EQ SYS MSTR OUT
AnalogPoint	JRP28OPRK2700-01	DROP2/DROP52	CENTRATE VAULT PUMP 1 RANK
AnalogPoint	JRP28OPRK2700-02	DROP2/DROP52	CENTRATE VAULT PUMP 2 RANK
AnalogPoint	JRP28OPRK2701-01	DROP2/DROP52	CENTRATE EQ PUMP 1 RANK
AnalogPoint	JRP28OPRK2701-02	DROP2/DROP52	CENTRATE EQ TANK PUMP 2 RANK
AnalogPoint	JRP28RSEL2700-00	DROP2/DROP52	CENTRATE VLT MSTR RANK SELECT
AnalogPoint	JRP28RSEL2701-00	DROP2/DROP52	CENTRATE EQ MSTR RANK SELECT
AnalogPoint	JRP28SIXX0101	DROP2/DROP52	CENTRATE EQ TNK1 PMP1 SPD FDBK
AnalogPoint	JRP28SIXX0102	DROP2/DROP52	CENTRATE EQ TNK2 PMP2 SPD FDBK
AnalogPoint	JRP28SIXX0201	DROP2/DROP52	CENTRATE VAULT PMP1 SPD FDBK
AnalogPoint	JRP28SIXX0202	DROP2/DROP52	CENTRATE VAULT PMP2 SPD FDBK
AnalogPoint	JRP28SPCX0101	DROP2/DROP52	CENTRATE EQ TNK1 PMP1 SPD CMD
AnalogPoint	JRP28SPCX0102	DROP2/DROP52	CENTRATE EQ TNK2 PMP2 SPD CMD
AnalogPoint	JRP28SPCX0201	DROP2/DROP52	CENTRATE VAULT PMP1 SPD CMD
AnalogPoint	JRP28SPCX0202	DROP2/DROP52	CENTRATE VAULT PMP2 SPD CMD
AnalogPoint	JRP28STPT0101-L	DROP2/DROP52	CENTRATE VAULT LEVEL SETPOINT
AnalogPoint	JRP28STPT0201-L	DROP2/DROP52	CENTRATE EQ TANKS LEVEL SETPT
AnalogPoint	JRP28TOTL2700-CS	DROP2/DROP52	CENTRATE VLT # OF PUMPS RUNNG
AnalogPoint	JRP28TOTL2701-CS	DROP2/DROP52	CENTRATE EQ # OF PUMPS RUNNG
AnalogPoint	JRP28TRTM0101-HR	DROP2/DROP52	CENTRATE EQ PUMP 1 MAINT RTME
AnalogPoint	JRP28TRTM0102-HR	DROP2/DROP52	CENTRATE EQ PUMP 2 MAINT RTME
AnalogPoint	JRP28TRTM0201-HR	DROP2/DROP52	CENTRATE VLT PUMP 1 MAINT RTME
AnalogPoint	JRP28TRTM0202-HR	DROP2/DROP52	CENTRATE VLT PUMP 2 MAINT RTME
AnalogPoint	JRP28TRTM1001-HR	DROP2/DROP52	CENTRATE EQ MIXER 1 MAINT RTME

AnalogPoint	JRP28TRTM1002-HR	DROP2/DROP52	CENTRATE EQ MIXER 2 MAINT RTME
AnalogPoint	JRP28TRTY0101-00	DROP2/DROP52	CENTRATE EQ PMP1 RTME MIN
AnalogPoint	JRP28TRTY0102-00	DROP2/DROP52	CENTRATE EQ PMP2 RTME MIN
AnalogPoint	JRP28TRTY0201-00	DROP2/DROP52	CENTRATE VLT PMP1 RTME MIN
AnalogPoint	JRP28TRTY0202-00	DROP2/DROP52	CENTRATE EQ PMP2 RTME MIN
AnalogPoint	JRP28TRTY1001-00	DROP2/DROP52	CENTRATE EQ MXR1 RTME MIN
AnalogPoint	JRP28TRTY1002-00	DROP2/DROP52	CENTRATE EQ MXR1 RTME MIN
AnalogPoint	JRP28TRTZ0101-HR	DROP2/DROP52	CENTRATE EQ PMP1 CURR RTME
AnalogPoint	JRP28TRTZ0102-HR	DROP2/DROP52	CENTRATE EQ PMP2 CURR RTME
AnalogPoint	JRP28TRTZ0201-HR	DROP2/DROP52	CENTRATE VLT PMP1 CURR RTME
AnalogPoint	JRP28TRTZ0202-HR	DROP2/DROP52	CENTRATE VLT PMP1 CURR RTME
AnalogPoint	JRP28TRTZ1001-HR	DROP2/DROP52	CENTRATE EQ MXR1 CURR RTME
AnalogPoint	JRP28TRTZ1002-HR	DROP2/DROP52	CENTRATE EQ MXR2 CURR RTME
AnalogPoint	JRP31LRCT3100-00	DROP2/DROP52	FOAM PUMP MSTR IN DCS COUNT
AnalogPoint	JRP31OFTR5201-00	DROP2/DROP52	TRN 1 FOAM SKMR OFF TIMER
AnalogPoint	JRP31OFTR5202-00	DROP2/DROP52	TRN 2 FOAM SKMR OFF TIMER
AnalogPoint	JRP31OFTR5203-00	DROP2/DROP52	TRN 3 FOAM SKMR OFF TIMER
AnalogPoint	JRP31OFTR5204-00	DROP2/DROP52	TRN 4 FOAM SKMR OFF TIMER
AnalogPoint	JRP31OFTR5205-00	DROP2/DROP52	TRN 5 FOAM SKMR OFF TIMER
AnalogPoint	JRP31OFTR5206-00	DROP2/DROP52	TRN 6 FOAM SKMR OFF TIMER
AnalogPoint	JRP31OFTR5207-00	DROP2/DROP52	TRN 7 FOAM SKMR OFF TIMER
AnalogPoint	JRP31OFTR5208-00	DROP2/DROP52	TRN 8 FOAM SKMR OFF TIMER
AnalogPoint	JRP31OFTR5209-00	DROP2/DROP52	TRN 9 FOAM SKMR OFF TIMER
AnalogPoint	JRP31OFTR5301-00	DROP2/DROP52	TRN 1 FOAM SV OFF TIMER
AnalogPoint	JRP31OFTR5302-00	DROP2/DROP52	TRN 2 FOAM SV OFF TIMER
AnalogPoint	JRP31OFTR5303-00	DROP2/DROP52	TRN 3 FOAM SV OFF TIMER
AnalogPoint	JRP31OFTR5304-00	DROP2/DROP52	TRN 4 FOAM SV OFF TIMER
AnalogPoint	JRP31OFTR5305-00	DROP2/DROP52	TRN 5 FOAM SV OFF TIMER
AnalogPoint	JRP31OFTR5306-00	DROP2/DROP52	TRN 6 FOAM SV OFF TIMER
AnalogPoint	JRP31OFTR5307-00	DROP2/DROP52	TRN 7 FOAM SV OFF TIMER
AnalogPoint	JRP31OFTR5308-00	DROP2/DROP52	TRN 8 FOAM SV OFF TIMER
AnalogPoint	JRP31OFTR5309-00	DROP2/DROP52	TRN 9 FOAM SV OFF TIMER
AnalogPoint	JRP31ONCT3100-00	DROP2/DROP52	FOAM PUMP MSTR RUN COUNT
AnalogPoint	JRP31ONTR5201-00	DROP2/DROP52	TRN 1 FOAM SKMR ON TIMER
AnalogPoint	JRP31ONTR5202-00	DROP2/DROP52	TRN 2 FOAM SKMR ON TIMER
AnalogPoint	JRP31ONTR5203-00	DROP2/DROP52	TRN 3 FOAM SKMR ON TIMER
AnalogPoint	JRP31ONTR5204-00	DROP2/DROP52	TRN 4 FOAM SKMR ON TIMER
AnalogPoint	JRP31ONTR5205-00	DROP2/DROP52	TRN 5 FOAM SKMR ON TIMER
AnalogPoint	JRP31ONTR5206-00	DROP2/DROP52	TRN 6 FOAM SKMR ON TIMER
AnalogPoint	JRP31ONTR5207-00	DROP2/DROP52	TRN 7 FOAM SKMR ON TIMER
AnalogPoint	JRP31ONTR5208-00	DROP2/DROP52	TRN 8 FOAM SKMR ON TIMER
AnalogPoint	JRP31ONTR5209-00	DROP2/DROP52	TRN 9 FOAM SKMR ON TIMER
AnalogPoint	JRP31ONTR5301-00	DROP2/DROP52	TRN 1 FOAM SV ON TIMER
AnalogPoint	JRP31ONTR5302-00	DROP2/DROP52	TRN 2 FOAM SV ON TIMER
AnalogPoint	JRP31ONTR5303-00	DROP2/DROP52	TRN 3 FOAM SV ON TIMER
AnalogPoint	JRP31ONTR5304-00	DROP2/DROP52	TRN 4 FOAM SV ON TIMER
AnalogPoint	JRP31ONTR5305-00	DROP2/DROP52	TRN 5 FOAM SV ON TIMER

AnalogPoint	JRP31ONTR5306-00	DROP2/DROP52	TRN 6 FOAM SV ON TIMER
AnalogPoint	JRP31ONTR5307-00	DROP2/DROP52	TRN 7 FOAM SV ON TIMER
AnalogPoint	JRP31ONTR5308-00	DROP2/DROP52	TRN 8 FOAM SV ON TIMER
AnalogPoint	JRP31ONTR5309-00	DROP2/DROP52	TRN 9 FOAM SV ON TIMER
AnalogPoint	JRP31PULS3100-00	DROP2/DROP52	FOAM PMP MSTR PULSE CNTR
AnalogPoint	JRP31TRTM5101-HR	DROP2/DROP52	TRN 1 FOAM PMP MAINT RTME
AnalogPoint	JRP31TRTM5102-HR	DROP2/DROP52	TRN 2 FOAM PMP MAINT RTME
AnalogPoint	JRP31TRTM5103-HR	DROP2/DROP52	TRN 3 FOAM PMP MAINT RTME
AnalogPoint	JRP31TRTM5104-HR	DROP2/DROP52	TRN 4 FOAM PMP MAINT RTME
AnalogPoint	JRP31TRTM5105-HR	DROP2/DROP52	TRN 5 FOAM PMP MAINT RTME
AnalogPoint	JRP31TRTM5106-HR	DROP2/DROP52	TRN 6 FOAM PMP MAINT RTME
AnalogPoint	JRP31TRTM5107-HR	DROP2/DROP52	TRN 7 FOAM PMP MAINT RTME
AnalogPoint	JRP31TRTM5108-HR	DROP2/DROP52	TRN 8 FOAM PMP MAINT RTME
AnalogPoint	JRP31TRTM5109-HR	DROP2/DROP52	TRN 9 FOAM PMP MAINT RTME
AnalogPoint	JRP31TRTM5201-HR	DROP2/DROP52	TRN 1 FOAM SKMR MAINT RTME
AnalogPoint	JRP31TRTM5202-HR	DROP2/DROP52	TRN 2 FOAM SKMR MAINT RTME
AnalogPoint	JRP31TRTM5203-HR	DROP2/DROP52	TRN 3 FOAM SKMR MAINT RTME
AnalogPoint	JRP31TRTM5204-HR	DROP2/DROP52	TRN 4 FOAM SKMR MAINT RTME
AnalogPoint	JRP31TRTM5205-HR	DROP2/DROP52	TRN 5 FOAM SKMR MAINT RTME
AnalogPoint	JRP31TRTM5206-HR	DROP2/DROP52	TRN 6 FOAM SKMR MAINT RTME
AnalogPoint	JRP31TRTM5207-HR	DROP2/DROP52	TRN 7 FOAM SKMR MAINT RTME
AnalogPoint	JRP31TRTM5208-HR	DROP2/DROP52	TRN 8 FOAM SKMR MAINT RTME
AnalogPoint	JRP31TRTM5209-HR	DROP2/DROP52	TRN 9 FOAM SKMR MAINT RTME
AnalogPoint	JRP31TRTY5101-00	DROP2/DROP52	TRN 1 FOAM PMP RTME MIN
AnalogPoint	JRP31TRTY5102-00	DROP2/DROP52	TRN 2 FOAM PMP RTME MIN
AnalogPoint	JRP31TRTY5103-00	DROP2/DROP52	TRN 3 FOAM PMP RTME MIN
AnalogPoint	JRP31TRTY5104-00	DROP2/DROP52	TRN 4 FOAM PMP RTME MIN
AnalogPoint	JRP31TRTY5105-00	DROP2/DROP52	TRN 5 FOAM PMP RTME MIN
AnalogPoint	JRP31TRTY5106-00	DROP2/DROP52	TRN 6 FOAM PMP RTME MIN
AnalogPoint	JRP31TRTY5107-00	DROP2/DROP52	TRN 7 FOAM PMP RTME MIN
AnalogPoint	JRP31TRTY5108-00	DROP2/DROP52	TRN 8 FOAM PMP RTME MIN
AnalogPoint	JRP31TRTY5109-00	DROP2/DROP52	TRN 9 FOAM PMP RTME MIN
AnalogPoint	JRP31TRTY5201-00	DROP2/DROP52	TRN 1 FOAM SKMR RTME MIN
AnalogPoint	JRP31TRTY5202-00	DROP2/DROP52	TRN 2 FOAM SKMR RTME MIN
AnalogPoint	JRP31TRTY5203-00	DROP2/DROP52	TRN 3 FOAM SKMR RTME MIN
AnalogPoint	JRP31TRTY5204-00	DROP2/DROP52	TRN 4 FOAM SKMR RTME MIN
AnalogPoint	JRP31TRTY5205-00	DROP2/DROP52	TRN 5 FOAM SKMR RTME MIN
AnalogPoint	JRP31TRTY5206-00	DROP2/DROP52	TRN 6 FOAM SKMR RTME MIN
AnalogPoint	JRP31TRTY5207-00	DROP2/DROP52	TRN 7 FOAM SKMR RTME MIN
AnalogPoint	JRP31TRTY5208-00	DROP2/DROP52	TRN 8 FOAM SKMR RTME MIN
AnalogPoint	JRP31TRTY5209-00	DROP2/DROP52	TRN 9 FOAM SKMR RTME MIN
AnalogPoint	JRP31TRTZ5101-HR	DROP2/DROP52	TRN 1 FOAM PMP CUR RTME
AnalogPoint	JRP31TRTZ5102-HR	DROP2/DROP52	TRN 2 FOAM PMP CUR RTME
AnalogPoint	JRP31TRTZ5103-HR	DROP2/DROP52	TRN 3 FOAM PMP CUR RTME
AnalogPoint	JRP31TRTZ5104-HR	DROP2/DROP52	TRN 4 FOAM PMP CUR RTME
AnalogPoint	JRP31TRTZ5105-HR	DROP2/DROP52	TRN 5 FOAM PMP CUR RTME
AnalogPoint	JRP31TRTZ5106-HR	DROP2/DROP52	TRN 6 FOAM PMP CUR RTME

AnalogPoint	JRP31TRTZ5107-HR	DROP2/DROP52	TRN 7 FOAM PMP CUR RTME
AnalogPoint	JRP31TRTZ5108-HR	DROP2/DROP52	TRN 8 FOAM PMP CUR RTME
AnalogPoint	JRP31TRTZ5109-HR	DROP2/DROP52	TRN 9 FOAM PMP CUR RTME
AnalogPoint	JRP31TRTZ5201-HR	DROP2/DROP52	TRN 1 FOAM SKMR CUR RTME
AnalogPoint	JRP31TRTZ5202-HR	DROP2/DROP52	TRN 2 FOAM SKMR CUR RTME
AnalogPoint	JRP31TRTZ5203-HR	DROP2/DROP52	TRN 3 FOAM SKMR CUR RTME
AnalogPoint	JRP31TRTZ5204-HR	DROP2/DROP52	TRN 4 FOAM SKMR CUR RTME
AnalogPoint	JRP31TRTZ5205-HR	DROP2/DROP52	TRN 5 FOAM SKMR CUR RTME
AnalogPoint	JRP31TRTZ5206-HR	DROP2/DROP52	TRN 6 FOAM SKMR CUR RTME
AnalogPoint	JRP31TRTZ5207-HR	DROP2/DROP52	TRN 7 FOAM SKMR CUR RTME
AnalogPoint	JRP31TRTZ5208-HR	DROP2/DROP52	TRN 8 FOAM SKMR CUR RTME
AnalogPoint	JRP31TRTZ5209-HR	DROP2/DROP52	TRN 9 FOAM SKMR CUR RTME
AnalogPoint	JRP31TRTZ5301-00	DROP2/DROP52	TRN 1 FOAM SV CUR RTME
AnalogPoint	JRP31TRTZ5302-00	DROP2/DROP52	TRN 2 FOAM SV CUR RTME
AnalogPoint	JRP31TRTZ5303-00	DROP2/DROP52	TRN 3 FOAM SV CUR RTME
AnalogPoint	JRP31TRTZ5304-00	DROP2/DROP52	TRN 4 FOAM SV CUR RTME
AnalogPoint	JRP31TRTZ5305-00	DROP2/DROP52	TRN 5 FOAM SV CUR RTME
AnalogPoint	JRP31TRTZ5306-00	DROP2/DROP52	TRN 6 FOAM SV CUR RTME
AnalogPoint	JRP31TRTZ5307-00	DROP2/DROP52	TRN 7 FOAM SV CUR RTME
AnalogPoint	JRP31TRTZ5308-00	DROP2/DROP52	TRN 8 FOAM SV CUR RTME
AnalogPoint	JRP31TRTZ5309-00	DROP2/DROP52	TRN 9 FOAM SV CUR RTME
AnalogPoint	JRP50AFCVCLSDTMR	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP50AFCVDELAYSP1	DROP2/DROP52	AIRFLO SWITCHOVER DELAY SP
AnalogPoint	JRP50AFCVMAX1	DROP2/DROP52	AMOX AFCV MAXIMUM OUTPUT
AnalogPoint	JRP50AFCVMIN1	DROP2/DROP52	AMOX AFCV MININUM OUTPUT
AnalogPoint	JRP50AFCVOPNTMR	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP50AFCVRESUMSP1	DROP2/DROP52	SCFM RESUME SETPOINT
AnalogPoint	JRP50AFVOFFTMR	DROP2/DROP52	AMOX AFCV INTRMITENT OFF TIMER
AnalogPoint	JRP50AFVONTMR	DROP2/DROP52	AMOX AFCV INTERMITENT ON TIMER
AnalogPoint	JRP50AITA1029	DROP2/DROP52	EQUALIZATION TNK NH4
AnalogPoint	JRP50AITA1044	DROP2/DROP52	REACTOR NH4
AnalogPoint	JRP50AITD1032	DROP2/DROP52	ANITAMOX CONDUCTIVITY
AnalogPoint	JRP50AITD1032A	DROP2/DROP52	ANITAMOX CONDUCTIVITY
AnalogPoint	JRP50AITD1047	DROP2/DROP52	ANITAMOX TANK DO
AnalogPoint	JRP50AITD1048	DROP2/DROP52	ANITAMOX TANK DO HACH
AnalogPoint	JRP50AITK1031	DROP2/DROP52	IFAS 1 POTASSIUM
AnalogPoint	JRP50AITK1046	DROP2/DROP52	ANITAMOX POTASSIUM
AnalogPoint	JRP50AITN1030	DROP2/DROP52	EQUALIZATION TNK N03
AnalogPoint	JRP50AITN1045	DROP2/DROP52	REACTOR N03
AnalogPoint	JRP50AITP1048	DROP2/DROP52	ANITAMOX TANK pH
AnalogPoint	JRP50AITT1065	DROP2/DROP52	IFAS 1 TANK TEMPERATURE
AnalogPoint	JRP50AITT1066	DROP2/DROP52	ANITAMOX TANK TEMPERATURE
AnalogPoint	JRP50AMOXDO1	DROP2/DROP52	SELECTED ANITAMOX DO
AnalogPoint	JRP50AMOXFLO1	DROP2/DROP52	ANITAMOX FLOW
AnalogPoint	JRP50CRNTDOSTPNT1	DROP2/DROP52	AMOX DO SETPOINT
AnalogPoint	JRP50CTDN1800-S1	DROP2/DROP52	
AnalogPoint	JRP50CTDN1800-S2	DROP2/DROP52	

AnalogPoint	JRP50CTDN1800-S3	DROP2/DROP52	
AnalogPoint	JRP50DOMATRIX1	DROP2/DROP52	DO MATRIX QUADRANT 1
AnalogPoint	JRP50DOMATRIX10	DROP2/DROP52	DO MATRIX QUADRANT 10
AnalogPoint	JRP50DOMATRIX11	DROP2/DROP52	DO MATRIX QUADRANT 11
AnalogPoint	JRP50DOMATRIX12	DROP2/DROP52	DO MATRIX QUADRANT 12
AnalogPoint	JRP50DOMATRIX13	DROP2/DROP52	DO MATRIX QUADRANT 13
AnalogPoint	JRP50DOMATRIX14	DROP2/DROP52	DO MATRIX QUADRANT 14
AnalogPoint	JRP50DOMATRIX15	DROP2/DROP52	DO MATRIX QUADRANT 15
AnalogPoint	JRP50DOMATRIX16	DROP2/DROP52	DO MATRIX QUADRANT 16
AnalogPoint	JRP50DOMATRIX2	DROP2/DROP52	DO MATRIX QUADRANT 2
AnalogPoint	JRP50DOMATRIX3	DROP2/DROP52	DO MATRIX QUADRANT 3
AnalogPoint	JRP50DOMATRIX4	DROP2/DROP52	DO MATRIX QUADRANT 4
AnalogPoint	JRP50DOMATRIX5	DROP2/DROP52	DO MATRIX QUADRANT 5
AnalogPoint	JRP50DOMATRIX6	DROP2/DROP52	DO MATRIX QUADRANT 6
AnalogPoint	JRP50DOMATRIX7	DROP2/DROP52	DO MATRIX QUADRANT 7
AnalogPoint	JRP50DOMATRIX8	DROP2/DROP52	DO MATRIX QUADRANT 8
AnalogPoint	JRP50DOMATRIX9	DROP2/DROP52	DO MATRIX QUADRANT 9
AnalogPoint	JRP50DOSTPNT1	DROP2/DROP52	AMOX DO SETPOINT
AnalogPoint	JRP50DOUPDTFREQ	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP50DOUPDTFREQ1	DROP2/DROP52	FLOTN DO UPDATE FREQ.
AnalogPoint	JRP50FCVX1034	DROP2/DROP52	ANITAMOX AIR FCV POS CMD
AnalogPoint	JRP50FGZI1053	DROP2/DROP52	MANHOLE 1 GATE POS FDBK
AnalogPoint	JRP50FGZI1058	DROP2/DROP52	MANHOLE 5 GATE POS FDBK
AnalogPoint	JRP50FITX1035	DROP2/DROP52	ANITAMOX AIR FLOW
AnalogPoint	JRP50FITX1059	DROP2/DROP52	ANITAMOX FEED PUMP FLOW
AnalogPoint	JRP50FLOATNDO1	DROP2/DROP52	FLOTN DO STPT ADJMNT QUAD 1-7
AnalogPoint	JRP50FLOATNDO1A	DROP2/DROP52	FLOTN DO STPT ADJSTMNT 8-14
AnalogPoint	JRP50FLOATNDO1B	DROP2/DROP52	FLOTN DO STPT ADJSTMNT 15-16
AnalogPoint	JRP50FLOTNDOMAX1	DROP2/DROP52	FLOTN DO MAXIMUM SETPOINT
AnalogPoint	JRP50FLOTNDOMIN1	DROP2/DROP52	FLOTN DO MINIMUM SETPOINT
AnalogPoint	JRP50FLOTNDOPERM2	DROP2/DROP52	FLOTN DO FLOW PERMISSIVE SP
AnalogPoint	JRP50FLOTNDOSPFACTR	DROP2/DROP52	FLOATING DO SP FACTOR
AnalogPoint	JRP50FLOTNDOTEST	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP50FLOTNFCTR1	DROP2/DROP52	FLOTN DO MATRIXOUTPUT FACTOR
AnalogPoint	JRP50FLTDOSPMAX	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP50FLTDOSPMIN	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP50FORCEVALU1A	DROP2/DROP52	FORCE VALUE EQ TANK NH4 SP
AnalogPoint	JRP50FORCEVALU2A	DROP2/DROP52	FORCE VALUE REACTOR NH4 SP
AnalogPoint	JRP50FORCEVALU3A	DROP2/DROP52	FORCE VALUE REACTOR NO3 SP
AnalogPoint	JRP50FORCEZERO1A	DROP2/DROP52	FORCE VALUE EQ TANK NO3 SP
AnalogPoint	JRP50FVZI1033	DROP2/DROP52	ANITAMOX AIR FCV POS
AnalogPoint	JRP50HIAIRFLOSTPT	DROP2/DROP52	AMOX HI AIR FLO SETPOINT
AnalogPoint	JRP50HIDOSTPT	DROP2/DROP52	ANITAMOX HI DO SETPOINT
AnalogPoint	JRP50LITX1002	DROP2/DROP52	REACTOR 1 ZONE 2 LEVEL
AnalogPoint	JRP50LOAIRFLOSTPT	DROP2/DROP52	AMOX LO AIR FLO SETPOINT
AnalogPoint	JRP50LOAIRFLOSTPT1	DROP2/DROP52	LOW AIR FLOW DEVIATION SP
AnalogPoint	JRP50LOAIRFLOTMR1	DROP2/DROP52	AMOX MIXER LO AIR FLO TIMER

AnalogPoint	JRP50LOAIRSP1	DROP2/DROP52	AMOX MIXERS LO AIR FLO ON SP
AnalogPoint	JRP50LOFLOALMDELAY	DROP2/DROP52	AMOX FD LO FLOW ALARM DELAY SP
AnalogPoint	JRP50LOFLOSTPT1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP50LOPHAIRONSP1A	DROP2/DROP52	LO PH AIR ON SETPOINT
AnalogPoint	JRP50LOPHAIRONSP2A	DROP2/DROP52	LO PH AIR ON VALVE TIMER
AnalogPoint	JRP50LOPHSHUTOFF1A	DROP2/DROP52	LOW PH SHUTOFF SP
AnalogPoint	JRP50MINX1000-SP	DROP2/DROP52	ANITAMOX AFV MIN OUTPUT
AnalogPoint	JRP50MINX1001-SP	DROP2/DROP52	ANITAMOX AFV HI PH SETPOINT
AnalogPoint	JRP50MINX1002-SP	DROP2/DROP52	ANITOMAX AFV PWR FAIL SETPOINT
AnalogPoint	JRP50MSTR1000-00	DROP2/DROP52	ANITAMOX AFCV MSTR PID OUTPUT
AnalogPoint	JRP50MSTR1000-01	DROP2/DROP52	AMOX pH BASED AFCV PID
AnalogPoint	JRP50MSTR1000-CO	DROP2/DROP52	ANITAMOX AFCV MSTR CTRL OUTPUT
AnalogPoint	JRP50N03RATIO1	DROP2/DROP52	N03 PRODUCTION RATIO
AnalogPoint	JRP50N03RATIOY1	DROP2/DROP52	MATRIX NO3 PRODUCTION VALUE Y1
AnalogPoint	JRP50N03RATIOY2	DROP2/DROP52	MATRIX NO3 PRODUCTION VALUE Y2
AnalogPoint	JRP50N03RATIOY3	DROP2/DROP52	MATRIX NO3 PRODUCTION VALUE Y3
AnalogPoint	JRP50NH4REM1	DROP2/DROP52	NH4 REMOVAL CALCULATION
AnalogPoint	JRP50NH4REMUVL1	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP50NH4XVALU1	DROP2/DROP52	MATRIX NH4 REMOVAL VALUE X1
AnalogPoint	JRP50NH4XVALU2	DROP2/DROP52	MATRIX NH4 REMOVAL VALUE X2
AnalogPoint	JRP50NH4XVALU3	DROP2/DROP52	MATRIX NH4 REMOVAL VALUE X3
AnalogPoint	JRP50NO3RATIO1	DROP2/DROP52	N03 PRODUCTION RATIO
AnalogPoint	JRP50PFAIRSP1	DROP2/DROP52	LO PH AIR PWR FAIL TMER
AnalogPoint	JRP50PHHRCNTR	DROP2/DROP52	PH ADJUSTMENT HOUR CNTR
AnalogPoint	JRP50PHISTPT1	DROP2/DROP52	AMOX PH INTEGRAL SETPOINT
AnalogPoint	JRP50PHPSTPT1	DROP2/DROP52	AMOX PH PROPORTIONAL SETPOINT
AnalogPoint	JRP50PIDTUNE1	DROP2/DROP52	SCFM PROPORTIONAL TUNING
AnalogPoint	JRP50PIDTUNE10	DROP2/DROP52	AMOX ph Based SCFM Integrl
AnalogPoint	JRP50PIDTUNE2	DROP2/DROP52	SCFM INTEGRAL TUNING
AnalogPoint	JRP50PIDTUNE3	DROP2/DROP52	DO PROPORTIONAL TUNING
AnalogPoint	JRP50PIDTUNE4	DROP2/DROP52	DO INTEGRAL TUNING
AnalogPoint	JRP50PIDTUNE5	DROP2/DROP52	AMOX ph Control Proportional
AnalogPoint	JRP50PIDTUNE6	DROP2/DROP52	AMOX ph Control Integral
AnalogPoint	JRP50PIDTUNE7	DROP2/DROP52	AMOX ph Based DO Proportional
AnalogPoint	JRP50PIDTUNE8	DROP2/DROP52	AMOX ph Based DO Integral
AnalogPoint	JRP50PIDTUNE9	DROP2/DROP52	AMOX ph Based SCFM Proprtnal
AnalogPoint	JRP50PMPOFFTMR	DROP2/DROP52	AMOX FD PMP OFF TIMER
AnalogPoint	JRP50PMPONTMR	DROP2/DROP52	AMOX FD PMP ON TIMER VALUE
AnalogPoint	JRP50PVXX1001-00	DROP2/DROP52	TRN 1 CRCY PMP RATIO PV
AnalogPoint	JRP50SCFMSTPT1	DROP2/DROP52	AMOX SCFM SETPOINT
AnalogPoint	JRP50SCXX1001	DROP2/DROP52	CENTRATE RECYCLE PMP SPEED CMD
AnalogPoint	JRP50SIXX1001	DROP2/DROP52	CENTRATE RECYCLE PMP SPEED
AnalogPoint	JRP50SIXX1001-VOL	DROP2/DROP52	CENTRATE PUMP EFFLUENT FLOW
AnalogPoint	JRP50SIXX1027	DROP2/DROP52	ANITAMOX FD PMP#1 SPD FEEDBACK
AnalogPoint	JRP50SIXX1028	DROP2/DROP52	ANITAMOX FD PMP#2 SPD FEEDBACK
AnalogPoint	JRP50SPCX1025	DROP2/DROP52	ANITAMOX FD PUMP #1 SPEED CMD
AnalogPoint	JRP50SPCX1026	DROP2/DROP52	ANITAMOX FD PUMP #2 SPEED CMD

AnalogPoint	JRP50STEP1800-PF	DROP2/DROP52	
AnalogPoint	JRP50STPT1001-L	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP50STPT1002-L	DROP2/DROP52	ANITAMOX AFV DO SETPOINT
AnalogPoint	JRP50STPT1003	DROP2/DROP52	AMOX PH SET POINT
AnalogPoint	JRP50STPT1004	DROP2/DROP52	AMOX PH GENERATED SCFM STPT
AnalogPoint	JRP50STPT1005	DROP2/DROP52	AMOX DO GENERATED SCFM STPT
AnalogPoint	JRP50STPT1006	DROP2/DROP52	AMOX PH GENERATED DO STPT
AnalogPoint	JRP50STPT1007-00	DROP2/DROP52	AMOX ph BASED FLO DO SP
AnalogPoint	JRP50STPT1007-01	DROP2/DROP52	pH BASED FLOATING DO TRK
AnalogPoint	JRP50STPT4001-L	DROP2/DROP52	ANITAMOX FD PMP FLOW SETPOINT
AnalogPoint	JRP50SWOVERDOSP1	DROP2/DROP52	SWITCHOVER DO SETPOINT
AnalogPoint	JRP50TFQF1000-00	DROP2/DROP52	AMOX PREVIOUS 24 HR FLO TOTAL
AnalogPoint	JRP50TFQH1000-00	DROP2/DROP52	AMOX CURR HR FLOW TOTAL
AnalogPoint	JRP50TFQM1000-00	DROP2/DROP52	AMOX PREV MONTH FLO TOTAL
AnalogPoint	JRP50TFQO1000-00	DROP2/DROP52	AMOX FLO CURR 24 HR FLO TOTAL
AnalogPoint	JRP50TFQP1000-00	DROP2/DROP52	AMOX PREV HR FLOW TOTAL
AnalogPoint	JRP50TFQZ1000-00	DROP2/DROP52	AMOX CURR MONTHLY FLO TOTAL
AnalogPoint	JRP50TRTM1001-HR	DROP2/DROP52	TRN 1 CRCY PMP MAINT RTME
AnalogPoint	JRP50TRTM2001-00	DROP2/DROP52	ANMOX MIXER#1 MAINT RTME
AnalogPoint	JRP50TRTM3001-00	DROP2/DROP52	AMOX MIXER RESET TOTAL RUNTIME
AnalogPoint	JRP50TRTM4001-00	DROP2/DROP52	ANITAMOX FD PMP MAINT RUNTIME
AnalogPoint	JRP50TRTM5001-HR	DROP2/DROP52	ANITAMOX HEATERS MAINT RUNTIM
AnalogPoint	JRP50TRTY1001-00	DROP2/DROP52	TRN 1 CRCY PMP RTME MIN
AnalogPoint	JRP50TRTY2001-00	DROP2/DROP52	ANMOX MIXER#1 RTME MIN
AnalogPoint	JRP50TRTY3001-00	DROP2/DROP52	AMOX MIXER RUNTIME MINUTES
AnalogPoint	JRP50TRTY4001-00	DROP2/DROP52	ANITAMOX FD PMP RUNTIME MIN
AnalogPoint	JRP50TRTY5001-00	DROP2/DROP52	ANITAMOX HEATERS RUNTIMR MIN
AnalogPoint	JRP50TRTZ1001-HR	DROP2/DROP52	TRN 1 CRCY PMP CUR RTME
AnalogPoint	JRP50TRTZ2001-HR	DROP2/DROP52	ANMOX MIXER#1 CUR RTME
AnalogPoint	JRP50TRTZ3001-HR	DROP2/DROP52	AMOX MIXER TOTAL RUNTIME
AnalogPoint	JRP50TRTZ4001-00	DROP2/DROP52	ANITAMOX FD PMP CURR RUNTIME
AnalogPoint	JRP50TRTZ5001-HR	DROP2/DROP52	ANITAMOX HEATERS CUR RUNTIME
AnalogPoint	JRP50ZCXX1052	DROP2/DROP52	MANHOLE 1 GATE POS CMD
AnalogPoint	JRP50ZCXX1057	DROP2/DROP52	MANHOLE 5 GATE POS CMD
AnalogPoint	SIM01FITX1000	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	SIM31LITX5101	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	SIM31LITX5102	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	SIM31LITX5103	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	SIM31LITX5104	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	SIM31LITX5105	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	SIM31LITX5106	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	SIM31LITX5107	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	SIM31LITX5108	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	SIM31LITX5109	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	SIM31PULSE-ACT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01A0008-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01A0009-OUT	DROP2/DROP52	@ Ovation Control Builder @

AnalogPoint	01A000A-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01A000B-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01A0016-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01A0018-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01A0019-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01A001C-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01A002F-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01CE007-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01CE008-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01CE009-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01CE01D-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01CE01E-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01DC008-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	01F3017-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	0203001-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	0207017-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	2SP1461-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	2SP5306-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	2SP5307-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	2SP8011-OUT	DROP2/DROP52	@ Ovation Control Builder @
AnalogPoint	JRP05STPT0511-OS	DROP2/DROP52	T1 DO OFFSET SP
AnalogPoint	JRP05STPT0513-OS	DROP2/DROP52	T3 DO OFFSET SP
AnalogPoint	JRP05STPT0514-OS	DROP2/DROP52	T4 DO OFFSET SP
AnalogPoint	JRP05STPT0516-OS	DROP2/DROP52	T6 DO OFFSET SP
AnalogPoint	JRP05STPT0517-OS	DROP2/DROP52	T7 DO OFFSET SP
AnalogPoint	JRP05STPT0519-OS	DROP2/DROP52	T9 DO OFFSET SP
AnalogPoint	JRP05STPTFCVAC-50	DROP2/DROP52	IFAS 2 FCV RATIO SETPOINT
AnalogPoint	JRP05STPTFCVAC-51	DROP2/DROP52	FCV RATIO SP IFAS T1
AnalogPoint	JRP05STPTFCVAC-53	DROP2/DROP52	FCV RATIO SP IFAS T3
AnalogPoint	JRP05STPTFCVAC-54	DROP2/DROP52	FCV RATIO IFAS T4
AnalogPoint	JRP05STPTFCVAC-55	DROP2/DROP52	FCV RATIO IFAS T5 SP
AnalogPoint	JRP05STPTFCVAC-56	DROP2/DROP52	FCV RATIO IFAS T6 SP
AnalogPoint	JRP05STPTFCVAC-57	DROP2/DROP52	FCV RATIO SP IFAS T7
AnalogPoint	JRP05STPTFCVAC-58	DROP2/DROP52	IFAS T8 FCV RATIO SP
AnalogPoint	JRP05STPTFCVAC-59	DROP2/DROP52	IFAS T9 FCV RATIO SP
AnalogPoint	JRP28LITX0101-01	DROP2/DROP52	CENTRATE VLT SMOOTHED LEVEL
AnalogPoint	JRP50AITP1048-ERR	DROP2/DROP52	AMOX PH SP VS ACTUAL ERROR
AnalogPoint	JRP50AITP1048AV-15	DROP2/DROP52	AMOX pH 15 MINUTE AVG
AnalogPoint	JRP50AITP1048AV-90	DROP2/DROP52	AMOX pH 90 MINUTE AVG
AnalogPoint	JRP50AMOXSLOPE-PH	DROP2/DROP52	AMOX pH CALCULATE SLOPE ERROR
AnalogPoint	JRP03AV0	DROP3/DROP53	DROP CONSTANT = 0
AnalogPoint	JRP03AV1	DROP3/DROP53	DROP CONSTANT = 1
AnalogPoint	JRP03AV10	DROP3/DROP53	DROP CONSTANT = 10
AnalogPoint	JRP03AV2	DROP3/DROP53	DROP CONSTANT = 2
AnalogPoint	JRP03AV3	DROP3/DROP53	DROP CONSTANT = 3
AnalogPoint	JRP03AV4	DROP3/DROP53	DROP CONSTANT = 4
AnalogPoint	JRP03AV60	DROP3/DROP53	DROP CONSTANT = 60

AnalogPoint	JRP05ACCT0500-C	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP08FITX1006	DROP3/DROP53	CAUSTIC FLOW TO SCRUBBER
AnalogPoint	JRP08FITXCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 FLOW
AnalogPoint	JRP08FITXCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 FLOW
AnalogPoint	JRP08FIXX1001	DROP3/DROP53	WAB FLOW
AnalogPoint	JRP08FIXX1002	DROP3/DROP53	WAB FLOW 2
AnalogPoint	JRP08FIXXTWAB	DROP3/DROP53	TWAB FLOW
AnalogPoint	JRP08FIXXWAB	DROP3/DROP53	SELECTED WAB FLOW
AnalogPoint	JRP08LIXX1000	DROP3/DROP53	CYCLONE TANK LEVEL
AnalogPoint	JRP08PITXCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 PRESSURE
AnalogPoint	JRP08PITXCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 PRESSURE
AnalogPoint	JRP08PREVHRAVG1	DROP3/DROP53	WAB FLOW PREV HR AVG
AnalogPoint	JRP08SCXX5101	DROP3/DROP53	WAB PUMP #1 SPEED COMMAND
AnalogPoint	JRP08SCXX5102	DROP3/DROP53	WAB PUMP #2 SPEED COMMAND
AnalogPoint	JRP08SCXX5103	DROP3/DROP53	WAB PUMP #3 SPEED COMMAND
AnalogPoint	JRP08SCXXCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 SPEED CMD
AnalogPoint	JRP08SCXXCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 SPEED CMD
AnalogPoint	JRP08SIXX5101	DROP3/DROP53	WAB PUMP SPEED FEEDBACK
AnalogPoint	JRP08SIXXCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 SPD FDBK
AnalogPoint	JRP08SIXXCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 SPD FDBK
AnalogPoint	JRP08STPT1002	DROP3/DROP53	WAB FLOW SETPOINT
AnalogPoint	JRP08STPT5101-L	DROP3/DROP53	CYCLONE TANK LEVEL SETPOINT
AnalogPoint	JRP08STPTCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 SETPT
AnalogPoint	JRP08STPTCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 SETPT
AnalogPoint	JRP08TFQF1001-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP08TFQF1002-00	DROP3/DROP53	PREVIOUS 24 HR FLOW
AnalogPoint	JRP08TFQF1003-00	DROP3/DROP53	TWAB FLOW 24 HR TOTAL
AnalogPoint	JRP08TFQF1006-00	DROP3/DROP53	PREVIOUS 24 HR CAUSTIC FLOW
AnalogPoint	JRP08TFQH1001-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP08TFQH1002-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP08TFQH1006-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP08TFQM1001-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP08TFQM1002-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP08TFQM1006-00	DROP3/DROP53	CAUSTIC PREVIOUS MONTH FLOW
AnalogPoint	JRP08TFQO1001-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP08TFQO1002-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP08TFQO1006-00	DROP3/DROP53	CURRENT 24 HR CAUSTIC FLOW
AnalogPoint	JRP08TFQP1001-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP08TFQP1002-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP08TFQP1006-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP08TFQZ1001-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP08TFQZ1002-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP08TFQZ1006-00	DROP3/DROP53	CAUSTIC CURR MONTH FLOW
AnalogPoint	JRP08TOTALFLO	DROP3/DROP53	CYCLONE FEED TOTAL FLOW
AnalogPoint	JRP08TRTMCFP1	DROP3/DROP53	CYCLONE PMP 1 MAINT RTME
AnalogPoint	JRP08TRTMCFP2	DROP3/DROP53	CYCLONE PMP 2 MAINT RTME
AnalogPoint	JRP08TRTYCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 RTME MIN

AnalogPoint	JRP08TRTYCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 RTME MIN
AnalogPoint	JRP08TRTZCFP1	DROP3/DROP53	CYCLONE FEED PMP 1 CUR RTME
AnalogPoint	JRP08TRTZCFP2	DROP3/DROP53	CYCLONE FEED PMP 2 CUR RTME
AnalogPoint	JRP08TRTZCYCL1	DROP3/DROP53	CYCLONE 1 RUN TIME
AnalogPoint	JRP08TRTZCYCL2	DROP3/DROP53	CYCLONE 2 RUN TIME
AnalogPoint	JRP08TRTZCYCL3	DROP3/DROP53	CYCLONE 3 RUN TIME
AnalogPoint	JRP08TRTZCYCL4	DROP3/DROP53	CYCLONE 4 RUN TIME
AnalogPoint	JRP08TRTZCYCL5	DROP3/DROP53	CYCLONE 5 RUN TIME
AnalogPoint	JRP08TRTZCYCL6	DROP3/DROP53	CYCLONE 6 RUN TIME
AnalogPoint	JRP08TRTZCYCL7	DROP3/DROP53	CYCLONE 7 RUN TIME
AnalogPoint	JRP08TRTZCYCL8	DROP3/DROP53	CYCLONE 8 RUN TIME
AnalogPoint	JRP08UNDERFLO	DROP3/DROP53	CYCLONE UNDERFLOW
AnalogPoint	JRP17FITX1001	DROP3/DROP53	GBT POLY FLOW METER 1
AnalogPoint	JRP17FITX1002	DROP3/DROP53	GBT POLY FLOW METER 2
AnalogPoint	JRP17FIXX1003	DROP3/DROP53	SELECTED POLY FLOW
AnalogPoint	JRP17POLYSTPT	DROP3/DROP53	LOGIC GENERATED POLY SETPOINT
AnalogPoint	JRP17SCXX1000	DROP3/DROP53	GBT POLY PUMP SPEED CMD
AnalogPoint	JRP17STPT0001	DROP3/DROP53	POLY FEED RATIO SET POINT
AnalogPoint	JRP17TFQF1001-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP17TFQO1001-00	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP22BDAMPS2	DROP3/DROP53	CENT.#2 BACKDRIVE AMPS
AnalogPoint	JRP22BDAMPS3	DROP3/DROP53	CENT.#3 BACKDRIVE AMPS
AnalogPoint	JRP22BDNIXX1	DROP3/DROP53	CENT.#1 BACKDRIVE TORQUE
AnalogPoint	JRP22BDNIXX2	DROP3/DROP53	CENT.#2 BACKDRIVE TORQUE
AnalogPoint	JRP22BDNIXX3	DROP3/DROP53	CENT.#3 BACKDRIVE TORQUE
AnalogPoint	JRP22BDRAMPS1	DROP3/DROP53	CENT.#1 BACKDRIVE AMPS
AnalogPoint	JRP22CENT1RUN1	DROP3/DROP53	CENT#1 RUN TIMER
AnalogPoint	JRP22CENT1RUN2	DROP3/DROP53	CENT#1 RESET RUN TIMER
AnalogPoint	JRP22CENT2RUN1	DROP3/DROP53	CENT#2 RUN TIMER
AnalogPoint	JRP22CENT2RUN2	DROP3/DROP53	CENT#2 RESET RUN TIMER
AnalogPoint	JRP22CENT3RUN1	DROP3/DROP53	CENT#3 RUN TIMER
AnalogPoint	JRP22CENT3RUN2	DROP3/DROP53	CENT#3 RESET RUN TIMER
AnalogPoint	JRP22CENTMODE-R	DROP3/DROP53	CENTRIFUGE 1 MODE READ
AnalogPoint	JRP22CENTMODE-W	DROP3/DROP53	CENTRIFUGE 1 MODE WRITE
AnalogPoint	JRP22DBSFLO1	DROP3/DROP53	CENT#1 SLUDGE FLOW
AnalogPoint	JRP22DBSFLO1-W	DROP3/DROP53	CENTRIFUGE 1 DBS FLO SP WRITE
AnalogPoint	JRP22DBSFLO2	DROP3/DROP53	CENT#2 SLUGE FLOW
AnalogPoint	JRP22DBSFLO3	DROP3/DROP53	CENT#3 SLUGE FLOW
AnalogPoint	JRP22DBSFLOSP1-R	DROP3/DROP53	CENTRIFUGE 1 DBS FLOW SP READ
AnalogPoint	JRP22DIFFSP1	DROP3/DROP53	CENT#1 DIFFERENTIAL SETPOINT
AnalogPoint	JRP22DIFFSP1-W	DROP3/DROP53	CENTRIFUGE 1 DIFF SP WRITE
AnalogPoint	JRP22DIFFSP1A	DROP3/DROP53	CENT #1 DIFF SP
AnalogPoint	JRP22DIFFSP2	DROP3/DROP53	CENT#2 DIFFERENTIAL SETPOINT
AnalogPoint	JRP22DIFFSP2A	DROP3/DROP53	CENT #2 DIFF SP
AnalogPoint	JRP22DIFFSP3	DROP3/DROP53	CENT#3 DIFFERENTIAL SETPOINT
AnalogPoint	JRP22DIFFSP3A	DROP3/DROP53	CENT #3 DIFF SP
AnalogPoint	JRP22DIFFSPD1	DROP3/DROP53	CENT#1 DIFFERENTIAL SPEED

AnalogPoint	JRP22DIFFSPD1A	DROP3/DROP53	CENT#1 DIFF SPEED
AnalogPoint	JRP22DIFFSPD2	DROP3/DROP53	CENT#2 DIFFERENTIAL SPEED
AnalogPoint	JRP22DIFFSPD2A	DROP3/DROP53	CENT#2 DIFF SPEED
AnalogPoint	JRP22DIFFSPD3	DROP3/DROP53	CENT#3 DIFFERENTIAL SPEED
AnalogPoint	JRP22DIFFSPD3A	DROP3/DROP53	CENT#3 DIFF SPEED
AnalogPoint	JRP22MDRAMPS1	DROP3/DROP53	CENT #1 MAIN DRIVE AMPS
AnalogPoint	JRP22MDRAMPS2	DROP3/DROP53	CENT #2 MAIN DRIVE AMPS
AnalogPoint	JRP22MDRAMPS3	DROP3/DROP53	CENT #3 MAIN DRIVE AMPS
AnalogPoint	JRP22MNDRSPD1	DROP3/DROP53	CENT#1 MAIN DRIVE BOWL SPEED
AnalogPoint	JRP22MNDRSPD2	DROP3/DROP53	CENT#2 MAIN DRIVE BOWL SPEED
AnalogPoint	JRP22MNDRSPD3	DROP3/DROP53	CENT#3 MAIN DRIVE BOWL SPEED
AnalogPoint	JRP22PINIONSP1	DROP3/DROP53	CENT#1 PINION SETPOINT
AnalogPoint	JRP22PINIONSP1-W	DROP3/DROP53	CENTRIFUGE 1 PINION SP WRITE
AnalogPoint	JRP22PINIONSP2	DROP3/DROP53	CENT#2 PINION SETPOINT
AnalogPoint	JRP22PINIONSP3	DROP3/DROP53	CENT#3 PINION SETPOINT
AnalogPoint	JRP22PINSPD1	DROP3/DROP53	CENT#1 PINION SPEED
AnalogPoint	JRP22PINSPD2	DROP3/DROP53	CENT#2 PINION SPEED
AnalogPoint	JRP22PINSPD3	DROP3/DROP53	CENT#3 PINION SPEED
AnalogPoint	JRP22POLYFLO1	DROP3/DROP53	CENT #1 POLYMER FLOW
AnalogPoint	JRP22POLYFLO1-W	DROP3/DROP53	CENTRIFUGE 1 POLY FLO SP WRITE
AnalogPoint	JRP22POLYFLO1A	DROP3/DROP53	CENT #1 POLYMER FLOW
AnalogPoint	JRP22POLYFLO2	DROP3/DROP53	CENT #2 POLYMER FLOW
AnalogPoint	JRP22POLYFLO2A	DROP3/DROP53	CENT#2 POLYMER FLOW
AnalogPoint	JRP22POLYFLO3	DROP3/DROP53	CENT #3 POLYMER FLOW
AnalogPoint	JRP22POLYFLO3A	DROP3/DROP53	CENT#3 POLYMER FLOW
AnalogPoint	JRP22POLYFLOSP1-R	DROP3/DROP53	CENTRIFUGE 1 POLY FLO SP READ
AnalogPoint	JRP22TFQFFLO1	DROP3/DROP53	DBS1 PREVIOUS 24 HR FLOW TOTAL
AnalogPoint	JRP22TFQFFLO1A	DROP3/DROP53	POLY1 PREVIOUS 24HR FLOW TOTAL
AnalogPoint	JRP22TFQFFLO2	DROP3/DROP53	DBS2 PREVIOUS 24 HR FLOW TOTAL
AnalogPoint	JRP22TFQFFLO2A	DROP3/DROP53	POLY2 PREVIOUS 24HR FLOW TOTAL
AnalogPoint	JRP22TFQFFLO3	DROP3/DROP53	DBS3 PREVIOUS 24 HR FLOW TOTAL
AnalogPoint	JRP22TFQFFLO3A	DROP3/DROP53	POLY3 PREVIOUS 24HR FLOW TOTAL
AnalogPoint	JRP22TFQHFLO1	DROP3/DROP53	DBS1 CURRENT HOUR FLOW TOTAL
AnalogPoint	JRP22TFQHFLO1A	DROP3/DROP53	POLY1 CURRENT HOUR FLOW TOTAL
AnalogPoint	JRP22TFQHFLO2	DROP3/DROP53	DBS2 CURRENT HOUR FLOW TOTAL
AnalogPoint	JRP22TFQHFLO2A	DROP3/DROP53	POLY2 CURRENT HOUR FLOW TOTAL
AnalogPoint	JRP22TFQHFLO3	DROP3/DROP53	DBS3 CURRENT HOUR FLOW TOTAL
AnalogPoint	JRP22TFQHFLO3A	DROP3/DROP53	POLY3 CURRENT HOUR FLOW TOTAL
AnalogPoint	JRP22TFQOFLO1	DROP3/DROP53	DBS1 CURRENT 24 HR FLOW TOTAL
AnalogPoint	JRP22TFQOFLO1A	DROP3/DROP53	POLY1 CURRENT 24HR FLOW TOTAL
AnalogPoint	JRP22TFQOFLO2	DROP3/DROP53	DBS2 CURRENT 24 HR FLOW TOTAL
AnalogPoint	JRP22TFQOFLO2A	DROP3/DROP53	POLY2 CURRENT 24HR FLOW TOTAL
AnalogPoint	JRP22TFQOFLO3	DROP3/DROP53	DBS3 CURRENT 24 HR FLOW TOTAL
AnalogPoint	JRP22TFQOFLO3A	DROP3/DROP53	POLY3 CURRENT 24HR FLOW TOTAL
AnalogPoint	JRP22TFQPFLO1	DROP3/DROP53	DBS1 PREVIOUS HOUR FLOW TOTAL
AnalogPoint	JRP22TFQPFLO1A	DROP3/DROP53	POLY1 PREVIOUS HOUR FLOW TOTAL
AnalogPoint	JRP22TFQPFLO2	DROP3/DROP53	DBS2 PREVIOUS HOUR FLOW TOTAL

AnalogPoint	JRP22TFQPFLO2A	DROP3/DROP53	POLY2 PREVIOUS HOUR FLOW TOTAL
AnalogPoint	JRP22TFQPFLO3	DROP3/DROP53	DBS3 PREVIOUS HOUR FLOW TOTAL
AnalogPoint	JRP22TFQPFLO3A	DROP3/DROP53	POLY3 PREVIOUS HOUR FLOW TOTAL
AnalogPoint	JRP22TORXSP1	DROP3/DROP53	CENT#1 TORQUE SETPOINT
AnalogPoint	JRP22TORXSP1-W	DROP3/DROP53	CENTRIFUGE 1 TORX SP WRITE
AnalogPoint	JRP22TORXSP2	DROP3/DROP53	CENT#2 TORQUE SETPOINT
AnalogPoint	JRP22TORXSP3	DROP3/DROP53	CENT#3 TORQUE SETPOINT
AnalogPoint	JRP46CTDN4600-S1	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46CTDN4600-S10	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46CTDN4600-S11	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46CTDN4600-S12	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46CTDN4600-S2	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46CTDN4600-S3	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46CTDN4600-S4	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46CTDN4600-S5	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46CTDN4600-S6	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46CTDN4600-S7	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46CTDN4600-S8	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46CTDN4600-S9	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46LITX1001	DROP3/DROP53	CARBON STRG TNK 1 LEVEL
AnalogPoint	JRP46LITX1002	DROP3/DROP53	CARBON STRG TNK 2 LEVEL
AnalogPoint	JRP46LIXX1001	DROP3/DROP53	CARBON STRG TNK 1 LVL (AO)
AnalogPoint	JRP46LIXX1002	DROP3/DROP53	CARBON STRG TNK 2 LVL (AO)
AnalogPoint	JRP46OFTR2001-00	DROP3/DROP53	CRBN RECRC PMP 1 OFF TIMER
AnalogPoint	JRP46OFTR2002-00	DROP3/DROP53	CRBN RECRC PMP 2 OFF TIMER
AnalogPoint	JRP46ONTR2001-00	DROP3/DROP53	CRBN RECRC PMP 1 ON TIMER
AnalogPoint	JRP46ONTR2002-00	DROP3/DROP53	CRBN RECRC PMP 2 ON TIMER
AnalogPoint	JRP46PVAX3000-00	DROP3/DROP53	CRBN FEED PMP PROC VAR - 1-9
AnalogPoint	JRP46PVBX3000-00	DROP3/DROP53	CRBN FEED PMP PROC VAR - 10-11
AnalogPoint	JRP46SCXX3001	DROP3/DROP53	CARBON FEED PMP 1 SPEED CMD
AnalogPoint	JRP46SCXX3002	DROP3/DROP53	CARBON FEED PMP 2 SPEED CMD
AnalogPoint	JRP46SCXX3003	DROP3/DROP53	CARBON FEED PMP 3 SPEED CMD
AnalogPoint	JRP46SCXX3004	DROP3/DROP53	CARBON FEED PMP 4 SPEED CMD
AnalogPoint	JRP46SCXX3005	DROP3/DROP53	CARBON FEED PMP 5 SPEED CMD
AnalogPoint	JRP46SCXX3006	DROP3/DROP53	CARBON FEED PMP 6 SPEED CMD
AnalogPoint	JRP46SCXX3007	DROP3/DROP53	CARBON FEED PMP 7 SPEED CMD
AnalogPoint	JRP46SCXX3008	DROP3/DROP53	CARBON FEED PMP 8 SPEED CMD
AnalogPoint	JRP46SCXX3009	DROP3/DROP53	CARBON FEED PMP 9 SPEED CMD
AnalogPoint	JRP46SCXX3010	DROP3/DROP53	CARBON FEED PMP 10 SPEED CMD
AnalogPoint	JRP46SCXX3011	DROP3/DROP53	CARBON FEED PMP 11 SPEED CMD
AnalogPoint	JRP46SIXX3001	DROP3/DROP53	CARBON FEED PMP 1 SPEED
AnalogPoint	JRP46SIXX3001-VOL	DROP3/DROP53	CRBN FEED PMP 1 CALCD FLOW
AnalogPoint	JRP46SIXX3002	DROP3/DROP53	CARBON FEED PMP 2 SPEED
AnalogPoint	JRP46SIXX3002-VOL	DROP3/DROP53	CRBN FEED PMP 2 CALCD FLOW
AnalogPoint	JRP46SIXX3003	DROP3/DROP53	CARBON FEED PMP 3 SPEED
AnalogPoint	JRP46SIXX3003-VOL	DROP3/DROP53	CRBN FEED PMP 3 CALCD FLOW
AnalogPoint	JRP46SIXX3004	DROP3/DROP53	CARBON FEED PMP 4 SPEED

AnalogPoint	JRP46SIXX3004-VOL	DROP3/DROP53	CRBN FEED PMP 4 CALCD FLOW
AnalogPoint	JRP46SIXX3005	DROP3/DROP53	CARBON FEED PMP 5 SPEED
AnalogPoint	JRP46SIXX3005-VOL	DROP3/DROP53	CRBN FEED PMP 5 CALCD FLOW
AnalogPoint	JRP46SIXX3006	DROP3/DROP53	CARBON FEED PMP 6 SPEED
AnalogPoint	JRP46SIXX3006-VOL	DROP3/DROP53	CRBN FEED PMP 6 CALCD FLOW
AnalogPoint	JRP46SIXX3007	DROP3/DROP53	CARBON FEED PMP 7 SPEED
AnalogPoint	JRP46SIXX3007-VOL	DROP3/DROP53	CRBN FEED PMP 7 CALCD FLOW
AnalogPoint	JRP46SIXX3008	DROP3/DROP53	CARBON FEED PMP 8 SPEED
AnalogPoint	JRP46SIXX3008-VOL	DROP3/DROP53	CRBN FEED PMP 8 CALCD FLOW
AnalogPoint	JRP46SIXX3009	DROP3/DROP53	CARBON FEED PMP 9 SPEED
AnalogPoint	JRP46SIXX3009-VOL	DROP3/DROP53	CRBN FEED PMP 9 CALCD FLOW
AnalogPoint	JRP46SIXX3010	DROP3/DROP53	CARBON FEED PMP 10 SPEED
AnalogPoint	JRP46SIXX3010-VOL	DROP3/DROP53	CRBN FEED PMP 10 CALCD FLOW
AnalogPoint	JRP46SIXX3011	DROP3/DROP53	CARBON FEED PMP 11 SPEED
AnalogPoint	JRP46SIXX3011-VOL	DROP3/DROP53	CRBN FEED PMP 11 CALCD FLOW
AnalogPoint	JRP46STEP4600-PF	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46STPT1001-CONC	DROP3/DROP53	CRBN STRG TNK 1 CHEM CONC
AnalogPoint	JRP46STPT1001-STR	DROP3/DROP53	CRBN STRG TNK 1 CHEM STENGTH
AnalogPoint	JRP46STPT1002-CONC	DROP3/DROP53	CRBN STRG TNK 2 CHEM CONC
AnalogPoint	JRP46STPT1002-STR	DROP3/DROP53	CRBN STRG TNK 2 CHEM STRENGTH
AnalogPoint	JRP46STPT3001-L	DROP3/DROP53	CRBN FEED PMP 1 DOSE STPT
AnalogPoint	JRP46STPT3002-L	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46STPT3003-L	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46STPT3004-L	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46STPT3005-L	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46STPT3006-L	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46STPT3007-L	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46STPT3008-L	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46STPT3009-L	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46STPT3010-L	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46STPT3011-L	DROP3/DROP53	@ Ovation Control Builder @
AnalogPoint	JRP46TRTM2001-HR	DROP3/DROP53	CRBN RECRC PMP 1 MAINT RTME
AnalogPoint	JRP46TRTM2002-HR	DROP3/DROP53	CRBN RECRC PMP 2 MAINT RTME
AnalogPoint	JRP46TRTM3001-HR	DROP3/DROP53	CRBN FEED PMP 1 MAINT RTME
AnalogPoint	JRP46TRTM3002-HR	DROP3/DROP53	CRBN FEED PMP 2 MAINT RTME
AnalogPoint	JRP46TRTM3003-HR	DROP3/DROP53	CRBN FEED PMP 3 MAINT RTME
AnalogPoint	JRP46TRTM3004-HR	DROP3/DROP53	CRBN FEED PMP 4 MAINT RTME
AnalogPoint	JRP46TRTM3005-HR	DROP3/DROP53	CRBN FEED PMP 5 MAINT RTME
AnalogPoint	JRP46TRTM3006-HR	DROP3/DROP53	CRBN FEED PMP 6 MAINT RTME
AnalogPoint	JRP46TRTM3007-HR	DROP3/DROP53	CRBN FEED PMP 7 MAINT RTME
AnalogPoint	JRP46TRTM3008-HR	DROP3/DROP53	CRBN FEED PMP 8 MAINT RTME
AnalogPoint	JRP46TRTM3009-HR	DROP3/DROP53	CRBN FEED PMP 9 MAINT RTME
AnalogPoint	JRP46TRTM3010-HR	DROP3/DROP53	CRBN FEED PMP 10 MAINT RTME
AnalogPoint	JRP46TRTM3011-HR	DROP3/DROP53	CRBN FEED PMP 11 MAINT RTME
AnalogPoint	JRP46TRTY2001-00	DROP3/DROP53	CRBN RECRC PMP 1 RTME MIN
AnalogPoint	JRP46TRTY2002-00	DROP3/DROP53	CRBN RECRC PMP 2 RTME MIN
AnalogPoint	JRP46TRTY3001-00	DROP3/DROP53	CRBN FEED PMP 1 RTME MIN

AnalogPoint	JRP46TRTY3002-00	DROP3/DROP53	CRBN FEED PMP 2 RTME MIN
AnalogPoint	JRP46TRTY3003-00	DROP3/DROP53	CRBN FEED PMP 3 RTME MIN
AnalogPoint	JRP46TRTY3004-00	DROP3/DROP53	CRBN FEED PMP 4 RTME MIN
AnalogPoint	JRP46TRTY3005-00	DROP3/DROP53	CRBN FEED PMP 5 RTME MIN
AnalogPoint	JRP46TRTY3006-00	DROP3/DROP53	CRBN FEED PMP 6 RTME MIN
AnalogPoint	JRP46TRTY3007-00	DROP3/DROP53	CRBN FEED PMP 7 RTME MIN
AnalogPoint	JRP46TRTY3008-00	DROP3/DROP53	CRBN FEED PMP 8 RTME MIN
AnalogPoint	JRP46TRTY3009-00	DROP3/DROP53	CRBN FEED PMP 9 RTME MIN
AnalogPoint	JRP46TRTY3010-00	DROP3/DROP53	CRBN FEED PMP 10 RTME MIN
AnalogPoint	JRP46TRTY3011-00	DROP3/DROP53	CRBN FEED PMP 11 RTME MIN
AnalogPoint	JRP46TRTZ2001-HR	DROP3/DROP53	CRBN RECRC PMP 1 CUR RTME
AnalogPoint	JRP46TRTZ2002-HR	DROP3/DROP53	CRBN RECRC PMP 2 CUR RTME
AnalogPoint	JRP46TRTZ3001-HR	DROP3/DROP53	CRBN FEED PMP 1 CUR RTME
AnalogPoint	JRP46TRTZ3002-HR	DROP3/DROP53	CRBN FEED PMP 2 CUR RTME
AnalogPoint	JRP46TRTZ3003-HR	DROP3/DROP53	CRBN FEED PMP 3 CUR RTME
AnalogPoint	JRP46TRTZ3004-HR	DROP3/DROP53	CRBN FEED PMP 4 CUR RTME
AnalogPoint	JRP46TRTZ3005-HR	DROP3/DROP53	CRBN FEED PMP 5 CUR RTME
AnalogPoint	JRP46TRTZ3006-HR	DROP3/DROP53	CRBN FEED PMP 6 CUR RTME
AnalogPoint	JRP46TRTZ3007-HR	DROP3/DROP53	CRBN FEED PMP 7 CUR RTME
AnalogPoint	JRP46TRTZ3008-HR	DROP3/DROP53	CRBN FEED PMP 8 CUR RTME
AnalogPoint	JRP46TRTZ3009-HR	DROP3/DROP53	CRBN FEED PMP 9 CUR RTME
AnalogPoint	JRP46TRTZ3010-HR	DROP3/DROP53	CRBN FEED PMP 10 CUR RTME
AnalogPoint	JRP46TRTZ3011-HR	DROP3/DROP53	CRBN FEED PMP 11 CUR RTME
AnalogPoint	JRP47TRTM2002-HR	DROP3/DROP53	CRBN RECRC PMP 2 MAINT RTME
AnalogPoint	JRP47TRTY2002-00	DROP3/DROP53	CRBN RECRC PMP 2 RTME MIN
AnalogPoint	JRP47TRTZ2002-HR	DROP3/DROP53	CRBN RECRC PMP 2 CUR RTME
AnalogPoint	JRP48TRTM3001-HR	DROP3/DROP53	CRBN FEED PMP 1 MAINT RTME
AnalogPoint	JRP48TRTY3001-00	DROP3/DROP53	CRBN FEED PMP 1 RTME MIN
AnalogPoint	JRP48TRTZ3001-HR	DROP3/DROP53	CRBN FEED PMP 1 CUR RTME
AnalogPoint	JRP49TRTM3002-HR	DROP3/DROP53	CRBN FEED PMP 2 MAINT RTME
AnalogPoint	JRP49TRTY3002-00	DROP3/DROP53	CRBN FEED PMP 2 RTME MIN
AnalogPoint	JRP49TRTZ3002-HR	DROP3/DROP53	CRBN FEED PMP 2 CUR RTME
AnalogPoint	JRP50LITX1003	DROP3/DROP53	SLUDGE HOLDING TANK LEVEL
AnalogPoint	JRP50TRTM3003-HR	DROP3/DROP53	CRBN FEED PMP 3 MAINT RTME
AnalogPoint	JRP50TRTY3003-00	DROP3/DROP53	CRBN FEED PMP 3 RTME MIN
AnalogPoint	JRP50TRTZ3003-HR	DROP3/DROP53	CRBN FEED PMP 3 CUR RTME
AnalogPoint	JRP51TRTM3004-HR	DROP3/DROP53	CRBN FEED PMP 4 MAINT RTME
AnalogPoint	JRP51TRTY3004-00	DROP3/DROP53	CRBN FEED PMP 4 RTME MIN
AnalogPoint	JRP51TRTZ3004-HR	DROP3/DROP53	CRBN FEED PMP 4 CUR RTME
AnalogPoint	JRP52TRTM3005-HR	DROP3/DROP53	CRBN FEED PMP 5 MAINT RTME
AnalogPoint	JRP52TRTY3005-00	DROP3/DROP53	CRBN FEED PMP 5 RTME MIN
AnalogPoint	JRP52TRTZ3005-HR	DROP3/DROP53	CRBN FEED PMP 5 CUR RTME
AnalogPoint	JRP53TRTM3006-HR	DROP3/DROP53	CRBN FEED PMP 6 MAINT RTME
AnalogPoint	JRP53TRTY3006-00	DROP3/DROP53	CRBN FEED PMP 6 RTME MIN
AnalogPoint	JRP53TRTZ3006-HR	DROP3/DROP53	CRBN FEED PMP 6 CUR RTME
AnalogPoint	JRP54TRTM3007-HR	DROP3/DROP53	CRBN FEED PMP 7 MAINT RTME
AnalogPoint	JRP54TRTY3007-00	DROP3/DROP53	CRBN FEED PMP 7 RTME MIN

AnalogPoint	JRP54TRTZ3007-HR	DROP3/DROP53	CRBN FEED PMP 7 CUR RTME
AnalogPoint	JRP55TRTM3008-HR	DROP3/DROP53	CRBN FEED PMP 8 MAINT RTME
AnalogPoint	JRP55TRTY3008-00	DROP3/DROP53	CRBN FEED PMP 8 RTME MIN
AnalogPoint	JRP55TRTZ3008-HR	DROP3/DROP53	CRBN FEED PMP 8 CUR RTME
AnalogPoint	JRP56TRTM3009-HR	DROP3/DROP53	CRBN FEED PMP 9 MAINT RTME
AnalogPoint	JRP56TRTY3009-00	DROP3/DROP53	CRBN FEED PMP 9 RTME MIN
AnalogPoint	JRP56TRTZ3009-HR	DROP3/DROP53	CRBN FEED PMP 9 CUR RTME
AnalogPoint	JRP57TRTM3010-HR	DROP3/DROP53	CRBN FEED PMP 10 MAINT RTME
AnalogPoint	JRP57TRTY3010-00	DROP3/DROP53	CRBN FEED PMP 10 RTME MIN
AnalogPoint	JRP57TRTZ3010-HR	DROP3/DROP53	CRBN FEED PMP 10 CUR RTME
AnalogPoint	JRP58TRTM3011-HR	DROP3/DROP53	CRBN FEED PMP 11 MAINT RTME
AnalogPoint	JRP58TRTY3011-00	DROP3/DROP53	CRBN FEED PMP 11 RTME MIN
AnalogPoint	JRP58TRTZ3011-HR	DROP3/DROP53	CRBN FEED PMP 11 CUR RTME
AnalogPoint	JRPCENT3RUN2	DROP3/DROP53	CENT#3 RESET RUN TIMER
AnalogPoint	JRP22PINIONSP2-W	DROP3/DROP53	CENTRIFUGE 2 PINION SP WRITE
AnalogPoint	JRP17LITX0001	DROP212	CENT POLY TANK 1 LVL
AnalogPoint	JRP17LITX0002	DROP212	POLY SYSTEM TANK 2 LEVEL
AnalogPoint	JRP17SIXX0101	DROP212	BLOWER VALVE POSITION

IO_LOCATION IO_CHANNEL

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1.2.1	2
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4.1.2.3	2

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4.1.2.3 8

1.2.3 3

1.2.3 6

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1.2.3 2

1.2.3 4
1.2.2 4
1.2.3 5

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Hampton Roads Sanitation District

Treatment Plants

Arc Flash Study Report

James River Treatment Plant

March 2015

HDR
5700 Lake Wright Drive
Twin Oaks I, Suite 300
Norfolk, VA 23502

Hampton Roads Sanitation District

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Hampton Roads Sanitation District
Arc Flash Study
Treatment Plants - James River Treatment Plant
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INTRODUCTION

PURPOSE

The purpose of this study is to perform an arc flash analysis in accordance with Institute of Electrical and Electronics Engineers (IEEE) Standard 1584 and National Fire Protection Association (NFPA) Standard 70E, and provide the Hampton Roads Sanitation District (HRSD) with the information for the required warning labels to place on electrical equipment. The reports address the arc flash analyses conducted for the HRSD treatment plants, pump stations, and other facilities.

Arc flashes are a potential safety hazard that can occur when working on energized electrical equipment such as switchgear, switchboards, motor control centers, transformers, panelboards, and some control panels. The Occupational Safety and Health Administration (OSHA) is the organization that enforces safety regulations to help prevent arc flash injuries. OSHA requires certain personal protective equipment (PPE) to be worn when working on energized electrical equipment. The NFPA Standard 70E 2012 requires electrical equipment be labeled with arc flash hazard information. An arc flash study establishes incident energy levels and arc flash boundaries at the electrical equipment for use in selecting the level of PPE and work procedures needed to safely perform work on the energized equipment. In addition, an arc flash study identifies where there are high incident energy levels associated with electrical equipment. This provides the opportunity to investigate the mitigating circumstances contributing to this high incident energy level with the intended result of evaluating methods to reduce this incident energy level.

In general, arc flash studies are performed on entire facility electrical distribution systems, including medium voltage and low voltage electrical equipment. The incident energy levels are calculated for each piece of electrical equipment, and a determination is made as to the NFPA 70E hazard/risk category for that equipment. NFPA 70E uses this category to determine the protective clothing and gear that are necessary to work on that equipment while energized. Arc flash studies examine potential worst case scenarios for the electrical distribution system. This is to determine the greatest incident energy levels of the equipment. Systems less than 240 V or less typically have low short-circuit current levels. Since these fault currents may be too low to trip the main circuit breaker immediately, very high arc flash energy levels may result. NFPA 70E indicates when arc flash calculations should be performed on the system.

The ultimate goal of this study is to calculate the available incident energy levels for the various pieces of electrical equipment and their resultant arc flash hazard/risk category. The PPE stated for these categories is for arc flash hazards only, and not for other hazards associated with electrical equipment. Therefore, while a given hazard/risk category is listed for specific electrical equipment, other hazards, such as voltage levels, may dictate other, or additional, PPE before working on the equipment. Other precautions may also be required for those hazards. It is incumbent upon HRSD to refer to the appropriate standards when using this information to provide the appropriate PPE, labeling, and workplace practices for their employees.

BACKGROUND

An arc flash is a rapid thermal energy release caused by an arcing fault. An arcing fault is the flow of current through the air between phase conductors or between phase and neutral or ground conductors. The transition from an arcing fault to an arc flash takes a finite amount of time. The difficulty lies in the fact that arcing faults are often of much less current than standard bolted fault currents upon which most protective device settings are based. Arc flashes can emit a great amount of energy in a fraction of a second. Temperature of the arc can reach up to 35,000 Degrees F. At these temperatures, radiated heat can cause exposed skin burns and clothing can ignite. Metals involved in the arc can melt and be propelled for distances of up to 10 feet, and sound waves can reach 140 decibels (dB). An arc flash can cause critical or even fatal injury. Overall damage due to an arc flash, including the thermal and blast effects, can be disastrous.

DEFINITIONS

Arc Flash Boundary – The calculated distance from energized electrical equipment that the incident energy is 1.2 cal/cm^2. Expressed in inches.

Hazard/Risk Category – A rating system in NFPA 70E based on arc flash incident energy levels to determine the necessary personal protective equipment (PPE) required to work on energized electrical equipment. Categories 0, 1, 2, 3, 4, and Greater Than Category 4.

Incident Energy – The calculated thermal energy that can be forced on a surface at a specific distance from energized electrical equipment during an arc flash. Expressed in calories per square centimeter (cal/cm^2).

Personal Protective Equipment (PPE) – Specific clothing and gear required by OSHA to wear when working on energized electrical equipment. Each arc flash hazard/risk category requires a different number of clothing layers and gear.

Medium Voltage Equipment – Equipment operating at a voltage of greater than 600 V.

Low Voltage Equipment – Equipment operating at a voltage of 600 V and less.

SCOPE

The scope of this arc flash study includes:

- Data collection – Gather all related existing documents to include one-line diagrams, record drawings, and study reports. Obtain utility information from Dominion Virginia Power (DVP).
- Perform a field survey of all electrical equipment for the purpose of determining the information necessary to perform the study. This includes equipment manufacturer, model number, sizes, load sizes, etc.
- Create a model of the electrical distribution system; entering all available data for each device/component into the model.
- Perform a short circuit analysis to determine the minimum and maximum short circuit current at all electrical equipment.
- Perform a coordination study to determine the existing coordination of electrical equipment and provide recommended equipment settings for improvement.
- Perform an arc flash hazard analysis in accordance with the 2002 Edition of IEEE Standard 1584 to determine the hazard risk category associated with each piece of equipment as defined in the 2012 Edition of NFPA 70E. The following items of electrical equipment if in use at the facility will be required to have an risk category assigned:
    - 13.2 kV Switchgear
    - 4160 V Switchgear
    - 4160 V Motor Control Centers
    - 480 V Switchgear
    - 480 V Switchboards
    - 480 V Motor Control Centers
    - 480 V Panelboards
    - 480 V Variable Frequency Drives (separately mounted)
    - 480 V Transfer Switches

From this study, arc flash warning labels can be generated and installed on the electrical equipment by HRSD. These labels should include:

- Flash Hazard Boundary (Arc Flash Boundary)
- Incident Energy with Corresponding Working Distance
- Hazard/Risk Category
- Voltage
- Limited Approach, Restricted Approach, and Prohibited Approach Distances

LIMITATIONS ON THE USE OF THIS STUDY

Arc flash calculations are based on short circuit analysis of electrical distribution systems which takes into account system configuration and characteristics. Any modification of the electrical system, such as the addition of equipment or a change in the utility system altering its contribution to system faults, will affect arc flash. Therefore, any changes made to the electrical system will require an updated arc flash analysis.

HDR's arc flash hazard analysis is performed pursuant to NFPA 70E and IEEE Standard 1584 for purposes of calculating the flash protection boundary distances and incident energy levels. The analysis does not include the recommendation of personal protective equipment (PPE), the creation of necessary arc flash warning labels, electrical safety programs, operating procedures, training, or tool selection. This information is provided solely for the use of the owner of the facility, and no other person (including but not limited to owner's employees or contractors) is an intended beneficiary of this information, and HDR assumes no duties towards them.

STANDARDS

As previously mentioned, OSHA is the organization that enforces safety regulations to help prevent arc flash injuries. OSHA requirements are based on these standards:

- *OSHA 29 Code of Federal Regulations (CFR) Part 1910 Subpart S*
    - Requires employers to evaluate the workplace for hazards.
- *National Fire Protection Association (NFPA) 70E – Standard for Electrical Safety in the Workplace*
    - Defines Hazard/Risk Categories
    - Specifies PPE
    - Specifies Boundary Limits
    - Requires marking of equipment for arc flash hazards with specific information
- *NFPA 70 National Electrical Code (NEC)*
    - Requires marking of equipment for arc flash hazards
    - Defines requirements for signage
- *Institute of Electronics and Electrical Engineers (IEEE) 1584 – Guide for Performing Arc Flash Hazard Calculations*
    - Provides a method to calculate arc flash energy
- *Underwriter's Laboratory (UL) 969 Standard for Marking and Labeling Systems*
    - Describes the requirements for adhesive labels and sign to be installed on equipment.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE is required for each arc flash hazard/risk category depending on the incident energy level. Refer to the appropriate tables in NFPA 70E Standard for PPE and additional equipment required for the calculated incident energy levels.

JRTP JAMES RIVER TREATMENT PLANT

JRTP-1 INTRODUCTION

Protective device coordination, short circuit, and arc flash analyses were performed for the James River Treatment Plant (JRTP) to determine the short circuit currents, incident energy levels, arc flash boundaries, and arc flash hazard/risk categories for major electrical equipment.

JRTP-2 DATA COLLECTION

Equipment data and one-line diagram modifications for this study update were obtained from the following documents:

- Hampton Roads Sanitation District James River Treatment Plant Phase I Improvements project dated May 2009.
    - Construction drawings dated May 2009.
    - Coordination Study dated April 1, 2010.
    - Short Circuit Study dated February 22, 2010.
- James River Treatment Plant Digester Feed Improvements project dated February to June 2014.
    - Shop drawings.
    - One-line diagram sketch by HRSD.

Field data for all existing equipment was originally collected during site visits on November 20 and 21, 2008. A site visit was performed on February 11, 2014 for the new equipment per the projects above. The existing major electrical equipment at JRTP included:

- 4,160 V Switchgear
- 480 V Switchboards
- 480 V Motor Control Centers (MCC)
- 480 V Motor Starter Racks
- 480 V Panelboards
- 480 V Variable Frequency Drive (VFD) Panels
- 480 V Automatic Transfer Switches (ATS)

Bus size, protective device settings, circuit sizes, motor horsepowers, and general loads were collected along with transformer sizes and their percent impedances. Circuit sizes and lengths were recorded in the field when available, otherwise were estimated based on construction drawings and contractor submittals. A listing of the existing protective devices and their settings is contained in Appendix JRTP-A.

Utility transformer size, transformer and source impedances, X/R ratios, and voltages were provided by Dominion Virginia Power (DVP). The existing service is a pad-mounted, 2500 kVA, 34,500 Primary to 4,160V Secondary, three-phase transformer. DVP provided the minimum and maximum percent impedances and positive and zero X

and R values of the transformer. These values were used to compute the following %Z and X/R values:

- Minimum %Z – 5.3763
- Maximum %Z – 6.1813
- Minimum X/R – 9.1148
- Maximum X/R – 14.6905

DVP provided utility current source impedances per unit contribution (100MVA base) as follows:

- $R_1 = 0.1371$
- $R_0 = 0.2769$
- $X_1 = 0.2779$
- $X_0 = 0.6355$

DVP also provided the protective devices on the primary side of the utility transformer: Cooper-Bussman, ELG-VP, 80A, 23 kV fuses. These fuses were used in the study.

JRTP-3 RESULTS

SKM Power Tools for Windows (PTW) Version 7.0 software was used to determine the fault currents, incident energy, and arc flash hazard/risk categories for the electrical equipment. The calculations were computed-based on standard IEEE 1584. This software was also used to create a one-line diagram of the power distribution system. The one-line diagrams are shown in Appendix JRTP-B.

Protective devices and settings that were not available or readable were modeled in the study as a general protective device by the same manufacturer that most represented the device in the field. The trip settings for these devices were assumed to be set at the maximum.

Protective Device Coordination

The protective devices of the major electrical equipment are shown to be fairly coordinated, but some areas can be improved. Several locations are not fully coordinated because the breakers have fixed settings. Table JRTP-T1 shows recommendations for better coordination.

The trip settings of the protective devices are shown on the one-line diagram. Time versus current curves showing the coordination of the protective devices on utility power are shown in Appendix JRTP-C.

Short Circuit Analysis

The analysis indicates that most of the electrical equipment is shown to be properly rated. However, several equipment short circuit current ratings are unknown, so it could not be determined if the equipment is properly rated. Table JRTP-T2 shows the equipment short circuit current ratings, available fault current, and recommendations.

Using SKM PowerTools software, short circuit analyses were performed for major electrical equipment. Source and transformer impedances were provided by DVP. All loads were assumed to be operating. The short circuit amperes for major electrical equipment are shown on the one-line diagrams in Appendix JRTP-B. Single-line-to-ground (SLG) and three-phase (3P) short circuit values are shown. Appendix JRTP-D shows the SKM short circuit analysis comprehensive report.

Arc Flash Analysis

Arc flash calculations were performed for multiple scenarios of the power distribution system. Since the utility provided minimum and maximum %Z and X/R values, four utility (normal) scenarios and one generator (standby) were evaluated as follows:

- Utility Operation – Transformer using Minimum %Z, Minimum X/R
- Utility Operation – Transformer using Minimum %Z, Maximum X/R

- Utility Operation – Transformer using Maximum %Z, Minimum X/R
- Utility Operation – Transformer using Maximum %Z, Maximum X/R
- Generator Operation

The worst case results of the scenarios are shown in this report.

Table JRTP-T1 shows the major existing electrical equipment with their main protective devices, arc flash hazard/risk categories, recommendations, and revised hazard/risk categories when applicable.

The one-line diagram also shows the arc flash results for the load side of equipment. Overall arc flash analyses may conclude with greater results, so the tables in Appendix JRTP-E should be used for determining PPE and labeling. Additional arc flash analysis results and labeling data are shown in the Arc Flash Evaluation Table – Existing Condition in Appendix JRTP-E. This table shows information on the equipment under existing conditions. The second table, Arc Flash Evaluation Table – After All Recommendations Implemented, shows the additional arc flash results after all of the recommendations from Table JRTP-T1 have been implemented.

Examples of arc flash warning labels for the equipment are shown in Appendix JRTP-F. These labels are examples only to show suggested layout and information to display.

For multi-section switchgear, switchboards, and motor control centers, two separate arc flash warning labels should be provided: one for the main protective device (line side) section of the equipment and one for the load side of the equipment. If the equipment is a single section, one arc flash warning label should be provided for the rating of the line side of the main protective device. The Table JRTP-T1 shows the arc flash hazard/risk category for both the main protective device and the load side of the equipment. The revised arc flash hazard/risk category applies to the load side of the equipment only, unless noted otherwise, after all of the recommendations have been implemented.

JRTP-4 CONCLUSIONS AND RECOMMENDATIONS

Overall the protective devices of the major electrical equipment are shown to be coordinated. Better coordination can be achieved by implementing the recommendations in Table JRTP-T1. The feeder circuit breaker in MCC (HYPO) to Panel JRM is only rated 125A, but the cascading Panel JRM main circuit breaker is 250A. Also, the feeder circuit breakers to Starter Racks 9 and 10B are 70A, but the cascading Starter Rack 9 and 10B main circuit breakers are 100A. In these instances, no recommendation was provided, since the feeder circuit breaker provides protection to the feeder cables.

Available short circuit values indicate that most of the electrical equipment is properly rated, but some equipment short circuit rating were unavailable or slightly underrated. Table JRTP-T2 shows the results and recommendations.

The arc flash analyses indicate that most equipment has arc flash hazard/risk Category 2 or below. The 480V main distribution switchboards have Greater Than Category 4.

If all the recommendations in Table JRTP-T1 are implemented, then most equipment can reduce to Category 0. The 480V main distributions switchboards can reduce to Category 3 (Category 4 on the line-side). Where MCC and panelboard equipment category ratings are greater than Category 0, recommend using PPE or remote switching devices for equipment.

Hampton Roads Sanitation District
James River Treatment Plant
Arc Flash Study
Table JRTP-T1 - Coordination and Arc Flash Results and Recommendations

Equipment Name	Main Protective Device Arc Flash Category	Equipment Arc Flash Category	Recommendations	Revised Category (If ALL Recommendations Implemented)
AERATION BLOWER 4 PANEL (AERATION BLOWERS BLDG)	-	Category 1	-	-
AERATION BLOWER 5 PANEL (AERATION BLOWERS BLDG)	-	Category 1	-	-
AERATION BLOWER 6 PANEL (AERATION BLOWERS BLDG)	-	Category 1	-	-
BKR TO INDUCTION MIXER CP (HYPOCHLORITE BLDG)	-	Category 0	-	-
CENT FEED PUMP 121 VFD PANEL (SLUDGE BLDG)	-	Category 0	-	-
CENT FEED PUMP 122 VFD PANEL (SLUDGE BLDG)	-	Category 0	-	-
CENT FEED PUMP 123 VFD PANEL (SLUDGE BLDG)	-	Category 0	-	-
CENTRATE REC PUMP VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
CENTRIFUGE 1 CP (SLUDGE BLDG)	-	Category 0	Adjust the trip settings of the Main Circuit Breaker for better coordination [INST=3,000A].	-
CENTRIFUGE 2 CP (SLUDGE BLDG)	-	Category 0	Adjust the trip settings of the Main Circuit Breaker for better coordination [INST=3,000A].	-
CENTRIFUGE 3 CP (SLUDGE BLDG)	-	Category 0	Adjust the trip settings of the Main Circuit Breaker for better coordination [INST=3,000A].	-
DWC POLY FD PUMP 1 VFD (SLUDGE BLDG)	-	Category 0	-	-
DWC POLY FD PUMP 2 VFD (SLUDGE BLDG)	-	Category 0	-	-
DWC POLY FD PUMP 3 VFD (SLUDGE BLDG)	-	Category 0	-	-
GRINDER 1 CONTROL PANEL (SLUDGE BLDG)	-	Category 0	-	-
GRINDER 2 CONTROL PANEL (SLUDGE BLDG)	-	Category 0	-	-
GRINDER 3 CONTROL PANEL (SLUDGE BLDG)	-	Category 0	-	-
HYDRAULIC POWER PACK CP (SLUDGE BLDG)	-	Category 0	-	-
IFAS R1 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R1 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R2 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R2 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R3 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R3 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R4 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R4 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R5 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R5 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R6 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R6 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R7 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R7 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R8 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R8 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R9 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
IFAS R9 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	-	Category 0	-	-
INDUCTION MIXER CP (HYPOCHLORITE BLDG)	-	Category 0	-	-

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Table JRTP-T1 - Coordination and Arc Flash Results and Recommendations

Equipment Name	Main Protective Device Arc Flash Category	Equipment Arc Flash Category	Recommendations	Revised Category (If ALL Recommendations Implemented)
MAIN MCC (MAIN BLDG)	-	Category 4	Adjust the trip settings of the feeder circuit breaker to Starter Racks 107, 114 and Digester for better coordination and to reduce arc flash [INST=6.5 (1,950A)]. Adjust trip settings of the feeder circuit breaker to MCC-103, MCC103A for better coordination and to reduce arc flash [INST=10 (2,500A)]. Adjust the trip setting of the feeder circuit breaker to MCC-5B for better coordination [INST=8 (3,200A)]. Adjust the trip setting of the feeder circut breaker to MCC-113 and Starter Rack (NPW) for better coordination [INST=8 (2,400A)]. Adjust the trip settings of the feeder circuit breaker to ATS (Digester) (Normal) [LTPU(Ir)=H (225A), LTD=10s, STPU=4 (900A), STD=Inst(J,K,L), INST=Fixed].	Category 2
MCC (DEWATERING BLDG) (DEWATERING BLDG)	Category 0	Category 0	Adjust the trip settings of the Main Circuit Breaker for better coordination [STPU=3 (2,400A)].	-
MCC (HYPO) (HYPOCHLORITE BLDG)	Category 0	Category 0	Adjust the trip setting of the feeder circuit breaker to Panel JRM for better coordination [INST=HI (1,250A)].	-
MCC (SCUM) (SCUM BLDG)	-	Category 0	-	-
MCC (SLUDGE BLDG) (SLUDGE BLDG)	Category 1	Category 1	Adjust the trip settings of the Main Circuit Breaker for better coordination [STPU=5, STD=Min].	-
MCC-2A (AERATION BLOWERS BLDG)	-	Category 1	-	-
MCC-2B (IFAS ELECTRICAL BLDG 1)	Category 0	Category 0	-	-
MCC-2C (IFAS ELECTRICAL BLDG 2)	Category 0	Category 0	-	-
MCC-5B (HEADWORKS & SCRUBBER FACILITY)	Category 0	Category 0	Adjust the trip setting of the Main Circuit Breaker for better coordination [INST=7 (2,800A)].	-
MCC-CC103 (RETURN PUMP STATION 1)	Category 1	Category 1	Adjust the trip settings of the Main Circuit Breaker for better coordination and to reduce arc flash [INST=4 (1,600A)].	Category 0 (Main Circuit Breaker also reduces to Category 0)
MCC-CC103A (RETURN PUMP STATION 2)	Category 1	Category 0	Adjust the trip settings of the Main Circuit Breaker for better coordination and to reduce arc flash [INST=LO (2,000A)].	(Main Circuit Breaker reduces to Category 0)
MCC-CC113 (NPW/EFFLUENT BLDG)	-	Category 0	-	-
MCC-G1 (SODIUM HYDROXIDE BLDG)	Category 0	Category 0	-	-

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Table JRTP-T1 - Coordination and Arc Flash Results and Recommendations

Equipment Name	Main Protective Device Arc Flash Category	Equipment Arc Flash Category	Recommendations	Revised Category (If ALL Recommendations Implemented)
MV MAIN SWGR (MAIN BLDG)	Category 2	Category 2	Adjust the trip settings of the feeder protection relay to SWBD-1 to reduce arc flash [51P TOC Pickup=0.9, 51P TOC Curve=IEC Curve C, 51P TOC Time Dial=1.5, 50P IOC Pickup=2.4, 50P1 IOC Delay=0.4]. Adjust the trip settings of the feeder protection relay to SWBD-2A to reduce arc flash [51P TOC Pickup=0.9, 51P TOC Curve=IEC Curve C, 51P TOC Time Dial=1.3, 50P IOC Pickup=2.7, 50P1 IOC Delay=0.7]. Adjust the trip settings of the feeder protection relay to SWBD-3 to reduce arc flash [51P TOC Pickup=0.9, 51P TOC Curve=IEC Curve C, 51P TOC Time Dial=1.5, 50P IOC Pickup=2.3, 50P1 IOC Delay=0.7].	-
NAOH RECIRC PUMP 5 STARTER (SODIUM HYDROXIDE BLDG)	-	Category 0	-	-
NAOH RECIRC PUMP 6 STARTER (SODIUM HYDROXIDE BLDG)	-	Category 0	-	-
PANEL (DIGESTER) (DIGESTER BLDG)	-	Category 0	-	-
PANEL DP2A (IN MCC) (AERATION BLOWERS BLOWERS BLDG)	-	Category 1	-	-
PANEL DP2B (IN MCC) (IFAS ELECTRICAL BLDG 1)	-	Category 0	-	-
PANEL DP2C (IN MCC) (IFAS ELECTRICAL BLDG 2)	-	Category 0	-	-
PANEL DP47 (SODIUM HYDROXIDE BLDG)	-	Category 1	-	-
PANEL JR1A (HYPOCHLORITE BLDG)	-	Category 0	Adjust the trip setting of the Main Circuit Breaker for better coordination [INST=LO (625A)].	-
PANEL JR1B (HYPOCHLORITE BLDG)	-	Category 0	Replace feeder circuit breaker to Induction Mixer with 3P, 20A breaker. Existing 60A breaker is oversized for wiring (#12AWG) and the load.	-
PANEL JR2 (BISULFITE BLDG)	-	Category 0	-	-
PANEL JRM (HYPOCHLORITE BLDG)	-	Category 0	Adjust the trip setting of the Main Circuit Breaker for better coordination [INST=LO (1,750A)]. Adjust the trip setting of the feeder circuit breaker to Panel JR1A for better coordination [INST=LO (750A)].	-
PANEL P5B (HEADWORKS & SCRUBBER FACILITY)	-	Category 0	-	-
PANEL P5C (HEADWORKS & SCRUBBER FACILITY)	-	Category 0	-	-
PANEL PP1 (DEWATERING BLDG)	-	Category 0	-	-
PANEL PP-1 (IN MCC) (SLUDGE BLDG)	-	Category 0	-	-
PANELBOARD A (IN MCC)(MAIN BLDG)	-	Category 0	-	-
PANELBOARD B (IN MCC)(MAIN BLDG)	-	Category 0	-	-

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Table JRTP-T1 - Coordination and Arc Flash Results and Recommendations

Equipment Name	Main Protective Device Arc Flash Category	Equipment Arc Flash Category	Recommendations	Revised Category (If ALL Recommendations Implemented)
PANELBOARD C (IN MCC)(MAIN BLDG)	-	Category 0	-	-
POLYMER SYSTEM CP17-1001 (DEWATERING BLDG)	-	Category 0	-	-
RETURN PUMP 1 VFD (RETURN PUMP STATION 2)	-	Category 0	-	-
RETURN PUMP 2 VFD (RETURN PUMP STATION 2)	-	Category 0	-	-
RETURN PUMP 3 VFD (RETURN PUMP STATION 1)	-	Category 1	-	Category 0
RETURN PUMP 4 VFD (RETURN PUMP STATION 1)	-	Category 1	-	Category 0
RETURN PUMP 5 VFD (RETURN PUMP STATION 2)	-	Category 0	-	-
RETURN PUMP 6 VFD (RETURN PUMP STATION 2)	-	Category 0	-	-
SCREEN 1 CP01-1210 (HEADWORKS & SCRUBBER FACILITY)	-	Category 0	-	-
SCREEN 2 CP01-1220 (HEADWORKS & SCRUBBER FACILITY)	-	Category 0	-	-
SCREEN 3 CP01-1230 (HEADWORKS & SCRUBBER FACILITY)	-	Category 0	-	-
STARTER RACK (AT) (AERATION TANKS)	Category 0	Category 0	-	-
STARTER RACK (DIGESTER) (DIGESTER BLDG)	Category 0	Category 0	Adjust the trip setting of the Main Circuit Breaker for better coordination and to reduce arc flash [INST=6 (1,355A)]. Replace the feeder circuit breaker to Starter Rack 114 with a smaller sized breaker [ie GE, TED, 70A]. Wire for this feeder is #4 AWG.	Category 0
STARTER RACK (NPW) (NPW/CHLORINE CONTACT TANKS)	Category 0	Category 0	Adjust the trip setting of the Main Circuit Breaker for better coordination [INST=3 (1,200A)].	-
STARTER RACK (SCRAPER DRIVE 3) (SECONDARY CLARIFIER 3)	-	Category 0	-	-
STARTER RACK (SCRAPER DRIVE 4) (SECONDARY CLARIFIER 4)	-	Category 0	-	-
STARTER RACK (SCRAPER DRIVE 5) (SECONDARY CLARIFIER 5)	-	Category 0	-	-
STARTER RACK (SCUM PUMP 4A,4B) (SECONDARY CLARIFIERS 3 & 4)	-	Category 0	-	-
STARTER RACK (SCUM PUMP 5) (SECONDARY CLARIFIER 5)	-	Category 0	-	-
STARTER RACK 100 (GRIT COLLECTORS 3 & 4)	Category 0	Category 0	-	-
STARTER RACK 101 (DRAINAGE PS)	Category 0	Category 0	-	-
STARTER RACK 107 (PRIMARY CLARIFIERS 3 & 4)	Category 3	Category 0	-	(Main Circuit Breaker reduces to Category 0)
STARTER RACK 10A (SECONDARY CLARIFIERS 1 & 2)	Category 0	Category 0	-	-
STARTER RACK 10B (GRIT COLLECTORS 1 & 2)	Category 0	Category 0	-	-

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Table JRTP-T1 - Coordination and Arc Flash Results and Recommendations

Equipment Name	Main Protective Device Arc Flash Category	Equipment Arc Flash Category	Recommendations	Revised Category (If ALL Recommendations Implemented)
STARTER RACK 112 (DRAINAGE PUMP (SECONDARY CLARIFIER 4))	Category 0	Category 0	-	-
STARTER RACK 114 (GRAVITY THICKENER BLDG)	Category 3	Category 3	Replace the Starter Rack 114 Main Circuit Breaker with a 70A [ie GE, TED, 70A].	Category 0 (Main Circuit Breaker also reduces to Category 0)
STARTER RACK 115 (GRAVITY THICKENER 1)	-	Category 0	-	-
STARTER RACK 116 (GRAVITY THICKENER 2)	-	Category 0	-	-
STARTER RACK 118 (SECONDARY CLARIFIER 5)	-	Category 0	-	-
STARTER RACK 9 (PRIMARY CLARIFIERS 1 & 2)	Category 0	Category 0	-	-
SWBD-1 (MAIN BLDG)	-	Greater Than Category 4	Adjust the trip settings of the Main Circuit Breaker to reduce arc flash [STPU=3.5x, STD=ST05-Min].	Category 3
SWBD-2A (AERATION BLOWERS BLDG)	Greater Than Category 4	Greater Than Category 4	Adjust the trip settings of the Main Circuit Breaker to reduce arc flash [STPU=2.5x, STD=ST11-Min, I2t Out]. Adjust the trip settings of the tie circuit breaker for better coordination [STPU=4x, STD=ST10-Min, I2t Out]. Adjust the trip setting of the feeder circuit breakers to Aeration Blower Panel 4, 5, and 6 for better coordination [STD I2t Out].	Category 3 (Main Circuit Breaker also reduces to Category 4)
SWBD-2B (AERATION BLOWERS BLDG)	-	Category 1	-	-
SWBD-3 (SLUDGE BLDG)	Greater Than Category 4	Greater Than Category 4	Adjust the trip settings of the Main Circuit Breaker to reduce arc flash [LTD=C-6, STPU=2.5x, STD=ST10-Min, INST=6x]. Adjust the trip settings of the feeder circuit breaker to MCC (Sludge Bldg) to reduce arc flash [STPU=5]. Adjust the trip settings of the feeder circuit breaker to MCC (Dewatering Bldg) for better coordination [INST=5.5 (3,300A)]. Adjust the trip setting of the feeder circuit breaker to Centrifuge Panels 1, 2, and 3 for better coordination [INST=6 (3600A)].	Category 3 (Main Circuit Breaker also reduces to Category 4)

Notes:

Equipment that was added per the James River Treatment Plant Phase I Improvements project dated May 2009 or existing equipment that changed arc flash hazard/risk categories in this update of this report are highlighted in yellow. Note these are category changes only; the equipment name, incident energy, or arc flash boundary may have changed.

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Table JRTP-T2 - Short Circuit Results and Recommendations

Equipment Name	Location	Equipment Short Circuit Current Rating (A) (see Note 1)	Minimum Interrupting Rating of Protective Device in Equipment (A) (see Note 2)	Equipment Short Circuit Availability (A)	Recommendations (see Note 1)
AERATION BLOWER 4 PANEL (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	-	24,221	-
AERATION BLOWER 5 PANEL (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	-	24,683	-
AERATION BLOWER 6 PANEL (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	-	25,407	-
BKR TO INDUCTION MIXER CP (HYPOCHLORITE BLDG)	HYPOCHLORITE BLDG	18,000	-	2,522	-
CENT FEED PUMP 121 VFD PANEL (SLUDGE BLDG)	SLUDGE BLDG	Unknown	200,000	14,240	-
CENT FEED PUMP 122 VFD PANEL (SLUDGE BLDG)	SLUDGE BLDG	Unknown	200,000	14,240	-
CENT FEED PUMP 123 VFD PANEL (SLUDGE BLDG)	SLUDGE BLDG	Unknown	200,000	14,240	-
CENTRATE REC PUMP VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	65,000	2,878	-
CENTRIFUGE 1 CP (SLUDGE BLDG)	SLUDGE BLDG	Unknown	30,000	26,165	-
CENTRIFUGE 2 CP (SLUDGE BLDG)	SLUDGE BLDG	Unknown	30,000	26,165	-
CENTRIFUGE 3 CP (SLUDGE BLDG)	SLUDGE BLDG	Unknown	30,000	26,165	-
DIGEST COMPRESSOR CP LP-5-10-1 (DIGESTER BLDG)	DIGESTER BLDG	Unknown	-	6,019	-
DIGEST COMPRESSOR CP LP-5-10-2 (DIGESTER BLDG)	DIGESTER BLDG	Unknown	-	6,853	-
DWC POLY FD PUMP 1 VFD (SLUDGE BLDG)	SLUDGE BLDG	Unknown	200,000	5,510	-
DWC POLY FD PUMP 2 VFD (SLUDGE BLDG)	SLUDGE BLDG	Unknown	200,000	5,510	-
DWC POLY FD PUMP 3 VFD (SLUDGE BLDG)	SLUDGE BLDG	Unknown	200,000	5,510	-
GRINDER 1 CONTROL PANEL (SLUDGE BLDG)	SLUDGE BLDG	Unknown	200,000	4,666	-
GRINDER 2 CONTROL PANEL (SLUDGE BLDG)	SLUDGE BLDG	Unknown	200,000	4,666	-
GRINDER 3 CONTROL PANEL (SLUDGE BLDG)	SLUDGE BLDG	Unknown	200,000	4,666	-
HYDRAULIC POWER PACK CP (SLUDGE BLDG)	SLUDGE BLDG	Unknown	18,000	5,475	-
IFAS R1 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	4,679	-
IFAS R1 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	4,537	-
IFAS R2 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	5,161	-
IFAS R2 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	4,279	-
IFAS R3 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	4,829	-
IFAS R3 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	4,048	-
IFAS R4 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	4,458	-
IFAS R4 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	4,591	-
IFAS R5 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	4,881	-
IFAS R5 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	4,732	-
IFAS R6 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	4,213	-
IFAS R6 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	3,891	-
IFAS R7 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	4,222	-
IFAS R7 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	4,233	-
IFAS R8 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	4,474	-
IFAS R8 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	4,350	-

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Table JRTP-T2 - Short Circuit Results and Recommendations

Equipment Name	Location	Equipment Short Circuit Current Rating (A) (see Note 1)	Minimum Interrupting Rating of Protective Device in Equipment (A) (see Note 2)	Equipment Short Circuit Availability (A)	Recommendations (see Note 1)
IFAS R9 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	3,915	-
IFAS R9 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	Unknown	35,000	3,639	-
INDUCTION MIXER CP (HYPOCHLORITE BLDG)	HYPOCHLORITE BLDG	Unknown	65,000	2,480	-
MAIN MCC (MAIN BLDG)	MAIN BLDG	65,000	65,000	38,139	-
MCC (DEWATERING BLDG) (DEWATERING BLDG)	DEWATERING BLDG	22,000	14,000	20,520	Several feeder breakers are underrated. Replace feeder circuit breakers to Digest Compressor CP LP-5-10-1, LP-5-10-2, Digest Transfer Station Pump, Air Compressor 1, and Air Compressor 2 with higher AIC rated breaker.
MCC (HYPO) (HYPOCHLORITE BLDG)	HYPOCHLORITE BLDG	22,000	18,000	13,472	-
MCC (SCUM) (SCUM BLDG)	SCUM BLDG	Unknown	25,000	2,372	-
MCC (SLUDGE BLDG) (SLUDGE BLDG)	SLUDGE BLDG	65,000	14,000	27,043	Main circuit breaker rated for 50,000AIC. Two feeder circuit breakers are underrated. Replace feeder circuit breakers to Gas Compressor 1 and Gas Compressor 2 with higher AIC rated breaker.
MCC-2A (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	65,000	65,000	29,485	-
MCC-2B (IFAS ELECTRICAL BLDG 1)	IFAS ELECTRICAL BLDG 1	65,000	65,000	15,681	-
MCC-2C (IFAS ELECTRICAL BLDG 2)	IFAS ELECTRICAL BLDG 2	65,000	65,000	11,645	-
MCC-5B (HEADWORKS & SCRUBBER FACILITY)	HEADWORKS & SCRUBBER FACILITY	22,000	25,000	11,812	-
MCC-CC103 (RETURN PUMP STATION 1)	RETURN PUMP STATION 1	Unknown	14,000	14,767	Two feeder circuit breakers are underrated. Replace feeder circuit breakers to Roof Vent and Heater with higher AIC rated breakers.

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Table JRTP-T2 - Short Circuit Results and Recommendations

Equipment Name	Location	Equipment Short Circuit Current Rating (A) (see Note 1)	Minimum Interrupting Rating of Protective Device in Equipment (A) (see Note 2)	Equipment Short Circuit Availability (A)	Recommendations (see Note 1)
MCC-CC103A (RETURN PUMP STATION 2)	RETURN PUMP STATION 2	25,000	18,000	18,320	Several feeder circuit breakers are underrated. Replace feeder circuit breakers to Return Pump 5 VFD, Return Pump 6 VFD, Panel PDP-103A, Return Pump 1 VFD, and Return Pump 2 VFD with higher AIC rated breakers.
MCC-CC113 (NPW/EFFLUENT BLDG)	NPW/EFFLUENT BLDG	Unknown	14,000	7,099	-
MCC-G1 (SODIUM HYDROXIDE BLDG)	SODIUM HYDROXIDE BLDG	42,000	25,000	2,971	-
MV MAIN SWGR (MAIN BLDG)	MAIN BLDG	29,000	29,000	8,518	-
NAOH RECIRC PUMP 5 STARTER (SODIUM HYDROXIDE BLDG)	SODIUM HYDROXIDE BLDG	Unknown	-	2,601	-
NAOH RECIRC PUMP 6 STARTER (SODIUM HYDROXIDE BLDG)	SODIUM HYDROXIDE BLDG	Unknown	-	2,656	-
PANEL (DIGESTER) (DIGESTER BLDG)	DIGESTER BLDG	35,000	35,000	3,660	-
PANEL DP2A (IN MCC) (AERATION BLOWERS BLOWERS BLDG)	AERATION BLOWERS BLDG	65,000	65,000	28,509	-
PANEL DP2B (IN MCC) (IFAS ELECTRICAL BLDG 1)	IFAS ELECTRICAL BLDG 1	65,000	65,000	15,323	-
PANEL DP2C (IN MCC) (IFAS ELECTRICAL BLDG 2)	IFAS ELECTRICAL BLDG 2	65,000	65,000	11,435	-
PANEL DP47 (SODIUM HYDROXIDE BLDG)	SODIUM HYDROXIDE BLDG	22,000	25,000	3,034	-
PANEL JR1A (HYPOCHLORITE BLDG)	HYPOCHLORITE BLDG	Unknown	25,000	13,193	-
PANEL JR1B (HYPOCHLORITE BLDG)	HYPOCHLORITE BLDG	Unknown	25,000	13,029	-
PANEL JR2 (BISULFITE BLDG)	BISULFITE BLDG	Unknown	25,000	8,143	-
PANEL JRM (HYPOCHLORITE BLDG)	HYPOCHLORITE BLDG	Unknown	25,000	13,273	-
PANEL P5B (HEADWORKS & SCRUBBER FACILITY)	HEADWORKS & SCRUBBER FACILITY	25,000	25,000	11,506	-
PANEL P5C (HEADWORKS & SCRUBBER FACILITY)	HEADWORKS & SCRUBBER FACILITY	25,000	25,000	9,366	-
PANEL PP1 (DEWATERING BLDG)	DEWATERING BLDG	Unknown	14,000	8,205	-
PANEL PP-1 (IN MCC) (SLUDGE BLDG)	SLUDGE BLDG	65,000	-	27,032	-
PANELBOARD A (IN MCC)(MAIN BLDG)	MAIN BLDG	65,000	65,000	37,305	-
PANELBOARD B (IN MCC)(MAIN BLDG)	MAIN BLDG	65,000	65,000	37,295	-
PANELBOARD C (IN MCC)(MAIN BLDG)	MAIN BLDG	65,000	65,000	37,287	-
POLYMER SYSTEM CP17-1001 (DEWATERING BLDG)	DEWATERING BLDG	Unknown	-	9,101	-
RETURN PUMP 1 VFD (RETURN PUMP STATION 2)	RETURN PUMP STATION 2	Unknown	14,000	3,403	-
RETURN PUMP 2 VFD (RETURN PUMP STATION 2)	RETURN PUMP STATION 2	Unknown	14,000	3,403	-

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Table JRTP-T2 - Short Circuit Results and Recommendations

Equipment Name	Location	Equipment Short Circuit Current Rating (A) (see Note 1)	Minimum Interrupting Rating of Protective Device in Equipment (A) (see Note 2)	Equipment Short Circuit Availability (A)	Recommendations (see Note 1)
RETURN PUMP 3 VFD (RETURN PUMP STATION 1)	RETURN PUMP STATION 1	Unknown	14,000	14,032	VFD main circuit breaker is underrated. Replace main circuit breaker in VFD with higher AIC rated breaker.
RETURN PUMP 4 VFD (RETURN PUMP STATION 1)	RETURN PUMP STATION 1	Unknown	14,000	14,032	VFD main circuit breaker is underrated. Replace main circuit breaker in VFD with higher AIC rated breaker.
RETURN PUMP 5 VFD (RETURN PUMP STATION 2)	RETURN PUMP STATION 2	Unknown	14,000	15,709	VFD main circuit breaker is underrated. Replace main circuit breaker in VFD with higher AIC rated breaker.
RETURN PUMP 6 VFD (RETURN PUMP STATION 2)	RETURN PUMP STATION 2	Unknown	14,000	16,669	VFD main circuit breaker is underrated. Replace main circuit breaker in VFD with higher AIC rated breaker.
SCREEN 1 CP01-1210 (HEADWORKS & SCRUBBER FACILITY)	HEADWORKS & SCRUBBER FACILITY	Unknown	-	9,366	-
SCREEN 2 CP01-1220 (HEADWORKS & SCRUBBER FACILITY)	HEADWORKS & SCRUBBER FACILITY	Unknown	-	11,812	-
SCREEN 3 CP01-1230 (HEADWORKS & SCRUBBER FACILITY)	HEADWORKS & SCRUBBER FACILITY	Unknown	-	9,366	-
STARTER RACK (AT) (AERATION TANKS)	AERATION TANKS	Unknown	14,000	3,256	-
STARTER RACK (DIGESTER) (DIGESTER BLDG)	DIGESTER BLDG	Unknown	14,000	4,924	-
STARTER RACK (NPW) (NPW/CHLORINE CONTACT TANKS)	NPW/CHLORINE CONTACT TANKS	Unknown	14,000	7,036	-
STARTER RACK (SCRAPER DRIVE 3) (SECONDARY CLARIFIER 3)	SECONDARY CLARIFIER 3	Unknown	18,000	2,139	-
STARTER RACK (SCRAPER DRIVE 4) (SECONDARY CLARIFIER 4)	SECONDARY CLARIFIER 4	Unknown	18,000	1,472	-
STARTER RACK (SCRAPER DRIVE 5) (SECONDARY CLARIFIER 5)	SECONDARY CLARIFIER 5	Unknown	18,000	1,385	-
STARTER RACK (SCUM PUMP 4A,4B) (SECONDARY CLARIFIERS 3 & 4)	SECONDARY CLARIFIERS 3 & 4	Unknown	18,000	2,146	-
STARTER RACK (SCUM PUMP 5) (SECONDARY CLARIFIER 5)	SECONDARY CLARIFIER 5	Unknown	18,000	2,865	-
STARTER RACK 100 (GRIT COLLECTORS 3 & 4)	GRIT COLLECTORS 3 & 4	Unknown	18,000	3,145	-
STARTER RACK 101 (DRAINAGE PS)	DRAINAGE PUMP STATION	Unknown	65,000	4,859	-
STARTER RACK 107 (PRIMARY CLARIFIERS 3 & 4)	PRIMARY CLARIFIERS 3& 4	Unknown	18,000	4,722	

Hampton Roads Sanitation District
James River Treatment Plant
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Table JRTP-T2 - Short Circuit Results and Recommendations

Equipment Name	Location	Equipment Short Circuit Current Rating (A) (see Note 1)	Minimum Interrupting Rating of Protective Device in Equipment (A) (see Note 2)	Equipment Short Circuit Availability (A)	Recommendations (see Note 1)
STARTER RACK 10A (SECONDARY CLARIFIERS 1 & 2)	SECONDARY CLARIFIERS 1 & 2	Unknown	14,000	4,235	-
STARTER RACK 10B (GRIT COLLECTORS 1 & 2)	GRIT COLLECTORS 1 & 2	Unknown	14,000	3,864	-
STARTER RACK 112 (DRAINAGE PUMP (SECONDARY CLARIFIER 4))	SECONDARY CLARIFIER 4	Unknown	18,000	3,229	-
STARTER RACK 114 (GRAVITY THICKENER BLDG)	GRAVITY THICKENER BLDG	Unknown	14,000	2,907	-
STARTER RACK 115 (GRAVITY THICKENER 1)	GRAVITY THICKENER 1	Unknown	14,000	2,011	-
STARTER RACK 116 (GRAVITY THICKENER 2)	GRAVITY THICKENER 2	Unknown	14,000	2,011	-
STARTER RACK 118 (SECONDARY CLARIFIER 5)	SECONDARY CLARIFIER 5	Unknown	-	3,604	-
STARTER RACK 9 (PRIMARY CLARIFIERS 1 & 2)	PRIMARY CLARIFIERS 1 & 2	Unknown	14,000	3,106	-
SWBD-1 (MAIN BLDG)	MAIN BLDG	65,000	65,000	38,246	-
SWBD-2A (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	65,000	65,000	31,342	-
SWBD-2B (AERATION BLOWERS BLDG)	AERATION BLOWERS BLDG	65,000	65,000	31,341	-
SWBD-3 (SLUDGE BLDG)	SLUDGE BLDG	Unknown	35,000	27,428	-

Notes:

1. Equipment short circuit current rating data that was not available in the field or record drawings for verification are indicated as Unknown. Shop drawings may have more information
   If underrated, recommend replacing equipment with higher rated equipment.
2. Minimum interrupting rating of protective device in equipment refers to the main and feeder circuit breakers for main power distribution (480V and above).

Appendices

Appendix JRTP-A

Protective Device Data Table

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
MV Main Switchgear - Main Building								
MV Main Switchgear Main Circuit Breaker (52M)	Cutler-Hammer	4160V	MV Vacuum	50-VCP-W-250	1200A			Note 1
MV Main Switchgear Main Relay (52M)	GE		Electronic	SR750, 50/51P: CT Ratio 600/5			Tap Setting=1, Curve=IEC-A Normal Inverse, Time Dial=2	Note 1
MV Main Switchgear Feeder Circuit Breaker to Transformer T-1 (52F1)	Cutler-Hammer	4160V	MV Vacuum	50-VCP-W-250	1200A			
MV Main Switchgear Feeder Relay to Transformer T-1 (52F1)	GE		Electronic	MIF II, 50/51P CT Ratio 300/5, 50GS CT Ratio 50/5			50/51P: Tap Setting=1, Curve=Curve B (BS142), Time Dial=2, INST=7; 50GS: Tap Setting=1.3, Curve=Curve A (BS142), Time Dial=0.3	Note 1
MV Main Switchgear Feeder Circuit Breaker to Transformer T-2A (52F2)	Cutler-Hammer	4160V	MV Vacuum	50-VCP-W-250	1200A			Note 1
MV Main Switchgear Feeder Relay to Transformer T-2A (52F2)	GE		Electronic	MIF II, 50/51P CT Ratio 300/5, 50GS CT Ratio 50/5			50/51P: Tap Setting=1.3, Curve=Curve B (BS142), Time Dial=2, INST=7; 50GS: Tap Setting=1.3, Curve=Curve A (BS142), Time Dial=0.3	Note 1
MV Main Switchgear Feeder Circuit Breaker to Transformer T-3 (52F3)	Cutler-Hammer	4160V	MV Vacuum	50-VCP-W-250	1200A			Note 1
MV Main Switchgear Feeder Relay to Transformer T-3 (52F3)	GE		Electronic	MIF II, 50/51P CT Ratio 300/5, 50GS CT Ratio 50/5			50/51P: Tap Setting=1, Curve=Curve B (BS142), Time Dial=2, INST=7; 50GS: Tap Setting=1.3, Curve=Curve A (BS142), Time Dial=0.3	Note 1
MV Main Switchgear Feeder Circuit Breaker to Transformer T-4 (52FS)	Cutler-Hammer	4160V	MV Vacuum	50-VCP-W-250	1200A			Note 1
MV Main Switchgear Feeder Relay to Transformer T-4 (52FS)	GE		Electronic	MIF II, 50/51P: CT Ratio 400/5			50/51P: Tap Setting=1, Curve=Curve B (BS142), Time Dial=2	Note 1
Generator - Generator Trailer								
Generator Main Circuit Breaker	Merlin Gerin	480V	Static	Masterpact, STR 28D	3000A	2500A	LTPU=1, LTD=Fixed, STPU=Fixed, STD=Fixed, INST=10	Note 1
Switchboard SWBD-1 - Main Building								

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
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Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
SWBD-1 Main Circuit Breaker	GE	480V	Static	PowerBreak II, Entelliguard TU	2000A	2000A	LTPU=0.75, LTD=C-10, STPU=4, STD=1, I2T Out, INST=5, GFPU=0.25, GFD=I2T-8, I2T In	Note 1
MAIN MCC - Main Building								
MAIN MCC Feeder Circuit Breaker to Blower No.1	Cutler-Hammer	480V	MCP	HMCP, Digitrip RMS310		600A	INST=C (Range: A to H)	
MAIN MCC Feeder Circuit Breaker to Blower No.2	Cutler-Hammer	480V	MCP	HMCP, Digitrip RMS310		600A	INST=C (Range: A to H)	
MAIN MCC Feeder Circuit Breaker to Blower No.3	Cutler-Hammer	480V	MCP	HMCP, Digitrip RMS310		600A	INST=C (Range: A to H)	
MAIN MCC Feeder Circuit Breaker to MCC-5B (Headworks and Scrubber Facility)	Cutler-Hammer	480V	Thermal Magnetic	HKD		400A	Mag(5-10)=6	Note 1
MAIN MCC Feeder Circuit Breaker to Site Lighting No.1	Cutler-Hammer	480V	Thermal Magnetic	HFD		20A		
MAIN MCC Feeder Circuit Breaker to Site Lighting No.2	Cutler-Hammer	480V	Thermal Magnetic	HFD		20A		
MAIN MCC Feeder Circuit Breaker to Site Lighting No.3	Cutler-Hammer	480V	Thermal Magnetic	HFD		20A		
MAIN MCC Feeder Circuit Breaker to Paneboard A	Cutler-Hammer	480V	Thermal Magnetic	HFD		225A		
MAIN MCC Feeder Circuit Breaker to Paneboard B	Cutler-Hammer	480V	Thermal Magnetic	HFD		225A		
MAIN MCC Feeder Circuit Breaker to Paneboard C	Cutler-Hammer	480V	Thermal Magnetic	HFD		225A		
MAIN MCC Feeder Circuit Breaker to MCC (Hypochlorite Building)	Cutler-Hammer	480V	Thermal Magnetic	HFD		175A		
MAIN MCC Feeder Circuit Breaker to Starter Racks for Primary Clarifiers 3 & 4, Digester Building, and Gravity Thickeners	Cutler-Hammer	480V	Thermal Magnetic	HKD		300A	Mag=5 (Range: 5 to 10)	
MAIN MCC Feeder Circuit Breaker to MCC-CC113, NPW Starter Rack	Cutler-Hammer	480V	Thermal Magnetic	HKD		300A	Mag=5 (Range: 5 to 10)	
MAIN MCC Feeder Circuit Breaker to MCC-103 and MCC-CC103A (Return Pump Stations 1 and 2)	Cutler-Hammer	480V	Thermal Magnetic	HJD		250A	Mag=5 (Range: 5 to 10)	
MAIN MCC Feeder Circuit Breaker to Panel (Digester) (Feeder A)	Cutler-Hammer	480V	Static	HFDE	225A	225A	LTPU=H (225A), LTD=10s, STPU=4, STD=FLAT Inst (J,K,L), INST=Fixed	Note 2
Panel A (in MAIN MCC) - Main Building								
Panel A Feeder Circuit Breaker to Starter Rack 101 (Drainage Pump Station)	Cutler-Hammer	480V	Thermal Magnetic	HFD		150A		
Panel A Feeder Circuit Breaker to Starter Rack 9 (Primary Clarifiers No. 1 and 2)	Cutler-Hammer	480V	Thermal Magnetic	HFD		70A		
Panel A Feeder Circuit Breaker to MCC (Scum Building)	Cutler-Hammer	480V	Thermal Magnetic	HFD		70A		
Panel A Feeder Circuit Breaker to Starter Rack (Aeration Tanks)	Cutler-Hammer	480V	Thermal Magnetic	HFD		70A		

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
Panel A Feeder Circuit Breaker to Transformer for Panel LP500	Cutler-Hammer	480V	Thermal Magnetic	HFD		70A		
Panel B (in MAIN MCC) - Main Building								
Panel B Feeder Circuit Breaker to Generator Jacket Water Heater	Cutler-Hammer	480V	Thermal Magnetic	HFD		50A		
Panel B Feeder Circuit Breaker to Transformer for Panel LP-D	Cutler-Hammer	480V	Thermal Magnetic	HFD		125A		
Panel B Feeder Circuit Breaker to Sewage Injectors	Cutler-Hammer	480V	Thermal Magnetic	HFD		50A		
Panel B Feeder Circuit Breaker to AHU (Administration Building)	Cutler-Hammer	480V	Thermal Magnetic	HFD		30A		
Panel B Feeder Circuit Breaker to Crane	Cutler-Hammer	480V	Thermal Magnetic	HFD		30A		
Panel B Feeder Circuit Breaker to Panel (Adminstration Building Addition)	Cutler-Hammer	480V	Thermal Magnetic	HFD		60A		
Panel B Feeder Circuit Breaker to Air Compressor (Shop)	Cutler-Hammer	480V	Thermal Magnetic	HFD		20A		
Panel B Feeder Circuit Breaker to Starter Rack 10B (Grit Collectors No. 1 and 2)	Cutler-Hammer	480V	Thermal Magnetic	HFD		70A		
Panel C (in MAIN MCC) - Main Building								
Panel C Feeder Circuit Breaker to Parts Washer	Cutler-Hammer	480V	Thermal Magnetic	HFD		30A		
Panel C Feeder Circuit Breaker to Starter Rack 100 (Grit Collectors No. 3 and 4)	Cutler-Hammer	480V	Thermal Magnetic	HFD		70A		
Panel C Feeder Circuit Breaker to Starter Rack 10A (Secondary Clarifiers No. 1 and 2)	Cutler-Hammer	480V	Thermal Magnetic	HFD		100A		
Panel C Feeder Circuit Breaker to Roof Top AC No.1	Cutler-Hammer	480V	Thermal Magnetic	HFD		30A		
Panel C Feeder Circuit Breaker to Transformer for Panel LP400 (Warehouse)	Cutler-Hammer	480V	Thermal Magnetic	HFD		70A		
Starter Rack 101 - Drainage Pump Station								
Starter Rack 101 Main Circuit Breaker	Bussmann	480V	LV Fuse	FRS-R-150		150A		
Starter Rack 101 Feeder Circuit Breaker to Drainage Pump No.1	Cutler-Hammer	480V	MCP	HMCP		100A	INST=B	
Starter Rack 101 Feeder Circuit Breaker to Drainage Pump No.2	Cutler-Hammer	480V	MCP	HMCP		100A	INST=B	
Starter Rack 101 Feeder Circuit Breaker to 9kVA Transformer for Lighting Panel	Bussmann	480V	LV Fuse	FRS-R-25		25A		
Starter Rack 101 Feeder Circuit Breaker to Air Compressor	Bussmann	480V	LV Fuse	FRS-R-15		15A		
Starter Rack 9 - Primary Clarifiers 1 & 2								
Starter Rack 9 Main Circuit Breaker	GE	480V	Thermal Magnetic	TED		100A		

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
Starter Rack 9 Feeder Circuit Breaker to Transformer for Lighting Panel	GE	480V	Thermal Magnetic	TED		30A		
Starter Rack 9 Feeder Circuit Breaker to Drive Motor No.1	Westinghouse	480V	Thermal Magnetic	HMCP		15A	INST=A (Range: A to H)	
Starter Rack 9 Feeder Circuit Breaker to Drive Motor No.2	Westinghouse	480V	Thermal Magnetic	HMCP		15A	INST=A (Range: A to H)	
Starter Rack 9 Feeder Circuit Breaker to Scum Pump	Westinghouse	480V	Thermal Magnetic	HMCP		15A	INST=A (Range: A to H)	
Starter Rack 9 Feeder Circuit Breaker to No.1 Primary Valve Actuator	Fusetron	480V	LV Fused Switch	FRS-R-2		2A		
Starter Rack 9 Feeder Circuit Breaker to No.2 Primary Valve Actuator	Fusetron	480V	LV Fused Switch	FRS-R-2		2A		
MCC - Scum Building								
MCC Feeder Circuit Breaker to Electric Heater	ITE	480V						Note 3
MCC Feeder Circuit Breaker to Skimmer	ITE	480V	MCP	EF3A003		3A	INST=4 (16A)	Note 4
MCC Feeder Circuit Breaker to Transformer for Panel A (next to MCC)	ITE	480V	Thermal Magnetic			15A		Note 4
MCC Feeder Circuit Breaker to Scum Pump	ITE	480V				15A		Note 4
MCC Feeder Circuit Breaker to Grit Pump		480V	MCP			5A	INST=41A	Note 4
MCC Feeder Circuit Breaker to Cross Screw		480V	MCP			3A	INST=12A	Note 4
MCC Feeder Circuit Breaker to Bottom Collector		480V	MCP			3A	INST=7A	Note 4
Starter Rack - Aeration Tanks								
Starter Rack Main Circuit Breaker	GE	480V	Thermal Magnetic	TED		40A		
Starter Rack Feeder Circuit Breaker to Light Poles	Square D	480V				20A		Note 4
Starter Rack Feeder Circuit Breaker to Transformer for Panel	GE	480V	Thermal Magnetic	TED		20A		
Starter Rack 10B - Grit Collectors 1 & 2								
Starter Rack 10B Main Circuit Breaker	GE	480V	Thermal Magnetic	TED		100A		
Starter Rack 10B Feeder Circuit Breaker to Transformer for Lighting Panel	GE	480V	Thermal Magnetic	TED		20A		
Starter Rack 10B Feeder Circuit Breaker to Collector Drive No.1	Square D	480V	MCP	MagGard		15A	INST=Lo [Range: Lo(50) to Hi(180)]	
Starter Rack 10B Feeder Circuit Breaker to Collector Drive No.2	Square D	480V	MCP	MagGard		15A	INST=Lo [Range: Lo(50) to Hi(180)]	
Starter Rack 10B Feeder Circuit Breaker to Grit Pump No.1	Square D	480V	MCP	MagGard		15A	INST=Hi [Range: Lo(50) to Hi(180)]	
Starter Rack 10B Feeder Circuit Breaker to Grit Pump No.2	Square D	480V	MCP	MagGard		15A	INST=Hi [Range: Lo(50) to Hi(180)]	
Starter Rack 100 - Grit Collectors 3 & 4								
Starter 100 Rack Main Fused Switch	Ferraz-Shawmut	480V	Fused Switch	TRS50R		50A		

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
Starter Rack 100 Feeder Circuit Breaker to Transformer for Lighting Panel	Ferraz-Shawmut	480V	Fused Switch	TRS12R		12A	(Single Phase)	Note 5
Starter Rack 100 Feeder Circuit Breaker to No.3 Grit Rake Arm	Square D	480V	Thermal Magnetic	FAL36015		15A		
Starter Rack 100 Feeder Circuit Breaker to No.4 Grit Rake Arm	Square D	480V	Thermal Magnetic	FAL36015		15A		
Starter Rack 100 Feeder Circuit Breaker to No.3 Grit Pump	Square D	480V	Thermal Magnetic	FAL36025		25A		
Starter Rack 100 Feeder Circuit Breaker to No.4 Grit Pump	Square D	480V	Thermal Magnetic	FAL36025		25A		
Starter Rack 10A - Secondary Clarifiers 1 & 2								
Starter Rack 10A Main Circuit Breaker	GE	480V	Thermal Magnetic	TED		100A		
Starter Rack 10A Feeder Circuit Breaker to Transformer for Panel	GE	480V		EC?		30A		
Starter Rack 10A Feeder Circuit Breaker to Rake Drive No.1	Westinghouse	480V	MCP	MCP		15A		Note 6
Starter Rack 10A Feeder Circuit Breaker to Rake Drive No.2	Westinghouse	480V	MCP	MCP		15A		Note 6
Transformer for Panel LP400 - Warehouse								
Feeder Circuit Breaker (separately mounted) to 75kVA Transformer for Panel LP400	Gould ITE	480V	Thermal Magnetic	E-1?		100A	Mag=100A	Note 4
MCC - Hypochlorite Building								
MCC Main Circuit Breaker	Square D	480V	Thermal Magnetic			175A	Hi	Note 4
MCC Feeder Circuit Breaker to 5-Minute Analyzer No.1	Square D	480V	MCP	Mag-Gard		3A	INST=Hi (28A)	
MCC Feeder Circuit Breaker to 5-Minute Analyzer No.2	Square D	480V	MCP	Mag-Gard		3A	INST=Hi (28A)	
MCC Feeder Circuit Breaker to EUH-3	Square D	480V	Thermal Magnetic			15A		Note 4
MCC Feeder Circuit Breaker to Panel JRM Feeder	Square D	480V	Thermal Magnetic	KCP		125A	INST=625A	
MCC Feeder Circuit Breaker to 15kVA Transformer for Panel	Square D	480V	Thermal Magnetic			25A		Note 4
MCC Feeder Circuit Breaker to Ammonia Pump No.1	Square D	480V	MCP	Mag-Gard		15A	INST=C (150A)	
MCC Feeder Circuit Breaker to Ammonia Pump No.2	Square D	480V	MCP	Mag-Gard		15A	INST=C (150A)	
MCC Feeder Circuit Breaker to 30-Minute Analyzer No.1	Square D	480V	MCP	Mag-Gard		3A	INST=20A	
MCC Feeder Circuit Breaker to 30-Minute Analyzer No.2	Square D	480V	MCP	Mag-Gard		3A	INST=20A	
MCC Feeder Circuit Breaker to EF-1 (separately mounted, outside MCC)	Square D	480V	MCP	Mag-Gard		3A	INST=Lo (8A)	
MCC Feeder Circuit Breaker to EF-2 (separately mounted, outside MCC)	Square D	480V	MCP	Mag-Gard		3A	INST=Lo (8A)	

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
MCC Feeder Circuit Breaker to EF-3 (separately mounted, outside MCC)	Square D	480V	MCP	Mag-Gard		3A	INST=Lo (8A)	
Panel JRM - Hypochlorite Building								
Panel JRM Main Circuit Breaker	Square D	480V	Thermal Magnetic			350A		Note 4
Panel JRM Feeder Circuit Breaker to Panel JR1A	Square D	480V	Thermal Magnetic			150A		Note 4
Panel JRM Feeder Circuit Breaker to JR1B	Square D	480V	Thermal Magnetic			150A		Note 4
Panel JR1A - Hypochlorite Building								
Panel JR1A Main Circuit Breaker	Square D	480V	Thermal Magnetic	KAL		150A		
(this panel feeds Panel JR1B (MLO))								
Induction Mixer Panel Starter Rack - Hypochlorite Building (fed by Panel JR1B)								
Induction Mixer Panel SR Main Circuit Breaker (separately mounted)	Square D	480V	Thermal Magnetic	FAL		60A		
Induction Mixer Panel Main Circuit Breaker (inside panel)	Cutler-Hammer	480V	MCP	HMCP		15A	INST=G	
Panel JR2 - Bisulfite Building								
Panel JR2 Main Circuit Breaker	Square D	480V	Thermal Magnetic	KAL		150A		
MCC-5B - Headworks and Scrubber Facility								
MCC-5B Main Circuit Breaker	Cutler-Hammer	480V	Thermal Magnetic	HKD	400A	400A	Mag(5-10)=5	Note 1
MCC-5B Feeder Circuit Breaker to Induced Draft Fan M-4-4-1	Cutler-Hammer	480V	Thermal Magnetic	HKB	250A	200A	INST=Lo (Range: Lo to Hi)	
MCC-5B Feeder Circuit Breaker to Induced Draft Fan M-4-4-2	Cutler-Hammer	480V	Thermal Magnetic	HKB	250A	200A	INST=Lo (Range: Lo to Hi)	
MCC-5B Feeder Circuit Breaker to Panelboard P5B	Westinghouse	480V	Thermal Magnetic	HKB	250A	225A	Mag=Hi (Range: Lo to Hi)	
MCC-5B Feeder Circuit Breaker to Recirculation Pump P-4-3-1	Westinghouse	480V	MCP	HMCP		15A	INST=G (Range: A to H)	
MCC-5B Feeder Circuit Breaker to Classifier M-2-2-1	Westinghouse	480V	MCP	HMCP		3A	INST=G (Range: A to H)	
MCC-5B Feeder Circuit Breaker to Classifier M-2-2-2	Westinghouse	480V	MCP	HMCP		3A	INST=G (Range: A to H)	
MCC-5B Feeder Circuit Breaker to Classifier M-2-2-3	Westinghouse	480V	MCP	HMCP		3A	INST=G (Range: A to H)	
MCC-5B Feeder Circuit Breaker to Supply Fan SF-1	Westinghouse	480V	MCP	HMCP		3A	INST=D (Range: A to H)	
MCC-5B Feeder Circuit Breaker to Recirculation Pump P-4-3-2	Westinghouse	480V	MCP	HMCP		3A	INST=D (Range: A to H)	
MCC-5B Feeder Circuit Breaker to Recirculation Pump P-4-3-3	Westinghouse	480V	MCP	HMCP		15A	INST=G (Range: A to H)	
MCC-5B Feeder Circuit Breaker to Panelboard P5C	Cutler-Hammer	480V	Thermal Magnetic	FD		100A	Fixed	Note 1
MCC-5B Feeder Circuit Breaker to Screen 2 CP01-1220	Cutler-Hammer	480V	Thermal Magnetic			30A		Note 7

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
Panel P5B - Headworks and Scrubber Facility								
P5B Main Circuit Breaker	Cutler-Hammer	480V	Thermal Magnetic	HFD		225A		
Panel P5C - Headworks and Scrubber Facility								
P5C Main Circuit Breaker	GE	480V	Thermal Magnetic	THED		100A	Fixed	Note 1
P5C Feeder Circuit Breaker to Screen 1 CP01-1210	GE	480V	Thermal Magnetic			30A		Note 7
P5C Feeder Circuit Breaker to Screen 3 CP01-1230	GE	480V	Thermal Magnetic			30A		Note 7
(not all feeder circuit breakers shown)								
Starter Rack 107 - Primary Clarifiers 3 & 4								
Starter Rack 107 Main Fused Switch	Square D	480V	LV Fused Switch	Fusetron FRS-R-50	60A	50A	(60A Safety Switch with 50A Fuses)	
Starter Rack 107 Feeder Circuit Breaker to 7.5kVA Transformer for Lighting Panel	Cutler-Hammer	480V	LV Fused Switch	LittelFuse FLSR20	30A	20A	(30A Safety Switch with 20A Fuses)	
Starter Rack 107 Feeder Circuit Breaker to Scum Pump No.3A	Square D	480V	MCP	Mag-Gard GJL		7A	INST=C (5x) [Range: A(3x) to I(11x)]	
Starter Rack 107 Feeder Circuit Breaker to Scum Pump No.4	Square D	480V	MCP	Mag-Gard GJL		7A	INST=C (5x) [Range: A(3x) to I(11x)]	
Starter Rack 107 Feeder Circuit Breaker to Primary Scraper Drive No.3	Square D	480V	Thermal Magnetic	FAL		15A		
Starter Rack 107 Feeder Circuit Breaker to Primary Scraper Drive No.4	Square D	480V	Thermal Magnetic	FAL		15A		
Starter Rack 107 Feeder Circuit Breaker to Primary Valve Actuator No.3	LittelFuse	480V	LV Fuses	FLSR-1.5		1.5A		
Starter Rack 107 Feeder Circuit Breaker to Primary Valve Actuator No.4	LittelFuse	480V	LV Fuses	FLSR-1.5		1.5A		
Starter Rack 107 Feeder Circuit Breaker to Lighting Contactor	Westinghouse	480V	Thermal Magnetic	HFD		20A		
Starter Rack - Digester Building								
Starter Rack Main Circuit Breaker	GE	480V	Thermal Magnetic	TFJ236225WL		225A	Max	
Starter Rack Feeder Circuit Breaker to Sludge Recirculation Pump No.1	ITE	480V	Thermal Magnetic	E6		50A		
Starter Rack Feeder Circuit Breaker to Sludge Recirculation Pump No.2	ITE	480V	Thermal Magnetic	E6		50A		
Starter Rack Feeder Circuit Breaker to Raw Sludge Pump No.1	ITE	480V	Thermal Magnetic	E6		25A		
Starter Rack Feeder Circuit Breaker to Raw Sludge Pump No.2	ITE	480V	Thermal Magnetic	E6		50A		
Starter Rack Feeder Circuit Breaker to Valve Actuator No.1	Westinghouse	480V	MCP	HMCP		3A		Note 6

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
Starter Rack Feeder Circuit Breaker to Valve Actuator No.2	ITE	480V	Thermal Magnetic	EF3 A003		3A		Note 4
Starter Rack Feeder Circuit Breaker to Valve Actuator 1 & 2 Sludge Thickener Feeder	GE	480V	Thermal Magnetic	TED		5A		Note 4
Starter Rack Feeder Circuit Breaker to Transformer for Lighting Panel		480V	Thermal Magnetic					Note 3
Starter Rack Feeder Circuit Breaker to Sludge Digester Heater		480V	Thermal Magnetic					Note 3
Starter Rack Feeder Circuit Breaker to Sump Pump	ITE	480V	Thermal Magnetic	EF3 A203		3A		Note 4
Starter Rack Feeder Circuit Breaker to Primary Pump No.3 (Sludge Recirculation Pump No.2)	GE	480V	Thermal Magnetic	TED		30A		
Starter Rack Feeder Circuit Breaker to Wemco Pump (Underflow Sludge)	ITE	480V	Thermal Magnetic	E6		100A		
Starter Rack 114 - Gravity Thickener Building								
Starter Rack 114 Main Circuit Breaker	GE	480V	Thermal Magnetic	TED		100A		
Starter Rack 114 Feeder Circuit Breaker to Starter Rack 115 (Gravity Thickener No.1)	GE	480V	Thermal Magnetic	TED		15A		
Starter Rack 114 Feeder Circuit Breaker to Starter Rack 116 (Gravity Thickener No. 2)	GE	480V	Thermal Magnetic	FAL		30A		
Starter Rack 114 Feeder Circuit Breaker to Transformer for Panel PDP114	GE	480V	Thermal Magnetic	TED		20A		
Starter Rack 114 Feeder Circuit Breaker to Thickened Sludge Pump No.1	GE	480V	Thermal Magnetic	TED		30A		
Starter Rack 114 Feeder Circuit Breaker to Thickened Sludge Pump No.2	GE	480V	Thermal Magnetic	TED		30A		
Starter Rack 114 Feeder Circuit Breaker to Muffin Monster No.1	Square D	480V	Thermal Magnetic	FAL		20A		
Starter Rack 114 Feeder Circuit Breaker to Muffin Monster No.2	Square D	480V	Thermal Magnetic	FAL		20A		
Starter Rack 115 - Gravity Thickener No. 1								
Starter Rack 115 Main Circuit Breaker	GE	480V	Thermal Magnetic	TED		15A		
Starter Rack 116 - Gravity Thickener No. 2								
Starter Rack 116 Main Circuit Breaker	GE	480V	Thermal Magnetic	TED		15A		
MCC-CC113 - NPW/Effluent Building								
MCC Molded Case Switch	GE	480V	Molded Case Switch			225A		Note 4
MCC Feeder Circuit Breaker to NPW Pump No.4	GE	480V	Thermal Magnetic	TED		100A		

Hampton Roads Sanitation District
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Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
MCC Feeder Circuit Breaker to Chlorinated Pump No.1	GE	480V	Thermal Magnetic	TED		50A		
MCC Feeder Circuit Breaker to Chlorinated Pump No.2	GE	480V	Thermal Magnetic	THED		50A		
MCC Feeder Circuit Breaker to Drainage Pump	GE	480V	Thermal Magnetic	THED		20A		
MCC Feeder Circuit Breaker to Roof Ventilator	GE	480V	Thermal Magnetic	TED		20A		
MCC Feeder Circuit Breaker to 15kW Heater	GE	480V	Thermal Magnetic	TED		20A		
MCC Feeder Circuit Breaker to Tranformer for Panel (in MCC)	GE	480V	Thermal Magnetic	THED		20A		
Starter Rack 112 - Drainage Pump (Secondary Clarifier 4)								
Starter Rack 112 Main Circuit Breaker	GE	480V	Thermal Magnetic	E100 Line				Note 3
Starter Rack 112 Feeder Circuit Breaker to Drainage Pump	Square D	480V	Thermal Magnetic	FAL		30A		
Starter Rack 112 Feeder Circuit Breaker to Site Lighting								Note 3
Starter Rack - NPW/Effluent Building (outside)								
Starter Rack Main Circuit Breaker	GE	480V	Thermal Magnetic	THJK		400A	Mag=Hi	
Starter Rack Feeder Circuit Breaker to Tranformer for Panel	GE	480V	Thermal Magnetic			15A		Note 4
Starter Rack Feeder Circuit Breaker to NPW Water Pump No.1	Square D	480V	Thermal Magnetic	KAL		110A		
Starter Rack Feeder Circuit Breaker to NPW Water Pump No.2	Square D	480V	Thermal Magnetic	KAL		110A		
MCC-CC103 - Return Pump Station No. 1								
MCC-CC103 Main Circuit Breaker	GE	480V	Thermal Magnetic	TJK		400A		Note 6
MCC-CC103 Feeder Circuit Breaker to Scraper Drive No. 3 Starter Rack	GE	480V	Thermal Magnetic	THED		30A		
MCC-CC103 Feeder Circuit Breaker to Scum Pumps 4A and 4B Starter Rack	GE	480V	Thermal Magnetic	THED		30A		
MCC-CC103 Feeder Circuit Breaker to Scraper Drive No. 4 Starter Rack	GE	480V	Thermal Magnetic	THED		30A		
MCC-CC103 Feeder Circuit Breaker to Roof Ventilator	GE	480V	Thermal Magnetic	TED		20A		
MCC-CC103 Feeder Circuit Breaker to Unit Heater	GE	480V	Thermal Magnetic	TED		30A		
MCC-CC103 Feeder Circuit Breaker to Scraper Drive No. 5 Starter Rack	GE	480V	Thermal Magnetic	THED		30A		
MCC-CC103 Feeder Circuit Breaker to Starter Rack 118 (feeds Scum Pump No. 5 Starter Rack)	GE	480V	Thermal Magnetic	THED		50A		
MCC-CC103 Feeder Circuit Breaker to PDP No. 103	GE	480V	Thermal Magnetic	THED		50A		

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Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
Return Pump 3 VFD Panel - Return Pump Station No. 1								
Return Pump 3 VFD Panel Main Circuit Breaker	Westinghouse	480V	Thermal Magnetic	EHD		80A		Note 5
Return Pump 4 VFD Panel - Return Pump Station No. 1								
Return Pump 4 VFD Panel Main Circuit Breaker	Westinghouse	480V	Thermal Magnetic	EHD		80A		Note 5
Scraper Drive 3 Starter Rack - Secondary Clarifier 3								
Scraper Drive 3 Starter Rack Main Circuit Breaker	Square D	480V	Thermal Magnetic	FAL		15A		
Scraper Drive 4 Starter Rack - Secondary Clarifier 4								
Scraper Drive 4 Starter Rack Main Circuit Breaker	Square D	480V	Thermal Magnetic	FAL		15A		
Scraper Drive 5 Starter Rack - Secondary Clarifier 5								
Scraper Drive 5 Starter Rack Main Circuit Breaker	Square D	480V	MCP	Mag-Gard		7A	Hi	
Scum Pumps 4A,4B Starter Rack - Secondary Clarifiers 3 & 4								
Feeder Circuit Breaker to Scum Pump 4A	Square D	480V	Thermal Magnetic	FAL		25A		
Feeder Circuit Breaker to Scum Pump 4B	Square D	480V	Thermal Magnetic	FAL		25A		
Scum Pump 5 Starter Rack - Secondary Clarifier 5								
Starter Rack Main Circuit Breaker	Square D	480V	MCP	Mag-Gard		30A		
MCC-CC103A - Return Pump Station No. 2								
MCC-CC103A Main Circuit Breaker	Square D	480V	Thermal Magnetic	LAL		400A		Note 6
MCC-CC103A Feeder Circuit Breaker to Return Pump No.5 VFD Panel	Square D	480V	Thermal Magnetic	FAL		100A		
MCC-CC103A Feeder Circuit Breaker to Return Pump No.6 VFD Panel	Square D	480V	Thermal Magnetic	FAL		100A		
MCC-CC103A Feeder Circuit Breaker to Return Pump No.1 VFD Panel	Square D	480V	Thermal Magnetic	FAL		50A		
MCC-CC103A Feeder Circuit Breaker to Return Pump No.2 VFD Panel	Square D	480V	Thermal Magnetic	FAL		50A		
MCC-CC103A Feeder Circuit Breaker to Transformer for Panel (in MCC)	Square D	480V	Thermal Magnetic	FAL		20A		
MCC-CC103A Feeder Circuit Breaker to Unit Heater	Square D	480V	Thermal Magnetic	FHL		30A		

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Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
Return Pump 5 VFD Panel - Return Pump Station No. 2								
Return Pump 5 VFD Panel Main Circuit Breaker	Westinghouse	480V	Thermal Magnetic	EHD		100A		
Return Pump 6 VFD Panel - Return Pump Station No. 2								
Return Pump 6 VFD Panel Main Circuit Breaker	Westinghouse	480V	Thermal Magnetic	EHD		100A		
Return Pump 1 VFD Panel - Return Pump Station No. 2								
Return Pump 1 VFD Panel Main Circuit Breaker	Westinghouse	480V	Thermal Magnetic	EHD		50A		
Return Pump 2 VFD Panel - Return Pump Station No. 2								
Return Pump 2 VFD Panel Main Circuit Breaker	Westinghouse	480V	Thermal Magnetic	EHD		50A		
Switchboard SWBD-2A,2B - Aeration Blower Building								
SWBD-2A Main Circuit Breaker	GE	480V	Static	PowerBreak II, Entelliguard TU	2000A	2000A	LTPU=1, LTD=C-3, STPU=4, STD=Int-1, I2t In, INST=5, GFPU=0.25, GFD=I2t-8, I2t In	Note 1
SWBD-2A Feeder Circuit Breaker to Aeration Blower 4	GE	480V	Static	SG/SK, MVT-Plus	600A	500A	LTPU=1, LTD=2, STPU=7, STD=1, I2t In, INST=10, GFPU=0.4, GFD=2, I2t In	Note 1
SWBD-2A Feeder Circuit Breaker to Aeration Blower 5	GE	480V	Static	SG/SK, MVT-Plus	600A	500A	LTPU=1, LTD=2, STPU=7, STD=1, I2t In, INST=10, GFPU=0.4, GFD=2, I2t In	Note 1
SWBD-2A Feeder Circuit Breaker to MCC-2A	GE	480V	Static	SG/SK, MVT-Plus	600A	450A	LTPU=1, LTD=3, STPU=3, STD=3, I2t In, INST=5, GFPU=0.4, GFD=2, I2t In	Note 1
SWBD-2A Feeder Circuit Breaker to MCC-2B	GE	480V	Static	SG/SK, MVT-Plus	400A	300A	LTPU=1, LTD=3, STPU=9, STD=4, I2t In, INST=10, GFPU=0.5, GFD=2, I2t In	Note 1
SWBD-2A Tie Circuit Breaker to SWBD-2B	GE	480V	Static	PowerBreak II, Entelliguard TU	1600A	1200A	LTPU=1, LTD=C-4, STPU=5, STD=Int-1, I2t In, INST=6, GFPU=0.2, GFD=I2t-7, I2t In	Note 1

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James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
SWBD-2B Feeder Circuit Breaker to MCC-2C	GE	480V	Static	SG/SK, MVT-Plus	400A	300A	LTPU=1, LTD=3, STPU=9, STD=4, I2t In, INST=10, GFPU=0.4, GFD=1, I2t In	Note 1
SWBD-2B Feeder Circuit Breaker to Panel DP47	GE	480V	Static	SE, Spectra RMS	250A	150A	LTPU=Fixed, LTD=Fixed, STPU=Fixed, STD=Fixed, INST=Max	Note 1
SWBD-2B Feeder Circuit Breaker to Aeration Blower 6	GE	480V	Static	SG/SK, MVT-Plus	600A	500A	LTPU=1, LTD=2, STPU=7, STD=1, I2t In, INST=10, GFPU=0.25, GFD=1, I2t In	Note 1
MCC-2A - Aeration Blowers Building								
MCC-2A Feeder Circuit Breaker to IFAS Reactor 1 Mixer 1	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 1 Mixer 2	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 1 Mixer 3	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 1 Mixer 4	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 2 Mixer 1	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 2 Mixer 2	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 2 Mixer 3	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 2 Mixer 4	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 3 Mixer 1	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 3 Mixer 2	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 3 Mixer 3	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 3 Mixer 4	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 1 NRCY Pump 1	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 1 NRCY Pump 2	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 2 NRCY Pump 1	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
MCC-2A Feeder Circuit Breaker to IFAS Reactor 2 NRCY Pump 2	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 3 NRCY Pump 1	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 3 NRCY Pump 2	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2A Feeder Circuit Breaker to Centrate Recycle Pump	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2A Feeder Circuit Breaker to Odor Control Fan 1	GE	480V	MCP	SE, Spectra RMS		100A	INST=MAX	Note 1
MCC-2A Feeder Circuit Breaker to Odor Control Fan 2	GE	480V	MCP	SE, Spectra RMS		100A	INST=MAX	Note 1
MCC-2A Feeder Circuit Breaker to Transformer TX-MCC-2A for Panel LP2A	GE	480V	MCP	SE, Spectra RMS		100A	INST=6	Note 1
MCC-2A Feeder Circuit Breaker to Panel DP2A	GE	480V	MCP	SE, Spectra RMS		100A	INST=MAX	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 1 Foam Skimmer	GE	480V	MCP	SE, Spectra RMS		3A	INST=3	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 2 Foam Skimmer	GE	480V	MCP	SE, Spectra RMS		3A	INST=3	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 3 Foam Skimmer	GE	480V	MCP	SE, Spectra RMS		3A	INST=3	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 1 Foam Pump	GE	480V	MCP	SE, Spectra RMS		7A	INST=5	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 2 Foam Pump	GE	480V	MCP	SE, Spectra RMS		7A	INST=5	Note 1
MCC-2A Feeder Circuit Breaker to IFAS Reactor 3 Foam Pump	GE	480V	MCP	SE, Spectra RMS		7A	INST=5	Note 1
MCC-2A Feeder Circuit Breaker to Preaeration Tanks Air Flow Control Valve	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2A Feeder Circuit Breaker to Panel (Digester) (Feeder B)	GE	480V	MCP	SGLC, Spectra RMS	400A	225A	LTPU=1, LTD=C-9, STPU=4x, STD=ST01-Int, I2t Off, INST=4x, GFPU=0.4, GFD=GFD-02 MIN, I2t Off	Note 2
IFAS Reactor 1 NRCY Pump 1 VFD Panel - Aeration Blowers Building								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
IFAS Reactor 1 NRCY Pump 2 VFD Panel - Aeration Blowers Building								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1

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Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
IFAS Reactor 2 NRCY Pump 1 VFD Panel - Aeration Blowers Building								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
IFAS Reactor 2 NRCY Pump 2 VFD Panel - Aeration Blowers Building								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
IFAS Reactor 3 NRCY Pump 1 VFD Panel - Aeration Blowers Building								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
IFAS Reactor 3 NRCY Pump 2 VFD Panel - Aeration Blowers Building								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
Centrate Pump VFD Panel - Aeration Blowers Building								
Main Circuit Breaker	GE	480V	Thermal Magnetic	SELA, Spectra RMS		20A	INST=2	Note 1
MCC-2B - IFAS Electrical Building 1								
MCC-2B Main Circuit Breaker	GE	480V	Static	SG, Spectra RMS	400A	300A	LTPU=Fixed, LTD=Fixed, STPU=Fixed, STD=Fixed, INST=4	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 4 Mixer 1	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 4 Mixer 2	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 4 Mixer 3	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 4 Mixer 4	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 5 Mixer 1	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 5 Mixer 2	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 5 Mixer 3	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 5 Mixer 4	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1

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Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
MCC-2B Feeder Circuit Breaker to IFAS Reactor 6 Mixer 1	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 6 Mixer 2	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 6 Mixer 3	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 6 Mixer 4	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 4 NRCY Pump 1	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 4 NRCY Pump 2	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 5 NRCY Pump 1	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 5 NRCY Pump 2	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 6 NRCY Pump 1	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 6 NRCY Pump 2	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2B Feeder Circuit Breaker to Transformer TX-MCC-2B for Panel LP2B	GE	480V	MCP	SE, Spectra RMS		30A	INST=MAX	Note 1
MCC-2B Feeder Circuit Breaker to Panel DP2B	GE	480V	MCP	SE, Spectra RMS		100A	INST=MAX	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 4 Foam Skimmer	GE	480V	MCP	SE, Spectra RMS		3A	INST=3	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 5 Foam Skimmer	GE	480V	MCP	SE, Spectra RMS		3A	INST=3	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 6 Foam Skimmer	GE	480V	MCP	SE, Spectra RMS		3A	INST=3	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 4 Foam Pump	GE	480V	MCP	SE, Spectra RMS		7A	INST=5	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 5 Foam Pump	GE	480V	MCP	SE, Spectra RMS		7A	INST=5	Note 1
MCC-2B Feeder Circuit Breaker to IFAS Reactor 6 Foam Pump	GE	480V	MCP	SE, Spectra RMS		7A	INST=5	Note 1
IFAS Reactor 4 NRCY Pump 1 VFD Panel - IFAS Electrical Building 1								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
IFAS Reactor 4 NRCY Pump 2 VFD Panel - IFAS Electrical Building 1								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
IFAS Reactor 5 NRCY Pump 1 VFD Panel - IFAS Electrical Building 1								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
IFAS Reactor 5 NRCY Pump 2 VFD Panel - IFAS Electrical Building 1								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
IFAS Reactor 6 NRCY Pump 1 VFD Panel - IFAS Electrical Building 1								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
IFAS Reactor 6 NRCY Pump 2 VFD Panel - IFAS Electrical Building 1								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
MCC-2C - IFAS Electrical Building 2								
MCC-2C Main Circuit Breaker	GE	480V	Static	SG, Spectra RMS	400A	300A	LTPU=Fixed, LTD=Fixed, STPU=Fixed, STD=Fixed, INST=4	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 7 Mixer 1	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 7 Mixer 2	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 7 Mixer 3	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 7 Mixer 4	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 8 Mixer 1	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 8 Mixer 2	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 8 Mixer 3	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 8 Mixer 4	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
MCC-2C Feeder Circuit Breaker to IFAS Reactor 9 Mixer 1	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 9 Mixer 2	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 9 Mixer 3	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 9 Mixer 4	GE	480V	MCP	SE, Spectra RMS		15A	INST=4	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 7 NRCY Pump 1	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 7 NRCY Pump 2	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 8 NRCY Pump 1	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 8 NRCY Pump 2	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 9 NRCY Pump 1	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 9 NRCY Pump 2	GE	480V	MCP	SE, Spectra RMS		20A	INST=2	Note 1
MCC-2C Feeder Circuit Breaker to Transformer TX-MCC-2C for Panel LP2C	GE	480V	MCP	SE, Spectra RMS		30A	INST=MAX	Note 1
MCC-2C Feeder Circuit Breaker to Panel DP2C	GE	480V	MCP	SE, Spectra RMS		100A	INST=MAX	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 7 Foam Skimmer	GE	480V	MCP	SE, Spectra RMS		3A	INST=3	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 8 Foam Skimmer	GE	480V	MCP	SE, Spectra RMS		3A	INST=3	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 9 Foam Skimmer	GE	480V	MCP	SE, Spectra RMS		3A	INST=3	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 7 Foam Pump	GE	480V	MCP	SE, Spectra RMS		7A	INST=5	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 8 Foam Pump	GE	480V	MCP	SE, Spectra RMS		7A	INST=5	Note 1
MCC-2C Feeder Circuit Breaker to IFAS Reactor 9 Foam Pump	GE	480V	MCP	SE, Spectra RMS		7A	INST=5	Note 1
IFAS Reactor 7 NRCY Pump 1 VFD Panel - IFAS Electrical Building 1								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
IFAS Reactor 7 NRCY Pump 2 VFD Panel - IFAS Electrical Building 1								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
IFAS Reactor 8 NRCY Pump 1 VFD Panel - IFAS Electrical Building 1								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
IFAS Reactor 8 NRCY Pump 2 VFD Panel - IFAS Electrical Building 1								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
IFAS Reactor 9 NRCY Pump 1 VFD Panel - IFAS Electrical Building 1								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
IFAS Reactor 9 NRCY Pump 2 VFD Panel - IFAS Electrical Building 1								
Main Circuit Breaker	Square D	480V	Thermal Magnetic	HGL36000S15		15A	Fixed	Note 1
Panel DP47 - Sodium Hydroxide Building								
DP47 Main Circuit Breaker	GE	480V	Static	SF, Spectra RMS	250A	150A	LTPU=Fixed, LTD=Fixed, STPU=Fixed, STD=Fixed, INST=5	Note 1
DP47 Feeder Circuit Breaker to MCC-G1 (Sodium Hydroxide Building)	GE	480V	Thermal Magnetic	THED		90A	Fixed	Note 1
(not all feeder circuit breakers shown)								
MCC-G1 - Sodium Hydroxide Building								
MCC Main Cirucit Breaker	Cutler-Hammer	480V	Thermal Magnetic	FH		90A		Note 5
MCC Feeder Circuit Breaker to NaOH Pump No.1	Cutler-Hammer	480V	Thermal Magnetic	FH		15A		Note 5
MCC Feeder Circuit Breaker to NaOH Pump No.2	Cutler-Hammer	480V	Thermal Magnetic	FH		15A		Note 5
MCC Feeder Circuit Breaker to 15kVA Transformer for Lighting Panel	Cutler-Hammer	480V	Thermal Magnetic	FH		40A		Note 5
MCC Feeder Circuit Breaker to Tank Heater Disconnect	Cutler-Hammer	480V	Thermal Magnetic	FH		15A		Note 5
MCC Feeder Circuit Breaker to Caustic Mixer	Cutler-Hammer	480V	Thermal Magnetic	FH		15A		Note 5
MCC Feeder Circuit Breaker to Unit Heater	Cutler-Hammer	480V	Thermal Magnetic	FH		15A		Note 5
Switchboard SWBD-3 - Sludge Building (Electrical Room)								

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
SWBD-3 Main Circuit Breaker	GE	480V	Static	EGTU, PowerBreak II	2000A	2000A	LTPU=1, LTD=C-3, STPU=4, STD=Int-1, I2t In, INST=5; GFPU=0.25, GFD=I2t-8, I2t In	Note 1
Switchboard Feeder Circuit Breaker to Centrifuge No.1	Westinghouse	480V	Static	LD	600A	600A	Mag=10	
Switchboard Feeder Circuit Breaker to Centrifuge No.2	Westinghouse	480V	Static	LD	600A	600A	Mag=10	
Switchboard Feeder Circuit Breaker to Centrifuge No.3	Westinghouse	480V	Static	LD	600A	600A	Mag=10	
Switchboard Feeder Circuit Breaker to MCC (Sludge Building)	Westinghouse	480V	Static	MD	800A	800A	STPU=10 (8000A)	Note 5
Switchboard Feeder Circuit Breaker to MCC (Dewatering Building)	Westinghouse	480V	Static	LD	600A	600A	Mag=10	
Centrifuge 1 Panel - Sludge Building (Third Floor)								
Centrifuge 1 Panel Main Circuit Breaker	Square D	480V	Thermal Magnetic	MAL36600		600A	Mag=Hi	
Centrifuge 2 Panel - Sludge Building (Third Floor)								
Centrifuge 2 Panel Main Circuit Breaker	Square D	480V	Thermal Magnetic	MAL36600		600A	Mag=Hi	
Centrifuge 3 Panel - Sludge Building (Third Floor)								
Centrifuge 3 Panel Main Circuit Breaker	Square D	480V	Thermal Magnetic	MAL36600		600A	Mag=Hi	
MCC - Sludge Building (Electrical Room)								
MCC Main Circuit Breaker	Westinghouse	480V	Static	HMCGA	800A	600A	STPU=6; STD=0.11; GFPU=640A; GFD=0.2	Note 5
MCC Feeder Circuit Breaker to Gas Compressor No.1	Cutler-Hammer	480V	Thermal Magnetic	EHD		50A		
MCC Feeder Circuit Breaker to Gas Compressor No.2	Cutler-Hammer	480V	Thermal Magnetic	EHD		50A		
MCC Feeder Circuit Breaker to Cooling Water Pump No.1	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to Cooling Water Pump No.2	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to Cooling Water Pump No.3	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to Grinder No.1	Westinghouse	480V	Thermal Magnetic	HFD		30A		
MCC Feeder Circuit Breaker to Non-Potable Water Pump No.1	Westinghouse	480V	MCP	HMCP		30A	INST=B (120A) (Range: A to H)	
MCC Feeder Circuit Breaker to Non-Potable Water Pump No.2	Westinghouse	480V	MCP	HMCP		30A	INST=B (120A) (Range: A to H)	
MCC Feeder Circuit Breaker to Non-Potable Water Pump No.3	Westinghouse	480V	MCP	HMCP		30A	INST=B (120A) (Range: A to H)	
MCC Feeder Circuit Breaker to Grinder No.2	Westinghouse	480V	Thermal Magnetic	HFD		30A		
MCC Feeder Circuit Breaker to Grinder No.3	Westinghouse	480V	Thermal Magnetic	HFD		30A		
MCC Feeder Circuit Breaker to AHU-1	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to CU-1	Westinghouse	480V	Thermal Magnetic	HFD		30A		

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
MCC Feeder Circuit Breaker to PRU-1	Westinghouse	480V	MCP	HMCP		7A	INST=E (49A) (Range: A to H)	
MCC Feeder Circuit Breaker to PRU-2	Westinghouse	480V	MCP	HMCP		7A	INST=E (49A) (Range: A to H)	
MCC Feeder Circuit Breaker to Unit Heater No.7	Westinghouse	480V	Thermal Magnetic	HFD		20A		
MCC Feeder Circuit Breaker to Unit Heater No.8	Westinghouse	480V	Thermal Magnetic	HFD		20A		
MCC Feeder Circuit Breaker to Unit Heater No.9	Westinghouse	480V	Thermal Magnetic	HFD		20A		
MCC Feeder Circuit Breaker to Unit Heater No.10	Westinghouse	480V	Thermal Magnetic	HFD		20A		
MCC Feeder Circuit Breaker to Unit Heater No.11	Westinghouse	480V	Thermal Magnetic	HFD		20A		
MCC Feeder Circuit Breaker to Unit Heater No.12	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to Unit Heater No.13	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to Unit Heater No.14	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to Unit Heater No.15	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to Unit Heater No.16	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to LP-1 Feeder	Westinghouse	480V	Thermal Magnetic	HFD		40A		
MCC Feeder Circuit Breaker to Hydraulic Power Pack	Westinghouse	480V	Thermal Magnetic	HFD		70A		
MCC Feeder Circuit Breaker to Unit Heater No.1	Westinghouse	480V	Thermal Magnetic	HFD		20A		
MCC Feeder Circuit Breaker to Unit Heater No.2	Westinghouse	480V	Thermal Magnetic	HFD		20A		
MCC Feeder Circuit Breaker to Unit Heater No.3	Westinghouse	480V	Thermal Magnetic	HFD		20A		
MCC Feeder Circuit Breaker to Unit Heater No.4	Westinghouse	480V	Thermal Magnetic	HFD		20A		
MCC Feeder Circuit Breaker to Unit Heater No.5	Westinghouse	480V	Thermal Magnetic	HFD		20A		
MCC Feeder Circuit Breaker to Unit Heater No.6	Westinghouse	480V	Thermal Magnetic	HFD		20A		
MCC Feeder Circuit Breaker to Traveling Bridge Crane	Westinghouse	480V	Thermal Magnetic	HFD		40A		
MCC Feeder Circuit Breaker to Centrifuge Feed Pump No.1	Westinghouse	480V	Thermal Magnetic	HFD		70A		
MCC Feeder Circuit Breaker to Centrifuge Feed Pump No.2	Westinghouse	480V	Thermal Magnetic	HFD		70A		
MCC Feeder Circuit Breaker to Centrifuge Feed Pump No.3	Westinghouse	480V	Thermal Magnetic	HFD		70A		
MCC Feeder Circuit Breaker to Cooling Tower	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to Panel PP-1 (in MCC)	Westinghouse	480V	Thermal Magnetic	HFD		100A		
MCC Feeder Circuit Breaker to Dewatering Centrifuge Polymer Feed Pump No.1	Westinghouse	480V	Thermal Magnetic	HFD		30A		
MCC Feeder Circuit Breaker to Dewatering Centrifuge Polymer Feed Pump No.2	Westinghouse	480V	Thermal Magnetic	HFD		30A		
MCC Feeder Circuit Breaker to Dewatering Centrifuge Polymer Feed Pump No.3	Westinghouse	480V	Thermal Magnetic	HFD		30A		
Centrifuge Feed Pump 121 VFD Panel- Sludge Building (Electrical Room)								
Main Fused Switch	LittelFuse	480V	LV Fuse	POWR-PRO JTD-60		60A		

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
Centrifuge Feed Pump 122 VFD Panel - Sludge Building (Electrical Room)								
Main Fused Switch	LittelFuse	480V	LV Fuse	POWR-PRO JTD-60		60A		
Centrifuge Feed Pump 123 VFD Panel - Sludge Building (Electrical Room)								
Main Fused Switch	LittelFuse	480V	LV Fuse	POWR-PRO JTD-60		60A		
Dewatering Centrifuge Polymer Feed Pump 1 VFD Panel - Sludge Building (Electrical Room)								
Main Fused Switch	LittelFuse	480V	LV Fuse	POWR-PRO JTD-20		20A		
Dewatering Centrifuge Polymer Feed Pump 2 VFD Panel - Sludge Building (Electrical Room)								
Main Fused Switch	LittelFuse	480V	LV Fuse	POWR-PRO JTD-20		20A		
Dewatering Centrifuge Polymer Feed Pump 3 VFD Panel - Sludge Building (Electrical Room)								
Main Fused Switch	LittelFuse	480V	LV Fuse	POWR-PRO JTD-20		20A		
Grinder 1 Control Panel - Sludge Building (First Floor)								
Main Fused Switch	Fusetron	480V	LV Fuse	FRS-R-20		20A		
Grinder 2 Control Panel - Sludge Building (First Floor)								
Main Fused Switch	Fusetron	480V	LV Fuse	FRS-R-20		20A		
Grinder 3 Control Panel - Sludge Building (First Floor)								
Main Fused Switch	Fusetron	480V	LV Fuse	FRS-R-20		20A		
Hydraulic Power Pack Panel - Sludge Building (First Floor)								
Main Circuit Breaker	Thomas-Betts	480V	Thermal Magnetic	FA		80A		
MCC - Dewatering Building								
MCC Main Circuit Breaker	Westinghouse	480V	Static	MC	800A	800A	Mag=10 (INST) (STPU?)	
MCC Feeder Circuit Breaker to Digester Compressor Panel PNL-LP-5-10-1	Cutler-Hammer	480V	Thermal Magnetic	FS		40A		Note 5

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
MCC Feeder Circuit Breaker to Digester Compressor Panel PNL-LP-5-10-2	Cutler-Hammer	480V	Thermal Magnetic	FS		40A		Note 5
MCC Feeder Circuit Breaker to Digester Transfer Station Pump	Cutler-Hammer	480V	Thermal Magnetic	FS		20A		Note 5
MCC Feeder Circuit Breaker to Digster Pump P-5-6-1	Westinghouse	480V	MCP	HMCP		100A	INST=F (Range: A to H)	
MCC Feeder Circuit Breaker to Digster Pump P-5-6-2	Westinghouse	480V	MCP	HMCP		100A	INST=C (Range: A to H)	
MCC Feeder Circuit Breaker to NPW Booster Pump No.3	Westinghouse	480V	MCP	MCP		15A	INST=130A (Range: 50 to 150A)	
MCC Feeder Circuit Breaker to Odor Control System Panel PP1	Westinghouse	480V	Thermal Magnetic	HKB		150A	Mag: Hi	
MCC Feeder Circuit Breaker to Polymer Transfer Pump No.1	Westinghouse	480V	MCP	MCP03150R		15A	INST=150A (Range: 50 to 150A)	
MCC Feeder Circuit Breaker to Polymer Transfer Pump No.2	Westinghouse	480V	MCP	MCP		7A	INST=58A (Range: 18 to 58A)	
MCC Feeder Circuit Breaker to GBT Control Panel No.1	Cutler-Hammer	480V	Thermal Magnetic	HFD		30A		
MCC Feeder Circuit Breaker to GBT Control Panel No.2	Cutler-Hammer	480V	Thermal Magnetic	HFD		30A		
MCC Feeder Circuit Breaker to Compressor No.2	Westinghouse	480V	Thermal Magnetic	FDB		70A		
MCC Feeder Circuit Breaker to Exhaust Fan EF-5	Westinghouse	480V	MCP	MCP		15A	INST=62A (Range: 50 to 150A)	
MCC Feeder Circuit Breaker to Exhaust Fan EF-2	Westinghouse	480V	MCP	MCP		15A	INST=150A (Range: 50 to 150A)	
MCC Feeder Circuit Breaker to Polymer Feed Pump No.3	Cutler-Hammer	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to Polymer Bulk Feeder	Cutler-Hammer	480V	Thermal Magnetic	HFD		30A		
MCC Feeder Circuit Breaker to NPW Booster Pump No.1	Westinghouse	480V	MCP	MCP		15A		Note 6
MCC Feeder Circuit Breaker to Air Compressor	Westinghouse	480V	Thermal Magnetic	FDB		70A		
MCC Feeder Circuit Breaker to Holding Tank Mixer	Westinghouse	480V	MCP	MCP		7A	INST=58A (Range: 18 to 58A)	
MCC Feeder Circuit Breaker to WAB Pump No.1	Westinghouse	480V	Thermal Magnetic	HFD		30A		
MCC Feeder Circuit Breaker to WAB Pump No.2	Westinghouse	480V	Thermal Magnetic	HFD		30A		
MCC Feeder Circuit Breaker to Polymer Feed Pump No.1	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to Polymer Feed Pump No.2	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to Filtrate Pump No.1	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to Filtrate Pump No.2	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to TWAB Pump No.1	Westinghouse	480V	Thermal Magnetic	HFD				Note 8
MCC Feeder Circuit Breaker to TWAB Pump No.2	Westinghouse	480V	Thermal Magnetic	HFD				Note 8
MCC Feeder Circuit Breaker to A/C Unit AC-1	Westinghouse	480V	Thermal Magnetic	HFD		30A		
MCC Feeder Circuit Breaker to Boiler	Westinghouse	480V	Thermal Magnetic	HFD		30A		
MCC Feeder Circuit Breaker to Panel LPA (in MCC)		480V				40A		Note 4
MCC Feeder Circuit Breaker to Transformer for Lighting Panel LPB	Westinghouse	480V	Thermal Magnetic	HFD		50A		
MCC Feeder Circuit Breaker to NPW Booster Pump No.2	Westinghouse	480V	MCP	MCP		15A		Note 6

Hampton Roads Sanitation District
James River Treatment Plant (JRTP)
Protective Device Data

Equipment Name	Protective Device							
	Manufacturer	Voltage (V)	Type	Model	Frame (A)	Trip (A)	Trip Settings	Specific Notes
MCC Feeder Circuit Breaker to Hot Water Pump No.1	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to Hot Water Pump No.2	Westinghouse	480V	Thermal Magnetic	HFD		15A		
MCC Feeder Circuit Breaker to Allied Colloids Dry Polymer Panel	Westinghouse	480V	Thermal Magnetic	HFD		30A		
MCC Feeder Circuit Breaker to Digester Heat Exchanger	Westinghouse	480V	Thermal Magnetic	HFD		40A		
MCC Feeder Circuit Breaker to Polymer System CP17-2001		480V				100A		Note 7
MCC Feeder Circuit Breaker to Carbon Recycle 1		480V						Note 3
MCC Feeder Circuit Breaker to Carbon Recycle 2		480V						Note 3
MCC Feeder Circuit Breaker to Transformer for Panel PP2		480V						Note 3

General Notes:

Items that have been modified for this update of the study are shown highlighted in yellow.

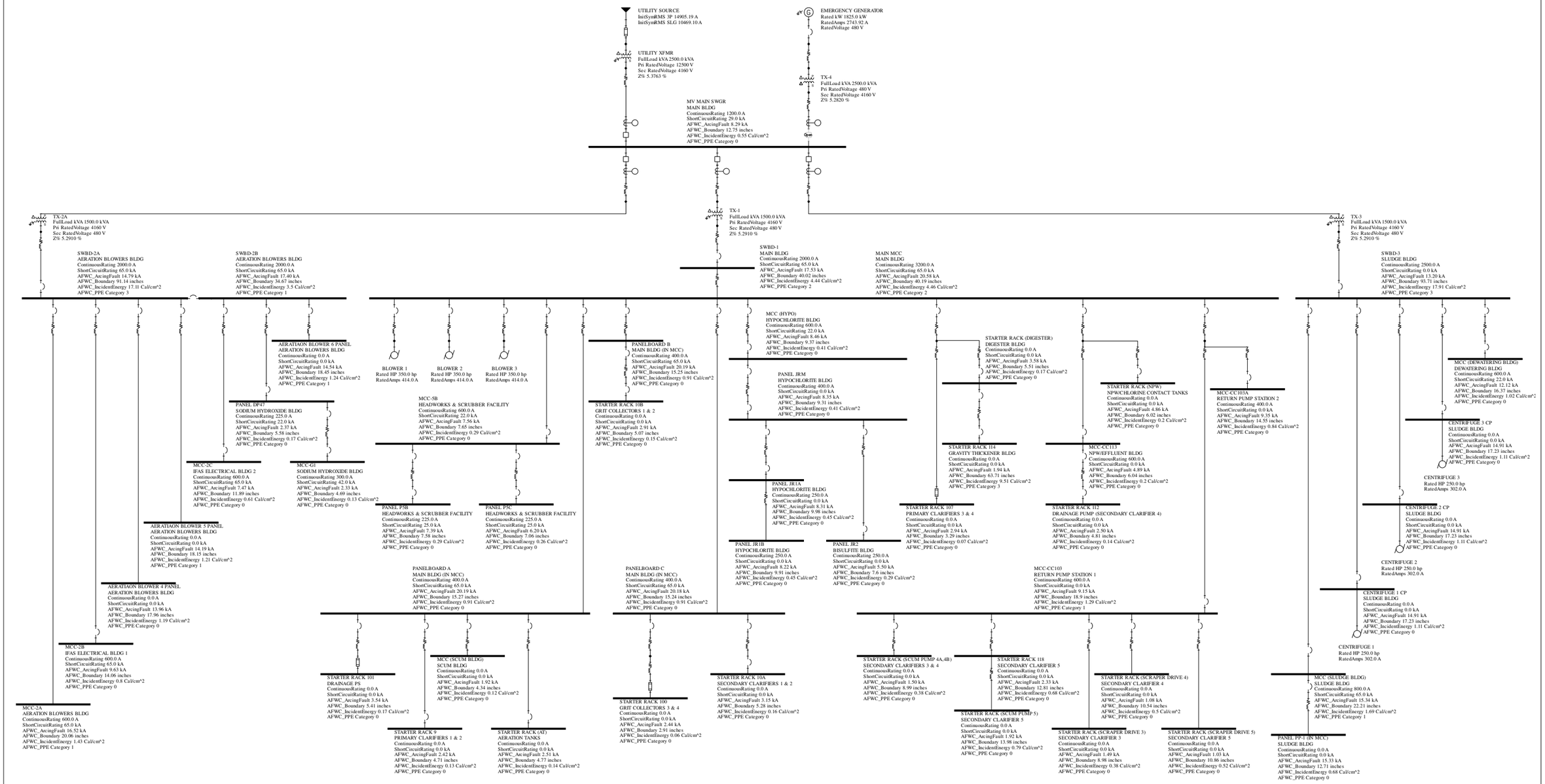
Protective device information obtained in the field from site visits, unless noted otherwise.

Specific Notes:

1. Protective device and trip settings added or modified per Coordination Study for James River Treatment Plant Phase I Improvements dated April 1, 2010.
2. Protective device added per Digester Replacement project. Recommended settings are provided in this study.
3. Limited or no information is readable or available for protective device. Protective device and load shown on one-line diagram, but not included in the study.
4. Limited information is readable or available for protective device. Similar device by same manufacturer modeled in study (see one-line diagram).
5. Exact device is not available. Similar device modeled in study (see one-line diagram).
6. Protective device settings are not readable or available, so maximum settings were used in the study.
7. Protective device was added per James River Treatment Plant Phase I Improvements, but protective device information and trip settings were not provided. Similar device by same manufacturer as other devices in the equipment modeled in the study (see one-line diagram).
8. Protective device size information is not readable or unavailable. Size used in study based on equipment load (see one-line diagram).

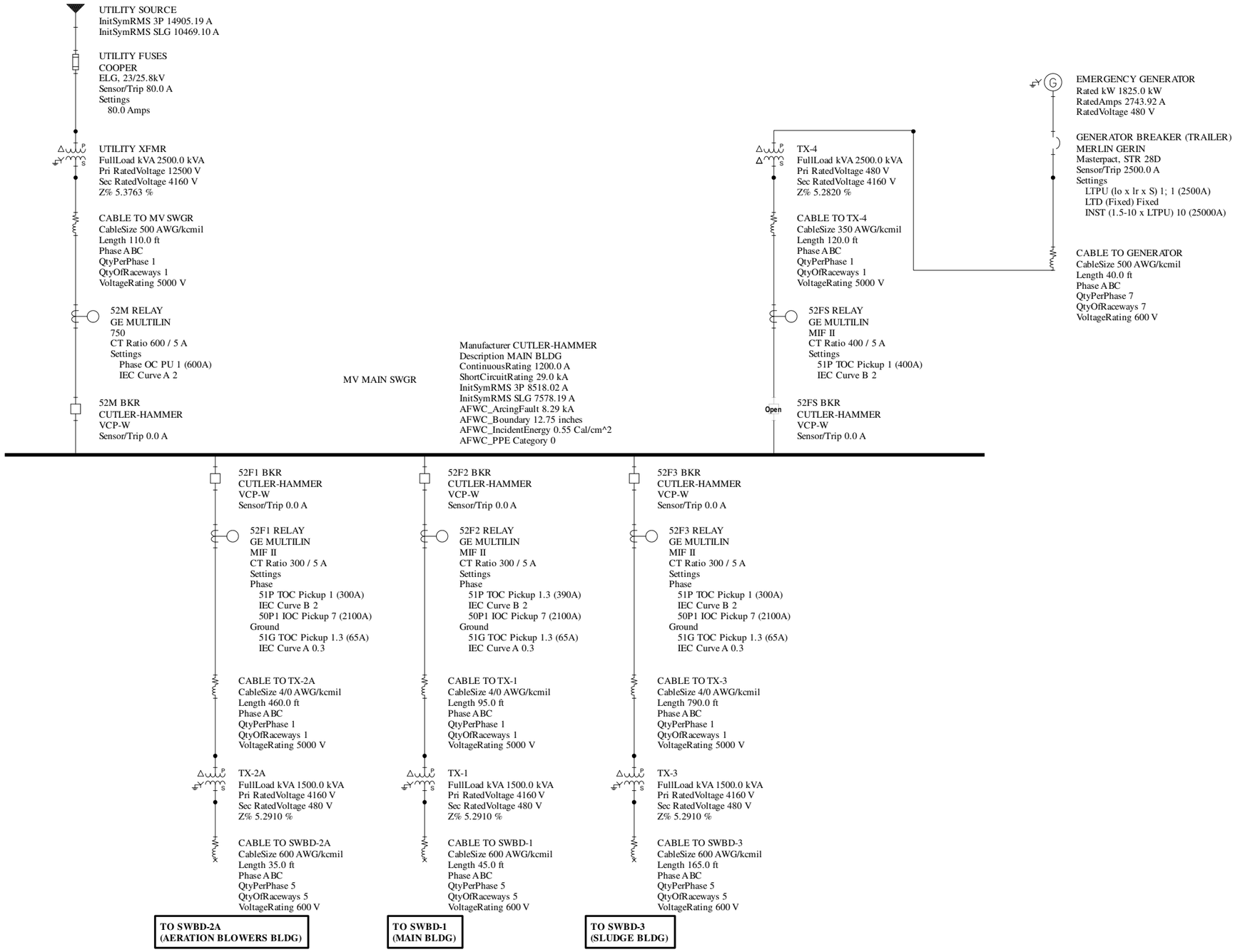
Appendix JRTP-B

One-line Diagrams



Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
One-line Diagram: OVERALL ONE-LINE


UTILITY SOURCE
InitSymRMS 3P 14905.19 A
InitSymRMS SLG 10469.10 A
UTILITY FUSES
COOPER
ELG, 23/25.8kV
Sensor/Trip 80.0 A
Settings
80.0 Amps
UTILITY XFMR
FullLoad kVA 2500.0 kVA
Pri RatedVoltage 12500 V
Sec RatedVoltage 4160 V
Z% 5.3763 %
CABLE TO MV SWGR
CableSize 500 AWG/kcmil
Length 110.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 5000 V
52M RELAY
GE MULTILIN
750
CT Ratio 600 / 5 A
Settings
Phase OC PU 1 (600A)
IEC Curve A 2
52M BKR
CUTLER-HAMMER
VCP-W
Sensor/Trip 0.0 A
MV MAIN SWGR
Manufacturer CUTLER-HAMMER
Description MAIN BLDG
ContinuousRating 1200.0 A
ShortCircuitRating 29.0 kA
InitSymRMS 3P 8518.02 A
InitSymRMS SLG 7578.19 A
AFWC_ArcingFault 8.29 kA
AFWC_Boundary 12.75 inches
AFWC_IncidentEnergy 0.55 Cal/cm^2
AFWC_PPE Category 0
TX-4
FullLoad kVA 2500.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 4160 V
Z% 5.2820 %
CABLE TO TX-4
CableSize 350 AWG/kcmil
Length 120.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 5000 V
52FS RELAY
GE MULTILIN
MIF II
CT Ratio 400 / 5 A
Settings
51P TOC Pickup 1 (400A)
IEC Curve B 2
Open
52FS BKR
CUTLER-HAMMER
VCP-W
Sensor/Trip 0.0 A
EMERGENCY GENERATOR
Rated kW 1825.0 kW
RatedAmps 2743.92 A
RatedVoltage 480 V
GENERATOR BREAKER (TRAILER)
MERLIN GERIN
Masterpact, STR 28D
Sensor/Trip 2500.0 A
Settings
LTPU (Io x Ir x S) 1; 1 (2500A)
LTD (Fixed) Fixed
INST (1.5-10 x LTPU) 10 (25000A)
CABLE TO GENERATOR
CableSize 500 AWG/kcmil
Length 40.0 ft
Phase ABC
QtyPerPhase 7
QtyOfRaceways 7
VoltageRating 600 V
52F1 BKR
CUTLER-HAMMER
VCP-W
Sensor/Trip 0.0 A
52F1 RELAY
GE MULTILIN
MIF II
CT Ratio 300 / 5 A
Settings
Phase
51P TOC Pickup 1 (300A)
IEC Curve B 2
50P1 IOC Pickup 7 (2100A)
Ground
51G TOC Pickup 1.3 (65A)
IEC Curve A 0.3
CABLE TO TX-2A
CableSize 4/0 AWG/kcmil
Length 460.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 5000 V
TX-2A
FullLoad kVA 1500.0 kVA
Pri RatedVoltage 4160 V
Sec RatedVoltage 480 V
Z% 5.2910 %
CABLE TO SWBD-2A
CableSize 600 AWG/kcmil
Length 35.0 ft
Phase ABC
QtyPerPhase 5
QtyOfRaceways 5
VoltageRating 600 V
TO SWBD-2A
(AERATION BLOWERS BLDG)
52F2 BKR
CUTLER-HAMMER
VCP-W
Sensor/Trip 0.0 A
52F2 RELAY
GE MULTILIN
MIF II
CT Ratio 300 / 5 A
Settings
Phase
51P TOC Pickup 1.3 (390A)
IEC Curve B 2
50P1 IOC Pickup 7 (2100A)
Ground
51G TOC Pickup 1.3 (65A)
IEC Curve A 0.3
CABLE TO TX-1
CableSize 4/0 AWG/kcmil
Length 95.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 5000 V
TX-1
FullLoad kVA 1500.0 kVA
Pri RatedVoltage 4160 V
Sec RatedVoltage 480 V
Z% 5.2910 %
CABLE TO SWBD-1
CableSize 600 AWG/kcmil
Length 45.0 ft
Phase ABC
QtyPerPhase 5
QtyOfRaceways 5
VoltageRating 600 V
TO SWBD-1
(MAIN BLDG)
52F3 BKR
CUTLER-HAMMER
VCP-W
Sensor/Trip 0.0 A
52F3 RELAY
GE MULTILIN
MIF II
CT Ratio 300 / 5 A
Settings
Phase
51P TOC Pickup 1 (300A)
IEC Curve B 2
50P1 IOC Pickup 7 (2100A)
Ground
51G TOC Pickup 1.3 (65A)
IEC Curve A 0.3
CABLE TO TX-3
CableSize 4/0 AWG/kcmil
Length 790.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 5000 V
TX-3
FullLoad kVA 1500.0 kVA
Pri RatedVoltage 4160 V
Sec RatedVoltage 480 V
Z% 5.2910 %
CABLE TO SWBD-3
CableSize 600 AWG/kcmil
Length 165.0 ft
Phase ABC
QtyPerPhase 5
QtyOfRaceways 5
VoltageRating 600 V
TO SWBD-3
(SLUDGE BLDG)

FROM TX-2A
(AERATION BLOWERS BLDG)

SWBD-2A MCB
GE
SS, SH PowerBreak II, EGTU
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 1.00X (2000A); C-3
STPU (1.5-9 x LTPU) 4X (8000A)
STD (ST01 - ST11) ST01-Int (I^2t On)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)

SWBD-2A

Manufacturer GE
Description AERATION BLOWERS BLDG
ContinuousRating 2000.0 A
ShortCircuitRating 65.0 kA
InitSymRMS 3P 31342.04 A
InitSymRMS SLG 31146.93 A
AFWC_ArcingFault 14.79 kA
AFWC_Boundary 91.14 inches
AFWC_IncidentEnergy 17.11 Cal/cm^2
AFWC_PPE Category 3

SWBD-2A TIE BKR
GE
SS, SH PowerBreak II, EGTU
Sensor/Trip 1600.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 1.00X (1200A); C-4
STPU (1.5-9 x LTPU) 5X (6000A)
STD (ST01 - ST11) ST01-Int (I^2t On)
INST w/ST=ON(2-15 x RP) 6X (7200A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.2 (320A)
GFD I2T (1-13 Bands) GFD07 (I^2t On)

SWBD-2B

Manufacturer GE
Description AERATION BLOWERS BLDG
ContinuousRating 2000.0 A
ShortCircuitRating 65.0 kA
InitSymRMS 3P 31340.77 A
InitSymRMS SLG 31143.13 A
AFWC_ArcingFault 17.40 kA
AFWC_Boundary 34.67 inches
AFWC_IncidentEnergy 3.5 Cal/cm^2
AFWC_PPE Category 1

BKR TO AERATION BLOWER 4
GE
SG, MVT Plus/PM
Sensor/Trip 600.0 A
Settings
Phase
LTPU (0.5-1.0 x P) 1 (500A)
LTD (1-3) 2
STPU (1.5 -9 x LTPU) 7 (3500A)
STD (1-4) 1 (I^2t On)
INST (1.5-10 x P) 10 (5000A)
Ground
GFPU (0.2-1.0 x S) 0.4 (240A)
GFD (1-4) 2 (I^2t On)

CABLE TO AERATION BLOWER 4
CableSize 250 AWG/kcmil
Length 100.0 ft
Phase ABC
QtyPerPhase 2
QtyOfRaceways 2
VoltageRating 600 V

AERATIAON BLOWER 4 PANEL
Manufacturer
Description AERATION BLOWERS BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 24220.96 A
InitSymRMS SLG 20421.55 A
AFWC_ArcingFault 13.96 kA
AFWC_Boundary 17.96 inches
AFWC_IncidentEnergy 1.19 Cal/cm^2
AFWC_PPE Category 0

AERATION BLOWER 4
Rated HP 350.0 hp
RatedAmps 414.0 A

BKR TO AERATION BLOWER 5
GE
SG, MVT Plus/PM
Sensor/Trip 600.0 A
Settings
Phase
LTPU (0.5-1.0 x P) 1 (500A)
LTD (1-3) 2
STPU (1.5 -9 x LTPU) 7 (3500A)
STD (1-4) 1 (I^2t On)
INST (1.5-10 x P) 10 (5000A)
Ground
GFPU (0.2-1.0 x S) 0.4 (240A)
GFD (1-4) 2 (I^2t On)

CABLE TO AERATION BLOWER 5
CableSize 250 AWG/kcmil
Length 92.0 ft
Phase ABC
QtyPerPhase 2
QtyOfRaceways 2
VoltageRating 600 V

AERATIAON BLOWER 5 PANEL
Manufacturer
Description AERATION BLOWERS BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 24683.21 A
InitSymRMS SLG 21037.58 A
AFWC_ArcingFault 14.19 kA
AFWC_Boundary 18.15 inches
AFWC_IncidentEnergy 1.21 Cal/cm^2
AFWC_PPE Category 1

AERATION BLOWER 5
Rated HP 350.0 hp
RatedAmps 414.0 A

BKR TO MCC-2A
GE
SG, MVT Plus/PM
Sensor/Trip 600.0 A
Settings
Phase
LTPU (0.5-1.0 x P) 1 (450A)
LTD (1-3) 3
STPU (1.5 -9 x LTPU) 3 (1350A)
STD (1-4) 3 (I^2t On)
INST (1.5-10 x P) 5 (2250A)
Ground
GFPU (0.2-1.0 x S) 0.4 (240A)
GFD (1-4) 2 (I^2t On)

CABLE TO MCC-2A
CableSize 4/0 AWG/kcmil
Length 20.0 ft
Phase ABC
QtyPerPhase 2
QtyOfRaceways 2
VoltageRating 600 V

TO MCC-2A
(AERATION BLOWERS BLDG)

BKR TO MCC-2B
GE
SG, MVT Plus/PM
Sensor/Trip 400.0 A
Settings
Phase
LTPU (0.5-1.0 x P) 1 (300A)
LTD (1-3) 3
STPU (1.5 -9 x LTPU) 9 (2700A)
STD (1-4) 4 (I^2t On)
INST (1.5-10 x P) 10 (3000A)
Ground
GFPU (0.2-1.0 x S) 0.5 (200A)
GFD (1-4) 2 (I^2t On)

CABLE TO MCC-2B
CableSize 350 AWG/kcmil
Length 160.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

TO MCC-2B
(IFAS ELECTRICAL BLDG 1)

BKR TO MCC-2C
GE
SG, MVT Plus/PM
Sensor/Trip 400.0 A
Settings
Phase
LTPU (0.5-1.0 x P) 1 (300A)
LTD (1-3) 3
STPU (1.5 -9 x LTPU) 9 (2700A)
STD (1-4) 4 (I^2t On)
INST (1.5-10 x P) 10 (3000A)
Ground
GFPU (0.2-1.0 x S) 0.4 (160A)
GFD (1-4) 1 (I^2t On)

CABLE TO MCC-2C
CableSize 350 AWG/kcmil
Length 270.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

TO MCC-2C
(IFAS ELECTRICAL BLDG 2)

BKR TO PANEL DP47
GE
SE, Spectra RMS Mag-Break
Sensor/Trip 150.0 A
Settings
MAX

CABLE TO PANEL DP47
CableSize 2/0 AWG/kcmil
Length 825.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

PANEL DP47 MCB
GE
SFHA, Spectra RMS
Sensor/Trip 150.0 A
Settings
5

PANEL DP47

Manufacturer GE
Description SODIUM HYDROXIDE BLDG
ContinuousRating 225.0 A
ShortCircuitRating 22.0 kA
InitSymRMS 3P 30343.7 A
InitSymRMS SLG 1766.41 A
AFWC_ArcingFault 2.37 kA
AFWC_Boundary 5.58 inches
AFWC_IncidentEnergy 0.17 Cal/cm^2
AFWC_PPE Category 0

BKR TO AERATION BLOWER 6
GE
SG, MVT Plus/PM
Sensor/Trip 600.0 A
Settings
Phase
LTPU (0.5-1.0 x P) 1 (500A)
LTD (1-3) 2
STPU (1.5 -9 x LTPU) 7 (3500A)
STD (1-4) 1 (I^2t On)
INST (1.5-10 x P) 10 (5000A)
Ground
GFPU (0.2-1.0 x S) 0.25 (150A)
GFD (1-4) 1 (I^2t On)

CABLE TO AERATION BLOWER 6
CableSize 250 AWG/kcmil
Length 80.0 ft
Phase ABC
QtyPerPhase 2
QtyOfRaceways 2
VoltageRating 600 V

AERATIAON BLOWER 6 PANEL
Manufacturer
Description AERATION BLOWERS BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 25406.67 A
InitSymRMS SLG 22023.54 A
AFWC_ArcingFault 14.54 kA
AFWC_Boundary 18.45 inches
AFWC_IncidentEnergy 1.24 Cal/cm^2
AFWC_PPE Category 1

AERATION BLOWER 6
Rated HP 350.0 hp
RatedAmps 414.0 A

BKR TO MCC-G1
GE
THED
Sensor/Trip 90.0 A
Settings
Fixed

CABLE TO MCC-G1
CableSize 2 AWG/kcmil
Length 10.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

MCC-G1 MCB
CUTLER-HAMMER
FD
Sensor/Trip 90.0 A
Settings
Fixed

MCC-G1

Manufacturer CUTLER-HAMMER
Description SODIUM HYDROXIDE BLDG
ContinuousRating 300.0 A
ShortCircuitRating 42.0 kA
InitSymRMS 3P 2971.18 A
InitSymRMS SLG 1728.47 A
AFWC_ArcingFault 2.33 kA
AFWC_Boundary 4.69 inches
AFWC_IncidentEnergy 0.13 Cal/cm^2
AFWC_PPE Category 0

BKR TO UNIT HEATER
CUTLER-HAMMER
FD
Sensor/Trip 15.0 A
Settings
Fixed

UNIT HEATER
Rated kW 5.0 kW
RatedAmps 6.0 A

BKR TO NaOH PUMP 1
CUTLER-HAMMER
FD
Sensor/Trip 15.0 A
Settings
Fixed

NaOH PUMP 1
Rated HP 1.0 hp
RatedAmps 2.1 A

BKR TO NaOH PUMP 2
CUTLER-HAMMER
FD
Sensor/Trip 15.0 A
Settings
Fixed

NaOH PUMP 2
Rated HP 1.0 hp
RatedAmps 2.1 A

BKR TO PANEL LPA
CUTLER-HAMMER
FD
Sensor/Trip 40.0 A
Settings
Fixed

XFMR - LPA
FullLoad kVA 15.0 kVA
Pri RatedVoltage 277 V
Sec RatedVoltage 240 V
Z% 5.0000 %

LPA PANEL LOAD
Rated kW 12.0 kW
RatedAmps 36.1 A

BKR TO TANK HEATER
CUTLER-HAMMER
FD
Sensor/Trip 15.0 A
Settings
Fixed

XFMR - TANK HEATER
FullLoad kVA 7.5 kVA
Pri RatedVoltage 277 V
Sec RatedVoltage 240 V
Z% 5.0000 %

TANK HEATER
Rated kW 6.0 kW
RatedAmps 9.0 A

BKR TO CAUSTIC MIXER DISC.
CUTLER-HAMMER
FD
Sensor/Trip 15.0 A
Settings
Fixed

CAUSTIC MIXER

BKR TO NAOH RECIRC PUMP 5
GE
THED
Sensor/Trip 50.0 A
Settings
Fixed

CABLE TO NAOH RECIRC PUMP 5
CableSize 6 AWG/kcmil
Length 35.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

NAOH RECIRC PUMP 5 STARTER
Manufacturer
Description SODIUM HYDROXIDE BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 2600.82 A
InitSymRMS SLG 1497.44 A
AFWC_ArcingFault 2.08 kA
AFWC_Boundary 5.12 inches
AFWC_IncidentEnergy 0.15 Cal/cm^2
AFWC_PPE Category 0

NAOH RECIRC PUMP 5
Rated HP 25.0 hp
RatedAmps 34.0 A

BKR TO NAOH RECIRC PUMP 6
GE
THED
Sensor/Trip 50.0 A
Settings
Fixed

CABLE TO NAOH RECIRC PUMP 6
CableSize 6 AWG/kcmil
Length 30.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

NAOH RECIRC PUMP 6 STARTER
Manufacturer
Description SODIUM HYDROXIDE BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 2655.60 A
InitSymRMS SLG 1530.97 A
AFWC_ArcingFault 2.11 kA
AFWC_Boundary 5.18 inches
AFWC_IncidentEnergy 0.15 Cal/cm^2
AFWC_PPE Category 0

NAOH RECIRC PUMP 6
Rated HP 25.0 hp
RatedAmps 34.0 A

Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
One-line Diagram: SWBD-2A,-2B (AERATION BLOWERS BLDG)

FROM SWBD-2A
(AERATION BLOWERS BLDG)

MCC-2A
Manufacturer GE
Description AERATION BLOWERS BLDG
ContinuousRating 600.0 A
ShortCircuitRating 65.0 kA
InitSymRMS 3P 29484.51 A
InitSymRMS SLG 28201.79 A
AFWC_ArcingFault 16.52 kA
AFWC_Boundary 20.06 inches
AFWC_IncidentEnergy 1.43 Cal/cm^2
AFWC_PPE Category 1

BKR TO IFAS REACTOR 1 MIXER 1
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

IFAS REACTOR 1 MIXER 1
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS REACTOR 1 MIXER 2
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

IFAS REACTOR 1 MIXER 2
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS REACTOR 1 MIXER 3
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

IFAS REACTOR 1 MIXER 3
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS REACTOR 1 MIXER 4
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

IFAS REACTOR 1 MIXER 4
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS REACTOR 2 MIXER 1
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 2 MIXER 1
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS REACTOR 2 MIXER 2
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 2 MIXER 2
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS REACTOR 2 MIXER 3
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 2 MIXER 3
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS REACTOR 2 MIXER 4
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 2 MIXER 4
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS REACTOR 3 MIXER 1
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 3 MIXER 1
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS REACTOR 3 MIXER 2
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 3 MIXER 2
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS REACTOR 3 MIXER 3
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 3 MIXER 3
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS REACTOR 3 MIXER 4
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 3 MIXER 4
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R1 NRCY PUMP 1
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

CABLE TO IFAS R1 NRCY PUMP1
CableSize 12 AWG/kcmil
Length 30.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

IFAS R1 NRCY PUMP 1 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed

IFAS R1 NRCY PUMP 1 VFD
Manufacturer
Description AERATION BLOWERS BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4678.82 A
InitSymRMS SLG 2776.95 A
AFWC_ArcingFault 3.43 kA
AFWC_Boundary 5.47 inches
AFWC_IncidentEnergy 0.17 Cal/cm^2
AFWC_PPE Category 0

IFAS R1 NRCY PUMP 1
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R1 NRCY PUMP 2
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

CABLE TO IFAS R1 NRCY PUMP2
CableSize 12 AWG/kcmil
Length 31.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

IFAS R1 NRCY PUMP 2 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed

IFAS R1 NRCY PUMP 2 VFD
Manufacturer
Description AERATION BLOWERS BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4537.43 A
InitSymRMS SLG 2690.77 A
AFWC_ArcingFault 3.34 kA
AFWC_Boundary 5.37 inches
AFWC_IncidentEnergy 0.16 Cal/cm^2
AFWC_PPE Category 0

IFAS R1 NRCY PUMP 2
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R2 NRCY PUMP 1
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

CABLE TO IFAS R2 NRCY PUMP1
CableSize 12 AWG/kcmil
Length 27.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

IFAS R2 NRCY PUMP 1 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed

IFAS R2 NRCY PUMP 1 VFD
Manufacturer
Description AERATION BLOWERS BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 5160.53 A
InitSymRMS SLG 3071.94 A
AFWC_ArcingFault 3.73 kA
AFWC_Boundary 5.77 inches
AFWC_IncidentEnergy 0.18 Cal/cm^2
AFWC_PPE Category 0

IFAS R2 NRCY PUMP 1
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R2 NRCY PUMP 2
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

CABLE TO IFAS R2 NRCY PUMP2
CableSize 12 AWG/kcmil
Length 33.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

IFAS R2 NRCY PUMP 2 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed

IFAS R2 NRCY PUMP 2 VFD
Manufacturer
Description AERATION BLOWERS BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4278.61 A
InitSymRMS SLG 2533.47 A
AFWC_ArcingFault 3.18 kA
AFWC_Boundary 5.2 inches
AFWC_IncidentEnergy 0.16 Cal/cm^2
AFWC_PPE Category 0

IFAS R2 NRCY PUMP 2
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R3 NRCY PUMP 1
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

CABLE TO IFAS R3 NRCY PUMP1
CableSize 12 AWG/kcmil
Length 29.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

IFAS R3 NRCY PUMP 1 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed

IFAS R3 NRCY PUMP 1 VFD
Manufacturer
Description AERATION BLOWERS BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4829.20 A
InitSymRMS SLG 2868.80 A
AFWC_ArcingFault 3.52 kA
AFWC_Boundary 5.56 inches
AFWC_IncidentEnergy 0.17 Cal/cm^2
AFWC_PPE Category 0

IFAS R3 NRCY PUMP 1
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R3 NRCY PUMP 2
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

CABLE TO IFAS R3 NRCY PUMP2
CableSize 12 AWG/kcmil
Length 35.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

IFAS R3 NRCY PUMP 2 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed

IFAS R3 NRCY PUMP 2 VFD
Manufacturer
Description AERATION BLOWERS BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4047.49 A
InitSymRMS SLG 2393.49 A
AFWC_ArcingFault 3.03 kA
AFWC_Boundary 5.04 inches
AFWC_IncidentEnergy 0.15 Cal/cm^2
AFWC_PPE Category 0

IFAS R3 NRCY PUMP 2
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO CENTRATE REC PUMP
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

CABLE TO CENTRATEREC PUMP
CableSize 12 AWG/kcmil
Length 50.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

CENTRATE REC PUMPVFD MCB
GE
SELA, Spectra RMS
Sensor/Trip 20.0 A
Settings
2

CENTRATE REC PUMPVFD
Manufacturer
Description AERATION BLOWERS BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 2878.35 A
InitSymRMS SLG 1691.79 A
AFWC_ArcingFault 2.26 kA
AFWC_Boundary 5.42 inches
AFWC_IncidentEnergy 0.17 Cal/cm^2
AFWC_PPE Category 0

CENTRATE RECYCLE PUMP
Rated HP 3.0 hp
RatedAmps 4.8 A

BKR TO ODOR CONTROL FAN 1
GE
SE, Spectra RMS
Settings
100A LTPU/LTD Max (620A)
100A INST (Min- Max) Max (1250A)

ODOR CONTROL FAN 1
Rated HP 50.0 hp
RatedAmps 65.0 A

BKR TO ODOR CONTROL FAN 2
GE
SE, Spectra RMS
Settings
100A LTPU/LTD Max (620A)
100A INST (Min- Max) Max (1250A)

ODOR CONTROL FAN 2
Rated HP 50.0 hp
RatedAmps 65.0 A

BKR TO TX-MCC-2A
GE
SE, Spectra RMS
Settings
100A LTPU/LTD 6 (620A)
100A INST (Min- Max) 6 (1000A)

TX-MCC-2A
FullLoad kVA 30.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 4.2690 %

PANEL LP2A LOAD

BKR TO PANEL DP2A (IN MCC)
GE
SE, Spectra RMS
Settings
100A LTPU/LTD Max (620A)
100A INST (Min- Max) Max (1250A)

CABLE TO PANEL DP2A (IN MCC)
CableSize 2 AWG/kcmil
Length 3.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

PANEL DP2A (IN MCC) MCB
GE
THED
Sensor/Trip 100.0 A
Settings
Fixed

PANEL DP2A (IN MCC)
Manufacturer GE
Description AERATION BLOWERS BLDG
ContinuousRating 225.0 A
ShortCircuitRating 100.0 kA
InitSymRMS 3P 28508.49 A
InitSymRMS SLG 26623.98 A
AFWC_ArcingFault 16.05 kA
AFWC_Boundary 16.6 inches
AFWC_IncidentEnergy 1.05 Cal/cm^2
AFWC_PPE Category 0

BKR TO IFAS R1 FOAM SKMR
GE
SE, Spectra RMS
Settings
3A LTPU/LTD 3 (11.25A)
3A INST (Min- Max) 3 (15.75A)

IFAS R1 FOAM SKIMMER
Rated HP 0.8 hp
RatedAmps 1.6 A

BKR TO IFAS R2 FOAM SKMR
GE
SE, Spectra RMS
Settings
3A LTPU/LTD 3 (11.25A)
3A INST (Min- Max) 3 (15.75A)

IFAS R2 FOAM SKIMMER
Rated HP 0.8 hp
RatedAmps 1.6 A

BKR TO IFAS R3 FOAM SKMR
GE
SE, Spectra RMS
Settings
3A LTPU/LTD 3 (11.25A)
3A INST (Min- Max) 3 (15.75A)

IFAS R3 FOAM SKIMMER
Rated HP 0.8 hp
RatedAmps 1.6 A

BKR TO IFAS R1 FOAM PUMP
GE
SE, Spectra RMS
Settings
7A LTPU/LTD 5 (34.3A)
7A INST (Min- Max) 5 (54.25A)

IFAS R1 FOAM PUMP
Rated HP 3.0 hp
RatedAmps 4.8 A

BKR TO IFAS R2 FOAM PUMP
GE
SE, Spectra RMS
Settings
7A LTPU/LTD 5 (34.3A)
7A INST (Min- Max) 5 (54.25A)

IFAS R2 FOAM PUMP
Rated HP 3.0 hp
RatedAmps 4.8 A

BKR TO IFAS R3 FOAM PUMP
GE
SE, Spectra RMS
Settings
7A LTPU/LTD 5 (34.3A)
7A INST (Min- Max) 5 (54.25A)

IFAS R3 FOAM PUMP
Rated HP 3.0 hp
RatedAmps 4.8 A

BKR TO PREAT TNK AFCV
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) Min (58A)

PREAERATION TANKS AIR FLOW CV

BKR TO ATS (DIGESTER) (E)
GE
SG, MET
Sensor/Trip 400.0 A
Settings
Phase
LTPU (0.5-1 x RP) 1.00X (225A); C-9
STPU (1.5-9 x LTPU) 4X (900A)
STD Int (ST01 - ST12) ST01-Int (I^2t Off)
INST (2-10 x S) 4X (1600A)
Ground
GFPU [0.4 - 0.6 x In] 0.4 (160A)
GFD I2T (Min-Max) GFD-02 MIN (I^2t Off)

CABLE TO ATS-DIGESTER (E)
CableSize 250 AWG/kcmil
Length 360.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

TO ATS-DIGESTER (E)
(DIGESTER BLDG)

FROM SWBD-2A
(AERATION BLOWERS BLDG)

MCC-2B MCB
GE
SGLA, Spectra RMS
Sensor/Trip 300.0 A
Settings
4

MCC-2B

Manufacturer GE
Description IFAS ELECTRICAL BLDG 1
ContinuousRating 600.0 A
ShortCircuitRating 65.0 kA
InitSymRMS 3P 15681.26 A
InitSymRMS SLG 11886.46 A
AFWC_ArcingFault 9.63 kA
AFWC_Boundary 14.06 inches
AFWC_IncidentEnergy 0.8 Cal/cm^2
AFWC_PPE Category 0

BKR TO IFAS R4 MIXER 1
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 4 MIXER 1
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R4 MIXER 2
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 4 MIXER 2
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R4 MIXER 3
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 4 MIXER 3
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R4 MIXER 4
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 4 MIXER 4
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R5 MIXER 1
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 5 MIXER 1
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R5 MIXER 2
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 5 MIXER 2
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R5 MIXER 3
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 5 MIXER 3
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R5 MIXER 4
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 5 MIXER 4
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R6 MIXER 1
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 6 MIXER 1
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R6 MIXER 2
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 6 MIXER 2
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R6 MIXER 3
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 6 MIXER 3
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R6 MIXER 4
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)

IFAS REACTOR 6 MIXER 4
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R4 NRCY PUMP 1
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

CABLE TO IFAS R4 NRCY PUMP 1
CableSize 12 AWG/kcmil
Length 28.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

IFAS R4 NRCY PUMP 1 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed

IFAS R4 NRCY PUMP 1 VFD
Manufacturer
Description IFAS ELECTRICAL BLDG 1
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4457.70 A
InitSymRMS SLG 2658.20 A
AFWC_ArcingFault 3.29 kA
AFWC_Boundary 5.32 inches
AFWC_IncidentEnergy 0.16 Cal/cm^2
AFWC_PPE Category 0

IFAS R4 NRCY PUMP 1
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R4 NRCY PUMP 2
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

CABLE TO IFAS R4 NRCY PUMP 2
CableSize 12 AWG/kcmil
Length 27.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

IFAS R4 NRCY PUMP 2 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed

IFAS R4 NRCY PUMP 2 VFD
Manufacturer
Description IFAS ELECTRICAL BLDG 1
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4590.79 A
InitSymRMS SLG 2741.01 A
AFWC_ArcingFault 3.37 kA
AFWC_Boundary 5.41 inches
AFWC_IncidentEnergy 0.17 Cal/cm^2
AFWC_PPE Category 0

IFAS R4 NRCY PUMP 2
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R5 NRCY PUMP 1
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

CABLE TO IFAS R5 NRCY PUMP 1
CableSize 12 AWG/kcmil
Length 25.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

IFAS R5 NRCY PUMP 1 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed

IFAS R5 NRCY PUMP 1 VFD
Manufacturer
Description IFAS ELECTRICAL BLDG 1
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4881.28 A
InitSymRMS SLG 2922.76 A
AFWC_ArcingFault 3.55 kA
AFWC_Boundary 5.6 inches
AFWC_IncidentEnergy 0.18 Cal/cm^2
AFWC_PPE Category 0

IFAS R5 NRCY PUMP 1
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R5 NRCY PUMP 2
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

CABLE TO IFAS R5 NRCY PUMP 2
CableSize 12 AWG/kcmil
Length 26.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

IFAS R5 NRCY PUMP 2 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed

IFAS R5 NRCY PUMP 2 VFD
Manufacturer
Description IFAS ELECTRICAL BLDG 1
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4731.75 A
InitSymRMS SLG 2829.03 A
AFWC_ArcingFault 3.46 kA
AFWC_Boundary 5.5 inches
AFWC_IncidentEnergy 0.17 Cal/cm^2
AFWC_PPE Category 0

IFAS R5 NRCY PUMP 2
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R6 NRCY PUMP 1
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

CABLE TO IFAS R6 NRCY PUMP 1
CableSize 12 AWG/kcmil
Length 30.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

IFAS R6 NRCY PUMP 1 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed

IFAS R6 NRCY PUMP 1 VFD
Manufacturer
Description IFAS ELECTRICAL BLDG 1
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4212.74 A
InitSymRMS SLG 2506.52 A
AFWC_ArcingFault 3.13 kA
AFWC_Boundary 5.15 inches
AFWC_IncidentEnergy 0.15 Cal/cm^2
AFWC_PPE Category 0

IFAS R6 NRCY PUMP 1
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO IFAS R6 NRCY PUMP 2
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)

CABLE TO IFAS R6 NRCY PUMP 2
CableSize 12 AWG/kcmil
Length 33.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

IFAS R6 NRCY PUMP 2 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed

IFAS R6 NRCY PUMP 2 VFD
Manufacturer
Description IFAS ELECTRICAL BLDG 1
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 3890.76 A
InitSymRMS SLG 2308.49 A
AFWC_ArcingFault 2.93 kA
AFWC_Boundary 4.93 inches
AFWC_IncidentEnergy 0.14 Cal/cm^2
AFWC_PPE Category 0

IFAS R6 NRCY PUMP 2
Rated HP 4.0 hp
RatedAmps 4.8 A

BKR TO TX-2B
GE
SE, Spectra RMS
Settings
30A LTPU/LTD Max (318A)
30A INST (Min- Max) Max (390.9A)

TX-2B
FullLoad kVA 15.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.7789 %

PANEL LP2B LOAD

BKR TO PANEL DP2B (IN MCC)
GE
SE, Spectra RMS
Settings
100A LTPU/LTD Max (820A)
100A INST (Min- Max) Max (1250A)

CABLE TO PANEL DP2B (IN MCC)
CableSize 2 AWG/kcmil
Length 3.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

PANEL DP2B (IN MCC) MCB
GE
THED
Sensor/Trip 100.0 A
Settings
Fixed

PANEL DP2B (IN MCC)
Manufacturer GE
Description AERATION BLOWERS BLDG
ContinuousRating 225.0 A
ShortCircuitRating 100.0 kA
InitSymRMS 3P 15322.51 A
InitSymRMS SLG 11505.98 A
AFWC_ArcingFault 9.44 kA
AFWC_Boundary 11.7 inches
AFWC_IncidentEnergy 0.59 Cal/cm^2
AFWC_PPE Category 0

BKR TO IFAS R4 FOAM SKMR
GE
SE, Spectra RMS
Settings
3A LTPU/LTD 3 (11.25A)
3A INST (Min- Max) 3 (15.75A)

IFAS R4 FOAM SKIMMER
Rated HP 0.8 hp
RatedAmps 1.6 A

BKR TO IFAS R5 FOAM SKMR
GE
SE, Spectra RMS
Settings
3A LTPU/LTD 3 (11.25A)
3A INST (Min- Max) 3 (15.75A)

IFAS R5 FOAM SKIMMER
Rated HP 0.8 hp
RatedAmps 1.6 A

BKR TO IFAS R6 FOAM SKMR
GE
SE, Spectra RMS
Settings
3A LTPU/LTD 3 (11.25A)
3A INST (Min- Max) 3 (15.75A)

IFAS R6 FOAM SKIMMER
Rated HP 0.8 hp
RatedAmps 1.6 A

BKR TO IFAS R4 FOAM PUMP
GE
SE, Spectra RMS
Settings
7A LTPU/LTD 5 (34.3A)
7A INST (Min- Max) 5 (54.25A)

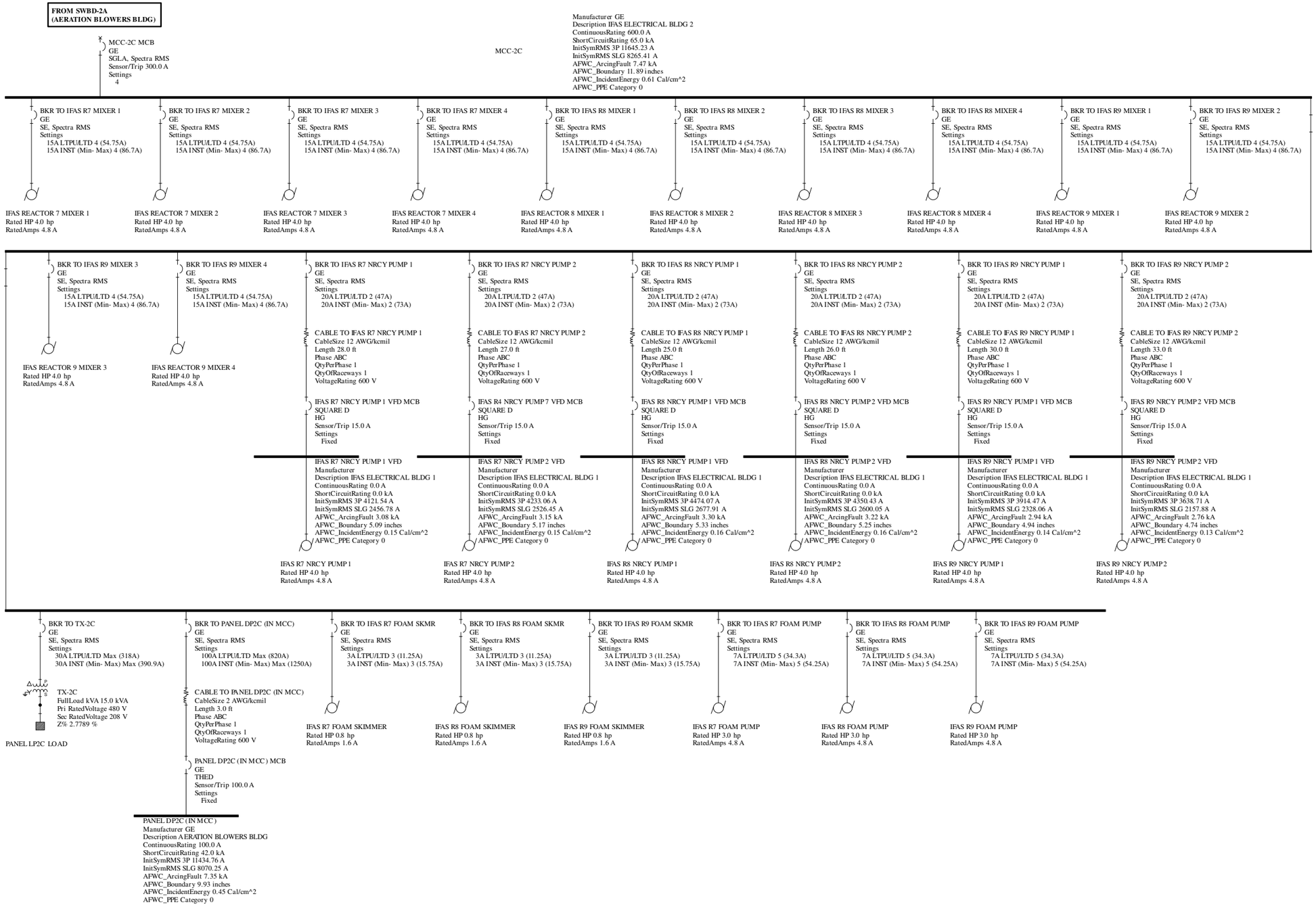
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Rated HP 3.0 hp
RatedAmps 4.8 A

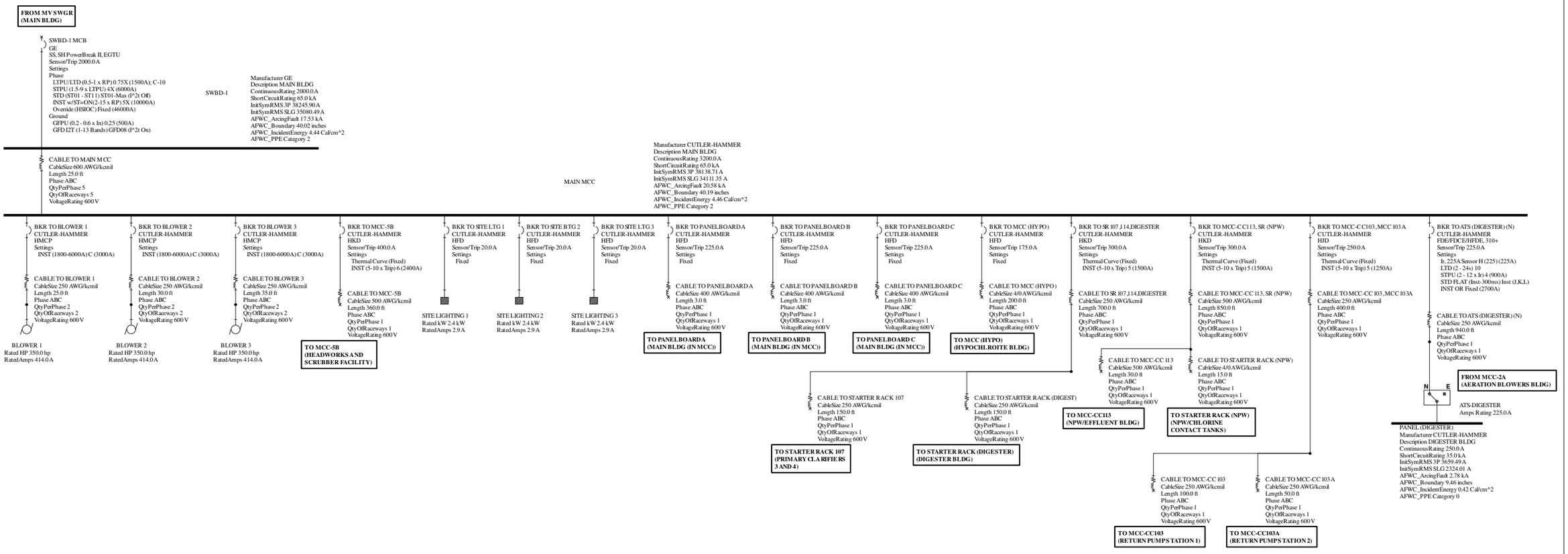
BKR TO IFAS R5 FOAM PUMP
GE
SE, Spectra RMS
Settings
7A LTPU/LTD 5 (34.3A)
7A INST (Min- Max) 5 (54.25A)

IFAS R5 FOAM PUMP
Rated HP 3.0 hp
RatedAmps 4.8 A

BKR TO IFAS R6 FOAM PUMP
GE
SE, Spectra RMS
Settings
7A LTPU/LTD 5 (34.3A)
7A INST (Min- Max) 5 (54.25A)

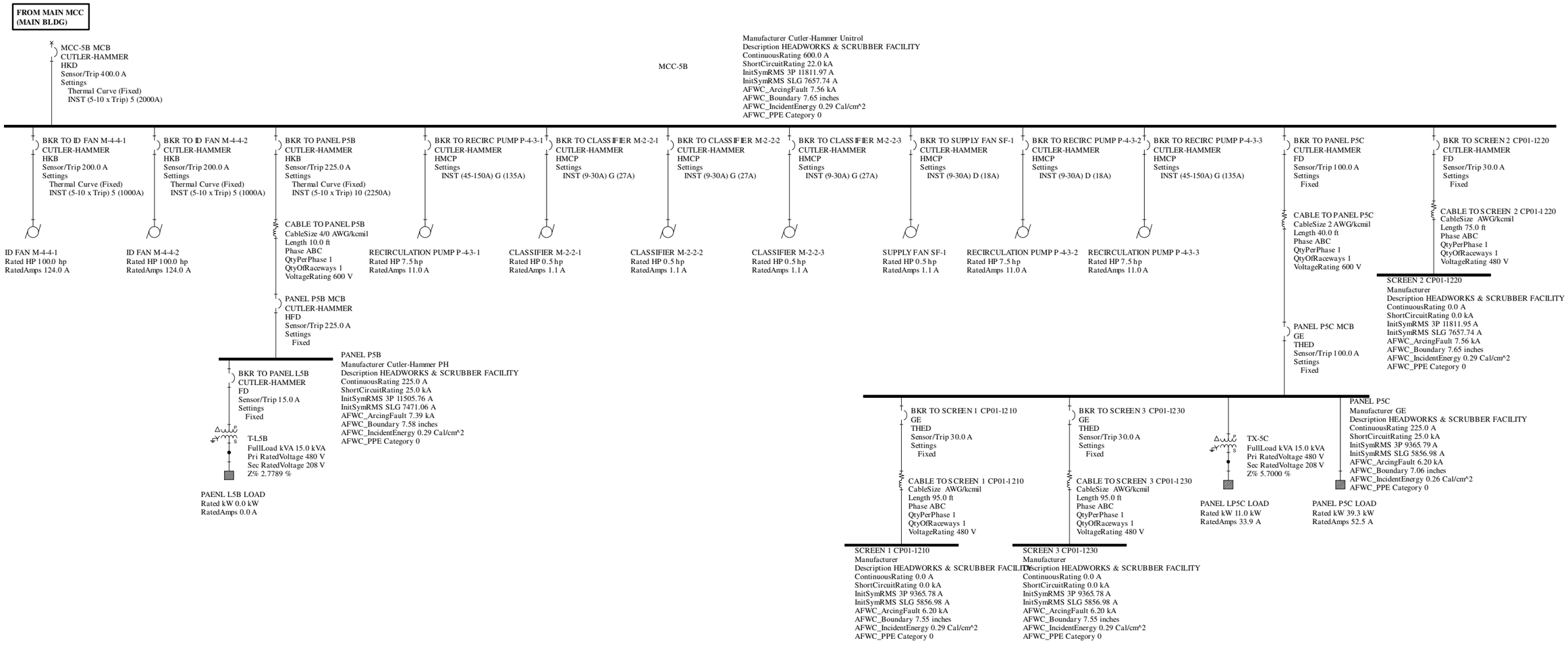
IFAS R6 FOAM PUMP
Rated HP 3.0 hp
RatedAmps 4.8 A

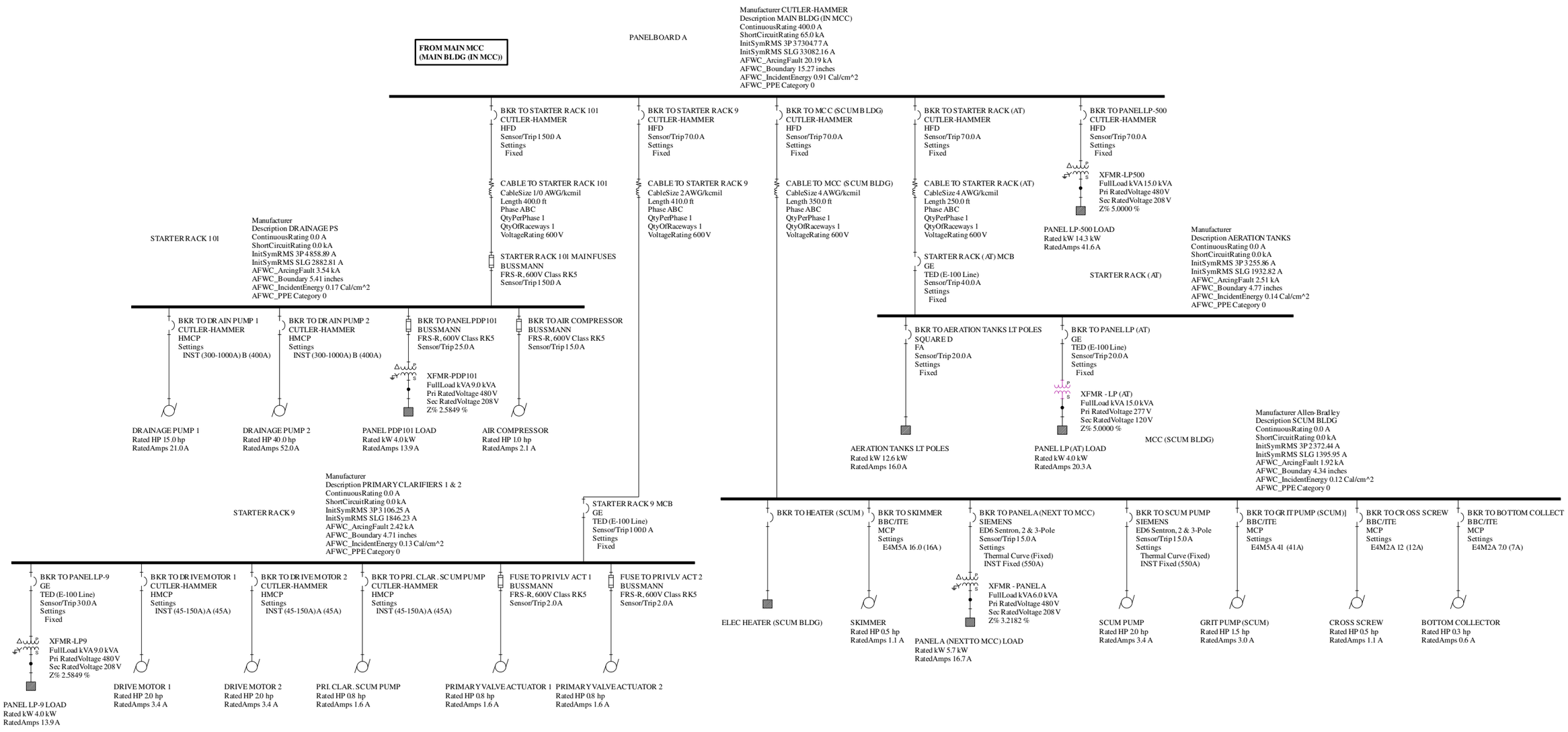

FROM SWBD-2A
(AERATION BLOWERS BLDG)
MCC-2C MCB
GE
SGLA, Spectra RMS
Sensor/Trip 300.0 A
Settings
4
MCC-2C
Manufacturer GE
Description IFAS ELECTRICAL BLDG 2
ContinuousRating 600.0 A
ShortCircuitRating 65.0 kA
InitSymRMS 3P 11645.23 A
InitSymRMS SLG 8265.41 A
AFWC_ArcingFault 7.47 kA
AFWC_Boundary 11.89 inches
AFWC_IncidentEnergy 0.61 Cal/cm^2
AFWC_PPE Category 0
BKR TO IFAS R7 MIXER 1
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)
IFAS REACTOR 7 MIXER 1
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R7 MIXER 2
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)
IFAS REACTOR 7 MIXER 2
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R7 MIXER 3
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)
IFAS REACTOR 7 MIXER 3
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R7 MIXER 4
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)
IFAS REACTOR 7 MIXER 4
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R8 MIXER 1
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)
IFAS REACTOR 8 MIXER 1
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R8 MIXER 2
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)
IFAS REACTOR 8 MIXER 2
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R8 MIXER 3
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)
IFAS REACTOR 8 MIXER 3
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R8 MIXER 4
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)
IFAS REACTOR 8 MIXER 4
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R9 MIXER 1
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)
IFAS REACTOR 9 MIXER 1
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R9 MIXER 2
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)
IFAS REACTOR 9 MIXER 2
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R9 MIXER 3
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)
IFAS REACTOR 9 MIXER 3
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R9 MIXER 4
GE
SE, Spectra RMS
Settings
15A LTPU/LTD 4 (54.75A)
15A INST (Min- Max) 4 (86.7A)
IFAS REACTOR 9 MIXER 4
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R7 NRCY PUMP 1
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)
CABLE TO IFAS R7 NRCY PUMP 1
CableSize 12 AWG/kcmil
Length 28.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
IFAS R7 NRCY PUMP 1 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed
IFAS R7 NRCY PUMP 1 VFD
Manufacturer
Description IFAS ELECTRICAL BLDG 1
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4121.54 A
InitSymRMS SLG 2456.78 A
AFWC_ArcingFault 3.08 kA
AFWC_Boundary 5.09 inches
AFWC_IncidentEnergy 0.15 Cal/cm^2
AFWC_PPE Category 0
IFAS R7 NRCY PUMP 1
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R7 NRCY PUMP 2
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)
CABLE TO IFAS R7 NRCY PUMP 2
CableSize 12 AWG/kcmil
Length 27.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
IFAS R4 NRCY PUMP 7 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed
IFAS R7 NRCY PUMP 2 VFD
Manufacturer
Description IFAS ELECTRICAL BLDG 1
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4233.06 A
InitSymRMS SLG 2526.45 A
AFWC_ArcingFault 3.15 kA
AFWC_Boundary 5.17 inches
AFWC_IncidentEnergy 0.15 Cal/cm^2
AFWC_PPE Category 0
IFAS R7 NRCY PUMP 2
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R8 NRCY PUMP 1
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)
CABLE TO IFAS R8 NRCY PUMP 1
CableSize 12 AWG/kcmil
Length 25.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
IFAS R8 NRCY PUMP 1 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed
IFAS R8 NRCY PUMP 1 VFD
Manufacturer
Description IFAS ELECTRICAL BLDG 1
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4474.07 A
InitSymRMS SLG 2677.91 A
AFWC_ArcingFault 3.30 kA
AFWC_Boundary 5.33 inches
AFWC_IncidentEnergy 0.16 Cal/cm^2
AFWC_PPE Category 0
IFAS R8 NRCY PUMP 1
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R8 NRCY PUMP 2
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)
CABLE TO IFAS R8 NRCY PUMP 2
CableSize 12 AWG/kcmil
Length 26.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
IFAS R8 NRCY PUMP 2 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed
IFAS R8 NRCY PUMP 2 VFD
Manufacturer
Description IFAS ELECTRICAL BLDG 1
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4350.43 A
InitSymRMS SLG 2600.05 A
AFWC_ArcingFault 3.22 kA
AFWC_Boundary 5.25 inches
AFWC_IncidentEnergy 0.16 Cal/cm^2
AFWC_PPE Category 0
IFAS R8 NRCY PUMP 2
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R9 NRCY PUMP 1
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)
CABLE TO IFAS R9 NRCY PUMP 1
CableSize 12 AWG/kcmil
Length 30.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
IFAS R9 NRCY PUMP 1 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed
IFAS R9 NRCY PUMP 1 VFD
Manufacturer
Description IFAS ELECTRICAL BLDG 1
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 3914.47 A
InitSymRMS SLG 2328.06 A
AFWC_ArcingFault 2.94 kA
AFWC_Boundary 4.94 inches
AFWC_IncidentEnergy 0.14 Cal/cm^2
AFWC_PPE Category 0
IFAS R9 NRCY PUMP 1
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO IFAS R9 NRCY PUMP 2
GE
SE, Spectra RMS
Settings
20A LTPU/LTD 2 (47A)
20A INST (Min- Max) 2 (73A)
CABLE TO IFAS R9 NRCY PUMP 2
CableSize 12 AWG/kcmil
Length 33.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
IFAS R9 NRCY PUMP 2 VFD MCB
SQUARE D
HG
Sensor/Trip 15.0 A
Settings
Fixed
IFAS R9 NRCY PUMP 2 VFD
Manufacturer
Description IFAS ELECTRICAL BLDG 1
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 3638.71 A
InitSymRMS SLG 2157.88 A
AFWC_ArcingFault 2.76 kA
AFWC_Boundary 4.74 inches
AFWC_IncidentEnergy 0.13 Cal/cm^2
AFWC_PPE Category 0
IFAS R9 NRCY PUMP 2
Rated HP 4.0 hp
RatedAmps 4.8 A
BKR TO TX-2C
GE
SE, Spectra RMS
Settings
30A LTPU/LTD Max (318A)
30A INST (Min- Max) Max (390.9A)
TX-2C
FullLoad kVA 15.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.7789 %
PANEL LP2C LOAD
BKR TO PANEL DP2C (IN MCC)
GE
SE, Spectra RMS
Settings
100A LTPU/LTD Max (820A)
100A INST (Min- Max) Max (1250A)
CABLE TO PANEL DP2C (IN MCC)
CableSize 2 AWG/kcmil
Length 3.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
PANEL DP2C (IN MCC) MCB
GE
THED
Sensor/Trip 100.0 A
Settings
Fixed
PANEL DP2C (IN MCC)
Manufacturer GE
Description AERATION BLOWERS BLDG
ContinuousRating 100.0 A
ShortCircuitRating 42.0 kA
InitSymRMS 3P 11434.76 A
InitSymRMS SLG 8070.25 A
AFWC_ArcingFault 7.35 kA
AFWC_Boundary 9.93 inches
AFWC_IncidentEnergy 0.45 Cal/cm^2
AFWC_PPE Category 0
BKR TO IFAS R7 FOAM SKMR
GE
SE, Spectra RMS
Settings
3A LTPU/LTD 3 (11.25A)
3A INST (Min- Max) 3 (15.75A)
IFAS R7 FOAM SKIMMER
Rated HP 0.8 hp
RatedAmps 1.6 A
BKR TO IFAS R8 FOAM SKMR
GE
SE, Spectra RMS
Settings
3A LTPU/LTD 3 (11.25A)
3A INST (Min- Max) 3 (15.75A)
IFAS R8 FOAM SKIMMER
Rated HP 0.8 hp
RatedAmps 1.6 A
BKR TO IFAS R9 FOAM SKMR
GE
SE, Spectra RMS
Settings
3A LTPU/LTD 3 (11.25A)
3A INST (Min- Max) 3 (15.75A)
IFAS R9 FOAM SKIMMER
Rated HP 0.8 hp
RatedAmps 1.6 A
BKR TO IFAS R7 FOAM PUMP
GE
SE, Spectra RMS
Settings
7A LTPU/LTD 5 (34.3A)
7A INST (Min- Max) 5 (54.25A)
IFAS R7 FOAM PUMP
Rated HP 3.0 hp
RatedAmps 4.8 A
BKR TO IFAS R8 FOAM PUMP
GE
SE, Spectra RMS
Settings
7A LTPU/LTD 5 (34.3A)
7A INST (Min- Max) 5 (54.25A)
IFAS R8 FOAM PUMP
Rated HP 3.0 hp
RatedAmps 4.8 A
BKR TO IFAS R9 FOAM PUMP
GE
SE, Spectra RMS
Settings
7A LTPU/LTD 5 (34.3A)
7A INST (Min- Max) 5 (54.25A)
IFAS R9 FOAM PUMP
Rated HP 3.0 hp
RatedAmps 4.8 A



Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
One-line Diagram: SWBD-1, MAIN MCC (MAIN BLDG)


FROM MAIN MCC
(MAIN BLDG)
MCC-5B MCB
CUTLER-HAMMER
HKD
Sensor/Trip 400.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 5 (2000A)
MCC-5B
Manufacturer Cutler-Hammer Unitrol
Description HEADWORKS & SCRUBBER FACILITY
ContinuousRating 600.0 A
ShortCircuitRating 22.0 kA
InitSymRMS 3P 11811.97 A
InitSymRMS SLG 7657.74 A
AFWC_ArcingFault 7.56 kA
AFWC_Boundary 7.65 inches
AFWC_IncidentEnergy 0.29 Cal/cm^2
AFWC_PPE Category 0
BKR TO ID FAN M-4-4-1
CUTLER-HAMMER
HKB
Sensor/Trip 200.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 5 (1000A)
ID FAN M-4-4-1
Rated HP 100.0 hp
RatedAmps 124.0 A
BKR TO ID FAN M-4-4-2
CUTLER-HAMMER
HKB
Sensor/Trip 200.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 5 (1000A)
ID FAN M-4-4-2
Rated HP 100.0 hp
RatedAmps 124.0 A
BKR TO PANEL P5B
CUTLER-HAMMER
HKB
Sensor/Trip 225.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 10 (2250A)
CABLE TO PANEL P5B
CableSize 4/0 AWG/kcmil
Length 10.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
PANEL P5B MCB
CUTLER-HAMMER
HFD
Sensor/Trip 225.0 A
Settings
Fixed
PANEL P5B
Manufacturer Cutler-Hammer PH
Description HEADWORKS & SCRUBBER FACILITY
ContinuousRating 225.0 A
ShortCircuitRating 25.0 kA
InitSymRMS 3P 11505.76 A
InitSymRMS SLG 7471.06 A
AFWC_ArcingFault 7.39 kA
AFWC_Boundary 7.58 inches
AFWC_IncidentEnergy 0.29 Cal/cm^2
AFWC_PPE Category 0
BKR TO RECIRC PUMP P-4-3-1
CUTLER-HAMMER
HMCP
Settings
INST (45-150A) G (135A)
RECIRCULATION PUMP P-4-3-1
Rated HP 7.5 hp
RatedAmps 11.0 A
BKR TO CLASSIFIER M-2-2-1
CUTLER-HAMMER
HMCP
Settings
INST (9-30A) G (27A)
CLASSIFIER M-2-2-1
Rated HP 0.5 hp
RatedAmps 1.1 A
BKR TO CLASSIFIER M-2-2-2
CUTLER-HAMMER
HMCP
Settings
INST (9-30A) G (27A)
CLASSIFIER M-2-2-2
Rated HP 0.5 hp
RatedAmps 1.1 A
BKR TO CLASSIFIER M-2-2-3
CUTLER-HAMMER
HMCP
Settings
INST (9-30A) G (27A)
CLASSIFIER M-2-2-3
Rated HP 0.5 hp
RatedAmps 1.1 A
BKR TO SUPPLY FAN SF-1
CUTLER-HAMMER
HMCP
Settings
INST (9-30A) D (18A)
SUPPLY FAN SF-1
Rated HP 0.5 hp
RatedAmps 1.1 A
BKR TO RECIRC PUMP P-4-3-2
CUTLER-HAMMER
HMCP
Settings
INST (9-30A) D (18A)
RECIRCULATION PUMP P-4-3-2
Rated HP 7.5 hp
RatedAmps 11.0 A
BKR TO RECIRC PUMP P-4-3-3
CUTLER-HAMMER
HMCP
Settings
INST (45-150A) G (135A)
RECIRCULATION PUMP P-4-3-3
Rated HP 7.5 hp
RatedAmps 11.0 A
BKR TO PANEL P5C
CUTLER-HAMMER
FD
Sensor/Trip 100.0 A
Settings
Fixed
CABLE TO PANEL P5C
CableSize 2 AWG/kcmil
Length 40.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
PANEL P5C MCB
GE
THED
Sensor/Trip 100.0 A
Settings
Fixed
BKR TO SCREEN 2 CP01-1220
CUTLER-HAMMER
FD
Sensor/Trip 30.0 A
Settings
Fixed
CABLE TO SCREEN 2 CP01-1220
CableSize AWG/kcmil
Length 75.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 480 V
SCREEN 2 CP01-1220
Manufacturer
Description HEADWORKS & SCRUBBER FACILITY
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 11811.95 A
InitSymRMS SLG 7657.74 A
AFWC_ArcingFault 7.56 kA
AFWC_Boundary 7.65 inches
AFWC_IncidentEnergy 0.29 Cal/cm^2
AFWC_PPE Category 0
BKR TO PANEL L5B
CUTLER-HAMMER
FD
Sensor/Trip 15.0 A
Settings
Fixed
T-L5B
FullLoad kVA 15.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.7789 %
PAENL L5B LOAD
Rated kW 0.0 kW
RatedAmps 0.0 A
BKR TO SCREEN 1 CP01-1210
GE
THED
Sensor/Trip 30.0 A
Settings
Fixed
CABLE TO SCREEN 1 CP01-1210
CableSize AWG/kcmil
Length 95.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 480 V
SCREEN 1 CP01-1210
Manufacturer
Description HEADWORKS & SCRUBBER FACILITY
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 9365.78 A
InitSymRMS SLG 5856.98 A
AFWC_ArcingFault 6.20 kA
AFWC_Boundary 7.55 inches
AFWC_IncidentEnergy 0.29 Cal/cm^2
AFWC_PPE Category 0
BKR TO SCREEN 3 CP01-1230
GE
THED
Sensor/Trip 30.0 A
Settings
Fixed
CABLE TO SCREEN 3 CP01-1230
CableSize AWG/kcmil
Length 95.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 480 V
SCREEN 3 CP01-1230
Manufacturer
Description HEADWORKS & SCRUBBER FACILITY
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 9365.78 A
InitSymRMS SLG 5856.98 A
AFWC_ArcingFault 6.20 kA
AFWC_Boundary 7.55 inches
AFWC_IncidentEnergy 0.29 Cal/cm^2
AFWC_PPE Category 0
TX-5C
FullLoad kVA 15.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 5.7000 %
PANEL LP5C LOAD
Rated kW 11.0 kW
RatedAmps 33.9 A
PANEL P5C
Manufacturer GE
Description HEADWORKS & SCRUBBER FACILITY
ContinuousRating 225.0 A
ShortCircuitRating 25.0 kA
InitSymRMS 3P 9365.79 A
InitSymRMS SLG 5856.98 A
AFWC_ArcingFault 6.20 kA
AFWC_Boundary 7.06 inches
AFWC_IncidentEnergy 0.26 Cal/cm^2
AFWC_PPE Category 0
PANEL P5C LOAD
Rated kW 39.3 kW
RatedAmps 52.5 A


FROM MAIN MCC
(MAIN BLDG (IN MCC))
PANELBOARD A
Manufacturer CUTLER-HAMMER
Description MAIN BLDG (IN MCC)
ContinuousRating 400.0 A
ShortCircuitRating 65.0 kA
InitSymRMS 3P 3730.77 A
InitSymRMS SLG 33082.16 A
AFWC_ArcingFault 20.19 kA
AFWC_Boundary 15.27 inches
AFWC_IncidentEnergy 0.91 Cal/cm^2
AFWC_PPE Category 0
BKR TO STARTER RACK 101
CUTLER-HAMMER
HFD
Sensor/Trip 1500 A
Settings
Fixed
CABLE TO STARTER RACK 101
CableSize 1/0 AWG/kcmil
Length 400.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
STARTER RACK 101 MAINFUSES
BUSSMANN
FRS-R, 600V Class RK5
Sensor/Trip 1500 A
STARTER RACK 101
Manufacturer
Description DRAINAGE PS
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4858.89 A
InitSymRMS SLG 2882.81 A
AFWC_ArcingFault 3.54 kA
AFWC_Boundary 5.41 inches
AFWC_IncidentEnergy 0.17 Cal/cm^2
AFWC_PPE Category 0
BKR TO DRAIN PUMP 1
CUTLER-HAMMER
HMCP
Settings
INST (300-1000A) B (400A)
BKR TO DRAIN PUMP 2
CUTLER-HAMMER
HMCP
Settings
INST (300-1000A) B (400A)
BKR TO PANEL PDP101
BUSSMANN
FRS-R, 600V Class RK5
Sensor/Trip 250 A
XFMR-PDP101
FullLoad kVA 9.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.5849 %
BKR TO AIR COMPRESSOR
BUSSMANN
FRS-R, 600V Class RK5
Sensor/Trip 150 A
DRAINAGE PUMP 1
Rated HP 15.0 hp
RatedAmps 21.0 A
DRAINAGE PUMP 2
Rated HP 40.0 hp
RatedAmps 52.0 A
PANEL PDP101 LOAD
Rated kW 4.0 kW
RatedAmps 13.9 A
AIR COMPRESSOR
Rated HP 1.0 hp
RatedAmps 2.1 A
BKR TO STARTER RACK 9
CUTLER-HAMMER
HFD
Sensor/Trip 700 A
Settings
Fixed
CABLE TO STARTER RACK 9
CableSize 2 AWG/kcmil
Length 410.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
STARTER RACK 9
Manufacturer
Description PRIMARY CLARIFIERS 1 & 2
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 3106.25 A
InitSymRMS SLG 1846.23 A
AFWC_ArcingFault 2.42 kA
AFWC_Boundary 4.71 inches
AFWC_IncidentEnergy 0.13 Cal/cm^2
AFWC_PPE Category 0
STARTER RACK 9 MCB
GE
TED (E-100 Line)
Sensor/Trip 1000 A
Settings
Fixed
BKR TO PANEL LP-9
GE
TED (E-100 Line)
Sensor/Trip 300 A
Settings
Fixed
XFMR-LP9
FullLoad kVA 9.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.5849 %
PANEL LP-9 LOAD
Rated kW 4.0 kW
RatedAmps 13.9 A
BKR TO DRIVE MOTOR 1
CUTLER-HAMMER
HMCP
Settings
INST (45-150A) A (45A)
DRIVE MOTOR 1
Rated HP 2.0 hp
RatedAmps 3.4 A
BKR TO DRIVE MOTOR 2
CUTLER-HAMMER
HMCP
Settings
INST (45-150A) A (45A)
DRIVE MOTOR 2
Rated HP 2.0 hp
RatedAmps 3.4 A
BKR TO PRI. CLAR. SCUM PUMP
CUTLER-HAMMER
HMCP
Settings
INST (45-150A) A (45A)
PRI. CLAR. SCUM PUMP
Rated HP 0.8 hp
RatedAmps 1.6 A
FUSE TO PRIVLV ACT 1
BUSSMANN
FRS-R, 600V Class RK5
Sensor/Trip 2.0 A
PRIMARY VALVE ACTUATOR 1
Rated HP 0.8 hp
RatedAmps 1.6 A
FUSE TO PRIVLV ACT 2
BUSSMANN
FRS-R, 600V Class RK5
Sensor/Trip 2.0 A
PRIMARY VALVE ACTUATOR 2
Rated HP 0.8 hp
RatedAmps 1.6 A
BKR TO MCC (SCUM BLDG)
CUTLER-HAMMER
HFD
Sensor/Trip 700 A
Settings
Fixed
CABLE TO MCC (SCUM BLDG)
CableSize 4 AWG/kcmil
Length 350.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
BKR TO STARTER RACK (AT)
CUTLER-HAMMER
HFD
Sensor/Trip 700 A
Settings
Fixed
CABLE TO STARTER RACK (AT)
CableSize 4 AWG/kcmil
Length 250.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
STARTER RACK (AT) MCB
GE
TED (E-100 Line)
Sensor/Trip 400 A
Settings
Fixed
STARTER RACK (AT)
BKR TO AERATION TANKS LT POLES
SQUARE D
FA
Sensor/Trip 200 A
Settings
Fixed
AERATION TANKS LT POLES
Rated kW 12.6 kW
RatedAmps 16.0 A
BKR TO PANEL LP (AT)
GE
TED (E-100 Line)
Sensor/Trip 200 A
Settings
Fixed
XFMR - LP (AT)
FullLoad kVA 15.0 kVA
Pri RatedVoltage 277 V
Sec RatedVoltage 120 V
Z% 5.0000 %
PANEL LP (AT) LOAD
Rated kW 4.0 kW
RatedAmps 20.3 A
BKR TO PANEL LP-500
CUTLER-HAMMER
HFD
Sensor/Trip 700 A
Settings
Fixed
XFMR-LP500
FullLoad kVA 15.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 5.0000 %
PANEL LP-500 LOAD
Rated kW 14.3 kW
RatedAmps 41.6 A
MCC (SCUM BLDG)
Manufacturer Allen-Bradley
Description SCUM BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 2372.44 A
InitSymRMS SLG 1395.95 A
AFWC_ArcingFault 1.92 kA
AFWC_Boundary 4.34 inches
AFWC_IncidentEnergy 0.12 Cal/cm^2
AFWC_PPE Category 0
BKR TO HEATER (SCUM)
ELEC HEATER (SCUM BLDG)
BKR TO SKIMMER
BBC/ITE
MCP
Settings
E4M5A 16.0 (16A)
SKIMMER
Rated HP 0.5 hp
RatedAmps 1.1 A
BKR TO PANEL A (NEXT TO MCC)
SIEMENS
ED6 Sentron, 2 & 3-Pole
Sensor/Trip 15.0 A
Settings
Thermal Curve (Fixed)
INST Fixed (550A)
XFMR - PANEL A
FullLoad kVA 6.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 3.2182 %
PANEL A (NEXTTO MCC) LOAD
Rated kW 5.7 kW
RatedAmps 16.7 A
BKR TO SCUM PUMP
SIEMENS
ED6 Sentron, 2 & 3-Pole
Sensor/Trip 15.0 A
Settings
Thermal Curve (Fixed)
INST Fixed (550A)
SCUM PUMP
Rated HP 2.0 hp
RatedAmps 3.4 A
BKR TO GRIT PUMP (SCUM)]
BBC/ITE
MCP
Settings
E4M5A 41 (41A)
GRIT PUMP (SCUM)
Rated HP 1.5 hp
RatedAmps 3.0 A
BKR TO CROSS SCREW
BBC/ITE
MCP
Settings
E4M2A 12 (12A)
CROSS SCREW
Rated HP 0.5 hp
RatedAmps 1.1 A
BKR TO BOTTOM COLLECT
BBC/ITE
MCP
Settings
E4M2A 7.0 (7A)
BOTTOM COLLECTOR
Rated HP 0.3 hp
RatedAmps 0.6 A

FROM MAIN MCC
(MAIN BLDG (IN MCC))

PANELBOARD B

Manufacturer CUTLER-HAMMER
Description MAIN BLDG (IN MCC)
ContinuousRating 400.0 A
ShortCircuitRating 65.0 kA
InitSymRMS 3P 37295.14 A
InitSymRMS SLG 33077.08 A
AFWC_ArcingFault 20.19 kA
AFWC_Boundary 15.25 inches
AFWC_IncidentEnergy 0.91 Cal/cm^2
AFWC_PPE Category 0

BKR TO GENERATOR JACKET HTR
CUTLER-HAMMER
HFD
Sensor/Trip 50.0 A
Settings
Fixed

GENERATOR JACKET HEATER
Rated kW 31.6 kW
RatedAmps 40.0 A

BKR TO PANEL LP-D
CUTLER-HAMMER
HFD
Sensor/Trip 125.0 A
Settings
Fixed

XFMR-LPD
FullLoad kVA 75.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 3.2041 %

PANEL LP-D LOAD
Rated kW 71.3 kW
RatedAmps 208.2 A

BKR TO SEWAGE INJECTORS
CUTLER-HAMMER
HFD
Sensor/Trip 50.0 A
Settings
Fixed

SEWAGE INJECTORS
Rated HP 6.0 hp
RatedAmps 12.2 A

BKR TO AHU (ADMIN BLDG)
CUTLER-HAMMER
HFD
Sensor/Trip 30.0 A
Settings
Fixed

AHU (ADMN BLDG)
Rated kW 12.6 kW
RatedAmps 19.0 A

BKR TO CRANE
CUTLER-HAMMER
HFD
Sensor/Trip 30.0 A
Settings
Fixed

CRANE
Rated HP 24.9 hp
RatedAmps 30.1 A

BKR TO PANEL (ADMIN)
CUTLER-HAMMER
HFD
Sensor/Trip 60.0 A
Settings
Fixed

XFMR - ADMIN
FullLoad kVA 15.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.7789 %

PANEL (ADMIN BLDG) LOAD
Rated kW 14.3 kW
RatedAmps 41.6 A

BKR TO AIR COMPRESSOR (SHOP)
CUTLER-HAMMER
HFD
Sensor/Trip 20.0 A
Settings
Fixed

AIR COMPRESSOR (SHOP)
Rated HP 0.8 hp
RatedAmps 1.6 A

BKR TO STARTER RACK 10B
CUTLER-HAMMER
HFD
Sensor/Trip 70.0 A
Settings
Fixed

CABLE TO STARTER RACK 10B
CableSize 2 AWG/kcmil
Length 325.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

STARTER RACK 10B

Manufacturer
Description GRIT COLLECTORS 1 & 2
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 3863.64 A
InitSymRMS SLG 2309.41 A
AFWC_ArcingFault 2.91 kA
AFWC_Boundary 5.07 inches
AFWC_IncidentEnergy 0.15 Cal/cm^2
AFWC_PPE Category 0

STARTER RACK 10BMCB
GE
TED (E-100 Line)
Sensor/Trip 100.0 A
Settings
Fixed

BKR TO LP-10B
GE
TED (E-100 Line)
Sensor/Trip 20.0 A
Settings
Fixed

XFMR - LP10B
FullLoad kVA 9.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.5849 %

LP-10B LOAD
Rated kW 2.0 kW
RatedAmps 5.8 A

BKR TO COLLECTOR DRIVE 1
SQUARE D
FAL Mag-Gard
Settings
13M (50-180A) 50 (50A)

COLLECTOR DRIVE 1
Rated HP 2.0 hp
RatedAmps 3.4 A

BKR TO COLLECTOR DRIVE 2
SQUARE D
FAL Mag-Gard
Settings
13M (50-180A) 50 (50A)

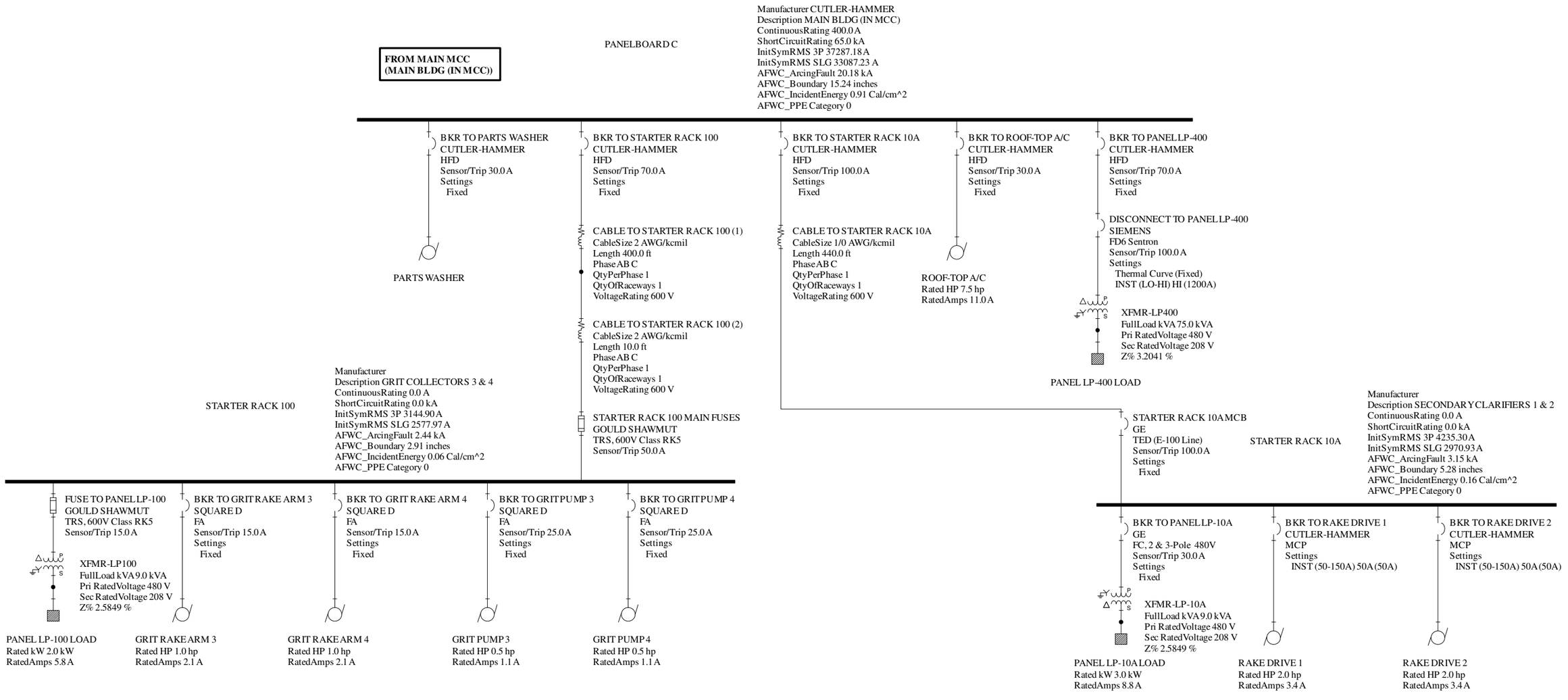
COLLECTOR DRIVE 2
Rated HP 2.0 hp
RatedAmps 3.4 A

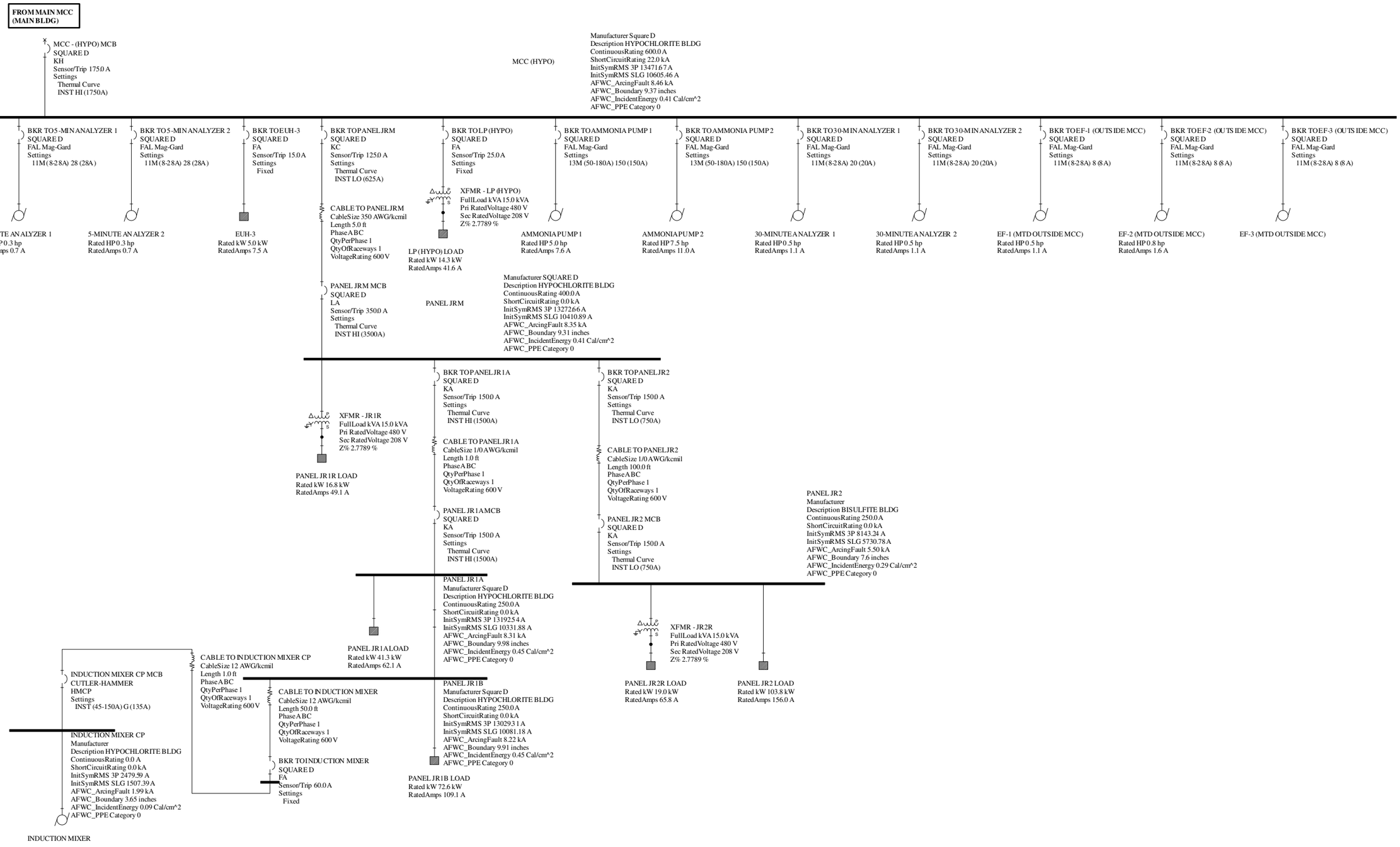
BKR TO GRIT PUMP 1
SQUARE D
FAL Mag-Gard
Settings
13M (50-180A) 180 (180A)

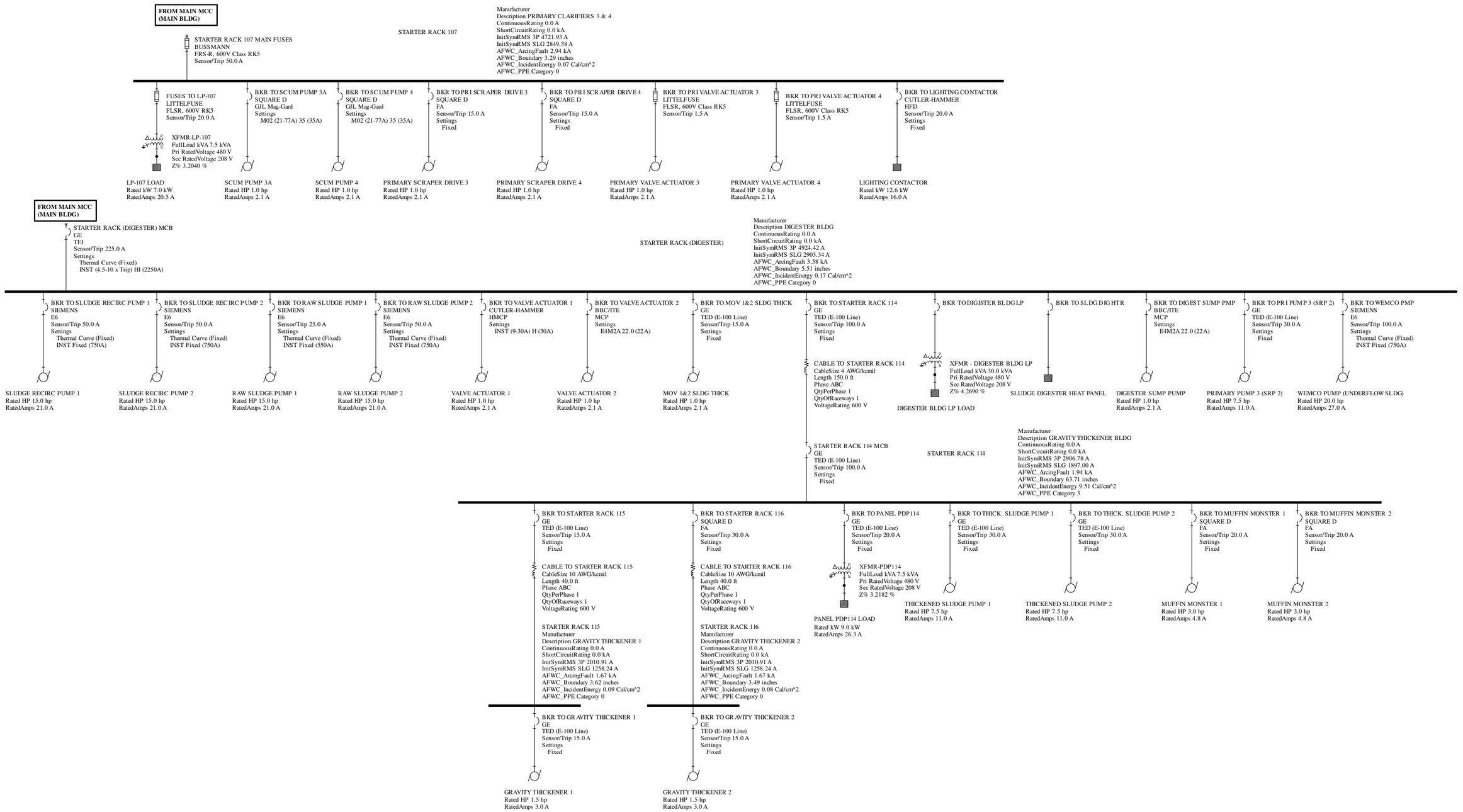
GRIT PUMP 1
Rated HP 1.0 hp
RatedAmps 2.1 A

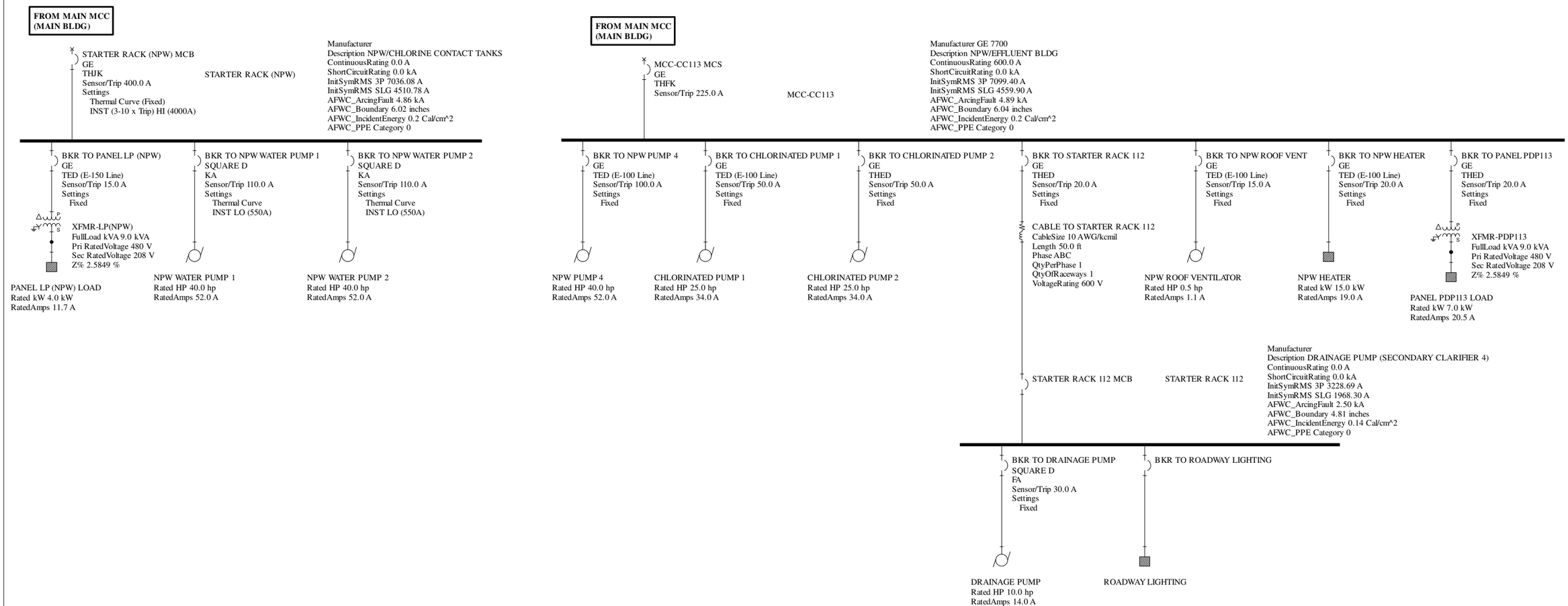
BKR TO GRIT PUMP 2
SQUARE D
FAL Mag-Gard
Settings
13M (50-180A) 180 (180A)

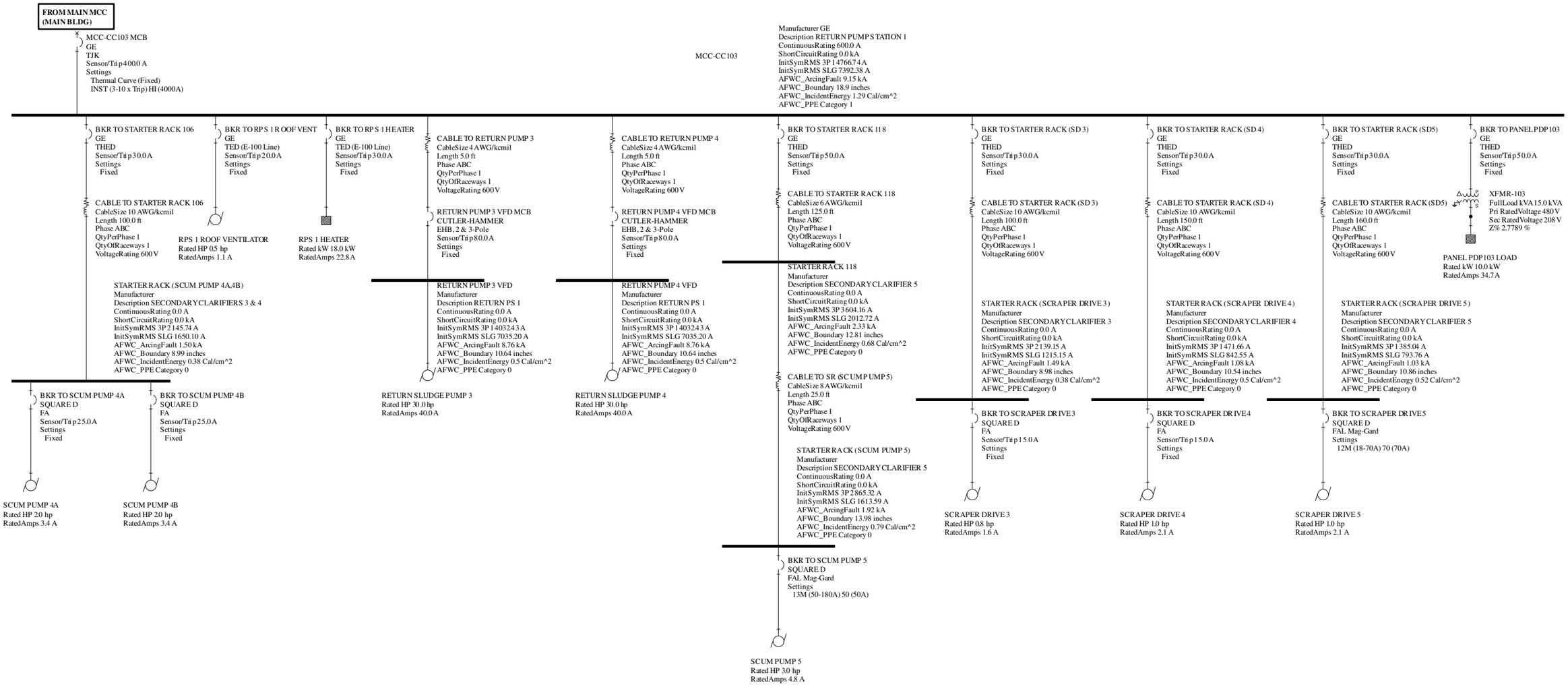
GRIT PUMP 2
Rated HP 1.0 hp
RatedAmps 2.1 A


FROM MAIN MCC
(MAIN BLDG (IN MCC))
PANELBOARD C
Manufacturer CUTLER-HAMMER
Description MAIN BLDG (IN MCC)
ContinuousRating 400.0 A
ShortCircuitRating 65.0 kA
InitSymRMS 3P 37287.18 A
InitSymRMS SLG 33087.23 A
AFWC_ArcingFault 20.18 kA
AFWC_Boundary 15.24 inches
AFWC_IncidentEnergy 0.91 Cal/cm^2
AFWC_PPE Category 0
BKR TO PARTS WASHER
CUTLER-HAMMER
HFD
Sensor/Trip 30.0 A
Settings
Fixed
PARTS WASHER
BKR TO STARTER RACK 100
CUTLER-HAMMER
HFD
Sensor/Trip 70.0 A
Settings
Fixed
CABLE TO STARTER RACK 100 (1)
CableSize 2 AWG/kcmil
Length 400.0 ft
Phase AB C
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
CABLE TO STARTER RACK 100 (2)
CableSize 2 AWG/kcmil
Length 10.0 ft
Phase AB C
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
STARTER RACK 100 MAIN FUSES
GOULD SHAWMUT
TRS, 600V Class RK5
Sensor/Trip 50.0 A
BKR TO STARTER RACK 10A
CUTLER-HAMMER
HFD
Sensor/Trip 100.0 A
Settings
Fixed
CABLE TO STARTER RACK 10A
CableSize 1/0 AWG/kcmil
Length 440.0 ft
Phase AB C
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
BKR TO ROOF-TOP A/C
CUTLER-HAMMER
HFD
Sensor/Trip 30.0 A
Settings
Fixed
ROOF-TOP A/C
Rated HP 7.5 hp
RatedAmps 11.0 A
BKR TO PANEL LP-400
CUTLER-HAMMER
HFD
Sensor/Trip 70.0 A
Settings
Fixed
DISCONNECT TO PANEL LP-400
SIEMENS
FD6 Sentron
Sensor/Trip 100.0 A
Settings
Thermal Curve (Fixed)
INST (LO-HI) HI (1200A)
XFMR-LP400
FullLoad kVA 75.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 3.2041 %
PANEL LP-400 LOAD
STARTER RACK 10A MCB
GE
TED (E-100 Line)
Sensor/Trip 100.0 A
Settings
Fixed
STARTER RACK 10A
Manufacturer
Description SECONDARY CLARIFIERS 1 & 2
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4235.30 A
InitSymRMS SLG 2970.93 A
AFWC_ArcingFault 3.15 kA
AFWC_Boundary 5.28 inches
AFWC_IncidentEnergy 0.16 Cal/cm^2
AFWC_PPE Category 0
BKR TO PANEL LP-10A
GE
FC, 2 & 3-Pole 480V
Sensor/Trip 30.0 A
Settings
Fixed
XFMR-LP-10A
FullLoad kVA 9.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.5849 %
PANEL LP-10A LOAD
Rated kW 3.0 kW
RatedAmps 8.8 A
BKR TO RAKE DRIVE 1
CUTLER-HAMMER
MCP
Settings
INST (50-150A) 50A (50A)
RAKE DRIVE 1
Rated HP 2.0 hp
RatedAmps 3.4 A
BKR TO RAKE DRIVE 2
CUTLER-HAMMER
MCP
Settings
INST (50-150A) 50A (50A)
RAKE DRIVE 2
Rated HP 2.0 hp
RatedAmps 3.4 A
STARTER RACK 100
Manufacturer
Description GRIT COLLECTORS 3 & 4
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 3144.90 A
InitSymRMS SLG 2577.97 A
AFWC_ArcingFault 2.44 kA
AFWC_Boundary 2.91 inches
AFWC_IncidentEnergy 0.06 Cal/cm^2
AFWC_PPE Category 0
FUSE TO PANEL LP-100
GOULD SHAWMUT
TRS, 600V Class RK5
Sensor/Trip 15.0 A
XFMR-LP100
FullLoad kVA 9.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.5849 %
PANEL LP-100 LOAD
Rated kW 2.0 kW
RatedAmps 5.8 A
BKR TO GRIT RAKE ARM 3
SQUARE D
FA
Sensor/Trip 15.0 A
Settings
Fixed
GRIT RAKE ARM 3
Rated HP 1.0 hp
RatedAmps 2.1 A
BKR TO GRIT RAKE ARM 4
SQUARE D
FA
Sensor/Trip 15.0 A
Settings
Fixed
GRIT RAKE ARM 4
Rated HP 1.0 hp
RatedAmps 2.1 A
BKR TO GRIT PUMP 3
SQUARE D
FA
Sensor/Trip 25.0 A
Settings
Fixed
GRIT PUMP 3
Rated HP 0.5 hp
RatedAmps 1.1 A
BKR TO GRIT PUMP 4
SQUARE D
FA
Sensor/Trip 25.0 A
Settings
Fixed
GRIT PUMP 4
Rated HP 0.5 hp
RatedAmps 1.1 A


FROM MAIN MCC (MAIN BLDG)
MCC - (HYPO) MCB
SQUARE D
KH
Sensor/Trip 1750 A
Settings
Thermal Curve
INST HI (1750A)
MCC (HYPO)
Manufacturer Square D
Description HYPOCHLORITE BLDG
ContinuousRating 600.0 A
ShortCircuitRating 22.0 kA
InitSymRMS 3P 13471.67 A
InitSymRMS SLG 10605.46 A
AFWC_ArcingFault 8.46 kA
AFWC_Boundary 9.37 inches
AFWC_IncidentEnergy 0.41 Cal/cm^2
AFWC_PPE Category 0
BKR TO 5-MIN ANALYZER 1
SQUARE D
FAL Mag-Gard
Settings
11M (8-28A) 28 (28A)
5-MINUTE ANALYZER 1
Rated HP 0.3 hp
RatedAmps 0.7 A
BKR TO 5-MIN ANALYZER 2
SQUARE D
FAL Mag-Gard
Settings
11M (8-28A) 28 (28A)
5-MINUTE ANALYZER 2
Rated HP 0.3 hp
RatedAmps 0.7 A
BKR TO EUH-3
SQUARE D
FA
Sensor/Trip 15.0 A
Settings
Fixed
EUH-3
Rated kW 5.0 kW
RatedAmps 7.5 A
BKR TO PANEL JRM
SQUARE D
KC
Sensor/Trip 1250 A
Settings
Thermal Curve
INST LO (625A)
CABLE TO PANEL JRM
CableSize 350 AWG/kcmil
Length 5.0 ft
Phase A BC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
PANEL JRM MCB
SQUARE D
LA
Sensor/Trip 3500 A
Settings
Thermal Curve
INST HI (3500A)
PANEL JRM
Manufacturer SQUARE D
Description HYPOCHLORITE BLDG
ContinuousRating 400.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 13272.66 A
InitSymRMS SLG 10410.89 A
AFWC_ArcingFault 8.35 kA
AFWC_Boundary 9.31 inches
AFWC_IncidentEnergy 0.41 Cal/cm^2
AFWC_PPE Category 0
BKR TO LP (HYPO)
SQUARE D
FA
Sensor/Trip 25.0 A
Settings
Fixed
XFMR - LP (HYPO)
FullLoad kVA 15.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.7789 %
LP (HYPO) LOAD
Rated kW 14.3 kW
RatedAmps 41.6 A
BKR TO AMMONIA PUMP 1
SQUARE D
FAL Mag-Gard
Settings
13M (50-180A) 150 (150A)
AMMONIA PUMP 1
Rated HP 5.0 hp
RatedAmps 7.6 A
BKR TO AMMONIA PUMP 2
SQUARE D
FAL Mag-Gard
Settings
13M (50-180A) 150 (150A)
AMMONIA PUMP 2
Rated HP 7.5 hp
RatedAmps 11.0 A
BKR TO 30-MIN ANALYZER 1
SQUARE D
FAL Mag-Gard
Settings
11M (8-28A) 20 (20A)
30-MINUTE ANALYZER 1
Rated HP 0.5 hp
RatedAmps 1.1 A
BKR TO 30-MIN ANALYZER 2
SQUARE D
FAL Mag-Gard
Settings
11M (8-28A) 20 (20A)
30-MINUTE ANALYZER 2
Rated HP 0.5 hp
RatedAmps 1.1 A
BKR TO EF-1 (OUTSIDE MCC)
SQUARE D
FAL Mag-Gard
Settings
11M (8-28A) 8 (8A)
EF-1 (MTD OUTSIDE MCC)
Rated HP 0.5 hp
RatedAmps 1.1 A
BKR TO EF-2 (OUTSIDE MCC)
SQUARE D
FAL Mag-Gard
Settings
11M (8-28A) 8 (8A)
EF-2 (MTD OUTSIDE MCC)
Rated HP 0.8 hp
RatedAmps 1.6 A
BKR TO EF-3 (OUTSIDE MCC)
SQUARE D
FAL Mag-Gard
Settings
11M (8-28A) 8 (8A)
EF-3 (MTD OUTSIDE MCC)
XFMR - JR1R
FullLoad kVA 15.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.7789 %
PANEL JR1R LOAD
Rated kW 16.8 kW
RatedAmps 49.1 A
BKR TO PANEL JR1A
SQUARE D
KA
Sensor/Trip 1500 A
Settings
Thermal Curve
INST HI (1500A)
CABLE TO PANEL JR1A
CableSize 1/0 AWG/kcmil
Length 1.0 ft
Phase A BC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
PANEL JR1A MCB
SQUARE D
KA
Sensor/Trip 1500 A
Settings
Thermal Curve
INST HI (1500A)
PANEL JR1A
Manufacturer Square D
Description HYPOCHLORITE BLDG
ContinuousRating 250.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 13192.54 A
InitSymRMS SLG 10331.88 A
AFWC_ArcingFault 8.31 kA
AFWC_Boundary 9.98 inches
AFWC_IncidentEnergy 0.45 Cal/cm^2
AFWC_PPE Category 0
PANEL JR1A LOAD
Rated kW 41.3 kW
RatedAmps 62.1 A
CABLE TO INDUCTION MIXER CP
CableSize 12 AWG/kcmil
Length 1.0 ft
Phase A BC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
INDUCTION MIXER CP MCB
CUTLER-HAMMER
HMCP
Settings
INST (45-150A) G (135A)
INDUCTION MIXER CP
Manufacturer
Description HYPOCHLORITE BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 2479.59 A
InitSymRMS SLG 1507.39 A
AFWC_ArcingFault 1.99 kA
AFWC_Boundary 3.65 inches
AFWC_IncidentEnergy 0.09 Cal/cm^2
AFWC_PPE Category 0
INDUCTION MIXER
CABLE TO INDUCTION MIXER
CableSize 12 AWG/kcmil
Length 50.0 ft
Phase A BC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
BKR TO INDUCTION MIXER
SQUARE D
FA
Sensor/Trip 60.0 A
Settings
Fixed
PANEL JR1B
Manufacturer Square D
Description HYPOCHLORITE BLDG
ContinuousRating 250.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 13029.31 A
InitSymRMS SLG 10081.18 A
AFWC_ArcingFault 8.22 kA
AFWC_Boundary 9.91 inches
AFWC_IncidentEnergy 0.45 Cal/cm^2
AFWC_PPE Category 0
PANEL JR1B LOAD
Rated kW 72.6 kW
RatedAmps 109.1 A
BKR TO PANEL JR2
SQUARE D
KA
Sensor/Trip 1500 A
Settings
Thermal Curve
INST LO (750A)
CABLE TO PANEL JR2
CableSize 1/0 AWG/kcmil
Length 100.0 ft
Phase A BC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
PANEL JR2 MCB
SQUARE D
KA
Sensor/Trip 1500 A
Settings
Thermal Curve
INST LO (750A)
PANEL JR2
Manufacturer
Description BISULFITE BLDG
ContinuousRating 250.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 8143.24 A
InitSymRMS SLG 5730.78 A
AFWC_ArcingFault 5.50 kA
AFWC_Boundary 7.6 inches
AFWC_IncidentEnergy 0.29 Cal/cm^2
AFWC_PPE Category 0
XFMR - JR2R
FullLoad kVA 15.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.7789 %
PANEL JR2R LOAD
Rated kW 19.0 kW
RatedAmps 65.8 A
PANEL JR2 LOAD
Rated kW 103.8 kW
RatedAmps 156.0 A

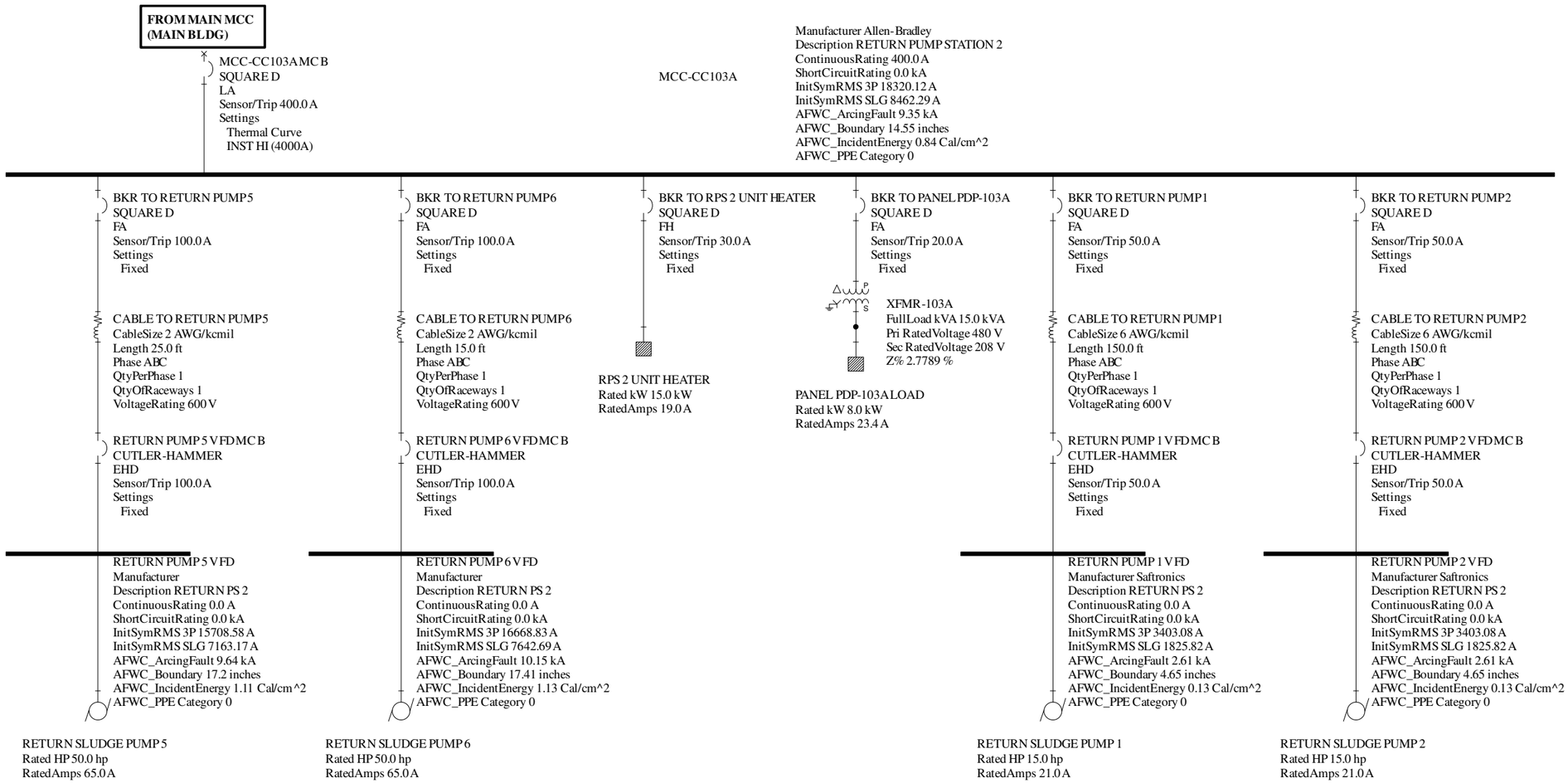

FROM MAIN MCC (MAIN BLDG)
STARTER RACK 107 MAIN FUSES
BUSSMANN
FRS-R, 600V Class RK5
Sensor/Trip 50.0 A
STARTER RACK 107
Manufacturer
Description PRIMARY CLARIFIERS 3 & 4
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4721.93 A
InitSymRMS SLG 2849.38 A
AFWC_ArcingFault 2.94 kA
AFWC_Boundary 3.29 inches
AFWC_IncidentEnergy 0.07 Cal/cm^2
AFWC_PPE Category 0
FUSES TO LP-107
LITTELFUSE
FLSR, 600V RK5
Sensor/Trip 20.0 A
XFMR-LP-107
FullLoad kVA 7.5 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 3.2040 %
LP-107 LOAD
Rated kW 7.0 kW
RatedAmps 20.5 A
BKR TO SCUM PUMP 3A
SQUARE D
GJL Mag-Gard
Settings
M02 (21-77A) 35 (35A)
SCUM PUMP 3A
Rated HP 1.0 hp
RatedAmps 2.1 A
BKR TO SCUM PUMP 4
SQUARE D
GJL Mag-Gard
Settings
M02 (21-77A) 35 (35A)
SCUM PUMP 4
Rated HP 1.0 hp
RatedAmps 2.1 A
BKR TO PRI SCRAPER DRIVE 3
SQUARE D
FA
Sensor/Trip 15.0 A
Settings
Fixed
PRIMARY SCRAPER DRIVE 3
Rated HP 1.0 hp
RatedAmps 2.1 A
BKR TO PRI SCRAPER DRIVE 4
SQUARE D
FA
Sensor/Trip 15.0 A
Settings
Fixed
PRIMARY SCRAPER DRIVE 4
Rated HP 1.0 hp
RatedAmps 2.1 A
BKR TO PRI VALVE ACTUATOR 3
LITTELFUSE
FLSR, 600V Class RK5
Sensor/Trip 1.5 A
PRIMARY VALVE ACTUATOR 3
Rated HP 1.0 hp
RatedAmps 2.1 A
BKR TO PRI VALVE ACTUATOR 4
LITTELFUSE
FLSR, 600V Class RK5
Sensor/Trip 1.5 A
PRIMARY VALVE ACTUATOR 4
Rated HP 1.0 hp
RatedAmps 2.1 A
BKR TO LIGHTING CONTACTOR
CUTLER-HAMMER
HFD
Sensor/Trip 20.0 A
Settings
Fixed
LIGHTING CONTACTOR
Rated kW 12.6 kW
RatedAmps 16.0 A
FROM MAIN MCC (MAIN BLDG)
STARTER RACK (DIGESTER) MCB
GE
TFJ
Sensor/Trip 225.0 A
Settings
Thermal Curve (Fixed)
INST (4.5-10 x Trip) HI (2250A)
STARTER RACK (DIGESTER)
Manufacturer
Description DIGESTER BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 4924.42 A
InitSymRMS SLG 2903.34 A
AFWC_ArcingFault 3.58 kA
AFWC_Boundary 5.51 inches
AFWC_IncidentEnergy 0.17 Cal/cm^2
AFWC_PPE Category 0
BKR TO SLUDGE RECIRC PUMP 1
SIEMENS
E6
Sensor/Trip 50.0 A
Settings
Thermal Curve (Fixed)
INST Fixed (750A)
SLUDGE RECIRC PUMP 1
Rated HP 15.0 hp
RatedAmps 21.0 A
BKR TO SLUDGE RECIRC PUMP 2
SIEMENS
E6
Sensor/Trip 50.0 A
Settings
Thermal Curve (Fixed)
INST Fixed (750A)
SLUDGE RECIRC PUMP 2
Rated HP 15.0 hp
RatedAmps 21.0 A
BKR TO RAW SLUDGE PUMP 1
SIEMENS
E6
Sensor/Trip 25.0 A
Settings
Thermal Curve (Fixed)
INST Fixed (550A)
RAW SLUDGE PUMP 1
Rated HP 15.0 hp
RatedAmps 21.0 A
BKR TO RAW SLUDGE PUMP 2
SIEMENS
E6
Sensor/Trip 50.0 A
Settings
Thermal Curve (Fixed)
INST Fixed (750A)
RAW SLUDGE PUMP 2
Rated HP 15.0 hp
RatedAmps 21.0 A
BKR TO VALVE ACTUATOR 1
CUTLER-HAMMER
HMCP
Settings
INST (9-30A) H (30A)
VALVE ACTUATOR 1
Rated HP 1.0 hp
RatedAmps 2.1 A
BKR TO VALVE ACTUATOR 2
BBC/ITE
MCP
Settings
E4M2A 22.0 (22A)
VALVE ACTUATOR 2
Rated HP 1.0 hp
RatedAmps 2.1 A
BKR TO MOV 1&2 SLDG THICK
GE
TED (E-100 Line)
Sensor/Trip 15.0 A
Settings
Fixed
MOV 1&2 SLDG THICK
Rated HP 1.0 hp
RatedAmps 2.1 A
BKR TO STARTER RACK 114
GE
TED (E-100 Line)
Sensor/Trip 100.0 A
Settings
Fixed
CABLE TO STARTER RACK 114
CableSize 4 AWG/kcmil
Length 150.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
STARTER RACK 114 MCB
GE
TED (E-100 Line)
Sensor/Trip 100.0 A
Settings
Fixed
STARTER RACK 114
Manufacturer
Description GRAVITY THICKENER BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 2906.78 A
InitSymRMS SLG 1897.00 A
AFWC_ArcingFault 1.94 kA
AFWC_Boundary 63.71 inches
AFWC_IncidentEnergy 9.51 Cal/cm^2
AFWC_PPE Category 3
BKR TO DIGISTER BLDG LP
XFMR - DIGESTER BLDG LP
FullLoad kVA 30.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 4.2690 %
DIGESTER BLDG LP LOAD
BKR TO SLDG DIG HTR
SLUDGE DIGESTER HEAT PANEL
BKR TO DIGEST SUMP PMP
BBC/ITE
MCP
Settings
E4M2A 22.0 (22A)
DIGESTER SUMP PUMP
Rated HP 1.0 hp
RatedAmps 2.1 A
BKR TO PRI PUMP 3 (SRP 2)
GE
TED (E-100 Line)
Sensor/Trip 30.0 A
Settings
Fixed
PRIMARY PUMP 3 (SRP 2)
Rated HP 7.5 hp
RatedAmps 11.0 A
BKR TO WEMCO PMP
SIEMENS
E6
Sensor/Trip 100.0 A
Settings
Thermal Curve (Fixed)
INST Fixed (750A)
WEMCO PUMP (UNDERFLOW SLDG)
Rated HP 20.0 hp
RatedAmps 27.0 A
BKR TO STARTER RACK 115
GE
TED (E-100 Line)
Sensor/Trip 15.0 A
Settings
Fixed
CABLE TO STARTER RACK 115
CableSize 10 AWG/kcmil
Length 40.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
STARTER RACK 115
Manufacturer
Description GRAVITY THICKENER 1
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 2010.91 A
InitSymRMS SLG 1258.24 A
AFWC_ArcingFault 1.67 kA
AFWC_Boundary 3.62 inches
AFWC_IncidentEnergy 0.09 Cal/cm^2
AFWC_PPE Category 0
BKR TO GRAVITY THICKENER 1
GE
TED (E-100 Line)
Sensor/Trip 15.0 A
Settings
Fixed
GRAVITY THICKENER 1
Rated HP 1.5 hp
RatedAmps 3.0 A
BKR TO STARTER RACK 116
SQUARE D
FA
Sensor/Trip 30.0 A
Settings
Fixed
CABLE TO STARTER RACK 116
CableSize 10 AWG/kcmil
Length 40.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
STARTER RACK 116
Manufacturer
Description GRAVITY THICKENER 2
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 2010.91 A
InitSymRMS SLG 1258.24 A
AFWC_ArcingFault 1.67 kA
AFWC_Boundary 3.49 inches
AFWC_IncidentEnergy 0.08 Cal/cm^2
AFWC_PPE Category 0
BKR TO GRAVITY THICKENER 2
GE
TED (E-100 Line)
Sensor/Trip 15.0 A
Settings
Fixed
GRAVITY THICKENER 2
Rated HP 1.5 hp
RatedAmps 3.0 A
BKR TO PANEL PDP114
GE
TED (E-100 Line)
Sensor/Trip 20.0 A
Settings
Fixed
XFMR-PDP114
FullLoad kVA 7.5 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 3.2182 %
PANEL PDP114 LOAD
Rated kW 9.0 kW
RatedAmps 26.3 A
BKR TO THICK. SLUDGE PUMP 1
GE
TED (E-100 Line)
Sensor/Trip 30.0 A
Settings
Fixed
THICKENED SLUDGE PUMP 1
Rated HP 7.5 hp
RatedAmps 11.0 A
BKR TO THICK. SLUDGE PUMP 2
GE
TED (E-100 Line)
Sensor/Trip 30.0 A
Settings
Fixed
THICKENED SLUDGE PUMP 2
Rated HP 7.5 hp
RatedAmps 11.0 A
BKR TO MUFFIN MONSTER 1
SQUARE D
FA
Sensor/Trip 20.0 A
Settings
Fixed
MUFFIN MONSTER 1
Rated HP 3.0 hp
RatedAmps 4.8 A
BKR TO MUFFIN MONSTER 2
SQUARE D
FA
Sensor/Trip 20.0 A
Settings
Fixed
MUFFIN MONSTER 2
Rated HP 3.0 hp
RatedAmps 4.8 A


FROM MAIN MCC
(MAIN BLDG)
STARTER RACK (NPW) MCB
GE
THJK
Sensor/Trip 400.0 A
Settings
Thermal Curve (Fixed)
INST (3-10 x Trip) HI (4000A)
STARTER RACK (NPW)
Manufacturer
Description NPW/CHLORINE CONTACT TANKS
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 7036.08 A
InitSymRMS SLG 4510.78 A
AFWC_ArcingFault 4.86 kA
AFWC_Boundary 6.02 inches
AFWC_IncidentEnergy 0.2 Cal/cm^2
AFWC_PPE Category 0
BKR TO PANEL LP (NPW)
GE
TED (E-150 Line)
Sensor/Trip 15.0 A
Settings
Fixed
XFMR-LP(NPW)
FullLoad kVA 9.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.5849 %
PANEL LP (NPW) LOAD
Rated kW 4.0 kW
RatedAmps 11.7 A
BKR TO NPW WATER PUMP 1
SQUARE D
KA
Sensor/Trip 110.0 A
Settings
Thermal Curve
INST LO (550A)
NPW WATER PUMP 1
Rated HP 40.0 hp
RatedAmps 52.0 A
BKR TO NPW WATER PUMP 2
SQUARE D
KA
Sensor/Trip 110.0 A
Settings
Thermal Curve
INST LO (550A)
NPW WATER PUMP 2
Rated HP 40.0 hp
RatedAmps 52.0 A
FROM MAIN MCC
(MAIN BLDG)
MCC-CC113 MCS
GE
THFK
Sensor/Trip 225.0 A
MCC-CC113
Manufacturer GE 7700
Description NPW/EFFLUENT BLDG
ContinuousRating 600.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 7099.40 A
InitSymRMS SLG 4559.90 A
AFWC_ArcingFault 4.89 kA
AFWC_Boundary 6.04 inches
AFWC_IncidentEnergy 0.2 Cal/cm^2
AFWC_PPE Category 0
BKR TO NPW PUMP 4
GE
TED (E-100 Line)
Sensor/Trip 100.0 A
Settings
Fixed
NPW PUMP 4
Rated HP 40.0 hp
RatedAmps 52.0 A
BKR TO CHLORINATED PUMP 1
GE
TED (E-100 Line)
Sensor/Trip 50.0 A
Settings
Fixed
CHLORINATED PUMP 1
Rated HP 25.0 hp
RatedAmps 34.0 A
BKR TO CHLORINATED PUMP 2
GE
THED
Sensor/Trip 50.0 A
Settings
Fixed
CHLORINATED PUMP 2
Rated HP 25.0 hp
RatedAmps 34.0 A
BKR TO STARTER RACK 112
GE
THED
Sensor/Trip 20.0 A
Settings
Fixed
CABLE TO STARTER RACK 112
CableSize 10 AWG/kcmil
Length 50.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
BKR TO NPW ROOF VENT
GE
TED (E-100 Line)
Sensor/Trip 15.0 A
Settings
Fixed
NPW ROOF VENTILATOR
Rated HP 0.5 hp
RatedAmps 1.1 A
BKR TO NPW HEATER
GE
TED (E-100 Line)
Sensor/Trip 20.0 A
Settings
Fixed
NPW HEATER
Rated kW 15.0 kW
RatedAmps 19.0 A
BKR TO PANEL PDP113
GE
THED
Sensor/Trip 20.0 A
Settings
Fixed
XFMR-PDP113
FullLoad kVA 9.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.5849 %
PANEL PDP113 LOAD
Rated kW 7.0 kW
RatedAmps 20.5 A
STARTER RACK 112 MCB
STARTER RACK 112
Manufacturer
Description DRAINAGE PUMP (SECONDARY CLARIFIER 4)
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 3228.69 A
InitSymRMS SLG 1968.30 A
AFWC_ArcingFault 2.50 kA
AFWC_Boundary 4.81 inches
AFWC_IncidentEnergy 0.14 Cal/cm^2
AFWC_PPE Category 0
BKR TO DRAINAGE PUMP
SQUARE D
FA
Sensor/Trip 30.0 A
Settings
Fixed
DRAINAGE PUMP
Rated HP 10.0 hp
RatedAmps 14.0 A
BKR TO ROADWAY LIGHTING
ROADWAY LIGHTING



Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
One-line Diagram: MCC-CC103 (RETURN PS 1)


FROM MAIN MCC
(MAIN BLDG)
MCC-CC103A MC B
SQUARE D
LA
Sensor/Trip 400.0 A
Settings
Thermal Curve
INST HI (4000A)
MCC-CC103A
Manufacturer Allen-Bradley
Description RETURN PUMP STATION 2
ContinuousRating 400.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 18320.12 A
InitSymRMS SLG 8462.29 A
AFWC_ArcingFault 9.35 kA
AFWC_Boundary 14.55 inches
AFWC_IncidentEnergy 0.84 Cal/cm^2
AFWC_PPE Category 0
BKR TO RETURN PUMP5
SQUARE D
FA
Sensor/Trip 100.0 A
Settings
Fixed
CABLE TO RETURN PUMP5
CableSize 2 AWG/kcmil
Length 25.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
RETURN PUMP 5 VFD MC B
CUTLER-HAMMER
EHD
Sensor/Trip 100.0 A
Settings
Fixed
RETURN PUMP 5 VFD
Manufacturer
Description RETURN PS 2
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 15708.58 A
InitSymRMS SLG 7163.17 A
AFWC_ArcingFault 9.64 kA
AFWC_Boundary 17.2 inches
AFWC_IncidentEnergy 1.11 Cal/cm^2
AFWC_PPE Category 0
RETURN SLUDGE PUMP 5
Rated HP 50.0 hp
RatedAmps 65.0 A
BKR TO RETURN PUMP6
SQUARE D
FA
Sensor/Trip 100.0 A
Settings
Fixed
CABLE TO RETURN PUMP6
CableSize 2 AWG/kcmil
Length 15.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
RETURN PUMP 6 VFD MC B
CUTLER-HAMMER
EHD
Sensor/Trip 100.0 A
Settings
Fixed
RETURN PUMP 6 VFD
Manufacturer
Description RETURN PS 2
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 16668.83 A
InitSymRMS SLG 7642.69 A
AFWC_ArcingFault 10.15 kA
AFWC_Boundary 17.41 inches
AFWC_IncidentEnergy 1.13 Cal/cm^2
AFWC_PPE Category 0
RETURN SLUDGE PUMP 6
Rated HP 50.0 hp
RatedAmps 65.0 A
BKR TO RPS 2 UNIT HEATER
SQUARE D
FH
Sensor/Trip 30.0 A
Settings
Fixed
RPS 2 UNIT HEATER
Rated kW 15.0 kW
RatedAmps 19.0 A
BKR TO PANEL PDP-103A
SQUARE D
FA
Sensor/Trip 20.0 A
Settings
Fixed
P
S
XFMR-103A
FullLoad kVA 15.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 2.7789 %
PANEL PDP-103A LOAD
Rated kW 8.0 kW
RatedAmps 23.4 A
BKR TO RETURN PUMP1
SQUARE D
FA
Sensor/Trip 50.0 A
Settings
Fixed
CABLE TO RETURN PUMP1
CableSize 6 AWG/kcmil
Length 150.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
RETURN PUMP 1 VFD MC B
CUTLER-HAMMER
EHD
Sensor/Trip 50.0 A
Settings
Fixed
RETURN PUMP 1 VFD
Manufacturer Saftronics
Description RETURN PS 2
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 3403.08 A
InitSymRMS SLG 1825.82 A
AFWC_ArcingFault 2.61 kA
AFWC_Boundary 4.65 inches
AFWC_IncidentEnergy 0.13 Cal/cm^2
AFWC_PPE Category 0
RETURN SLUDGE PUMP 1
Rated HP 15.0 hp
RatedAmps 21.0 A
BKR TO RETURN PUMP2
SQUARE D
FA
Sensor/Trip 50.0 A
Settings
Fixed
CABLE TO RETURN PUMP2
CableSize 6 AWG/kcmil
Length 150.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V
RETURN PUMP 2 VFD MC B
CUTLER-HAMMER
EHD
Sensor/Trip 50.0 A
Settings
Fixed
RETURN PUMP 2 VFD
Manufacturer Saftronics
Description RETURN PS 2
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 3403.08 A
InitSymRMS SLG 1825.82 A
AFWC_ArcingFault 2.61 kA
AFWC_Boundary 4.65 inches
AFWC_IncidentEnergy 0.13 Cal/cm^2
AFWC_PPE Category 0
RETURN SLUDGE PUMP 2
Rated HP 15.0 hp
RatedAmps 21.0 A

FROM TX-3 (SLUDGE BLDG)

SWBD-3 MCB
GE
SS, SH PowerBreak II, EGTU
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 1.00X (2000A); C-3
STPU (1.5-9 x LTPU) 4X (8000A)
STD (ST01 - ST11) ST01-Int (I^2t On)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)

SWBD-3

Manufacturer CUTLER-HAMMER
Description SLUDGE BLDG
ContinuousRating 2500.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 27427.68 A
InitSymRMS SLG 25526.83 A
AFWC_ArcingFault 13.20 kA
AFWC_Boundary 93.71 inches
AFWC_IncidentEnergy 17.91 Cal/cm^2
AFWC_PPE Category 3

BKR TO MCC (SLUDGE BLDG)
CUTLER-HAMMER
MC
Sensor/Trip 800.0 A
Settings
LTPU (1.0 x P) Fixed (800A)
LTD (Fixed) Fixed
STPU (3-10 x P) 10 (8000A)
STD (Fixed) Fixed (I^2t Off)
INST (9000A) Fixed (9000A)

CABLE TO MCC (SLUDGE BLDG)
CableSize 500 AWG/kcmil
Length 15.0 ft
Phase ABC
QtyPerPhase 5
QtyOfRaceways 5
VoltageRating 600 V

TO MCC (SLUDGE BLDG) (SLUDGE BLDG)

BKR TO CENTRIFUGE 1
CUTLER-HAMMER
LD
Sensor/Trip 600.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 10 (6000A)

CABLE TO CENTRIFUGE 1
CableSize 350 AWG/kcmil
Length 20.0 ft
Phase ABC
QtyPerPhase 2
QtyOfRaceways 2
VoltageRating 600 V

CENTRIFUGE 1 CP MCB
SQUARE D
MAL Mag-Gard
Settings
42M (3000-6000A) 6000 (6000A)

CENTRIFUGE 1 CP
Manufacturer
Description SLUDGE BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 26165.17 A
InitSymRMS SLG 23725.38 A
AFWC_ArcingFault 14.91 kA
AFWC_Boundary 17.23 inches
AFWC_IncidentEnergy 1.11 Cal/cm^2
AFWC_PPE Category 0

CENTRIFUGE 1
Rated HP 250.0 hp
RatedAmps 302.0 A

BKR TO CENTRIFUGE 2
CUTLER-HAMMER
LD
Sensor/Trip 600.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 10 (6000A)

CABLE TO CENTRIFUGE 2
CableSize 350 AWG/kcmil
Length 20.0 ft
Phase ABC
QtyPerPhase 2
QtyOfRaceways 2
VoltageRating 600 V

CENTRIFUGE 2 CP MCB
SQUARE D
MAL Mag-Gard
Settings
42M (3000-6000A) 6000 (6000A)

CENTRIFUGE 2 CP
Manufacturer
Description SLUDGE BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 26165.17 A
InitSymRMS SLG 23725.38 A
AFWC_ArcingFault 14.91 kA
AFWC_Boundary 17.23 inches
AFWC_IncidentEnergy 1.11 Cal/cm^2
AFWC_PPE Category 0

CENTRIFUGE 2
Rated HP 250.0 hp
RatedAmps 302.0 A

BKR TO CENTRIFUGE 3
CUTLER-HAMMER
LD
Sensor/Trip 600.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 10 (6000A)

CABLE TO CENTRIFUGE 3
CableSize 350 AWG/kcmil
Length 20.0 ft
Phase ABC
QtyPerPhase 2
QtyOfRaceways 2
VoltageRating 600 V

CENTRIFUGE 3 CP MCB
SQUARE D
MAL Mag-Gard
Settings
42M (3000-6000A) 6000 (6000A)

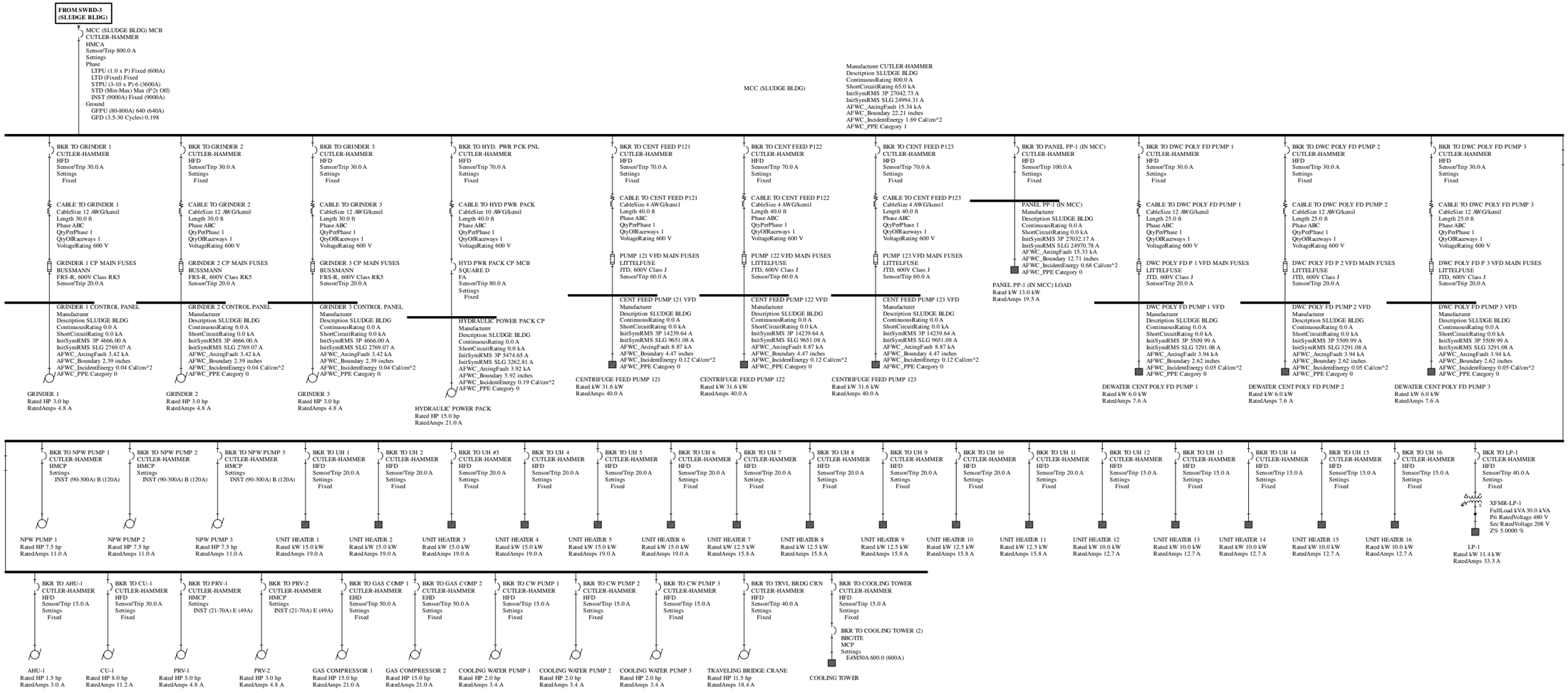
CENTRIFUGE 3 CP
Manufacturer
Description SLUDGE BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 26165.17 A
InitSymRMS SLG 23725.38 A
AFWC_ArcingFault 14.91 kA
AFWC_Boundary 17.23 inches
AFWC_IncidentEnergy 1.11 Cal/cm^2
AFWC_PPE Category 0

CENTRIFUGE 3
Rated HP 250.0 hp
RatedAmps 302.0 A

BKR TO MCC (DEWATERING BLDG)
CUTLER-HAMMER
LD
Sensor/Trip 600.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 10 (6000A)

CABLE TO MCC (DEWATERING BLDG)
CableSize 500 AWG/kcmil
Length 400.0 ft
Phase ABC
QtyPerPhase 5
QtyOfRaceways 5
VoltageRating 600 V

TO MCC (DEWATERING BLDG) (DEWATERING BLDG)



Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
One-line Diagram: MCC (SLUDGE BLDG)

FROM SWBD-3
(SLUDGE BLDG)

MCC (DEWATERING BLDG) MCB
CUTLER-HAMMER
MC
Sensor/Trip 800.0 A
Settings
LTPU (1.0 x P) Fixed (800A)
LTD (Fixed) Fixed
STPU (3-10 x P) 10 (8000A)
STD (Fixed) Fixed (I^2t On)
INST (9000A) Fixed (9000A)

MCC (DEWATERING BLDG)
Manufacturer
Description DEWATERING BLDG
ContinuousRating 600.0 A
ShortCircuitRating 22.0 kA
InitSymRMS 3P 20519.92 A
InitSymRMS SLG 16448.93 A
AFWC_ArcingFault 12.12 kA
AFWC_Boundary 16.37 inches
AFWC_IncidentEnergy 1.02 Cal/cm^2
AFWC_PPE Category 0

BKR TO DIG COM CP LP-5-10-1
CUTLER-HAMMER
FB, 2 & 3-Pole
Sensor/Trip 40.0 A
Settings
Fixed

CABLE TO DIG COMP CP LP-5-10-1
CableSize 2/0 AWG/kcmil
Length 310.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

DIGEST COMPRESSOR CP LP-5-10-1
Manufacturer
Description DIGESTER BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 6019.16 A
InitSymRMS SLG 3812.79 A
AFWC_ArcingFault 4.25 kA
AFWC_Boundary 6.92 inches
AFWC_IncidentEnergy 0.25 Cal/cm^2
AFWC_PPE Category 0

DIG COMPRESS CP LP-5-10-1
Rated kW 18.0 kW
RatedAmps 27.0 A

BKR TO DIG COM CP LP-5-10-2
CUTLER-HAMMER
FB, 2 & 3-Pole
Sensor/Trip 40.0 A
Settings
Fixed

CABLE TO DIG COMP CP LP-5-10-2
CableSize 2/0 AWG/kcmil
Length 260.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

DIGEST COMPRESSOR CP LP-5-10-2
Manufacturer
Description DIGESTER BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 6853.42 A
InitSymRMS SLG 4383.85 A
AFWC_ArcingFault 4.75 kA
AFWC_Boundary 7.41 inches
AFWC_IncidentEnergy 0.28 Cal/cm^2
AFWC_PPE Category 0

DIG COMPRESS CP LP-5-10-2
Rated kW 18.0 kW
RatedAmps 27.0 A

BKR TO DIG XFR STA PUMP
CUTLER-HAMMER
FB, 2 & 3-Pole
Sensor/Trip 20.0 A
Settings
Fixed

DIG XFR STA SUMP PUMP
Rated HP 0.5 hp
RatedAmps 1.1 A

BKR TO DIGESTER P-5-6-1
CUTLER-HAMMER
HMCP
Settings
INST (300-1000A) F (800A)

DIGESTER PUMP P-5-6-1
Rated HP 30.0 hp
RatedAmps 40.0 A

BKR TO DIGESTER P-5-6-2
CUTLER-HAMMER
HMCP
Settings
INST (300-1000A) C (500A)

DIGESTER PUMP P-5-6-2
Rated HP 30.0 hp
RatedAmps 40.0 A

BKR TO NPW BOOST PUMP 3
CUTLER-HAMMER
MCP
Settings
INST (50-150A) 130A (130A)

NPW BOOSTER PUMP 3
Rated HP 7.5 hp
RatedAmps 11.0 A

BKR TO ODOR CTRL SYS CIRC
CUTLER-HAMMER
HKB
Sensor/Trip 150.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 10 (1500A)

CABLE TO PANEL PP1
CableSize 2/0 AWG/kcmil
Length 200.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

PANEL PP1
Manufacturer CUTLER-HAMMER
Description DEWATERING BLDG
ContinuousRating 225.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 8204.49 A
InitSymRMS SLG 5337.23 A
AFWC_ArcingFault 5.54 kA
AFWC_Boundary 8.82 inches
AFWC_IncidentEnergy 0.37 Cal/cm^2
AFWC_PPE Category 0

ODOR CNTRL SYS PANEL PP1

BKR TO POLY XFR PUMP 1
CUTLER-HAMMER
MCP
Settings
INST (50-150A) 150A (150A)

POLYMER TRANSFER PUMP 1
Rated HP 2.0 hp
RatedAmps 3.4 A

BKR TO POLY XFR PUMP 2
CUTLER-HAMMER
MCP
Settings
INST (18-58A) 58A (58A)

POLYMER TRANSFER PUMP 2
Rated HP 2.0 hp
RatedAmps 3.4 A

BKR TO GBT CP 1
CUTLER-HAMMER
HFD
Sensor/Trip 30.0 A
Settings
Fixed

GBT CP 1
Rated HP 15.0 hp
RatedAmps 21.0 A

BKR TO GBT CP 2
CUTLER-HAMMER
HFD
Sensor/Trip 30.0 A
Settings
Fixed

GBT CP 2
Rated HP 15.0 hp
RatedAmps 21.0 A

BKR TO COMPRESSOR 2
CUTLER-HAMMER
FDB
Sensor/Trip 70.0 A
Settings
Fixed

AIR COMPRESSOR 2
Rated HP 25.0 hp
RatedAmps 34.0 A

BKR TO EF-5
CUTLER-HAMMER
MCP
Settings
INST (50-150A) 62A (62A)

EXHAUST FAN EF-5
Rated HP 3.0 hp
RatedAmps 4.8 A

BKR TO EF-2
CUTLER-HAMMER
MCP
Settings
INST (50-150A) 150A (150A)

EXHAUST FAN EF-2
Rated HP 5.0 hp
RatedAmps 7.6 A

BKR TO POLY FEED PUMP 3
CUTLER-HAMMER
HFD
Sensor/Trip 15.0 A
Settings
Fixed

POLYMER FEED PUMP 3
Rated HP 0.8 hp
RatedAmps 1.6 A

BKR TO POLY BULK FDR
CUTLER-HAMMER
HFD
Sensor/Trip 30.0 A
Settings
Fixed

POLYMER BULK FEEDER
Rated kW 16.0 kW
RatedAmps 24.0 A

BKR TO NPW BOOST PUMP 1
CUTLER-HAMMER
MCP
Settings
INST (50-150A) 130A (130A)

NPW BOOSTER PUMP 1
Rated HP 7.5 hp
RatedAmps 11.0 A

BKR TO AIR COMPRESSOR 1
CUTLER-HAMMER
FDB
Sensor/Trip 70.0 A
Settings
Fixed

AIR COMPRESSOR 1
Rated HP 25.0 hp
RatedAmps 34.0 A

BKR TO HLDNG TNK MXER
CUTLER-HAMMER
MCP
Settings
INST (18-58A) 58A (58A)

HOLDING TANK MIXER
Rated HP 40.0 hp
RatedAmps 52.0 A

BKR TO FILTRATE PUMP 1
CUTLER-HAMMER
HFD
Sensor/Trip 15.0 A
Settings
Fixed

FILTRATE PUMP 1
Rated HP 5.0 hp
RatedAmps 7.6 A

BKR TO FILTRATE PUMP 2
CUTLER-HAMMER
HFD
Sensor/Trip 15.0 A
Settings
Fixed

FILTRATE PUMP 2
Rated HP 5.0 hp
RatedAmps 7.6 A

BKR TO WAB PUMP 1
CUTLER-HAMMER
HFD
Sensor/Trip 30.0 A
Settings
Fixed

WAB PUMP 1
Rated HP 10.0 hp
RatedAmps 14.0 A

BKR TO WAB PUMP 2
CUTLER-HAMMER
HFD
Sensor/Trip 30.0 A
Settings
Fixed

WAB PUMP 2
Rated HP 10.0 hp
RatedAmps 14.0 A

BKR TO POLY FEED PUMP 1
CUTLER-HAMMER
HFD
Sensor/Trip 15.0 A
Settings
Fixed

POLYMER FEED PUMP 1
Rated HP 0.8 hp
RatedAmps 1.6 A

BKR TO POLY FEED PUMP 2
CUTLER-HAMMER
HFD
Sensor/Trip 15.0 A
Settings
Fixed

POLYMER FEED PUMP 2
Rated HP 0.8 hp
RatedAmps 1.6 A

BKR TO TWAB PUMP 1
CUTLER-HAMMER
HFD
Sensor/Trip 45.0 A
Settings
Fixed

TWAB PUMP 1
Rated HP 15.0 hp
RatedAmps 21.0 A

BKR TO TWAB PUMP 2
CUTLER-HAMMER
HFD
Sensor/Trip 45.0 A
Settings
Fixed

TWAB PUMP 2
Rated HP 15.0 hp
RatedAmps 21.0 A

BKR TO AC-1
CUTLER-HAMMER
HFD
Sensor/Trip 30.0 A
Settings
Fixed

A/C UNIT AC-1
Rated kW 7.0 kW
RatedAmps 8.9 A

BKR TO BOILER
CUTLER-HAMMER
HFD
Sensor/Trip 30.0 A
Settings
Fixed

BOILER

BKR TO NPW BOOST PUMP 2
CUTLER-HAMMER
MCP
Settings
INST (50-150A) 130A (130A)

NPW BOOSTER PUMP 2
Rated HP 7.5 hp
RatedAmps 11.0 A

BKR TO HOT WTR PUMP 1
CUTLER-HAMMER
HFD
Sensor/Trip 15.0 A
Settings
Fixed

HOT WATER PUMP 1
Rated HP 2.0 hp
RatedAmps 3.4 A

BKR TO HOT WTR PUMP 2
CUTLER-HAMMER
HFD
Sensor/Trip 15.0 A
Settings
Fixed

HOT WATER PUMP 2
Rated HP 2.0 hp
RatedAmps 3.4 A

BKR TO ALLIED COLL DRY POLY
CUTLER-HAMMER
HFD
Sensor/Trip 30.0 A
Settings
Fixed

ALLIED COLLOIDS DRY POLYMER
Rated HP 2.0 hp
RatedAmps 3.4 A

BKR TO DIG HEAT XCHR
CUTLER-HAMMER
HFD
Sensor/Trip 40.0 A
Settings
Fixed

DIGESTER HEAT EXCHANGER
Rated HP 2.0 hp
RatedAmps 3.4 A

BKR TO PANLE LPA (IN MCC)
CUTLER-HAMMER
HFD
Sensor/Trip 40.0 A
Settings
Fixed

PANEL LPA LOAD
Rated kW 20.0 kW
RatedAmps 30.0 A

BKR TO PANEL LPB (IN MCC)
CUTLER-HAMMER
HFD
Sensor/Trip 50.0 A
Settings
Fixed

XFMR - LPB
FullLoad kVA 30.0 kVA
Pri RatedVoltage 480 V
Sec RatedVoltage 208 V
Z% 4.2690 %

PANEL LPB LOAD
Rated kW 28.5 kW
RatedAmps 83.3 A

BKR TO POLY SYS CP
CUTLER-HAMMER
HFD
Sensor/Trip 100.0 A
Settings
Fixed

CABLE TO POLY SYS CP
CableSize 2 AWG/kcmil
Length 100.0 ft
Phase ABC
QtyPerPhase 1
QtyOfRaceways 1
VoltageRating 600 V

POLYMER SYSTEM CP17-2001
Manufacturer
Description DEWATERING BLDG
ContinuousRating 0.0 A
ShortCircuitRating 0.0 kA
InitSymRMS 3P 9100.49 A
InitSymRMS SLG 5816.71 A
AFWC_ArcingFault 6.05 kA
AFWC_Boundary 7.44 inches
AFWC_IncidentEnergy 0.28 Cal/cm^2
AFWC_PPE Category 0

BKR TO PANEL PP2

XFMR - PP2
FullLoad kVA 7.5 kVA
Pri RatedVoltage 277 V
Sec RatedVoltage 208 V
Z% 2.5000 %

PANEL PP2 LOAD

BKR TO CARBON RECYCLE 1

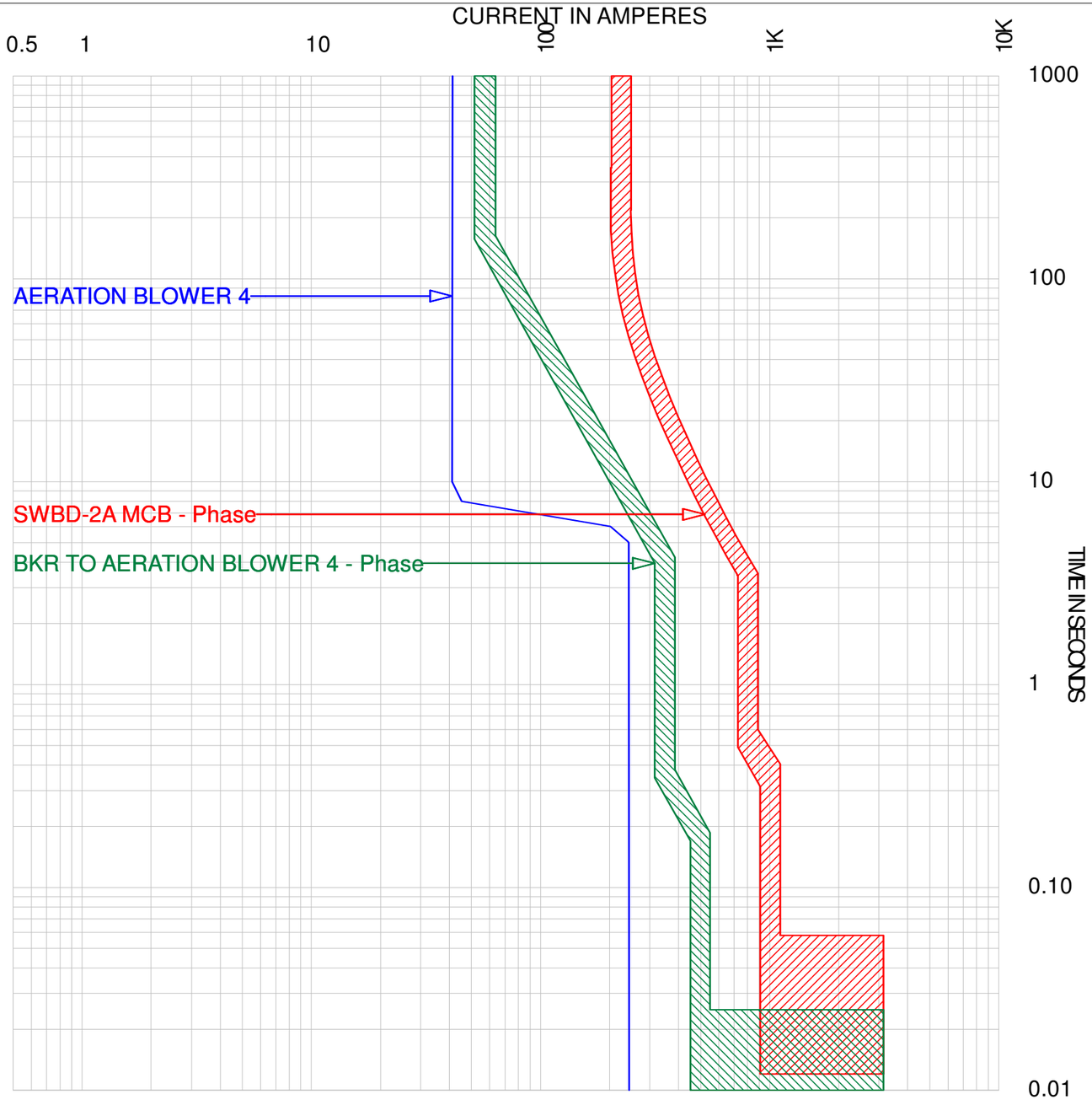
CARBON RECYCLE 1

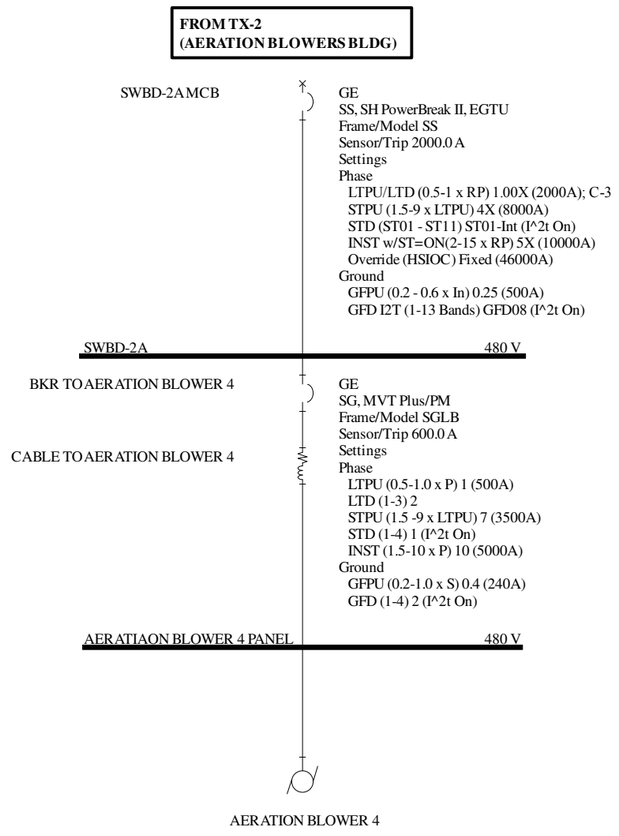
BKR TO CARBON RECYCLE 2

CARBON RECYCLE 2

Appendix JRTP-C

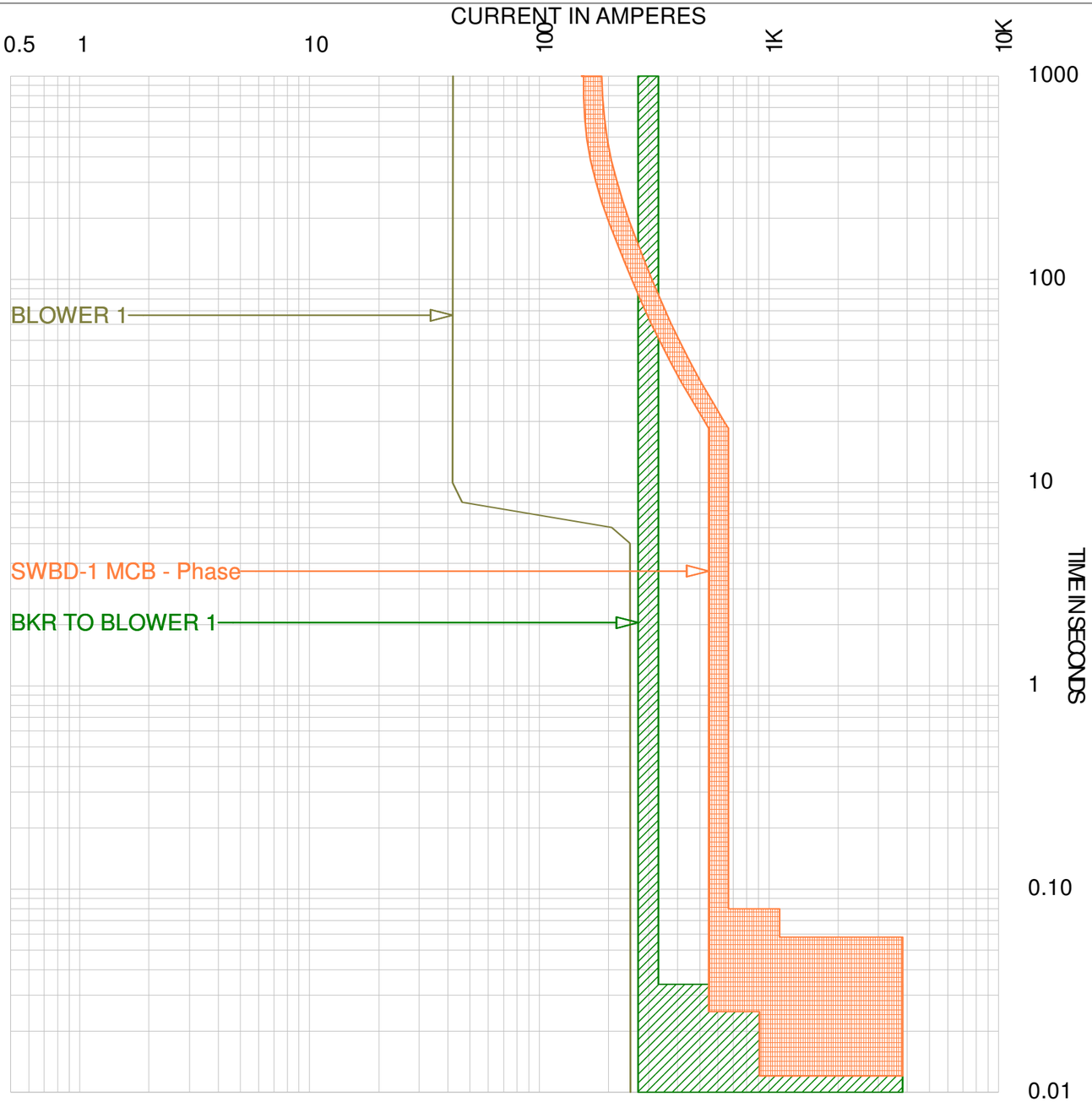
Protective Device Coordination
Time VS Current Curves

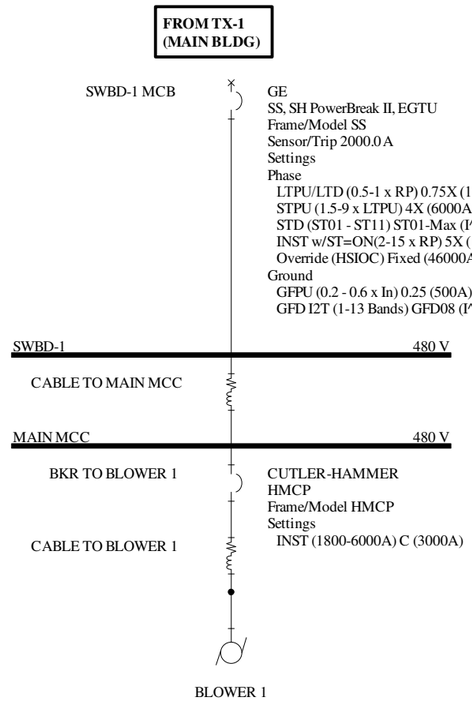




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

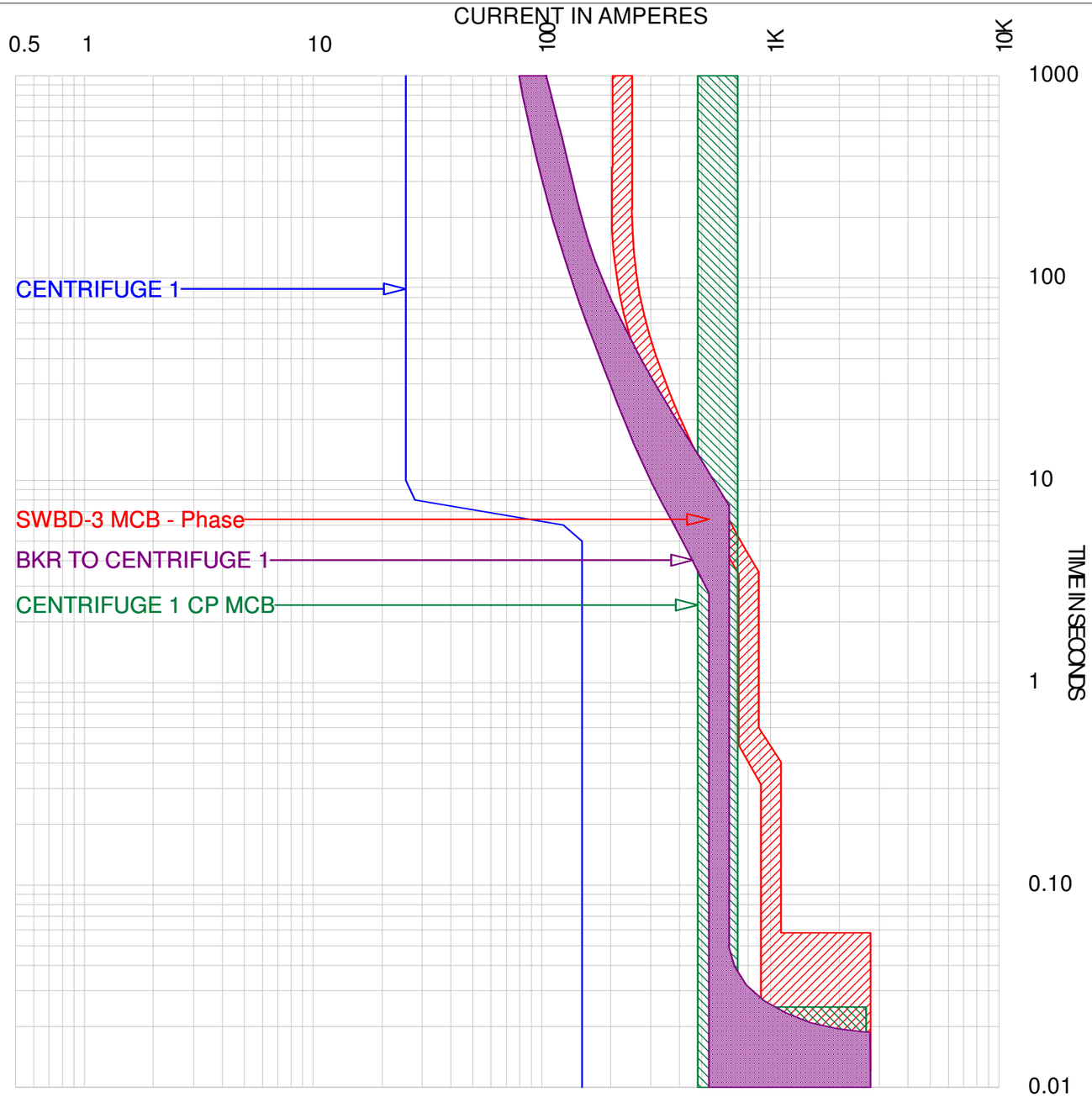
March 2015
SKM System Analysis, Inc.
TCC: TCC_AERATION BLOWER 4
Reference Voltage: 480V x 10

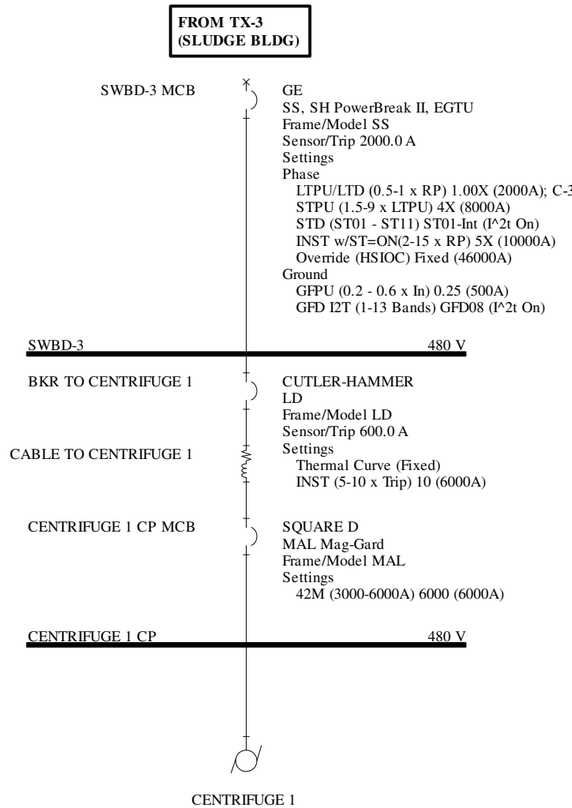




Hampton Roads Sanitation District
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James River Treatment Plant

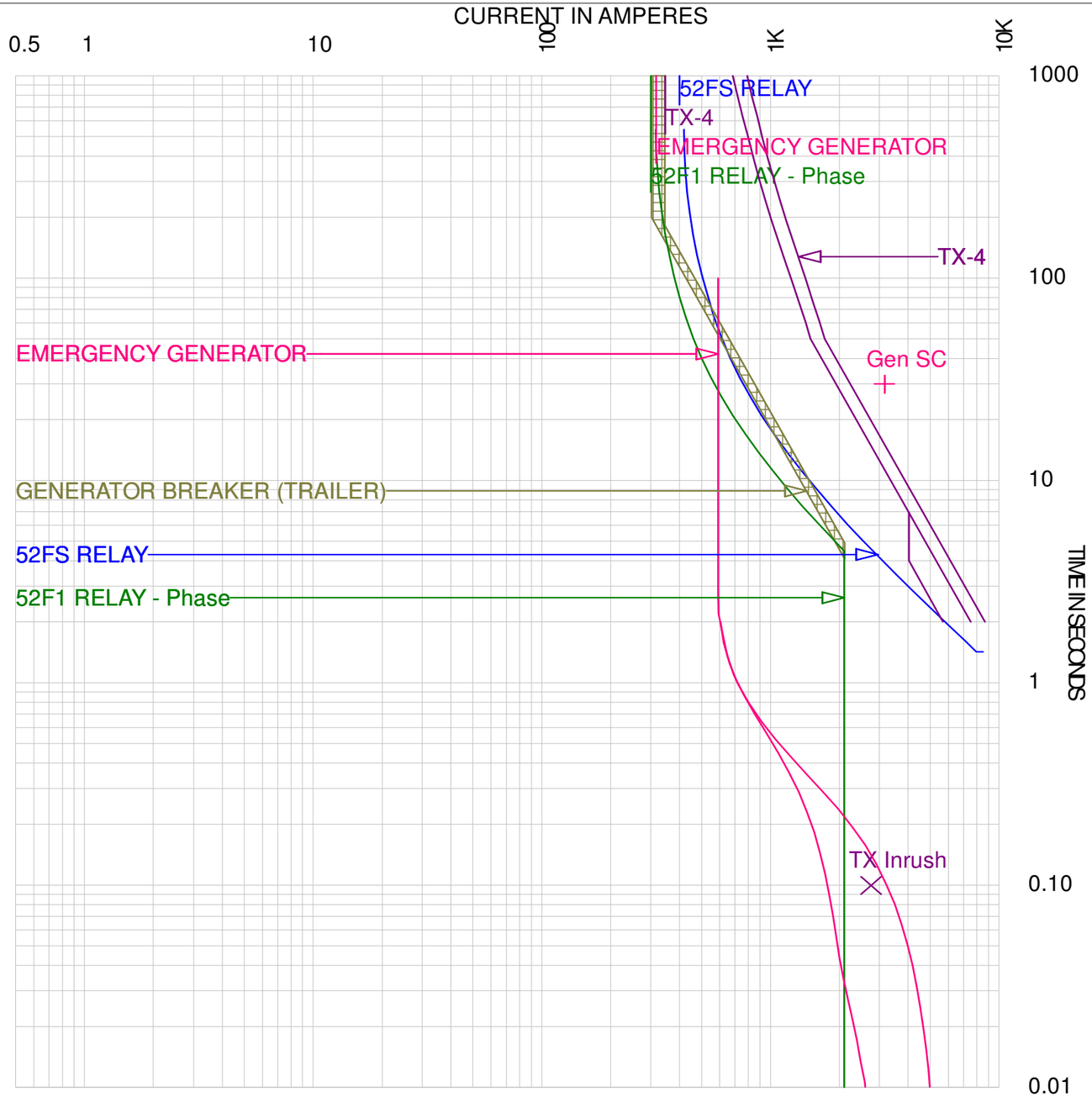
March 2015
SKM System Analysis, Inc.
TCC: TCC_BLOWER 1
Reference Voltage: 480V x 10

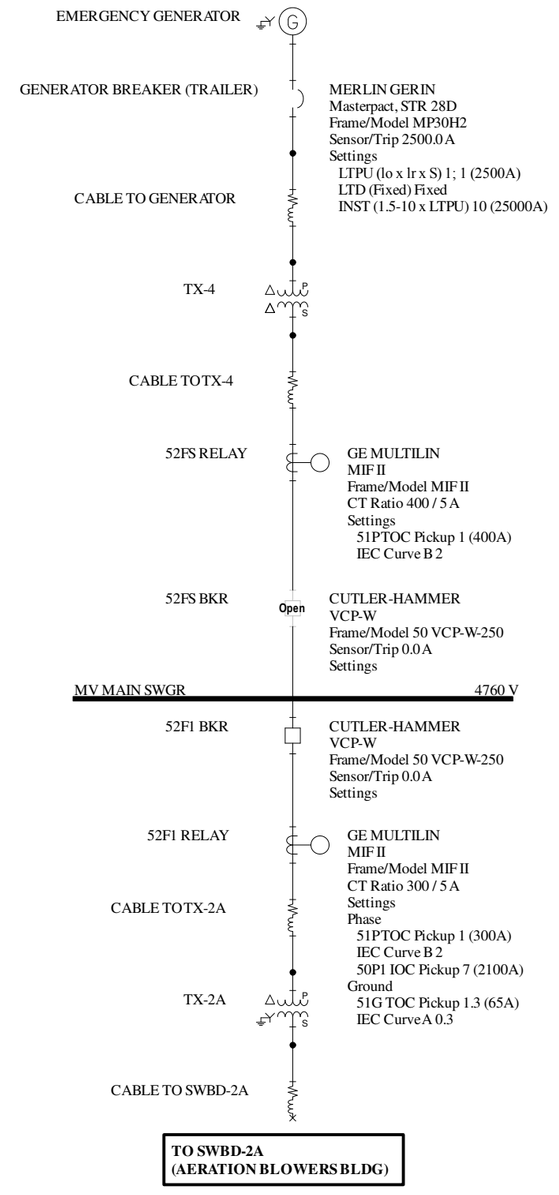




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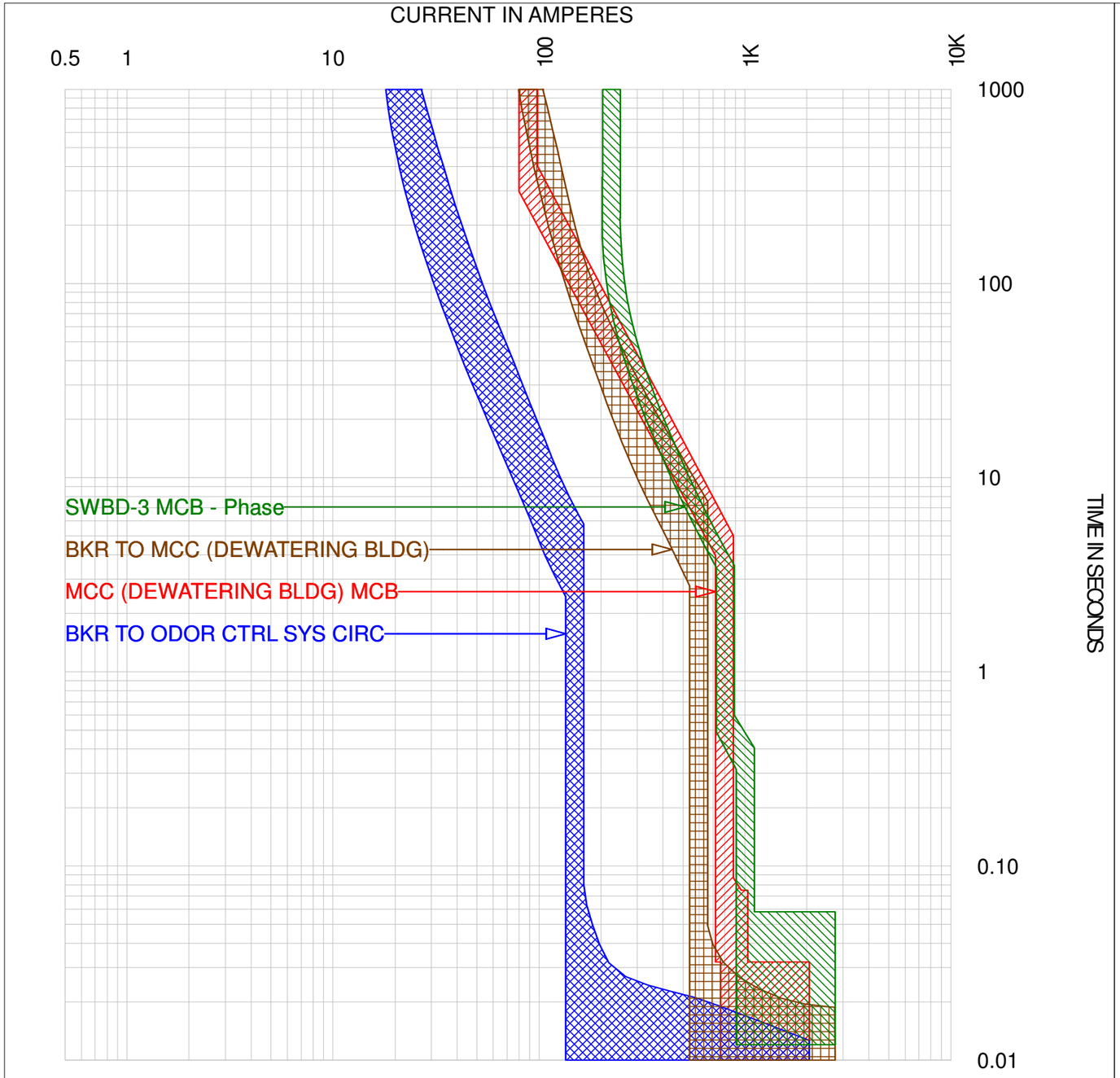
March 2015
SKM System Analysis, Inc.
TCC: TCC_CENTRIFUGE 1
Reference Voltage: 480V x 10

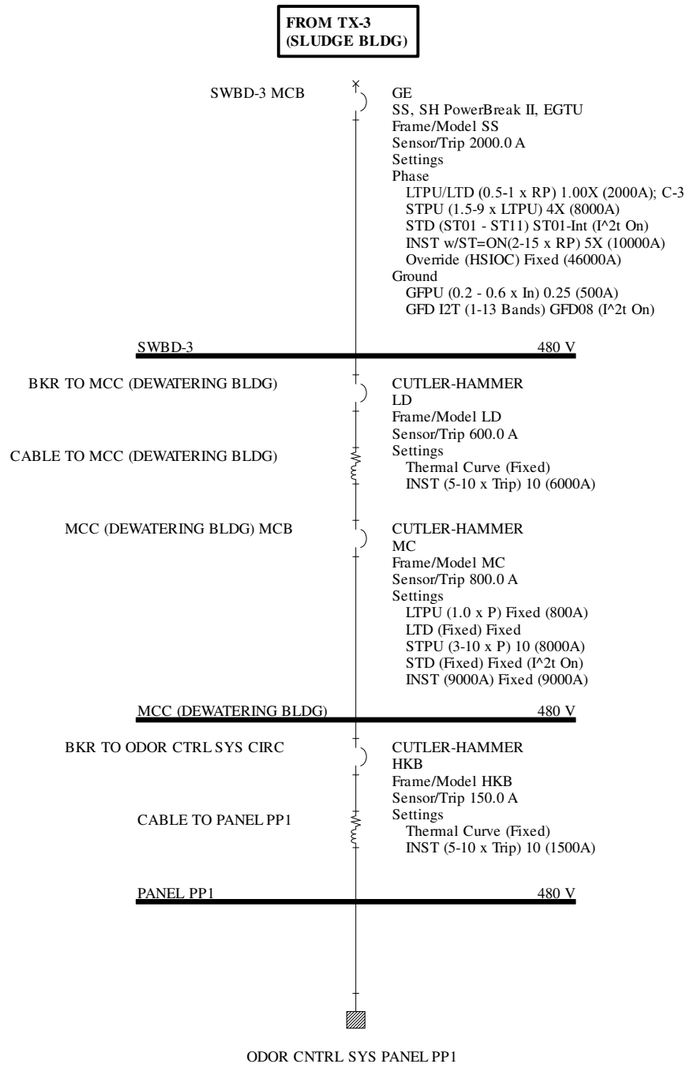




Hampton Roads Sanitation District
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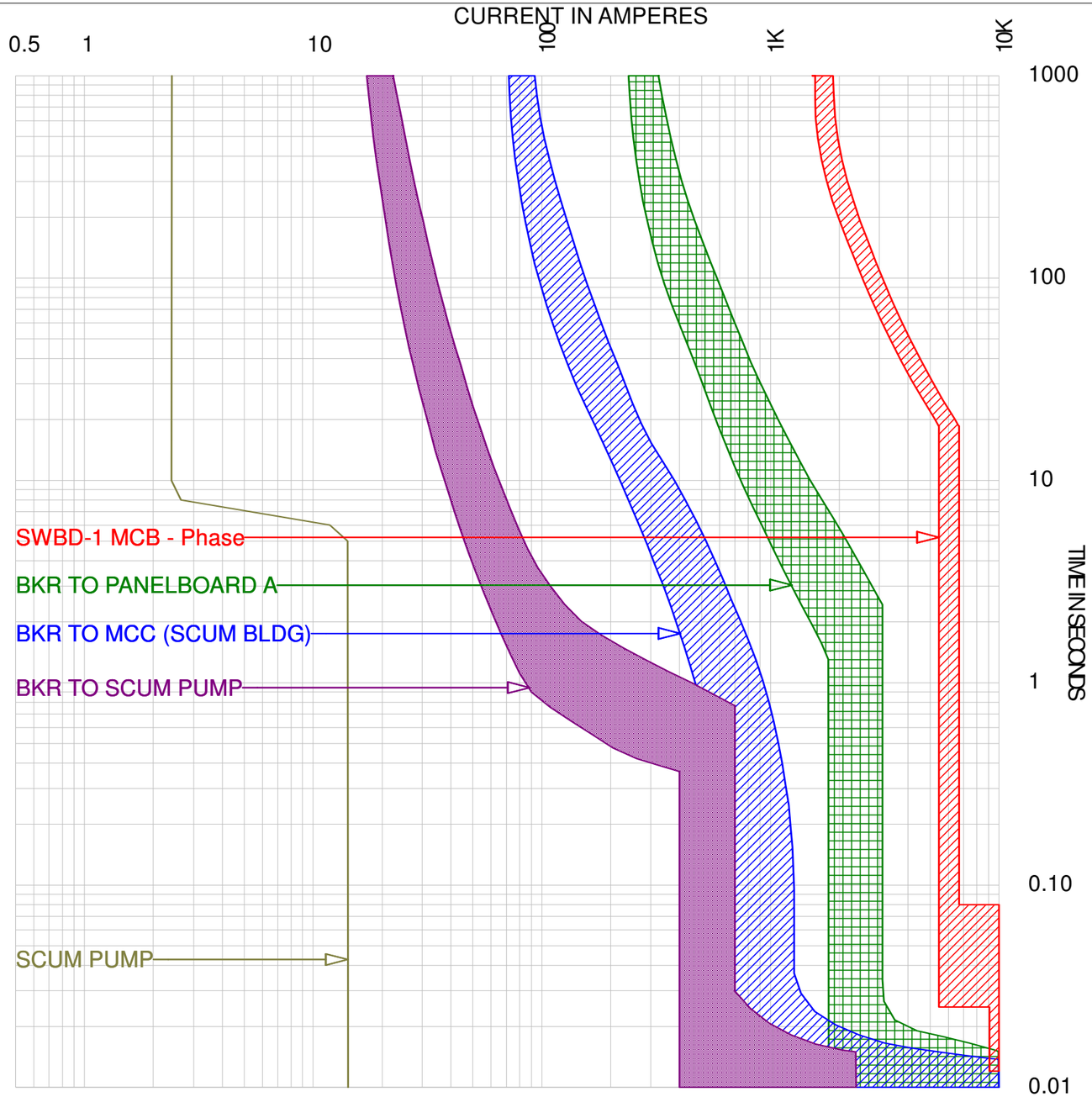
March 2015
SKM System Analysis, Inc.
TCC: TCC_GENERATOR
Reference Voltage: 4160V x 1

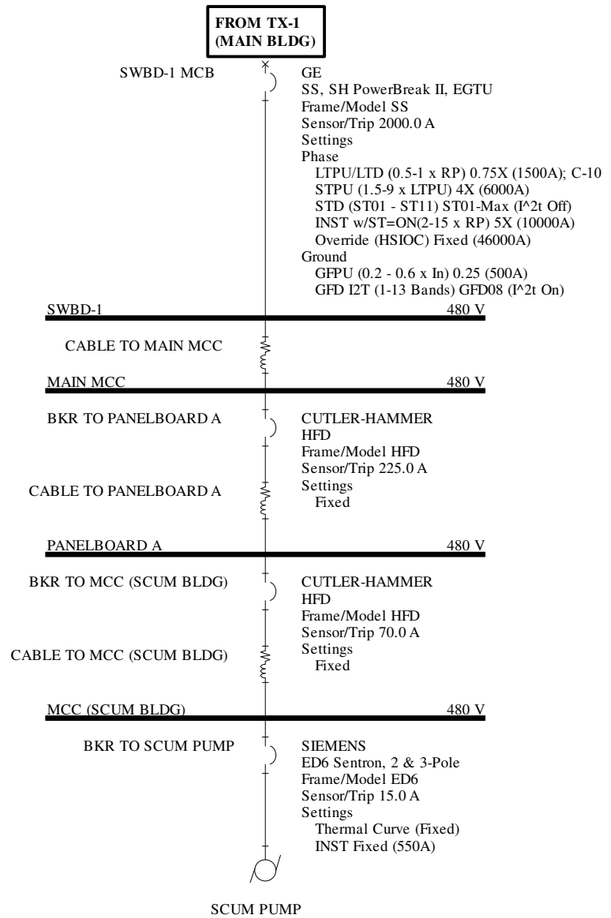


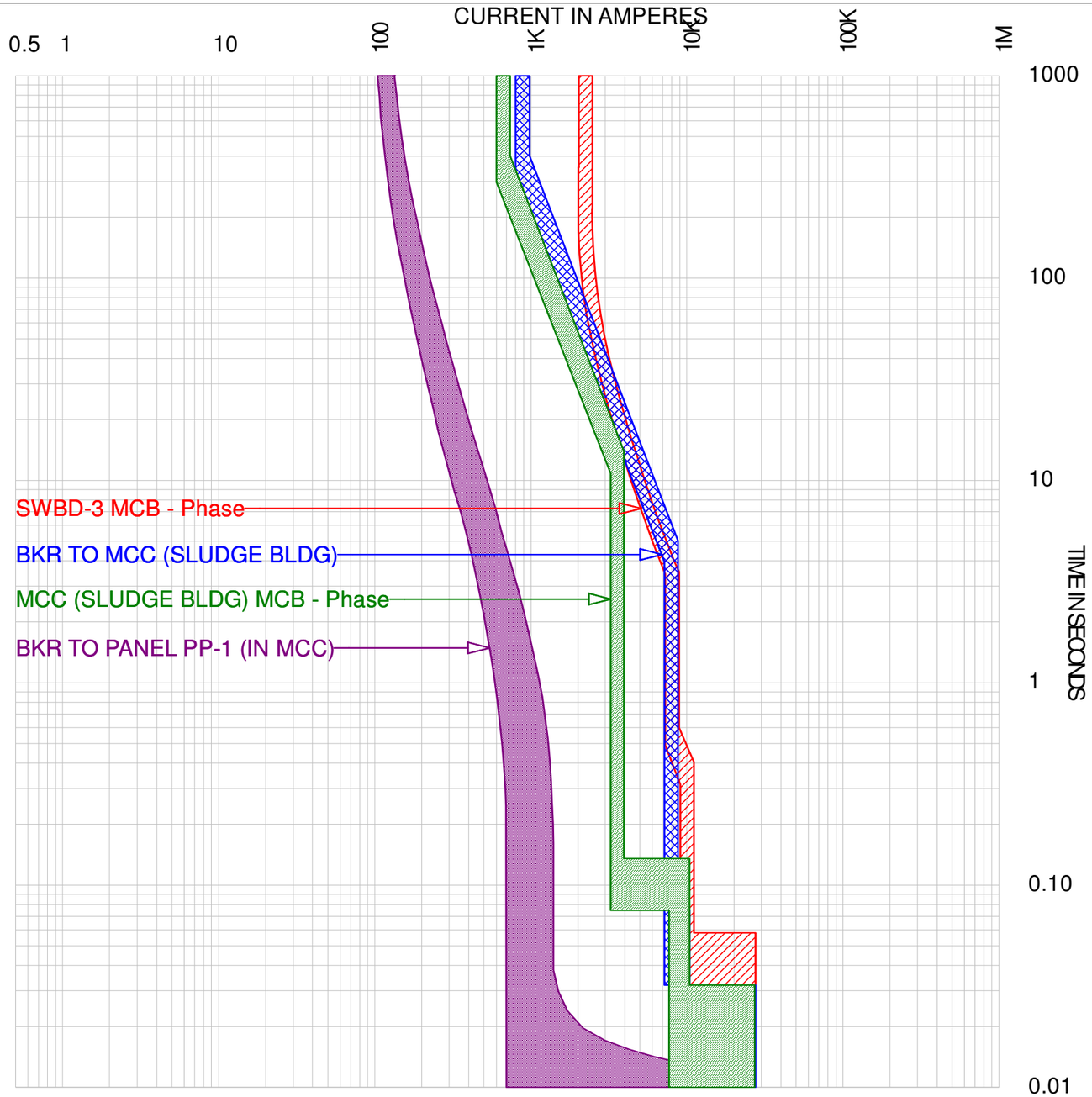


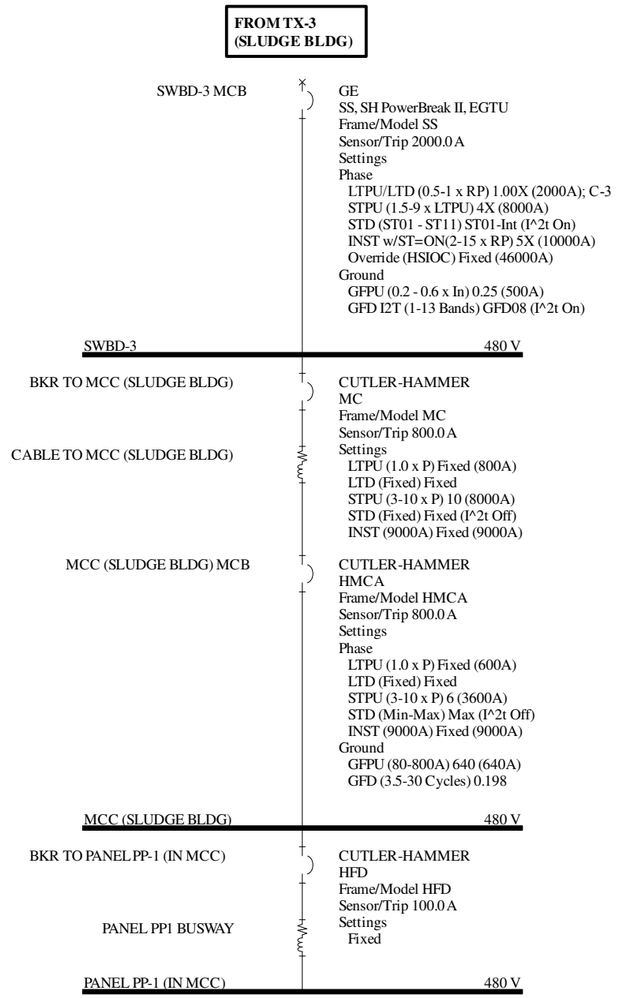
Hampton Roads Sanitation District
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James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_MCC (DEWATERING BLDG)
Reference Voltage: 480V x 10


CURRENT IN AMPERES
0.5
1
10
100
1K
10K
1000
100
10
1
0.10
0.01
TIME IN SECONDS
SWBD-1 MCB - Phase
BKR TO PANELBOARD A
BKR TO MCC (SCUM BLDG)
BKR TO SCUM PUMP
SCUM PUMP

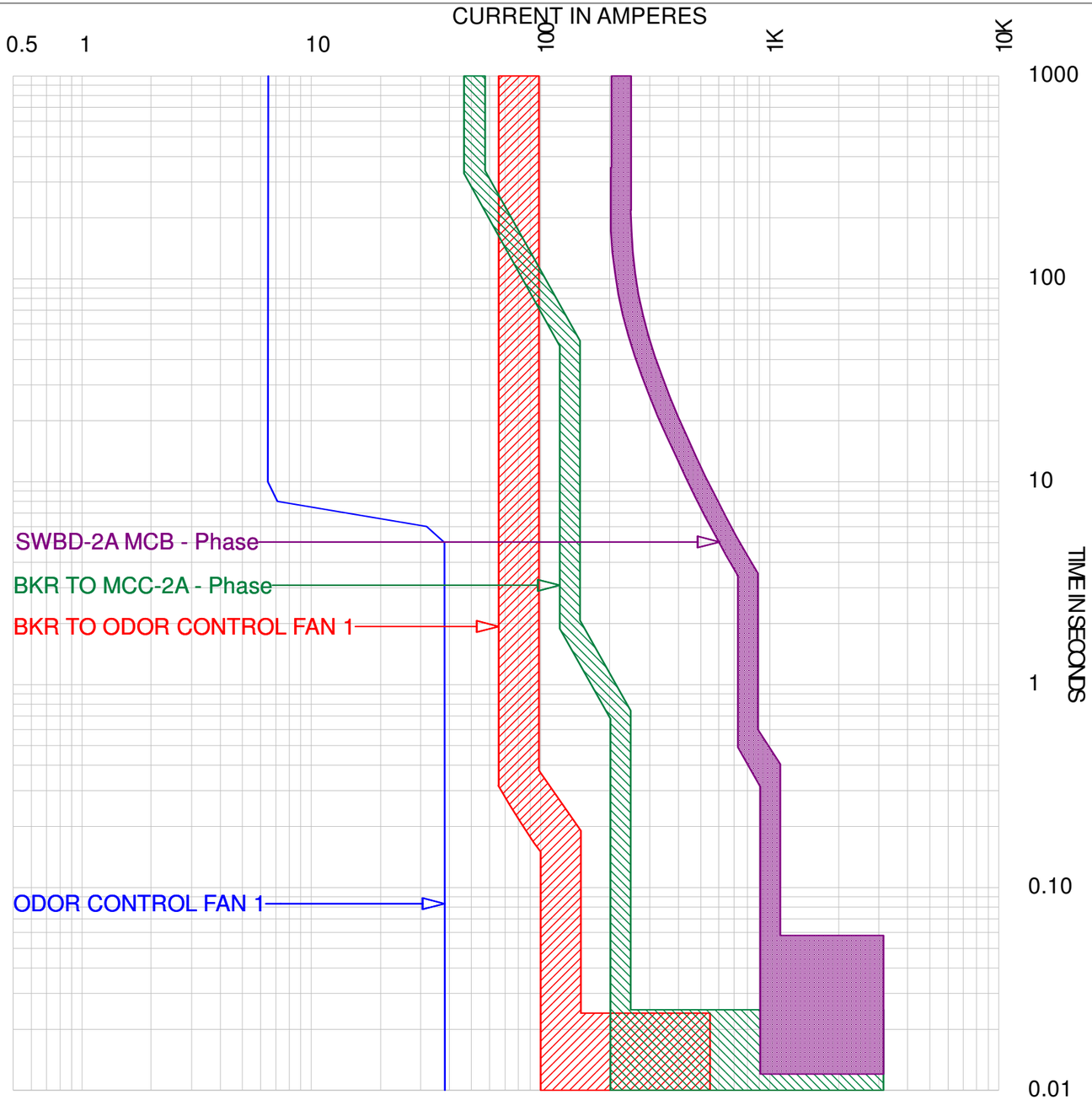

FROM TX-1
(MAIN BLDG)
SWBD-1 MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 0.75X (1500A); C-10
STPU (1.5-9 x LTPU) 4X (6000A)
STD (ST01 - ST11) ST01-Max (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)
SWBD-1
480 V
CABLE TO MAIN MCC
MAIN MCC
480 V
BKR TO PANELBOARD A
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 225.0 A
Settings
Fixed
CABLE TO PANELBOARD A
PANELBOARD A
480 V
BKR TO MCC (SCUM BLDG)
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 70.0 A
Settings
Fixed
CABLE TO MCC (SCUM BLDG)
MCC (SCUM BLDG)
480 V
BKR TO SCUM PUMP
SIEMENS
ED6 Sentron, 2 & 3-Pole
Frame/Model ED6
Sensor/Trip 15.0 A
Settings
Thermal Curve (Fixed)
INST Fixed (550A)
SCUM PUMP





Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_MCC (SLUDGE BLDG)
Reference Voltage: 480V x 1



FROM TX-2
(AERATION BLOWERS BLDG)

SWBD-2A MCB

GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 1.00X (2000A); C-3
STPU (1.5-9 x LTPU) 4X (8000A)
STD (ST01 - ST11) ST01-Int (I^2t On)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)

SWBD-2A — 480 V

BKR TO MCC-2A

GE
SG, MVT Plus/PM
Frame/Model SGLB
Sensor/Trip 600.0 A
Settings
Phase
LTPU (0.5-1.0 x P) 1 (450A)
LTD (1-3) 3
STPU (1.5 -9 x LTPU) 3 (1350A)
STD (1-4) 3 (I^2t On)
INST (1.5-10 x P) 5 (2250A)
Ground
GFPU (0.2-1.0 x S) 0.4 (240A)
GFD (1-4) 2 (I^2t On)

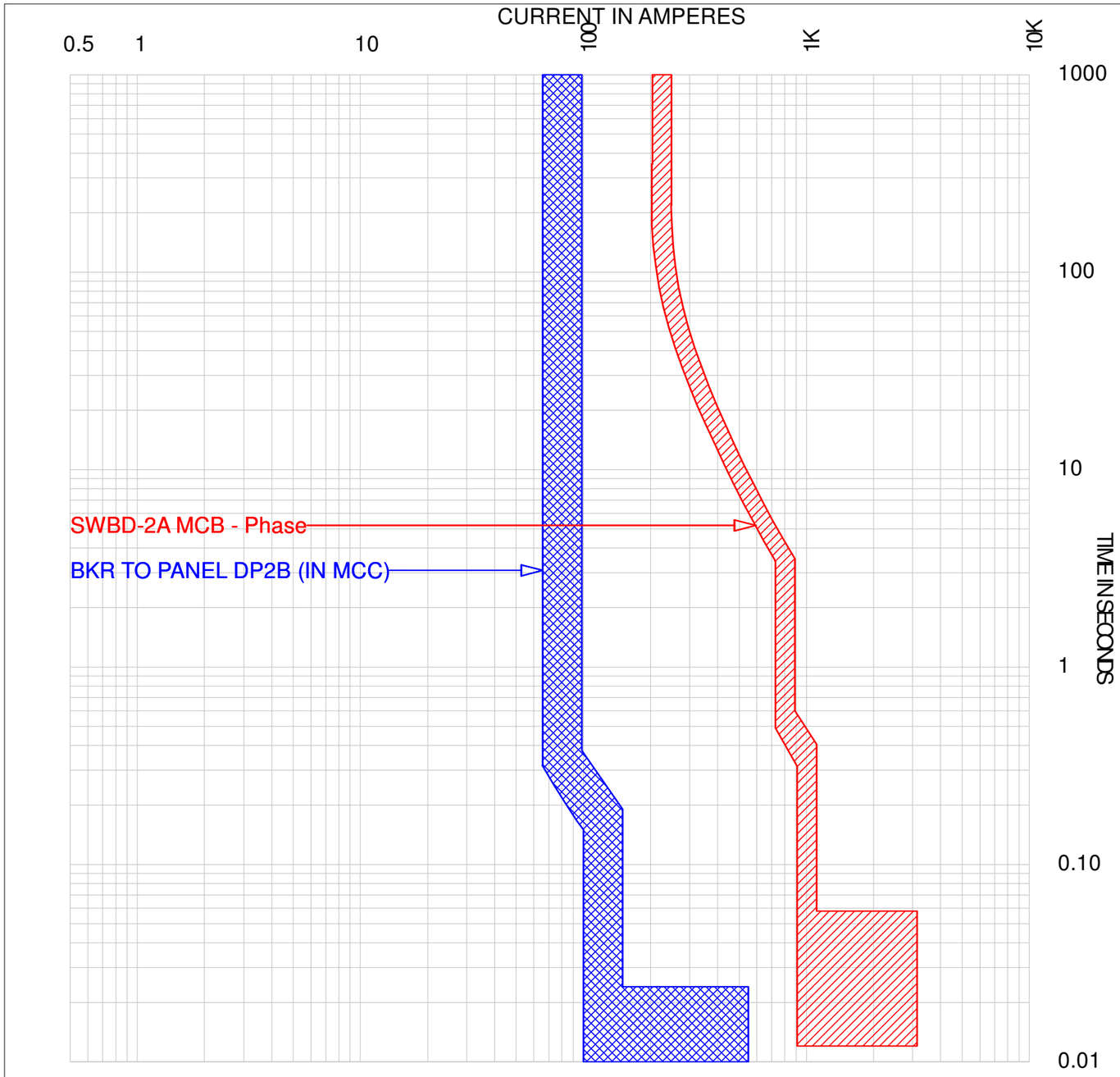
CABLE TO MCC-2A

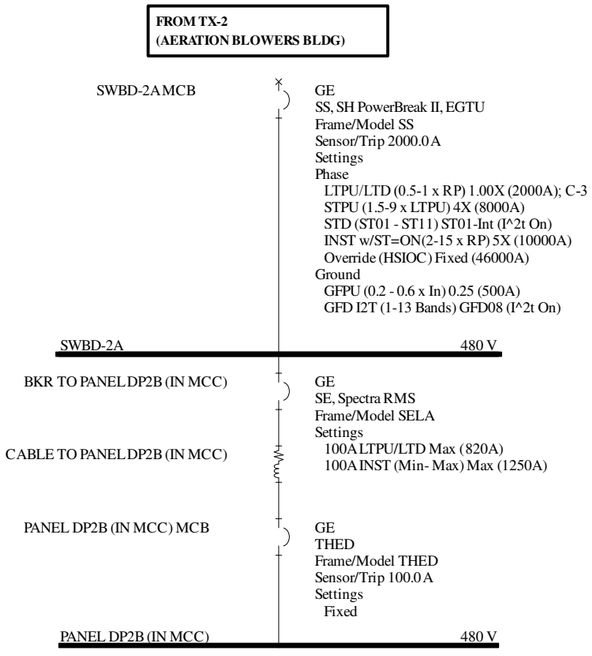
MCC-2A — 480 V

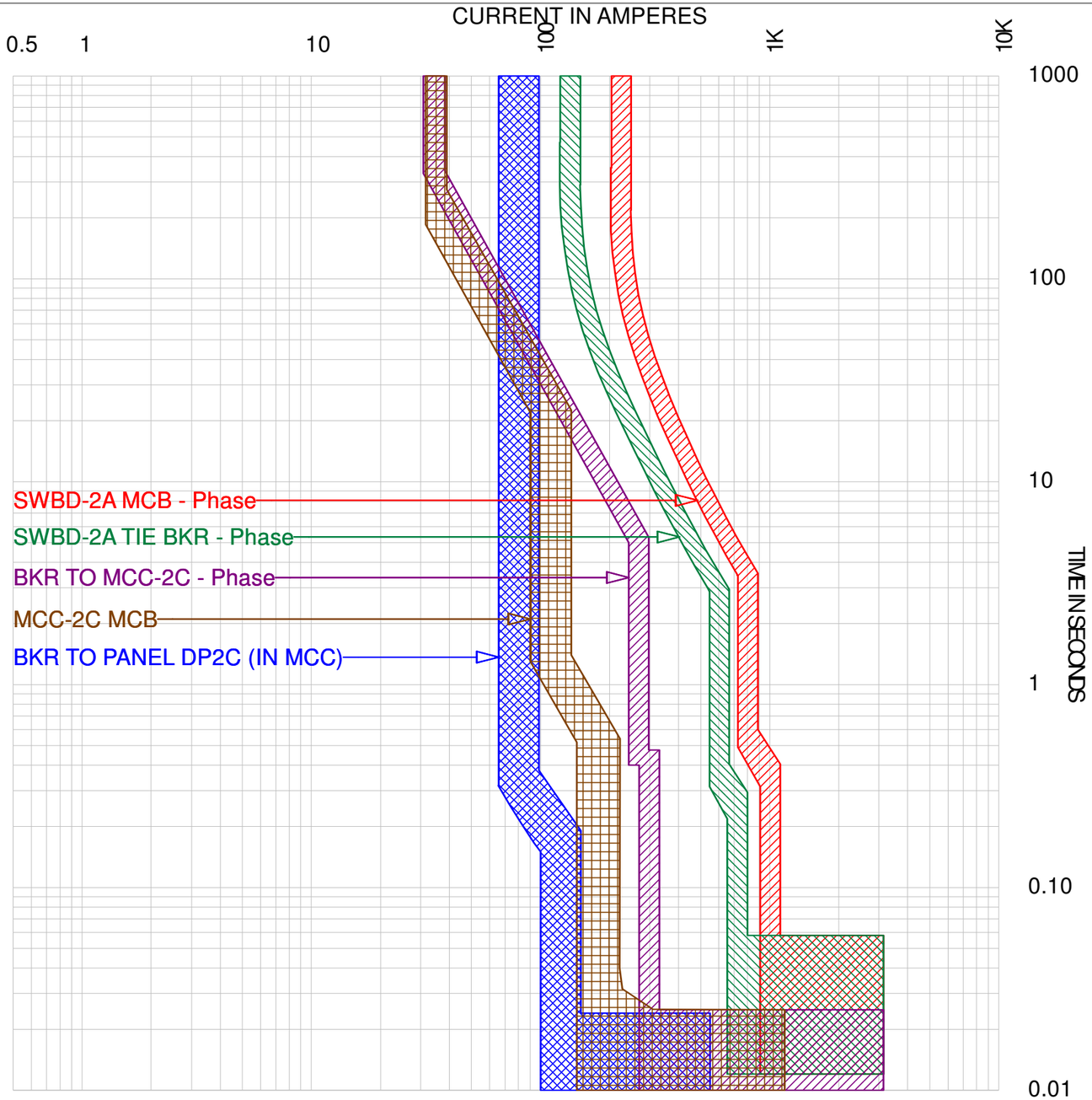
BKR TO ODOR CONTROL FAN 1

GE
SE, Spectra RMS
Frame/Model SELA
Settings
100A LTPU/LTD Max (820A)
100A INST (Min- Max) Max (1250A)

ODOR CONTROL FAN 1


CURRENT IN AMPERES
0.5
1
10
100
1K
10K
1000
100
10
1
0.10
0.01
TIME IN SECONDS
SWBD-2A MCB - Phase
BKR TO PANEL DP2B (IN MCC)


FROM TX-2
(AERATION BLOWERS BLDG)
SWBD-2A MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 1.00X (2000A); C-3
STPU (1.5-9 x LTPU) 4X (8000A)
STD (ST01 - ST11) ST01-Int (I^2t On)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)
SWBD-2A
480 V
BKR TO PANEL DP2B (IN MCC)
GE
SE, Spectra RMS
Frame/Model SELA
Settings
100A LTPU/LTD Max (820A)
100A INST (Min- Max) Max (1250A)
CABLE TO PANEL DP2B (IN MCC)
PANEL DP2B (IN MCC) MCB
GE
THED
Frame/Model THED
Sensor/Trip 100.0 A
Settings
Fixed
PANEL DP2B (IN MCC)
480 V



FROM TX-2
(AERATION BLOWERS BLDG)

SWBD-2A MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 1.00X (2000A); C-3
STPU (1.5-9 x LTPU) 4X (8000A)
STD (ST01 - ST11) ST01-Int (I^2t On)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)

SWBD-2A 480 V

SWBD-2A TIE BKR
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 1600.0 A
Settings

SWBD-2A BUSWAY
Phase
LTPU/LTD (0.5-1 x RP) 1.00X (1200A); C-4
STPU (1.5-9 x LTPU) 5X (6000A)
STD (ST01 - ST11) ST01-Int (I^2t On)
INST w/ST=ON(2-15 x RP) 6X (7200A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.2 (320A)
GFD I2T (1-13 Bands) GFD07 (I^2t On)

SWBD-2B 480 V

BKR TO MCC-2C
GE
SG, MVT Plus/PM
Frame/Model SGLB
Sensor/Trip 400.0 A
Settings

CABLE TO MCC-2C
Phase
LTPU (0.5-1.0 x P) 1 (300A)
LTD (1-3) 3
STPU (1.5 -9 x LTPU) 9 (2700A)
STD (1-4) 4 (I^2t On)
INST (1.5-10 x P) 10 (3000A)
Ground
GFPU (0.2-1.0 x S) 0.4 (160A)
GFD (1-4) 1 (I^2t On)

MCC-2C MCB
GE
SGLA, Spectra RMS
Frame/Model SGLA
Sensor/Trip 300.0 A
Settings
4

MCC-2C 480 V

BKR TO PANEL DP2C (IN MCC)
GE
SE, Spectra RMS
Frame/Model SELA
Settings

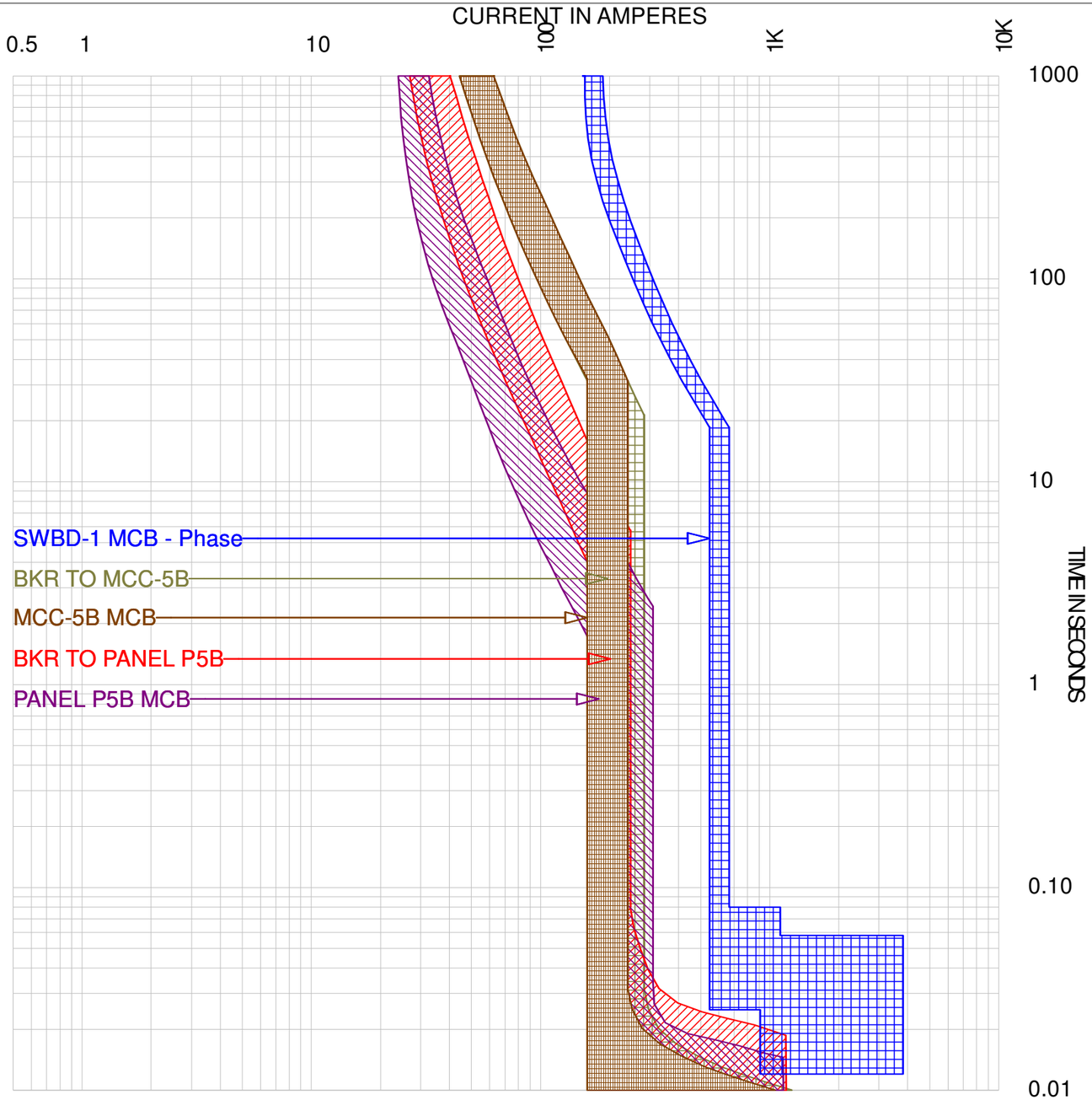
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100A LTPU/LTD Max (820A)
100A INST (Min- Max) Max (1250A)

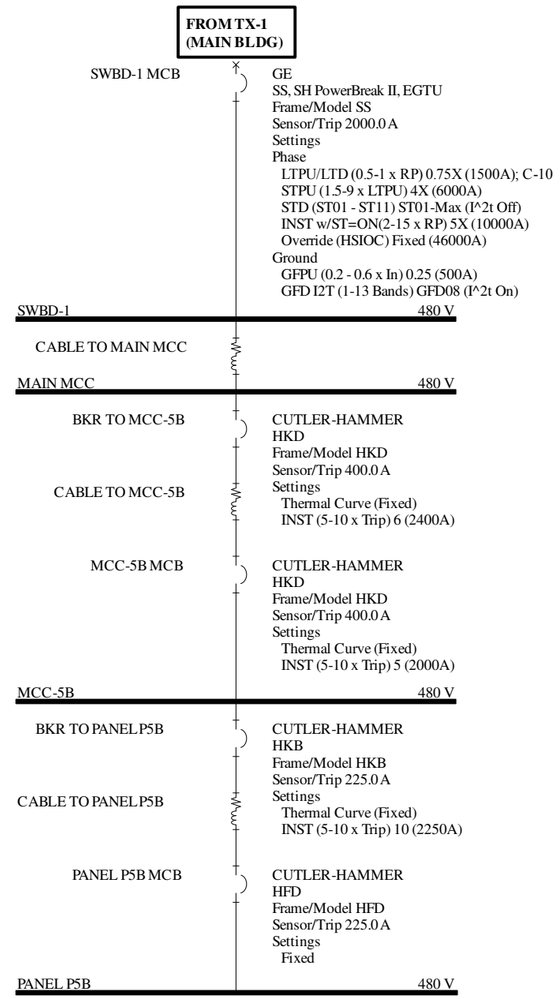
PANEL DP2C (IN MCC) MCB
GE
THED
Frame/Model THED
Sensor/Trip 100.0 A
Settings
Fixed

PANEL DP2C (IN MCC) 480 V

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James River Treatment Plant

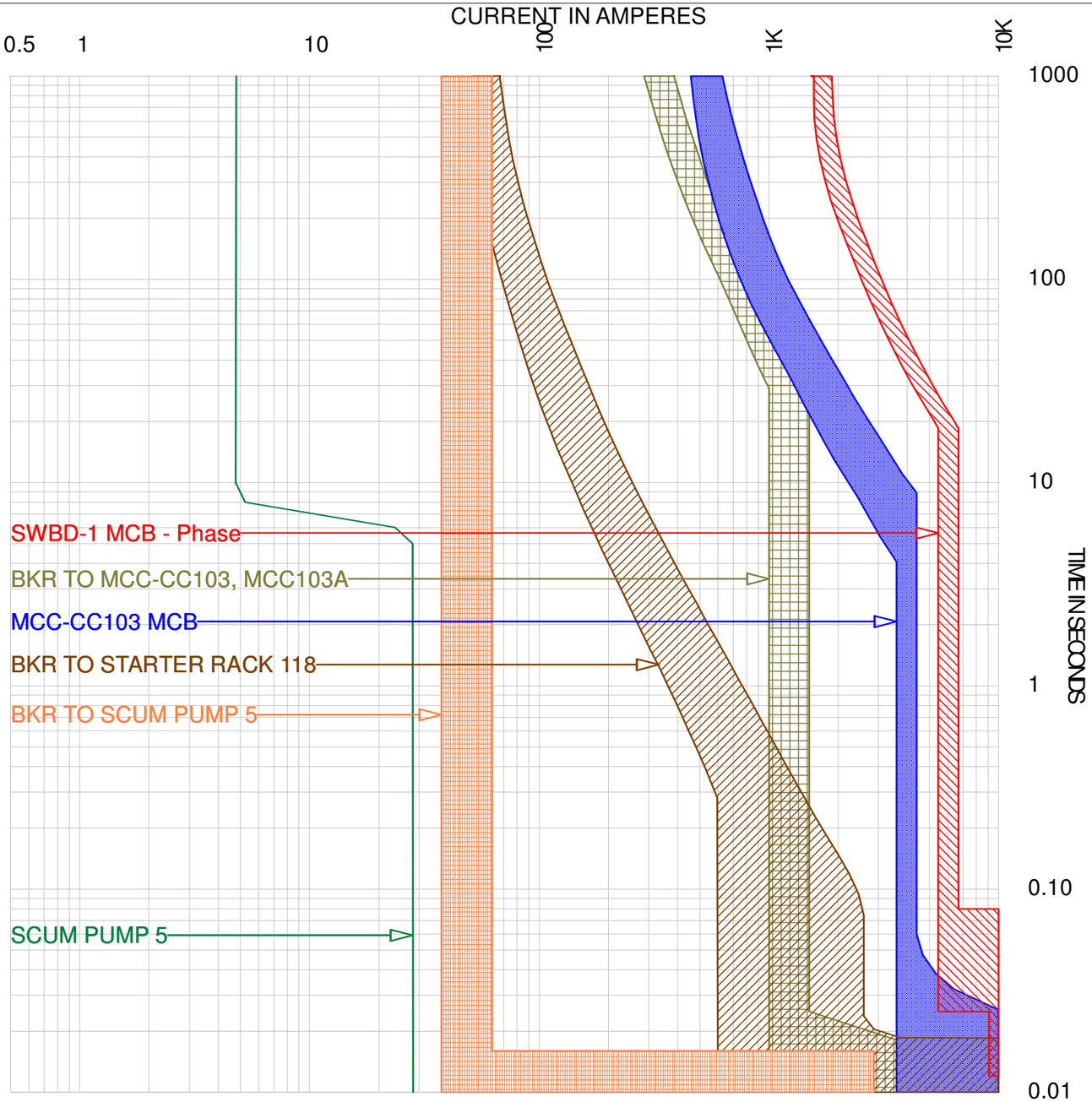
March 2015
SKM System Analysis, Inc.
TCC: TCC_MCC-2C (IFAS ELEC BLDG 2)
Reference Voltage: 480V x 10

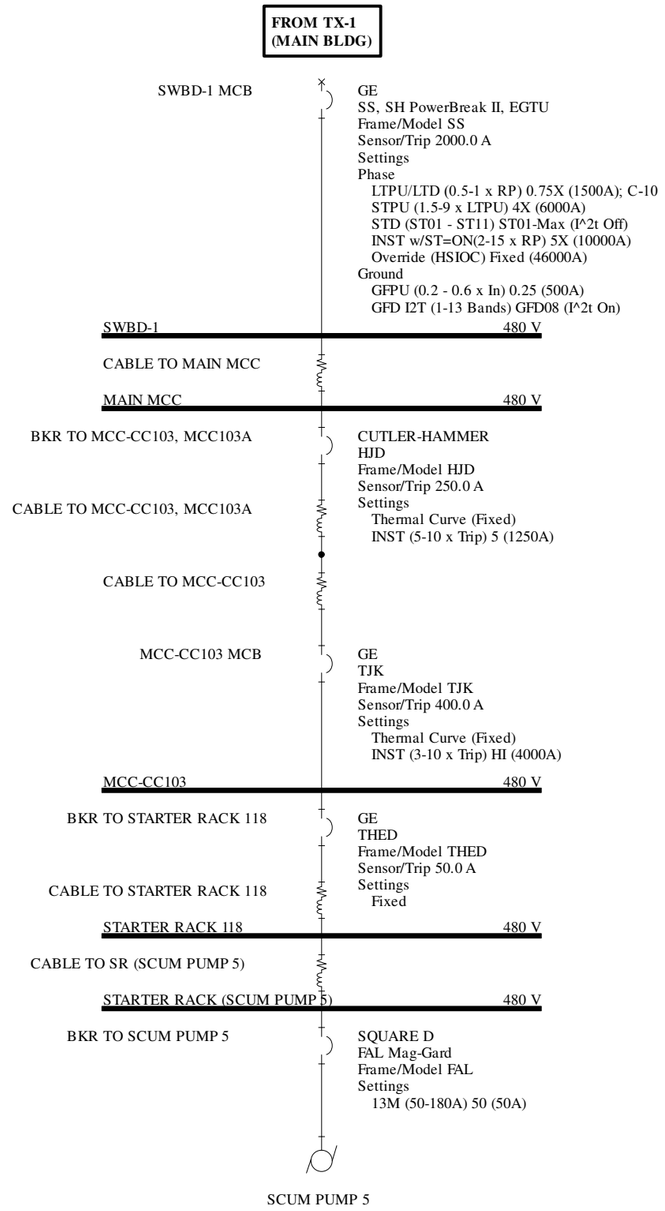




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Arc Flash Study
James River Treatment Plant

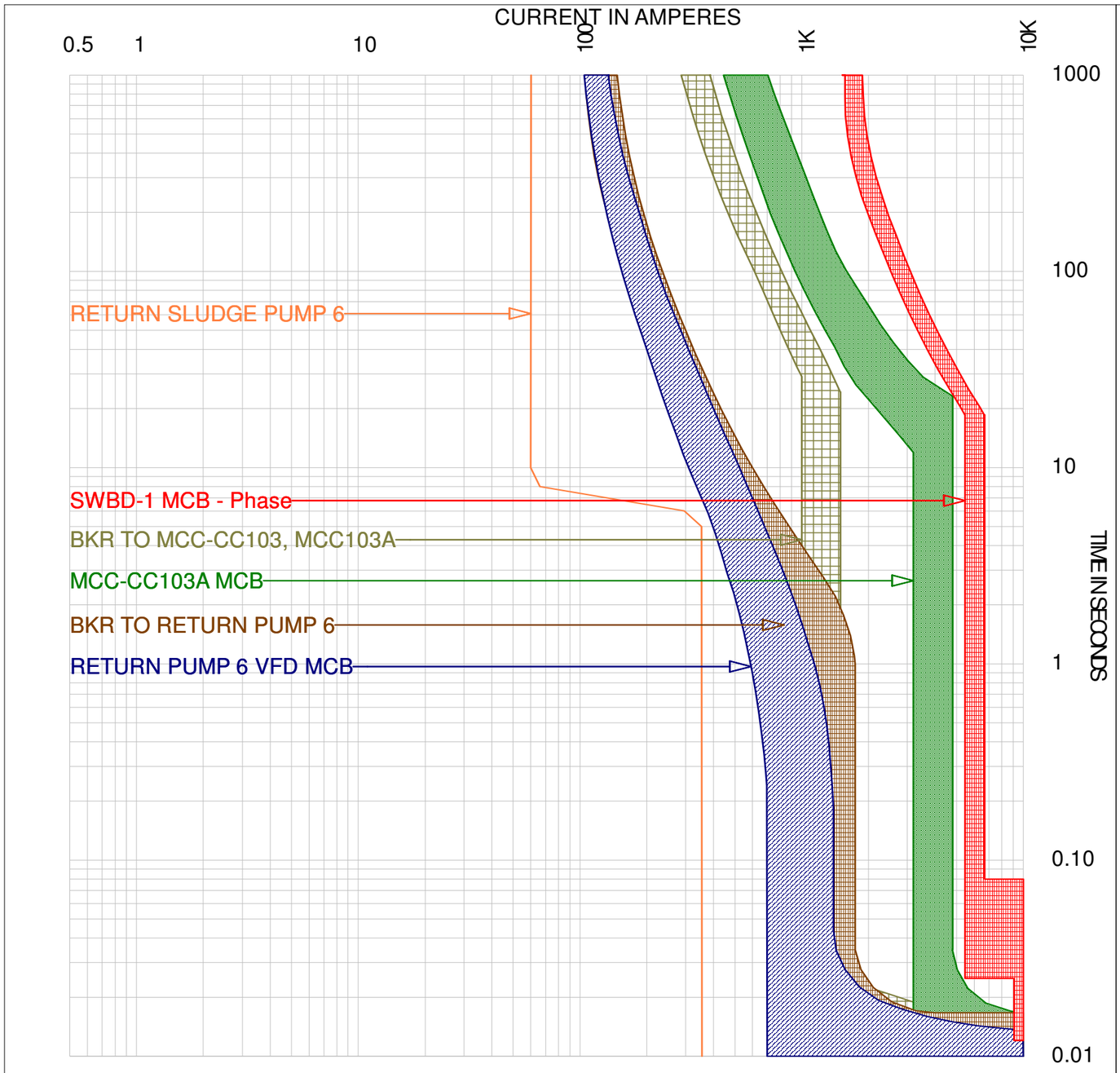
March 2015
SKM System Analysis, Inc.
TCC: TCC_MCC-5B (HEADWORKS)
Reference Voltage: 480V x 10

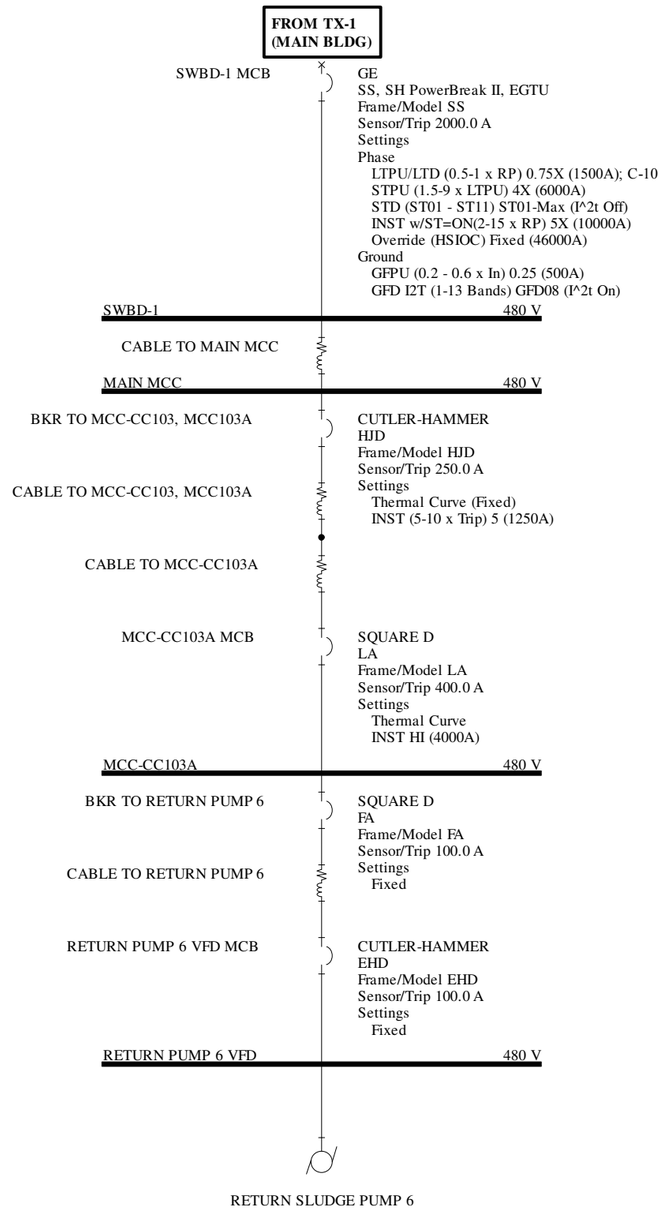




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

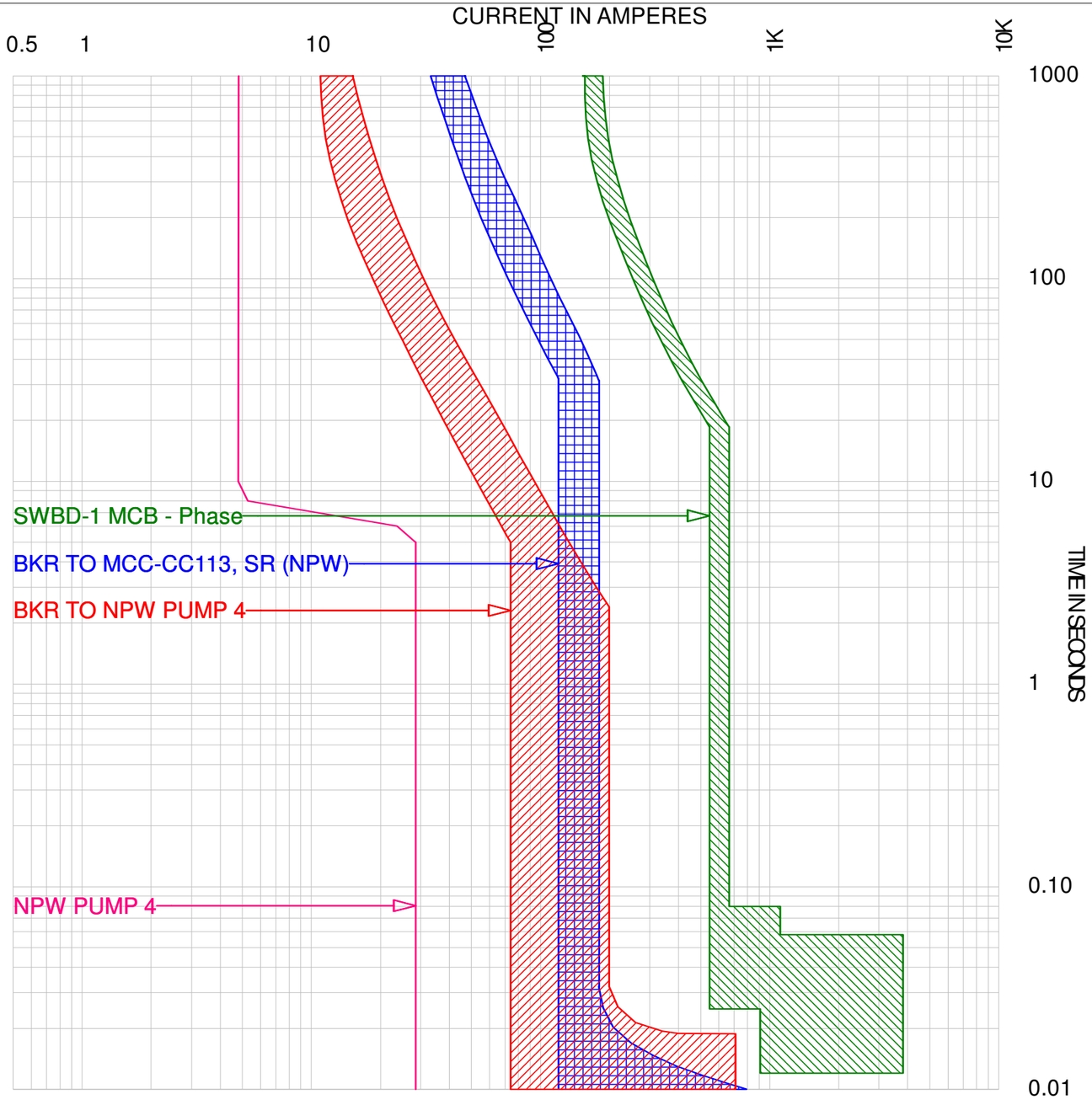
March 2015
SKM System Analysis, Inc.
TCC: TCC_MCC-CC103 (RETURN PS 1)
Reference Voltage: 480V x 1

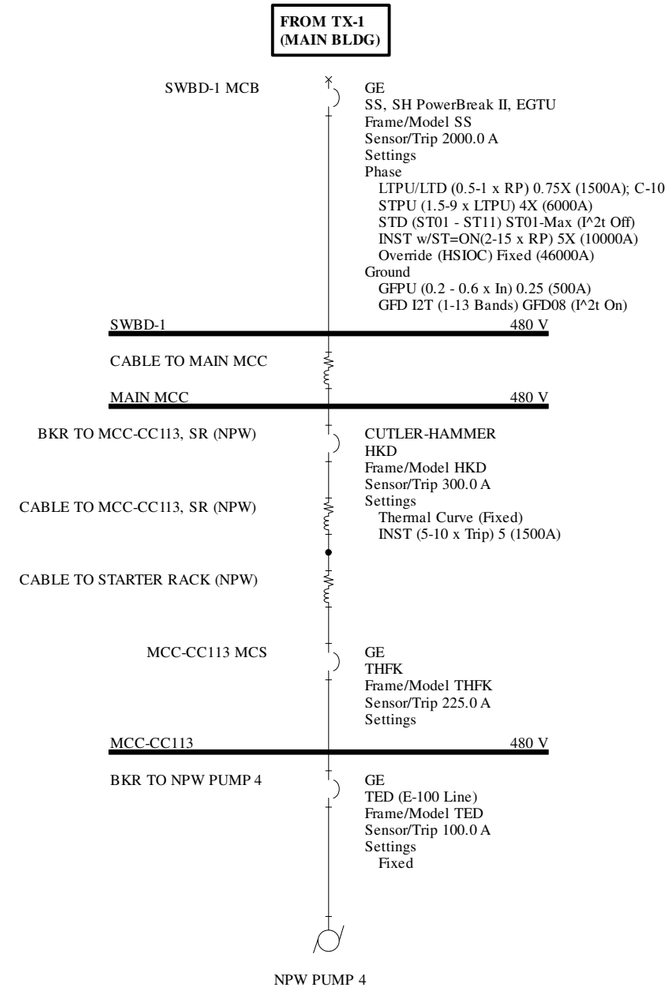




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

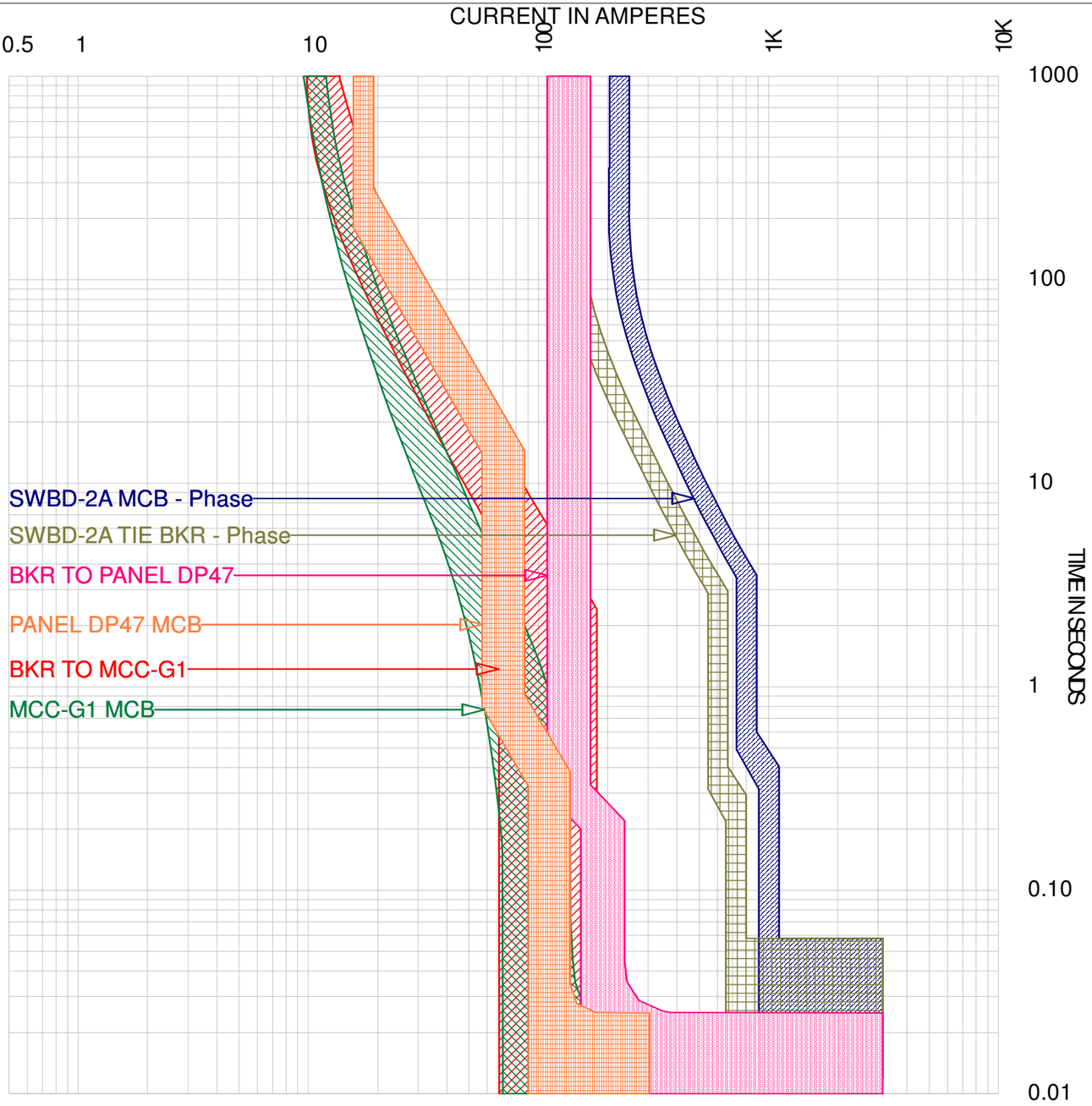
March 2015
SKM System Analysis, Inc.
TCC: TCC_MCC-CC103A (RETURN PS 2)
Reference Voltage: 480V x 1





Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_MCC-CC113 (NPW EFFL BLDG)
Reference Voltage: 480V x 10



FROM TX-2A
(AERATION BLOWERS BLDG)

SWBD-2A MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 1.00X (2000A); C-3
STPU (1.5-9 x LTPU) 4X (8000A)
STD (ST01 - ST11) ST01-Int (I^2t On)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)

SWBD-2A — 480 V

SWBD-2A TIE BKR
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 1600.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 1.00X (1200A); C-4
STPU (1.5-9 x LTPU) 5X (6000A)
STD (ST01 - ST11) ST01-Int (I^2t On)
INST w/ST=ON(2-15 x RP) 6X (7200A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.2 (320A)
GFD I2T (1-13 Bands) GFD07 (I^2t On)

SWBD-2B — 480 V

BKR TO PANEL DP47
GE
SE, Spectra RMS Mag-Break
Frame/Model SELA
Sensor/Trip 150.0 A
Settings
MAX

CABLE TO PANEL DP47

PANEL DP47 MCB
GE
SFHA, Spectra RMS
Frame/Model SFHA
Sensor/Trip 150.0 A
Settings
5

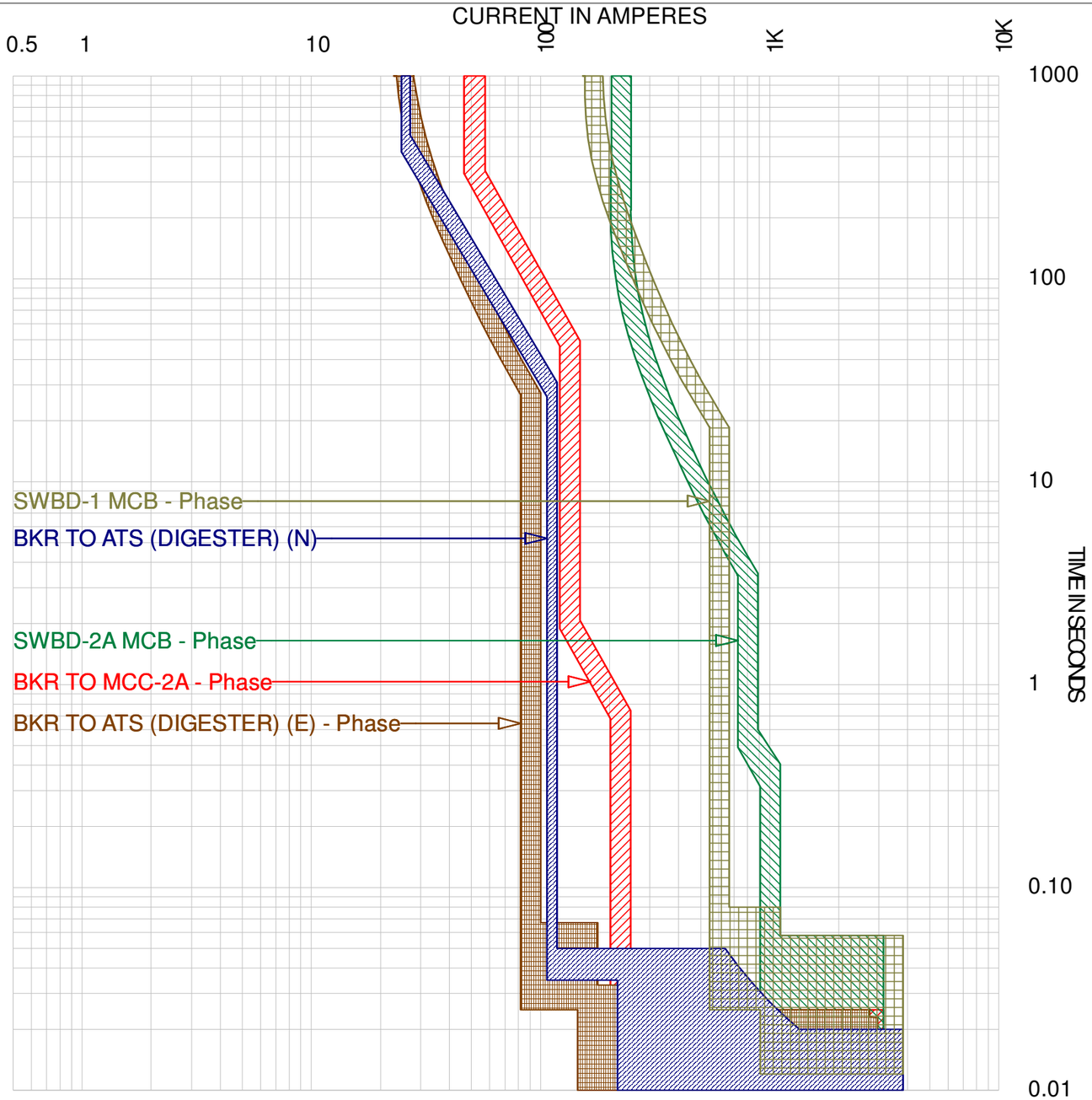
PANEL DP47 — 480 V

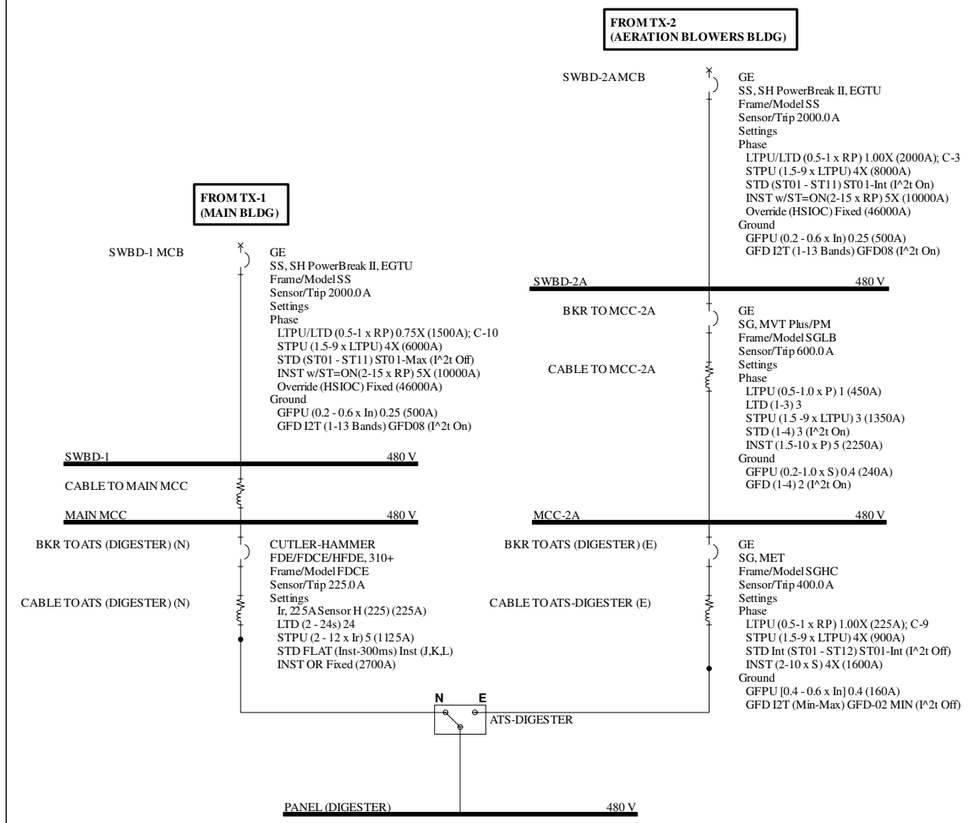
BKR TO MCC-G1
GE
THED
Frame/Model THED
Sensor/Trip 90.0 A
Settings
Fixed

CABLE TO MCC-G1

MCC-G1 MCB
CUTLER-HAMMER
FD
Frame/Model FD
Sensor/Trip 90.0 A
Settings
Fixed

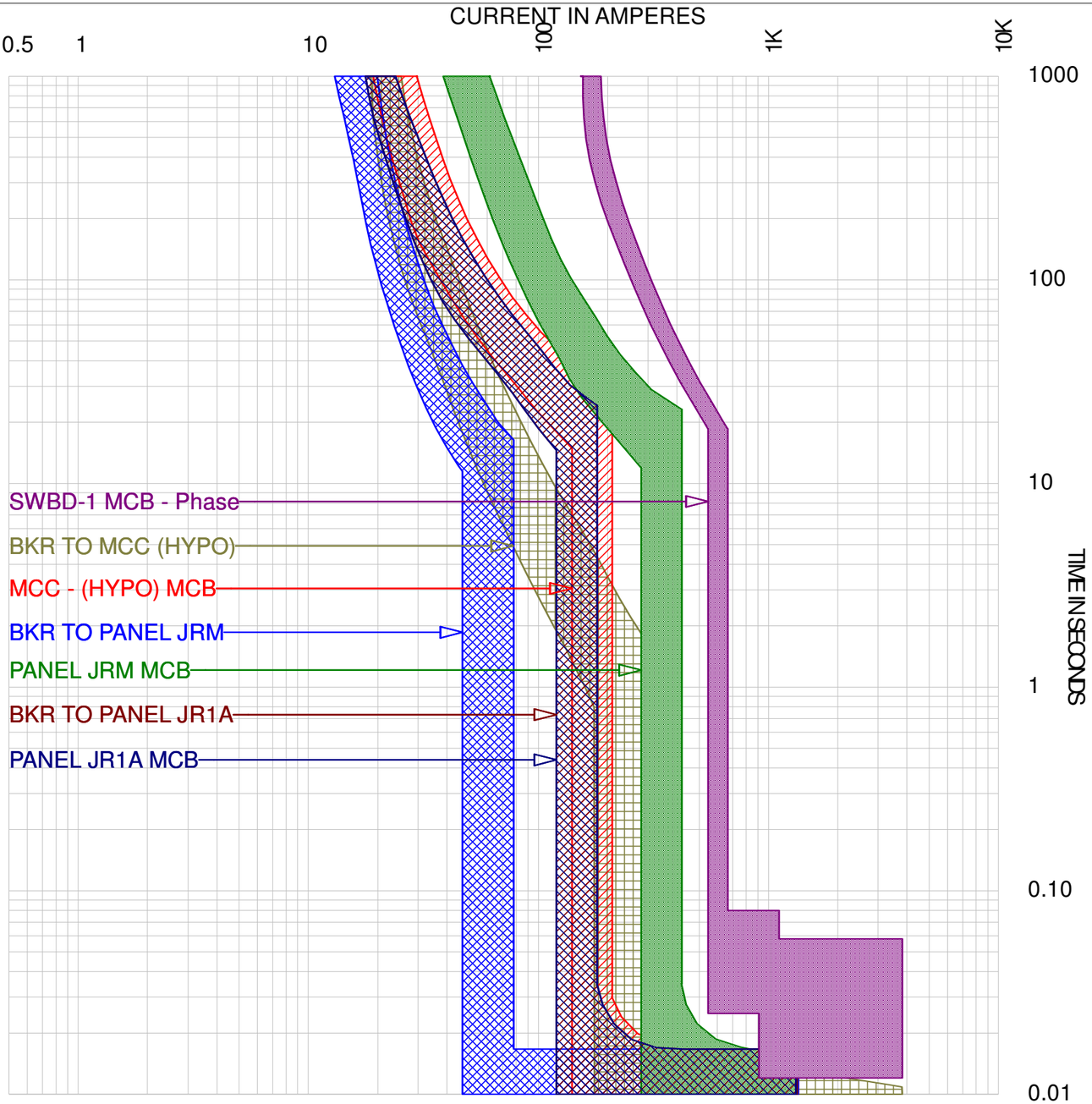
MCC-G1 — 480 V





Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_PANEL (DIGESTER)
Reference Voltage: 480V x 10



FROM TX-1 (MAIN BLDG)

SWBD-1 MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 0.75X (1500A); C-10
STPU (1.5-9 x LTPU) 4X (6000A)
STD (ST01 - ST11) ST01-Max (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)

SWBD-1 480 V

CABLE TO MAIN MCC

MAIN MCC 480 V

BKR TO MCC (HYPO)
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 175.0 A
Settings
Fixed

CABLE TO MCC (HYPO)

MCC - (HYPO) MCB
SQUARE D
KH
Frame/Model KH
Sensor/Trip 175.0 A
Settings
Thermal Curve
INST HI (1750A)

MCC (HYPO) 480 V

BKR TO PANEL JRM
SQUARE D
KC
Frame/Model KC
Sensor/Trip 125.0 A
Settings
Thermal Curve
INST LO (625A)

CABLE TO PANEL JRM

PANEL JRM MCB
SQUARE D
LA
Frame/Model LA
Sensor/Trip 350.0 A
Settings
Thermal Curve
INST HI (3500A)

PANEL JRM 480 V

BKR TO PANEL JR1A
SQUARE D
KA
Frame/Model KA
Sensor/Trip 150.0 A
Settings
Thermal Curve
INST HI (1500A)

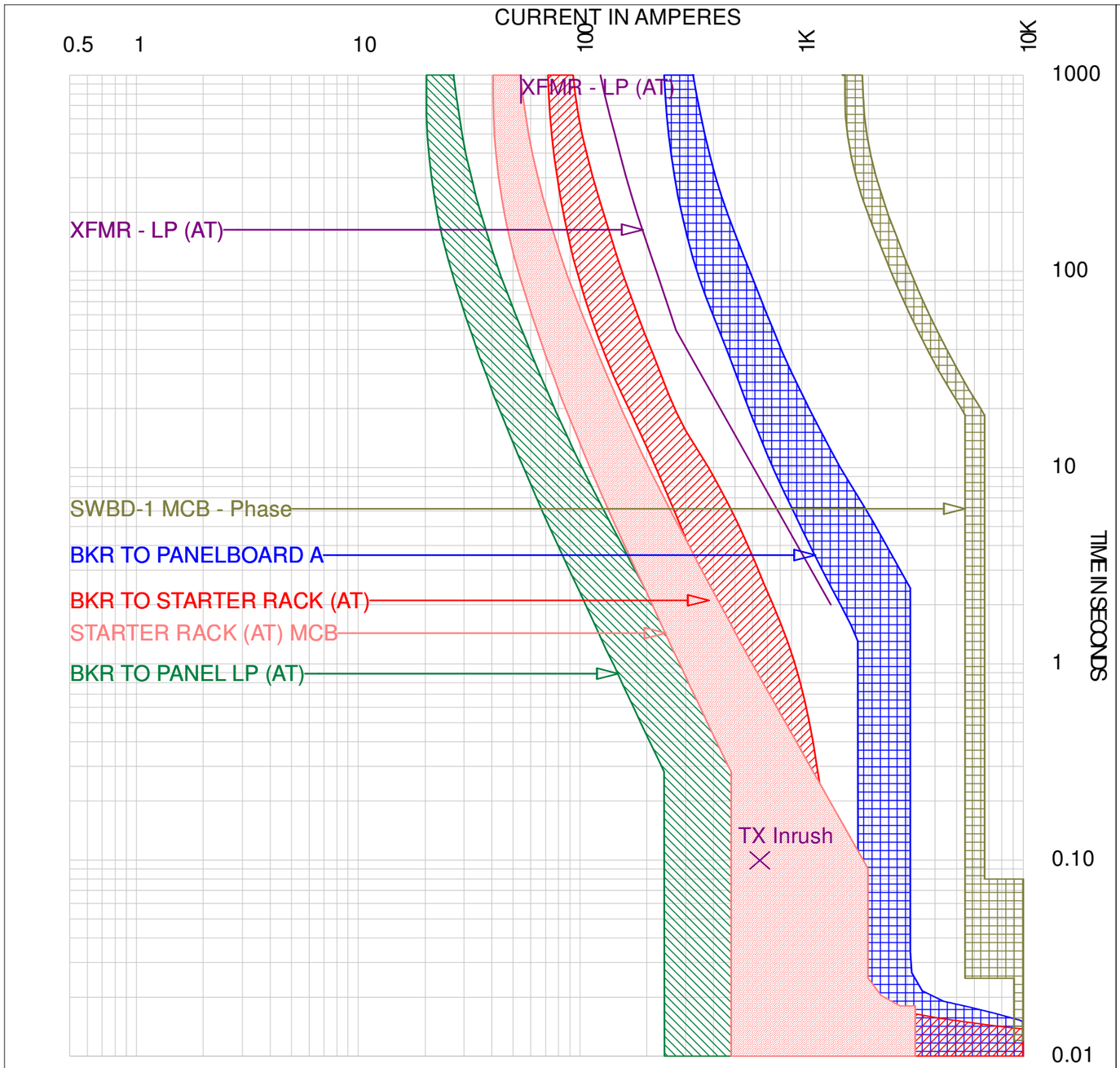
CABLE TO PANEL JR1A

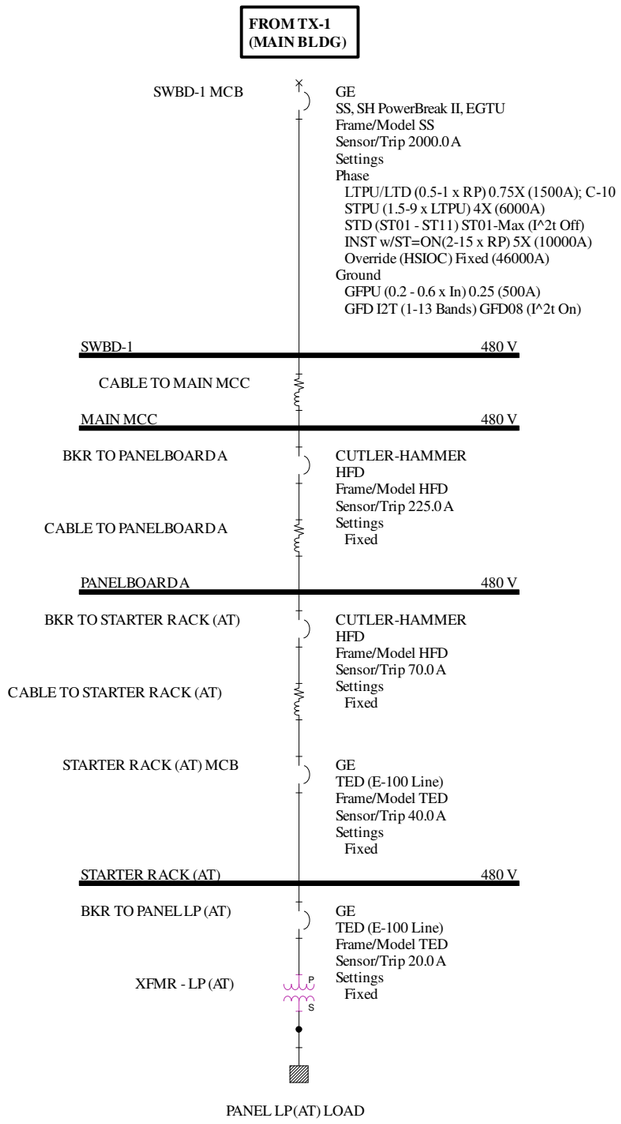
PANEL JR1A MCB
SQUARE D
KA
Frame/Model KA
Sensor/Trip 150.0 A
Settings
Thermal Curve
INST HI (1500A)

PANEL JR1A 480 V

Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

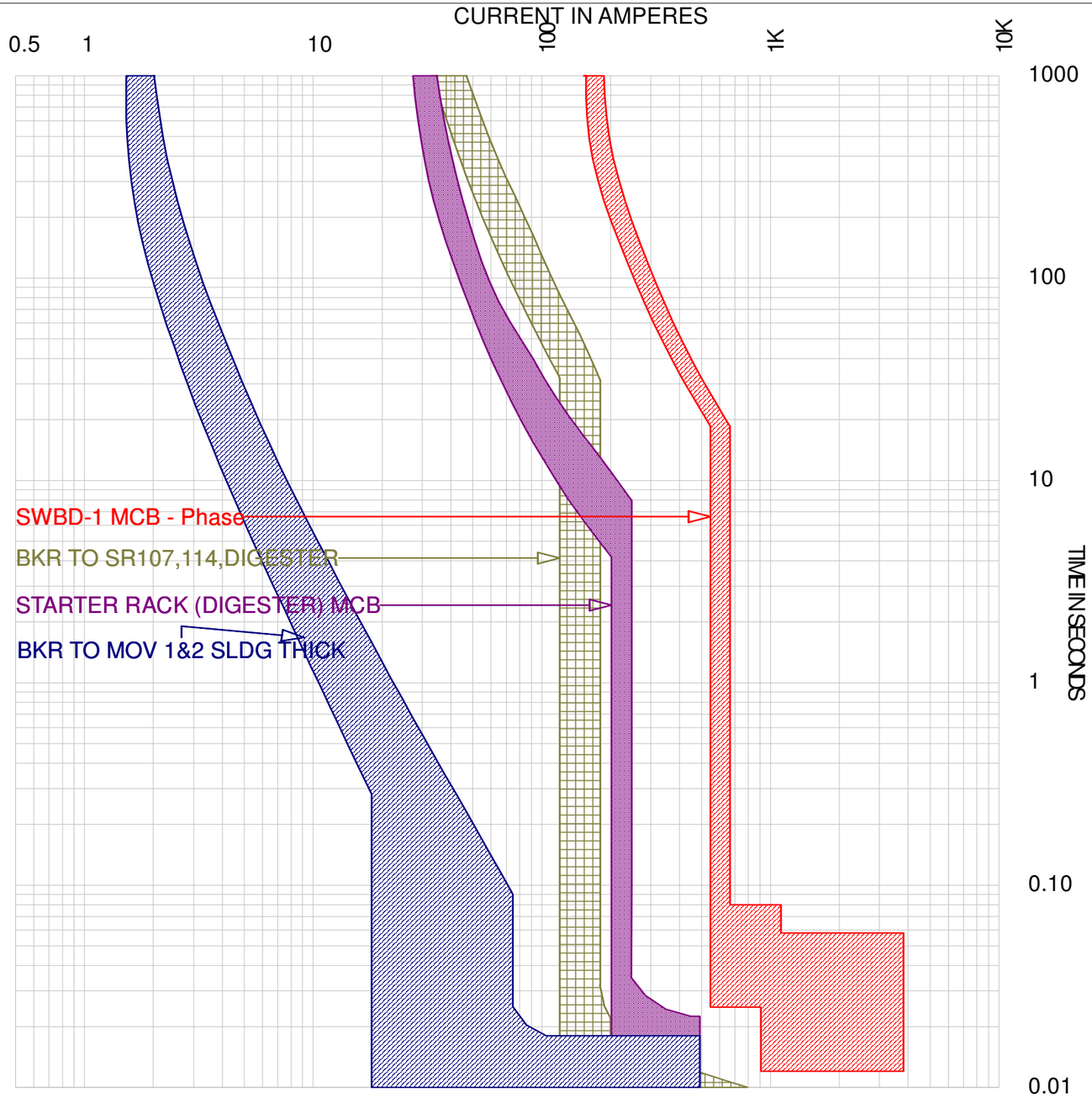
March 2015
SKM System Analysis, Inc.
TCC: TCC_PANEL JRM (HYPO BLDG)
Reference Voltage: 480V x 10

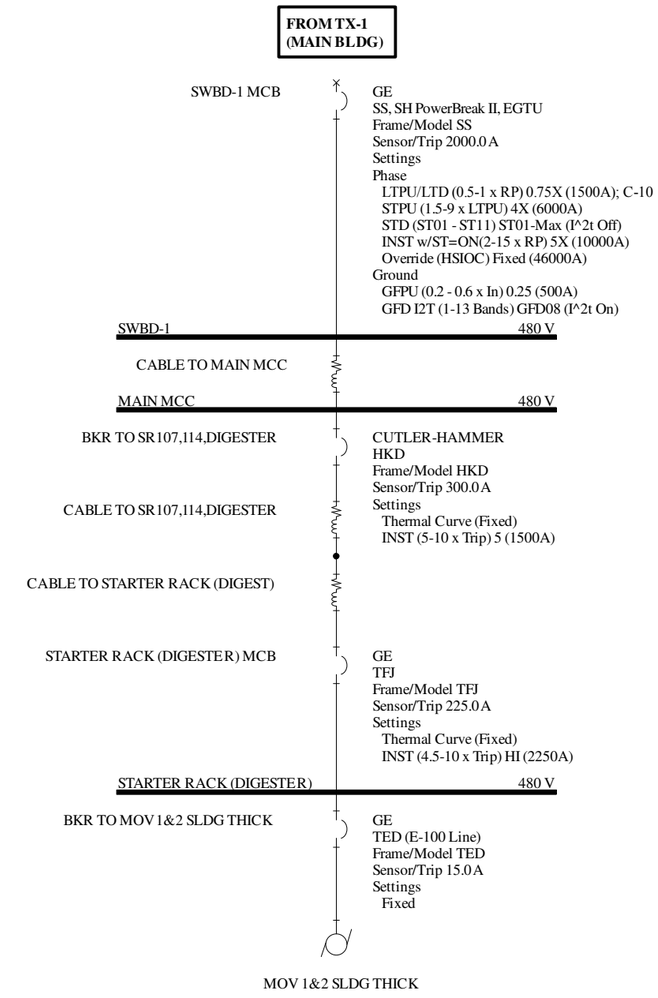




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

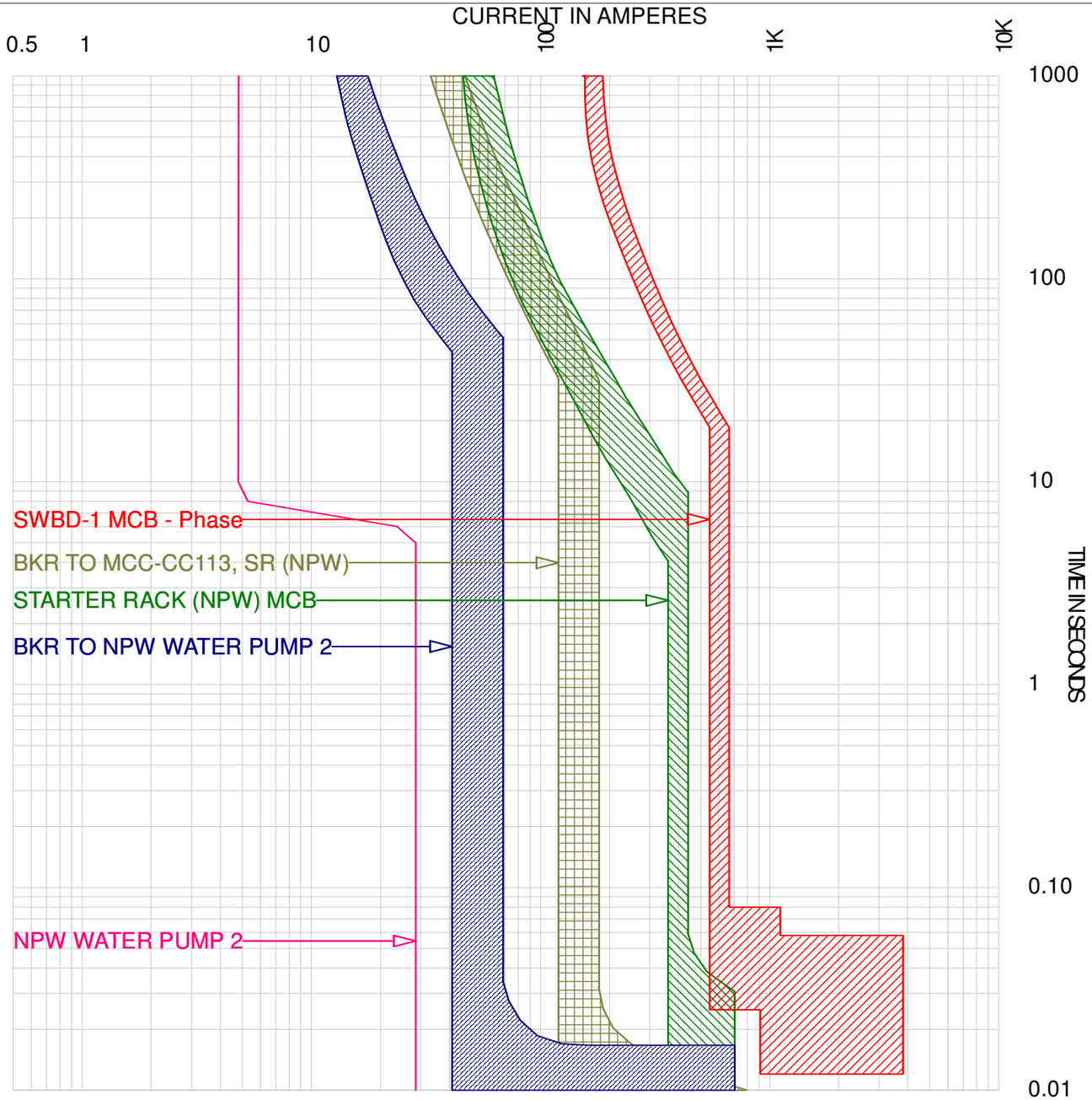
March 2015
SKM System Analysis, Inc.
TCC: TCC_STARTER RACK (AT)
Reference Voltage: 480V x 1

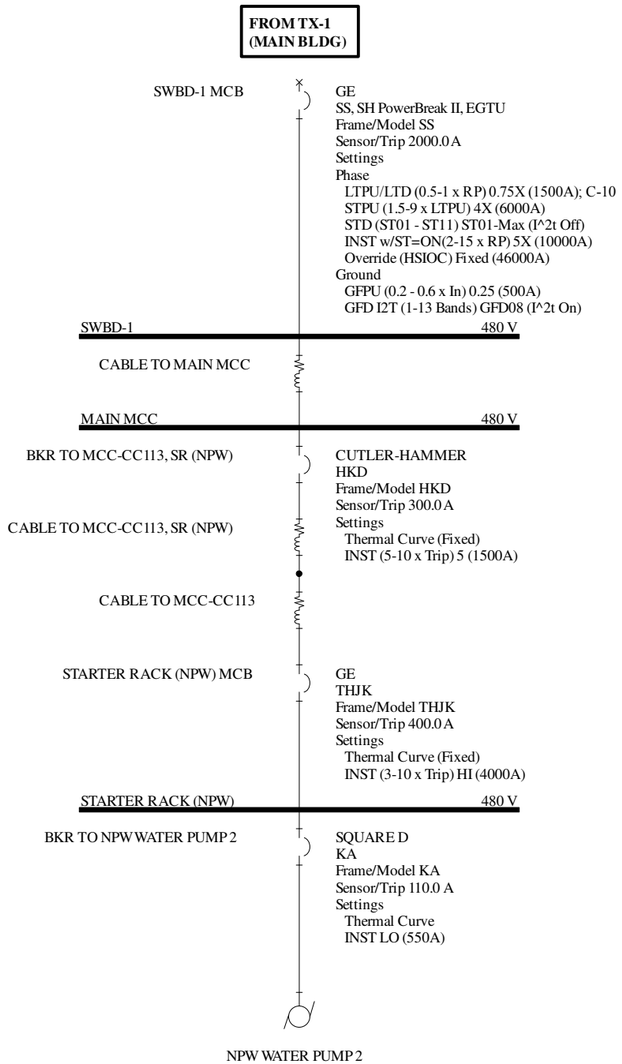




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

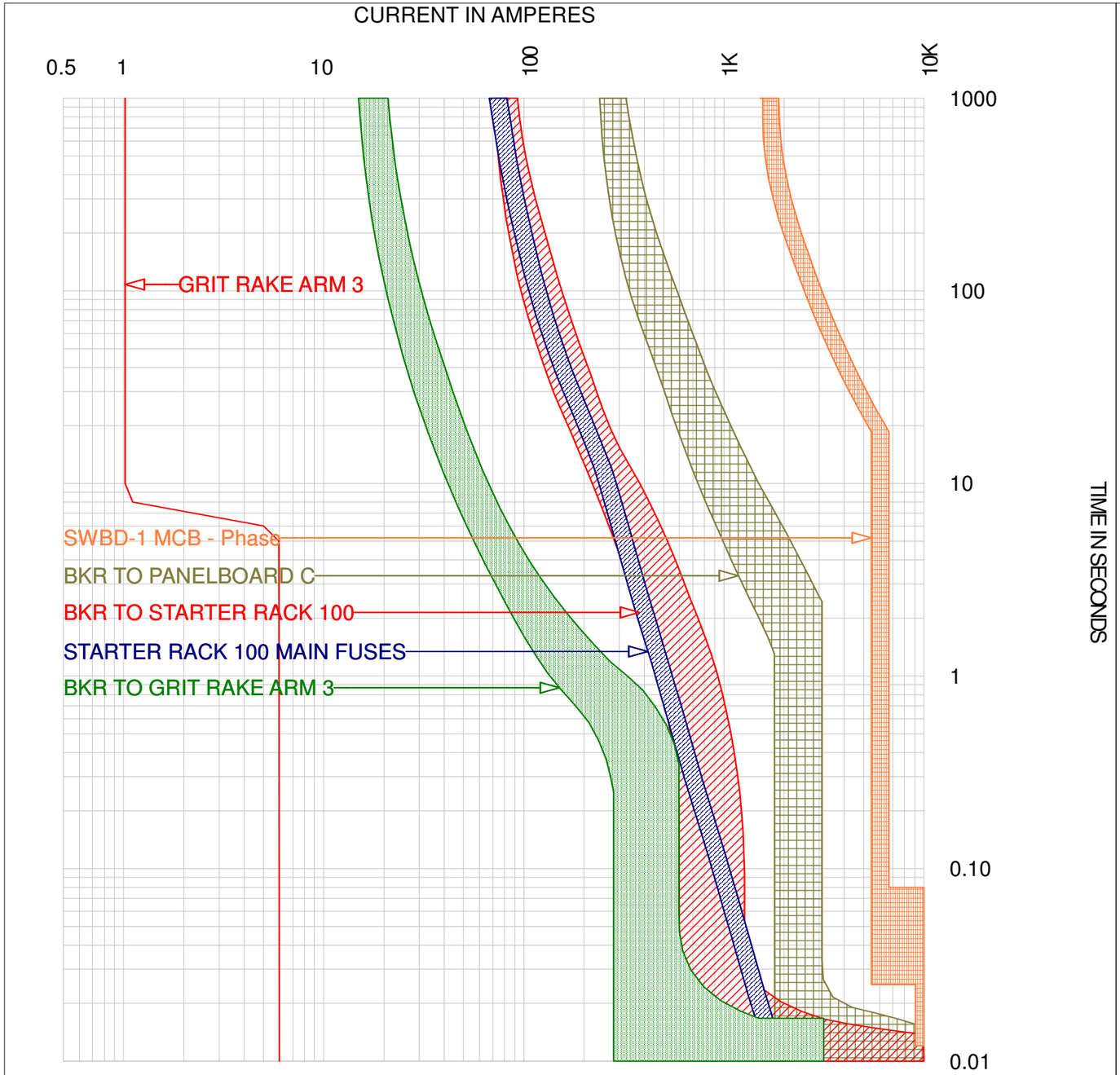
March 2015
SKM System Analysis, Inc.
TCC: TCC_STARTER RACK (DIGESTER BLDG)
Reference Voltage: 480V x 10

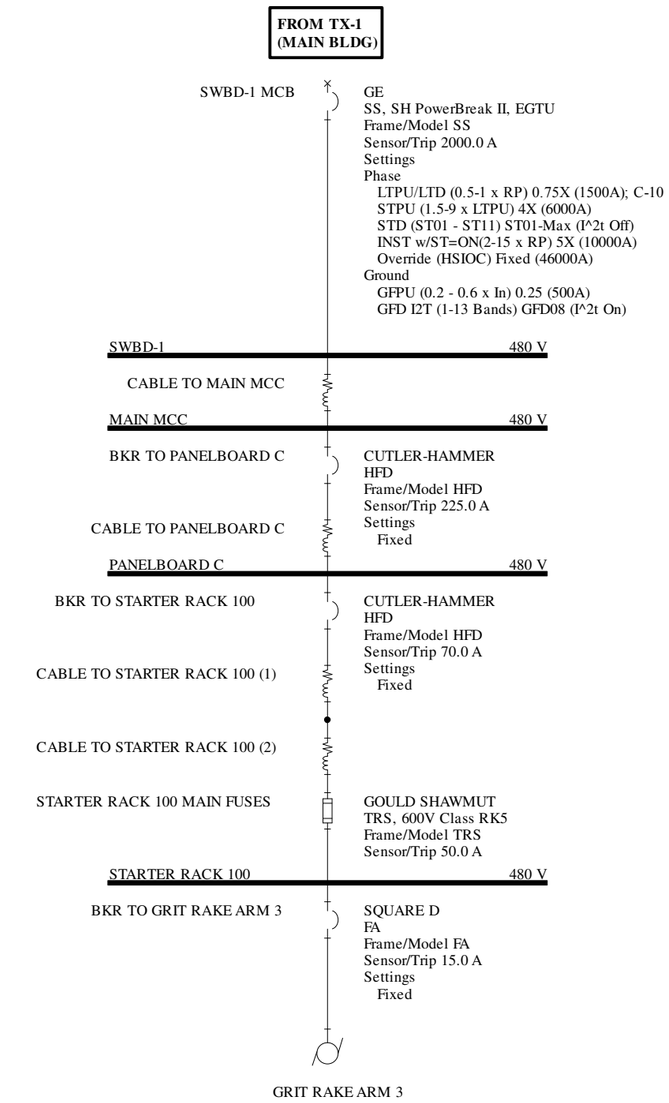




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

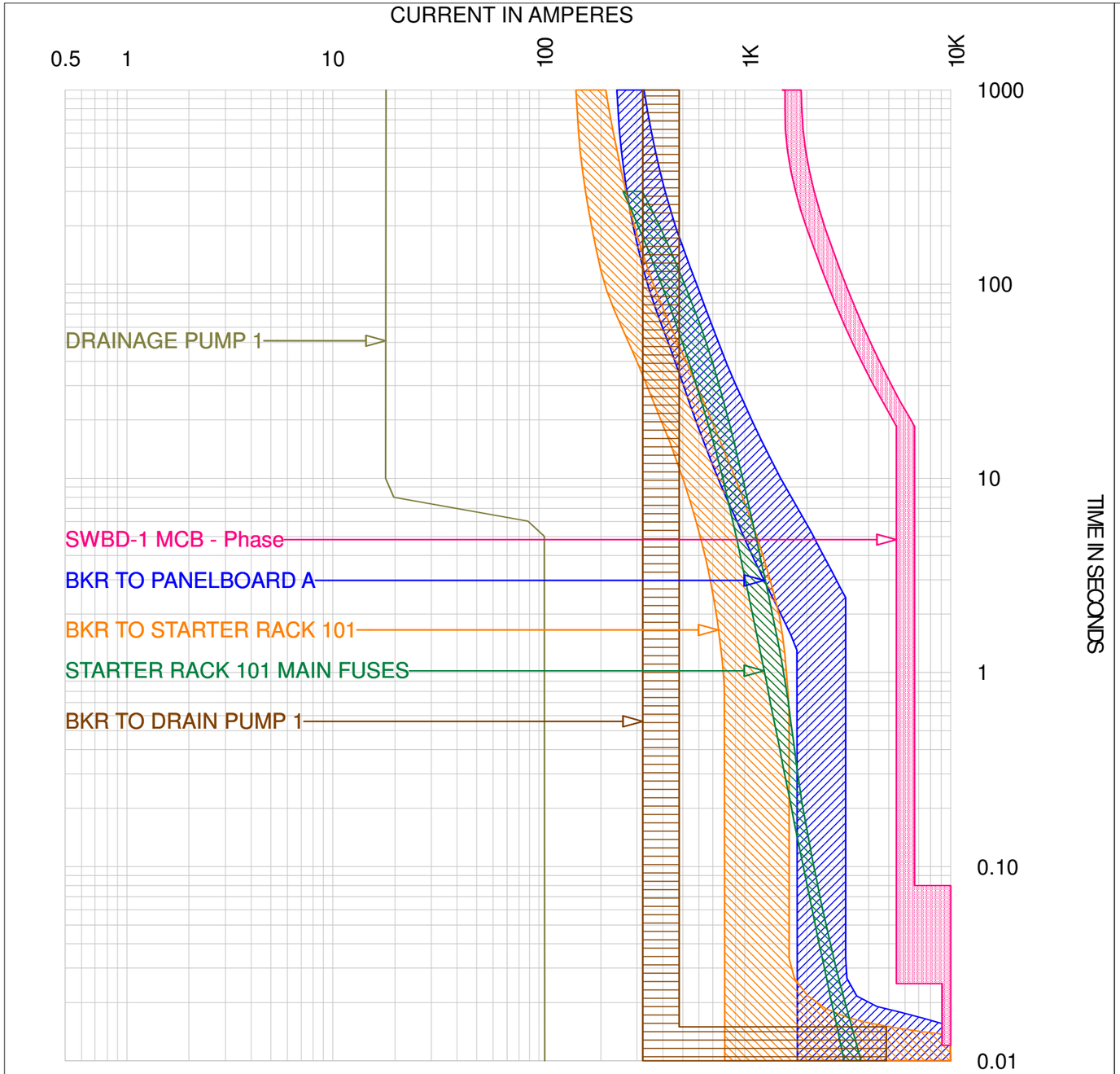
March 2015
SKM System Analysis, Inc.
TCC: TCC_STARTER RACK (NPW)
Reference Voltage: 480V x 10

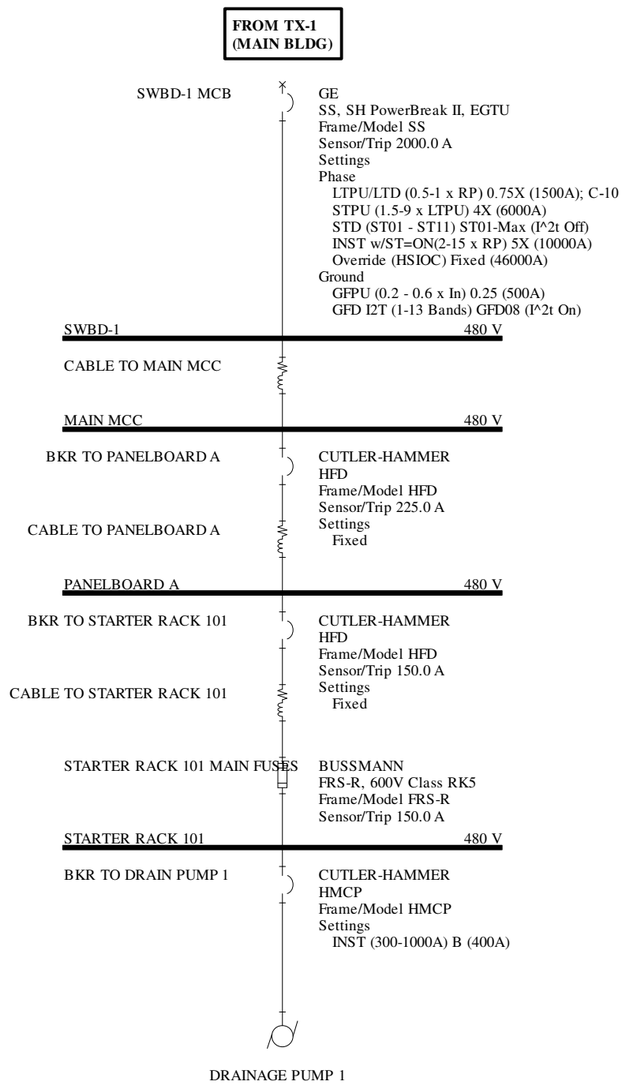


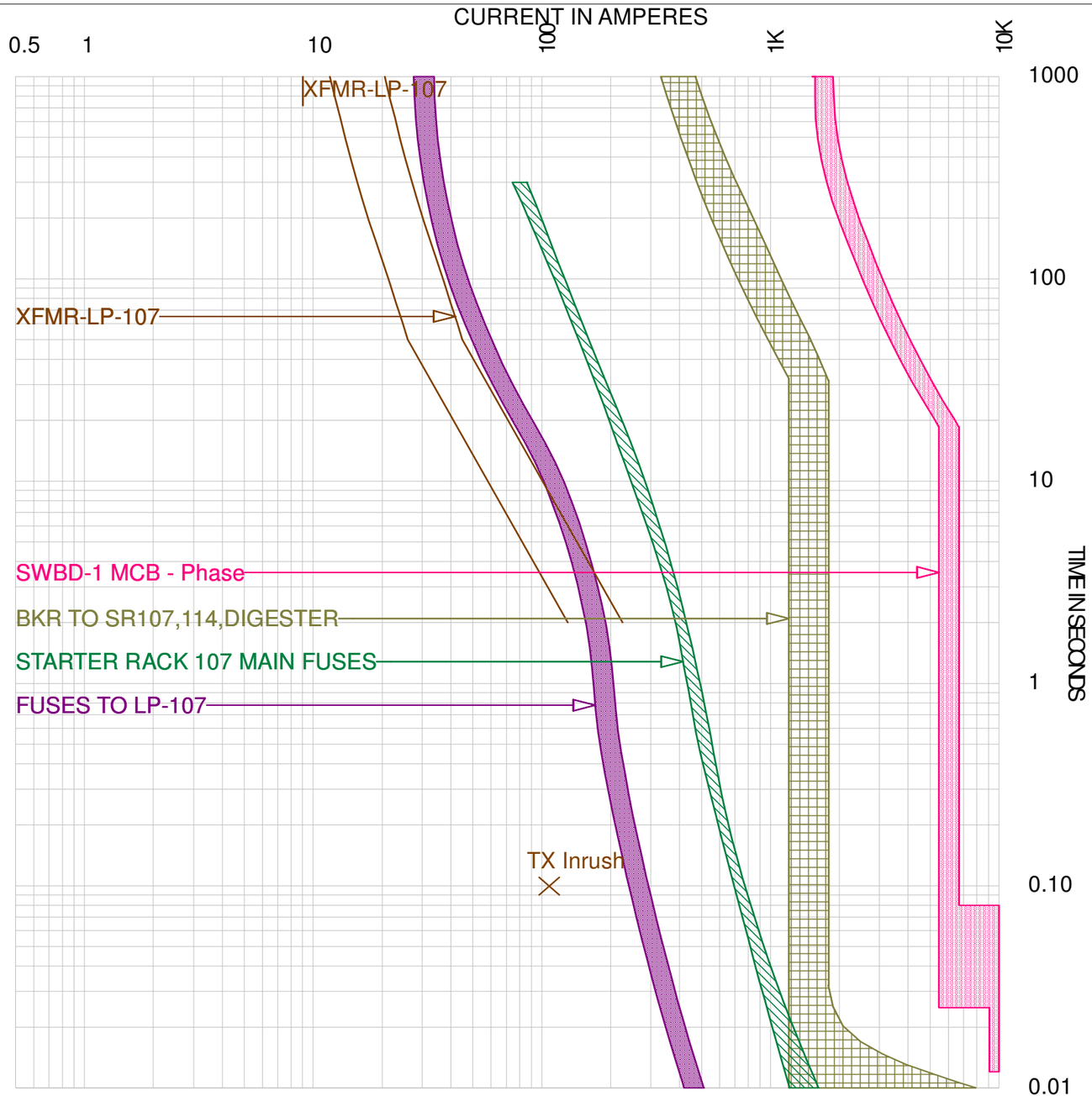


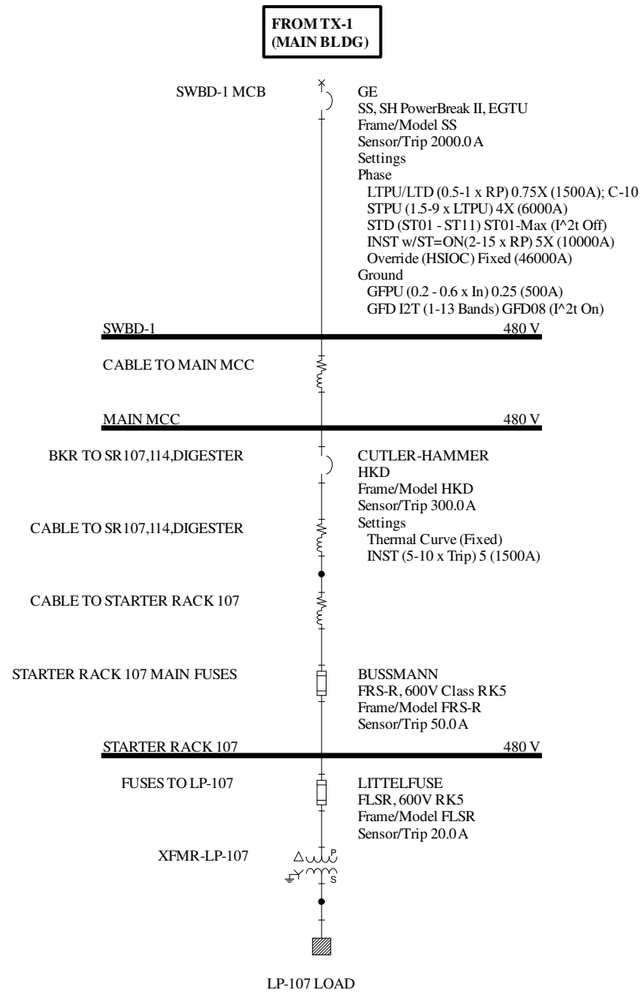
Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_STARTER RACK 100 (GRIT COLLECT 3&4)
Reference Voltage: 480V x 1


CURRENT IN AMPERES
0.5
1
10
100
1K
10K
1000
100
10
1
0.10
0.01
TIME IN SECONDS
DRAINAGE PUMP 1
SWBD-1 MCB - Phase
BKR TO PANELBOARD A
BKR TO STARTER RACK 101
STARTER RACK 101 MAIN FUSES
BKR TO DRAIN PUMP 1

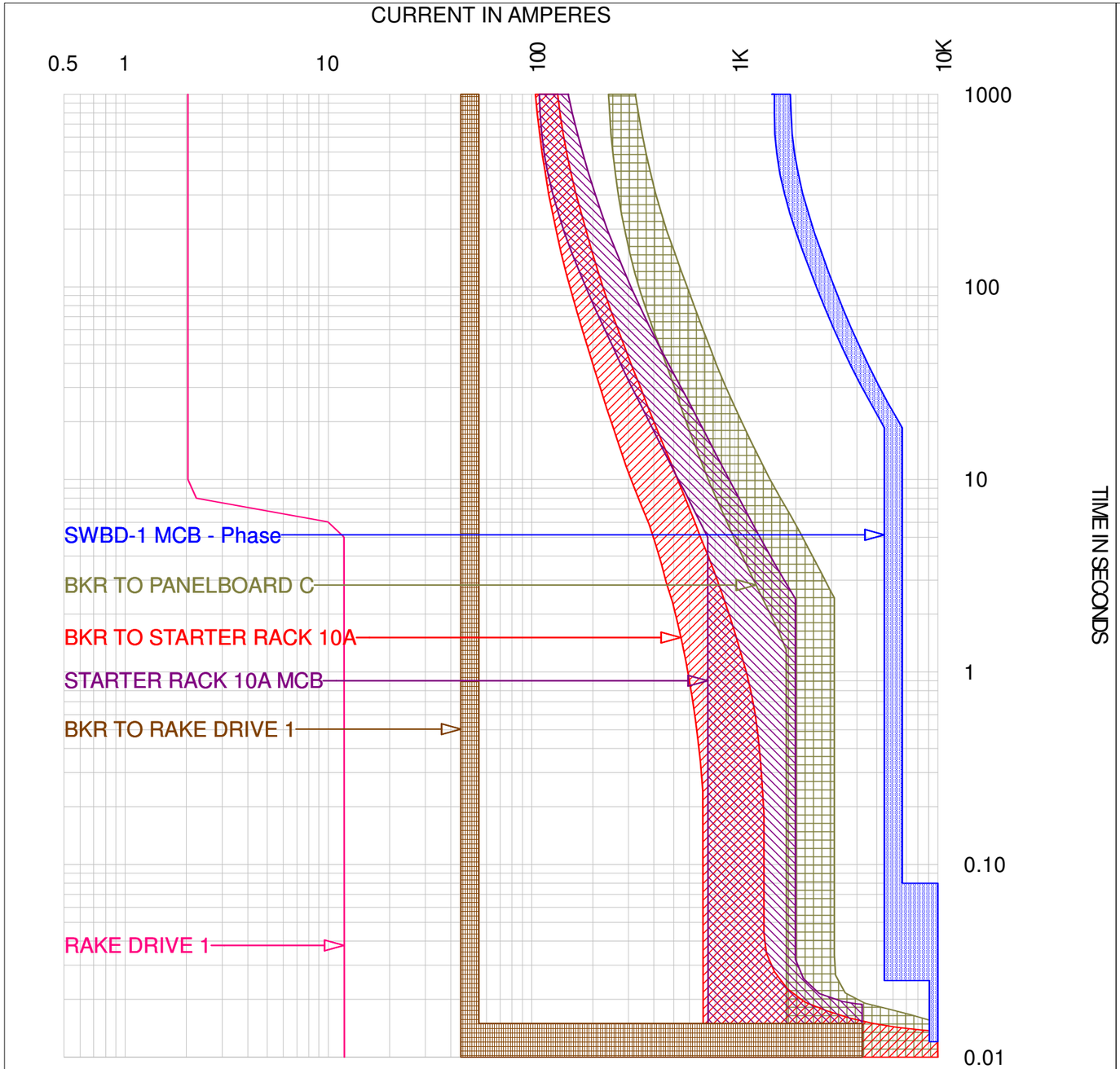

FROM TX-1
(MAIN BLDG)
SWBD-1 MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 0.75X (1500A); C-10
STPU (1.5-9 x LTPU) 4X (6000A)
STD (ST01 - ST11) ST01-Max (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)
SWBD-1
480 V
CABLE TO MAIN MCC
MAIN MCC
480 V
BKR TO PANELBOARD A
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 225.0 A
Settings
Fixed
CABLE TO PANELBOARD A
PANELBOARD A
480 V
BKR TO STARTER RACK 101
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 150.0 A
Settings
Fixed
CABLE TO STARTER RACK 101
STARTER RACK 101 MAIN FUSES
BUSSMANN
FRS-R, 600V Class RK5
Frame/Model FRS-R
Sensor/Trip 150.0 A
STARTER RACK 101
480 V
BKR TO DRAIN PUMP 1
CUTLER-HAMMER
HMCP
Frame/Model HMCP
Settings
INST (300-1000A) B (400A)
DRAINAGE PUMP 1

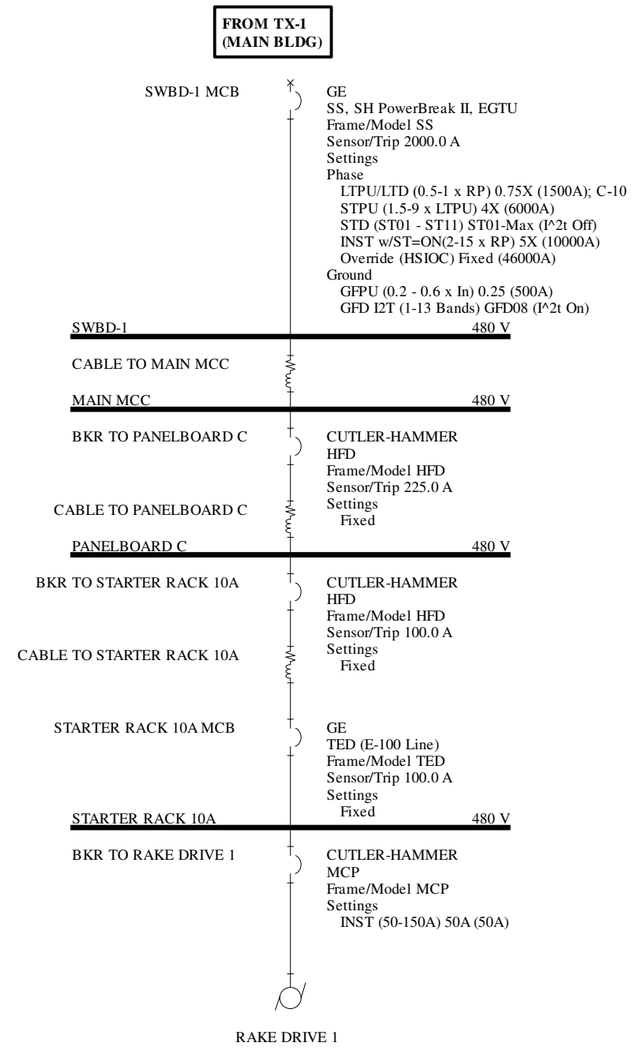




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

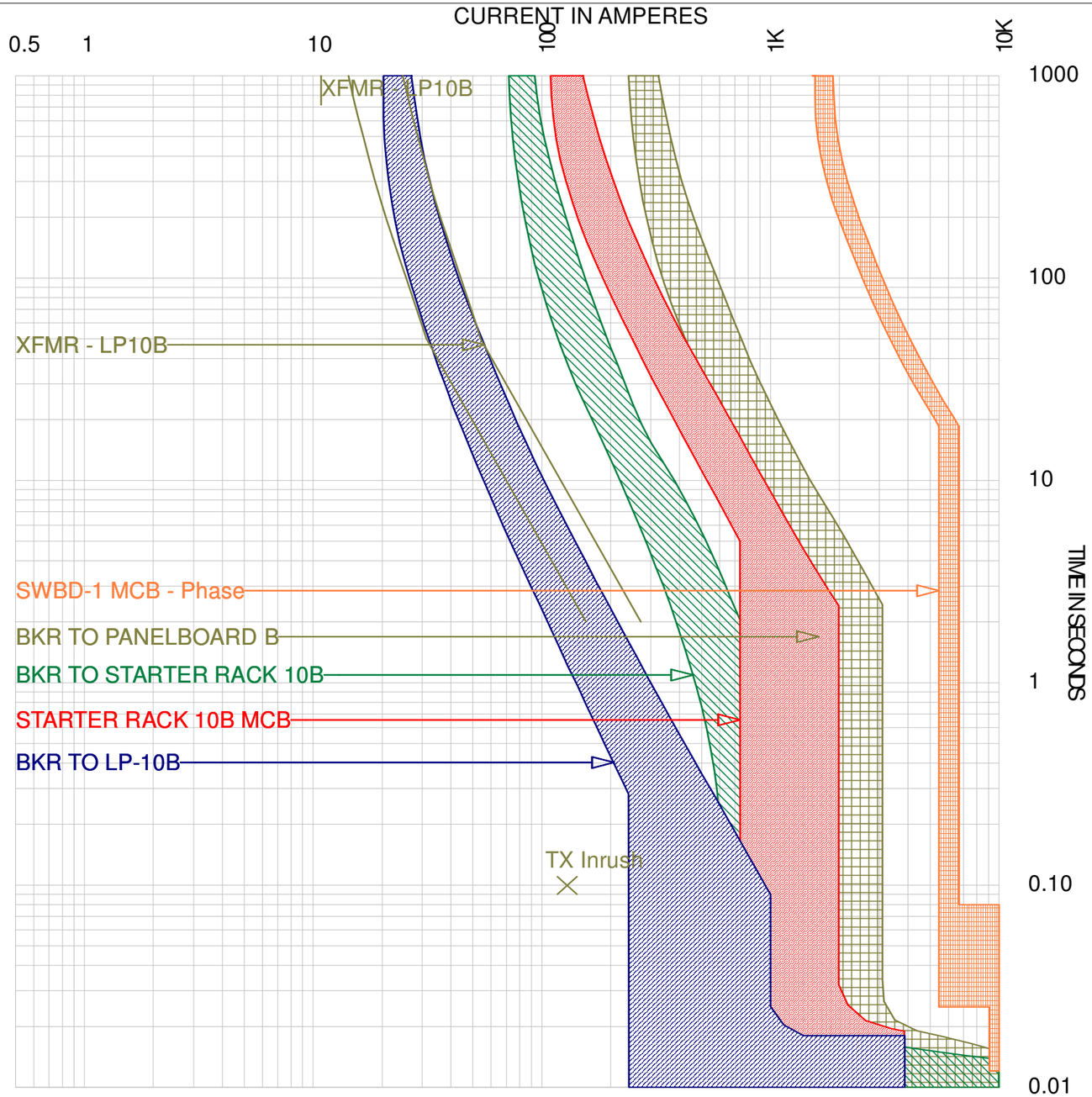
March 2015
SKM System Analysis, Inc.
TCC: TCC_STARTER RACK 107 (PRI CLAR 3,4)
Reference Voltage: 480V x 1

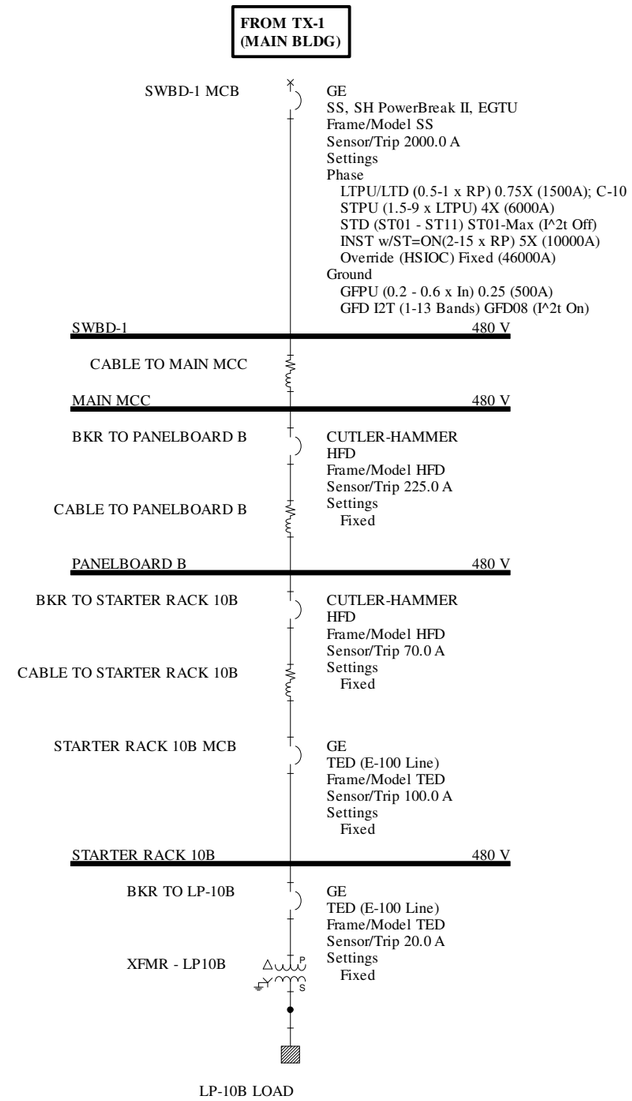




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

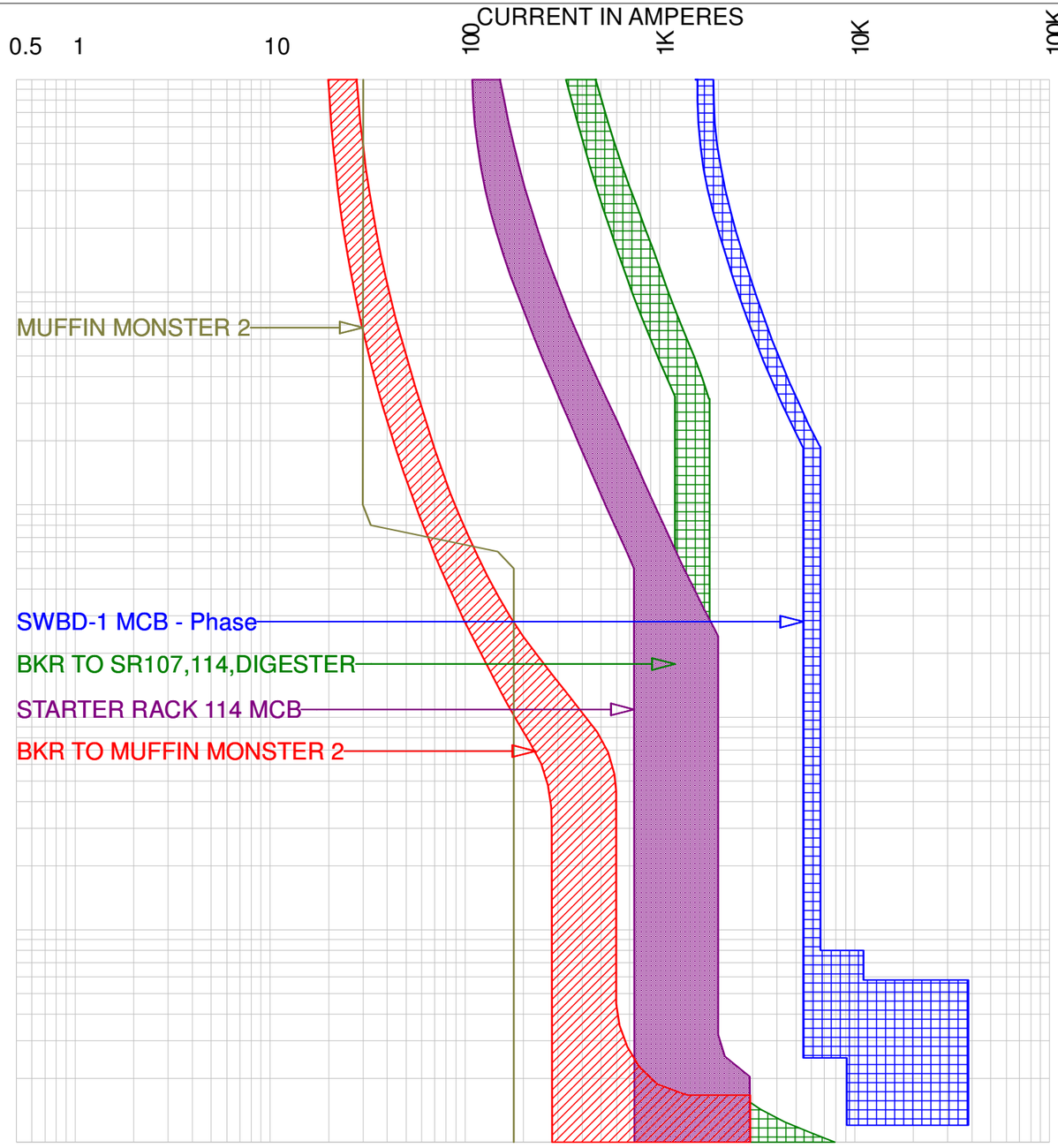
March 2015
SKM System Analysis, Inc.
TCC: TCC_STARTER RACK 10A (SEC CLAR 1&2)
Reference Voltage: 480V x 1

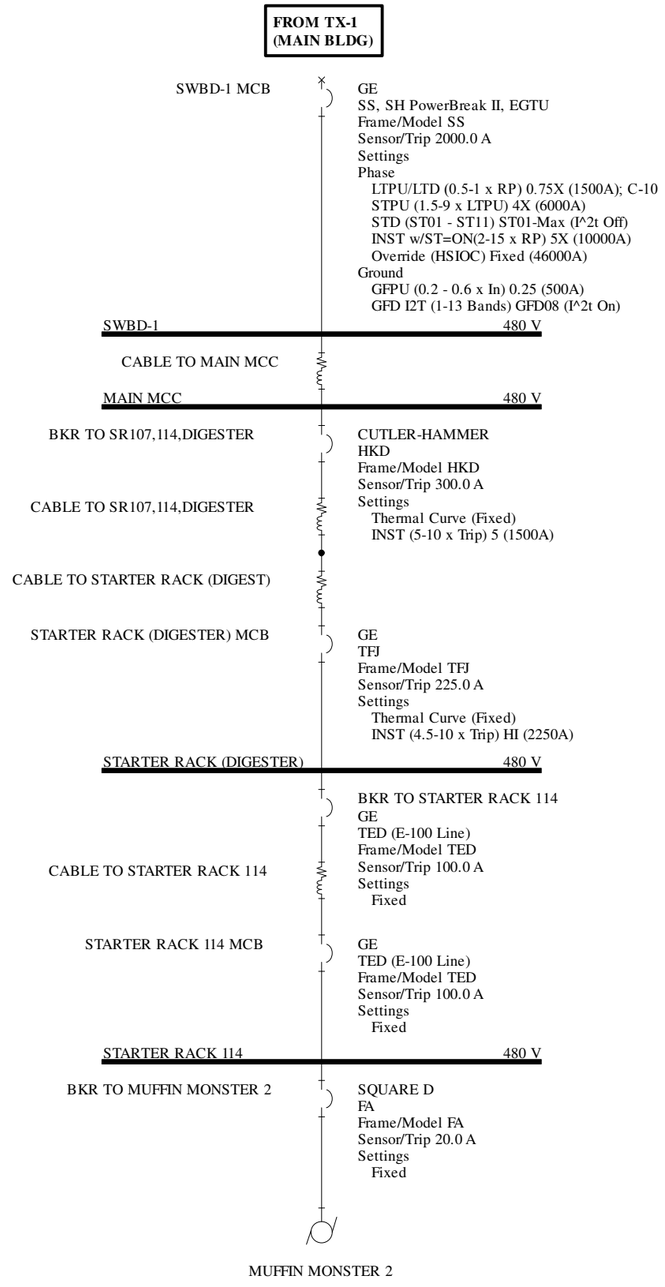


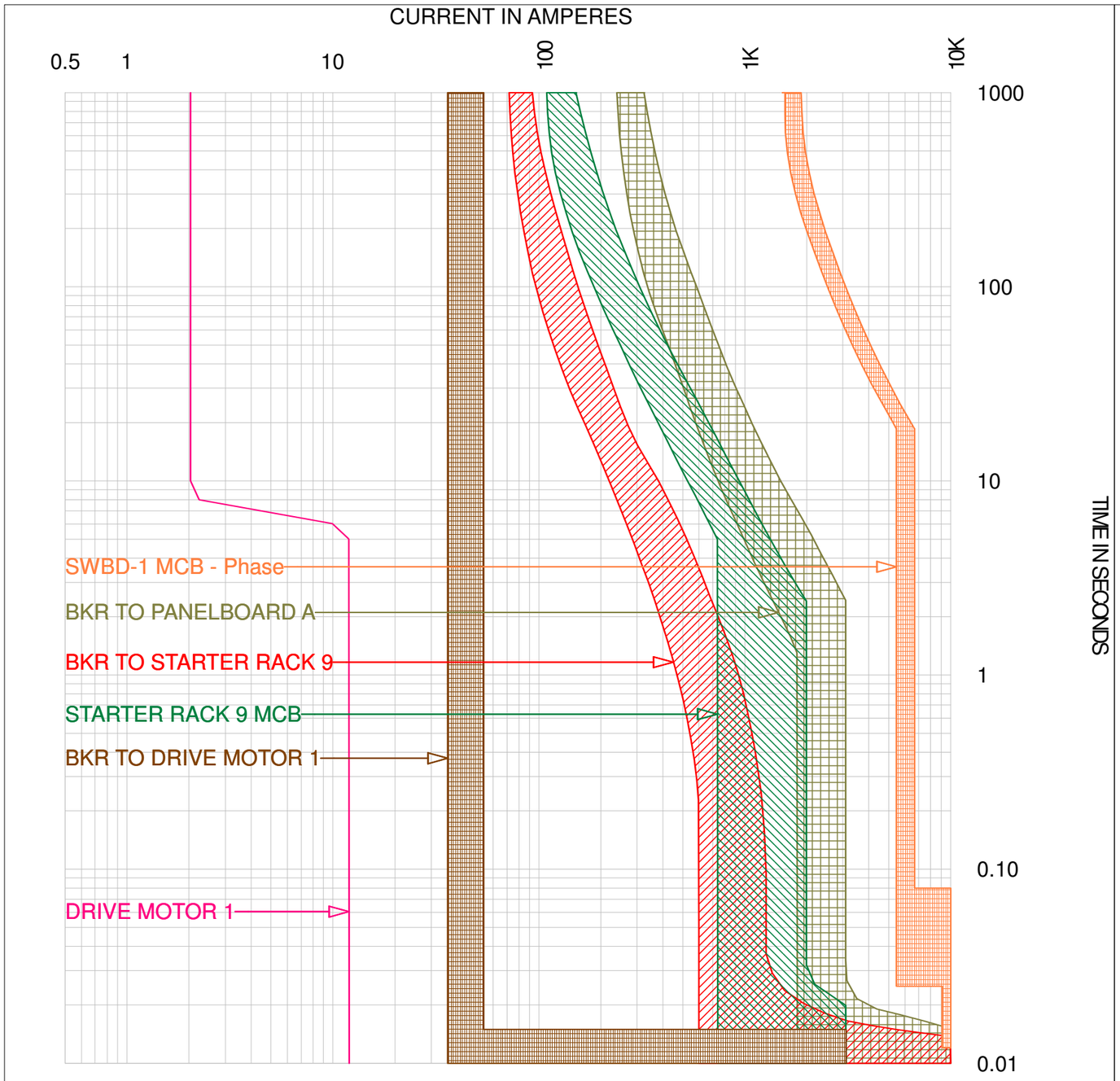


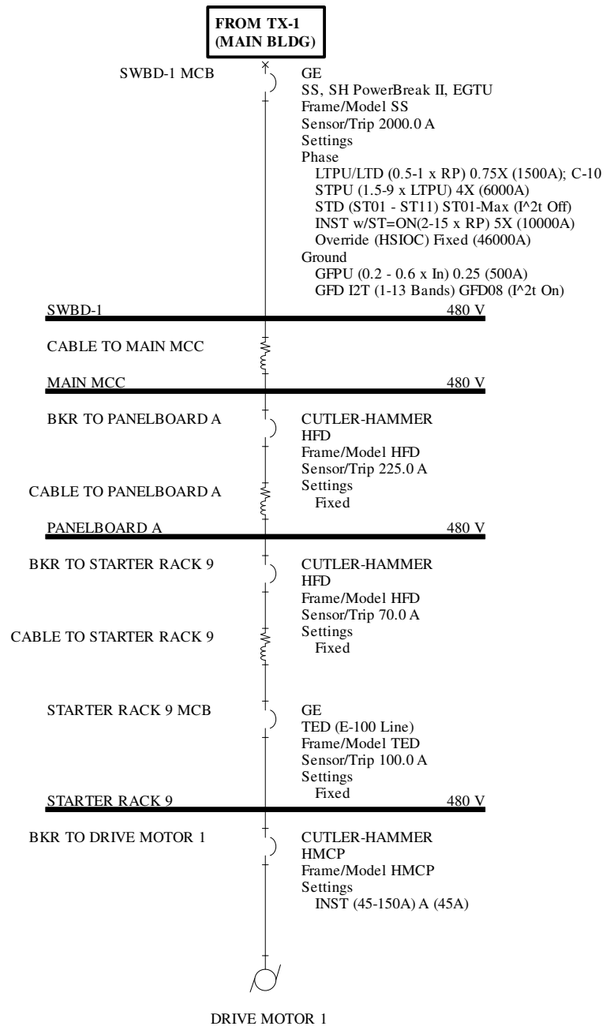
Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_STARTER RACK 10B (GRIT COLLECT 1,2)
Reference Voltage: 480V x 1


CURRENT IN AMPERES
0.5
1
10
100
1K
10K
100K
1000
100
10
1
0.10
0.01
TIME IN SECONDS
MUFFIN MONSTER 2
SWBD-1 MCB - Phase
BKR TO SR107,114,DIGESTER
STARTER RACK 114 MCB
BKR TO MUFFIN MONSTER 2

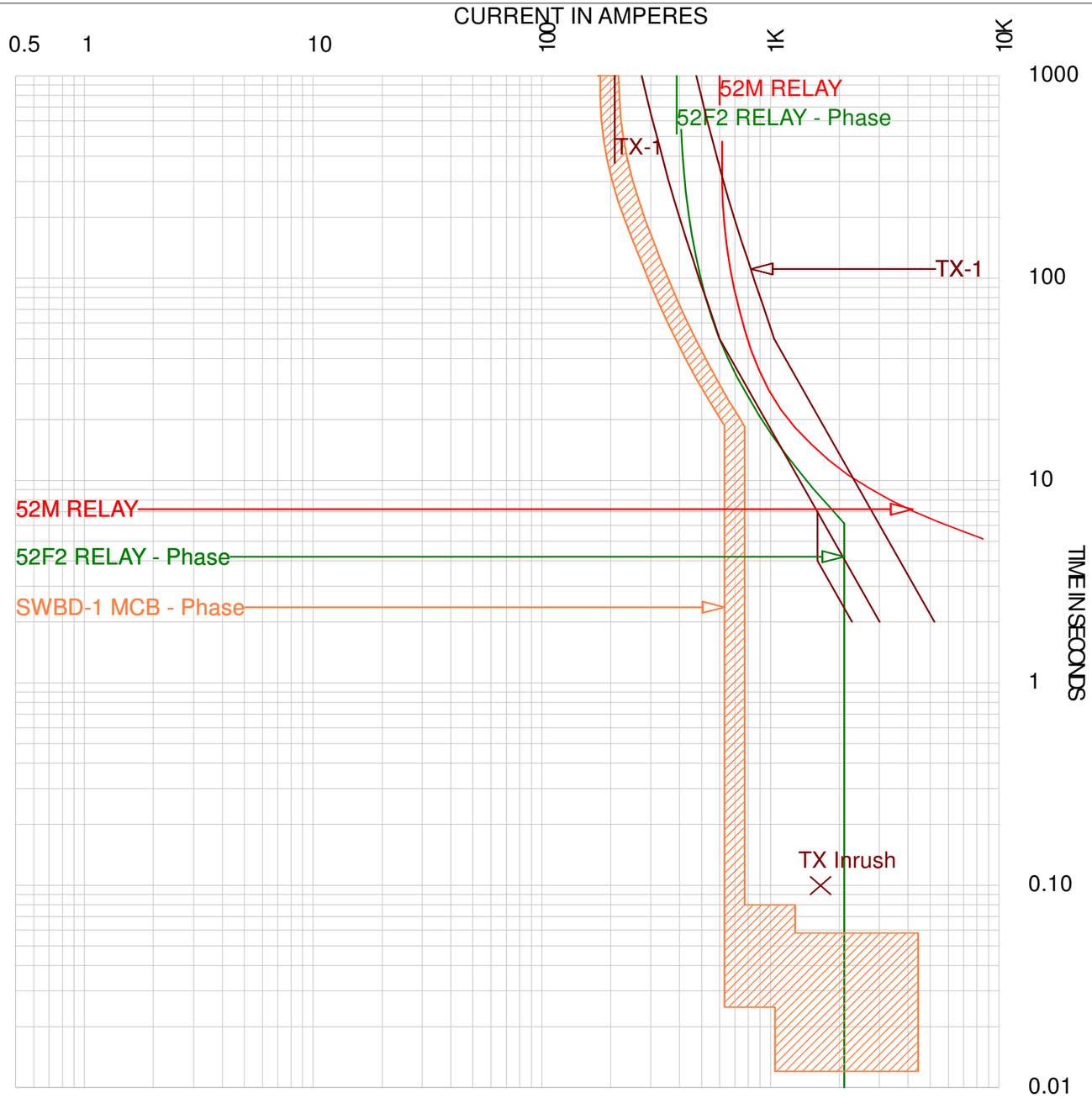

FROM TX-1
(MAIN BLDG)
SWBD-1 MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 0.75X (1500A); C-10
STPU (1.5-9 x LTPU) 4X (6000A)
STD (ST01 - ST11) ST01-Max (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)
SWBD-1
480 V
CABLE TO MAIN MCC
MAIN MCC
480 V
BKR TO SR107,114,DIGESTER
CUTLER-HAMMER
HKD
Frame/Model HKD
Sensor/Trip 300.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 5 (1500A)
CABLE TO SR107,114,DIGESTER
CABLE TO STARTER RACK (DIGEST)
STARTER RACK (DIGESTER) MCB
GE
TFJ
Frame/Model TFJ
Sensor/Trip 225.0 A
Settings
Thermal Curve (Fixed)
INST (4.5-10 x Trip) HI (2250A)
STARTER RACK (DIGESTER)
480 V
BKR TO STARTER RACK 114
GE
TED (E-100 Line)
Frame/Model TED
Sensor/Trip 100.0 A
Settings
Fixed
CABLE TO STARTER RACK 114
STARTER RACK 114 MCB
GE
TED (E-100 Line)
Frame/Model TED
Sensor/Trip 100.0 A
Settings
Fixed
STARTER RACK 114
480 V
BKR TO MUFFIN MONSTER 2
SQUARE D
FA
Frame/Model FA
Sensor/Trip 20.0 A
Settings
Fixed
MUFFIN MONSTER 2

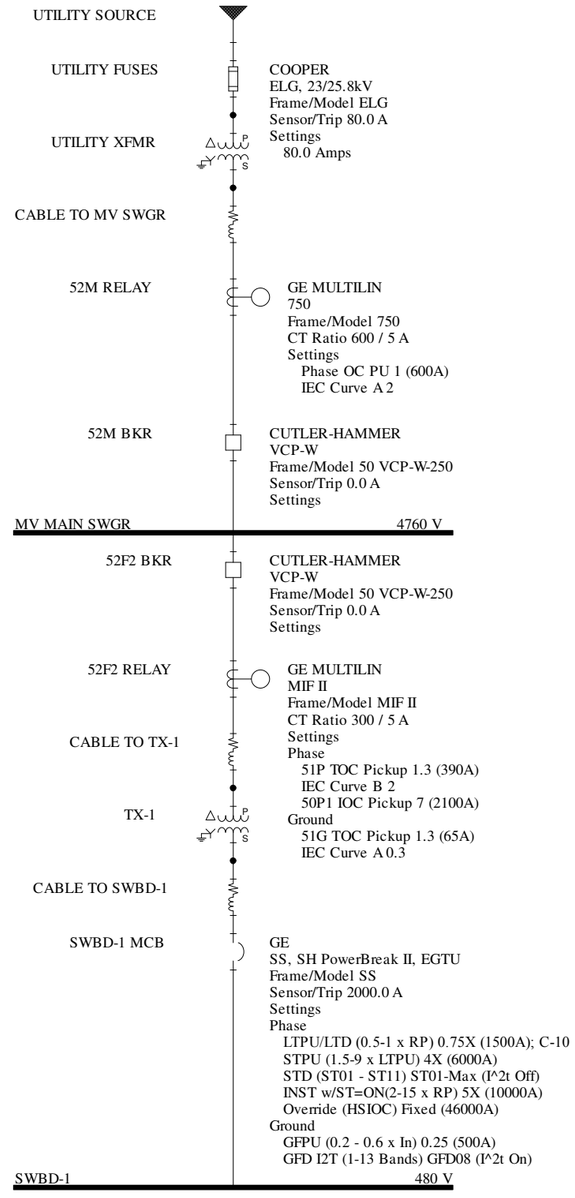




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

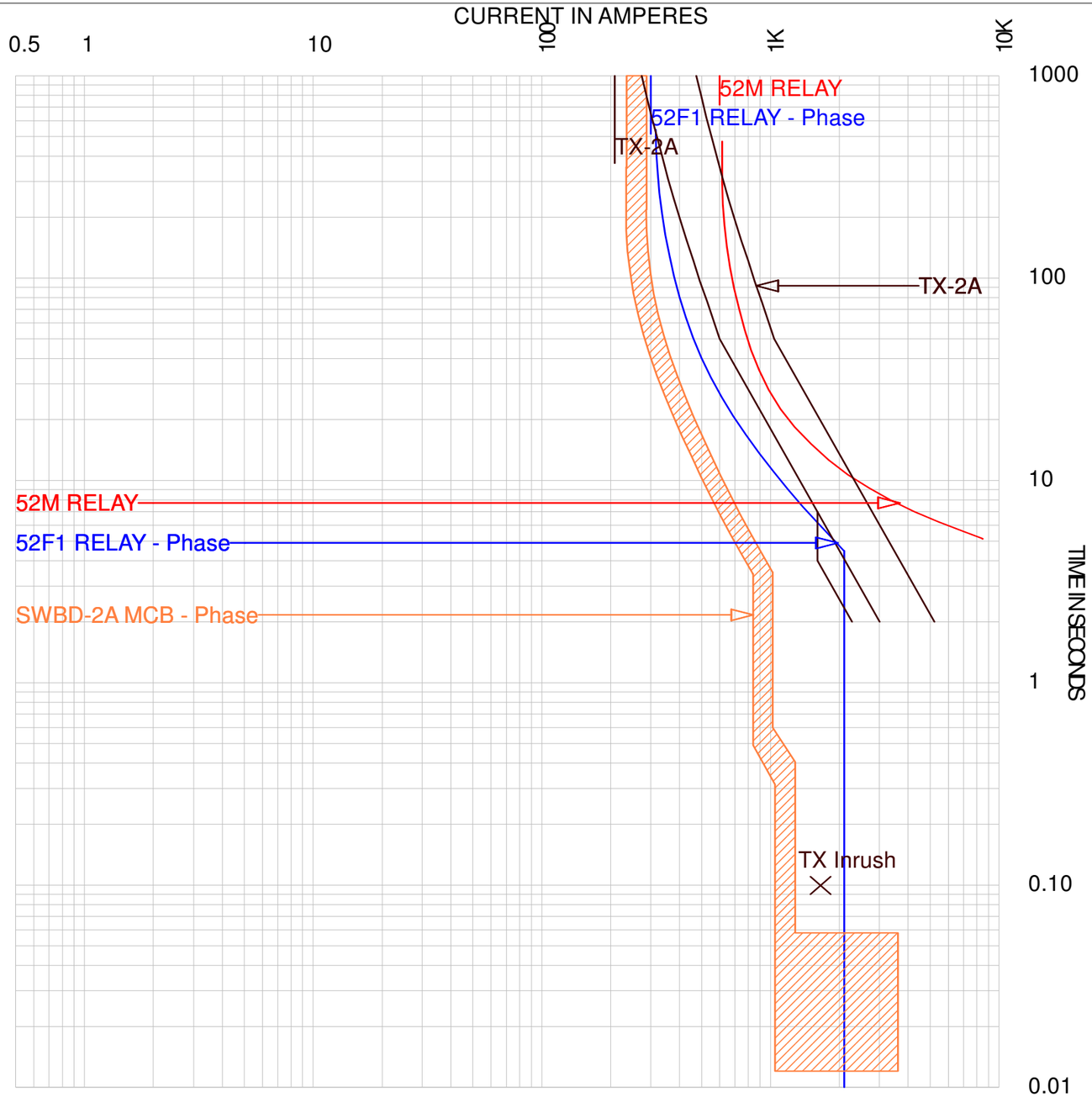
March 2015
SKM System Analysis, Inc.
TCC: TCC_STARTER RACK 9 (PRI CLAR 1&2)
Reference Voltage: 480V x 1

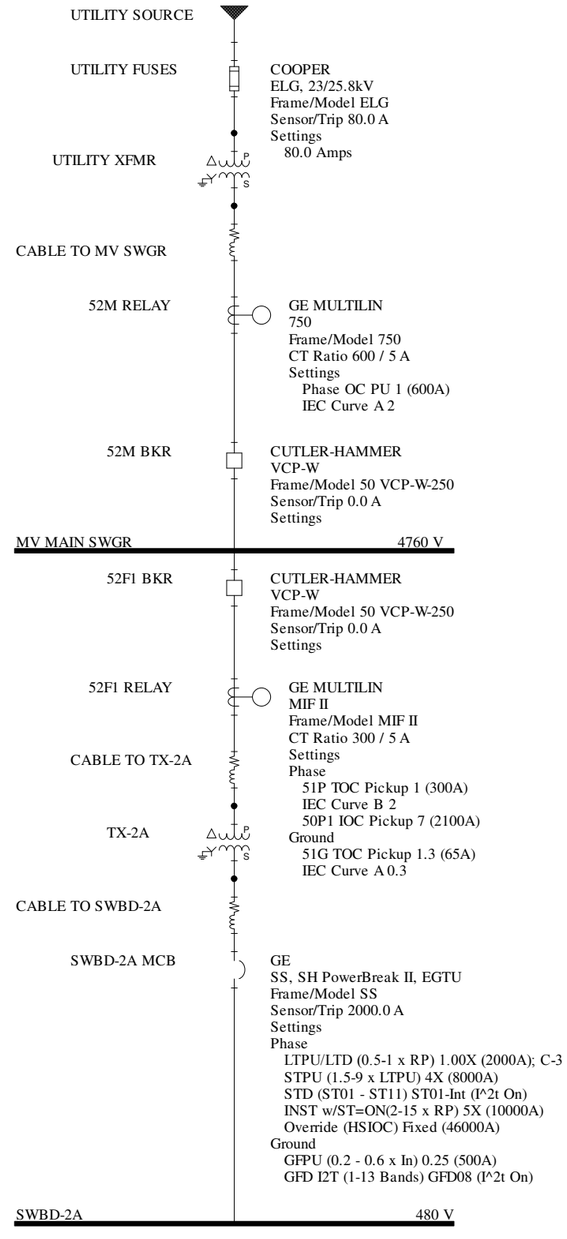




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

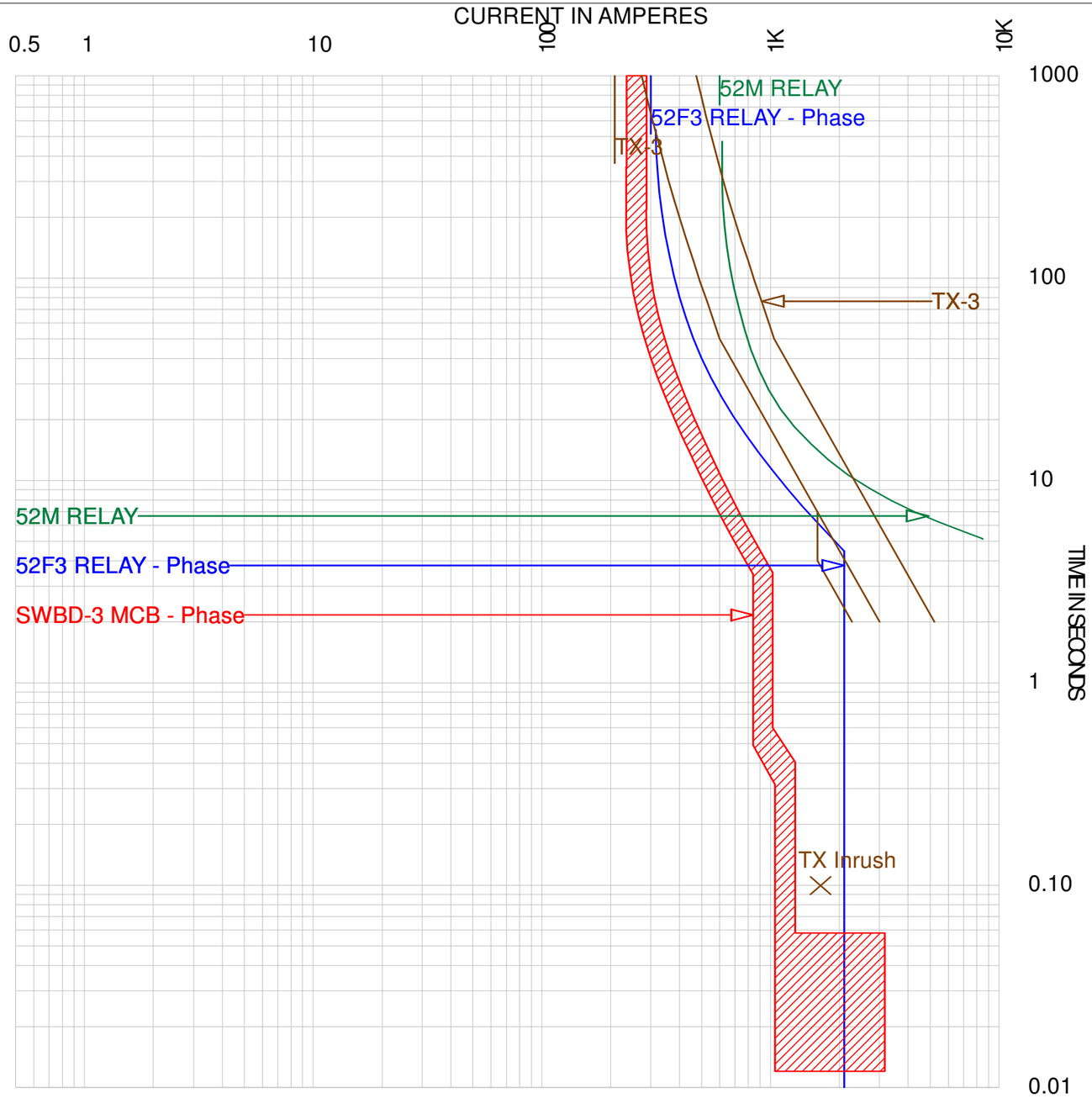
March 2015
SKM System Analysis, Inc.
TCC: TCC_TX-1
Reference Voltage: 4160V x 1

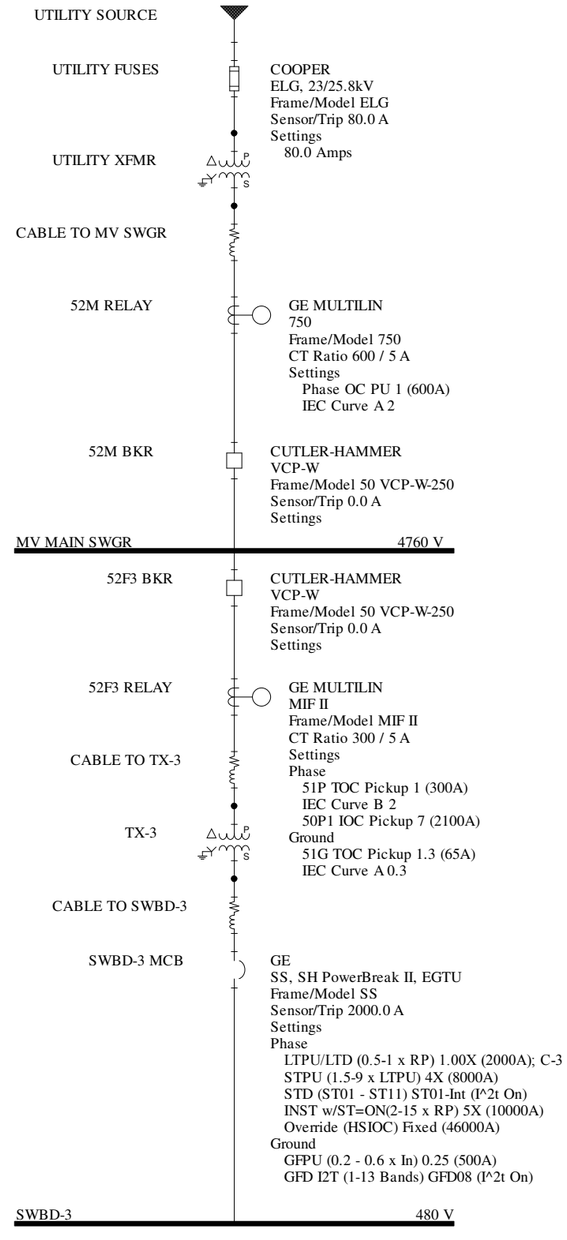




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_TX-2A
Reference Voltage: 4160V x 1



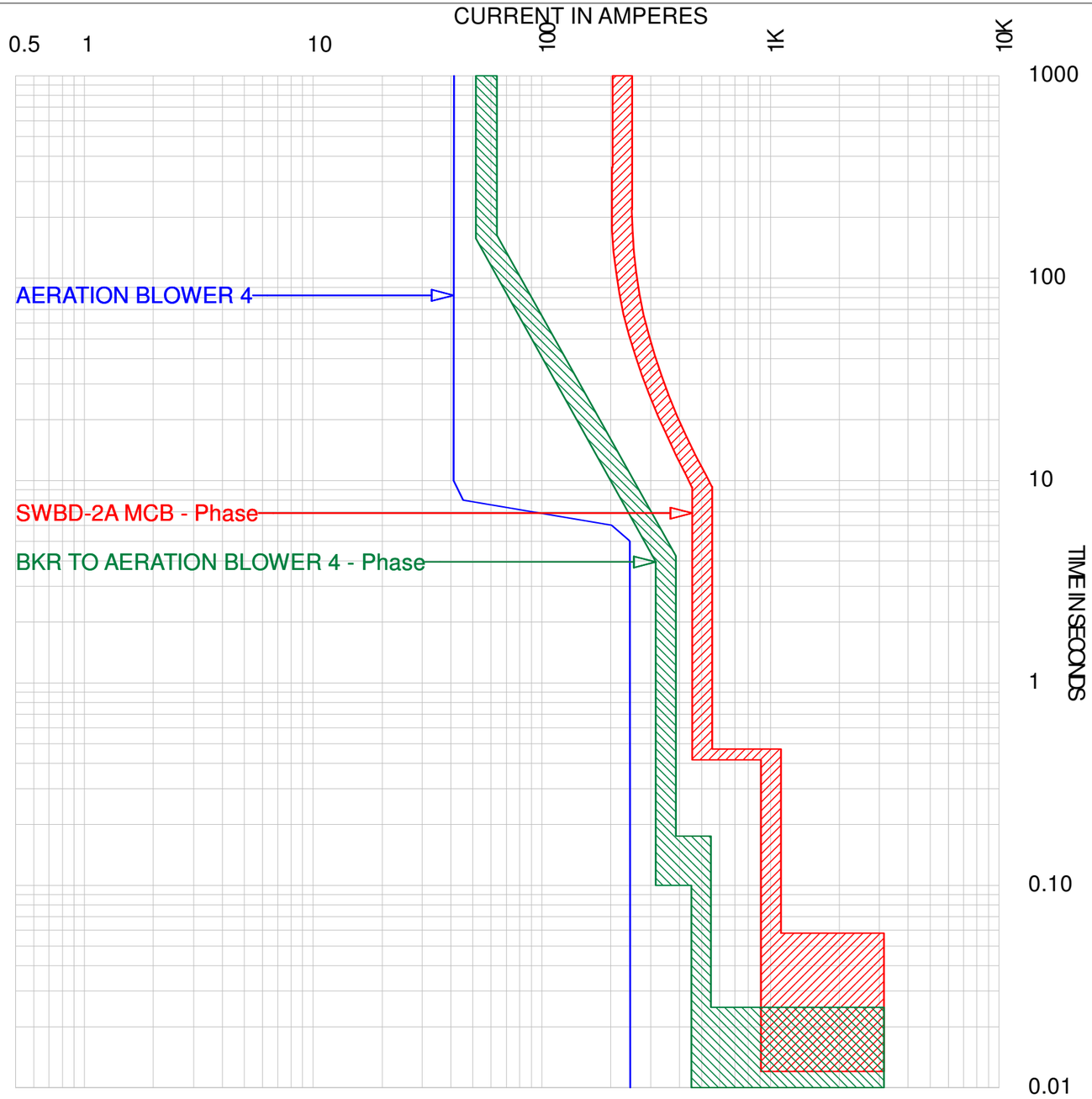


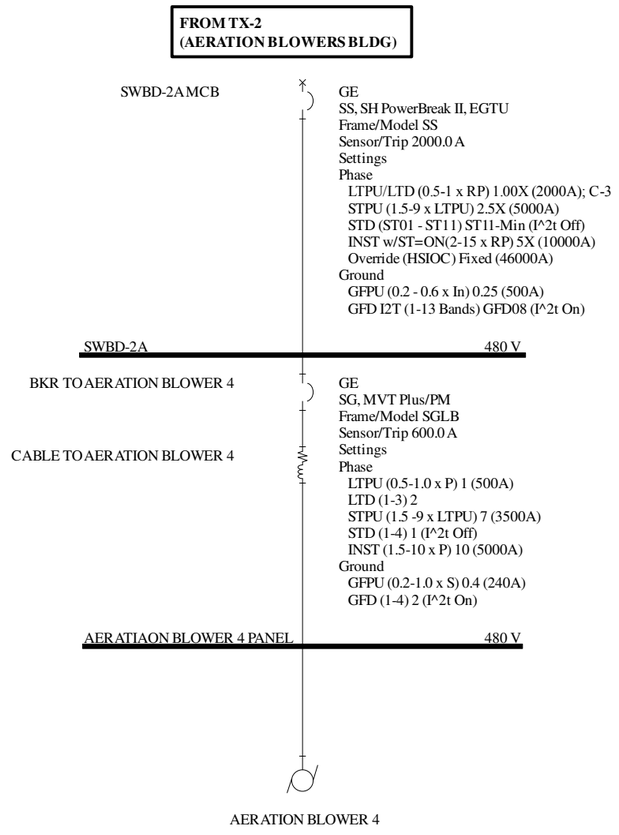
Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_TX-3
Reference Voltage: 4160V x 1

Appendix JRTP-C

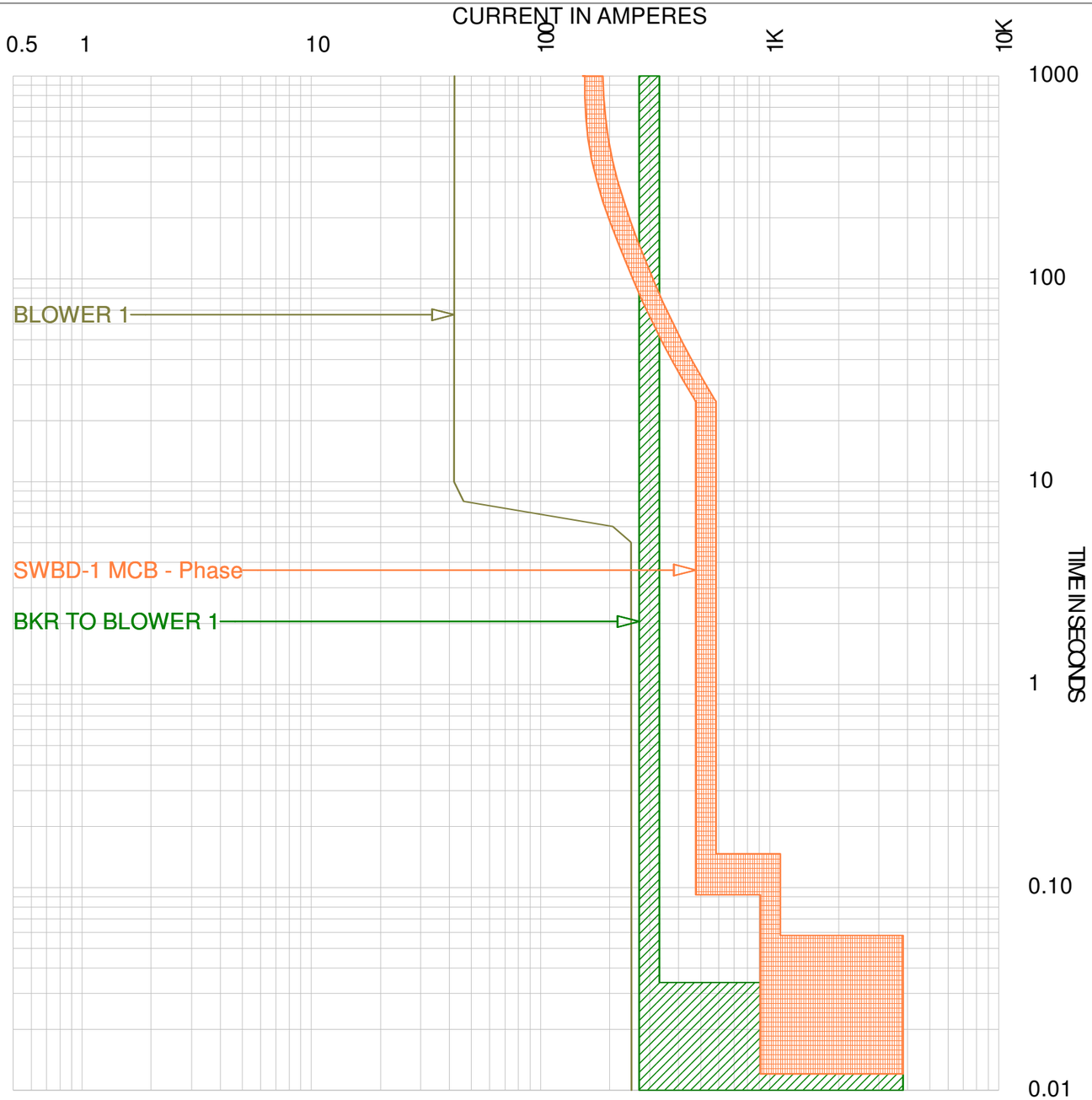
Protective Device Coordination
Time VS Current Curves
After All Recommendations from Table JRTP-T1 Implemented

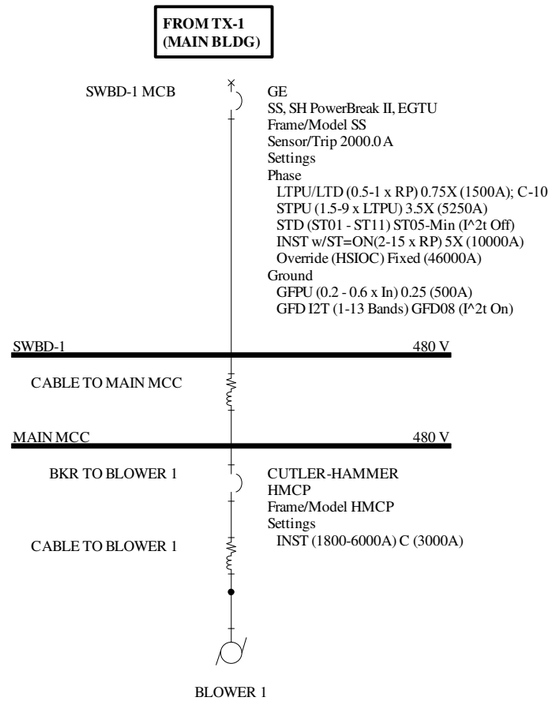




Hampton Roads Sanitation District
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James River Treatment Plant

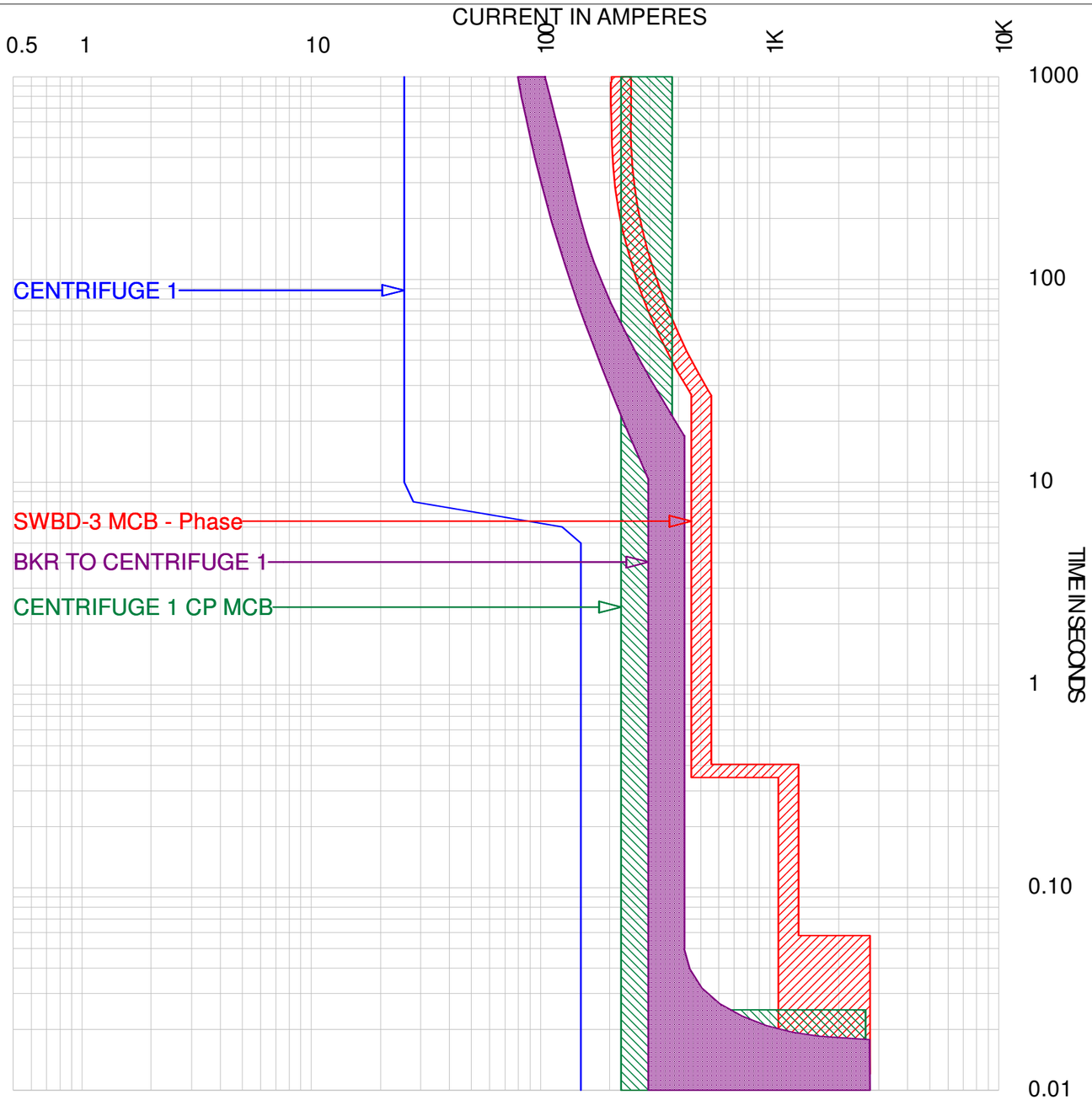
March 2015
SKM System Analysis, Inc.
TCC: TCC_AERATION BLOWER 4 RECOMMENDATIONS
Reference Voltage: 480V x 10

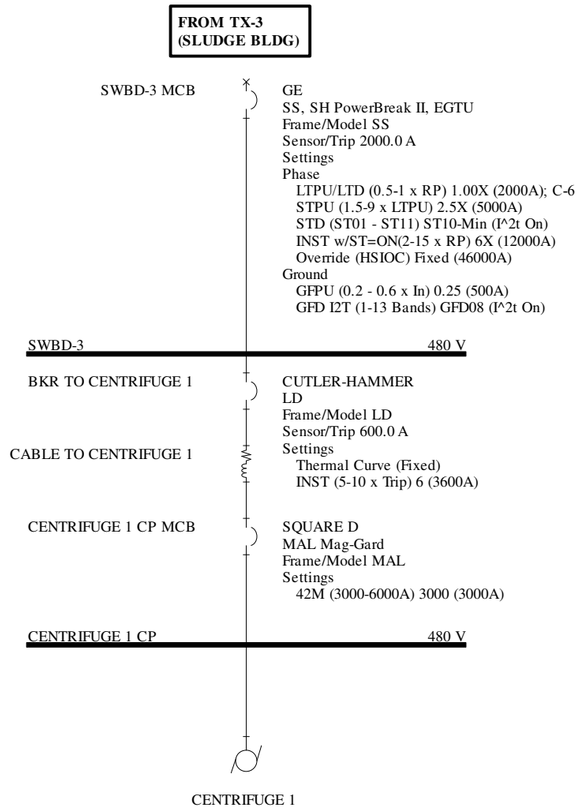




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

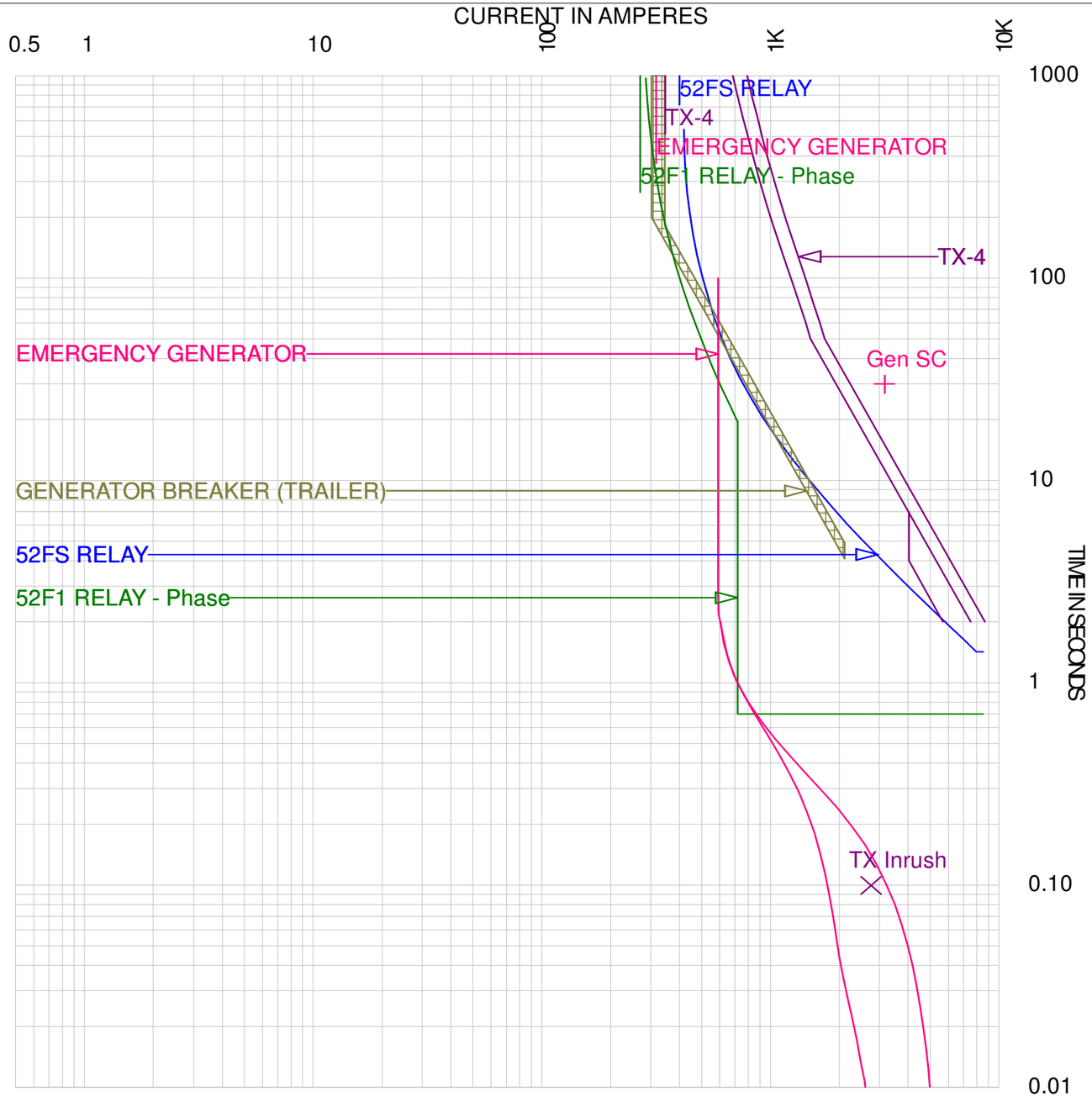
March 2015
SKM System Analysis, Inc.
TCC: TCC_BLOWER 1 RECOMMENDATIONS
Reference Voltage: 480V x 10

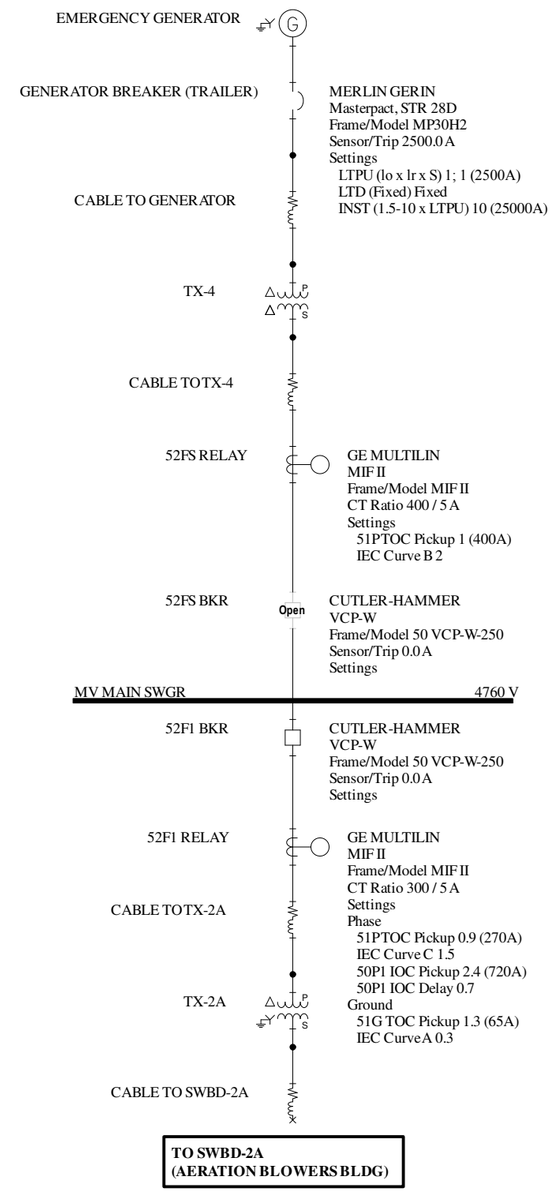


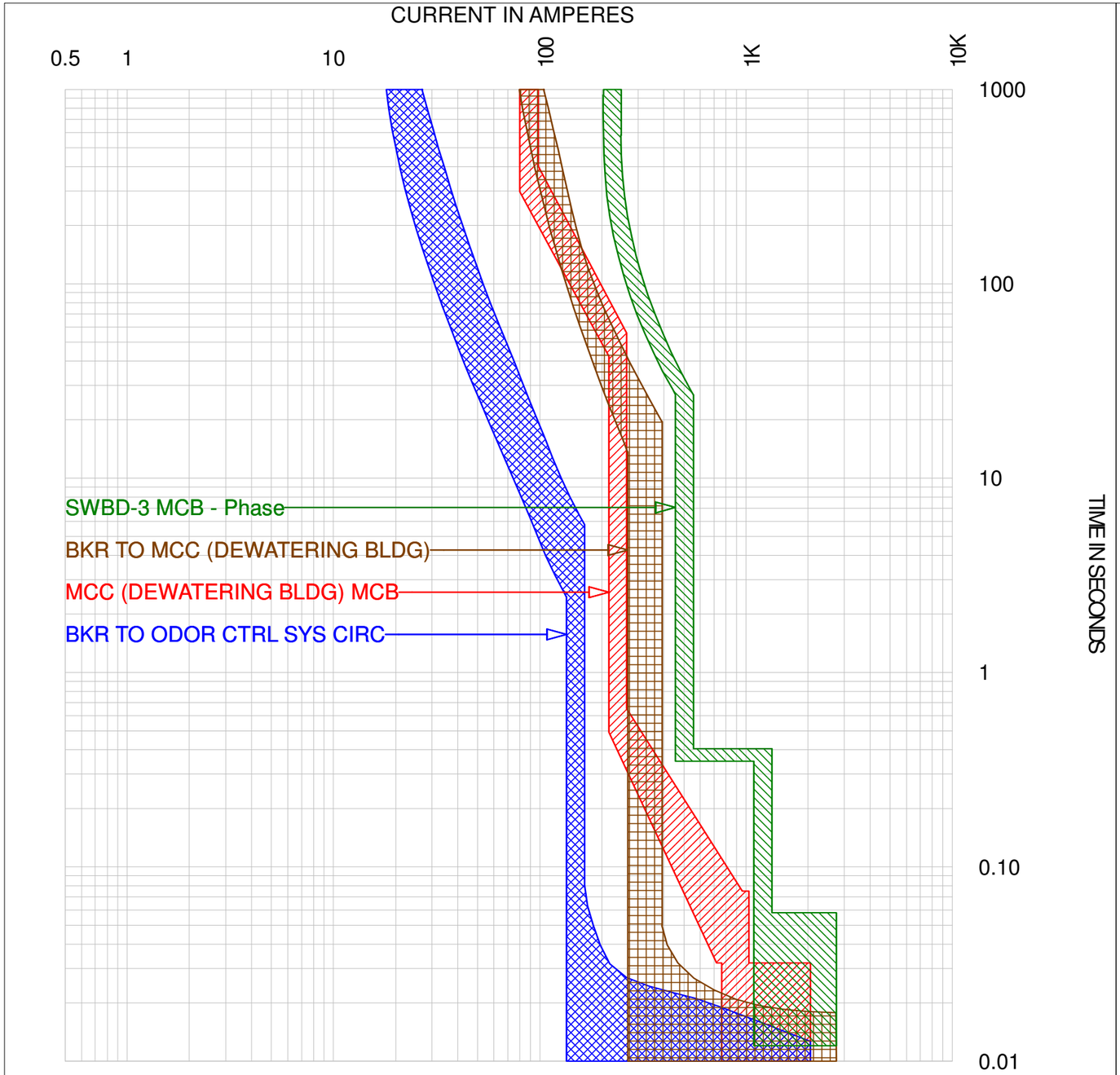


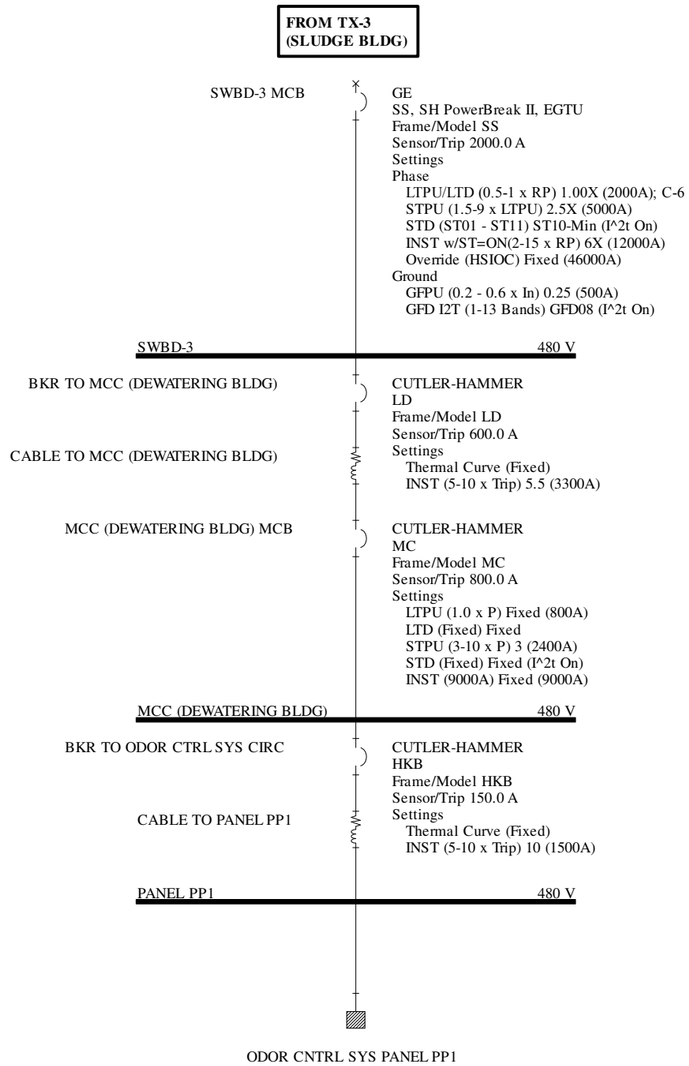
Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_CENTRIFUGE 1 RECOMMENDATIONS
Reference Voltage: 480V x 10


CURRENT IN AMPERES
0.5
1
10
100
1K
10K
1000
100
10
1
0.10
0.01
TIME IN SECONDS
52FS RELAY
TX-4
EMERGENCY GENERATOR
52F1 RELAY - Phase
TX-4
EMERGENCY GENERATOR
Gen SC
GENERATOR BREAKER (TRAILER)
52FS RELAY
52F1 RELAY - Phase
TX Inrush

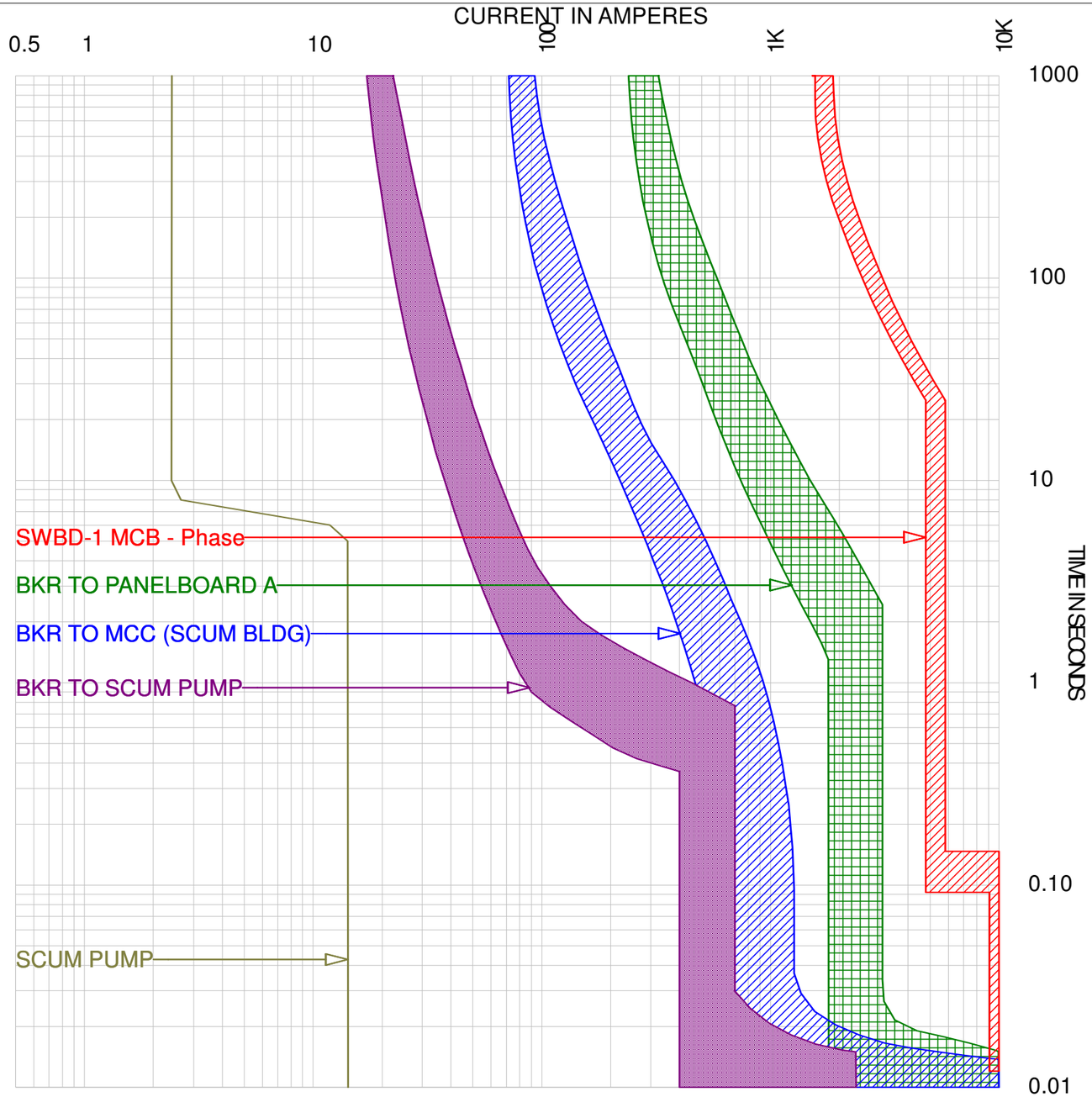

EMERGENCY GENERATOR
G
GENERATOR BREAKER (TRAILER)
MERLIN GERIN
Masterpact, STR 28D
Frame/Model MP30H2
Sensor/Trip 2500.0 A
Settings
LTPU (Io x Ir x S) 1; 1 (2500A)
LTD (Fixed) Fixed
INST (1.5-10 x LTPU) 10 (25000A)
CABLE TO GENERATOR
TX-4
P
S
CABLE TO TX-4
52FS RELAY
GE MULTILIN
MIF II
Frame/Model MIF II
CT Ratio 400 / 5 A
Settings
51PTOC Pickup 1 (400A)
IEC Curve B 2
52FS BKR
Open
CUTLER-HAMMER
VCP-W
Frame/Model 50 VCP-W-250
Sensor/Trip 0.0 A
Settings
MV MAIN SWGR
4760 V
52F1 BKR
CUTLER-HAMMER
VCP-W
Frame/Model 50 VCP-W-250
Sensor/Trip 0.0 A
Settings
52F1 RELAY
GE MULTILIN
MIF II
Frame/Model MIF II
CT Ratio 300 / 5 A
Settings
Phase
51PTOC Pickup 0.9 (270A)
IEC Curve C 1.5
50P1 IOC Pickup 2.4 (720A)
50P1 IOC Delay 0.7
Ground
51G TOC Pickup 1.3 (65A)
IEC Curve A 0.3
CABLE TO TX-2A
TX-2A
CABLE TO SWBD-2A
TO SWBD-2A
(AERATION BLOWERS BLDG)

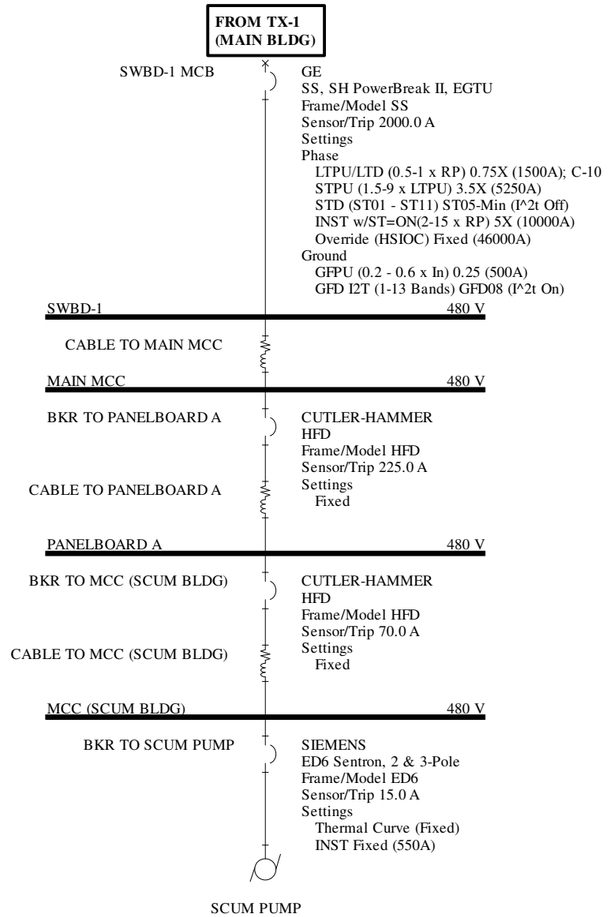


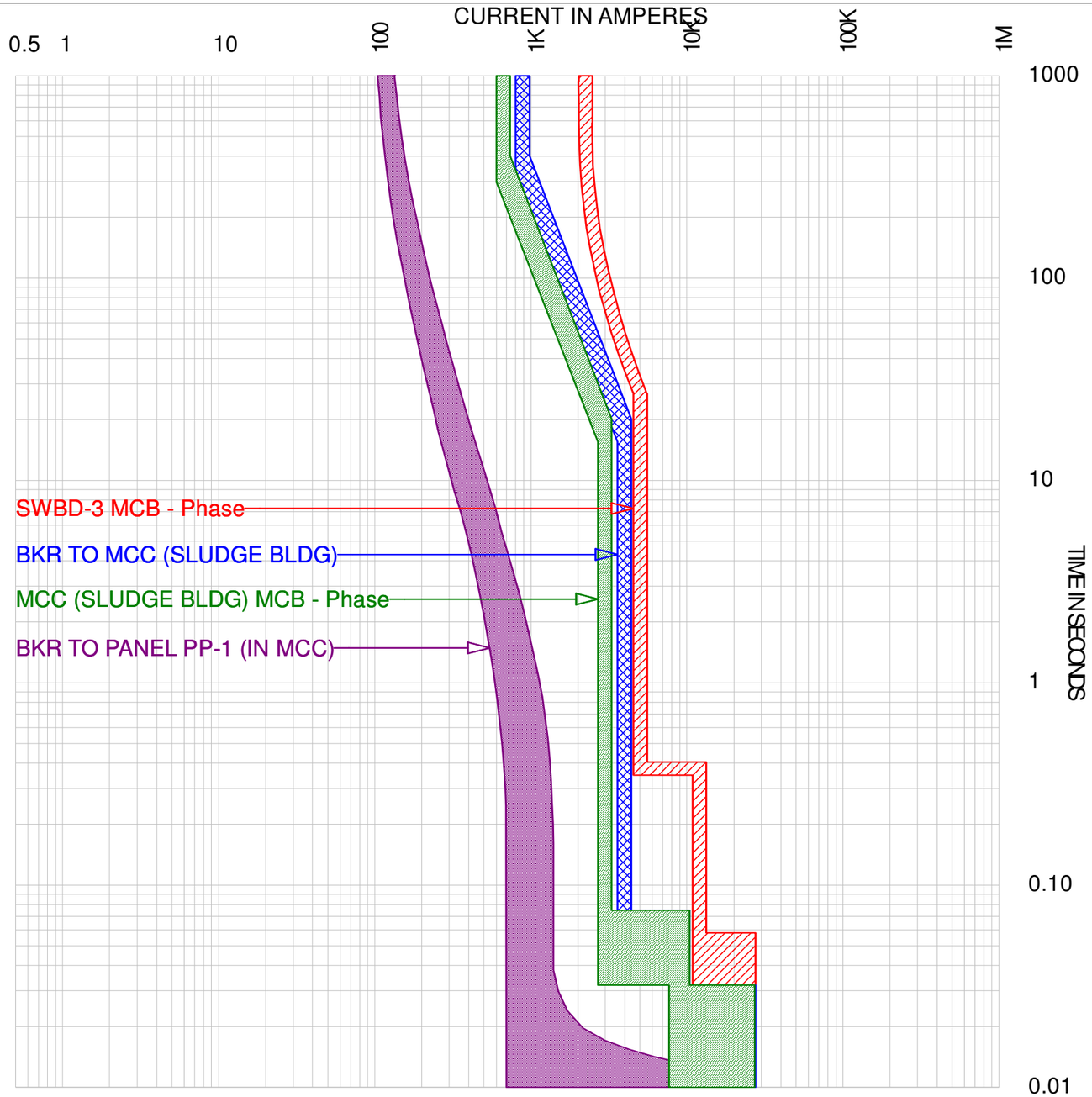


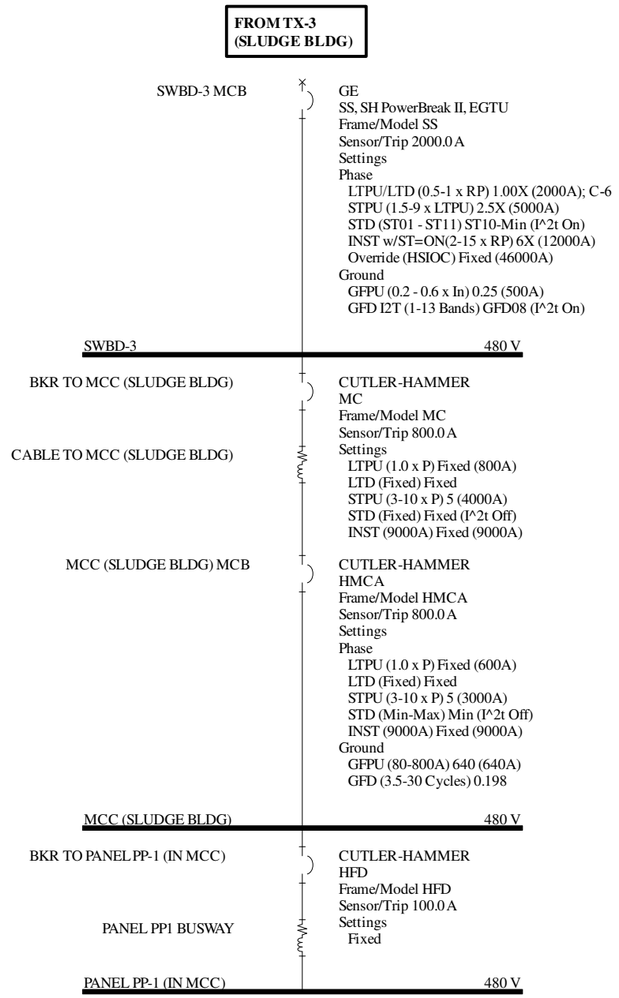
Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_MCC (DEWATERING BLDG) RECOMMENDATIONS
Reference Voltage: 480V x 10


CURRENT IN AMPERES
0.5
1
10
100
1K
10K
1000
100
10
1
0.10
0.01
TIME IN SECONDS
SWBD-1 MCB - Phase
BKR TO PANELBOARD A
BKR TO MCC (SCUM BLDG)
BKR TO SCUM PUMP
SCUM PUMP

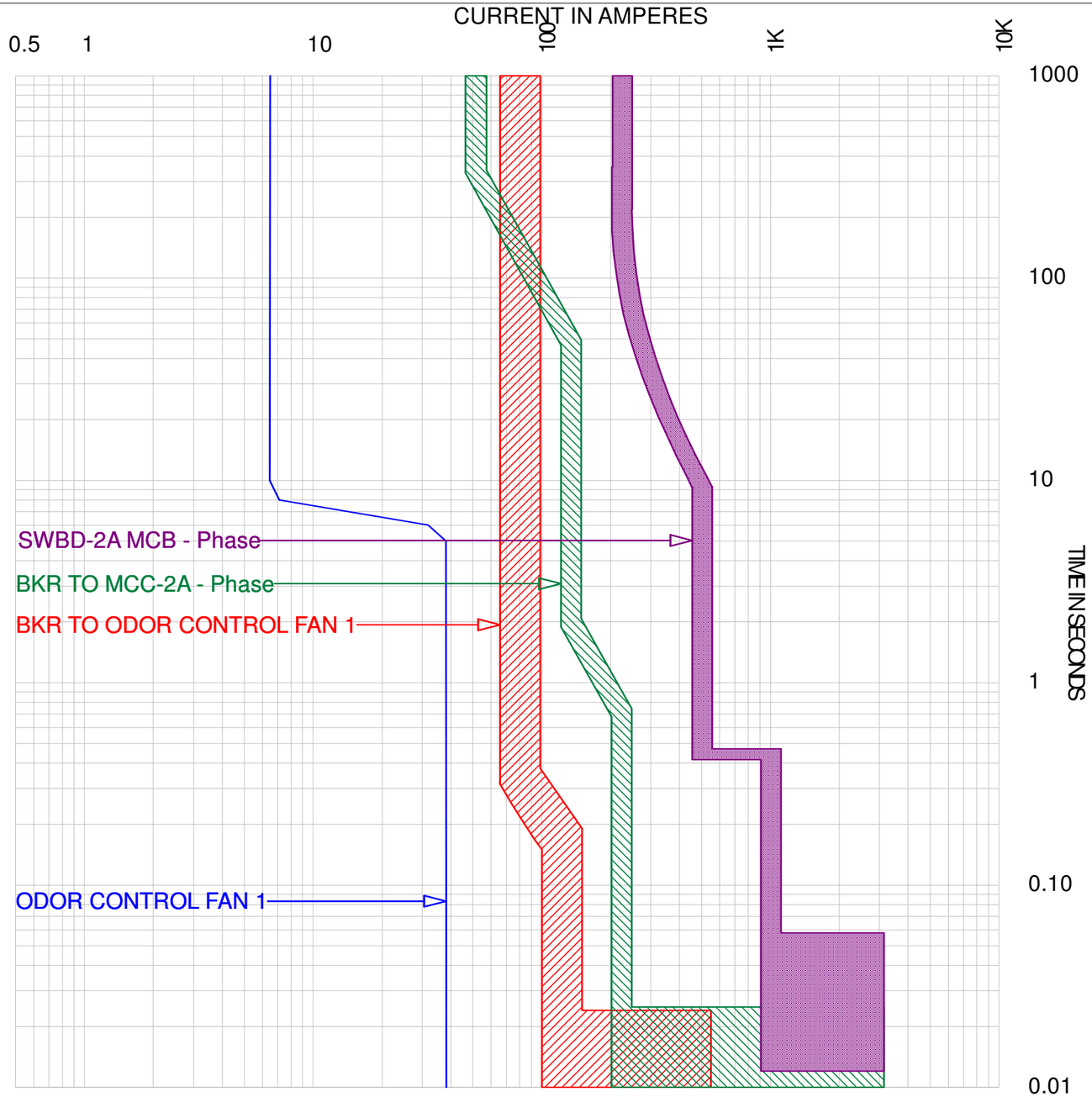

FROM TX-1
(MAIN BLDG)
SWBD-1 MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 0.75X (1500A); C-10
STPU (1.5-9 x LTPU) 3.5X (5250A)
STD (ST01 - ST11) ST05-Min (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)
SWBD-1
480 V
CABLE TO MAIN MCC
MAIN MCC
480 V
BKR TO PANELBOARD A
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 225.0 A
Settings
Fixed
CABLE TO PANELBOARD A
PANELBOARD A
480 V
BKR TO MCC (SCUM BLDG)
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 70.0 A
Settings
Fixed
CABLE TO MCC (SCUM BLDG)
MCC (SCUM BLDG)
480 V
BKR TO SCUM PUMP
SIEMENS
ED6 Sentron, 2 & 3-Pole
Frame/Model ED6
Sensor/Trip 15.0 A
Settings
Thermal Curve (Fixed)
INST Fixed (550A)
SCUM PUMP

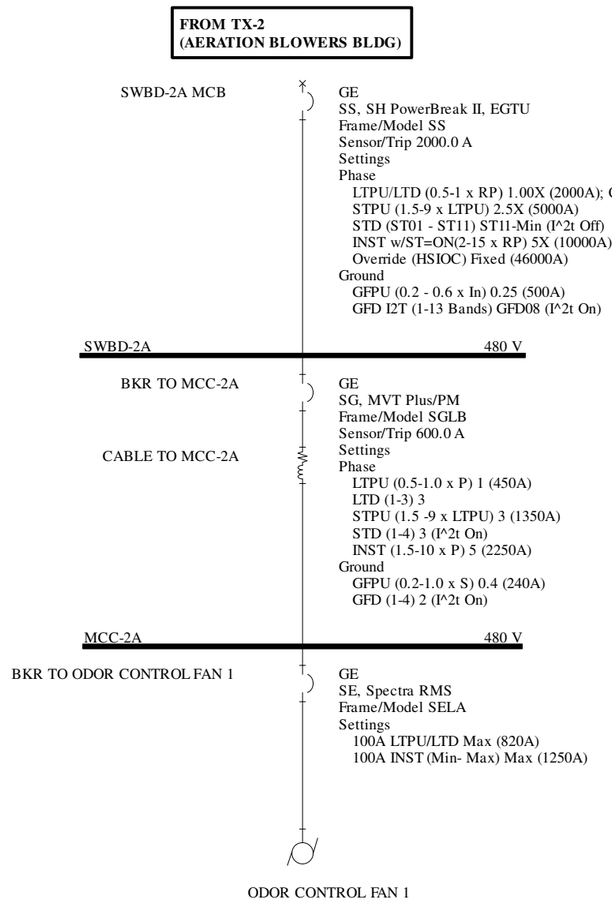




Hampton Roads Sanitation District
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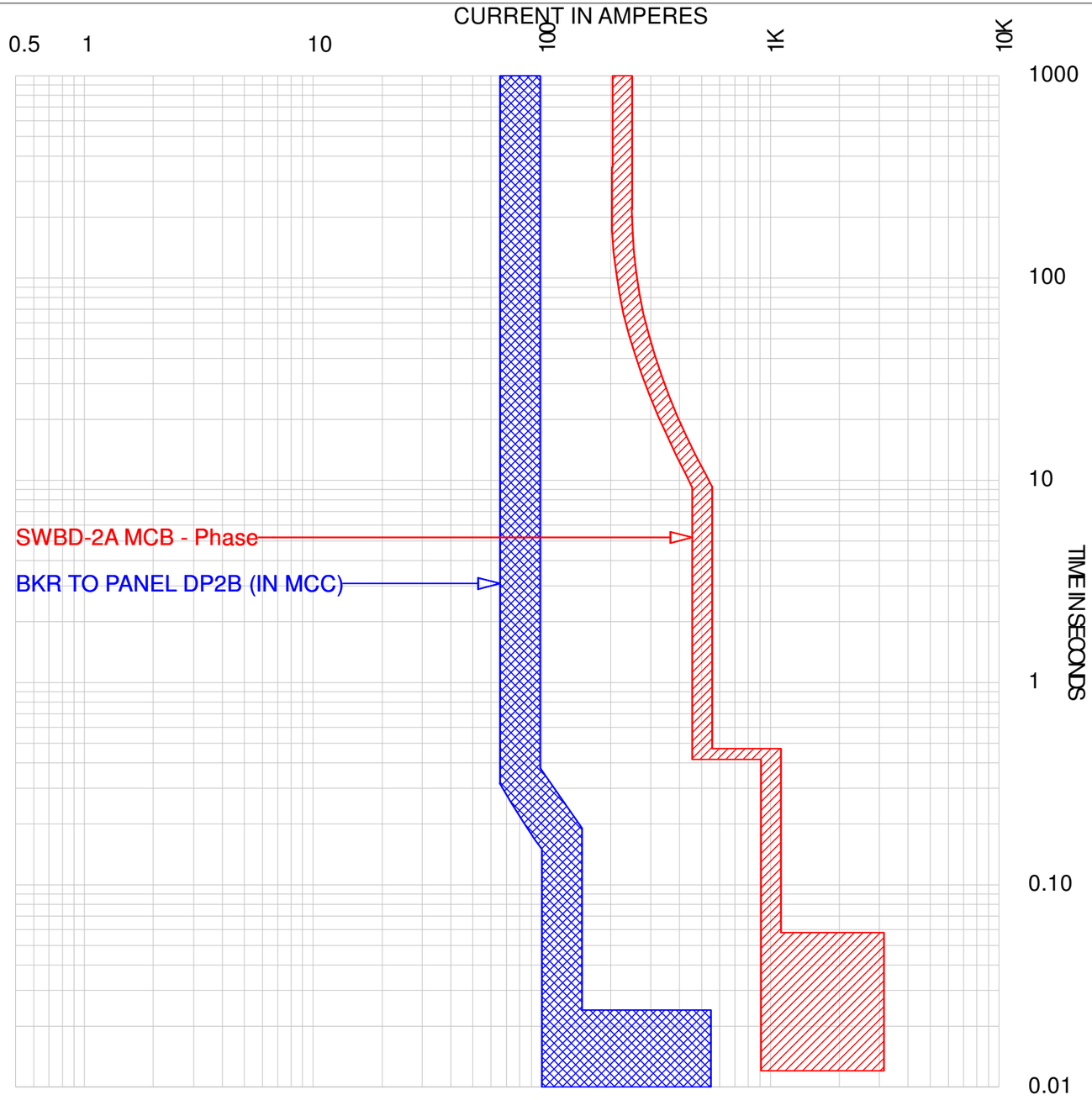
March 2015
SKM System Analysis, Inc.
TCC: TCC_MCC (SLUDGE BLDG) RECOMMENDATIONS
Reference Voltage: 480V x 1

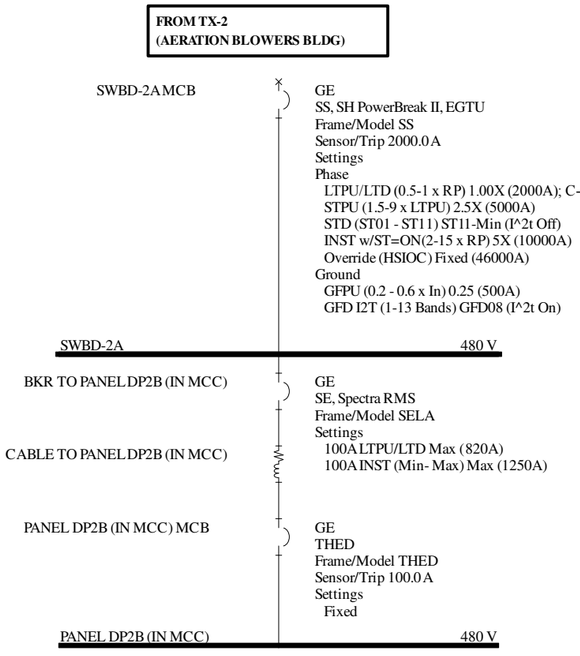




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

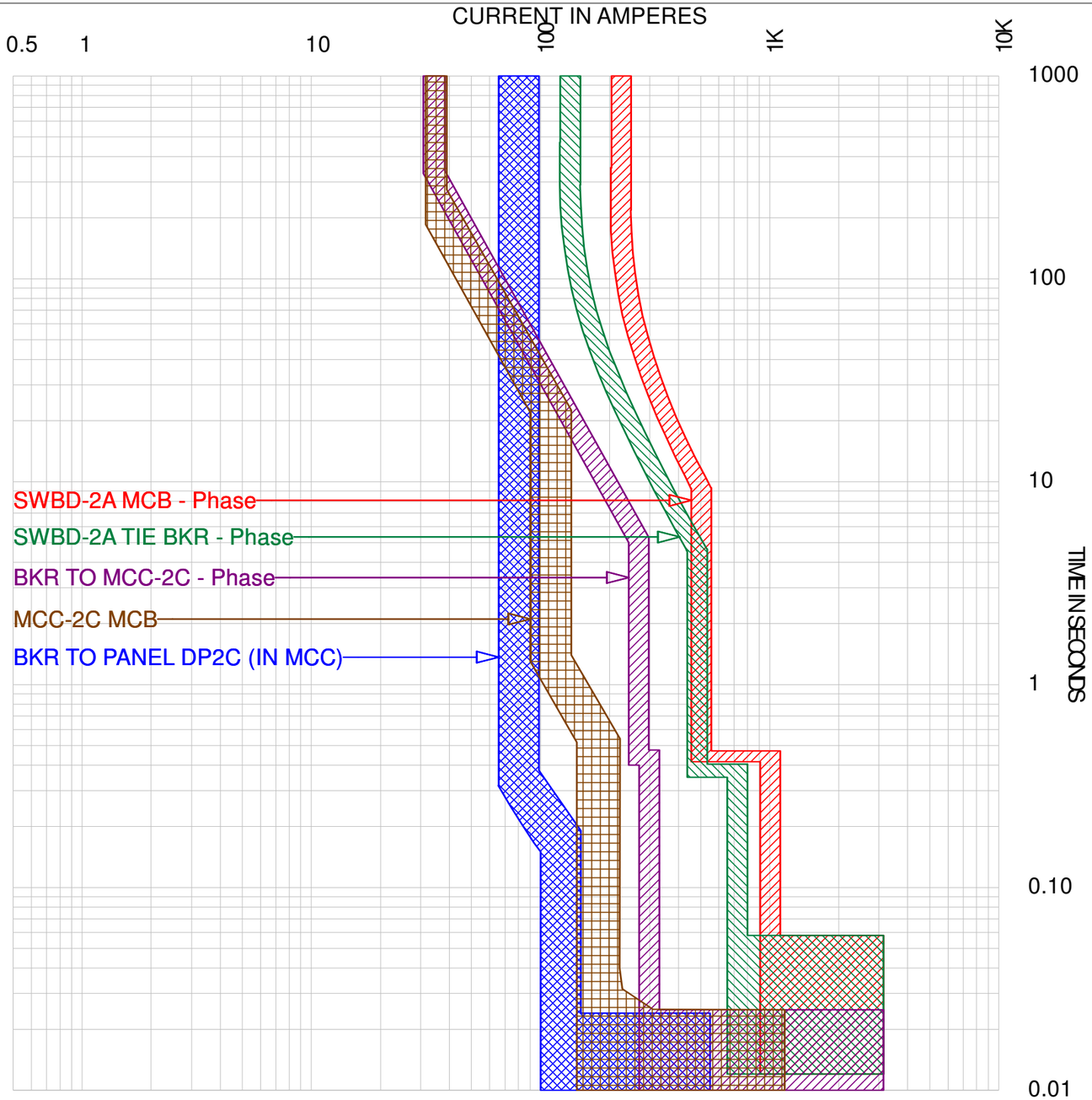
March 2015
SKM System Analysis, Inc.
TCC: TCC_MCC-2A (AERATION BLOWERS BLDG) RECOMMENDATIONS
Reference Voltage: 480V x 10





Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_MCC-2B (IFAS ELEC BLDG 1) RECOMMENDATIONS
Reference Voltage: 480V x 10



FROM TX-2
(AERATION BLOWERS BLDG)

SWBD-2A MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 1.00X (2000A); C-3
STPU (1.5-9 x LTPU) 2.5X (5000A)
STD (ST01 - ST11) ST11-Min (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)

SWBD-2A 480 V

SWBD-2A TIE BKR
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 1600.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 1.00X (1200A); C-4
STPU (1.5-9 x LTPU) 4X (4800A)
STD (ST01 - ST11) ST10-Min (I^2t Off)
INST w/ST=ON(2-15 x RP) 6X (7200A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.2 (320A)
GFD I2T (1-13 Bands) GFD07 (I^2t On)

SWBD-2A BUSWAY

SWBD-2B 480 V

BKR TO MCC-2C
GE
SG, MVT Plus/PM
Frame/Model SGLB
Sensor/Trip 400.0 A
Settings
Phase
LTPU (0.5-1.0 x P) 1 (300A)
LTD (1-3) 3
STPU (1.5 -9 x LTPU) 9 (2700A)
STD (1-4) 4 (I^2t On)
INST (1.5-10 x P) 10 (3000A)
Ground
GFPU (0.2-1.0 x S) 0.4 (160A)
GFD (1-4) 1 (I^2t On)

CABLE TO MCC-2C

MCC-2C MCB
GE
SGLA, Spectra RMS
Frame/Model SGLA
Sensor/Trip 300.0 A
Settings
4

MCC-2C 480 V

BKR TO PANEL DP2C (IN MCC)
GE
SE, Spectra RMS
Frame/Model SELA
Settings
100A LTPU/LTD Max (820A)
100A INST (Min- Max) Max (1250A)

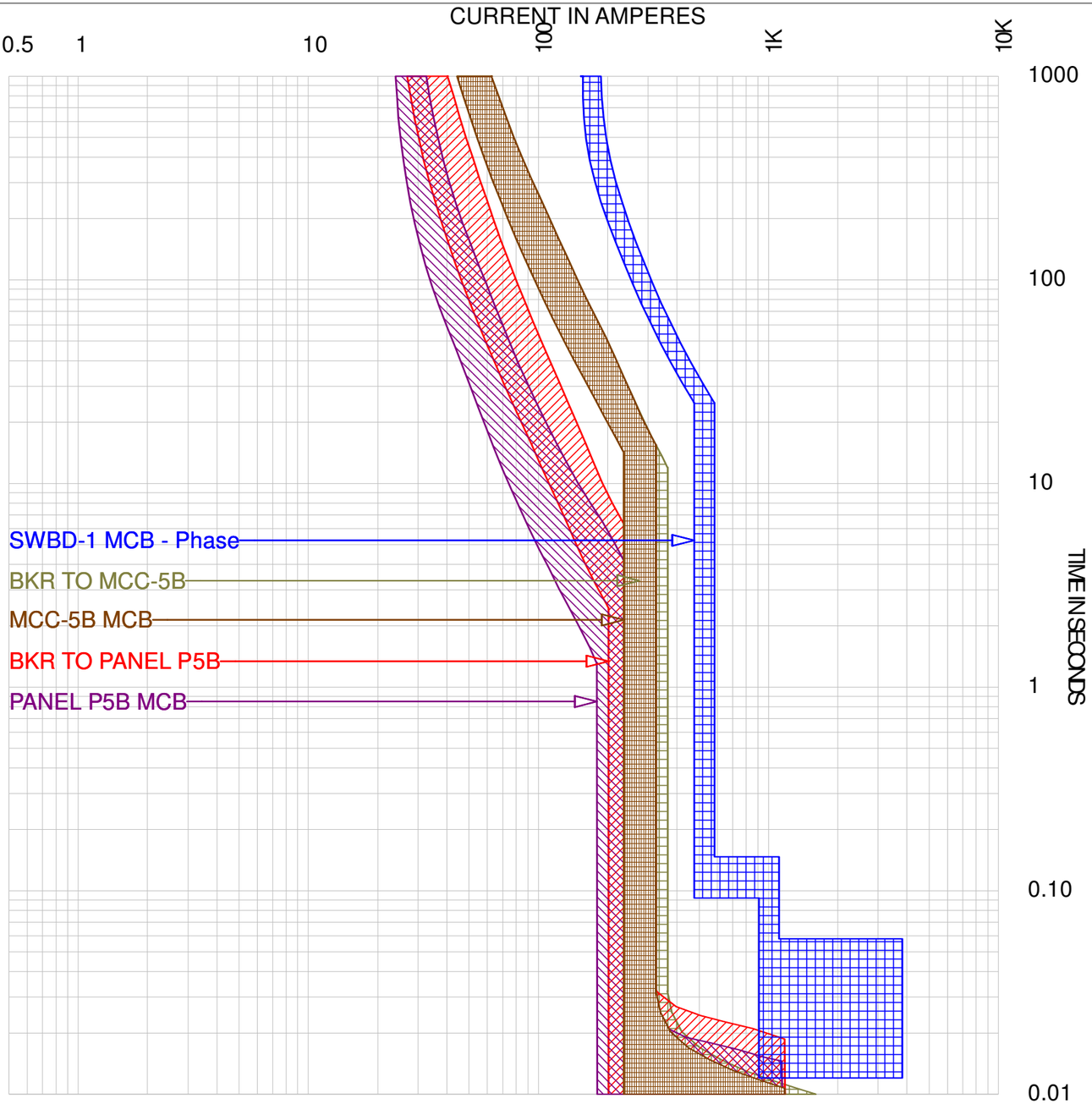
CABLE TO PANEL DP2C (IN MCC)

PANEL DP2C (IN MCC) MCB
GE
THED
Frame/Model THED
Sensor/Trip 100.0 A
Settings
Fixed

PANEL DP2C (IN MCC) 480 V

Hampton Roads Sanitation District
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James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_MCC-2C (IFAS ELEC BLDG 2) RECOMMENDATIONS
Reference Voltage: 480V x 10



FROM TX-1 (MAIN BLDG)

SWBD-1 MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 0.75X (1500A); C-10
STPU (1.5-9 x LTPU) 3.5X (5250A)
STD (ST01 - ST11) ST05-Min (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)

SWBD-1 480 V

CABLE TO MAIN MCC

MAIN MCC 480 V

BKR TO MCC-5B
CUTLER-HAMMER
HKD
Frame/Model HKD
Sensor/Trip 400.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 8 (3200A)

CABLE TO MCC-5B

MCC-5B MCB
CUTLER-HAMMER
HKD
Frame/Model HKD
Sensor/Trip 400.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 7 (2800A)

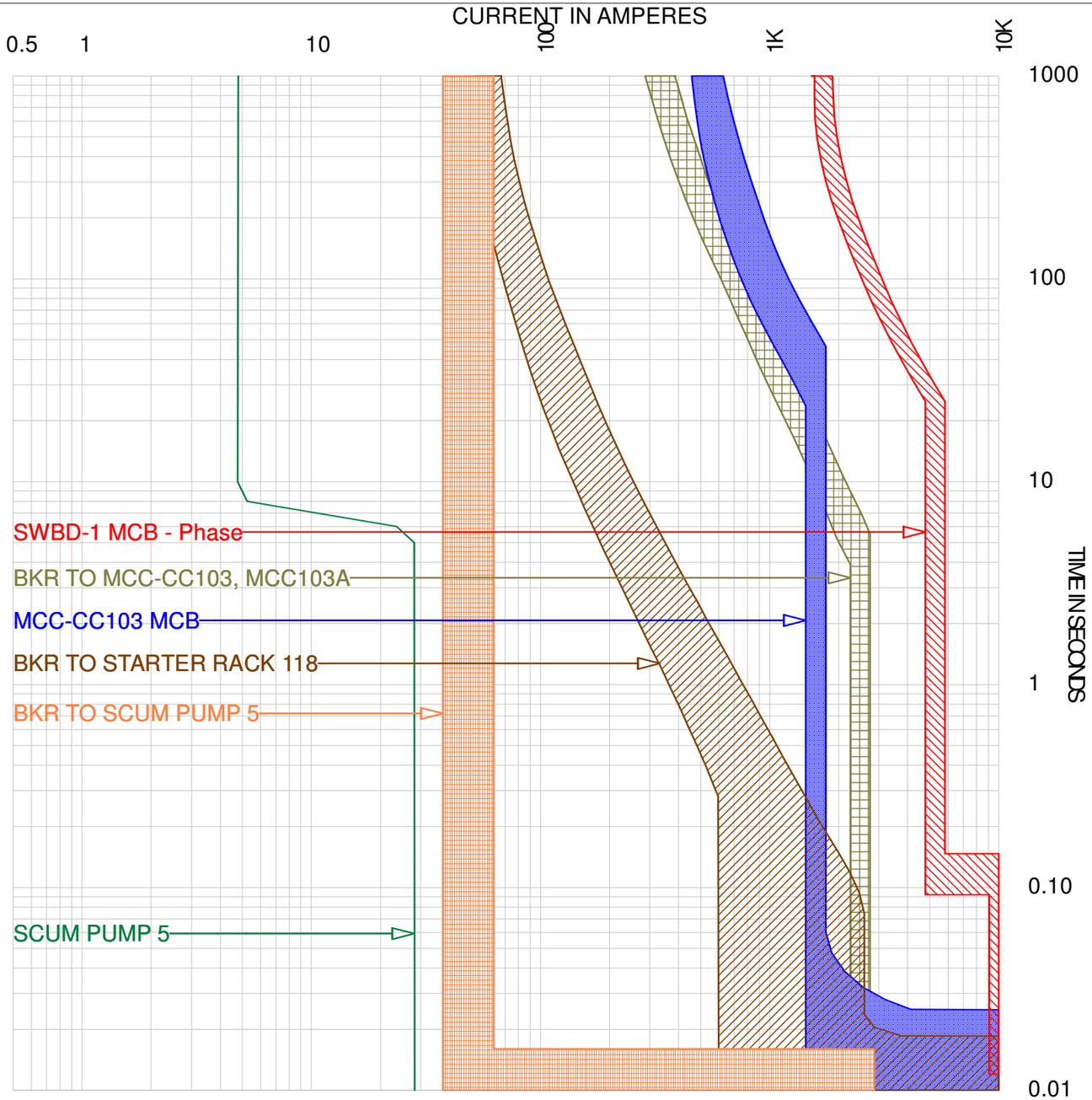
MCC-5B 480 V

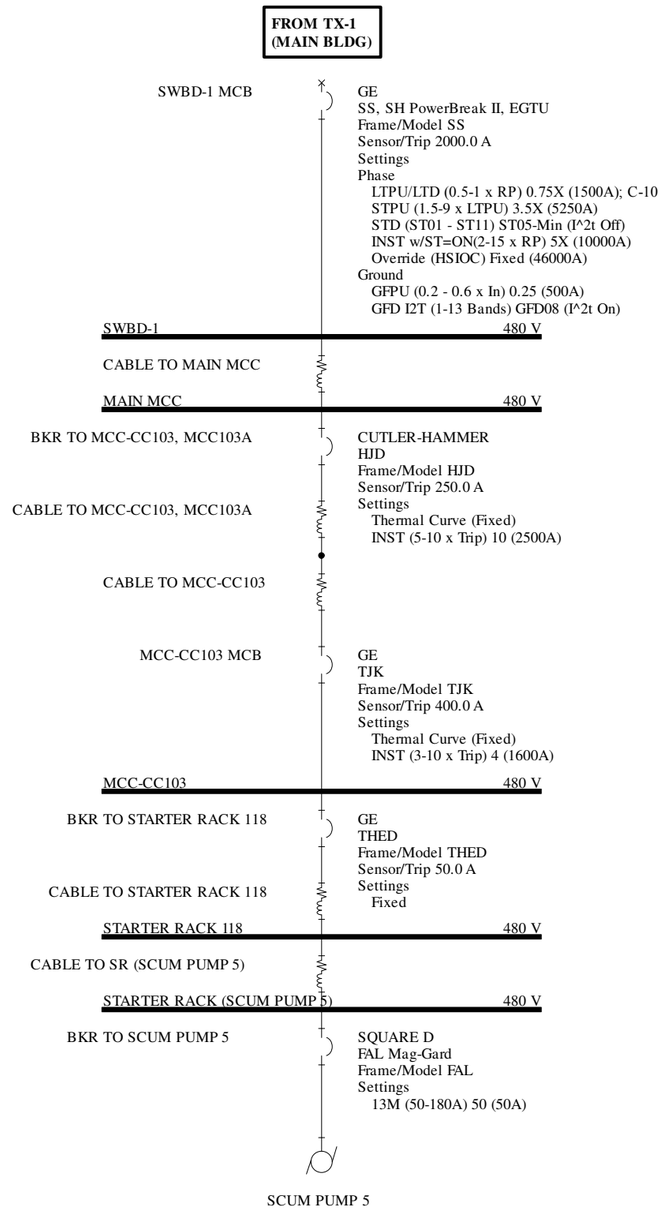
BKR TO PANEL P5B
CUTLER-HAMMER
HKB
Frame/Model HKB
Sensor/Trip 225.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 10 (2250A)

CABLE TO PANEL P5B

PANEL P5B MCB
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 225.0 A
Settings
Fixed

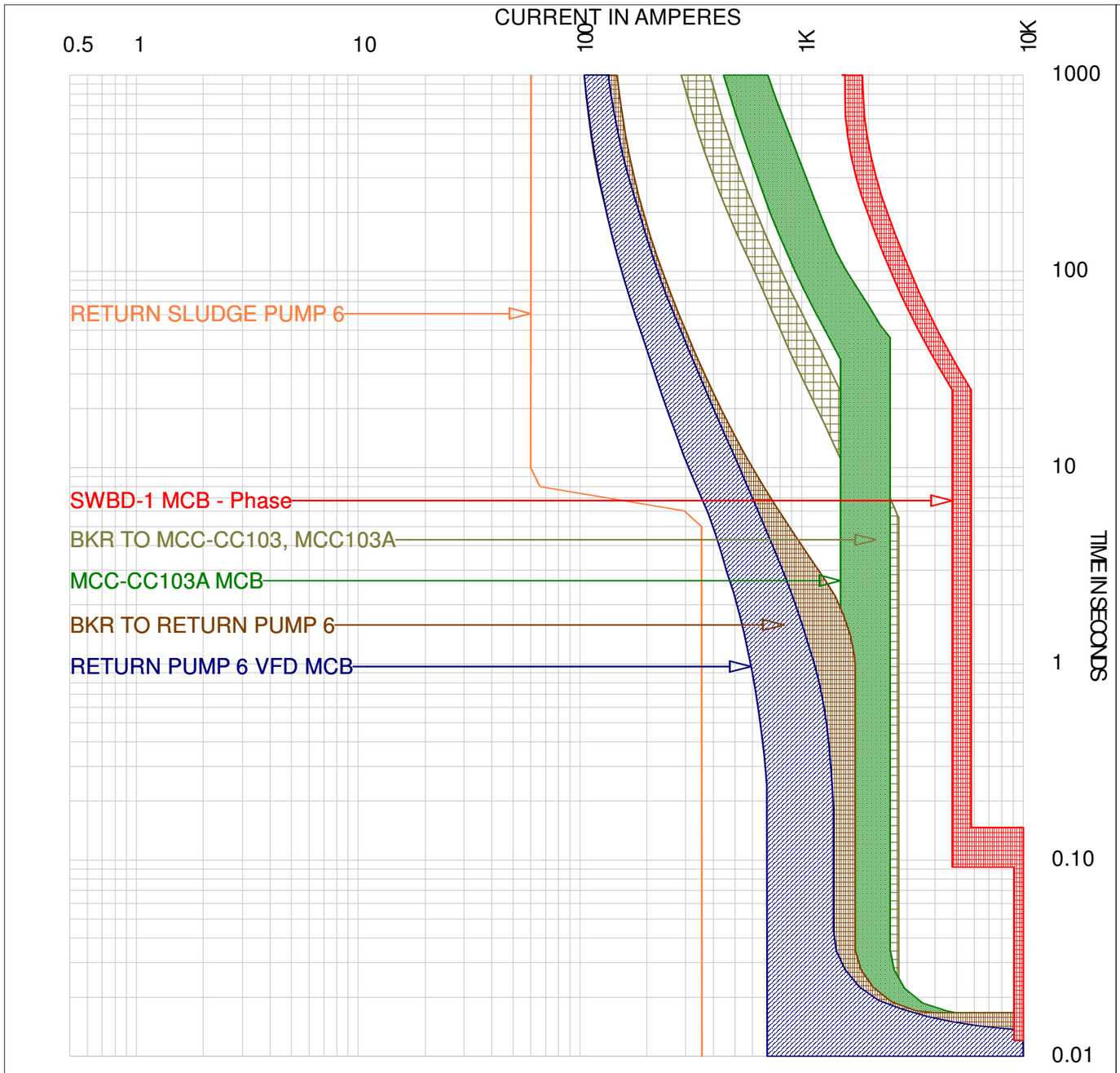
PANEL P5B 480 V

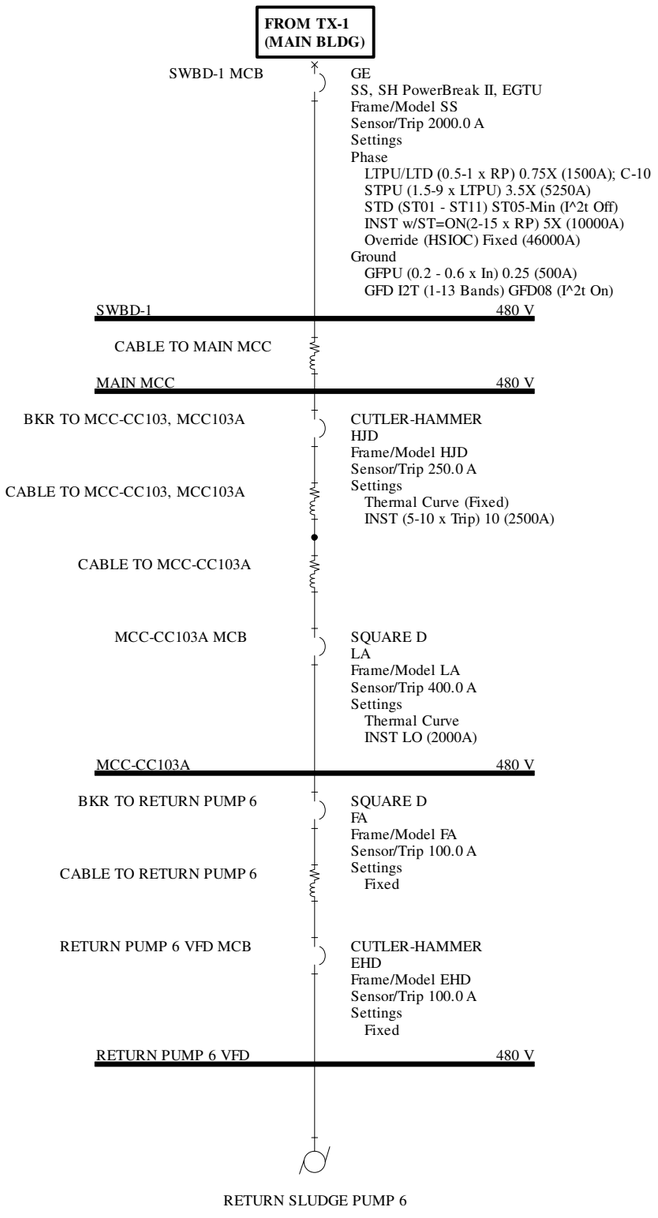


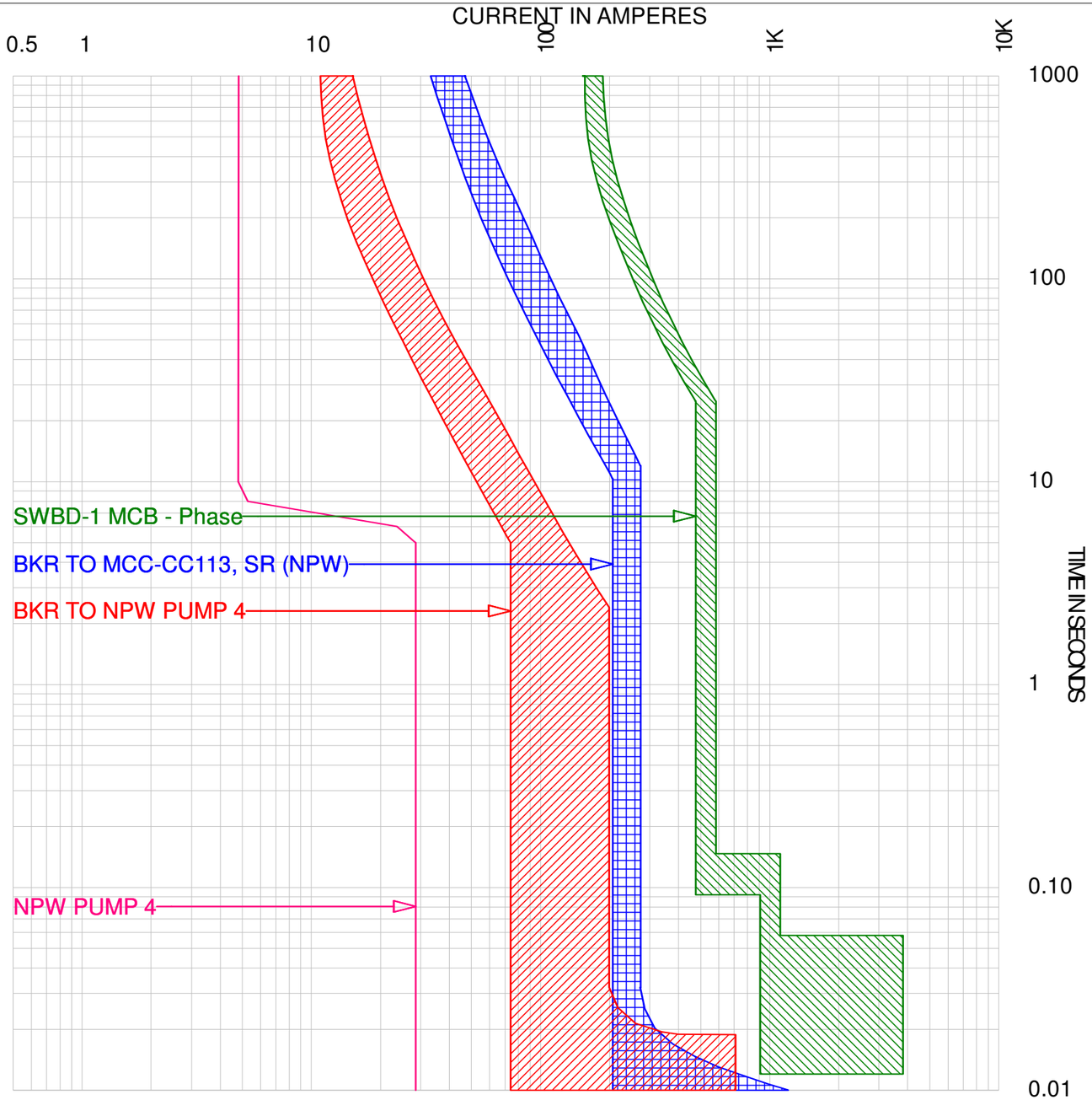


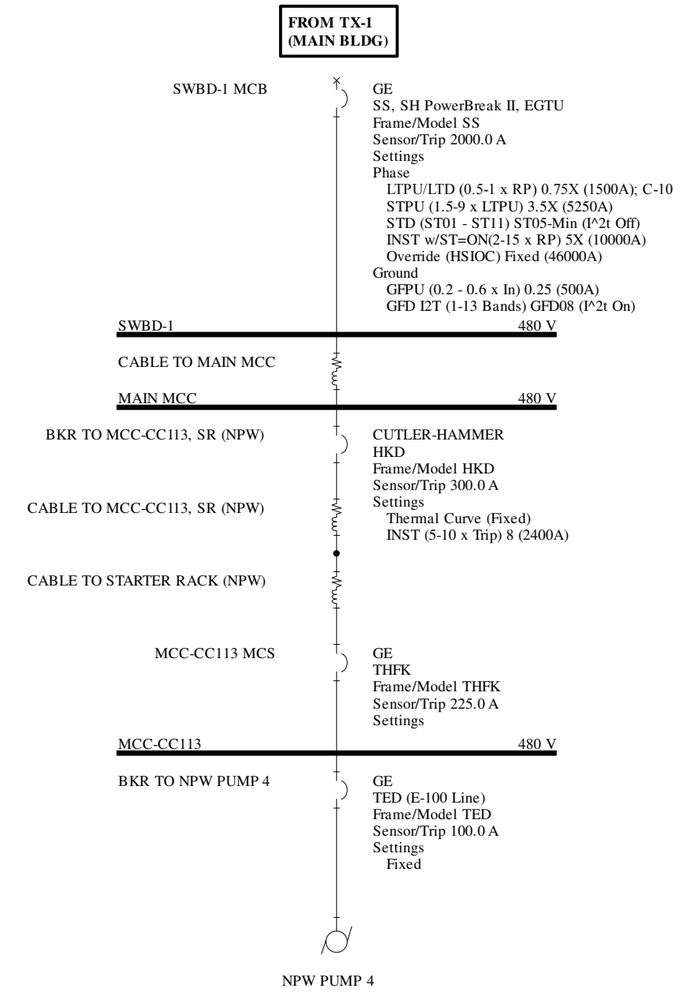
Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

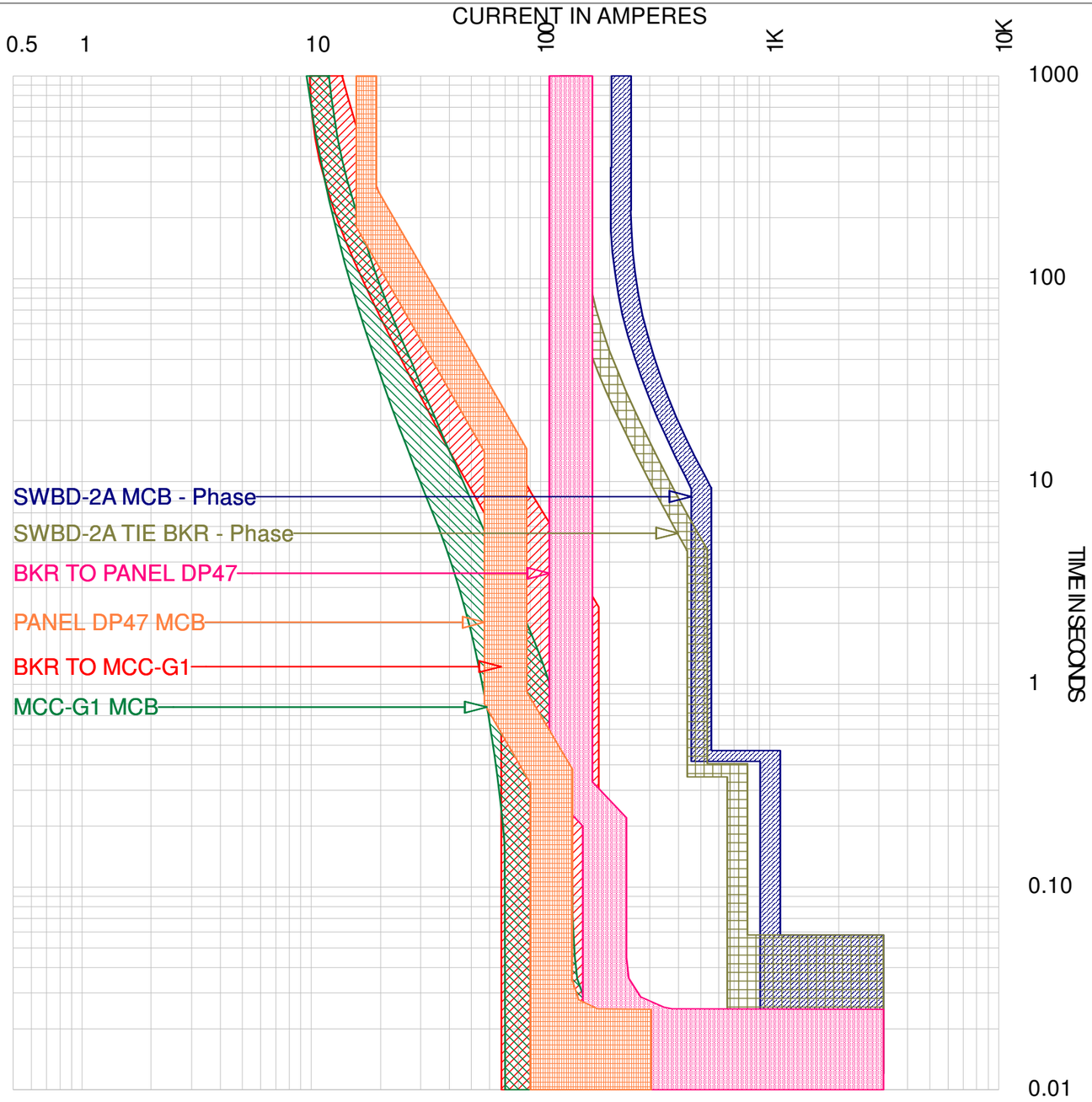
March 2015
SKM System Analysis, Inc.
TCC: TCC_MCC-CC103 (RETURN PS 1) RECOMMENDATIONS
Reference Voltage: 480V x 1


CURRENT IN AMPERES
0.5
1
10
100
1K
10K
1000
100
10
1
0.10
0.01
TIME IN SECONDS
RETURN SLUDGE PUMP 6
SWBD-1 MCB - Phase
BKR TO MCC-CC103, MCC103A
MCC-CC103A MCB
BKR TO RETURN PUMP 6
RETURN PUMP 6 VFD MCB


FROM TX-1
(MAIN BLDG)
SWBD-1 MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 0.75X (1500A); C-10
STPU (1.5-9 x LTPU) 3.5X (5250A)
STD (ST01 - ST11) ST05-Min (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)
SWBD-1
480 V
CABLE TO MAIN MCC
MAIN MCC
480 V
BKR TO MCC-CC103, MCC103A
CUTLER-HAMMER
HJD
Frame/Model HJD
Sensor/Trip 250.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 10 (2500A)
CABLE TO MCC-CC103, MCC103A
CABLE TO MCC-CC103A
MCC-CC103A MCB
SQUARE D
LA
Frame/Model LA
Sensor/Trip 400.0 A
Settings
Thermal Curve
INST LO (2000A)
MCC-CC103A
480 V
BKR TO RETURN PUMP 6
SQUARE D
FA
Frame/Model FA
Sensor/Trip 100.0 A
Settings
Fixed
CABLE TO RETURN PUMP 6
RETURN PUMP 6 VFD MCB
CUTLER-HAMMER
EHD
Frame/Model EHD
Sensor/Trip 100.0 A
Settings
Fixed
RETURN PUMP 6 VFD
480 V
RETURN SLUDGE PUMP 6


CURRENT IN AMPERES
0.5
1
10
100
1K
10K
1000
100
10
1
0.10
0.01
TIME IN SECONDS
SWBD-1 MCB - Phase
BKR TO MCC-CC113, SR (NPW)
BKR TO NPW PUMP 4
NPW PUMP 4


FROM TX-1
(MAIN BLDG)
SWBD-1 MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 0.75X (1500A); C-10
STPU (1.5-9 x LTPU) 3.5X (5250A)
STD (ST01 - ST11) ST05-Min (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)
SWBD-1
480 V
CABLE TO MAIN MCC
MAIN MCC
480 V
BKR TO MCC-CC113, SR (NPW)
CUTLER-HAMMER
HKD
Frame/Model HKD
Sensor/Trip 300.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 8 (2400A)
CABLE TO MCC-CC113, SR (NPW)
CABLE TO STARTER RACK (NPW)
MCC-CC113 MCS
GE
THFK
Frame/Model THFK
Sensor/Trip 225.0 A
Settings
MCC-CC113
480 V
BKR TO NPW PUMP 4
GE
TED (E-100 Line)
Frame/Model TED
Sensor/Trip 100.0 A
Settings
Fixed
NPW PUMP 4



FROM TX-2A
(AERATION BLOWERS BLDG)

SWBD-2A MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 1.00X (2000A); C-3
STPU (1.5-9 x LTPU) 2.5X (5000A)
STD (ST01 - ST11) ST11-Min (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)

SWBD-2A 480 V

SWBD-2A TIE BKR
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 1600.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 1.00X (1200A); C-4
STPU (1.5-9 x LTPU) 4X (4800A)
STD (ST01 - ST11) ST10-Min (I^2t Off)
INST w/ST=ON(2-15 x RP) 6X (7200A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.2 (320A)
GFD I2T (1-13 Bands) GFD07 (I^2t On)

SWBD-2B 480 V

BKR TO PANEL DP47
GE
SE, Spectra RMS Mag-Break
Frame/Model SELA
Sensor/Trip 150.0 A
Settings
MAX

CABLE TO PANEL DP47

PANEL DP47 MCB
GE
SFHA, Spectra RMS
Frame/Model SFHA
Sensor/Trip 150.0 A
Settings
5

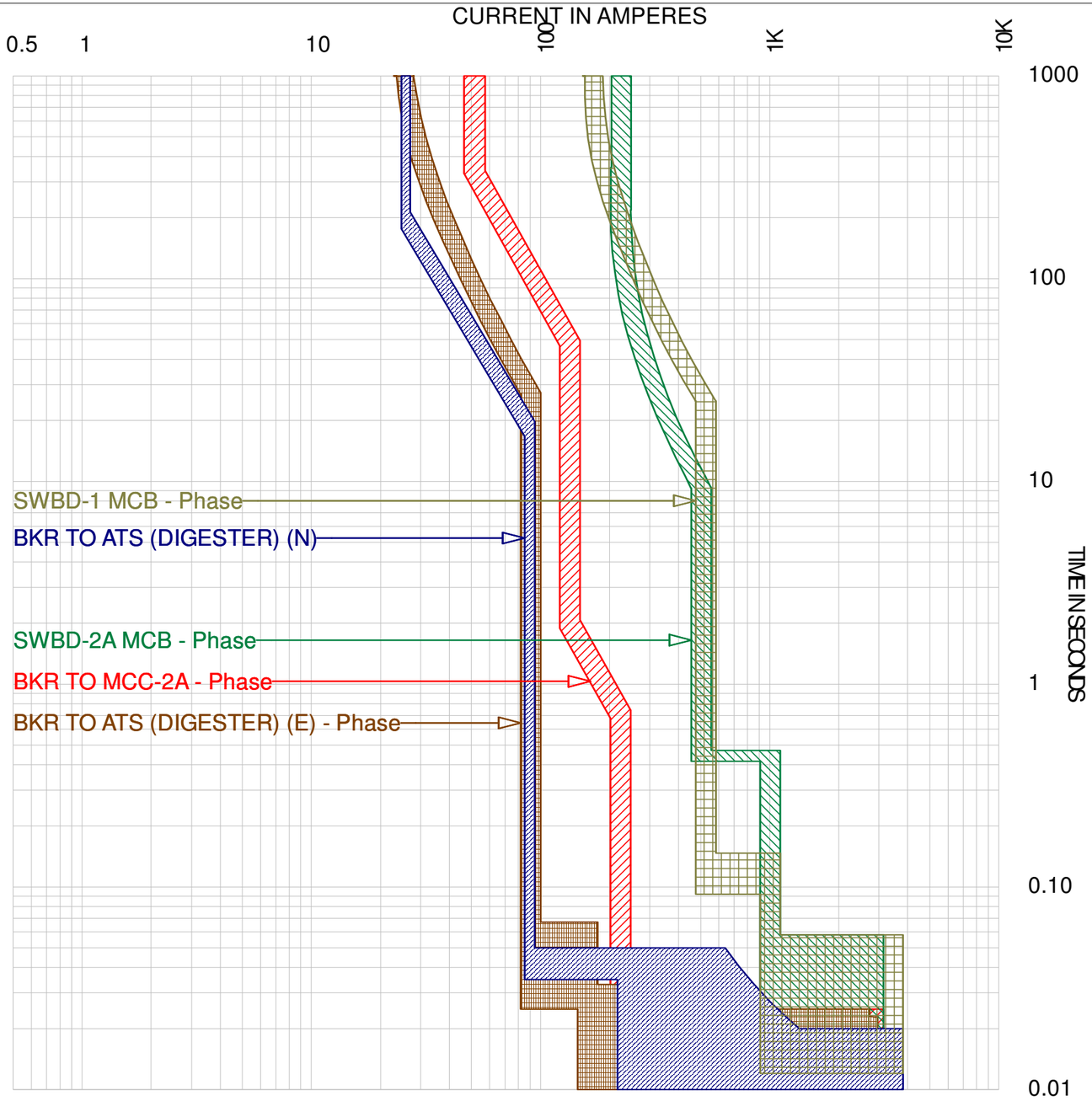
PANEL DP47 480 V

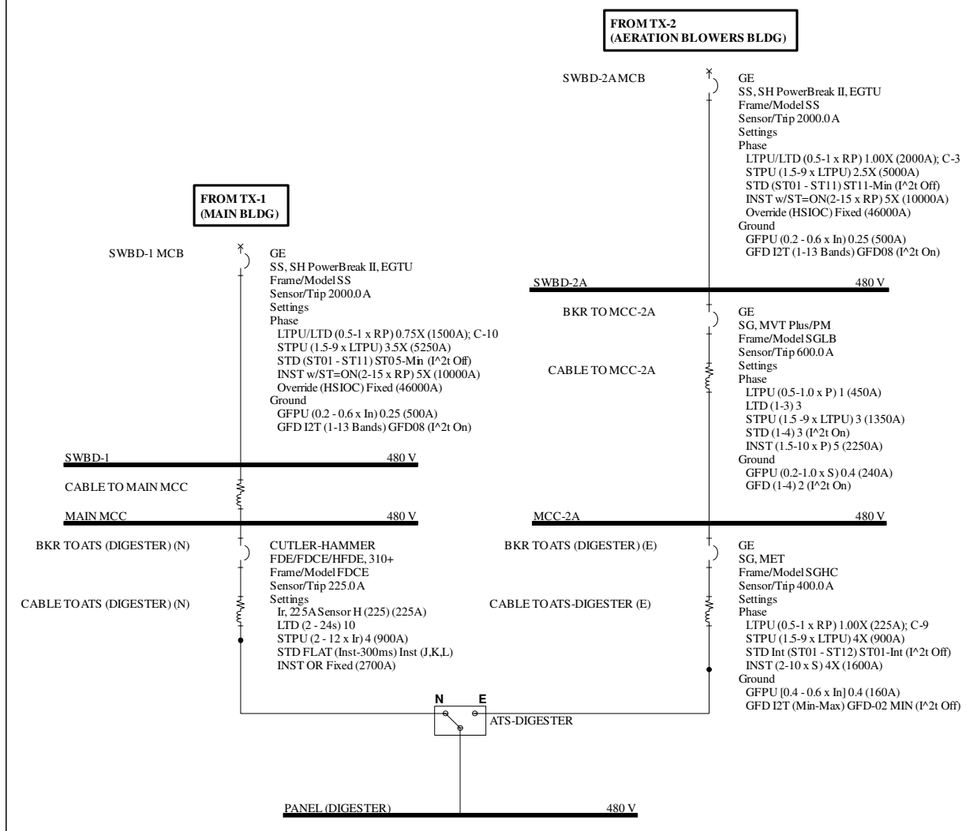
BKR TO MCC-G1
GE
THED
Frame/Model THED
Sensor/Trip 90.0 A
Settings
Fixed

CABLE TO MCC-G1

MCC-G1 MCB
CUTLER-HAMMER
FD
Frame/Model FD
Sensor/Trip 90.0 A
Settings
Fixed

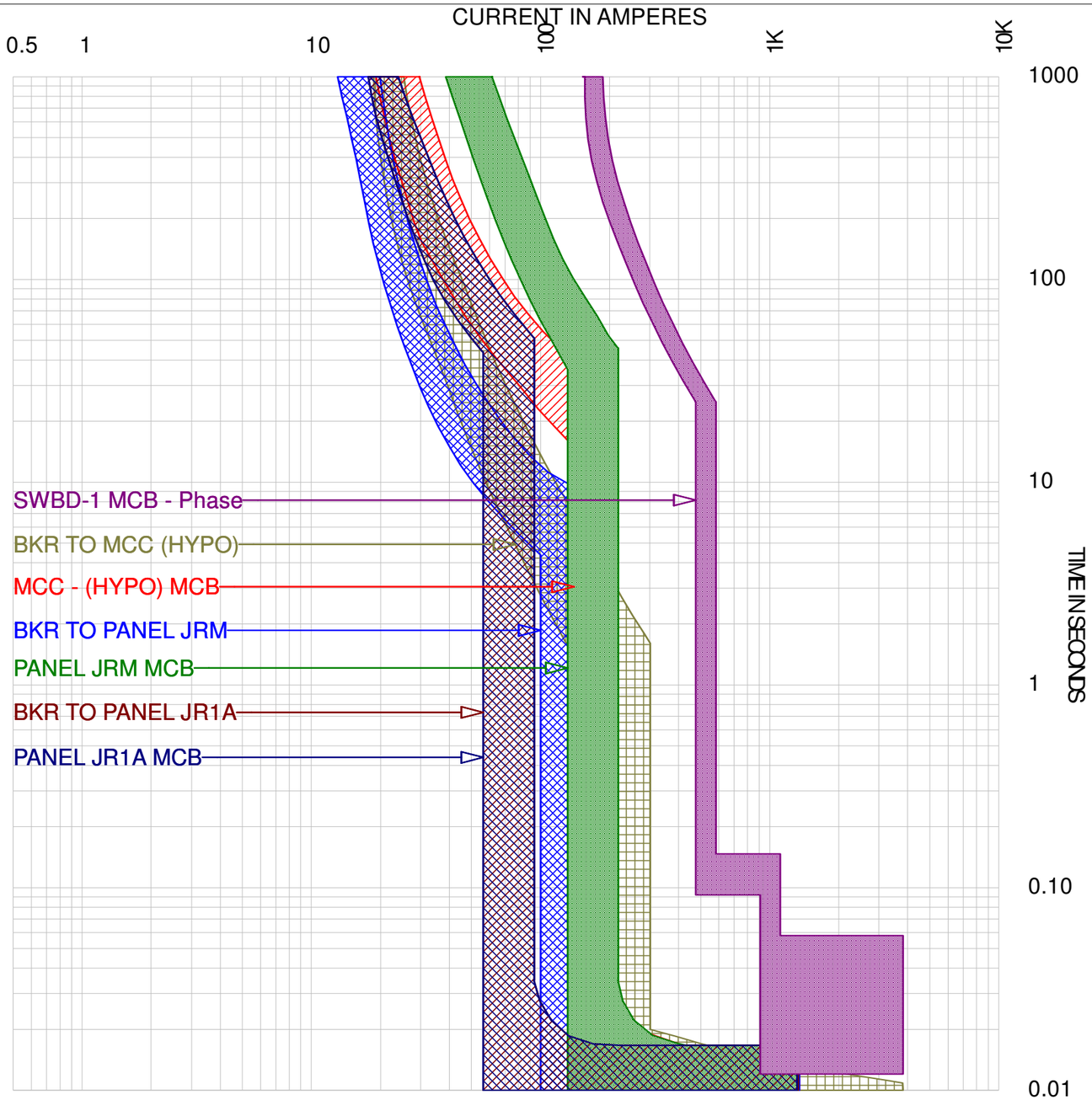
MCC-G1 480 V





Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_PANEL (DIGESTER) RECOMMENDATIONS
Reference Voltage: 480V x 10



FROM TX-1 (MAIN BLDG)

SWBD-1 MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 0.75X (1500A); C-10
STPU (1.5-9 x LTPU) 3.5X (5250A)
STD (ST01 - ST11) ST05-Min (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)

SWBD-1 480 V

CABLE TO MAIN MCC

MAIN MCC 480 V

BKR TO MCC (HYPO)
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 175.0 A
Settings
Fixed

CABLE TO MCC (HYPO)

MCC - (HYPO) MCB
SQUARE D
KH
Frame/Model KH
Sensor/Trip 175.0 A
Settings
Thermal Curve
INST HI (1750A)

MCC (HYPO) 480 V

BKR TO PANEL JRM
SQUARE D
KC
Frame/Model KC
Sensor/Trip 125.0 A
Settings
Thermal Curve
INST HI (1250A)

CABLE TO PANEL JRM

PANEL JRM MCB
SQUARE D
LA
Frame/Model LA
Sensor/Trip 350.0 A
Settings
Thermal Curve
INST LO (1750A)

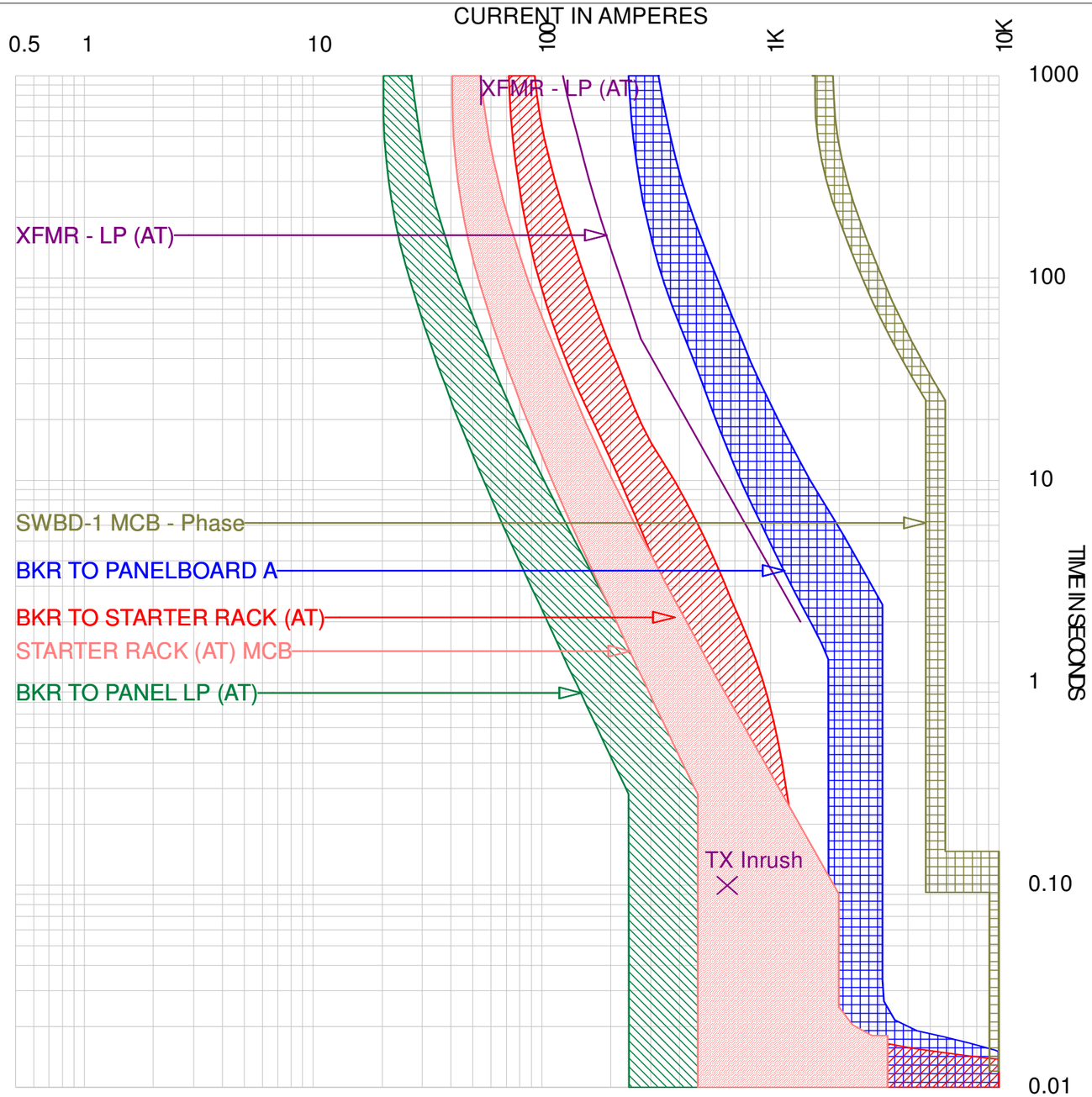
PANEL JRM 480 V

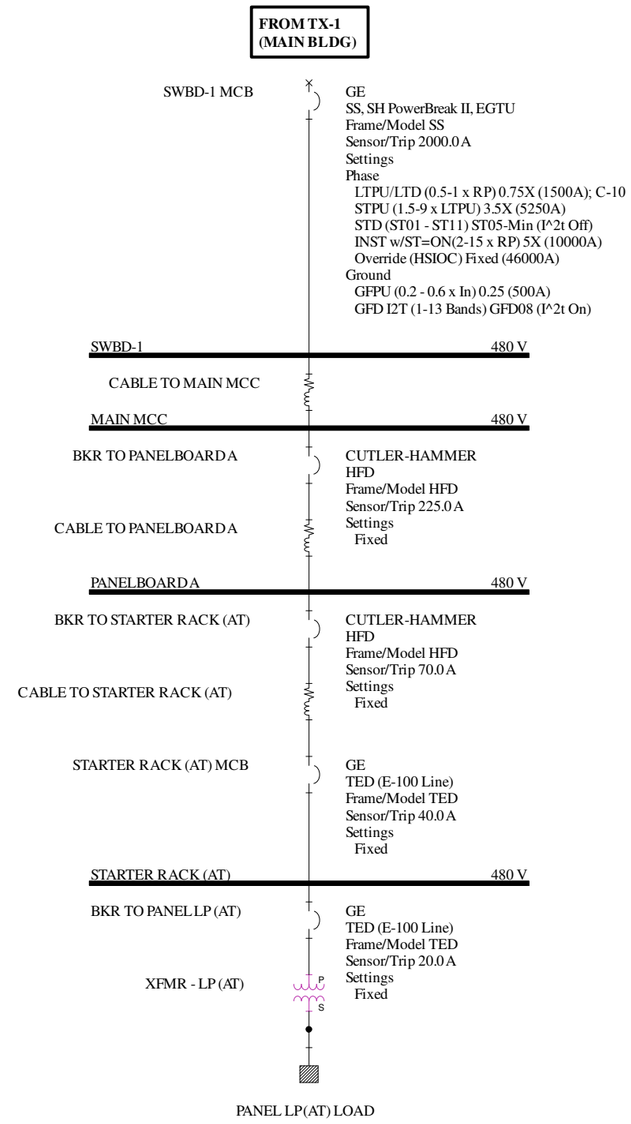
BKR TO PANEL JR1A
SQUARE D
KA
Frame/Model KA
Sensor/Trip 150.0 A
Settings
Thermal Curve
INST LO (750A)

CABLE TO PANEL JR1A

PANEL JR1A MCB
SQUARE D
KA
Frame/Model KA
Sensor/Trip 150.0 A
Settings
Thermal Curve
INST LO (750A)

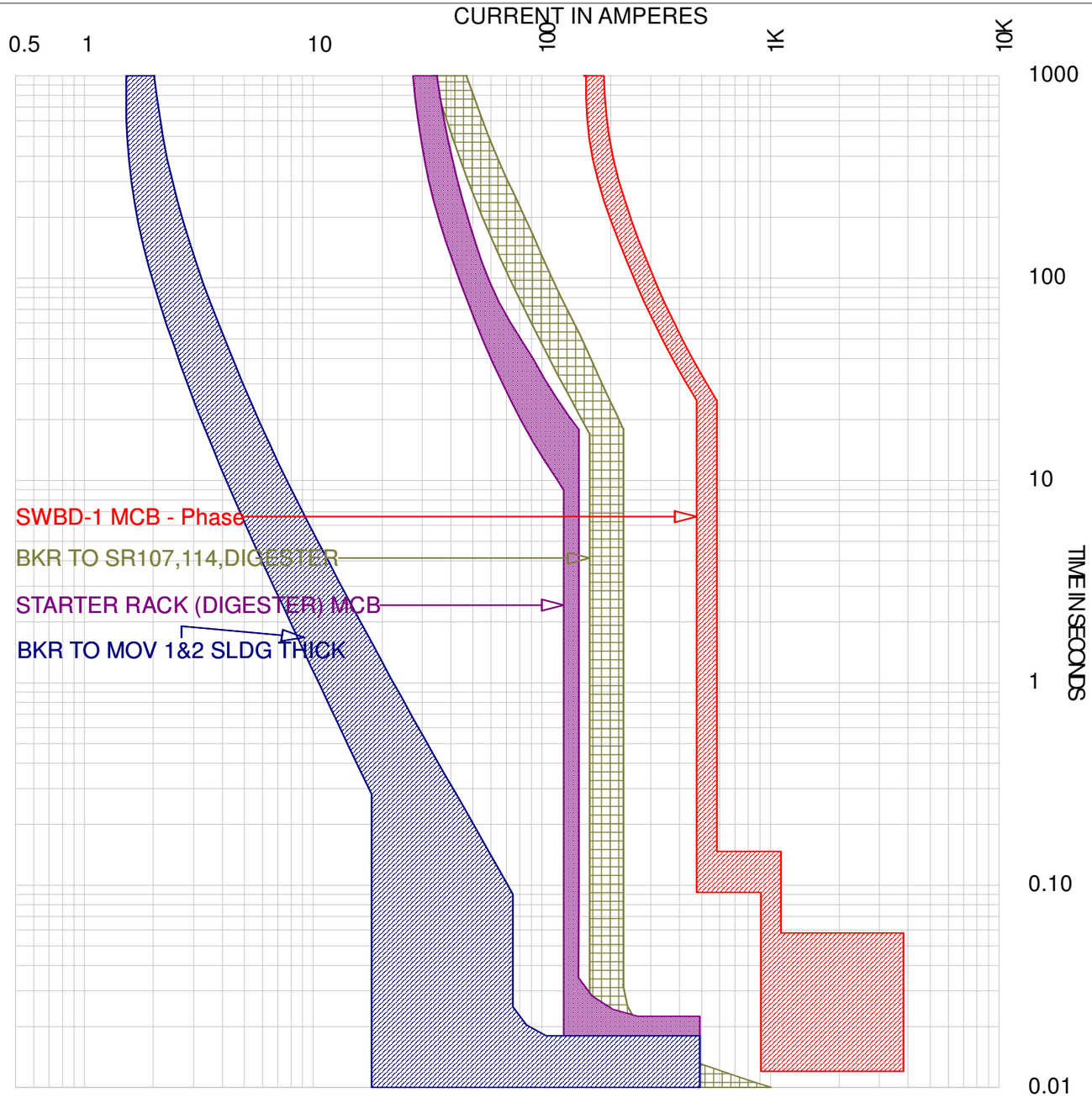
PANEL JR1A 480 V

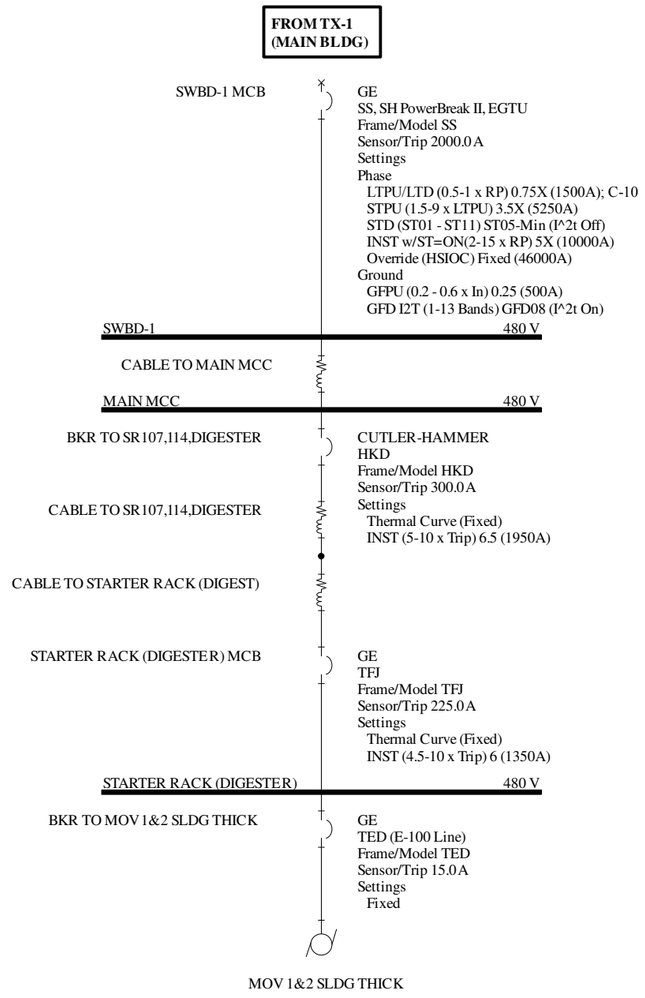




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

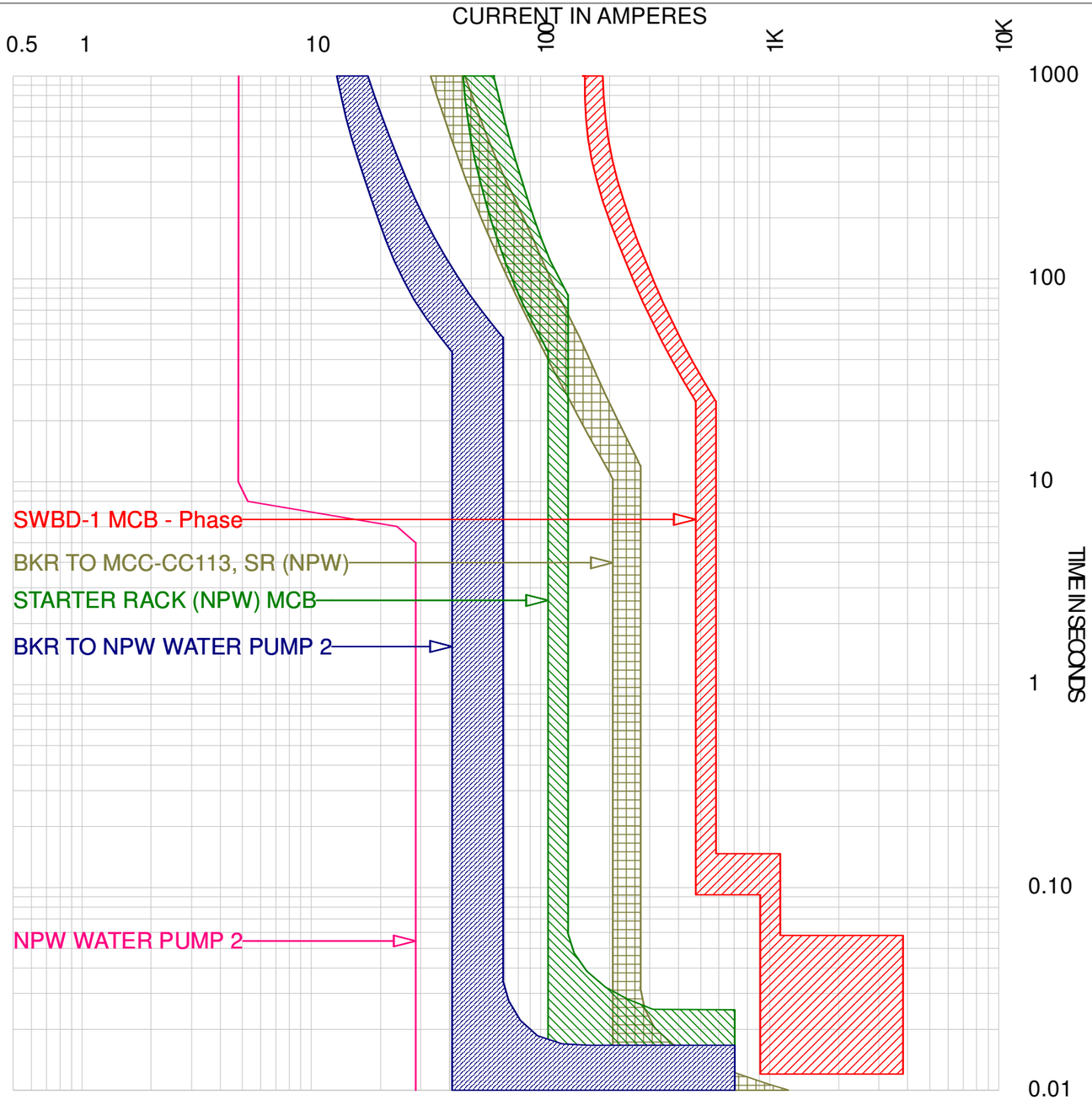
March 2015
SKM System Analysis, Inc.
TCC: TCC_STARTER RACK (AT) RECOMMENDATIONS
Reference Voltage: 480V x 1

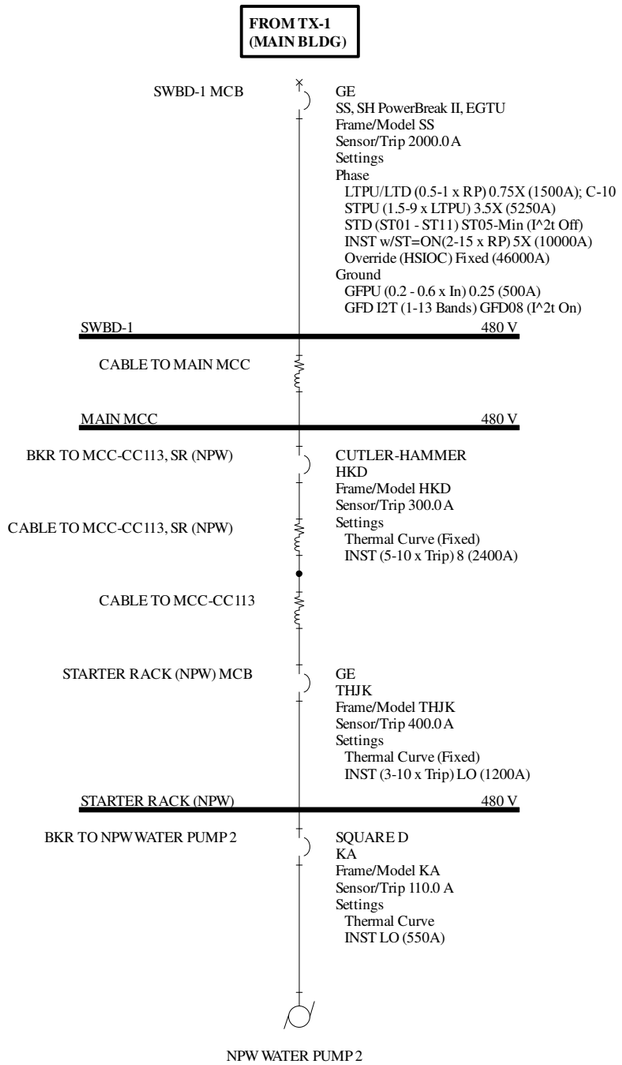


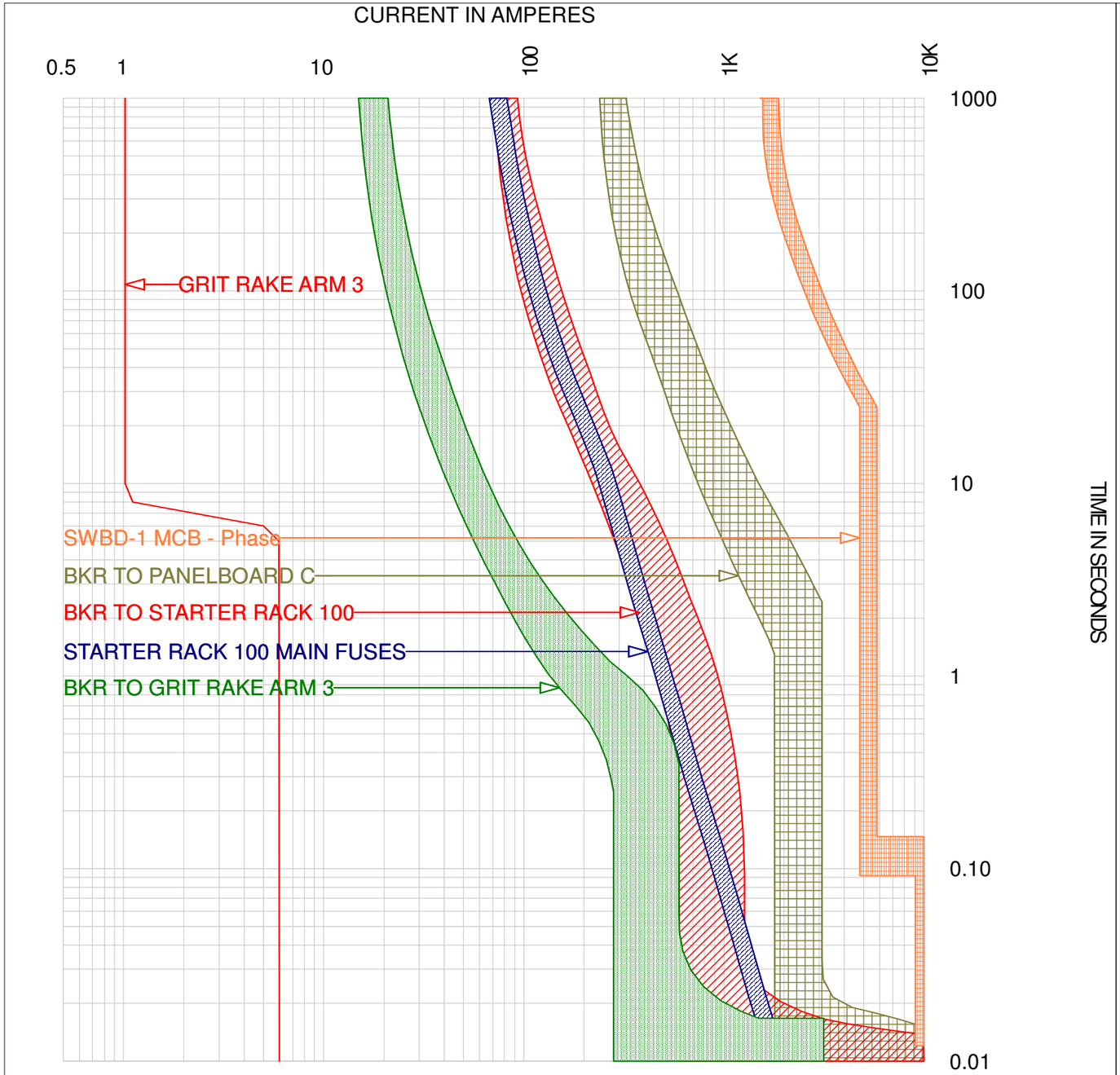


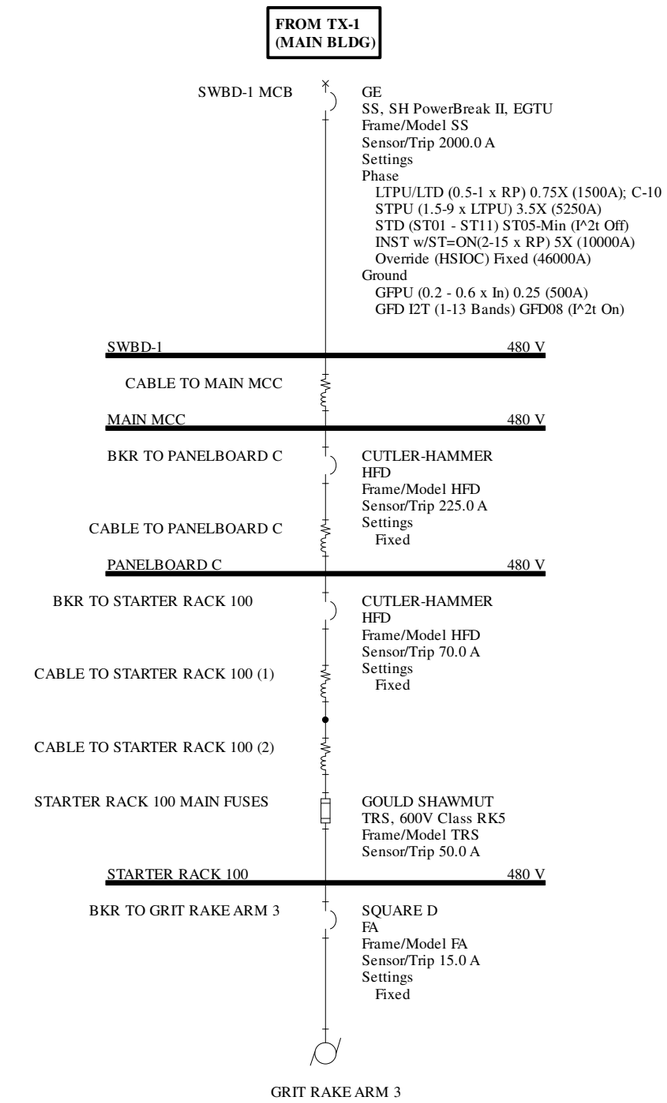
Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_STARTER RACK (DIGESTER BLDG) RECOMMENDATIONS
Reference Voltage: 480V x 10


CURRENT IN AMPERES
0.5
1
10
100
1K
10K
1000
100
10
1
0.10
0.01
TIME IN SECONDS
SWBD-1 MCB - Phase
BKR TO MCC-CC113, SR (NPW)
STARTER RACK (NPW) MCB
BKR TO NPW WATER PUMP 2
NPW WATER PUMP 2

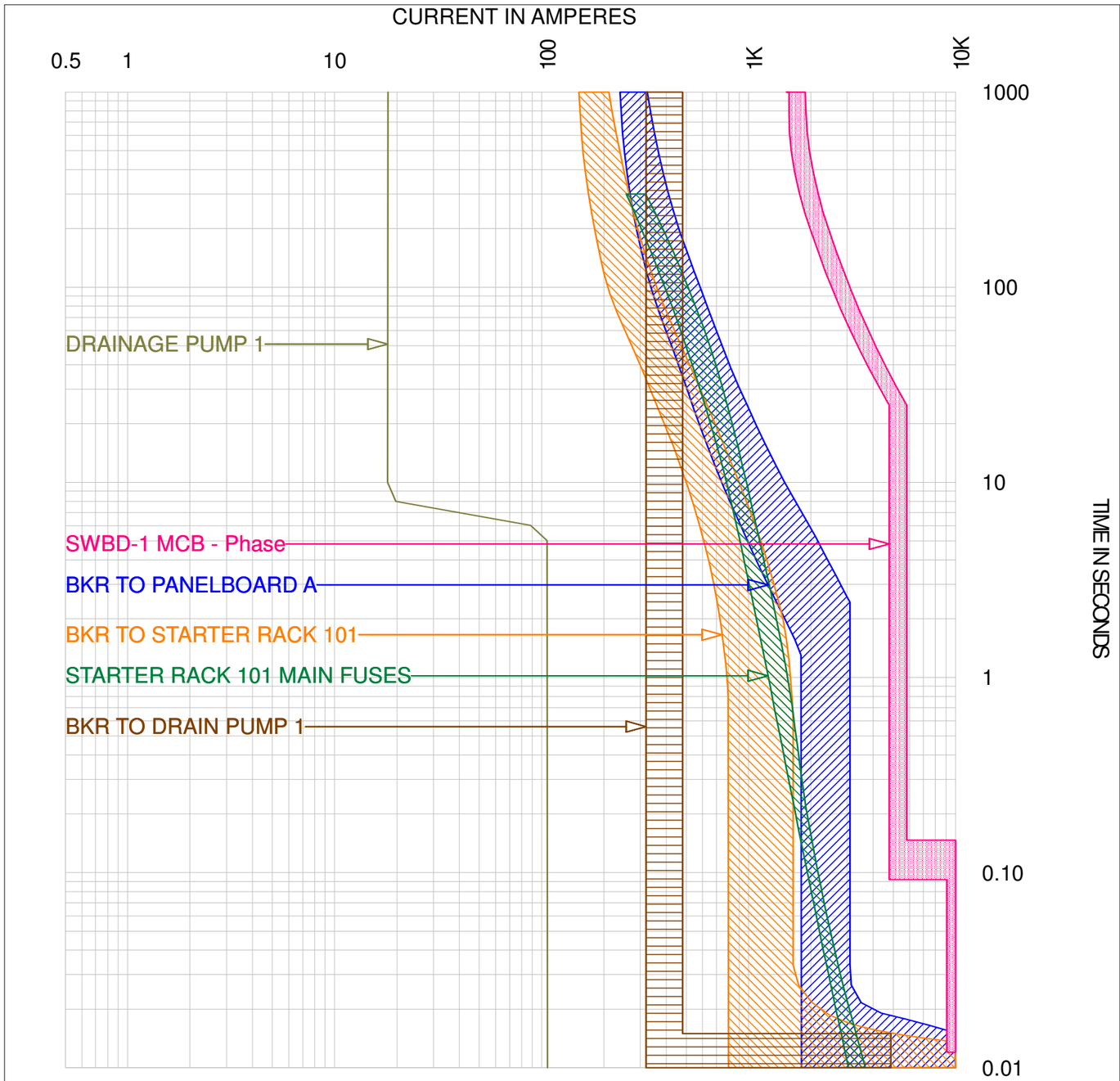

FROM TX-1
(MAIN BLDG)
SWBD-1 MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 0.75X (1500A); C-10
STPU (1.5-9 x LTPU) 3.5X (5250A)
STD (ST01 - ST11) ST05-Min (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)
SWBD-1
480 V
CABLE TO MAIN MCC
MAIN MCC
480 V
BKR TO MCC-CC113, SR (NPW)
CUTLER-HAMMER
HKD
Frame/Model HKD
Sensor/Trip 300.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 8 (2400A)
CABLE TO MCC-CC113, SR (NPW)
CABLE TO MCC-CC113
STARTER RACK (NPW) MCB
GE
THJK
Frame/Model THJK
Sensor/Trip 400.0 A
Settings
Thermal Curve (Fixed)
INST (3-10 x Trip) LO (1200A)
STARTER RACK (NPW)
480 V
BKR TO NPW WATER PUMP 2
SQUARE D
KA
Frame/Model KA
Sensor/Trip 110.0 A
Settings
Thermal Curve
INST LO (550A)
NPW WATER PUMP 2

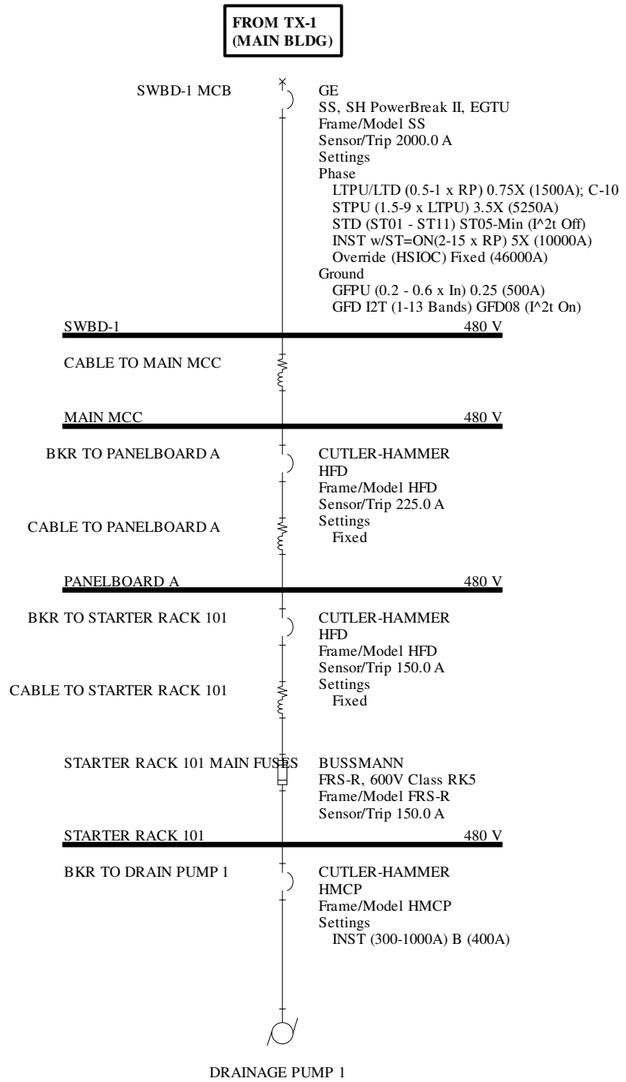


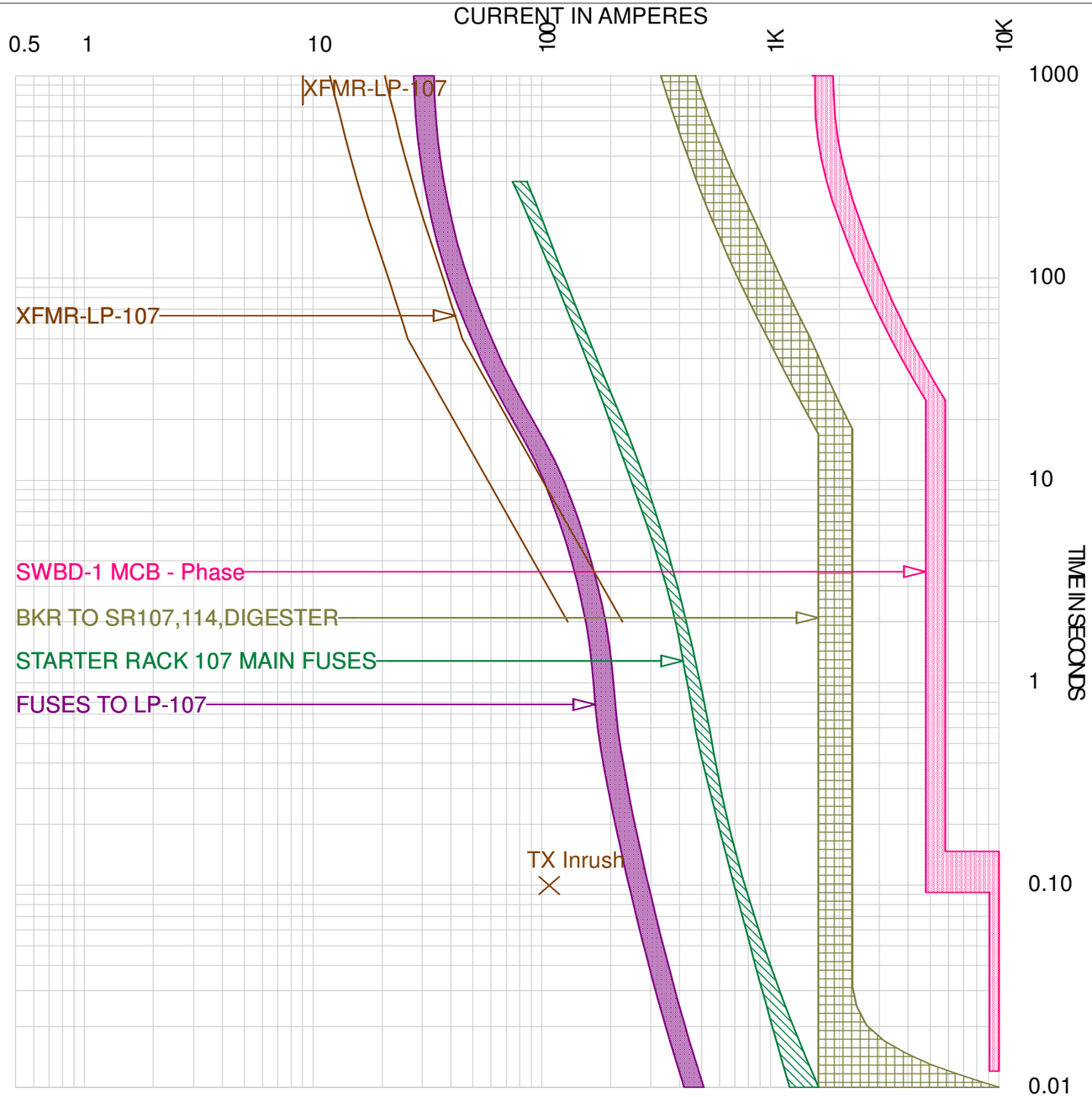


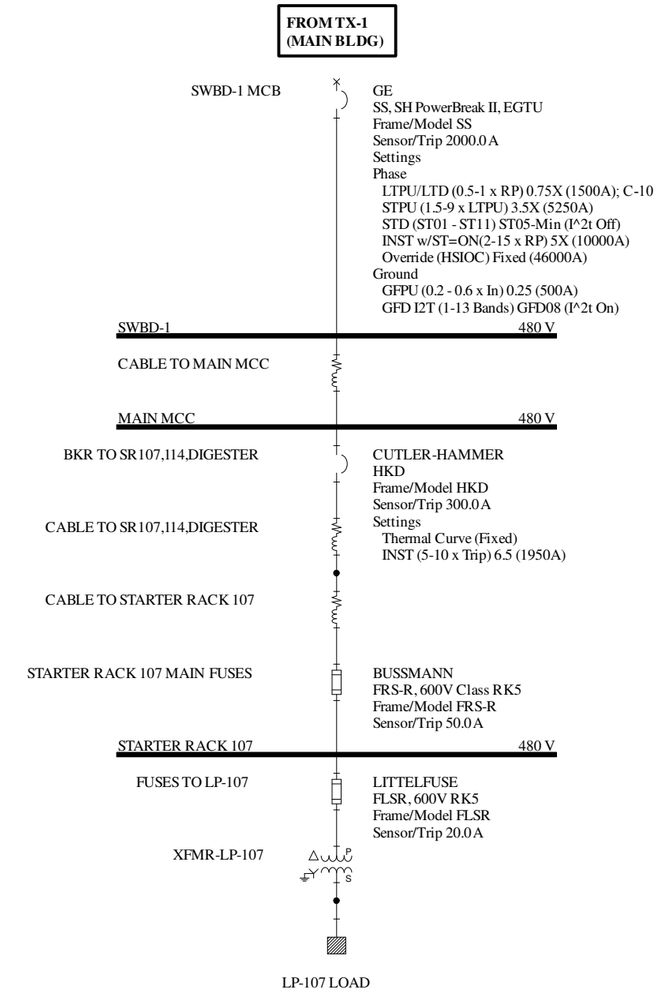
Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_STARTER RACK 100 (GRIT COLLECT 3&4) RECOMMENDATIONS
Reference Voltage: 480V x 1


CURRENT IN AMPERES
0.5
1
10
100
1K
10K
1000
100
10
1
0.10
0.01
TIME IN SECONDS
DRAINAGE PUMP 1
SWBD-1 MCB - Phase
BKR TO PANELBOARD A
BKR TO STARTER RACK 101
STARTER RACK 101 MAIN FUSES
BKR TO DRAIN PUMP 1

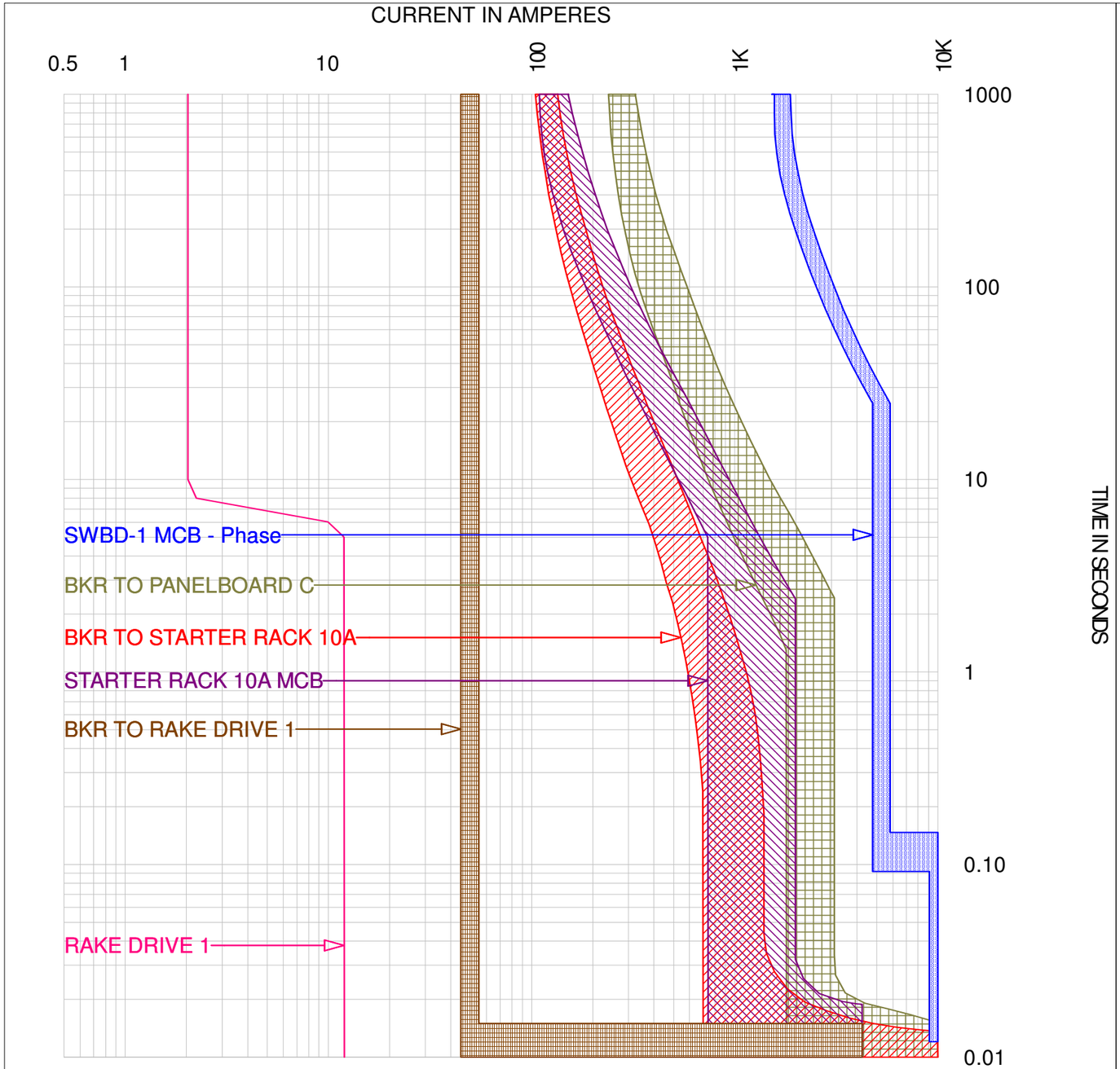

FROM TX-1
(MAIN BLDG)
SWBD-1 MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 0.75X (1500A); C-10
STPU (1.5-9 x LTPU) 3.5X (5250A)
STD (ST01 - ST11) ST05-Min (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)
SWBD-1
480 V
CABLE TO MAIN MCC
MAIN MCC
480 V
BKR TO PANELBOARD A
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 225.0 A
Settings
Fixed
CABLE TO PANELBOARD A
PANELBOARD A
480 V
BKR TO STARTER RACK 101
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 150.0 A
Settings
Fixed
CABLE TO STARTER RACK 101
STARTER RACK 101 MAIN FUSES
BUSSMANN
FRS-R, 600V Class RK5
Frame/Model FRS-R
Sensor/Trip 150.0 A
STARTER RACK 101
480 V
BKR TO DRAIN PUMP 1
CUTLER-HAMMER
HMCP
Frame/Model HMCP
Settings
INST (300-1000A) B (400A)
DRAINAGE PUMP 1

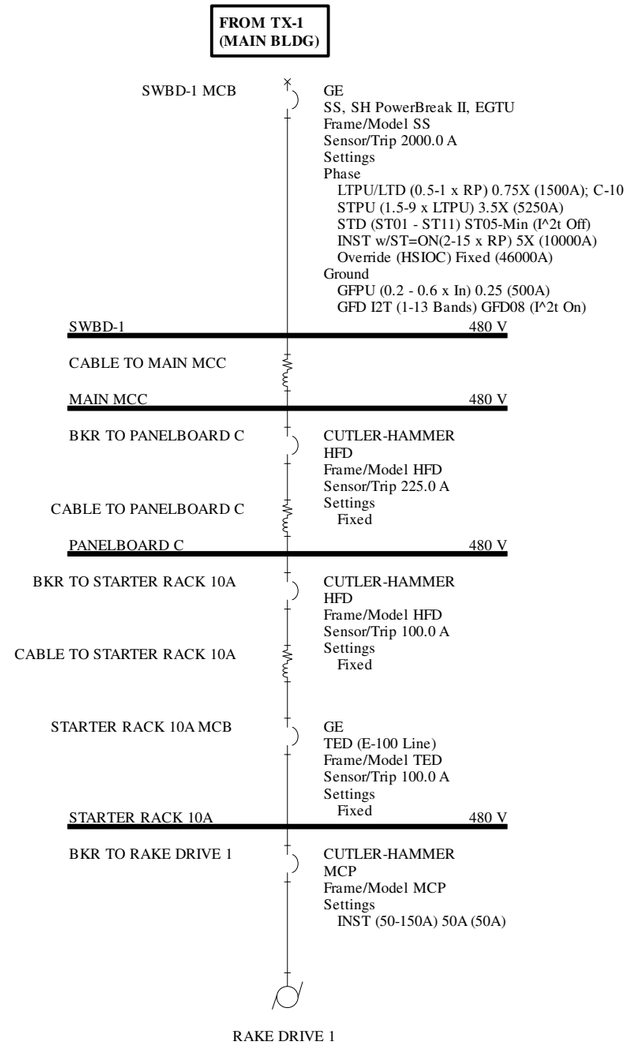




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Arc Flash Study
James River Treatment Plant

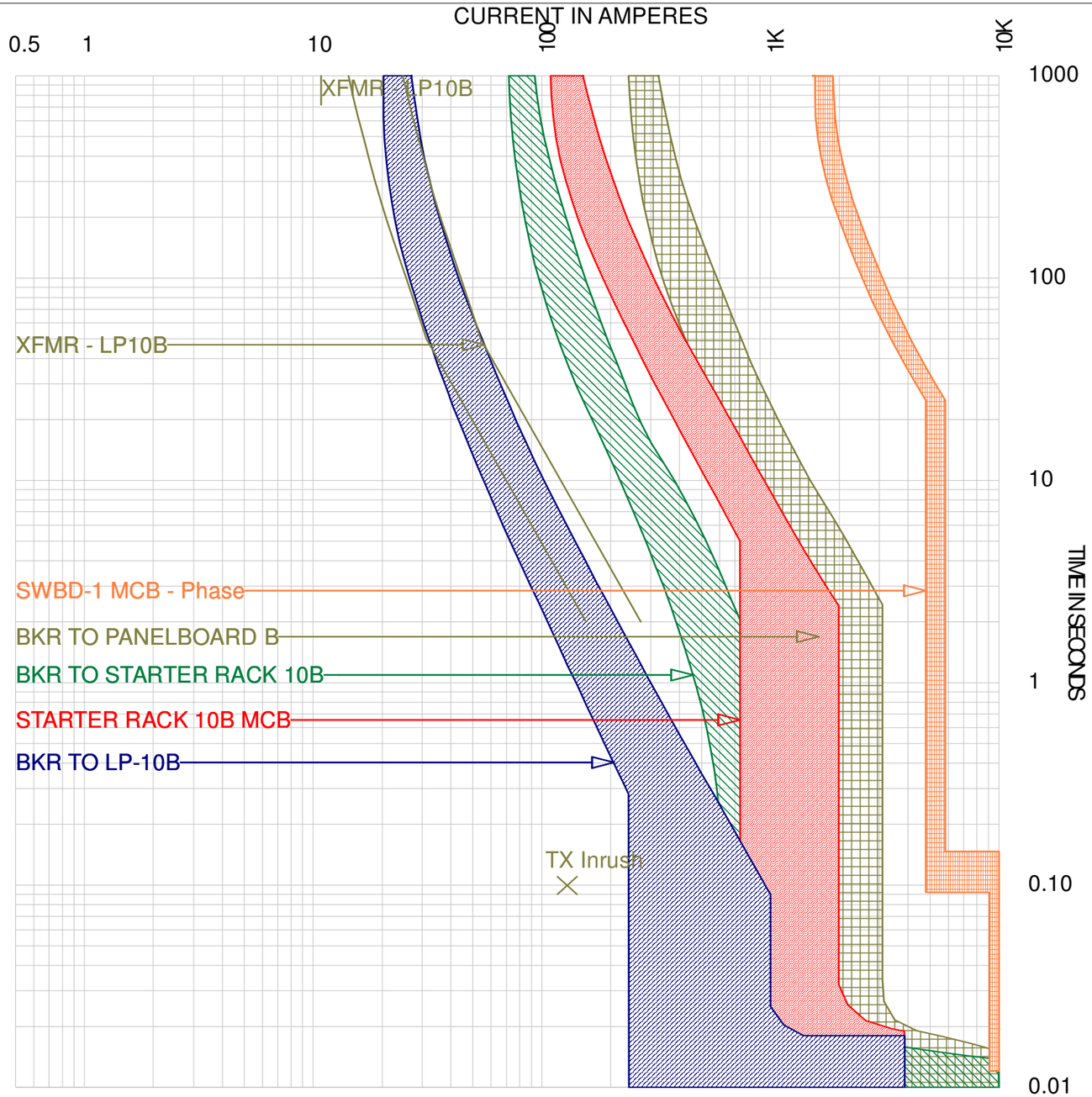
March 2015
SKM System Analysis, Inc.
TCC: TCC_STARTER RACK 107 (PRI CLAR 3,4) RECOMMENDATIONS
Reference Voltage: 480V x 1

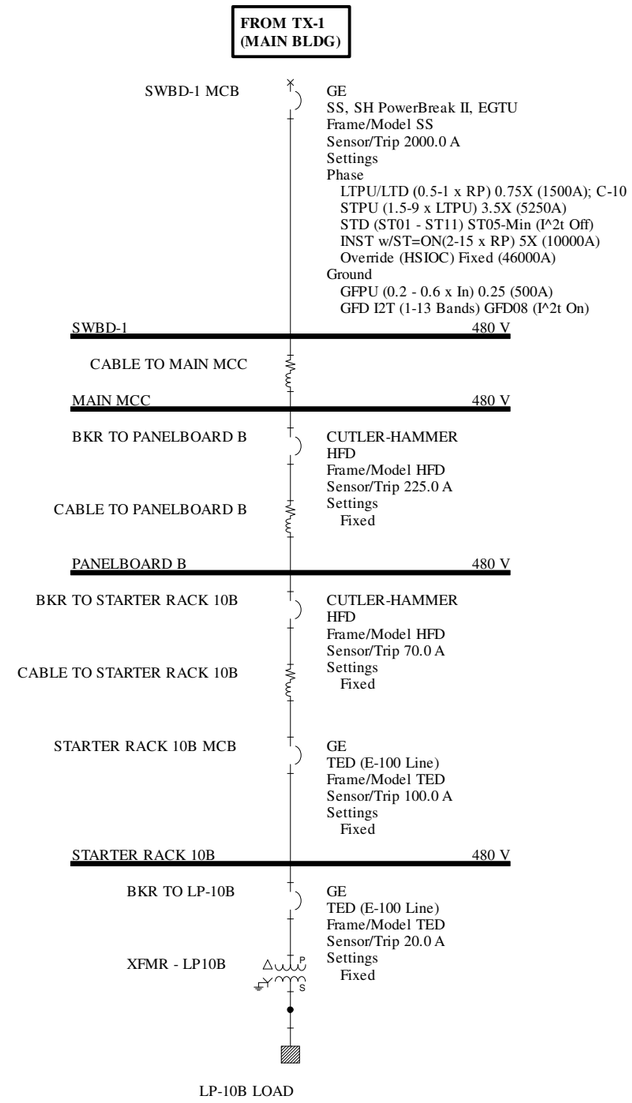


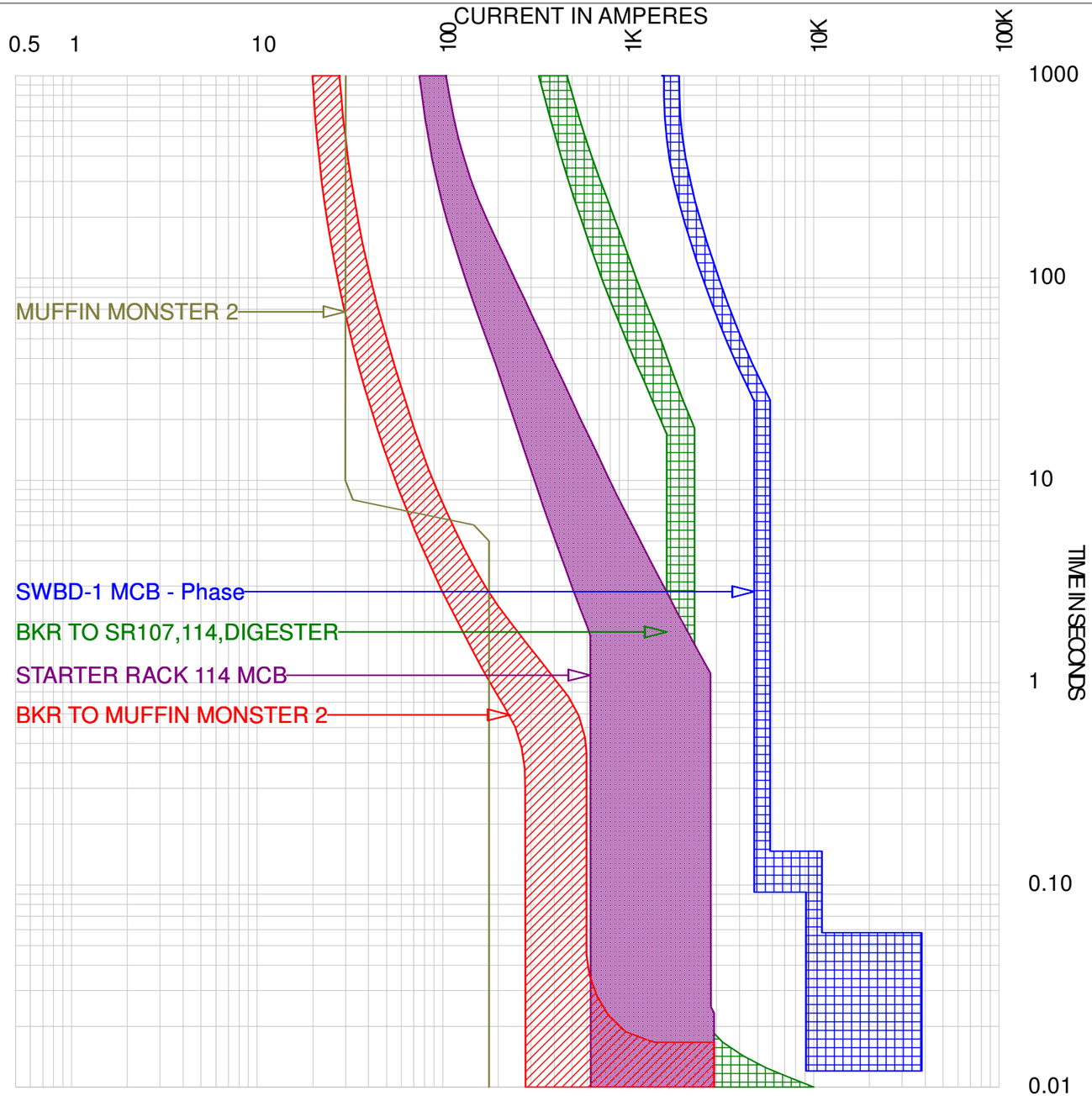


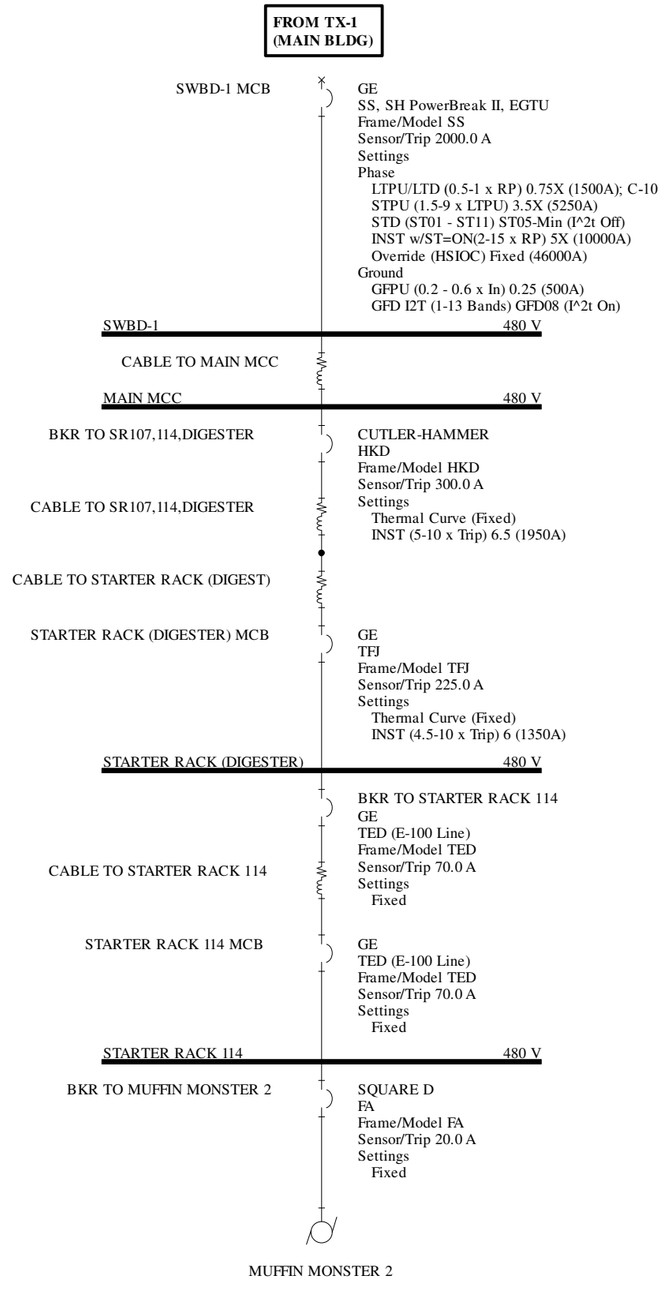
Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

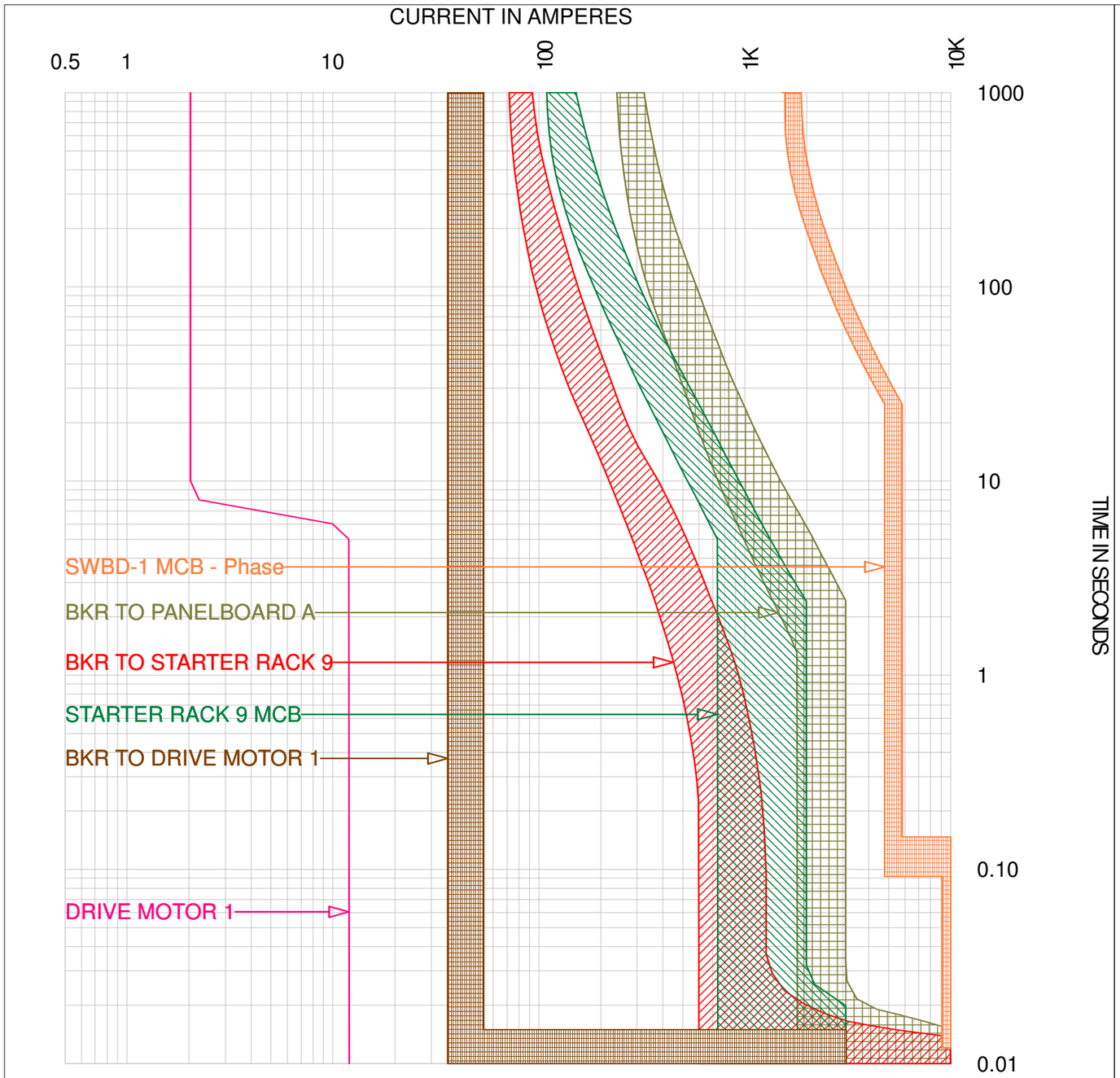
March 2015
SKM System Analysis, Inc.
TCC: TCC_STARTER RACK 10A (SEC CLAR 1&2) RECOMMENDATIONS
Reference Voltage: 480V x 1

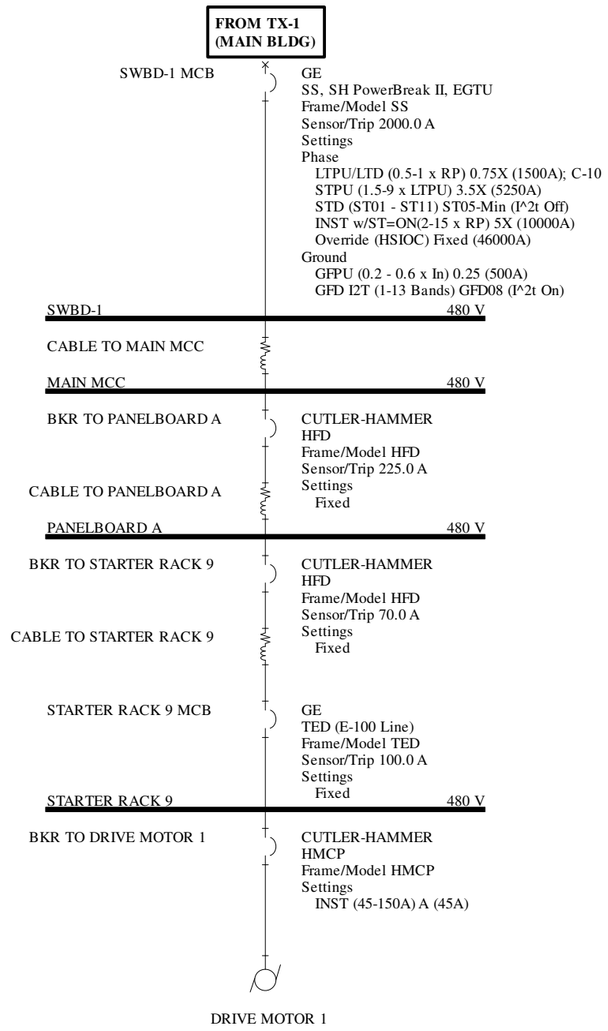

CURRENT IN AMPERES
0.5
1
10
100
1K
10K
1000
100
10
1
0.10
0.01
TIME IN SECONDS
XFMR - LP10B
SWBD-1 MCB - Phase
BKR TO PANELBOARD B
BKR TO STARTER RACK 10B
STARTER RACK 10B MCB
BKR TO LP-10B
TX Inrush

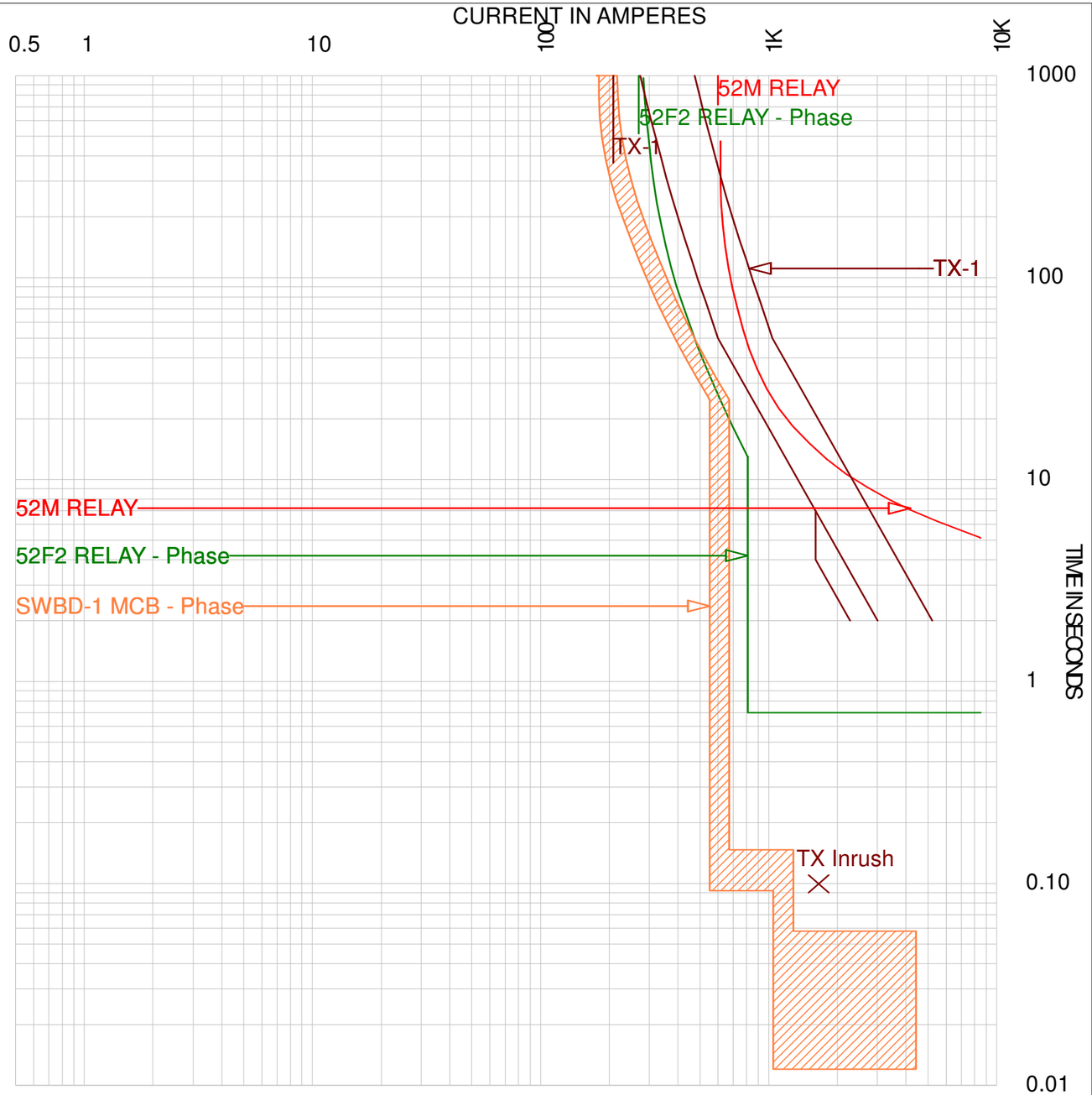

FROM TX-1
(MAIN BLDG)
SWBD-1 MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 0.75X (1500A); C-10
STPU (1.5-9 x LTPU) 3.5X (5250A)
STD (ST01 - ST11) ST05-Min (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)
SWBD-1
480 V
CABLE TO MAIN MCC
MAIN MCC
480 V
BKR TO PANELBOARD B
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 225.0 A
Settings
Fixed
CABLE TO PANELBOARD B
PANELBOARD B
480 V
BKR TO STARTER RACK 10B
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 70.0 A
Settings
Fixed
CABLE TO STARTER RACK 10B
STARTER RACK 10B MCB
GE
TED (E-100 Line)
Frame/Model TED
Sensor/Trip 100.0 A
Settings
Fixed
STARTER RACK 10B
480 V
BKR TO LP-10B
GE
TED (E-100 Line)
Frame/Model TED
Sensor/Trip 20.0 A
Settings
Fixed
XFMR - LP10B
P
S
LP-10B LOAD

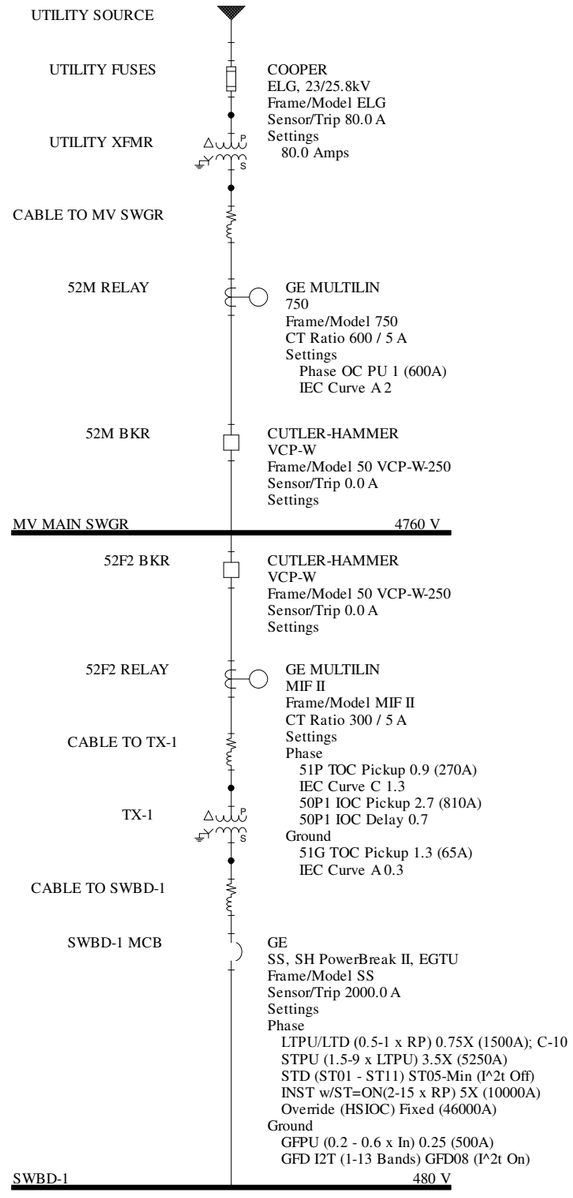

CURRENT IN AMPERES
0.5
1
10
100
1K
10K
100K
1000
100
10
1
0.10
0.01
TIME IN SECONDS
MUFFIN MONSTER 2
SWBD-1 MCB - Phase
BKR TO SR107,114,DIGESTER
STARTER RACK 114 MCB
BKR TO MUFFIN MONSTER 2


FROM TX-1
(MAIN BLDG)
SWBD-1 MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 0.75X (1500A); C-10
STPU (1.5-9 x LTPU) 3.5X (5250A)
STD (ST01 - ST11) ST05-Min (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)
SWBD-1
480 V
CABLE TO MAIN MCC
MAIN MCC
480 V
BKR TO SR107,114,DIGESTER
CUTLER-HAMMER
HKD
Frame/Model HKD
Sensor/Trip 300.0 A
Settings
Thermal Curve (Fixed)
INST (5-10 x Trip) 6.5 (1950A)
CABLE TO SR107,114,DIGESTER
CABLE TO STARTER RACK (DIGEST)
STARTER RACK (DIGESTER) MCB
GE
TFJ
Frame/Model TFJ
Sensor/Trip 225.0 A
Settings
Thermal Curve (Fixed)
INST (4.5-10 x Trip) 6 (1350A)
STARTER RACK (DIGESTER)
480 V
BKR TO STARTER RACK 114
GE
TED (E-100 Line)
Frame/Model TED
Sensor/Trip 70.0 A
Settings
Fixed
CABLE TO STARTER RACK 114
STARTER RACK 114 MCB
GE
TED (E-100 Line)
Frame/Model TED
Sensor/Trip 70.0 A
Settings
Fixed
STARTER RACK 114
480 V
BKR TO MUFFIN MONSTER 2
SQUARE D
FA
Frame/Model FA
Sensor/Trip 20.0 A
Settings
Fixed
MUFFIN MONSTER 2


CURRENT IN AMPERES
0.5
1
10
100
1K
10K
1000
100
10
1
0.10
0.01
TIME IN SECONDS
SWBD-1 MCB - Phase
BKR TO PANELBOARD A
BKR TO STARTER RACK 9
STARTER RACK 9 MCB
BKR TO DRIVE MOTOR 1
DRIVE MOTOR 1

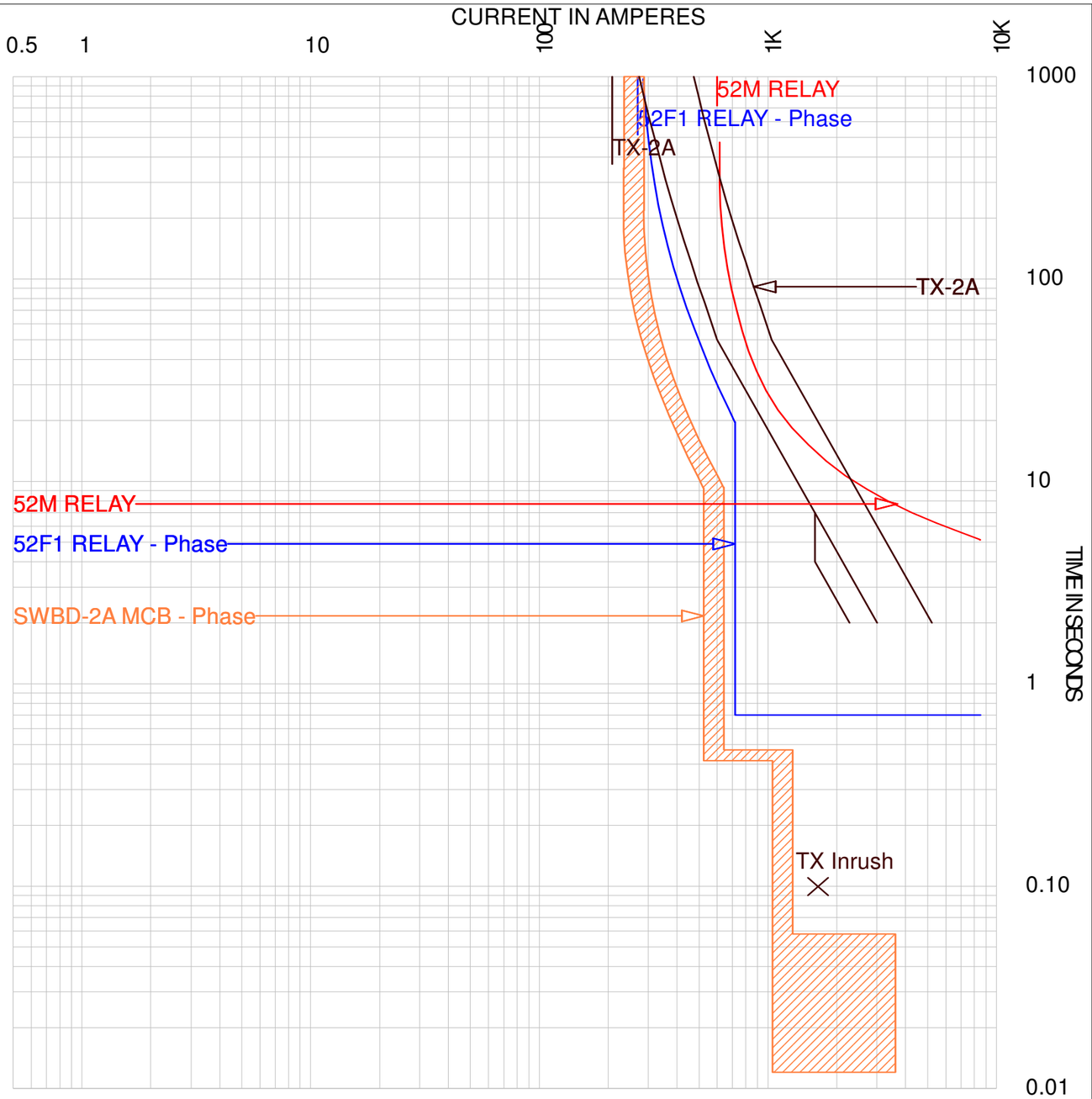

FROM TX-1
(MAIN BLDG)
SWBD-1 MCB
GE
SS, SH PowerBreak II, EGTU
Frame/Model SS
Sensor/Trip 2000.0 A
Settings
Phase
LTPU/LTD (0.5-1 x RP) 0.75X (1500A); C-10
STPU (1.5-9 x LTPU) 3.5X (5250A)
STD (ST01 - ST11) ST05-Min (I^2t Off)
INST w/ST=ON(2-15 x RP) 5X (10000A)
Override (HSIOC) Fixed (46000A)
Ground
GFPU (0.2 - 0.6 x In) 0.25 (500A)
GFD I2T (1-13 Bands) GFD08 (I^2t On)
SWBD-1
480 V
CABLE TO MAIN MCC
MAIN MCC
480 V
BKR TO PANELBOARD A
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 225.0 A
Settings
Fixed
CABLE TO PANELBOARD A
PANELBOARD A
480 V
BKR TO STARTER RACK 9
CUTLER-HAMMER
HFD
Frame/Model HFD
Sensor/Trip 70.0 A
Settings
Fixed
CABLE TO STARTER RACK 9
STARTER RACK 9 MCB
GE
TED (E-100 Line)
Frame/Model TED
Sensor/Trip 100.0 A
Settings
Fixed
STARTER RACK 9
480 V
BKR TO DRIVE MOTOR 1
CUTLER-HAMMER
HMCP
Frame/Model HMCP
Settings
INST (45-150A) A (45A)
DRIVE MOTOR 1

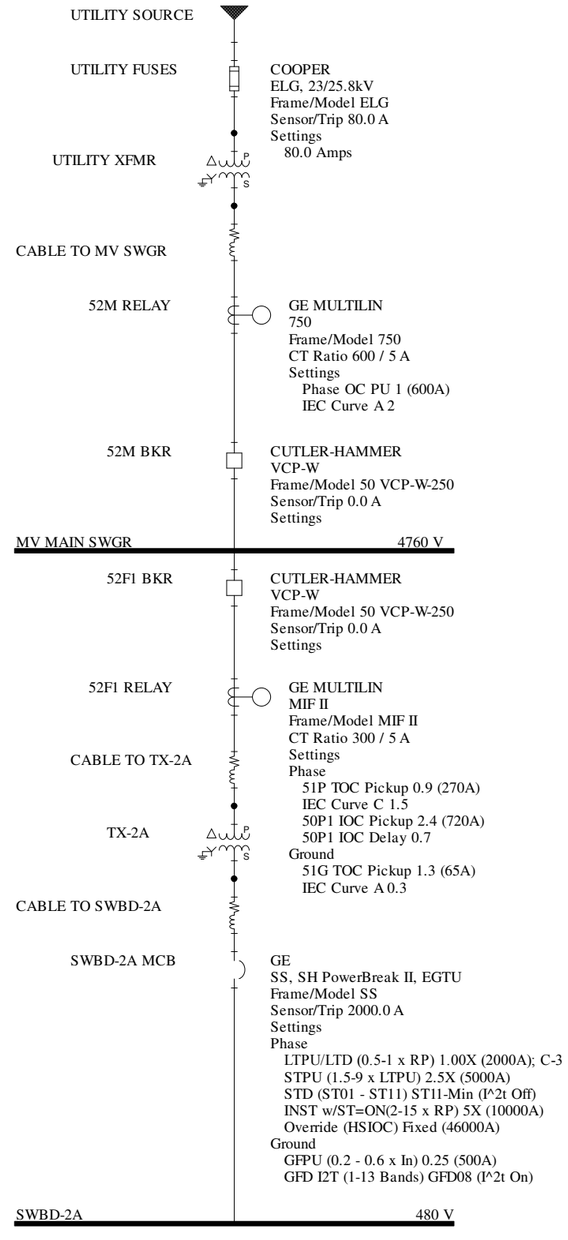




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

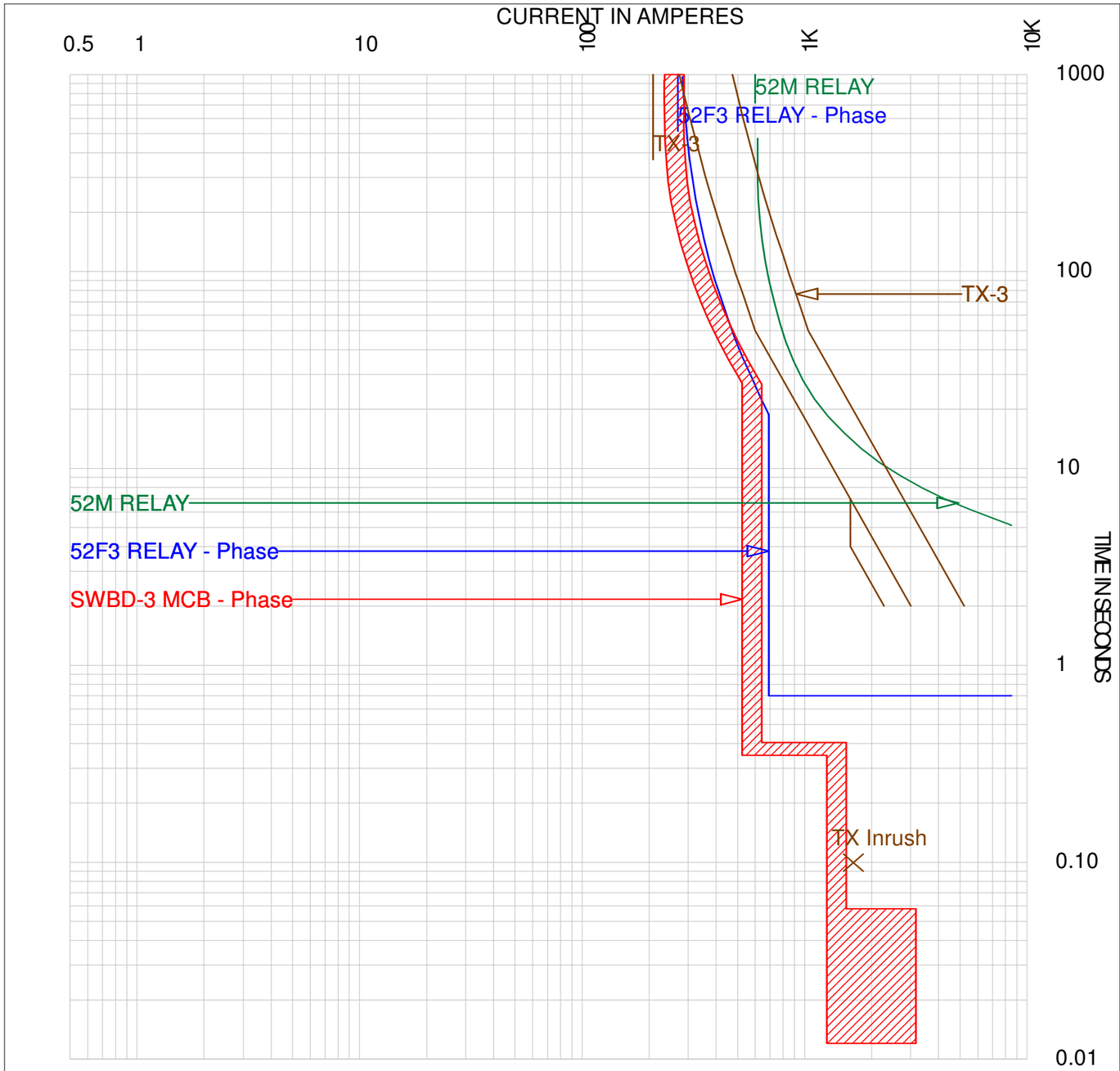
March 2015
SKM System Analysis, Inc.
TCC: TCC_TX-1 RECOMMENDATIONS
Reference Voltage: 4160V x 1

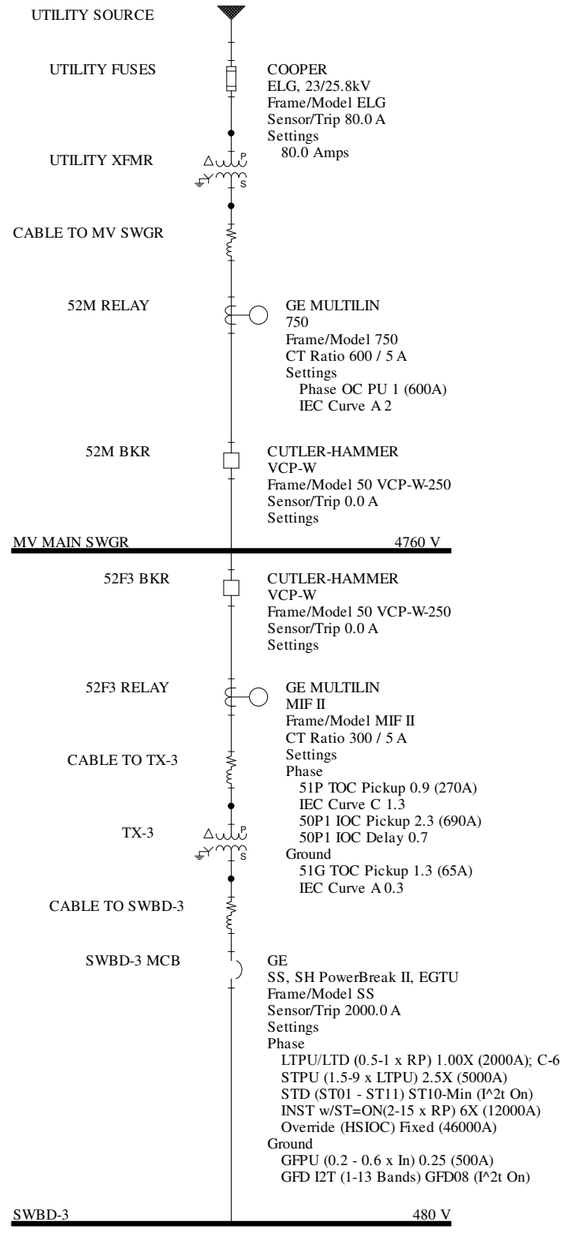




Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_TX-2A RECOMMENDATIONS
Reference Voltage: 4160V x 1





Hampton Roads Sanitation District
Arc Flash Study
James River Treatment Plant

March 2015
SKM System Analysis, Inc.
TCC: TCC_TX-3 RECOMMENDATIONS
Reference Voltage: 4160V x 1

Appendix JRTP-D

Short Circuit Report

Mar 25, 2015 09:03:29

ALL INFORMATION PRESENTED IS FOR REVIEW, APPROVAL
INTERPRETATION AND APPLICATION BY A REGISTERED ENGINEER ONLY
SKM DISCLAIMS ANY RESPONSIBILITY AND LIABILITY RESULTING
FROM THE USE AND INTERPRETATION OF THIS SOFTWARE.

SKM POWER*TOOLS FOR WINDOWS
SHORT CIRCUIT ANALYSIS REPORT
COPYRIGHT SKM SYSTEMS ANALYSIS, INC. 1995-2014

ALL PU VALUES ARE EXPRESSED ON A 100 MVA BASE

BUS NAME	SWING GENERATORS SOURCE NAME	VOLTAGE	ANGLE
BUS-0167	UTILITY SOURCE	1.00	0.00
BUS-0174	EMERGENCY GENE	1.00	0.00

********** P R E - F A U L T V O L T A G E P R O F I L E **********

BUS# NAME	BASE VOLTS	PU VOLTS	ANGLE (D)
AERATIAON BLOW	480.00	1.0000	-60.
AERATIAON BLOW	480.00	1.0000	-60.
AERATIAON BLOW	480.00	1.0000	-60.
BKR TO INDUCTI	480.00	1.0000	-60.
CENT FEED PUMP	480.00	1.0000	-60.
CENT FEED PUMP	480.00	1.0000	-60.
CENT FEED PUMP	480.00	1.0000	-60.
CENTRATE REC P	480.00	1.0000	-60.
CENTRIFUGE 1 C	480.00	1.0000	-60.
CENTRIFUGE 2 C	480.00	1.0000	-60.
CENTRIFUGE 3 C	480.00	1.0000	-60.
DIGEST COMPRES	480.00	1.0000	-60.
DIGEST COMPRES	480.00	1.0000	-60.
DWC POLY FD PU	480.00	1.0000	-60.
DWC POLY FD PU	480.00	1.0000	-60.
DWC POLY FD PU	480.00	1.0000	-60.
GRINDER 1 CONT	480.00	1.0000	-60.
GRINDER 2 CONT	480.00	1.0000	-60.
GRINDER 3 CONT	480.00	1.0000	-60.
HYDRAULIC POWE	480.00	1.0000	-60.

********** P R E - F A U L T V O L T A G E P R O F I L E **********

BUS#	NAME	BASE VOLTS	PU VOLTS	ANGLE (D)
	IFAS R1 NRCY P	480.00	1.0000	-60.
	IFAS R1 NRCY P	480.00	1.0000	-60.
	IFAS R2 NRCY P	480.00	1.0000	-60.
	IFAS R2 NRCY P	480.00	1.0000	-60.
	IFAS R3 NRCY P	480.00	1.0000	-60.
	IFAS R3 NRCY P	480.00	1.0000	-60.
	IFAS R4 NRCY P	480.00	1.0000	-60.
	IFAS R4 NRCY P	480.00	1.0000	-60.
	IFAS R5 NRCY P	480.00	1.0000	-60.
	IFAS R5 NRCY P	480.00	1.0000	-60.
	IFAS R6 NRCY P	480.00	1.0000	-60.
	IFAS R6 NRCY P	480.00	1.0000	-60.
	IFAS R7 NRCY P	480.00	1.0000	-60.
	IFAS R7 NRCY P	480.00	1.0000	-60.
	IFAS R8 NRCY P	480.00	1.0000	-60.
	IFAS R8 NRCY P	480.00	1.0000	-60.
	IFAS R9 NRCY P	480.00	1.0000	-60.
	IFAS R9 NRCY P	480.00	1.0000	-60.
	INDUCTION MIXE	480.00	1.0000	-60.
	MAIN MCC	480.00	1.0000	-60.
	MCC (DEWATERIN	480.00	1.0000	-60.
	MCC (DEWATERIN	480.00	1.0000	-60.
	MCC (DEWATERIN	480.00	1.0000	-60.
	MCC (HYPO)	480.00	1.0000	-60.
	MCC (SCUM BLDG	480.00	1.0000	-60.
	MCC (SLUDGE BL	480.00	1.0000	-60.
	MCC (SLUDGE BL	480.00	1.0000	-60.
	MCC (SLUDGE BL	480.00	1.0000	-60.
	MCC-2A	480.00	1.0000	-60.
	MCC-2A (CONT 2	480.00	1.0000	-60.
	MCC-2A (CONT)	480.00	1.0000	-60.
	MCC-2B	480.00	1.0000	-60.
	MCC-2B (CONT 2	480.00	1.0000	-60.
	MCC-2B (CONT)	480.00	1.0000	-60.
	MCC-2C	480.00	1.0000	-60.
	MCC-2C (CONT 2	480.00	1.0000	-60.
	MCC-2C (CONT)	480.00	1.0000	-60.
	MCC-5B	480.00	1.0000	-60.
	MCC-CC103	480.00	1.0000	-60.
	MCC-CC103A	480.00	1.0000	-60.
	MCC-CC113	480.00	1.0000	-60.
	MCC-G1	480.00	1.0000	-60.

********** P R E - F A U L T V O L T A G E P R O F I L E **********

BUS#	NAME	BASE VOLTS	PU VOLTS	ANGLE (D)
	MV MAIN SWGR	4160.00	1.0000	-30.
	NAOH RECIRC PU	480.00	1.0000	-60.
	NAOH RECIRC PU	480.00	1.0000	-60.
	PANEL (DIGESTE	480.00	1.0000	-60.
	PANEL DP2A (IN	480.00	1.0000	-60.
	PANEL DP2B (IN	480.00	1.0000	-60.
	PANEL DP2C (IN	480.00	1.0000	-60.
	PANEL DP47	480.00	1.0000	-60.
	PANEL JR1A	480.00	1.0000	-60.
	PANEL JR1B	480.00	1.0000	-60.
	PANEL JR2	480.00	1.0000	-60.
	PANEL JRM	480.00	1.0000	-60.
	PANEL P5B	480.00	1.0000	-60.
	PANEL P5C	480.00	1.0000	-60.
	PANEL PP-1 (IN	480.00	1.0000	-60.
	PANEL PP1	480.00	1.0000	-60.
	PANELBOARD A	480.00	1.0000	-60.
	PANELBOARD B	480.00	1.0000	-60.
	PANELBOARD C	480.00	1.0000	-60.
	POLYMER SYSTEM	480.00	1.0000	-60.
	RETURN PUMP 1	480.00	1.0000	-60.
	RETURN PUMP 2	480.00	1.0000	-60.
	RETURN PUMP 3	480.00	1.0000	-60.
	RETURN PUMP 4	480.00	1.0000	-60.

********** P R E - F A U L T V O L T A G E P R O F I L E **********

BUS# NAME	BASE VOLTS	PU VOLTS	ANGLE (D)
RETURN PUMP 5	480.00	1.0000	-60.
RETURN PUMP 6	480.00	1.0000	-60.
SCREEN 1 CP01-	480.00	1.0000	-60.
SCREEN 2 CP01-	480.00	1.0000	-60.
SCREEN 3 CP01-	480.00	1.0000	-60.
STARTER RACK (	480.00	1.0000	-60.
STARTER RACK (	480.00	1.0000	-60.
STARTER RACK (	480.00	1.0000	-60.
STARTER RACK (	480.00	1.0000	-60.
STARTER RACK (	480.00	1.0000	-60.
STARTER RACK (	480.00	1.0000	-60.
STARTER RACK (	480.00	1.0000	-60.
STARTER RACK (	480.00	1.0000	-60.
STARTER RACK 1	480.00	1.0000	-60.
STARTER RACK 1	480.00	1.0000	-60.
STARTER RACK 1	480.00	1.0000	-60.
STARTER RACK 1	480.00	1.0000	-60.
STARTER RACK 1	480.00	1.0000	-60.
STARTER RACK 1	480.00	1.0000	-60.
STARTER RACK 1	480.00	1.0000	-60.
STARTER RACK 1	480.00	1.0000	-60.
STARTER RACK 1	480.00	1.0000	-60.
STARTER RACK 9	480.00	1.0000	-60.
SWBD-1	480.00	1.0000	-60.
SWBD-2A	480.00	1.0000	-60.
SWBD-2B	480.00	1.0000	-60.
SWBD-3	480.00	1.0000	-60.

********** F A U L T A N A L Y S I S R E P O R T **********

FAULT TYPE: 3PH
MODEL INDUCTION MOTOR CONTRIBUTION: YES
MODEL TRANSFORMER TAPS: YES
MODEL TRANSFORMER PHASE SHIFT: YES

==========

AERATIAON BLOW VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 24221.0 / -131. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 1.591 +j 4.704 (PU)
THEVENIN IMPEDANCE X/R RATIO: 2.958

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
26960.7	24225.9	24221.0	24221.0	24221.0

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
24221.0 /-131.3	24220.9 / 108.7	24220.9 / -11.3

AERATIAON BLOW ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
SWBD-2A	480.0	0.2924 / -88.	0.2924 / 152.	0.2924 / 32.

AERATIAON BLOW ========== INI. RMS SYSTEM BRANCH FLOWS (AMPS) ==========
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

	BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
AERATION BLOWE	AERATIAON BLOW	480.	2435.4/-144.	2435.4/ 96.	2435.4/ -24.
SWBD-2A	AERATIAON BLOW CABLE TO AERAT	480.	21854.5/-130.	21854.5/ 110.	21854.5/ -10.

```
 AERATIAON BLOW VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  24683.2 / -132. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    1.516 +j   4.631 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     3.054

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   27658.1     24689.8     24683.3     24683.2     24683.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                24683.2 /-131.9    24683.2 / 108.1     24683.2 / -11.9

 AERATIAON BLOW ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   SWBD-2A           480.0  0.2746 / -89.  0.2746 / 151.  0.2746 /  31.
   AERATIAON BLOW ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
AERATION BLOWE AERATIAON BLOW                   480.   2435.4/-144.   2435.4/  96.   2435.4/ -24.
SWBD-2A        AERATIAON BLOW CABLE TO AERAT   480.  22311.0/-131.  22310.9/ 109.  22310.9/ -11.

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 AERATIAON BLOW VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  25406.7 / -133. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    1.405 +j   4.521 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     3.219

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   28789.2     25417.0     25406.9     25406.7     25406.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                25406.7 /-132.7    25406.7 / 107.3     25406.7 / -12.7

 AERATIAON BLOW ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   SWBD-2B           480.0  0.2464 / -90.  0.2464 / 150.  0.2464 /  30.
   AERATIAON BLOW ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
AERATION BLOWE AERATIAON BLOW                   480.   2435.4/-144.   2435.4/  96.   2435.4/ -24.
SWBD-2B        AERATIAON BLOW CABLE TO AERAT   480.  23025.7/-132.  23025.7/ 108.  23025.7/ -12.

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```
 BKR TO INDUCTI VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2521.5 /  -71. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   46.903 +j   8.703 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.186

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2521.5      2521.5      2521.5      2521.5      2521.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2521.5 / -70.5     2521.5 / 169.5      2521.5 /  49.5

 BKR TO INDUCTI ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANEL JR1B        480.0  0.8517 / -68.  0.8517 / 172.  0.8517 /  52.
   INDUCTION MIXE    480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BKR TO INDUCTI ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
PANEL JR1B     BKR TO INDUCTI CABLE TO INDUC   480.   2521.5/ -71.   2521.5/ 169.   2521.5/  49.
BKR TO INDUCTI INDUCTION MIXE CABLE TO INDUC   480.      0.0/   0.      0.0/   0.      0.0/   0.
```

```
 CENT FEED PUMP VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  14239.6 / -100. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    6.446 +j   5.458 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.847

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   14248.2     14239.6     14239.6     14239.6     14239.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                14239.6 /-100.3    14239.6 / 139.7     14239.6 /  19.7

 CENT FEED PUMP ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.6724 / -89.  0.6724 / 151.  0.6724 /  31.
   CENT FEED PUMP ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (SLUDGE BL CENT FEED PUMP CABLE TO CENT    480.  14239.6/-100.  14239.6/ 140.  14239.6/  20.

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```

```
 CENT FEED PUMP VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  14239.6 / -100. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    6.446 +j   5.458 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.847

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   14248.2     14239.6     14239.6     14239.6     14239.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                14239.6 /-100.3    14239.6 / 139.7     14239.6 /  19.7

 CENT FEED PUMP ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.6724 / -89.  0.6724 / 151.  0.6724 /  31.
   CENT FEED PUMP ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (SLUDGE BL CENT FEED PUMP CABLE TO CENT    480.  14239.6/-100.  14239.6/ 140.  14239.6/  20.

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```
 CENT FEED PUMP VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  14239.6 / -100. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    6.446 +j   5.458 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.847

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   14248.2     14239.6     14239.6     14239.6     14239.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                14239.6 /-100.3    14239.6 / 139.7     14239.6 /  19.7

 CENT FEED PUMP ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.6724 / -89.  0.6724 / 151.  0.6724 /  31.
   CENT FEED PUMP ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (SLUDGE BL CENT FEED PUMP CABLE TO CENT    480.  14239.6/-100.  14239.6/ 140.  14239.6/  20.

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 CENTRATE REC P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2878.4 /  -69. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   41.304 +j   6.342 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.154

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2878.4      2878.4      2878.4      2878.4      2878.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2878.4 / -68.7     2878.4 / 171.3      2878.4 /  51.3

 CENTRATE REC P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2A (CONT)     480.0  0.9699 / -65.  0.9699 / 175.  0.9699 /  55.
   CENTRATE REC P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
CENTRATE RECYC CENTRATE REC P                   480.     28.2/-144.     28.2/  96.     28.2/ -24.
MCC-2A (CONT)  CENTRATE REC P CABLE TO CENTR   480.   2871.4/ -68.   2871.4/ 172.   2871.4/  52.

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```
 CENTRIFUGE 1 C VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  26165.2 / -138. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    0.978 +j   4.492 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     4.594

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   32145.2     26275.0     26172.3     26165.2     26165.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                26165.2 /-137.7    26165.2 / 102.3     26165.2 / -17.7

 CENTRIFUGE 1 C ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   SWBD-3            480.0  0.0546 / -85.  0.0546 / 155.  0.0546 /  35.
   CENTRIFUGE 1 C ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
CENTRIFUGE 1   CENTRIFUGE 1 C                   480.   1776.5/-144.   1776.5/  96.   1776.5/ -24.
SWBD-3         CENTRIFUGE 1 C CABLE TO CENTR   480.  24401.2/-137.  24401.2/ 103.  24401.2/ -17.

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 CENTRIFUGE 2 C VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  26165.2 / -138. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    0.978 +j   4.492 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     4.594

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   32145.2     26275.0     26172.3     26165.2     26165.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                26165.2 /-137.7    26165.2 / 102.3     26165.2 / -17.7

 CENTRIFUGE 2 C ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   SWBD-3            480.0  0.0546 / -85.  0.0546 / 155.  0.0546 /  35.
   CENTRIFUGE 2 C ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
CENTRIFUGE 2   CENTRIFUGE 2 C                   480.   1776.5/-144.   1776.5/  96.   1776.5/ -24.
SWBD-3         CENTRIFUGE 2 C CABLE TO CENTR   480.  24401.2/-137.  24401.2/ 103.  24401.2/ -17.

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 CENTRIFUGE 3 C VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  26165.2 / -138. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    0.978 +j   4.492 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     4.594

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   32145.2     26275.0     26172.3     26165.2     26165.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                26165.2 /-137.7    26165.2 / 102.3     26165.2 / -17.7

 CENTRIFUGE 3 C ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   SWBD-3            480.0  0.0546 / -85.  0.0546 / 155.  0.0546 /  35.
   CENTRIFUGE 3 C ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
CENTRIFUGE 3   CENTRIFUGE 3 C                   480.   1776.5/-144.   1776.5/  96.   1776.5/ -24.
SWBD-3         CENTRIFUGE 3 C CABLE TO CENTR   480.  24401.2/-137.  24401.2/ 103.  24401.2/ -17.

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```

```
 DIGEST COMPRES VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   6019.2 / -100. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   15.341 +j  12.806 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.835

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    6022.4      6019.2      6019.2      6019.2      6019.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 6019.2 / -99.9     6019.2 / 140.1      6019.2 /  20.1

 DIGEST COMPRES ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (DEWATERIN    480.0  0.7749 / -72.  0.7749 / 168.  0.7749 /  48.
   DIGEST COMPRES ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (DEWATERIN DIGEST COMPRES CABLE TO DIG C   480.   6019.2/-100.   6019.2/ 140.   6019.2/  20.

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 DIGEST COMPRES VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   6853.4 / -102. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   13.127 +j  11.649 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.887

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    6859.2      6853.4      6853.4      6853.4      6853.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 6853.4 /-101.6     6853.4 / 138.4      6853.4 /  18.4

 DIGEST COMPRES ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (DEWATERIN    480.0  0.7400 / -74.  0.7400 / 166.  0.7400 /  46.
   DIGEST COMPRES ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (DEWATERIN DIGEST COMPRES CABLE TO DIG C   480.   6853.4/-102.   6853.4/ 138.   6853.4/  18.

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```
 DWC POLY FD PU VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5510.0 /  -74. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   21.164 +j   5.349 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.253

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5510.0      5510.0      5510.0      5510.0      5510.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5510.0 / -74.2     5510.0 / 165.8      5510.0 /  45.8

 DWC POLY FD PU ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.9306 / -71.  0.9306 / 169.  0.9306 /  49.
   DWC POLY FD PU ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (SLUDGE BL DWC POLY FD PU CABLE TO DWC P   480.   5510.0/ -74.   5510.0/ 166.   5510.0/  46.

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```
 DWC POLY FD PU VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5510.0 /  -74. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   21.164 +j   5.349 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.253

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5510.0      5510.0      5510.0      5510.0      5510.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5510.0 / -74.2     5510.0 / 165.8      5510.0 /  45.8

 DWC POLY FD PU ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.9306 / -71.  0.9306 / 169.  0.9306 /  49.
   DWC POLY FD PU ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (SLUDGE BL DWC POLY FD PU CABLE TO DWC P   480.   5510.0/ -74.   5510.0/ 166.   5510.0/  46.

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```
 DWC POLY FD PU VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5510.0 /  -74. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   21.164 +j   5.349 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.253

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5510.0      5510.0      5510.0      5510.0      5510.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5510.0 / -74.2     5510.0 / 165.8      5510.0 /  45.8

 DWC POLY FD PU ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.9306 / -71.  0.9306 / 169.  0.9306 /  49.
   DWC POLY FD PU ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (SLUDGE BL DWC POLY FD PU CABLE TO DWC P   480.   5510.0/ -74.   5510.0/ 166.   5510.0/  46.

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 GRINDER 1 CONT VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4666.0 /  -73. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   25.144 +j   5.685 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.226

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4666.0      4666.0      4666.0      4666.0      4666.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4666.0 / -72.7     4666.0 / 167.3      4666.0 /  47.3

 GRINDER 1 CONT ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.9439 / -70.  0.9439 / 170.  0.9439 /  50.
   GRINDER 1 CONT ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
GRINDER 1      GRINDER 1 CONT                   480.     28.2/-144.     28.2/  96.     28.2/ -24.
MCC (SLUDGE BL GRINDER 1 CONT CABLE TO GRIND   480.   4657.1/ -72.   4657.1/ 168.   4657.1/  48.

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 GRINDER 2 CONT VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4666.0 /  -73. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   25.144 +j   5.685 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.226

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4666.0      4666.0      4666.0      4666.0      4666.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4666.0 / -72.7     4666.0 / 167.3      4666.0 /  47.3

 GRINDER 2 CONT ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.9439 / -70.  0.9439 / 170.  0.9439 /  50.
   GRINDER 2 CONT ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
GRINDER 2      GRINDER 2 CONT                   480.     28.2/-144.     28.2/  96.     28.2/ -24.
MCC (SLUDGE BL GRINDER 2 CONT CABLE TO GRIND   480.   4657.1/ -72.   4657.1/ 168.   4657.1/  48.

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 GRINDER 3 CONT VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4666.0 /  -73. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   25.144 +j   5.685 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.226

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4666.0      4666.0      4666.0      4666.0      4666.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4666.0 / -72.7     4666.0 / 167.3      4666.0 /  47.3

 GRINDER 3 CONT ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.9439 / -70.  0.9439 / 170.  0.9439 /  50.
   GRINDER 3 CONT ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
GRINDER 3      GRINDER 3 CONT                   480.     28.2/-144.     28.2/  96.     28.2/ -24.
MCC (SLUDGE BL GRINDER 3 CONT CABLE TO GRIND   480.   4657.1/ -72.   4657.1/ 168.   4657.1/  48.

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 HYDRAULIC POWE VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5474.7 /  -77. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   21.060 +j   6.259 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.297

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5474.7      5474.7      5474.7      5474.7      5474.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5474.7 / -76.6     5474.6 / 163.4      5474.7 /  43.4

 HYDRAULIC POWE ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.9271 / -71.  0.9271 / 169.  0.9271 /  49.
   HYDRAULIC POWE ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
HYDRAULIC POWE HYDRAULIC POWE                   480.    123.5/-144.    123.5/  96.    123.5/ -24.
MCC (SLUDGE BL HYDRAULIC POWE CABLE TO HYD P   480.   5429.1/ -75.   5429.1/ 165.   5429.1/  45.

-------------------------------------------------------------------------------------------------
```

```
 IFAS R1 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4678.8 /  -72. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   25.153 +j   5.309 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.211

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4678.8      4678.8      4678.8      4678.8      4678.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4678.8 / -71.9     4678.8 / 168.1      4678.8 /  48.1

 IFAS R1 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2A (CONT)     480.0  0.9465 / -69.  0.9465 / 171.  0.9465 /  51.
   IFAS R1 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R1 NRCY P IFAS R1 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2A (CONT)  IFAS R1 NRCY P CABLE TO IFAS    480.   4670.3/ -72.   4670.3/ 168.   4670.3/  48.
```

```
 IFAS R1 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4537.4 /  -72. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   25.961 +j   5.358 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.206

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4537.4      4537.4      4537.4      4537.4      4537.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4537.4 / -71.7     4537.4 / 168.3      4537.4 /  48.3

 IFAS R1 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2A (CONT)     480.0  0.9485 / -69.  0.9485 / 171.  0.9485 /  51.
   IFAS R1 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R1 NRCY P IFAS R1 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2A (CONT)  IFAS R1 NRCY P CABLE TO IFAS    480.   4529.0/ -71.   4529.0/ 169.   4529.0/  49.
```

```
 IFAS R2 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5160.5 /  -73. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   22.729 +j   5.165 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.227

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5160.5      5160.5      5160.5      5160.5      5160.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5160.5 / -72.8     5160.5 / 167.2      5160.5 /  47.2

 IFAS R2 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2A (CONT)     480.0  0.9397 / -70.  0.9397 / 170.  0.9397 /  50.
   IFAS R2 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R2 NRCY P IFAS R2 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2A (CONT)  IFAS R2 NRCY P CABLE TO IFAS    480.   5151.6/ -73.   5151.6/ 167.   5151.6/  47.
```

```
 IFAS R2 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4278.6 /  -71. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   27.578 +j   5.457 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.198

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4278.6      4278.6      4278.6      4278.6      4278.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4278.6 / -71.2     4278.6 / 168.8      4278.6 /  48.8

 IFAS R2 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2A (CONT)     480.0  0.9521 / -68.  0.9521 / 172.  0.9521 /  52.
   IFAS R2 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R2 NRCY P IFAS R2 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2A (CONT)  IFAS R2 NRCY P CABLE TO IFAS    480.   4270.4/ -71.   4270.4/ 169.   4270.4/  49.
```

```
 IFAS R3 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4829.2 /  -72. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   24.345 +j   5.261 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.216

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4829.2      4829.2      4829.2      4829.2      4829.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4829.2 / -72.2     4829.2 / 167.8      4829.2 /  47.8

 IFAS R3 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2A (CONT)     480.0  0.9444 / -69.  0.9444 / 171.  0.9444 /  51.
   IFAS R3 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R3 NRCY P IFAS R3 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2A (CONT)  IFAS R3 NRCY P CABLE TO IFAS    480.   4820.6/ -72.   4820.6/ 168.   4820.6/  48.
```

```
 IFAS R3 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4047.5 /  -71. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   29.193 +j   5.557 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.190

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4047.5      4047.5      4047.5      4047.5      4047.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4047.5 / -70.8     4047.5 / 169.2      4047.5 /  49.2

 IFAS R3 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2A (CONT)     480.0  0.9552 / -68.  0.9552 / 172.  0.9552 /  52.
   IFAS R3 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R3 NRCY P IFAS R3 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2A (CONT)  IFAS R3 NRCY P CABLE TO IFAS    480.   4039.5/ -70.   4039.5/ 170.   4039.5/  50.
```

```
 IFAS R4 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4457.7 /  -78. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   25.681 +j   8.281 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.322

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4457.7      4457.7      4457.7      4457.7      4457.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4457.7 / -77.9     4457.7 / 162.1      4457.7 /  42.1

 IFAS R4 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2B (CONT)     480.0  0.8411 / -75.  0.8411 / 165.  0.8411 /  45.
   IFAS R4 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R4 NRCY P IFAS R4 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2B (CONT)  IFAS R4 NRCY P CABLE TO IFAS    480.   4446.4/ -78.   4446.4/ 162.   4446.4/  42.
```

```
 IFAS R4 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4590.8 /  -78. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   24.874 +j   8.233 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.331

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4590.8      4590.8      4590.8      4590.8      4590.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4590.8 / -78.3     4590.8 / 161.7      4590.8 /  41.7

 IFAS R4 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2B (CONT)     480.0  0.8353 / -75.  0.8353 / 165.  0.8353 /  45.
   IFAS R4 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R4 NRCY P IFAS R4 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2B (CONT)  IFAS R4 NRCY P CABLE TO IFAS    480.   4579.3/ -78.   4579.3/ 162.   4579.3/  42.
```

```
 IFAS R5 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4881.3 /  -79. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   23.259 +j   8.136 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.350

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4881.3      4881.3      4881.3      4881.3      4881.3

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4881.3 / -79.3     4881.3 / 160.7      4881.3 /  40.7

 IFAS R5 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2B (CONT)     480.0  0.8224 / -76.  0.8224 / 164.  0.8224 /  44.
   IFAS R5 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R5 NRCY P IFAS R5 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2B (CONT)  IFAS R5 NRCY P CABLE TO IFAS    480.   4869.4/ -79.   4869.4/ 161.   4869.4/  41.
```

```
 IFAS R5 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4731.8 /  -79. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   24.066 +j   8.184 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.340

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4731.8      4731.8      4731.8      4731.8      4731.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4731.8 / -78.8     4731.7 / 161.2      4731.7 /  41.2

 IFAS R5 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2B (CONT)     480.0  0.8291 / -76.  0.8291 / 164.  0.8291 /  44.
   IFAS R5 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R5 NRCY P IFAS R5 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2B (CONT)  IFAS R5 NRCY P CABLE TO IFAS    480.   4720.1/ -78.   4720.1/ 162.   4720.1/  42.
```

```
 IFAS R6 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4212.7 /  -77. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   27.295 +j   8.379 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.307

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4212.7      4212.7      4212.7      4212.7      4212.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4212.7 / -77.1     4212.7 / 162.9      4212.7 /  42.9

 IFAS R6 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2B (CONT)     480.0  0.8516 / -74.  0.8516 / 166.  0.8516 /  46.
   IFAS R6 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R6 NRCY P IFAS R6 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2B (CONT)  IFAS R6 NRCY P CABLE TO IFAS    480.   4201.8/ -77.   4201.8/ 163.   4201.8/  43.
```

```
 IFAS R6 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3890.8 /  -76. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   29.715 +j   8.529 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.287

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3890.8      3890.8      3890.8      3890.8      3890.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3890.8 / -76.0     3890.8 / 164.0      3890.8 /  44.0

 IFAS R6 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2B (CONT)     480.0  0.8651 / -73.  0.8651 / 167.  0.8651 /  47.
   IFAS R6 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R6 NRCY P IFAS R6 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2B (CONT)  IFAS R6 NRCY P CABLE TO IFAS    480.   3880.3/ -76.   3880.3/ 164.   3880.3/  44.
```

```
 IFAS R7 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4121.5 /  -81. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   27.233 +j  10.489 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.385

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4121.5      4121.5      4121.5      4121.5      4121.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4121.5 / -81.1     4121.5 / 158.9      4121.5 /  38.9

 IFAS R7 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2C (CONT)     480.0  0.7772 / -78.  0.7772 / 162.  0.7772 /  42.
   IFAS R7 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R7 NRCY P IFAS R7 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2C (CONT)  IFAS R7 NRCY P CABLE TO IFAS    480.   4108.8/ -81.   4108.8/ 159.   4108.8/  39.
```

```
 IFAS R7 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4233.1 /  -82. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   26.427 +j  10.440 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.395

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4233.1      4233.1      4233.1      4233.1      4233.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4233.1 / -81.6     4233.1 / 158.4      4233.1 /  38.4

 IFAS R7 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2C (CONT)     480.0  0.7698 / -78.  0.7698 / 162.  0.7698 /  42.
   IFAS R7 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R7 NRCY P IFAS R7 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2C (CONT)  IFAS R7 NRCY P CABLE TO IFAS    480.   4220.1/ -81.   4220.1/ 159.   4220.1/  39.
```

```
 IFAS R8 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4474.1 /  -83. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   24.815 +j  10.343 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.417

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4474.1      4474.1      4474.1      4474.1      4474.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4474.1 / -82.6     4474.1 / 157.4      4474.1 /  37.4

 IFAS R8 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2C (CONT)     480.0  0.7534 / -80.  0.7534 / 160.  0.7534 /  40.
   IFAS R8 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R8 NRCY P IFAS R8 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2C (CONT)  IFAS R8 NRCY P CABLE TO IFAS    480.   4460.7/ -82.   4460.7/ 158.   4460.7/  38.
```

```
 IFAS R8 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4350.4 /  -82. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   25.621 +j  10.392 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.406

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4350.4      4350.4      4350.4      4350.4      4350.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4350.4 / -82.1     4350.4 / 157.9      4350.4 /  37.9

 IFAS R8 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2C (CONT)     480.0  0.7618 / -79.  0.7618 / 161.  0.7618 /  41.
   IFAS R8 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R8 NRCY P IFAS R8 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2C (CONT)  IFAS R8 NRCY P CABLE TO IFAS    480.   4337.3/ -82.   4337.3/ 158.   4337.3/  38.
```

```
 IFAS R9 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3914.5 /  -80. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   28.845 +j  10.588 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.367

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3914.5      3914.5      3914.5      3914.5      3914.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3914.5 / -80.2     3914.5 / 159.8      3914.5 /  39.8

 IFAS R9 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2C (CONT)     480.0  0.7909 / -77.  0.7909 / 163.  0.7909 /  43.
   IFAS R9 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R9 NRCY P IFAS R9 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2C (CONT)  IFAS R9 NRCY P CABLE TO IFAS    480.   3902.2/ -80.   3902.2/ 160.   3902.2/  40.
```

```
 IFAS R9 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3638.7 /  -79. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   31.263 +j  10.739 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.344

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3638.7      3638.7      3638.7      3638.7      3638.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3638.7 / -79.0     3638.7 / 161.0      3638.7 /  41.0

 IFAS R9 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2C (CONT)     480.0  0.8086 / -76.  0.8086 / 164.  0.8086 /  44.
   IFAS R9 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R9 NRCY P IFAS R9 NRCY P                   480.     28.4/-144.     28.4/  96.     28.4/ -24.
MCC-2C (CONT)  IFAS R9 NRCY P CABLE TO IFAS    480.   3627.0/ -79.   3627.0/ 161.   3627.0/  41.
```

```
 INDUCTION MIXE VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2479.6 /  -70. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   47.714 +j   8.742 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.183

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2479.6      2479.6      2479.6      2479.6      2479.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2479.6 / -70.4     2479.6 / 169.6      2479.6 /  49.6

 INDUCTION MIXE ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   BKR TO INDUCTI    480.0  0.0168 / -68.  0.0168 / 172.  0.0168 /  52.
   INDUCTION MIXE ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BKR TO INDUCTI INDUCTION MIXE CABLE TO INDUC   480.   2479.6/ -70.   2479.6/ 170.   2479.6/  50.

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MAIN MCC VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 38138.7 / -137. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 0.689 +j 3.078 (PU)
THEVENIN IMPEDANCE X/R RATIO: 4.467

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
46553.5	38275.8	38147.0	38138.7	38138.7

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
38138.7 /-137.4	38138.7 / 102.6	38138.7 / -17.4

MAIN MCC ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
BUS-0015	480.0	0.0081 /-102.	0.0081 / 138.	0.0081 / 18.
BUS-0016	480.0	0.0097 /-102.	0.0097 / 138.	0.0097 / 18.
BUS-0017	480.0	0.0113 /-102.	0.0113 / 138.	0.0113 / 18.
MCC (HYPO)	480.0	0.0079 /-112.	0.0079 / 128.	0.0079 / 8.
PANELBOARD A	480.0	0.0004 / -87.	0.0004 / 153.	0.0004 / 33.
PANELBOARD B	480.0	0.0002 / -90.	0.0002 / 150.	0.0002 / 30.
PANELBOARD C	480.0	0.0001 / -90.	0.0001 / 150.	0.0001 / 30.
CL2 PUMPS, NPW	480.0	0.1698 / -86.	0.1698 / 154.	0.1698 / 34.
MCC-5B	480.0	0.1084 / -84.	0.1084 / 156.	0.1084 / 36.
BUS-0101	480.0	0.5626 / -80.	0.5626 / 160.	0.5626 / 40.
SWBD-1	480.0	0.0199 / -79.	0.0199 / 161.	0.0199 / 41.
BUS-0234	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
BUS-0238	480.0	0.1681 / -94.	0.1681 / 146.	0.1681 / 26.

MAIN MCC ========== INI. RMS SYSTEM BRANCH FLOWS (AMPS) ==========

FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
MAIN MCC	BUS-0015	CABLE TO BLOWE	480.	2420.8/ 36.	2420.8/ -84.	2420.8/ 156.
MAIN MCC	BUS-0016	CABLE TO BLOWE	480.	2417.9/ 36.	2417.9/ -84.	2417.9/ 156.
MAIN MCC	BUS-0017	CABLE TO BLOWE	480.	2415.0/ 36.	2415.0/ -84.	2415.0/ 156.
MAIN MCC	MCC (HYPO)	CABLE TO MCC (	480.	145.8/ 36.	145.8/ -84.	145.8/ 156.
MAIN MCC	PANELBOARD A	CABLE TO PANEL	480.	543.8/ 39.	543.8/ -81.	543.8/ 159.
MAIN MCC	PANELBOARD B	CABLE TO PANEL	480.	331.9/ 36.	331.9/ -84.	331.9/ 156.
MAIN MCC	PANELBOARD C	CABLE TO PANEL	480.	142.0/ 36.	142.0/ -84.	142.0/ 156.
MAIN MCC	CL2 PUMPS, NPW	CABLE TO MCC-C	480.	1192.8/ 41.	1192.8/ -79.	1192.8/ 161.
MAIN MCC	MCC-5B	CABLE TO MCC-5	480.	1514.2/ 38.	1514.2/ -82.	1514.2/ 158.
MAIN MCC	BUS-0101	CABLE TO MCC-C	480.	5814.0/ 64.	5814.0/ -56.	5814.0/-176.
SWBD-1	MAIN MCC	CABLE TO MAIN	480.	20795.9/-140.	20795.9/ 100.	20795.9/ -20.
MAIN MCC	BUS-0234	CABLE TO ATS (	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MAIN MCC	BUS-0238	CABLE TO SR107	480.	897.7/ 44.	897.7/ -76.	897.7/ 164.

MCC (DEWATERIN VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 20519.9 / -134. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 1.617 +j 5.634 (PU)
THEVENIN IMPEDANCE X/R RATIO: 3.485

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
23661.6	20535.1	20520.3	20519.9	20519.9

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
20519.9 /-134.0	20519.9 / 106.0	20519.9 / -14.0

MCC (DEWATERIN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
SWBD-3	480.0	0.2897 / -75.	0.2897 / 165.	0.2897 / 45.
DIGEST COMPRES	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
DIGEST COMPRES	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
MCC (DEWATERIN	480.0	0.0000 /-104.	0.0000 / 136.	0.0000 / 16.
PANEL PP1	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

MCC (DEWATERIN ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

BRANCH NAME		VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
DIGESTER PUMP	MCC (DEWATERIN	480.	235.3/-144.	235.3/ 96.	235.3/ -24.
DIGESTER PUMP	MCC (DEWATERIN	480.	235.3/-144.	235.3/ 96.	235.3/ -24.
DIG XFR STA SU	MCC (DEWATERIN	480.	6.5/-144.	6.5/ 96.	6.5/ -24.
POLYMER TRANSF	MCC (DEWATERIN	480.	20.0/-144.	20.0/ 96.	20.0/ -24.
POLYMER TRANSF	MCC (DEWATERIN	480.	20.0/-144.	20.0/ 96.	20.0/ -24.
EXHAUST FAN EF	MCC (DEWATERIN	480.	44.7/-144.	44.7/ 96.	44.7/ -24.
EXHAUST FAN EF	MCC (DEWATERIN	480.	28.2/-144.	28.2/ 96.	28.2/ -24.
NPW BOOSTER PU	MCC (DEWATERIN	480.	64.7/-144.	64.7/ 96.	64.7/ -24.

MCC (DEWATERIN ================ FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ================

AIR COMPRESSOR	MCC (DEWATERIN		480.	200.0/	-144.	200.0/	96.	200.0/	-24.
GBT CP 2	MCC (DEWATERIN		480.	123.5/	-144.	123.5/	96.	123.5/	-24.
POLYMER FEED P	MCC (DEWATERIN		480.	9.4/	-144.	9.4/	96.	9.4/	-24.
GBT CP 1	MCC (DEWATERIN		480.	123.5/	-144.	123.5/	96.	123.5/	-24.
SWBD-3	MCC (DEWATERIN	CABLE TO MCC (	480.	18216.1/	-133.	18216.1/	107.	18216.1/	-13.
MCC (DEWATERIN	DIGEST COMPRES	CABLE TO DIG C	480.	0.0/	0.	0.0/	0.	0.0/	0.
MCC (DEWATERIN	DIGEST COMPRES	CABLE TO DIG C	480.	0.0/	0.	0.0/	0.	0.0/	0.
MCC (DEWATERIN	MCC (DEWATERIN	MCC (DEWATERIN	480.	1235.3/	36.	1235.3/	-84.	1235.3/	156.
MCC (DEWATERIN	PANEL PP1	CABLE TO PANEL	480.	0.0/	0.	0.0/	0.	0.0/	0.

MCC (DEWATERIN VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 20516.9 / -134. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 1.617 +j 5.635 (PU)
THEVENIN IMPEDANCE X/R RATIO: 3.484

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
23656.3	20532.0	20517.3	20516.9	20516.9

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
20516.9 /-134.0	20516.9 / 106.0	20516.9 / -14.0

MCC (DEWATERIN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC (DEWATERIN	480.0	0.0002 / -93.	0.0002 / 147.	0.0002 / 27.
MCC (DEWATERIN	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

MCC (DEWATERIN ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
HOLDING TANK M MCC (DEWATERIN	480.	305.9/-144.	305.9/ 96.	305.9/ -24.
WAB PUMP 1 MCC (DEWATERIN	480.	82.3/-144.	82.3/ 96.	82.3/ -24.
POLYMER FEED P MCC (DEWATERIN	480.	9.4/-144.	9.4/ 96.	9.4/ -24.
FILTRATE PUMP MCC (DEWATERIN	480.	44.7/-144.	44.7/ 96.	44.7/ -24.
AIR COMPRESSOR MCC (DEWATERIN	480.	200.0/-144.	200.0/ 96.	200.0/ -24.
NPW BOOSTER PU MCC (DEWATERIN	480.	64.7/-144.	64.7/ 96.	64.7/ -24.
TWAB PUMP 1 MCC (DEWATERIN	480.	123.5/-144.	123.5/ 96.	123.5/ -24.
TWAB PUMP 2 MCC (DEWATERIN	480.	123.5/-144.	123.5/ 96.	123.5/ -24.
NPW BOOSTER PU MCC (DEWATERIN	480.	64.7/-144.	64.7/ 96.	64.7/ -24.
WAB PUMP 2 MCC (DEWATERIN	480.	82.3/-144.	82.3/ 96.	82.3/ -24.
POLYMER FEED P MCC (DEWATERIN	480.	9.4/-144.	9.4/ 96.	9.4/ -24.

MCC (DEWATERIN ==========	FIRST BRANCH	SYSTEM BRANCH FLOWS (AMPS) ==========		
HOT WATER PUMP MCC (DEWATERIN	480.	20.0/-144.	20.0/ 96.	20.0/ -24.
FILTRATE PUMP MCC (DEWATERIN	480.	44.7/-144.	44.7/ 96.	44.7/ -24.
MCC (DEWATERIN MCC (DEWATERIN MCC (DEWATERIN	480.	19302.8/-133.	19302.8/ 107.	19302.8/ -13.
MCC (DEWATERIN MCC (DEWATERIN MCC (DEWATERIN	480.	60.0/ 36.	60.0/ -84.	60.0/ 156.

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 MCC (DEWATERIN VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  20513.6 / -134. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    1.618 +j   5.636 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     3.482

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   23650.4     20528.7     20514.0     20513.6     20513.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                20513.6 /-134.0    20513.6 / 106.0     20513.6 / -14.0

 MCC (DEWATERIN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANEL LPB         208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   MCC (DEWATERIN    480.0  0.0002 / -94.  0.0002 / 146.  0.0002 /  26.
   POLYMER SYSTEM    480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   MCC (DEWATERIN ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
DIGESTER HEAT  MCC (DEWATERIN                  480.     20.0/-144.     20.0/  96.     20.0/ -24.
HOT WATER PUMP MCC (DEWATERIN                  480.     20.0/-144.     20.0/  96.     20.0/ -24.
ALLIED COLLOID MCC (DEWATERIN                  480.     20.0/-144.     20.0/  96.     20.0/ -24.
MCC (DEWATERIN PANEL LPB      XFMR - LPB       208.      0.0/   0.      0.0/   0.      0.0/   0.
MCC (DEWATERIN MCC (DEWATERIN MCC (DEWATERIN   480.  20454.6/-134.  20454.6/ 106.  20454.6/ -14.
MCC (DEWATERIN POLYMER SYSTEM CABLE TO POLY    480.      0.0/   0.      0.0/   0.      0.0/   0.

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MCC (HYPO) VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 13471.7 / -107. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 6.091 +j 6.528 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.072

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
13509.9	13471.7	13471.7	13471.7	13471.7

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
13471.7 /-107.0	13471.7 / 133.0	13471.7 / 13.0

MCC (HYPO) ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MAIN MCC	480.0	0.7207 / -74.	0.7207 / 166.	0.7207 / 46.
LP (HYPO) PANE	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
PANEL JRM	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

MCC (HYPO) ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

BRANCH NAME			VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
AMMONIA PUMP 1	MCC (HYPO)		480.	44.7/-144.	44.7/ 96.	44.7/ -24.
EF-2 (MTD OUTS	MCC (HYPO)		480.	9.4/-144.	9.4/ 96.	9.4/ -24.
5-MINUTE ANALY	MCC (HYPO)		480.	4.1/-144.	4.1/ 96.	4.1/ -24.
30-MINUTE ANAL	MCC (HYPO)		480.	6.5/-144.	6.5/ 96.	6.5/ -24.
30-MINUTE ANAL	MCC (HYPO)		480.	6.5/-144.	6.5/ 96.	6.5/ -24.
AMMONIA PUMP 2	MCC (HYPO)		480.	64.7/-144.	64.7/ 96.	64.7/ -24.
5-MINUTE ANALY	MCC (HYPO)		480.	4.1/-144.	4.1/ 96.	4.1/ -24.
EF-1 (MTD OUTS	MCC (HYPO)		480.	6.5/-144.	6.5/ 96.	6.5/ -24.
MAIN MCC	MCC (HYPO)	CABLE TO MCC (	480.	13355.5/-107.	13355.5/ 133.	13355.5/ 13.
MCC (HYPO)	LP (HYPO) PANE	XFMR - LP (HYP	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

MCC (HYPO) ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC (HYPO)	PANEL JRM	CABLE TO PANEL	480.	0.0/	0.	0.0/	0.	0.0/	0.		

```
 MCC (SCUM BLDG VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2372.4 /  -76. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   48.816 +j  13.690 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.280

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2372.4      2372.4      2372.4      2372.4      2372.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2372.4 / -75.7     2372.4 / 164.3      2372.4 /  44.3

 MCC (SCUM BLDG ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANELBOARD A      480.0  0.9723 / -63.  0.9723 / 177.  0.9723 /  57.
   PANEL A (NEXT     208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   MCC (SCUM BLDG ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BOTTOM COLLECT MCC (SCUM BLDG                 480.      3.5/-144.      3.5/  96.      3.5/ -24.
CROSS SCREW    MCC (SCUM BLDG                 480.      6.5/-144.      6.5/  96.      6.5/ -24.
SCUM PUMP      MCC (SCUM BLDG                 480.     20.0/-144.     20.0/  96.     20.0/ -24.
SKIMMER        MCC (SCUM BLDG                 480.      6.5/-144.      6.5/  96.      6.5/ -24.
GRIT PUMP (SCU MCC (SCUM BLDG                 480.     17.6/-144.     17.6/  96.     17.6/ -24.
PANELBOARD A   MCC (SCUM BLDG CABLE TO MCC (   480.   2353.2/ -74.   2353.2/ 166.   2353.2/  46.
MCC (SCUM BLDG PANEL A (NEXT  XFMR - PANEL A   480.      0.0/   0.      0.0/   0.      0.0/   0.
```

MCC (SLUDGE BL VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 27042.7 / -139. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 0.873 +j 4.361 (PU)
THEVENIN IMPEDANCE X/R RATIO: 4.993

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
33864.9	27218.3	27056.9	27042.8	27042.7

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
27042.7 /-138.7	27042.7 / 101.3	27042.7 / -18.7

MCC (SLUDGE BL ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
SWBD-3	480.0	0.0156 / -81.	0.0156 / 159.	0.0156 / 39.
HYDRAULIC POWE	480.0	0.0210 /-139.	0.0210 / 101.	0.0210 / -19.
CENT FEED PUMP	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
CENT FEED PUMP	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
CENT FEED PUMP	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
DWC POLY FD PU	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
DWC POLY FD PU	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
DWC POLY FD PU	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
GRINDER 1 CONT	480.0	0.0057 /-141.	0.0057 / 99.	0.0057 / -21.
GRINDER 2 CONT	480.0	0.0057 /-141.	0.0057 / 99.	0.0057 / -21.
GRINDER 3 CONT	480.0	0.0057 /-141.	0.0057 / 99.	0.0057 / -21.
PANEL PP-1 (IN	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
MCC (SLUDGE BL	480.0	0.0000 /-107.	0.0000 / 133.	0.0000 / 13.

MCC (SLUDGE BL ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================

FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

	BRANCH NAME	VBASE LL	-PHASE A-		-PHASE B-		-PHASE C-	
SWBD-3	MCC (SLUDGE BL CABLE TO MCC (	480.	26089.9/	-138.	26089.8/	102.	26089.8/	-18.
MCC (SLUDGE BL	HYDRAULIC POWE CABLE TO HYD P	480.	123.1/	37.	123.1/	-83.	123.1/	157.
MCC (SLUDGE BL	CENT FEED PUMP CABLE TO CENT	480.	0.0/	0.	0.0/	0.	0.0/	0.
MCC (SLUDGE BL	CENT FEED PUMP CABLE TO CENT	480.	0.0/	0.	0.0/	0.	0.0/	0.
MCC (SLUDGE BL	CENT FEED PUMP CABLE TO CENT	480.	0.0/	0.	0.0/	0.	0.0/	0.
MCC (SLUDGE BL	DWC POLY FD PU CABLE TO DWC P	480.	0.0/	0.	0.0/	0.	0.0/	0.
MCC (SLUDGE BL	DWC POLY FD PU CABLE TO DWC P	480.	0.0/	0.	0.0/	0.	0.0/	0.
MCC (SLUDGE BL	DWC POLY FD PU CABLE TO DWC P	480.	0.0/	0.	0.0/	0.	0.0/	0.
MCC (SLUDGE BL	GRINDER 1 CONT CABLE TO GRIND	480.	28.2/	36.	28.2/	-84.	28.2/	156.
MCC (SLUDGE BL	GRINDER 2 CONT CABLE TO GRIND	480.	28.2/	36.	28.2/	-84.	28.2/	156.
MCC (SLUDGE BL	GRINDER 3 CONT CABLE TO GRIND	480.	28.2/	36.	28.2/	-84.	28.2/	156.
MCC (SLUDGE BL	PANEL PP-1 (IN PANEL PP1 BUSW	480.	0.0/	0.	0.0/	0.	0.0/	0.
MCC (SLUDGE BL	MCC (SLUDGE BL MCC (SLUDGE BL	480.	749.7/	36.	749.7/	-84.	749.7/	156.

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 MCC (SLUDGE BL VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  27034.8 / -139. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    0.875 +j   4.362 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     4.986

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   33844.7     27209.2     27048.9     27034.9     27034.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                27034.8 /-138.7    27034.8 / 101.3     27034.8 / -18.7

 MCC (SLUDGE BL ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.0002 /-101.  0.0002 / 139.  0.0002 /  19.
   MCC (SLUDGE BL ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
COOLING WATER  MCC (SLUDGE BL                  480.     20.0/-144.     20.0/  96.     20.0/ -24.
TRAVELING BRID MCC (SLUDGE BL                  480.    108.4/-144.    108.4/  96.    108.4/ -24.
PRV-2          MCC (SLUDGE BL                  480.     28.2/-144.     28.2/  96.     28.2/ -24.
COOLING WATER  MCC (SLUDGE BL                  480.     20.0/-144.     20.0/  96.     20.0/ -24.
COOLING WATER  MCC (SLUDGE BL                  480.     20.0/-144.     20.0/  96.     20.0/ -24.
AHU-1          MCC (SLUDGE BL                  480.     17.6/-144.     17.6/  96.     17.6/ -24.
GAS COMPRESSOR MCC (SLUDGE BL                  480.    123.5/-144.    123.5/  96.    123.5/ -24.
GAS COMPRESSOR MCC (SLUDGE BL                  480.    123.5/-144.    123.5/  96.    123.5/ -24.
CU-1           MCC (SLUDGE BL                  480.     66.0/-144.     66.0/  96.     66.0/ -24.
PRV-1          MCC (SLUDGE BL                  480.     28.2/-144.     28.2/  96.     28.2/ -24.
MCC (SLUDGE BL MCC (SLUDGE BL MCC (SLUDGE BL   480.  26482.0/-139.  26482.0/ 101.  26482.0/ -19.

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 MCC (SLUDGE BL VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  27038.8 / -139. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    0.874 +j   4.362 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     4.990

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   33854.9     27213.8     27052.9     27038.9     27038.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                27038.8 /-138.7    27038.8 / 101.3     27038.8 / -18.7

 MCC (SLUDGE BL ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.0002 /-101.  0.0002 / 139.  0.0002 /  19.
   PANEL LP-1        208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   MCC (SLUDGE BL    480.0  0.0000 /-107.  0.0000 / 133.  0.0000 /  13.
   MCC (SLUDGE BL ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
NPW PUMP 1     MCC (SLUDGE BL                  480.     64.7/-144.     64.7/  96.     64.7/ -24.
NPW PUMP 3     MCC (SLUDGE BL                  480.     64.7/-144.     64.7/  96.     64.7/ -24.
NPW PUMP 2     MCC (SLUDGE BL                  480.     64.7/-144.     64.7/  96.     64.7/ -24.
MCC (SLUDGE BL MCC (SLUDGE BL MCC (SLUDGE BL   480.  26292.8/-139.  26292.8/ 101.  26292.8/ -19.
MCC (SLUDGE BL PANEL LP-1     XFMR-LP-1        208.      0.0/   0.      0.0/   0.      0.0/   0.
MCC (SLUDGE BL MCC (SLUDGE BL MCC (SLUDGE BL   480.    555.5/  36.    555.5/ -84.    555.5/ 156.

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MCC-2A VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 29484.5 / -138. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 0.879 +j 3.984 (PU)
THEVENIN IMPEDANCE X/R RATIO: 4.534

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
36114.8	29599.7	29491.7	29484.5	29484.5

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
29484.5 /-137.6	29484.5 / 102.4	29484.5 / -17.6

MCC-2A ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
SWBD-2A	480.0	0.0821 / -99.	0.0821 / 141.	0.0821 / 21.
MCC-2A (CONT)	480.0	0.0000 /-104.	0.0000 / 136.	0.0000 / 16.

MCC-2A ========== INI. RMS SYSTEM BRANCH FLOWS (AMPS) ==========
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
IFAS REACTOR 1 MCC-2A			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 2 MCC-2A			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 1 MCC-2A			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 1 MCC-2A			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 3 MCC-2A			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 2 MCC-2A			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 3 MCC-2A			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 2 MCC-2A			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 2 MCC-2A			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 1 MCC-2A			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
SWBD-2A	MCC-2A	CABLE TO MCC-2	480.	28065.9/-137.	28065.8/ 103.	28065.9/ -17.

MCC-2A ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC-2A	MCC-2A (CONT)	MCC-2A BUSWAY	480.	1145.0/	36.	1145.0/	-84.	1145.0/ 156.

MCC-2A (CONT 2 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 29472.2 / -138. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 0.880 +j 3.985 (PU)
THEVENIN IMPEDANCE X/R RATIO: 4.528

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
36087.2	29586.4	29479.3	29472.2	29472.2

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
29472.2 /-137.5	29472.2 / 102.5	29472.2 / -17.5

MCC-2A (CONT 2 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC-2A (CONT)	480.0	0.0003 / -97.	0.0003 / 143.	0.0003 / 23.
BUS-0194	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
PANEL DP2A (IN	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
BUS-0235	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

MCC-2A (CONT 2 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
IFAS R3 FOAM S MCC-2A (CONT 2	480.	9.4/-144.	9.4/ 96.	9.4/ -24.
PREAERATION TA MCC-2A (CONT 2	480.	12.4/-144.	12.4/ 96.	12.4/ -24.
IFAS R1 FOAM P MCC-2A (CONT 2	480.	28.2/-144.	28.2/ 96.	28.2/ -24.
IFAS R3 FOAM P MCC-2A (CONT 2	480.	28.2/-144.	28.2/ 96.	28.2/ -24.
IFAS R2 FOAM S MCC-2A (CONT 2	480.	9.4/-144.	9.4/ 96.	9.4/ -24.
IFAS R2 FOAM P MCC-2A (CONT 2	480.	28.2/-144.	28.2/ 96.	28.2/ -24.
IFAS R1 FOAM S MCC-2A (CONT 2	480.	9.4/-144.	9.4/ 96.	9.4/ -24.
ODOR CONTROL F MCC-2A (CONT 2	480.	382.4/-144.	382.4/ 96.	382.4/ -24.
ODOR CONTROL F MCC-2A (CONT 2	480.	382.4/-144.	382.4/ 96.	382.4/ -24.

MCC-2A (CONT 2 ================ FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ================

MCC-2A (CONT)	MCC-2A (CONT 2	MCC-2A BUSWAY	480.	28588.5/	-137.	28588.5/	103.	28588.5/ -17.
MCC-2A (CONT 2	BUS-0194	TX-MCC-2A	480.	0.0/	0.	0.0/	0.	0.0/ 0.
MCC-2A (CONT 2	PANEL DP2A (IN	CABLE TO PANEL	480.	0.0/	0.	0.0/	0.	0.0/ 0.
MCC-2A (CONT 2	BUS-0235	CABLE TO ATS-D	480.	0.0/	0.	0.0/	0.	0.0/ 0.

MCC-2A (CONT) VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 29478.4 / -138. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 0.879 +j 3.984 (PU)
THEVENIN IMPEDANCE X/R RATIO: 4.531

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
36101.1	29593.1	29485.6	29478.4	29478.4

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
29478.4 /-137.6	29478.4 / 102.4	29478.4 / -17.6

MCC-2A (CONT) ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC-2A	480.0	0.0003 / -97.	0.0003 / 143.	0.0003 / 23.
IFAS R1 NRCY P	480.0	0.0057 /-141.	0.0057 / 99.	0.0057 / -21.
IFAS R1 NRCY P	480.0	0.0059 /-141.	0.0059 / 99.	0.0059 / -21.
IFAS R2 NRCY P	480.0	0.0052 /-141.	0.0052 / 99.	0.0052 / -21.
IFAS R2 NRCY P	480.0	0.0063 /-141.	0.0063 / 99.	0.0063 / -21.
IFAS R3 NRCY P	480.0	0.0056 /-141.	0.0056 / 99.	0.0056 / -21.
IFAS R3 NRCY P	480.0	0.0067 /-141.	0.0067 / 99.	0.0067 / -21.
CENTRATE REC P	480.0	0.0095 /-141.	0.0095 / 99.	0.0095 / -21.
MCC-2A (CONT 2	480.0	0.0000 /-104.	0.0000 / 136.	0.0000 / 16.

MCC-2A (CONT) ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

	BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
IFAS REACTOR 3	MCC-2A (CONT)	480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 3	MCC-2A (CONT)	480.	28.4/-144.	28.4/ 96.	28.4/ -24.
MCC-2A	MCC-2A (CONT) MCC-2A BUSWAY	480.	28341.4/-137.	28341.4/ 103.	28341.4/ -17.
MCC-2A (CONT)	IFAS R1 NRCY P CABLE TO IFAS	480.	28.4/ 36.	28.4/ -84.	28.4/ 156.

MCC-2A (CONT) ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC-2A (CONT)	IFAS R1 NRCY P CABLE TO IFAS	480.	28.4/	36.	28.4/	-84.	28.4/	156.
MCC-2A (CONT)	IFAS R2 NRCY P CABLE TO IFAS	480.	28.4/	36.	28.4/	-84.	28.4/	156.
MCC-2A (CONT)	IFAS R2 NRCY P CABLE TO IFAS	480.	28.4/	36.	28.4/	-84.	28.4/	156.
MCC-2A (CONT)	IFAS R3 NRCY P CABLE TO IFAS	480.	28.4/	36.	28.4/	-84.	28.4/	156.
MCC-2A (CONT)	IFAS R3 NRCY P CABLE TO IFAS	480.	28.3/	36.	28.3/	-84.	28.3/	156.
MCC-2A (CONT)	CENTRATE REC P CABLE TO CENTR	480.	28.2/	36.	28.2/	-84.	28.2/	156.
MCC-2A (CONT)	MCC-2A (CONT 2 MCC-2A BUSWAY	480.	890.0/	36.	890.0/	-84.	890.0/	156.

MCC-2B VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 15681.3 / -127. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 3.058 +j 7.034 (PU)
THEVENIN IMPEDANCE X/R RATIO: 2.300

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
16671.0	15681.5	15681.3	15681.3	15681.3

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
15681.3 /-126.5	15681.3 / 113.5	15681.3 / -6.5

MCC-2B ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
SWBD-2A	480.0	0.5398 / -73.	0.5398 / 167.	0.5398 / 47.
MCC-2B (CONT)	480.0	0.0000 /-104.	0.0000 / 136.	0.0000 / 16.

MCC-2B ========== INI. RMS SYSTEM BRANCH FLOWS (AMPS) ==========
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
IFAS REACTOR 5 MCC-2B			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 6 MCC-2B			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 5 MCC-2B			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 5 MCC-2B			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 5 MCC-2B			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 4 MCC-2B			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 4 MCC-2B			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 6 MCC-2B			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 4 MCC-2B			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 4 MCC-2B			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
SWBD-2A	MCC-2B	CABLE TO MCC-2	480.	15088.4/-126.	15088.4/ 114.	15088.4/ -6.

MCC-2B ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC-2B	MCC-2B (CONT)	MCC-2B BUSWAY	480.	339.8/ 36.	339.8/ -84.	339.8/ 156.

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 MCC-2B (CONT 2 VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  15677.2 / -126. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    3.060 +j   7.036 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.299

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   16665.8     15677.4     15677.2     15677.2     15677.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                15677.2 /-126.5    15677.2 / 113.5     15677.2 /  -6.5

 MCC-2B (CONT 2 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2B (CONT)     480.0  0.0001 / -86.  0.0001 / 154.  0.0001 /  34.
   PANEL DP2B (IN    480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-0195          208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   MCC-2B (CONT 2 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R4 FOAM P MCC-2B (CONT 2                  480.     28.2/-144.     28.2/  96.     28.2/ -24.
IFAS R5 FOAM S MCC-2B (CONT 2                  480.      9.4/-144.      9.4/  96.      9.4/ -24.
IFAS R4 FOAM S MCC-2B (CONT 2                  480.      9.4/-144.      9.4/  96.      9.4/ -24.
IFAS R5 FOAM P MCC-2B (CONT 2                  480.     28.2/-144.     28.2/  96.     28.2/ -24.
IFAS R6 FOAM P MCC-2B (CONT 2                  480.     28.2/-144.     28.2/  96.     28.2/ -24.
IFAS R6 FOAM S MCC-2B (CONT 2                  480.      9.4/-144.      9.4/  96.      9.4/ -24.
MCC-2B (CONT)  MCC-2B (CONT 2 MCC-2B BUSWAY    480.  15569.7/-126.  15569.7/ 114.  15569.7/  -6.
MCC-2B (CONT 2 PANEL DP2B (IN CABLE TO PANEL   480.      0.0/   0.      0.0/   0.      0.0/   0.
MCC-2B (CONT 2 BUS-0195       TX-2B            480.      0.0/   0.      0.0/   0.      0.0/   0.

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MCC-2B (CONT) VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 15679.2 / -126. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 3.059 +j 7.035 (PU)
THEVENIN IMPEDANCE X/R RATIO: 2.300

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
16668.4	15679.5	15679.2	15679.2	15679.2

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
15679.2 /-126.5	15679.2 / 113.5	15679.2 / -6.5

MCC-2B (CONT) ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC-2B	480.0	0.0001 / -86.	0.0001 / 154.	0.0001 / 34.
IFAS R4 NRCY P	480.0	0.0054 /-141.	0.0054 / 99.	0.0054 / -21.
IFAS R4 NRCY P	480.0	0.0052 /-141.	0.0052 / 99.	0.0052 / -21.
IFAS R5 NRCY P	480.0	0.0048 /-141.	0.0048 / 99.	0.0048 / -21.
IFAS R5 NRCY P	480.0	0.0050 /-141.	0.0050 / 99.	0.0050 / -21.
IFAS R6 NRCY P	480.0	0.0057 /-141.	0.0057 / 99.	0.0057 / -21.
IFAS R6 NRCY P	480.0	0.0063 /-141.	0.0063 / 99.	0.0063 / -21.
MCC-2B (CONT 2	480.0	0.0000 /-103.	0.0000 / 0.	0.0000 / 17.

MCC-2B (CONT) ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
IFAS REACTOR 6	MCC-2B (CONT)		480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 6	MCC-2B (CONT)		480.	28.4/-144.	28.4/ 96.	28.4/ -24.
MCC-2B	MCC-2B (CONT)	MCC-2B BUSWAY	480.	15355.7/-126.	15355.7/ 114.	15355.7/ -6.
MCC-2B (CONT)	IFAS R4 NRCY P	CABLE TO IFAS	480.	28.4/ 36.	28.4/ -84.	28.4/ 156.
MCC-2B (CONT)	IFAS R4 NRCY P	CABLE TO IFAS	480.	28.4/ 36.	28.4/ -84.	28.4/ 156.

MCC-2B (CONT) ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC-2B (CONT)	IFAS R5 NRCY P CABLE TO IFAS	480.	28.4/	36.	28.4/	-84.	28.4/	156.
MCC-2B (CONT)	IFAS R5 NRCY P CABLE TO IFAS	480.	28.4/	36.	28.4/	-84.	28.4/	156.
MCC-2B (CONT)	IFAS R6 NRCY P CABLE TO IFAS	480.	28.4/	36.	28.4/	-84.	28.4/	156.
MCC-2B (CONT)	IFAS R6 NRCY P CABLE TO IFAS	480.	28.4/	36.	28.4/	-84.	28.4/	156.
MCC-2B (CONT)	MCC-2B (CONT 2 MCC-2B BUSWAY	480.	112.9/	36.	112.9/	-84.	112.9/	156.

MCC-2C VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 11645.2 / -123. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 4.637 +j 9.230 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.990

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
12130.8	11645.3	11645.2	11645.2	11645.2

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
11645.2 /-123.3	11645.2 / 116.7	11645.2 / -3.3

MCC-2C ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
SWBD-2B	480.0	0.6680 / -70.	0.6680 / 170.	0.6680 / 50.
MCC-2C (CONT)	480.0	0.0000 /-104.	0.0000 / 136.	0.0000 / 16.

MCC-2C ========== INI. RMS SYSTEM BRANCH FLOWS (AMPS) ==========
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
IFAS REACTOR 7 MCC-2C			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 8 MCC-2C			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 9 MCC-2C			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 7 MCC-2C			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 7 MCC-2C			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 8 MCC-2C			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 8 MCC-2C			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 8 MCC-2C			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 7 MCC-2C			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 9 MCC-2C			480.	28.4/-144.	28.4/ 96.	28.4/ -24.
SWBD-2B	MCC-2C	CABLE TO MCC-2	480.	11064.8/-122.	11064.8/ 118.	11064.8/ -2.

MCC-2C ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC-2C	MCC-2C (CONT)	MCC-2C BUSWAY	480.	339.8/ 36.	339.8/ -84.	339.8/ 156.

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 MCC-2C (CONT 2 VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  11642.9 / -123. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    4.638 +j   9.231 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.990

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   12128.1     11643.0     11642.9     11642.9     11642.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                11642.9 /-123.3    11642.9 / 116.7     11642.9 /  -3.3

 MCC-2C (CONT 2 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2C (CONT)     480.0  0.0001 / -83.  0.0001 / 157.  0.0001 /  37.
   PANEL DP2C (IN    480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   BUS-0196          208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   MCC-2C (CONT 2 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R9 FOAM P MCC-2C (CONT 2                 480.     28.2/-144.     28.2/  96.     28.2/ -24.
IFAS R9 FOAM S MCC-2C (CONT 2                 480.      9.4/-144.      9.4/  96.      9.4/ -24.
IFAS R7 FOAM P MCC-2C (CONT 2                 480.     28.2/-144.     28.2/  96.     28.2/ -24.
IFAS R8 FOAM P MCC-2C (CONT 2                 480.     28.2/-144.     28.2/  96.     28.2/ -24.
IFAS R7 FOAM S MCC-2C (CONT 2                 480.      9.4/-144.      9.4/  96.      9.4/ -24.
IFAS R8 FOAM S MCC-2C (CONT 2                 480.      9.4/-144.      9.4/  96.      9.4/ -24.
MCC-2C (CONT)  MCC-2C (CONT 2 MCC-2C BUSWAY    480.  11537.5/-123.  11537.5/ 117.  11537.5/  -3.
MCC-2C (CONT 2 PANEL DP2C (IN CABLE TO PANEL   480.      0.0/   0.      0.0/   0.      0.0/   0.
MCC-2C (CONT 2 BUS-0196       TX-2C           480.      0.0/   0.      0.0/   0.      0.0/   0.

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MCC-2C (CONT) VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 11644.1 / -123. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 4.638 +j 9.230 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.990

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
12129.5	11644.1	11644.1	11644.1	11644.1

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
11644.1 /-123.3	11644.1 / 116.7	11644.1 / -3.3

MCC-2C (CONT) ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC-2C	480.0	0.0001 / -83.	0.0001 / 157.	0.0001 / 37.
IFAS R7 NRCY P	480.0	0.0054 /-141.	0.0054 / 99.	0.0054 / -21.
IFAS R7 NRCY P	480.0	0.0052 /-141.	0.0052 / 99.	0.0052 / -21.
IFAS R8 NRCY P	480.0	0.0048 /-141.	0.0048 / 99.	0.0048 / -21.
IFAS R8 NRCY P	480.0	0.0050 /-141.	0.0050 / 99.	0.0050 / -21.
IFAS R9 NRCY P	480.0	0.0057 /-141.	0.0057 / 99.	0.0057 / -21.
IFAS R9 NRCY P	480.0	0.0063 /-141.	0.0063 / 99.	0.0063 / -21.
MCC-2C (CONT 2	480.0	0.0000 /-103.	0.0000 / 0.	0.0000 / 17.

MCC-2C (CONT) ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
IFAS REACTOR 9	MCC-2C (CONT)		480.	28.4/-144.	28.4/ 96.	28.4/ -24.
IFAS REACTOR 9	MCC-2C (CONT)		480.	28.4/-144.	28.4/ 96.	28.4/ -24.
MCC-2C	MCC-2C (CONT)	MCC-2C BUSWAY	480.	11327.1/-123.	11327.1/ 117.	11327.1/ -3.
MCC-2C (CONT)	IFAS R7 NRCY P	CABLE TO IFAS	480.	28.4/ 36.	28.4/ -84.	28.4/ 156.
MCC-2C (CONT)	IFAS R7 NRCY P	CABLE TO IFAS	480.	28.4/ 36.	28.4/ -84.	28.4/ 156.

MCC-2C (CONT) ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC-2C (CONT)	IFAS R8 NRCY P CABLE TO IFAS	480.	28.4/	36.	28.4/	-84.	28.4/	156.
MCC-2C (CONT)	IFAS R8 NRCY P CABLE TO IFAS	480.	28.4/	36.	28.4/	-84.	28.4/	156.
MCC-2C (CONT)	IFAS R9 NRCY P CABLE TO IFAS	480.	28.4/	36.	28.4/	-84.	28.4/	156.
MCC-2C (CONT)	IFAS R9 NRCY P CABLE TO IFAS	480.	28.4/	36.	28.4/	-84.	28.4/	156.
MCC-2C (CONT)	MCC-2C (CONT 2 MCC-2C BUSWAY	480.	112.9/	36.	112.9/	-84.	112.9/	156.

MCC-5B VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 11812.0 / -126. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 4.136 +j 9.305 (PU)
THEVENIN IMPEDANCE X/R RATIO: 2.250

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
12514.7	11812.1	11812.0	11812.0	11812.0

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
11812.0 /-126.0	11812.0 / 114.0	11812.0 / -6.0

MCC-5B ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MAIN MCC	480.0	0.7323 / -65.	0.7323 / 175.	0.7323 / 55.
PANEL P5B	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
PANEL P5C	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
SCREEN 2 CP01-	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

MCC-5B ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
ID FAN M-4-4-1 MCC-5B	480.	729.4/-144.	729.4/ 96.	729.4/ -24.
RECIRCULATION MCC-5B	480.	64.7/-144.	64.7/ 96.	64.7/ -24.
RECIRCULATION MCC-5B	480.	64.7/-144.	64.7/ 96.	64.7/ -24.
ID FAN M-4-4-2 MCC-5B	480.	729.4/-144.	729.4/ 96.	729.4/ -24.
CLASSIFIER M-2 MCC-5B	480.	6.5/-144.	6.5/ 96.	6.5/ -24.
CLASSIFIER M-2 MCC-5B	480.	6.5/-144.	6.5/ 96.	6.5/ -24.
RECIRCULATION MCC-5B	480.	64.7/-144.	64.7/ 96.	64.7/ -24.
CLASSIFIER M-2 MCC-5B	480.	6.5/-144.	6.5/ 96.	6.5/ -24.
SUPPLY FAN SF- MCC-5B	480.	6.5/-144.	6.5/ 96.	6.5/ -24.

MCC-5B ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MAIN MCC	MCC-5B	CABLE TO MCC-5	480.	10231.1/	-123.	10231.0/	117.	10231.1/	-3.
MCC-5B	PANEL P5B	CABLE TO PANEL	480.	0.0/	0.	0.0/	0.	0.0/	0.
MCC-5B	PANEL P5C	CABLE TO PANEL	480.	0.0/	0.	0.0/	0.	0.0/	0.
MCC-5B	SCREEN 2 CP01-	CABLE TO SCREE	480.	0.0/	0.	0.0/	0.	0.0/	0.

MCC-CC103 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 14766.7 / -121. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 3.983 +j 7.105 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.784

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
15196.8	14766.8	14766.7	14766.7	14766.7

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
14766.7 /-120.7	14766.7 / 119.3	14766.7 / -0.7

MCC-CC103 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
BUS-0101	480.0	0.2866 / -78.	0.2866 / 162.	0.2866 / 42.
PDP103	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
RETURN PUMP 3	480.0	0.0094 /-133.	0.0094 / 107.	0.0094 / -13.
RETURN PUMP 4	480.0	0.0094 /-133.	0.0094 / 107.	0.0094 / -13.
STARTER RACK (	480.0	0.0099 /-140.	0.0099 / 100.	0.0099 / -20.
STARTER RACK 1	480.0	0.0053 /-136.	0.0053 / 104.	0.0053 / -16.
STARTER RACK (	480.0	0.0011 /-140.	0.0011 / 100.	0.0011 / -20.
STARTER RACK (	480.0	0.0028 /-140.	0.0028 / 100.	0.0028 / -20.
STARTER RACK (	480.0	0.0030 /-140.	0.0030 / 100.	0.0030 / -20.

MCC-CC103 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
RPS 1 ROOF VEN	MCC-CC103		480.	1.2/-144.	1.2/ 96.	1.2/ -24.
BUS-0101	MCC-CC103	CABLE TO MCC-C	480.	11844.8/-115.	11844.7/ 125.	11844.8/ 5.
MCC-CC103	PDP103	XFMR-103	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC-CC103	RETURN PUMP 3	CABLE TO RETUR	480.	1595.6/ 36.	1595.6/ -84.	1595.6/ 156.

MCC-CC103 ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC-CC103	RETURN PUMP 4	CABLE TO RETUR	480.	1595.6/	36.	1595.6/	-84.	1595.6/	156.
MCC-CC103	STARTER RACK (	CABLE TO START	480.	23.1/	36.	23.1/	-84.	23.1/	156.
MCC-CC103	STARTER RACK 1	CABLE TO START	480.	23.0/	36.	23.0/	-84.	23.0/	156.
MCC-CC103	STARTER RACK (	CABLE TO START	480.	2.6/	36.	2.6/	-84.	2.6/	156.
MCC-CC103	STARTER RACK (	CABLE TO START	480.	4.4/	36.	4.4/	-84.	4.4/	156.
MCC-CC103	STARTER RACK (	CABLE TO START	480.	4.4/	36.	4.4/	-84.	4.4/	156.

MCC-CC103A VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 18320.1 / -126. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 2.620 +j 6.020 (PU)
THEVENIN IMPEDANCE X/R RATIO: 2.298

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
19473.7	18320.4	18320.1	18320.1	18320.1

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
18320.1 /-126.5	18320.1 / 113.5	18320.1 / -6.5

MCC-CC103A ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
BUS-0101	480.0	0.1181 / -77.	0.1181 / 163.	0.1181 / 43.
PANEL PDP-103A	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
RETURN PUMP 1	480.0	0.1186 /-130.	0.1186 / 110.	0.1186 / -10.
RETURN PUMP 2	480.0	0.1186 /-130.	0.1186 / 110.	0.1186 / -10.
RETURN PUMP 5	480.0	0.0776 /-124.	0.0776 / 116.	0.0776 / -4.
RETURN PUMP 6	480.0	0.0472 /-126.	0.0472 / 114.	0.0472 / -6.

MCC-CC103A ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
BUS-0101	MCC-CC103A	CABLE TO MCC-C	480.	9766.0/-113.	9765.9/ 127.	9766.0/ 7.
MCC-CC103A	PANEL PDP-103A	XFMR-103A	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC-CC103A	RETURN PUMP 1	CABLE TO RETUR	480.	425.9/ 42.	425.9/ -78.	425.9/ 162.
MCC-CC103A	RETURN PUMP 2	CABLE TO RETUR	480.	425.9/ 42.	425.9/ -78.	425.9/ 162.
MCC-CC103A	RETURN PUMP 5	CABLE TO RETUR	480.	4091.8/ 40.	4091.8/ -80.	4091.8/ 160.
MCC-CC103A	RETURN PUMP 6	CABLE TO RETUR	480.	4146.6/ 38.	4146.6/ -82.	4146.6/ 158.

MCC-CC113 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 7099.4 / -122. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 8.026 +j 14.921 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.859

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
7337.1	7099.4	7099.4	7099.4	7099.4

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
7099.4 /-121.7	7099.4 / 118.3	7099.4 / -1.7

MCC-CC113 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
CL2 PUMPS, NPW	480.0	0.0258 / -87.	0.0258 / 153.	0.0258 / 33.
PANEL PDP113	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
STARTER RACK 1	480.0	0.0175 /-139.	0.0175 / 101.	0.0175 / -19.

MCC-CC113 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
CHLORINATED PU	MCC-CC113		480.	200.0/-144.	200.0/ 96.	200.0/ -24.
NPW ROOF VENTI	MCC-CC113		480.	6.5/-144.	6.5/ 96.	6.5/ -24.
CHLORINATED PU	MCC-CC113		480.	200.0/-144.	200.0/ 96.	200.0/ -24.
NPW PUMP 4	MCC-CC113		480.	305.9/-144.	305.9/ 96.	305.9/ -24.
CL2 PUMPS, NPW	MCC-CC113	CABLE TO START	480.	6372.5/-119.	6372.5/ 121.	6372.5/ 1.
MCC-CC113	PANEL PDP113	XFMR-PDP113	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC-CC113	STARTER RACK 1	CABLE TO START	480.	82.1/ 37.	82.1/ -83.	82.1/ 157.

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 MCC-G1          VOLTAGE BASE LL:                  480.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:   2971.2 /  -98. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:   32.108 +j  24.656 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     0.768

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     2972.0      2971.2      2971.2      2971.2      2971.2

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                  2971.2 / -97.5     2971.2 / 142.5      2971.2 /  22.5

 MCC-G1          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANEL DP47         480.0  0.0224 / -81.  0.0224 / 159.  0.0224 /  39.
   MCC-G1           ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                  FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                                 BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
NaOH PUMP 1    MCC-G1                           480.     12.4/-144.     12.4/  96.     12.4/ -24.
NaOH PUMP 2    MCC-G1                           480.     12.4/-144.     12.4/  96.     12.4/ -24.
PANEL DP47     MCC-G1          CABLE TO MCC-G   480.   2954.3/ -97.   2954.3/ 143.   2954.3/  23.

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MV MAIN SWGR VOLTAGE BASE LL: 4160.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 8518.0 / -112. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 0.236 +j 1.612 (PU)
THEVENIN IMPEDANCE X/R RATIO: 6.831

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
11419.1	8730.4	8552.1	8518.9	8518.0

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
8518.0 /-111.7	8518.0 / 128.3	8518.0 / 8.3

MV MAIN SWGR ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
BUS-0168	4160.0	0.0155 / -53.	0.0155 /-173.	0.0155 / 67.
BUS-0169	4160.0	0.0148 / -70.	0.0148 / 170.	0.0148 / 50.
BUS-0170	4160.0	0.0045 / -64.	0.0045 / 176.	0.0045 / 56.
BUS-0171	4160.0	0.0214 / -70.	0.0214 / 170.	0.0214 / 50.

MV MAIN SWGR ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
BUS-0168	MV MAIN SWGR	CABLE TO MV SW	4160.	5606.6/-113.	5606.6/ 127.	5606.6/ 7.
MV MAIN SWGR	BUS-0169	CABLE TO TX-2A	4160.	885.6/ 68.	885.6/ -52.	885.6/-172.
MV MAIN SWGR	BUS-0170	CABLE TO TX-1	4160.	1288.8/ 74.	1288.8/ -46.	1288.8/-166.
MV MAIN SWGR	BUS-0171	CABLE TO TX-3	4160.	745.4/ 68.	745.4/ -52.	745.4/-172.

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 NAOH RECIRC PU VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2600.8 /  -94. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   38.141 +j  26.155 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.686

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2601.1      2600.8      2600.8      2600.8      2600.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2600.8 / -94.4     2600.8 / 145.6      2600.8 /  25.6

 NAOH RECIRC PU ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANEL DP47        480.0  0.1610 / -83.  0.1610 / 157.  0.1610 /  37.
   NAOH RECIRC PU ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
NAOH RECIRC PU NAOH RECIRC PU                   480.    200.0/-144.    200.0/  96.    200.0/ -24.
PANEL DP47     NAOH RECIRC PU CABLE TO NAOH    480.   2476.6/ -91.   2476.6/ 149.   2476.6/  29.

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 NAOH RECIRC PU VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2655.6 /  -95. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   37.162 +j  25.894 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.697

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2655.9      2655.6      2655.6      2655.6      2655.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2655.6 / -94.9     2655.6 / 145.1      2655.6 /  25.1

 NAOH RECIRC PU ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANEL DP47        480.0  0.1409 / -84.  0.1409 / 156.  0.1409 /  36.
   NAOH RECIRC PU ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
NAOH RECIRC PU NAOH RECIRC PU                   480.    200.0/-144.    200.0/  96.    200.0/ -24.
PANEL DP47     NAOH RECIRC PU CABLE TO NAOH    480.   2530.1/ -91.   2530.1/ 149.   2530.1/  29.

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 PANEL (DIGESTE VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3659.5 / -105. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   23.210 +j  23.273 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.003

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3666.4      3659.5      3659.5      3659.5      3659.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3659.5 /-105.1     3659.5 / 134.9      3659.5 /  14.9

 PANEL (DIGESTE ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-0234          480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   PANEL (DIGESTE ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-0234       PANEL (DIGESTE ATS-DIGESTER     480.   3659.5/-105.   3659.5/ 135.   3659.5/  15.

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 PANEL DP2A (IN VOLTAGE BASE LL:                 480.0 (VOLTS)
               INI. SYM. RMS FAULT CURRENT:  28508.5 / -134. ( AMPS/DEG )
               THEVENIN EQUIVALENT IMPEDANCE:    1.143 +j   4.061 (PU)
               THEVENIN IMPEDANCE X/R RATIO:     3.553

                ASYM    RMS   INTERRUPTING AMPS
               1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                  33014.9     28532.6     28509.2     28508.5     28508.5

               INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

               INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               28508.5 /-134.3    28508.5 / 105.7     28508.5 / -14.3

 PANEL DP2A (IN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                   FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2A (CONT 2    480.0  0.0649 /-118.  0.0649 / 122.  0.0649 /   2.
   PANEL DP2A (IN ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC-2A (CONT 2 PANEL DP2A (IN CABLE TO PANEL   480.  28508.5/-134.  28508.5/ 106.  28508.5/ -14.

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 PANEL DP2B (IN VOLTAGE BASE LL:                 480.0 (VOLTS)
               INI. SYM. RMS FAULT CURRENT:  15322.5 / -125. ( AMPS/DEG )
               THEVENIN EQUIVALENT IMPEDANCE:    3.323 +j   7.112 (PU)
               THEVENIN IMPEDANCE X/R RATIO:     2.140

                ASYM    RMS   INTERRUPTING AMPS
               1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                  16115.5     15322.6     15322.5     15322.5     15322.5

               INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

               INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               15322.5 /-125.0    15322.5 / 115.0     15322.5 /  -5.0

 PANEL DP2B (IN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                   FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2B (CONT 2    480.0  0.0349 /-109.  0.0349 / 131.  0.0349 /  11.
   PANEL DP2B (IN ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC-2B (CONT 2 PANEL DP2B (IN CABLE TO PANEL   480.  15322.5/-125.  15322.5/ 115.  15322.5/  -5.

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 PANEL DP2C (IN VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  11434.8 / -122. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    4.902 +j   9.307 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.899

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   11845.4     11434.8     11434.8     11434.8     11434.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                11434.8 /-122.2    11434.7 / 117.8     11434.8 /  -2.2

 PANEL DP2C (IN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2C (CONT 2    480.0  0.0260 /-106.  0.0260 / 134.  0.0260 /  14.
   PANEL DP2C (IN ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC-2C (CONT 2 PANEL DP2C (IN CABLE TO PANEL   480.  11434.8/-122.  11434.7/ 118.  11434.8/  -2.

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PANEL DP47 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 3034.4 / -98. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 31.244 +j 24.395 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.781

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
3035.3	3034.4	3034.4	3034.4	3034.4

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
3034.4 / -98.0	3034.4 / 142.0	3034.4 / 22.0

PANEL DP47 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC-G1	480.0	0.0002 /-128.	0.0002 / 112.	0.0002 / -8.
SWBD-2B	480.0	0.9439 / -64.	0.9439 / 176.	0.9439 / 56.
NAOH RECIRC PU	480.0	0.0130 /-136.	0.0130 / 104.	0.0130 / -16.
NAOH RECIRC PU	480.0	0.0111 /-136.	0.0111 / 104.	0.0111 / -16.

PANEL DP47 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

	BRANCH NAME		VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
PANEL DP47	MCC-G1	CABLE TO MCC-G	480.	24.7/ 36.	24.7/ -84.	24.7/ 156.
SWBD-2B	PANEL DP47	CABLE TO PANEL	480.	2755.1/ -92.	2755.1/ 148.	2755.1/ 28.
PANEL DP47	NAOH RECIRC PU	CABLE TO NAOH	480.	199.4/ 36.	199.4/ -84.	199.4/ 156.
PANEL DP47	NAOH RECIRC PU	CABLE TO NAOH	480.	199.5/ 36.	199.5/ -84.	199.5/ 156.

PANEL JR1A VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 13192.5 / -107. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 6.229 +j 6.658 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.069

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
13229.4	13192.5	13192.5	13192.5	13192.5

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
13192.5 /-106.9	13192.5 / 133.1	13192.5 / 13.1

PANEL JR1A ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
PANEL JRM	480.0	0.0066 / -84.	0.0066 / 156.	0.0066 / 36.
PANEL JR1B	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

PANEL JR1A ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
PANEL JRM	PANEL JR1A	CABLE TO PANEL	480.	13192.5/-107.	13192.5/ 133.	13192.5/ 13.
PANEL JR1A	PANEL JR1B	PANEL JR1B BUS	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

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 PANEL JR1B     VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  13029.3 / -107. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    6.321 +j   6.728 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.064

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   13064.9     13029.3     13029.3     13029.3     13029.3

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                13029.3 /-106.8    13029.3 / 133.2     13029.3 /  13.2

 PANEL JR1B     ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANEL JR1A        480.0  0.0125 / -70.  0.0125 / 170.  0.0125 /  50.
   BKR TO INDUCTI    480.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   PANEL JR1B     ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
PANEL JR1A     PANEL JR1B     PANEL JR1B BUS   480.  13029.3/-107.  13029.3/ 133.  13029.3/  13.
PANEL JR1B     BKR TO INDUCTI CABLE TO INDUC   480.      0.0/   0.      0.0/   0.      0.0/   0.

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PANEL JR2 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 8143.2 / -97. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 11.729 +j 8.978 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.766

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
8145.5	8143.2	8143.2	8143.2	8143.2

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
8143.2 / -97.4	8143.2 / 142.6	8143.2 / 22.6

PANEL JR2 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
PANEL JRM	480.0	0.4082 / -75.	0.4082 / 165.	0.4082 / 45.
JR2R	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

PANEL JR2 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
PANEL JRM	PANEL JR2	CABLE TO PANEL	480.	8143.2/ -97.	8143.2/ 143.	8143.2/ 23.
PANEL JR2	JR2R	XFMR - JR2R	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

PANEL JRM VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 13272.7 / -107. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 6.173 +j 6.635 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.075

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
13311.0	13272.7	13272.7	13272.7	13272.7

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
13272.7 /-107.1	13272.6 / 132.9	13272.7 / 12.9

PANEL JRM ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC (HYPO)	480.0	0.0148 / -55.	0.0148 /-175.	0.0148 / 65.
PANEL JR1R	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
PANEL JR1A	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
PANEL JR2	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

PANEL JRM ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
MCC (HYPO)	PANEL JRM	CABLE TO PANEL	480.	13272.7/-107.	13272.6/ 133.	13272.7/ 13.
PANEL JRM	PANEL JR1R	XFMR - JR1R	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANEL JRM	PANEL JR1A	CABLE TO PANEL	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANEL JRM	PANEL JR2	CABLE TO PANEL	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

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 PANEL P5B      VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  11505.8 / -125. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    4.411 +j   9.478 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.149

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   12108.2     11505.9     11505.8     11505.8     11505.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                11505.8 /-125.0    11505.8 / 115.0     11505.8 /  -5.0

 PANEL P5B      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-5B            480.0  0.0310 / -93.  0.0310 / 147.  0.0310 /  27.
   PANEL P5B      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC-5B         PANEL P5B      CABLE TO PANEL   480.  11505.8/-125.  11505.8/ 115.  11505.8/  -5.

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PANEL P5C VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 9365.8 / -113. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 7.643 +j 10.321 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.350

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
9454.7	9365.8	9365.8	9365.8	9365.8

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
9365.8 /-113.5	9365.8 / 126.5	9365.8 / 6.5

PANEL P5C ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC-5B	480.0	0.2843 / -97.	0.2843 / 143.	0.2843 / 23.
PANEL L5B0	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
SCREEN 1 CP01-	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
SCREEN 3 CP01-	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

PANEL P5C ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
MCC-5B	PANEL P5C	CABLE TO PANEL	480.	9365.8/-113.	9365.8/ 127.	9365.8/ 7.
PANEL P5C	PANEL L5B0	TX-5C	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANEL P5C	SCREEN 1 CP01-	CABLE TO SCREE	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANEL P5C	SCREEN 3 CP01-	CABLE TO SCREE	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

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 PANEL PP-1 (IN VOLTAGE BASE LL:                 480.0 (VOLTS)
               INI. SYM. RMS FAULT CURRENT:  27032.2 / -139. ( AMPS/DEG )
               THEVENIN EQUIVALENT IMPEDANCE:    0.875 +j   4.363 (PU)
               THEVENIN IMPEDANCE X/R RATIO:     4.984

                ASYM    RMS   INTERRUPTING AMPS
               1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                  33837.9     27206.1     27046.2     27032.3     27032.2

               INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

               INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               27032.2 /-138.7    27032.1 / 101.3     27032.2 / -18.7

 PANEL PP-1 (IN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                   FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.0005 /-101.  0.0005 / 139.  0.0005 /  19.
   PANEL PP-1 (IN ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (SLUDGE BL PANEL PP-1 (IN PANEL PP1 BUSW   480.  27032.2/-139.  27032.1/ 101.  27032.2/ -19.

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 PANEL PP1       VOLTAGE BASE LL:                 480.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:   8204.5 / -104. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:   10.471 +j  10.261 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     0.980

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     8217.9      8204.5      8204.5      8204.5      8204.5

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                  8204.5 /-104.4     8204.5 / 135.6      8204.5 /  15.6

 PANEL PP1       ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (DEWATERIN    480.0  0.6814 / -77.  0.6814 / 163.  0.6814 /  43.
   PANEL PP1      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (DEWATERIN PANEL PP1       CABLE TO PANEL   480.   8204.5/-104.   8204.5/ 136.   8204.5/  16.

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PANELBOARD A VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 37304.8 / -137. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 0.734 +j 3.140 (PU)
THEVENIN IMPEDANCE X/R RATIO: 4.278

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
45082.7	37409.4	37310.3	37304.8	37304.8

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
37304.8 /-136.8	37304.7 / 103.2	37304.7 / -16.8

PANELBOARD A ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MAIN MCC	480.0	0.0241 / -83.	0.0241 / 157.	0.0241 / 37.
STARTER RACK 1	480.0	0.0847 /-117.	0.0847 / 123.	0.0847 / 3.
STARTER RACK 9	480.0	0.0211 /-127.	0.0211 / 113.	0.0211 / -7.
MCC (SCUM BLDG	480.0	0.0222 /-132.	0.0222 / 108.	0.0222 / -12.
STARTER RACK (	480.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
PANEL LP-500	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

PANELBOARD A ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
MAIN MCC	PANELBOARD A	CABLE TO PANEL	480.	36762.1/-137.	36762.1/ 103.	36762.1/ -17.
PANELBOARD A	STARTER RACK 1	CABLE TO START	480.	422.6/ 40.	422.6/ -80.	422.6/ 160.
PANELBOARD A	STARTER RACK 9	CABLE TO START	480.	67.7/ 37.	67.7/ -83.	67.7/ 157.
PANELBOARD A	MCC (SCUM BLDG	CABLE TO MCC (	480.	53.8/ 37.	53.8/ -83.	53.8/ 157.
PANELBOARD A	STARTER RACK (	CABLE TO START	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANELBOARD A	PANEL LP-500	XFMR-LP500	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

PANELBOARD B VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 37295.1 / -137. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 0.734 +j 3.140 (PU)
THEVENIN IMPEDANCE X/R RATIO: 4.276

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
45066.4	37399.5	37300.7	37295.2	37295.1

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
37295.1 /-136.8	37295.1 / 103.2	37295.1 / -16.8

PANELBOARD B ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MAIN MCC	480.0	0.0242 / -83.	0.0242 / 157.	0.0242 / 37.
PANEL LP-D	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
PANEL (ADMIN)	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
STARTER RACK 1	480.0	0.0159 /-127.	0.0159 / 113.	0.0159 / -7.

PANELBOARD B ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
CRANE	PANELBOARD B		480.	176.9/-144.	176.9/ 96.	176.9/ -24.
SEWAGE INJECTO	PANELBOARD B		480.	72.0/-144.	72.0/ 96.	72.0/ -24.
AIR COMPRESSOR	PANELBOARD B		480.	18.8/-144.	18.8/ 96.	18.8/ -24.
MAIN MCC	PANELBOARD B	CABLE TO PANEL	480.	36965.8/-137.	36965.8/ 103.	36965.8/ -17.
PANELBOARD B	PANEL LP-D	XFMR-LPD	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANELBOARD B	PANEL (ADMIN)	XFMR - ADMIN	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANELBOARD B	STARTER RACK 1	CABLE TO START	480.	64.3/ 37.	64.3/ -83.	64.3/ 157.

PANELBOARD C VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 37287.2 / -137. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 0.735 +j 3.141 (PU)
THEVENIN IMPEDANCE X/R RATIO: 4.274

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
45051.0	37391.2	37292.7	37287.2	37287.2

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
37287.2 /-136.8	37287.2 / 103.2	37287.2 / -16.8

PANELBOARD C ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MAIN MCC	480.0	0.0244 / -83.	0.0244 / 157.	0.0244 / 37.
PANEL LP-400	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
STARTER RACK 1	480.0	0.0088 /-121.	0.0088 / 119.	0.0088 / -1.
BUS-0085	480.0	0.0112 /-131.	0.0112 / 109.	0.0112 / -11.

PANELBOARD C ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
ROOF-TOP A/C	PANELBOARD C		480.	64.7/-144.	64.7/ 96.	64.7/ -24.
MAIN MCC	PANELBOARD C	CABLE TO PANEL	480.	37146.3/-137.	37146.2/ 103.	37146.2/ -17.
PANELBOARD C	PANEL LP-400	XFMR-LP400	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANELBOARD C	STARTER RACK 1	CABLE TO START	480.	39.8/ 36.	39.8/ -84.	39.8/ 156.
PANELBOARD C	BUS-0085	CABLE TO START	480.	37.5/ 36.	37.5/ -84.	37.5/ 156.

```
 POLYMER SYSTEM VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   9100.5 /  -98. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   10.386 +j   8.175 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.787

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    9103.6      9100.5      9100.5      9100.5      9100.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 9100.5 / -98.2     9100.5 / 141.8      9100.5 /  21.8

 POLYMER SYSTEM ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (DEWATERIN    480.0  0.6906 / -82.  0.6906 / 158.  0.6906 /  38.
   POLYMER SYSTEM ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (DEWATERIN POLYMER SYSTEM CABLE TO POLY    480.   9100.5/ -98.   9100.5/ 142.   9100.5/  22.

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RETURN PUMP 1 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 3403.1 / -83. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 32.450 +j 14.008 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.432

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
3403.1	3403.1	3403.1	3403.1	3403.1

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
3403.1 / -83.3	3403.1 / 156.7	3403.1 / 36.7

RETURN PUMP 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC-CC103A	480.0	0.8946 / -69.	0.8946 / 171.	0.8946 / 51.

RETURN PUMP 1 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
RETURN SLUDGE	RETURN PUMP 1		480.	441.0/-144.	441.0/ 96.	441.0/ -24.
MCC-CC103A	RETURN PUMP 1	CABLE TO RETUR	480.	3212.1/ -76.	3212.1/ 164.	3212.1/ 44.

RETURN PUMP 2 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 3403.1 / -83. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 32.450 +j 14.008 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.432

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
3403.1	3403.1	3403.1	3403.1	3403.1

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
3403.1 / -83.3	3403.1 / 156.7	3403.1 / 36.7

RETURN PUMP 2 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC-CC103A	480.0	0.8946 / -69.	0.8946 / 171.	0.8946 / 51.

RETURN PUMP 2 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
RETURN SLUDGE	RETURN PUMP 2		480.	441.0/-144.	441.0/ 96.	441.0/ -24.
MCC-CC103A	RETURN PUMP 2	CABLE TO RETUR	480.	3212.1/ -76.	3212.1/ 164.	3212.1/ 44.

```
 RETURN PUMP 3  VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  14032.4 / -118. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    4.526 +j   7.279 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.608

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   14311.8     14032.4     14032.4     14032.4     14032.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                14032.4 /-118.1    14032.4 / 121.9     14032.4 /   1.9

 RETURN PUMP 3  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103         480.0  0.0745 /-104.  0.0745 / 136.  0.0745 /  16.
   RETURN PUMP 3  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
RETURN SLUDGE  RETURN PUMP 3                    480.   1600.0/-144.   1600.0/  96.   1600.0/ -24.
MCC-CC103      RETURN PUMP 3  CABLE TO RETUR   480.  12616.0/-115.  12616.0/ 125.  12616.0/   5.
```

```
 RETURN PUMP 4  VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  14032.4 / -118. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    4.526 +j   7.279 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.608

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   14311.8     14032.4     14032.4     14032.4     14032.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                14032.4 /-118.1    14032.4 / 121.9     14032.4 /   1.9

 RETURN PUMP 4  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103          480.0  0.0745 /-104.  0.0745 / 136.  0.0745 /  16.
   RETURN PUMP 4  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
RETURN SLUDGE  RETURN PUMP 4                    480.   1600.0/-144.   1600.0/  96.   1600.0/ -24.
MCC-CC103      RETURN PUMP 4  CABLE TO RETUR   480.  12616.0/-115.  12616.0/ 125.  12616.0/   5.

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```

```
 RETURN PUMP 5  VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  15708.6 / -121. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    3.693 +j   6.708 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.816

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   16195.0     15708.6     15708.6     15708.6     15708.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                15708.6 /-121.2    15708.6 / 118.8     15708.6 /  -1.2

 RETURN PUMP 5  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103A        480.0  0.2265 / -97.  0.2265 / 143.  0.2265 /  23.
   RETURN PUMP 5  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
RETURN SLUDGE  RETURN PUMP 5                    480.   4224.9/-144.   4224.9/  96.   4224.9/ -24.
MCC-CC103A     RETURN PUMP 5  CABLE TO RETUR   480.  11939.1/-113.  11939.0/ 127.  11939.1/   7.

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```
 RETURN PUMP 6  VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  16668.8 / -123. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    3.279 +j   6.428 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.960

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   17331.3     16668.9     16668.8     16668.8     16668.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                16668.8 /-123.0    16668.8 / 117.0     16668.8 /  -3.0

 RETURN PUMP 6  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103A        480.0  0.1460 /-100.  0.1460 / 140.  0.1460 /  20.
   RETURN PUMP 6  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
RETURN SLUDGE  RETURN PUMP 6                    480.   4224.9/-144.   4224.9/  96.   4224.9/ -24.
MCC-CC103A     RETURN PUMP 6  CABLE TO RETUR   480.  12825.3/-116.  12825.3/ 124.  12825.3/   4.

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```
 SCREEN 1 CP01- VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   9365.8 / -113. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    7.643 +j  10.321 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.350

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    9454.7      9365.8      9365.8      9365.8      9365.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 9365.8 /-113.5     9365.8 / 126.5      9365.8 /   6.5

 SCREEN 1 CP01- ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANEL P5C         480.0  0.0000 / -67.  0.0000 / 173.  0.0000 /   0.
   SCREEN 1 CP01- ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
PANEL P5C      SCREEN 1 CP01- CABLE TO SCREE   480.   9365.8/-113.   9365.8/ 127.   9365.8/   7.

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```
 SCREEN 2 CP01- VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  11812.0 / -126. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    4.136 +j   9.305 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.250

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   12514.7     11812.1     11812.0     11812.0     11812.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                11812.0 /-126.0    11811.9 / 114.0     11811.9 /  -6.0

 SCREEN 2 CP01- ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-5B            480.0  0.0000 / -80.  0.0000 / 160.  0.0000 /  40.
   SCREEN 2 CP01- ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC-5B         SCREEN 2 CP01- CABLE TO SCREE   480.  11812.0/-126.  11811.9/ 114.  11811.9/  -6.

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 SCREEN 3 CP01- VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   9365.8 / -113. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    7.643 +j  10.321 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.350

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    9454.7      9365.8      9365.8      9365.8      9365.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 9365.8 /-113.5     9365.8 / 126.5      9365.8 /   6.5

 SCREEN 3 CP01- ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANEL P5C         480.0  0.0000 / -67.  0.0000 / 173.  0.0000 /   0.
   SCREEN 3 CP01- ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
PANEL P5C      SCREEN 3 CP01- CABLE TO SCREE   480.   9365.8/-113.   9365.8/ 127.   9365.8/   7.

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 STARTER RACK ( VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3255.9 /  -76. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   35.565 +j   9.997 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.281

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3255.9      3255.9      3255.9      3255.9      3255.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3255.9 / -75.7     3255.9 / 164.3      3255.9 /  44.3

 STARTER RACK ( ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANELBOARD A      480.0  0.9609 / -65.  0.9609 / 175.  0.9609 /  55.
   STARTER RACK ( ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
PANELBOARD A   STARTER RACK ( CABLE TO START   480.   3255.9/ -76.   3255.9/ 164.   3255.9/  44.

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STARTER RACK (VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 4924.4 / -112. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 14.930 +j 19.331 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.295

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
4962.7	4924.4	4924.4	4924.4	4924.4

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
4924.4 /-112.3	4924.4 / 127.7	4924.4 / 7.7

STARTER RACK (==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
STARTER RACK 1	480.0	0.0385 /-133.	0.0385 / 107.	0.0385 / -13.
BUS-0162	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
BUS-0238	480.0	0.1494 / -69.	0.1494 / 171.	0.1494 / 51.

STARTER RACK (================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
RAW SLUDGE PUM STARTER RACK (	480.	123.5/-144.	123.5/ 96.	123.5/ -24.
DIGESTER SUMP STARTER RACK (	480.	12.4/-144.	12.4/ 96.	12.4/ -24.
RAW SLUDGE PUM STARTER RACK (	480.	123.5/-144.	123.5/ 96.	123.5/ -24.
SLUDGE RECIRC STARTER RACK (	480.	123.5/-144.	123.5/ 96.	123.5/ -24.
PRIMARY PUMP 3 STARTER RACK (	480.	64.7/-144.	64.7/ 96.	64.7/ -24.
MOV 1&2 SLDG T STARTER RACK (	480.	12.4/-144.	12.4/ 96.	12.4/ -24.
SLUDGE RECIRC STARTER RACK (	480.	123.5/-144.	123.5/ 96.	123.5/ -24.
WEMCO PUMP (UN STARTER RACK (	480.	158.8/-144.	158.8/ 96.	158.8/ -24.
VALVE ACTUATOR STARTER RACK (	480.	12.4/-144.	12.4/ 96.	12.4/ -24.
VALVE ACTUATOR STARTER RACK (	480.	12.4/-144.	12.4/ 96.	12.4/ -24.

STARTER RACK (================ FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ================

STARTER RACK (	STARTER RACK 1	CABLE TO START	480.	218.9/ 38.	218.9/ -82.	218.9/ 158.
STARTER RACK (	BUS-0162	XFMR - DIGESTE	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-0238	STARTER RACK (	CABLE TO START	480.	4116.1/-105.	4116.1/ 135.	4116.1/ 15.

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 STARTER RACK ( VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   7036.1 / -122. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    7.991 +j  15.112 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.891

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    7285.4      7036.1      7036.1      7036.1      7036.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 7036.1 /-122.1     7036.1 / 117.9      7036.1 /  -2.1

 STARTER RACK ( ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   CL2 PUMPS, NPW    480.0  0.0325 / -67.  0.0325 / 173.  0.0325 /  53.
   PANEL LP (NPW)    208.0  0.0000 /   0.  0.0000 /   0.  0.0000 /   0.
   STARTER RACK ( ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
NPW WATER PUMP STARTER RACK (                  480.    305.9/-144.    305.9/  96.    305.9/ -24.
NPW WATER PUMP STARTER RACK (                  480.    305.9/-144.    305.9/  96.    305.9/ -24.
CL2 PUMPS, NPW STARTER RACK ( CABLE TO MCC-C   480.   6473.6/-120.   6473.6/ 120.   6473.6/   0.
STARTER RACK ( PANEL LP (NPW) XFMR-LP(NPW)     480.      0.0/   0.      0.0/   0.      0.0/   0.

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 STARTER RACK ( VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2139.1 /  -71. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   55.167 +j  10.872 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.197

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2139.1      2139.1      2139.1      2139.1      2139.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2139.1 / -71.1     2139.1 / 168.9      2139.1 /  48.9

 STARTER RACH ( ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103         480.0  0.9129 / -67.  0.9129 / 173.  0.9129 /  53.
   STARTER RACK ( ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
SCRAPER DRIVE  STARTER RACK (                   480.      2.6/-144.      2.6/  96.      2.6/ -24.
MCC-CC103      STARTER RACK ( CABLE TO START   480.   2138.4/ -71.   2138.4/ 169.   2138.4/  49.

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 STARTER RACK ( VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1471.7 /  -69. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   80.709 +j  12.891 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.160

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1471.7      1471.7      1471.7      1471.7      1471.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1471.7 / -69.1     1471.7 / 170.9      1471.7 /  50.9

 STARTER RACK ( ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103          480.0  0.9417 / -65.  0.9417 / 175.  0.9417 /  55.
   STARTER RACK ( ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
SCRAPER DRIVE  STARTER RACK (                   480.      4.4/-144.      4.4/  96.      4.4/ -24.
MCC-CC103      STARTER RACK ( CABLE TO START   480.   1470.5/ -69.   1470.5/ 171.   1470.5/  51.

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 STARTER RACK ( VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1385.0 /  -69. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   85.820 +j  13.292 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.155

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1385.0      1385.0      1385.0      1385.0      1385.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1385.0 / -68.8     1385.0 / 171.2      1385.0 /  51.2

 STARTER RACK ( ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103         480.0  0.9453 / -64.  0.9453 / 176.  0.9453 /  56.
   STARTER RACK ( ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
SCRAPER DRIVE  STARTER RACK (                   480.      4.4/-144.      4.4/  96.      4.4/ -24.
MCC-CC103      STARTER RACK ( CABLE TO START   480.   1383.9/ -69.   1383.9/ 171.   1383.9/  51.

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 STARTER RACK ( VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2145.7 /  -72. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   54.922 +j  11.219 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.204

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2145.7      2145.7      2145.7      2145.7      2145.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2145.7 / -71.5     2145.7 / 168.5      2145.7 /  48.5

 STARTER RACK ( ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103          480.0  0.9130 / -67.  0.9130 / 173.  0.9130 /  53.
   STARTER RACK ( ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
SCUM PUMP 4B   STARTER RACK (                  480.     11.6/-144.     11.6/  96.     11.6/ -24.
SCUM PUMP 4A   STARTER RACK (                  480.     11.6/-144.     11.6/  96.     11.6/ -24.
MCC-CC103      STARTER RACK ( CABLE TO START   480.   2139.0/ -71.   2139.0/ 169.   2139.0/  49.

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 STARTER RACK ( VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2865.3 /  -76. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   40.252 +j  11.914 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.296

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2865.3      2865.3      2865.3      2865.3      2865.3

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2865.3 / -76.5     2865.3 / 163.5      2865.3 /  43.5

 STARTER RACK ( ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   STARTER RACK 1    480.0  0.2099 / -71.  0.2099 / 169.  0.2099 /  49.
   STARTER RACK ( ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
SCUM PUM 5    STARTER RACK (                   480.     23.0/-144.     23.0/  96.     23.0/ -24.
STARTER RACK 1 STARTER RACK ( CABLE TO SR (S   480.   2856.7/ -76.   2856.7/ 164.   2856.7/  44.

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STARTER RACK 1 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 3144.9 / -78. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 36.380 +j 11.801 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.324

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
3144.9	3144.9	3144.9	3144.9	3144.9

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
3144.9 / -78.0	3144.9 / 162.0	3144.9 / 42.0

STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
BUS-0085	480.0	0.0234 / -64.	0.0234 / 176.	0.0234 / 56.
PANEL LP-100	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

STARTER RACK 1 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
GRIT PUMP 4	STARTER RACK 1		480.	6.5/-144.	6.5/ 96.	6.5/ -24.
GRIT RAKE ARM	STARTER RACK 1		480.	12.4/-144.	12.4/ 96.	12.4/ -24.
GRIT PUMP 3	STARTER RACK 1		480.	6.5/-144.	6.5/ 96.	6.5/ -24.
GRIT RAKE ARM	STARTER RACK 1		480.	12.4/-144.	12.4/ 96.	12.4/ -24.
BUS-0085	STARTER RACK 1	CABLE TO START	480.	3130.0/ -77.	3130.0/ 163.	3130.0/ 43.
STARTER RACK 1	PANEL LP-100	XFMR-LP100	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

STARTER RACK 1 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 4858.9 / -93. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 20.771 +j 13.467 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.648

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
4859.2	4858.9	4858.9	4858.9	4858.9

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
4858.9 / -93.0	4858.9 / 147.0	4858.9 / 27.0

STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
PANELBOARD A	480.0	0.9216 / -66.	0.9216 / 174.	0.9216 / 54.
PANEL PDP101	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

STARTER RACK 1 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
AIR COMPRESSOR	STARTER RACK 1		480.	12.4/-144.	12.4/ 96.	12.4/ -24.
DRAINAGE PUMP	STARTER RACK 1		480.	305.9/-144.	305.9/ 96.	305.9/ -24.
DRAINAGE PUMP	STARTER RACK 1		480.	123.5/-144.	123.5/ 96.	123.5/ -24.
PANELBOARD A	STARTER RACK 1	CABLE TO START	480.	4595.8/ -89.	4595.8/ 151.	4595.8/ 31.
STARTER RACK 1 PANEL PDP101		XFMR-PDP101	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

STARTER RACK 1 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 4721.9 / -110. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 16.416 +j 19.478 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.187

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
4745.5	4721.9	4721.9	4721.9	4721.9

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
4721.9 /-109.9	4721.9 / 130.1	4721.9 / 10.1

STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
PC34SR-LP	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
BUS-0238	480.0	0.1691 / -73.	0.1691 / 167.	0.1691 / 47.

STARTER RACK 1 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
SCUM PUMP 3A	STARTER RACK 1		480.	12.4/-144.	12.4/ 96.	12.4/ -24.
PRIMARY SCRAPE	STARTER RACK 1		480.	12.4/-144.	12.4/ 96.	12.4/ -24.
PRIMARY VALVE	STARTER RACK 1		480.	12.4/-144.	12.4/ 96.	12.4/ -24.
SCUM PUMP 4	STARTER RACK 1		480.	12.4/-144.	12.4/ 96.	12.4/ -24.
PRIMARY VALVE	STARTER RACK 1		480.	12.4/-144.	12.4/ 96.	12.4/ -24.
PRIMARY SCRAPE	STARTER RACK 1		480.	12.4/-144.	12.4/ 96.	12.4/ -24.
STARTER RACK 1	PC34SR-LP	XFMR-LP-107	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-0238	STARTER RACK 1	CABLE TO START	480.	4661.0/-109.	4661.0/ 131.	4661.0/ 11.

STARTER RACK 1 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 4235.3 / -89. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 24.942 +j 13.582 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.545

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
4235.3	4235.3	4235.3	4235.3	4235.3

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
4235.3 / -88.6	4235.3 / 151.4	4235.3 / 31.4

STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
PANELBOARD C	480.0	0.9292 / -65.	0.9292 / 175.	0.9292 / 55.
PANEL LP-10A	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

STARTER RACK 1 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
RAKE DRIVE 1	STARTER RACK 1		480.	20.0/-144.	20.0/ 96.	20.0/ -24.
RAKE DRIVE 2	STARTER RACK 1		480.	20.0/-144.	20.0/ 96.	20.0/ -24.
PANELBOARD C	STARTER RACK 1	CABLE TO START	480.	4212.9/ -88.	4212.9/ 152.	4212.9/ 32.
STARTER RACK 1	PANEL LP-10A	XFMR-LP-10A	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

STARTER RACK 1 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 3863.6 / -82. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 28.833 +j 11.741 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.407

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
3863.6	3863.6	3863.6	3863.6	3863.6

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
3863.6 / -82.2	3863.6 / 157.8	3863.6 / 37.8

STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
PANELBOARD B	480.0	0.9455 / -65.	0.9455 / 175.	0.9455 / 55.
PANEL LP-10B	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

STARTER RACK 1 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
GRIT PUMP 2	STARTER RACK 1		480.	12.4/-144.	12.4/ 96.	12.4/ -24.
COLLECTOR DRIV	STARTER RACK 1		480.	20.0/-144.	20.0/ 96.	20.0/ -24.
COLLECTOR DRIV	STARTER RACK 1		480.	20.0/-144.	20.0/ 96.	20.0/ -24.
GRIT PUMP 1	STARTER RACK 1		480.	12.4/-144.	12.4/ 96.	12.4/ -24.
PANELBOARD B	STARTER RACK 1	CABLE TO START	480.	3833.8/ -81.	3833.8/ 159.	3833.8/ 39.
STARTER RACK 1	PANEL LP-10B	XFMR - LP10B	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

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 STARTER RACK 1 VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3228.7 /  -88. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   32.951 +j  17.381 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.527

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3228.7      3228.7      3228.7      3228.7      3228.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3228.7 / -87.8     3228.7 / 152.2      3228.7 /  32.2

 STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC113          480.0  0.6796 / -82.  0.6796 / 158.  0.6796 /  38.
   STARTER RACK 1 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
DRAINAGE PUMP  STARTER RACK 1                   480.     82.3/-144.     82.3/  96.     82.3/ -24.
MCC-CC113      STARTER RACK 1 CABLE TO START   480.   3184.0/ -87.   3183.9/ 153.   3183.9/  33.

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STARTER RACK 1 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 2906.8 / -95. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 33.714 +j 23.992 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.712

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
2907.2	2906.8	2906.8	2906.8	2906.8

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
2906.8 / -95.4	2906.8 / 144.6	2906.8 / 24.6

STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
PANEL PDP114	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.
STARTER RACK (	480.0	0.4865 / -83.	0.4865 / 157.	0.4865 / 37.
STARTER RACK 1	480.0	0.0030 /-140.	0.0030 / 100.	0.0030 / -20.
STARTER RACK 1	480.0	0.0030 /-140.	0.0030 / 100.	0.0030 / -20.

STARTER RACK 1 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
THICKENED SLUD	STARTER RACK 1		480.	64.7/-144.	64.7/ 96.	64.7/ -24.
MUFFIN MONSTER	STARTER RACK 1		480.	28.2/-144.	28.2/ 96.	28.2/ -24.
MUFFIN MONSTER	STARTER RACK 1		480.	28.2/-144.	28.2/ 96.	28.2/ -24.
THICKENED SLUD	STARTER RACK 1		480.	64.7/-144.	64.7/ 96.	64.7/ -24.
STARTER RACK 1 PANEL PDP114		XFMR-PDP114	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
STARTER RACK (	STARTER RACK 1	CABLE TO START	480.	2766.2/ -92.	2766.2/ 148.	2766.2/ 28.
STARTER RACK 1	STARTER RACK 1	CABLE TO START	480.	17.6/ 36.	17.6/ -84.	17.6/ 156.
STARTER RACK 1	STARTER RACK 1	CABLE TO START	480.	17.6/ 36.	17.6/ -84.	17.6/ 156.

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 STARTER RACK 1 VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2010.9 /  -85. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   54.007 +j  25.709 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.476

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2010.9      2010.9      2010.9      2010.9      2010.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2010.9 / -85.5     2010.9 / 154.5      2010.9 /  34.5

 STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   STARTER RACK 1    480.0  0.3418 / -81.  0.3418 / 159.  0.3418 /  39.
   STARTER RACK 1 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
GRAVITY THICKE STARTER RACK 1                   480.     17.6/-144.     17.6/  96.     17.6/ -24.
STARTER RACK 1 STARTER RACK 1 CABLE TO START   480.   2001.8/ -85.   2001.8/ 155.   2001.8/  35.

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 STARTER RACK 1 VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2010.9 /  -85. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   54.007 +j  25.709 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.476

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2010.9      2010.9      2010.9      2010.9      2010.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2010.9 / -85.5     2010.9 / 154.5      2010.9 /  34.5

 STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   STARTER RACK 1    480.0  0.3418 / -81.  0.3418 / 159.  0.3418 /  39.
   STARTER RACK 1 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
GRAVITY THICKE STARTER RACK 1                   480.     17.6/-144.     17.6/  96.     17.6/ -24.
STARTER RACK 1 STARTER RACK 1 CABLE TO START   480.   2001.8/ -85.   2001.8/ 155.   2001.8/  35.

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 STARTER RACK 1 VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3604.2 /  -79. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   31.514 +j  10.984 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.349

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3604.2      3604.2      3604.2      3604.2      3604.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3604.2 / -79.2     3604.2 / 160.8      3604.2 /  40.8

 STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103          480.0  0.8343 / -71.  0.8343 / 169.  0.8343 /  49.
   STARTER RACK (     480.0  0.0017 /-139.  0.0017 / 101.  0.0017 / -19.
   STARTER RACK 1 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC-CC103      STARTER RACK 1 CABLE TO START   480.   3594.5/ -79.   3594.5/ 161.   3594.5/  41.
STARTER RACK 1 STARTER RACK ( CABLE TO SR (S   480.     23.0/  36.     23.0/ -84.     23.0/ 156.

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STARTER RACK 9 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 3106.2 / -81. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 36.050 +j 14.137 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.392

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
3106.2	3106.2	3106.2	3106.2	3106.2

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
3106.2 / -81.4	3106.2 / 158.6	3106.2 / 38.6

STARTER RACK 9 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
PANELBOARD A	480.0	0.9570 / -64.	0.9570 / 176.	0.9570 / 56.
PANEL LP-9	208.0	0.0000 / 0.	0.0000 / 0.	0.0000 / 0.

STARTER RACK 9 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
PRIMARY VALVE	STARTER RACK 9		480.	9.4/-144.	9.4/ 96.	9.4/ -24.
PRI. CLAR. SCU	STARTER RACK 9		480.	9.4/-144.	9.4/ 96.	9.4/ -24.
PRIMARY VALVE	STARTER RACK 9		480.	9.4/-144.	9.4/ 96.	9.4/ -24.
DRIVE MOTOR 1	STARTER RACK 9		480.	20.0/-144.	20.0/ 96.	20.0/ -24.
DRIVE MOTOR 2	STARTER RACK 9		480.	20.0/-144.	20.0/ 96.	20.0/ -24.
PANELBOARD A	STARTER RACK 9	CABLE TO START	480.	3075.7/ -80.	3075.7/ 160.	3075.7/ 40.
STARTER RACK 9	PANEL LP-9	XFMR-LP9	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

SWBD-1 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 38245.9 / -138. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 0.678 +j 3.071 (PU)
THEVENIN IMPEDANCE X/R RATIO: 4.533

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
46841.9	38395.0	38255.2	38245.9	38245.9

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
38245.9 /-137.6	38245.9 / 102.4	38245.9 / -17.6

SWBD-1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MAIN MCC	480.0	0.0164 / -73.	0.0164 / 167.	0.0164 / 47.
BUS-0176	480.0	0.0364 / -80.	0.0364 / 160.	0.0364 / 40.

SWBD-1 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
SWBD-1	MAIN MCC	CABLE TO MAIN	480.	17127.0/ 46.	17127.0/ -74.	17127.0/ 166.
BUS-0176	SWBD-1	CABLE TO SWBD-	480.	21192.6/-141.	21192.6/ 99.	21192.6/ -21.

SWBD-2A VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 31342.0 / -141. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 0.629 +j 3.786 (PU)
THEVENIN IMPEDANCE X/R RATIO: 6.023

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
40920.9	31821.3	31401.9	31343.0	31342.0

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
31342.0 /-140.6	31342.0 / 99.4	31342.0 / -20.6

SWBD-2A ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
BUS-0175	480.0	0.0283 / -78.	0.0283 / 162.	0.0283 / 42.
AERATIAON BLOW	480.0	0.0318 /-101.	0.0318 / 139.	0.0318 / 19.
AERATIAON BLOW	480.0	0.0293 /-101.	0.0293 / 139.	0.0293 / 19.
SWBD-2B	480.0	0.0000 /-115.	0.0000 / 125.	0.0000 / 5.
MCC-2A	480.0	0.0042 /-106.	0.0042 / 134.	0.0042 / 14.
MCC-2B	480.0	0.0219 / -91.	0.0219 / 149.	0.0219 / 29.

SWBD-2A ========== INI. RMS SYSTEM BRANCH FLOWS (AMPS) ==========
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
BUS-0175	SWBD-2A	CABLE TO SWBD-	480.	21179.7/-139.	21179.7/ 101.	21179.7/ -19.
SWBD-2A	AERATIAON BLOW	CABLE TO AERAT	480.	2377.6/ 37.	2377.6/ -83.	2377.6/ 157.
SWBD-2A	AERATIAON BLOW	CABLE TO AERAT	480.	2382.2/ 37.	2382.2/ -83.	2382.2/ 157.
SWBD-2A	SWBD-2B	SWBD-2A BUSWAY	480.	3380.8/ 37.	3380.8/ -83.	3380.8/ 157.
SWBD-2A	MCC-2A	CABLE TO MCC-2	480.	1424.7/ 36.	1424.7/ -84.	1424.7/ 156.
SWBD-2A	MCC-2B	CABLE TO MCC-2	480.	612.0/ 36.	612.0/ -84.	612.0/ 156.

SWBD-2B VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 31340.8 / -141. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 0.629 +j 3.786 (PU)
THEVENIN IMPEDANCE X/R RATIO: 6.021

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
40916.4	31819.4	31400.5	31341.7	31340.8

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.0000 / 0.0	0.0000 / 0.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
31340.8 /-140.6	31340.7 / 99.4	31340.8 / -20.6

SWBD-2B ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
SWBD-2A	480.0	0.0001 /-112.	0.0001 / 128.	0.0001 / 8.
AERATIAON BLOW	480.0	0.0256 /-101.	0.0256 / 139.	0.0256 / 19.
PANEL DP47	480.0	0.1334 /-110.	0.1334 / 130.	0.1334 / 10.
MCC-2C	480.0	0.0365 / -91.	0.0365 / 149.	0.0365 / 29.

SWBD-2B ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
SWBD-2A	SWBD-2B	SWBD-2A BUSWAY	480.	27962.3/-140.	27962.3/ 100.	27962.3/ -20.
SWBD-2B	AERATIAON BLOW	CABLE TO AERAT	480.	2389.1/ 37.	2389.1/ -83.	2389.1/ 157.
SWBD-2B	PANEL DP47	CABLE TO PANEL	480.	389.4/ 43.	389.4/ -77.	389.4/ 163.
SWBD-2B	MCC-2C	CABLE TO MCC-2	480.	604.2/ 37.	604.2/ -83.	604.2/ 157.

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 SWBD-3          VOLTAGE BASE LL:                 480.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:  27427.7 / -139. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:    0.838 +j   4.305 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     5.135

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    34566.8     27632.3     27445.4     27427.8     27427.7

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     0.0000 /    0.0     0.0000 /    0.0

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 27427.7 /-139.0    27427.7 / 101.0     27427.7 / -19.0

 SWBD-3          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.0006 / -86.  0.0006 / 154.  0.0006 /  34.
   MCC (DEWATERIN    480.0  0.0361 / -86.  0.0361 / 154.  0.0361 /  34.
   CENTRIFUGE 1 C    480.0  0.0040 / -92.  0.0040 / 148.  0.0040 /  28.
   CENTRIFUGE 2 C    480.0  0.0040 / -92.  0.0040 / 148.  0.0040 /  28.
   CENTRIFUGE 3 C    480.0  0.0040 / -92.  0.0040 / 148.  0.0040 /  28.
   BUS-0177          480.0  0.1194 / -76.  0.1194 / 164.  0.1194 /  44.
   SWBD-3         ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
SWBD-3         MCC (SLUDGE BL CABLE TO MCC (   480.    956.8/  36.    956.8/ -84.    956.8/ 156.
SWBD-3         MCC (DEWATERIN CABLE TO MCC (   480.   2270.4/  37.   2270.4/ -83.   2270.4/ 157.
SWBD-3         CENTRIFUGE 1 C CABLE TO CENTR   480.   1770.5/  36.   1770.5/ -84.   1770.5/ 156.
SWBD-3         CENTRIFUGE 2 C CABLE TO CENTR   480.   1770.5/  36.   1770.5/ -84.   1770.5/ 156.
SWBD-3         CENTRIFUGE 3 C CABLE TO CENTR   480.   1770.5/  36.   1770.5/ -84.   1770.5/ 156.
BUS-0177       SWBD-3         CABLE TO SWBD-   480.  18935.6/-137.  18935.6/ 103.  18935.6/ -17.

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********** F A U L T A N A L Y S I S R E P O R T **********

FAULT TYPE: SLG
MODEL INDUCTION MOTOR CONTRIBUTION: YES
MODEL TRANSFORMER TAPS: YES
MODEL TRANSFORMER PHASE SHIFT: YES

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AERATIAON BLOW VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 20421.5 / -124. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 7.734 +j 15.887 (PU)
THEVENIN IMPEDANCE X/R RATIO: 2.054
SEQUENCE EQUIVALENT IMPEDANCE Z1: 1.591 +j 4.704 (PU)
Z2: 1.591 +j 4.704 (PU)
Z0: 4.553 +j 6.479 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
21358.9	20421.6	20421.5	20421.5	20421.5

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.0084 / 168.8	1.1776 / 64.3

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
20421.5 /-124.0	0.0 / 0.0	0.0 / 0.0

AERATIAON BLOW ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
SWBD-2A	480.0	0.4241 / -86.	0.9982 / 179.	1.0143 / 60.

AERATIAON BLOW ========== INI. RMS SYSTEM BRANCH FLOWS (AMPS) ==========
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

	BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
AERATION BLOWE	AERATIAON BLOW	480.	1368.9/-137.	684.5/ 43.	684.5/ 43.
SWBD-2A	AERATIAON BLOW CABLE TO AERAT	480.	19090.0/-123.	684.5/-137.	684.5/-137.

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 AERATIAON BLOW VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  21037.6 / -125. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    7.284 +j  15.529 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.132
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   1.516 +j   4.631 (PU)
                                              Z2:   1.516 +j   4.631 (PU)
                                              Z0:   4.251 +j   6.267 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   22114.4     21037.7     21037.6     21037.6     21037.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0043 /  169.4     1.1698 /   64.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                21037.6 /-124.9        0.0 /   0.0         0.0 /   0.0

 AERATIAON BLOW ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   SWBD-2A           480.0  0.4022 / -87.  0.9979 / 179.  1.0144 /  60.
   AERATIAON BLOW ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
AERATION BLOWE AERATIAON BLOW                   480.   1383.8/-137.    691.9/  43.    691.9/  43.
SWBD-2A        AERATIAON BLOW CABLE TO AERAT   480.  19688.4/-124.    691.9/-137.    691.9/-137.

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 AERATIAON BLOW VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  22023.5 / -126. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    6.609 +j  14.992 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.269
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   1.405 +j   4.521 (PU)
                                              Z2:   1.405 +j   4.521 (PU)
                                              Z0:   3.800 +j   5.950 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   23363.3     22023.9     22023.5     22023.5     22023.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9985 /  170.2     1.1569 /   63.5

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                22023.5 /-126.2        0.0 /   0.0         0.0 /   0.0

 AERATIAON BLOW ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   SWBD-2B           480.0  0.3666 / -88.  0.9973 / 179.  1.0146 /  60.
   AERATIAON BLOW ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
AERATION BLOWE AERATIAON BLOW                   480.   1407.4/-138.    703.7/  42.    703.7/  42.
SWBD-2B        AERATIAON BLOW CABLE TO AERAT   480.  20646.6/-125.    703.7/-138.    703.7/-138.

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 BKR TO INDUCTI VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1534.0 /  -69. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  232.469 +j  35.889 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.154
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  46.903 +j   8.703 (PU)
                                              Z2:  46.903 +j   8.703 (PU)
                                              Z0: 138.664 +j  18.483 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1534.0      1534.0      1534.0      1534.0      1534.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2304 /  163.5     1.2561 /   75.2

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1534.0 / -68.8       0.0 /   0.0         0.0 /   0.0

 BKR TO INDUCTI ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANEL JR1B        480.0  0.8896 / -66.  1.0342 / 180.  0.9896 /  62.
   INDUCTION MIXE    480.0  0.0000 /   0.  1.2304 / 164.  1.2561 /  75.
   BKR TO INDUCTI ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
PANEL JR1B     BKR TO INDUCTI CABLE TO INDUC   480.   1534.0/ -69.      0.0/   0.      0.0/   0.
BKR TO INDUCTI INDUCTION MIXE CABLE TO INDUC   480.      0.0/   0.      0.0/   0.      0.0/   0.

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 CENT FEED PUMP VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   9651.1 /  -90. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   32.268 +j  18.887 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.585
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   6.446 +j   5.458 (PU)
                                              Z2:   6.446 +j   5.458 (PU)
                                              Z0:  19.375 +j   7.970 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    9651.3      9651.1      9651.1      9651.1      9651.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1200 /  162.0     1.2879 /   70.3

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 9651.1 / -90.3        0.0 /   0.0         0.0 /   0.0

 CENT FEED PUMP ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (SLUDGE BL    480.0  0.7789 / -81.  1.0244 / 179.  1.0104 /  62.
   CENT FEED PUMP ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (SLUDGE BL CENT FEED PUMP CABLE TO CENT    480.   9651.1/ -90.      0.0/ -90.      0.0/ -90.

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 CENT FEED PUMP VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   9651.1 /  -90. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   32.268 +j  18.887 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.585
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   6.446 +j   5.458 (PU)
                                              Z2:   6.446 +j   5.458 (PU)
                                              Z0:  19.375 +j   7.970 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    9651.3      9651.1      9651.1      9651.1      9651.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1200 /  162.0     1.2879 /   70.3

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 9651.1 / -90.3       0.0 /   0.0         0.0 /   0.0

 CENT FEED PUMP ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (SLUDGE BL    480.0  0.7789 / -81.  1.0244 / 179.  1.0104 /  62.
   CENT FEED PUMP ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (SLUDGE BL CENT FEED PUMP CABLE TO CENT    480.   9651.1/ -90.      0.0/ -90.      0.0/ -90.

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 CENT FEED PUMP VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   9651.1 /  -90. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   32.268 +j  18.887 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.585
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   6.446 +j   5.458 (PU)
                                              Z2:   6.446 +j   5.458 (PU)
                                              Z0:  19.375 +j   7.970 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    9651.3      9651.1      9651.1      9651.1      9651.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1200 /  162.0     1.2879 /   70.3

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 9651.1 / -90.3        0.0 /   0.0         0.0 /   0.0

 CENT FEED PUMP ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (SLUDGE BL    480.0  0.7789 / -81.  1.0244 / 179.  1.0104 /  62.
   CENT FEED PUMP ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (SLUDGE BL CENT FEED PUMP CABLE TO CENT    480.   9651.1/ -90.      0.0/ -90.      0.0/ -90.

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 CENTRATE REC P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1691.8 /  -66. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  212.163 +j  21.916 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.103
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  41.304 +j   6.342 (PU)
                                              Z2:  41.304 +j   6.342 (PU)
                                              Z0: 129.555 +j   9.232 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1691.8      1691.8      1691.8      1691.8      1691.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2386 /  162.5     1.2785 /   75.6

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1691.8 / -65.9        0.0 /   0.0         0.0 /   0.0

 CENTRATE REC P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2A (CONT)     480.0  0.9801 / -63.  1.0032 / 180.  1.0008 /  60.
   CENTRATE REC P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
CENTRATE RECYC CENTRATE REC P                  480.     11.1/-141.      5.5/  39.      5.5/  39.
MCC-2A (CONT)  CENTRATE REC P CABLE TO CENTR   480.   1689.1/ -66.      5.5/-141.      5.5/-141.

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 CENTRIFUGE 1 C VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  23725.4 / -134. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    4.164 +j  14.628 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     3.513
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   0.978 +j   4.492 (PU)
                                              Z2:   0.978 +j   4.492 (PU)
                                              Z0:   2.209 +j   5.644 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   27406.0     23743.9     23725.9     23725.4     23725.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0042 /  173.7     1.0983 /   62.8

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                23725.4 /-134.1       0.0 /   0.0         0.0 /   0.0

 CENTRIFUGE 1 C ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   SWBD-3            480.0  0.0812 / -86.  1.0026 / 175.  1.0692 /  62.
   CENTRIFUGE 1 C ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
CENTRIFUGE 1   CENTRIFUGE 1 C                  480.   1073.9/-141.    536.9/  39.    536.9/  39.
SWBD-3         CENTRIFUGE 1 C CABLE TO CENTR   480.  22658.9/-134.    536.9/-141.    536.9/-141.

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 CENTRIFUGE 2 C VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  23725.4 / -134. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    4.164 +j  14.628 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     3.513
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   0.978 +j   4.492 (PU)
                                              Z2:   0.978 +j   4.492 (PU)
                                              Z0:   2.209 +j   5.644 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   27406.0     23743.9     23725.9     23725.4     23725.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0042 /  173.7     1.0983 /   62.8

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                23725.4 /-134.1       0.0 /   0.0         0.0 /   0.0

 CENTRIFUGE 2 C ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   SWBD-3            480.0  0.0812 / -86.  1.0026 / 175.  1.0692 /  62.
   CENTRIFUGE 2 C ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
CENTRIFUGE 2   CENTRIFUGE 2 C                  480.   1073.9/-141.    536.9/  39.    536.9/  39.
SWBD-3         CENTRIFUGE 2 C CABLE TO CENTR   480.  22658.9/-134.    536.9/-141.    536.9/-141.

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 CENTRIFUGE 3 C VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  23725.4 / -134. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    4.164 +j  14.628 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     3.513
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   0.978 +j   4.492 (PU)
                                              Z2:   0.978 +j   4.492 (PU)
                                              Z0:   2.209 +j   5.644 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   27406.0     23743.9     23725.9     23725.4     23725.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0042 /  173.7     1.0983 /   62.8

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                23725.4 /-134.1       0.0 /   0.0         0.0 /   0.0

 CENTRIFUGE 3 C ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   SWBD-3            480.0  0.0812 / -86.  1.0026 / 175.  1.0692 /  62.
   CENTRIFUGE 3 C ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
CENTRIFUGE 3   CENTRIFUGE 3 C                  480.   1073.9/-141.    536.9/  39.    536.9/  39.
SWBD-3         CENTRIFUGE 3 C CABLE TO CENTR   480.  22658.9/-134.    536.9/-141.    536.9/-141.

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```
 DIGEST COMPRES VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3812.8 /  -94. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   78.832 +j  52.367 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.664
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  15.341 +j  12.806 (PU)
                                              Z2:  15.341 +j  12.806 (PU)
                                              Z0:  48.151 +j  26.755 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3813.1      3812.8      3812.8      3812.8      3812.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1801 /  162.5     1.2774 /   72.9

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3812.8 / -93.6       0.0 /   0.0         0.0 /   0.0

 DIGEST COMPRES ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                       ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (DEWATERIN    480.0  0.8199 / -69.  1.0351 / 178.  1.0160 /  63.
   DIGEST COMPRES ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (DEWATERIN DIGEST COMPRES CABLE TO DIG C   480.   3812.8/ -94.      0.0/   0.      0.0/   0.
```

```
 DIGEST COMPRES VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4383.9 /  -95. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   67.430 +j  47.206 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.700
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  13.127 +j  11.649 (PU)
                                              Z2:  13.127 +j  11.649 (PU)
                                              Z0:  41.176 +j  23.908 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4384.4      4383.9      4383.9      4383.9      4383.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1729 /  162.5     1.2767 /   72.6

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4383.9 / -95.0        0.0 /   0.0         0.0 /   0.0

 DIGEST COMPRES ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (DEWATERIN    480.0  0.7907 / -71.  1.0394 / 178.  1.0199 /  63.
   DIGEST COMPRES ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (DEWATERIN DIGEST COMPRES CABLE TO DIG C   480.   4383.9/ -95.      0.0/ -95.      0.0/ -95.

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```
 DWC POLY FD PU VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3291.1 /  -70. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  108.089 +j  18.398 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.170
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  21.164 +j   5.349 (PU)
                                              Z2:  21.164 +j   5.349 (PU)
                                              Z0:  65.760 +j   7.701 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3291.1      3291.1      3291.1      3291.1      3291.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2202 /  162.2     1.2853 /   74.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3291.1 / -69.7        0.0 /   0.0         0.0 /   0.0

 DWC POLY FD PU ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                       ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (SLUDGE BL    480.0  0.9542 / -67.  1.0108 / 180.  0.9992 /  61.
   DWC POLY FD PU ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (SLUDGE BL DWC POLY FD PU CABLE TO DWC P   480.   3291.1/ -70.      0.0/   0.      0.0/   0.
```

```
 DWC POLY FD PU VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3291.1 /  -70. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  108.089 +j  18.398 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.170
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  21.164 +j   5.349 (PU)
                                              Z2:  21.164 +j   5.349 (PU)
                                              Z0:  65.760 +j   7.701 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3291.1      3291.1      3291.1      3291.1      3291.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2202 /  162.2     1.2853 /   74.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3291.1 / -69.7       0.0 /   0.0         0.0 /   0.0

 DWC POLY FD PU ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                       ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (SLUDGE BL    480.0  0.9542 / -67.  1.0108 / 180.  0.9992 /  61.
   DWC POLY FD PU ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (SLUDGE BL DWC POLY FD PU CABLE TO DWC P   480.   3291.1/ -70.      0.0/   0.      0.0/   0.

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```
 DWC POLY FD PU VOLTAGE BASE LL:                 480.0 (VOLTS)
               INI. SYM. RMS FAULT CURRENT:   3291.1 /  -70. ( AMPS/DEG )
               THEVENIN EQUIVALENT IMPEDANCE:  108.089 +j  18.398 (PU)
               THEVENIN IMPEDANCE X/R RATIO:     0.170
               SEQUENCE EQUIVALENT IMPEDANCE Z1:  21.164 +j   5.349 (PU)
                                             Z2:  21.164 +j   5.349 (PU)
                                             Z0:  65.760 +j   7.701 (PU)

                ASYM    RMS   INTERRUPTING AMPS
               1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   3291.1      3291.1      3291.1      3291.1      3291.1

               INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               0.0000 /    0.0     1.2202 /  162.2     1.2853 /   74.7

               INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
                3291.1 / -69.7        0.0 /   0.0         0.0 /   0.0

 DWC POLY FD PU ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                   FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                      ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (SLUDGE BL    480.0  0.9542 / -67.  1.0108 / 180.  0.9992 /  61.
   DWC POLY FD PU ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (SLUDGE BL DWC POLY FD PU CABLE TO DWC P   480.   3291.1/ -70.      0.0/   0.      0.0/   0.

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 GRINDER 1 CONT VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2769.1 /  -69. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  128.837 +j  19.556 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.152
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  25.144 +j   5.685 (PU)
                                              Z2:  25.144 +j   5.685 (PU)
                                              Z0:  78.549 +j   8.187 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2769.1      2769.1      2769.1      2769.1      2769.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2259 /  162.2     1.2845 /   75.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2769.1 / -68.6       0.0 /   0.0         0.0 /   0.0

 GRINDER 1 CONT ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (SLUDGE BL    480.0  0.9627 / -66.  1.0092 / 180.  0.9992 /  61.
   GRINDER 1 CONT ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
GRINDER 1      GRINDER 1 CONT                   480.     11.2/-140.      5.6/  40.      5.6/  40.
MCC (SLUDGE BL GRINDER 1 CONT CABLE TO GRIND   480.   2765.6/ -68.      5.6/-140.      5.6/-140.

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 GRINDER 2 CONT VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2769.1 /  -69. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  128.837 +j  19.556 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.152
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  25.144 +j   5.685 (PU)
                                              Z2:  25.144 +j   5.685 (PU)
                                              Z0:  78.549 +j   8.187 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2769.1      2769.1      2769.1      2769.1      2769.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2259 /  162.2     1.2845 /   75.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2769.1 / -68.6        0.0 /   0.0         0.0 /   0.0

 GRINDER 2 CONT ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (SLUDGE BL    480.0  0.9627 / -66.  1.0092 / 180.  0.9992 /  61.
   GRINDER 2 CONT ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
GRINDER 2      GRINDER 2 CONT                   480.     11.2/-140.      5.6/  40.      5.6/  40.
MCC (SLUDGE BL GRINDER 2 CONT CABLE TO GRIND   480.   2765.6/ -68.      5.6/-140.      5.6/-140.

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 GRINDER 3 CONT VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2769.1 /  -69. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  128.837 +j  19.556 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.152
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  25.144 +j   5.685 (PU)
                                              Z2:  25.144 +j   5.685 (PU)
                                              Z0:  78.549 +j   8.187 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2769.1      2769.1      2769.1      2769.1      2769.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2259 /  162.2     1.2845 /   75.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2769.1 / -68.6        0.0 /   0.0         0.0 /   0.0

 GRINDER 3 CONT ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                       ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (SLUDGE BL    480.0  0.9627 / -66.  1.0092 / 180.  0.9992 /  61.
   GRINDER 3 CONT ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
GRINDER 3      GRINDER 3 CONT                   480.     11.2/-140.      5.6/  40.      5.6/  40.
MCC (SLUDGE BL GRINDER 3 CONT CABLE TO GRIND   480.   2765.6/ -68.      5.6/-140.      5.6/-140.

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 HYDRAULIC POWE VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3262.8 /  -71. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  108.495 +j  21.439 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.198
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  21.060 +j   6.259 (PU)
                                              Z2:  21.060 +j   6.259 (PU)
                                              Z0:  66.375 +j   8.920 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3262.8      3262.8      3262.8      3262.8      3262.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2159 /  161.8     1.2930 /   74.5

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3262.8 / -71.2        0.0 /   0.0         0.0 /   0.0

 HYDRAULIC POWE ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (SLUDGE BL    480.0  0.9529 / -67.  1.0108 / 180.  1.0000 /  61.
   HYDRAULIC POWE ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
HYDRAULIC POWE HYDRAULIC POWE                   480.     49.1/-139.     24.5/  41.     24.5/  41.
MCC (SLUDGE BL HYDRAULIC POWE CABLE TO HYD P   480.   3244.5/ -70.     24.5/-139.     24.5/-139.

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 IFAS R1 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2776.9 /  -68. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  128.703 +j  17.905 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.139
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  25.153 +j   5.309 (PU)
                                              Z2:  25.153 +j   5.309 (PU)
                                              Z0:  78.397 +j   7.286 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2776.9      2776.9      2776.9      2776.9      2776.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2265 /  162.2     1.2836 /   75.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2776.9 / -67.9        0.0 /   0.0         0.0 /   0.0

 IFAS R1 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2A (CONT)     480.0  0.9655 / -65.  1.0051 / 180.  1.0015 /  60.
   IFAS R1 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R1 NRCY P IFAS R1 NRCY P                   480.     11.2/-140.      5.6/  40.      5.6/  40.
MCC-2A (CONT)  IFAS R1 NRCY P CABLE TO IFAS    480.   2773.6/ -68.      5.6/-140.      5.6/-140.

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 IFAS R1 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2690.8 /  -68. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  132.877 +j  18.100 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.136
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  25.961 +j   5.358 (PU)
                                              Z2:  25.961 +j   5.358 (PU)
                                              Z0:  80.954 +j   7.384 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2690.8      2690.8      2690.8      2690.8      2690.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2275 /  162.3     1.2832 /   75.1

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2690.8 / -67.8        0.0 /   0.0         0.0 /   0.0

 IFAS R1 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2A (CONT)     480.0  0.9667 / -65.  1.0049 / 180.  1.0014 /  60.
   IFAS R1 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R1 NRCY P IFAS R1 NRCY P                   480.     11.2/-140.      5.6/  40.      5.6/  40.
MCC-2A (CONT)  IFAS R1 NRCY P CABLE TO IFAS    480.   2687.4/ -68.      5.6/-140.      5.6/-140.

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 IFAS R2 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   3071.9 /  -68. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  116.180 +j  17.324 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.149
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  22.729 +j   5.165 (PU)
                                              Z2:  22.729 +j   5.165 (PU)
                                              Z0:  70.723 +j   6.995 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    3071.9      3071.9      3071.9      3071.9      3071.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2231 /  162.2     1.2850 /   74.9

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 3071.9 / -68.5        0.0 /   0.0         0.0 /   0.0

 IFAS R2 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2A (CONT)     480.0  0.9613 / -66.  1.0055 / 180.  1.0017 /  60.
   IFAS R2 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R2 NRCY P IFAS R2 NRCY P                   480.     11.3/-140.      5.6/  40.      5.6/  40.
MCC-2A (CONT)  IFAS R2 NRCY P CABLE TO IFAS    480.   3068.4/ -68.      5.6/-140.      5.6/-140.

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 IFAS R2 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2533.5 /  -67. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  141.225 +j  18.492 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.131
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  27.578 +j   5.457 (PU)
                                              Z2:  27.578 +j   5.457 (PU)
                                              Z0:  86.070 +j   7.578 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2533.5      2533.5      2533.5      2533.5      2533.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2293 /  162.3     1.2825 /   75.1

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2533.5 / -67.5       0.0 /   0.0         0.0 /   0.0

 IFAS R2 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2A (CONT)     480.0  0.9689 / -65.  1.0047 / 180.  1.0013 /  60.
   IFAS R2 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R2 NRCY P IFAS R2 NRCY P                  480.     11.2/-141.      5.6/  39.      5.6/  39.
MCC-2A (CONT)  IFAS R2 NRCY P CABLE TO IFAS    480.   2530.2/ -67.      5.6/-141.      5.6/-141.

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 IFAS R3 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2868.8 /  -68. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  124.529 +j  17.711 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.142
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  24.345 +j   5.261 (PU)
                                              Z2:  24.345 +j   5.261 (PU)
                                              Z0:  75.839 +j   7.189 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2868.8      2868.8      2868.8      2868.8      2868.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2255 /  162.2     1.2841 /   75.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2868.8 / -68.1       0.0 /   0.0         0.0 /   0.0

 IFAS R3 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                       ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2A (CONT)     480.0  0.9642 / -66.  1.0052 / 180.  1.0016 /  60.
   IFAS R3 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R3 NRCY P IFAS R3 NRCY P                   480.     11.2/-140.      5.6/  40.      5.6/  40.
MCC-2A (CONT)  IFAS R3 NRCY P CABLE TO IFAS    480.   2865.4/ -68.      5.6/-140.      5.6/-140.

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 IFAS R3 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2393.5 /  -67. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  149.573 +j  18.886 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.126
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  29.193 +j   5.557 (PU)
                                              Z2:  29.193 +j   5.557 (PU)
                                              Z0:  91.186 +j   7.773 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2393.5      2393.5      2393.5      2393.5      2393.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2309 /  162.3     1.2818 /   75.2

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2393.5 / -67.2       0.0 /   0.0         0.0 /   0.0

 IFAS R3 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2A (CONT)     480.0  0.9708 / -65.  1.0044 / 180.  1.0012 /  60.
   IFAS R3 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R3 NRCY P IFAS R3 NRCY P                   480.     11.2/-141.      5.6/  39.      5.6/  39.
MCC-2A (CONT)  IFAS R3 NRCY P CABLE TO IFAS    480.   2390.3/ -67.      5.6/-141.      5.6/-141.

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 IFAS R4 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2658.2 /  -73. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  132.037 +j  31.519 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.239
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  25.681 +j   8.281 (PU)
                                              Z2:  25.681 +j   8.281 (PU)
                                              Z0:  80.676 +j  14.956 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2658.2      2658.2      2658.2      2658.2      2658.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2215 /  162.2     1.2853 /   74.8

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2658.2 / -73.4        0.0 /   0.0         0.0 /   0.0

 IFAS R4 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2B (CONT)     480.0  0.8623 / -71.  1.0498 / 178.  1.0045 /  63.
   IFAS R4 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R4 NRCY P IFAS R4 NRCY P                   480.     11.3/-140.      5.6/  40.      5.6/  40.
MCC-2B (CONT)  IFAS R4 NRCY P CABLE TO IFAS    480.   2653.7/ -73.      5.6/-140.      5.6/-140.

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 IFAS R4 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2741.0 /  -74. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  127.865 +j  31.324 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.245
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  24.874 +j   8.233 (PU)
                                              Z2:  24.874 +j   8.233 (PU)
                                              Z0:  78.118 +j  14.859 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2741.0      2741.0      2741.0      2741.0      2741.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2202 /  162.1     1.2857 /   74.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2741.0 / -73.8        0.0 /   0.0         0.0 /   0.0

 IFAS R4 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2B (CONT)     480.0  0.8574 / -71.  1.0512 / 178.  1.0051 /  63.
   IFAS R4 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R4 NRCY P IFAS R4 NRCY P                   480.     11.3/-140.      5.6/  40.      5.6/  40.
MCC-2B (CONT)  IFAS R4 NRCY P CABLE TO IFAS    480.   2736.4/ -74.      5.6/-140.      5.6/-140.

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 IFAS R5 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2922.8 /  -75. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  119.521 +j  30.937 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.259
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  23.259 +j   8.136 (PU)
                                              Z2:  23.259 +j   8.136 (PU)
                                              Z0:  73.002 +j  14.665 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2922.8      2922.8      2922.8      2922.8      2922.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2175 /  162.1     1.2863 /   74.6

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2922.8 / -74.5       0.0 /   0.0         0.0 /   0.0

 IFAS R5 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2B (CONT)     480.0  0.8466 / -72.  1.0542 / 178.  1.0063 /  64.
   IFAS R5 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R5 NRCY P IFAS R5 NRCY P                   480.     11.3/-140.      5.7/  40.      5.7/  40.
MCC-2B (CONT)  IFAS R5 NRCY P CABLE TO IFAS    480.   2918.0/ -74.      5.7/-140.      5.7/-140.

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 IFAS R5 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2829.0 /  -74. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  123.693 +j  31.130 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.252
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  24.066 +j   8.184 (PU)
                                              Z2:  24.066 +j   8.184 (PU)
                                              Z0:  75.560 +j  14.762 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2829.0      2829.0      2829.0      2829.0      2829.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2189 /  162.1     1.2860 /   74.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2829.0 / -74.1       0.0 /   0.0         0.0 /   0.0

 IFAS R5 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2B (CONT)     480.0  0.8522 / -72.  1.0526 / 178.  1.0057 /  64.
   IFAS R5 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R5 NRCY P IFAS R5 NRCY P                   480.     11.3/-140.      5.7/  40.      5.7/  40.
MCC-2B (CONT)  IFAS R5 NRCY P CABLE TO IFAS    480.   2824.4/ -74.      5.7/-140.      5.7/-140.

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 IFAS R6 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2506.5 /  -73. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  140.381 +j  31.909 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.227
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  27.295 +j   8.379 (PU)
                                              Z2:  27.295 +j   8.379 (PU)
                                              Z0:  85.792 +j  15.151 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2506.5      2506.5      2506.5      2506.5      2506.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2237 /  162.2     1.2847 /   74.9

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2506.5 / -72.8        0.0 /   0.0         0.0 /   0.0

 IFAS R6 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2B (CONT)     480.0  0.8712 / -70.  1.0472 / 178.  1.0036 /  63.
   IFAS R6 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R6 NRCY P IFAS R6 NRCY P                   480.     11.3/-140.      5.6/  40.      5.6/  40.
MCC-2B (CONT)  IFAS R6 NRCY P CABLE TO IFAS    480.   2502.2/ -73.      5.6/-140.      5.6/-140.

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 IFAS R6 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2308.5 /  -72. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  152.895 +j  32.500 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.213
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  29.715 +j   8.529 (PU)
                                              Z2:  29.715 +j   8.529 (PU)
                                              Z0:  93.466 +j  15.443 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2308.5      2308.5      2308.5      2308.5      2308.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2266 /  162.2     1.2839 /   75.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2308.5 / -72.0       0.0 /   0.0         0.0 /   0.0

 IFAS R6 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2B (CONT)     480.0  0.8826 / -69.  1.0438 / 179.  1.0025 /  63.
   IFAS R6 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R6 NRCY P IFAS R6 NRCY P                   480.     11.2/-140.      5.6/  40.      5.6/  40.
MCC-2B (CONT)  IFAS R6 NRCY P CABLE TO IFAS    480.   2304.4/ -72.      5.6/-140.      5.6/-140.

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 IFAS R7 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2456.8 /  -76. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  140.831 +j  41.708 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.296
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  27.233 +j  10.489 (PU)
                                              Z2:  27.233 +j  10.489 (PU)
                                              Z0:  86.364 +j  20.729 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2456.8      2456.8      2456.8      2456.8      2456.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2209 /  162.1     1.2865 /   74.8

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2456.8 / -76.5       0.0 /   0.0         0.0 /   0.0

 IFAS R7 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2C (CONT)     480.0  0.7968 / -74.  1.0755 / 177.  1.0132 /  65.
   IFAS R7 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R7 NRCY P IFAS R7 NRCY P                  480.     11.3/-140.      5.6/  40.      5.6/  40.
MCC-2C (CONT)  IFAS R7 NRCY P CABLE TO IFAS    480.   2451.7/ -76.      5.6/-140.      5.6/-140.

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 IFAS R7 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2526.4 /  -77. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  136.661 +j  41.513 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.304
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  26.427 +j  10.440 (PU)
                                              Z2:  26.427 +j  10.440 (PU)
                                              Z0:  83.806 +j  20.632 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2526.4      2526.4      2526.4      2526.4      2526.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2197 /  162.1     1.2867 /   74.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2526.4 / -76.9        0.0 /   0.0         0.0 /   0.0

 IFAS R7 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2C (CONT)     480.0  0.7902 / -74.  1.0773 / 177.  1.0143 /  65.
   IFAS R7 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R7 NRCY P IFAS R7 NRCY P                   480.     11.3/-140.      5.6/  40.      5.6/  40.
MCC-2C (CONT)  IFAS R7 NRCY P CABLE TO IFAS    480.   2521.3/ -77.      5.6/-140.      5.6/-140.

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 IFAS R8 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2677.9 /  -78. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  128.320 +j  41.124 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.320
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  24.815 +j  10.343 (PU)
                                              Z2:  24.815 +j  10.343 (PU)
                                              Z0:  78.690 +j  20.438 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2677.9      2677.9      2677.9      2677.9      2677.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2171 /  162.1     1.2872 /   74.6

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2677.9 / -77.8        0.0 /   0.0         0.0 /   0.0

 IFAS R8 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2C (CONT)     480.0  0.7755 / -75.  1.0812 / 177.  1.0169 /  66.
   IFAS R8 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R8 NRCY P IFAS R8 NRCY P                   480.     11.3/-139.      5.7/  41.      5.7/  41.
MCC-2C (CONT)  IFAS R8 NRCY P CABLE TO IFAS    480.   2672.6/ -78.      5.7/-139.      5.7/-139.

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 IFAS R8 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2600.1 /  -77. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  132.490 +j  41.318 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.312
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  25.621 +j  10.392 (PU)
                                              Z2:  25.621 +j  10.392 (PU)
                                              Z0:  81.248 +j  20.535 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2600.1      2600.1      2600.1      2600.1      2600.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2184 /  162.1     1.2869 /   74.6

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2600.1 / -77.3        0.0 /   0.0         0.0 /   0.0

 IFAS R8 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2C (CONT)     480.0  0.7831 / -75.  1.0792 / 177.  1.0155 /  65.
   IFAS R8 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R8 NRCY P IFAS R8 NRCY P                   480.     11.3/-140.      5.7/  40.      5.7/  40.
MCC-2C (CONT)  IFAS R8 NRCY P CABLE TO IFAS    480.   2594.8/ -77.      5.7/-140.      5.7/-140.

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 IFAS R9 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2328.1 /  -76. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  149.171 +j  42.101 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.282
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  28.845 +j  10.588 (PU)
                                              Z2:  28.845 +j  10.588 (PU)
                                              Z0:  91.480 +j  20.924 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2328.1      2328.1      2328.1      2328.1      2328.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2230 /  162.1     1.2860 /   74.9

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2328.1 / -75.8        0.0 /   0.0         0.0 /   0.0

 IFAS R9 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2C (CONT)     480.0  0.8090 / -73.  1.0720 / 177.  1.0112 /  65.
   IFAS R9 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R9 NRCY P IFAS R9 NRCY P                  480.     11.3/-140.      5.6/  40.      5.6/  40.
MCC-2C (CONT)  IFAS R9 NRCY P CABLE TO IFAS    480.   2323.2/ -76.      5.6/-140.      5.6/-140.

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 IFAS R9 NRCY P VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2157.9 /  -75. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  161.679 +j  42.694 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.264
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  31.263 +j  10.739 (PU)
                                              Z2:  31.263 +j  10.739 (PU)
                                              Z0:  99.154 +j  21.216 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2157.9      2157.9      2157.9      2157.9      2157.9

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2258 /  162.2     1.2853 /   75.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2157.9 / -74.8        0.0 /   0.0         0.0 /   0.0

 IFAS R9 NRCY P ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-2C (CONT)     480.0  0.8248 / -72.  1.0674 / 178.  1.0089 /  65.
   IFAS R9 NRCY P ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R9 NRCY P IFAS R9 NRCY P                   480.     11.2/-140.      5.6/  40.      5.6/  40.
MCC-2C (CONT)  IFAS R9 NRCY P CABLE TO IFAS    480.   2153.2/ -75.      5.6/-140.      5.6/-140.

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 INDUCTION MIXE VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1507.4 /  -69. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  236.651 +j  36.065 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.152
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  47.714 +j   8.742 (PU)
                                              Z2:  47.714 +j   8.742 (PU)
                                              Z0: 141.222 +j  18.580 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1507.4      1507.4      1507.4      1507.4      1507.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2309 /  163.5     1.2563 /   75.3

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1507.4 / -68.7       0.0 /   0.0         0.0 /   0.0

 INDUCTION MIXE ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   BKR TO INDUCTI    480.0  0.0175 / -66.  1.2262 / 164.  1.2505 /  75.
   INDUCTION MIXE ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BKR TO INDUCTI INDUCTION MIXE CABLE TO INDUC   480.   1507.4/ -69.      0.0/   0.      0.0/   0.

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MAIN MCC VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 34111.3 / -137. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 2.433 +j 10.295 (PU)
THEVENIN IMPEDANCE X/R RATIO: 4.232
SEQUENCE EQUIVALENT IMPEDANCE Z1: 0.689 +j 3.078 (PU)
Z2: 0.689 +j 3.078 (PU)
Z0: 1.055 +j 4.140 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
41119.3	34201.1	34116.0	34111.4	34111.3

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.0482 / 174.7	1.0655 / 64.6

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
34111.3 /-136.7	0.0 / 0.0	0.0 / 0.0

MAIN MCC ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
BUS-0015	480.0	0.0048 /-101.	1.0479 / 175.	1.0678 / 65.
BUS-0016	480.0	0.0058 /-101.	1.0479 / 175.	1.0683 / 65.
BUS-0017	480.0	0.0067 /-101.	1.0478 / 175.	1.0688 / 65.
MCC (HYPO)	480.0	0.0047 /-111.	1.0475 / 175.	1.0678 / 65.
PANELBOARD A	480.0	0.0002 / -86.	1.0482 / 175.	1.0656 / 65.
PANELBOARD B	480.0	0.0001 / -89.	1.0482 / 175.	1.0655 / 65.
PANELBOARD C	480.0	0.0003 / -48.	1.0480 / 175.	1.0655 / 65.
CL2 PUMPS, NPW	480.0	0.1012 / -85.	1.0584 / 172.	1.1094 / 66.
MCC-5B	480.0	0.0646 / -83.	1.0555 / 173.	1.0929 / 66.
BUS-0101	480.0	0.3355 / -79.	1.1072 / 166.	1.2045 / 69.
SWBD-1	480.0	0.0403 / -81.	1.0438 / 176.	1.0464 / 64.
BUS-0234	480.0	0.0000 / 0.	1.0482 / 175.	1.0655 / 65.
BUS-0238	480.0	0.1002 / -94.	1.0508 / 172.	1.1122 / 66.

MAIN MCC ========== INI. RMS SYSTEM BRANCH FLOWS (AMPS) ==========

FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
MAIN MCC	BUS-0015	CABLE TO BLOWE	480.	1443.4/ 37.	721.7/-143.	721.7/-143.
MAIN MCC	BUS-0016	CABLE TO BLOWE	480.	1441.7/ 37.	720.9/-143.	720.9/-143.
MAIN MCC	BUS-0017	CABLE TO BLOWE	480.	1440.0/ 37.	720.0/-143.	720.0/-143.
MAIN MCC	MCC (HYPO)	CABLE TO MCC (	480.	86.9/ 37.	43.5/-143.	43.5/-143.
MAIN MCC	PANELBOARD A	CABLE TO PANEL	480.	324.2/ 40.	162.1/-140.	162.1/-140.
MAIN MCC	PANELBOARD B	CABLE TO PANEL	480.	197.9/ 37.	99.0/-143.	99.0/-143.
MAIN MCC	PANELBOARD C	CABLE TO PANEL	480.	191.4/ 72.	115.0/ 112.	115.0/ 112.
MAIN MCC	CL2 PUMPS, NPW	CABLE TO MCC-C	480.	711.2/ 42.	355.6/-138.	355.6/-138.
MAIN MCC	MCC-5B	CABLE TO MCC-5	480.	902.8/ 39.	451.4/-141.	451.4/-141.
MAIN MCC	BUS-0101	CABLE TO MCC-C	480.	3466.7/ 65.	1733.4/-115.	1733.4/-115.
SWBD-1	MAIN MCC	CABLE TO MAIN	480.	23682.0/-139.	5100.3/-134.	5100.3/-134.
MAIN MCC	BUS-0234	CABLE TO ATS (	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MAIN MCC	BUS-0238	CABLE TO SR107	480.	535.3/ 44.	267.6/-136.	267.6/-136.

MCC (DEWATERIN VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 16448.9 / -128. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 8.141 +j 20.371 (PU)
THEVENIN IMPEDANCE X/R RATIO: 2.502
SEQUENCE EQUIVALENT IMPEDANCE Z1: 1.617 +j 5.634 (PU)
Z2: 1.617 +j 5.634 (PU)
Z0: 4.907 +j 9.102 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
17734.3	16449.6	16448.9	16448.9	16448.9

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.0537 / 168.2	1.1788 / 66.6

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
16448.9 /-128.2	0.0 / 0.0	0.0 / 0.0

MCC (DEWATERIN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
SWBD-3	480.0	0.3873 / -74.	1.0088 / 177.	1.0495 / 62.
DIGEST COMPRES	480.0	0.0000 / 0.	1.0537 / 168.	1.1788 / 67.
DIGEST COMPRES	480.0	0.0000 / 0.	1.0537 / 168.	1.1788 / 67.
MCC (DEWATERIN	480.0	0.0000 / -98.	1.0537 / 168.	1.1788 / 67.
PANEL PP1	480.0	0.0000 / 0.	1.0537 / 168.	1.1788 / 67.

MCC (DEWATERIN ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
DIGESTER PUMP MCC (DEWATERIN	480.	125.7/-139.	62.9/ 41.	62.9/ 41.
DIGESTER PUMP MCC (DEWATERIN	480.	125.7/-139.	62.9/ 41.	62.9/ 41.
DIG XFR STA SU MCC (DEWATERIN	480.	3.5/-139.	1.7/ 41.	1.7/ 41.
POLYMER TRANSF MCC (DEWATERIN	480.	10.7/-139.	5.3/ 41.	5.3/ 41.
POLYMER TRANSF MCC (DEWATERIN	480.	10.7/-139.	5.3/ 41.	5.3/ 41.
EXHAUST FAN EF MCC (DEWATERIN	480.	23.9/-139.	11.9/ 41.	11.9/ 41.
EXHAUST FAN EF MCC (DEWATERIN	480.	15.1/-139.	7.5/ 41.	7.5/ 41.
NPW BOOSTER PU MCC (DEWATERIN	480.	34.6/-139.	17.3/ 41.	17.3/ 41.

MCC (DEWATERIN ================ FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ================

AIR COMPRESSOR	MCC (DEWATERIN		480.	106.9/-139.	53.4/ 41.	53.4/ 41.
GBT CP 2	MCC (DEWATERIN		480.	66.0/-139.	33.0/ 41.	33.0/ 41.
POLYMER FEED P	MCC (DEWATERIN		480.	5.0/-139.	2.5/ 41.	2.5/ 41.
GBT CP 1	MCC (DEWATERIN		480.	66.0/-139.	33.0/ 41.	33.0/ 41.
SWBD-3	MCC (DEWATERIN	CABLE TO MCC (	480.	15216.8/-127.	627.0/-139.	627.0/-139.
MCC (DEWATERIN	DIGEST COMPRES	CABLE TO DIG C	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC (DEWATERIN	DIGEST COMPRES	CABLE TO DIG C	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC (DEWATERIN	MCC (DEWATERIN	MCC (DEWATERIN	480.	660.1/ 41.	330.1/-139.	330.1/-139.
MCC (DEWATERIN	PANEL PP1	CABLE TO PANEL	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

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 MCC (DEWATERIN VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  16443.4 / -128. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    8.147 +j  20.376 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.501
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   1.617 +j   5.635 (PU)
                                              Z2:   1.617 +j   5.635 (PU)
                                              Z0:   4.912 +j   9.106 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   17726.6     16444.1     16443.4     16443.4     16443.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0538 /  168.2     1.1790 /   66.6

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                16443.4 /-128.2        0.0 /   0.0         0.0 /   0.0

 MCC (DEWATERIN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                       ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (DEWATERIN    480.0  0.0004 / -90.  1.0537 / 168.  1.1787 /  67.
   MCC (DEWATERIN    480.0  0.0000 /   0.  1.0538 / 168.  1.1790 /  67.
   MCC (DEWATERIN ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
HOLDING TANK M MCC (DEWATERIN                 480.    163.4/-139.     81.7/  41.     81.7/  41.
WAB PUMP 1     MCC (DEWATERIN                 480.     44.0/-139.     22.0/  41.     22.0/  41.
POLYMER FEED P MCC (DEWATERIN                 480.      5.0/-139.      2.5/  41.      2.5/  41.
FILTRATE PUMP  MCC (DEWATERIN                 480.     23.9/-139.     11.9/  41.     11.9/  41.
AIR COMPRESSOR MCC (DEWATERIN                 480.    106.9/-139.     53.4/  41.     53.4/  41.
NPW BOOSTER PU MCC (DEWATERIN                 480.     34.6/-139.     17.3/  41.     17.3/  41.
TWAB PUMP 1    MCC (DEWATERIN                 480.     66.0/-139.     33.0/  41.     33.0/  41.
TWAB PUMP 2    MCC (DEWATERIN                 480.     66.0/-139.     33.0/  41.     33.0/  41.
NPW BOOSTER PU MCC (DEWATERIN                 480.     34.6/-139.     17.3/  41.     17.3/  41.
WAB PUMP 2     MCC (DEWATERIN                 480.     44.0/-139.     22.0/  41.     22.0/  41.
POLYMER FEED P MCC (DEWATERIN                 480.      5.0/-139.      2.5/  41.      2.5/  41.
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MCC (DEWATERIN ==========	FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========			
HOT WATER PUMP MCC (DEWATERIN	480.	10.7/-139.	5.3/ 41.	5.3/ 41.
FILTRATE PUMP MCC (DEWATERIN	480.	23.9/-139.	11.9/ 41.	11.9/ 41.
MCC (DEWATERIN MCC (DEWATERIN MCC (DEWATERIN	480.	15794.4/-128.	330.0/-139.	330.0/-139.
MCC (DEWATERIN MCC (DEWATERIN MCC (DEWATERIN	480.	32.1/ 41.	16.0/-139.	16.0/-139.

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 MCC (DEWATERIN VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  16437.7 / -128. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    8.154 +j  20.382 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.500
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   1.618 +j   5.636 (PU)
                                              Z2:   1.618 +j   5.636 (PU)
                                              Z0:   4.918 +j   9.110 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   17718.6     16438.4     16437.7     16437.7     16437.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0538 /  168.2     1.1791 /   66.6

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                16437.7 /-128.2        0.0 /   0.0         0.0 /   0.0

 MCC (DEWATERIN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                       ---PHASE A---      ---PHASE B---      ---PHASE C---
   PANEL LPB          208.0  0.6808 /-113.  0.6084 / 168.  1.0000 /  30.
   MCC (DEWATERIN     480.0  0.0004 / -90.  1.0538 / 168.  1.1789 /  67.
   POLYMER SYSTEM     480.0  0.0000 /   0.  1.0538 / 168.  1.1791 /  67.
   MCC (DEWATERIN ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
DIGESTER HEAT  MCC (DEWATERIN                  480.     10.7/-139.      5.3/  41.      5.3/  41.
HOT WATER PUMP MCC (DEWATERIN                  480.     10.7/-139.      5.3/  41.      5.3/  41.
ALLIED COLLOID MCC (DEWATERIN                  480.     10.7/-139.      5.3/  41.      5.3/  41.
MCC (DEWATERIN PANEL LPB      XFMR - LPB       208.      0.0/   0.      0.0/   0.      0.0/   0.
MCC (DEWATERIN MCC (DEWATERIN MCC (DEWATERIN   480.  16406.1/-128.     16.0/-139.     16.0/-139.
MCC (DEWATERIN POLYMER SYSTEM CABLE TO POLY    480.      0.0/   0.      0.0/   0.      0.0/   0.

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MCC (HYPO) VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 10605.5 / -110. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 21.970 +j 25.981 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.183
SEQUENCE EQUIVALENT IMPEDANCE Z1: 6.091 +j 6.528 (PU)
Z2: 6.091 +j 6.528 (PU)
Z0: 9.788 +j 12.924 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
10657.6	10605.5	10605.5	10605.5	10605.5

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.1521 / 171.7	1.0928 / 70.8

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
10605.5 /-109.8	0.0 / 0.0	0.0 / 0.0

MCC (HYPO) ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MAIN MCC	480.0	0.7378 / -71.	1.0260 / 179.	1.0062 / 62.
LP (HYPO) PANE	208.0	0.6309 /-109.	0.6652 / 172.	1.0000 / 30.
PANEL JRM	480.0	0.0000 / 0.	1.1521 / 172.	1.0928 / 71.

MCC (HYPO) ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

	BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
AMMONIA PUMP 1 MCC (HYPO)		480.	23.5/-147.	11.7/ 33.	11.7/ 33.
EF-2 (MTD OUTS MCC (HYPO)		480.	4.9/-147.	2.5/ 33.	2.5/ 33.
5-MINUTE ANALY MCC (HYPO)		480.	2.2/-147.	1.1/ 33.	1.1/ 33.
30-MINUTE ANAL MCC (HYPO)		480.	3.4/-147.	1.7/ 33.	1.7/ 33.
30-MINUTE ANAL MCC (HYPO)		480.	3.4/-147.	1.7/ 33.	1.7/ 33.
AMMONIA PUMP 2 MCC (HYPO)		480.	34.0/-147.	17.0/ 33.	17.0/ 33.
5-MINUTE ANALY MCC (HYPO)		480.	2.2/-147.	1.1/ 33.	1.1/ 33.
EF-1 (MTD OUTS MCC (HYPO)		480.	3.4/-147.	1.7/ 33.	1.7/ 33.
MAIN MCC MCC (HYPO)	CABLE TO MCC (	480.	10544.4/-110.	38.4/-147.	38.4/-147.
MCC (HYPO) LP (HYPO) PANE	XFMR - LP (HYP	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

MCC (HYPO)	========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========									
MCC (HYPO)	PANEL JRM	CABLE TO PANEL	480.	0.0/	0.	0.0/	0.	0.0/	0.

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 MCC (SCUM BLDG VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1396.0 /  -72. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  252.505 +j  55.314 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.219
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  48.816 +j  13.690 (PU)
                                              Z2:  48.816 +j  13.690 (PU)
                                              Z0: 154.873 +j  27.934 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1396.0      1396.0      1396.0      1396.0      1396.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2350 /  162.4     1.2817 /   75.4

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1396.0 / -72.4       0.0 /   0.0         0.0 /   0.0

 MCC (SCUM BLDG ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   PANELBOARD A      480.0  0.9824 / -62.  1.0049 / 180.  0.9981 /  60.
   PANEL A (NEXT     208.0  0.7400 /-105.  0.7130 / 162.  1.0000 /  30.
   MCC (SCUM BLDG ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BOTTOM COLLECT MCC (SCUM BLDG                  480.      1.4/-141.      0.7/  39.      0.7/  39.
CROSS SCREW    MCC (SCUM BLDG                  480.      2.5/-141.      1.3/  39.      1.3/  39.
SCUM PUMP      MCC (SCUM BLDG                  480.      7.8/-141.      3.9/  39.      3.9/  39.
SKIMMER        MCC (SCUM BLDG                  480.      2.5/-141.      1.3/  39.      1.3/  39.
GRIT PUMP (SCU MCC (SCUM BLDG                  480.      6.9/-141.      3.5/  39.      3.5/  39.
PANELBOARD A   MCC (SCUM BLDG CABLE TO MCC (   480.   1388.4/ -72.     10.6/-141.     10.6/-141.
MCC (SCUM BLDG PANEL A (NEXT  XFMR - PANEL A   480.      0.0/   0.      0.0/   0.      0.0/   0.

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MCC (SLUDGE BL VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 24994.3 / -136. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 3.559 +j 13.991 (PU)
THEVENIN IMPEDANCE X/R RATIO: 3.931
SEQUENCE EQUIVALENT IMPEDANCE Z1: 0.873 +j 4.361 (PU)
Z2: 0.873 +j 4.361 (PU)
Z0: 1.812 +j 5.269 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
29620.3	25036.1	24996.0	24994.3	24994.3

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.0014 / 174.8	1.0805 / 62.3

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
24994.3 /-135.7	0.0 / 0.0	0.0 / 0.0

MCC (SLUDGE BL ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
SWBD-3	480.0	0.0228 / -82.	1.0005 / 175.	1.0730 / 62.
HYDRAULIC POWE	480.0	0.0129 /-136.	0.9972 / 175.	1.0866 / 62.
CENT FEED PUMP	480.0	0.0000 / 0.	1.0014 / 175.	1.0805 / 62.
CENT FEED PUMP	480.0	0.0000 / 0.	1.0014 / 175.	1.0805 / 62.
CENT FEED PUMP	480.0	0.0000 / 0.	1.0014 / 175.	1.0805 / 62.
DWC POLY FD PU	480.0	0.0000 / 0.	1.0014 / 175.	1.0805 / 62.
DWC POLY FD PU	480.0	0.0000 / 0.	1.0014 / 175.	1.0805 / 62.
DWC POLY FD PU	480.0	0.0000 / 0.	1.0014 / 175.	1.0805 / 62.
GRINDER 1 CONT	480.0	0.0035 /-138.	1.0002 / 175.	1.0821 / 62.
GRINDER 2 CONT	480.0	0.0035 /-138.	1.0002 / 175.	1.0821 / 62.
GRINDER 3 CONT	480.0	0.0035 /-138.	1.0002 / 175.	1.0821 / 62.
PANEL PP-1 (IN	480.0	0.0000 / 0.	1.0014 / 175.	1.0805 / 62.
MCC (SLUDGE BL	480.0	0.0000 /-104.	1.0014 / 175.	1.0805 / 62.

MCC (SLUDGE BL ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================

FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

	BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
SWBD-3	MCC (SLUDGE BL CABLE TO MCC (	480.	24407.1/-136.	294.9/-141.	294.9/-141.
MCC (SLUDGE BL	HYDRAULIC POWE CABLE TO HYD P	480.	75.8/ 40.	37.9/-140.	37.9/-140.
MCC (SLUDGE BL	CENT FEED PUMP CABLE TO CENT	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC (SLUDGE BL	CENT FEED PUMP CABLE TO CENT	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC (SLUDGE BL	CENT FEED PUMP CABLE TO CENT	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC (SLUDGE BL	DWC POLY FD PU CABLE TO DWC P	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC (SLUDGE BL	DWC POLY FD PU CABLE TO DWC P	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC (SLUDGE BL	DWC POLY FD PU CABLE TO DWC P	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC (SLUDGE BL	GRINDER 1 CONT CABLE TO GRIND	480.	17.4/ 39.	8.7/-141.	8.7/-141.
MCC (SLUDGE BL	GRINDER 2 CONT CABLE TO GRIND	480.	17.4/ 39.	8.7/-141.	8.7/-141.
MCC (SLUDGE BL	GRINDER 3 CONT CABLE TO GRIND	480.	17.4/ 39.	8.7/-141.	8.7/-141.
MCC (SLUDGE BL	PANEL PP-1 (IN PANEL PP1 BUSW	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC (SLUDGE BL	MCC (SLUDGE BL MCC (SLUDGE BL	480.	461.9/ 39.	231.0/-141.	231.0/-141.

MCC (SLUDGE BL VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 24976.0 / -136. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 3.571 +j 13.999 (PU)
THEVENIN IMPEDANCE X/R RATIO: 3.921
SEQUENCE EQUIVALENT IMPEDANCE Z1: 0.875 +j 4.362 (PU)
Z2: 0.875 +j 4.362 (PU)
Z0: 1.821 +j 5.275 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
29580.9	25017.1	24977.7	24976.0	24976.0

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.0014 / 174.8	1.0810 / 62.3

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
24976.0 /-135.7	0.0 / 0.0	0.0 / 0.0

MCC (SLUDGE BL ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

	---PHASE A---	---PHASE B---	---PHASE C---
MCC (SLUDGE BL 480.0	0.0005 /-101.	1.0014 / 175.	1.0807 / 62.

MCC (SLUDGE BL ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

	BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
COOLING WATER	MCC (SLUDGE BL	480.	12.3/-141.	6.2/ 39.	6.2/ 39.
TRAVELING BRID	MCC (SLUDGE BL	480.	66.8/-141.	33.4/ 39.	33.4/ 39.
PRV-2	MCC (SLUDGE BL	480.	17.4/-141.	8.7/ 39.	8.7/ 39.
COOLING WATER	MCC (SLUDGE BL	480.	12.3/-141.	6.2/ 39.	6.2/ 39.
COOLING WATER	MCC (SLUDGE BL	480.	12.3/-141.	6.2/ 39.	6.2/ 39.
AHU-1	MCC (SLUDGE BL	480.	10.9/-141.	5.4/ 39.	5.4/ 39.
GAS COMPRESSOR	MCC (SLUDGE BL	480.	76.1/-141.	38.0/ 39.	38.0/ 39.
GAS COMPRESSOR	MCC (SLUDGE BL	480.	76.1/-141.	38.0/ 39.	38.0/ 39.
CU-1	MCC (SLUDGE BL	480.	40.6/-141.	20.3/ 39.	20.3/ 39.
PRV-1	MCC (SLUDGE BL	480.	17.4/-141.	8.7/ 39.	8.7/ 39.
MCC (SLUDGE BL	MCC (SLUDGE BL MCC (SLUDGE BL	480.	24635.6/-136.	171.1/-141.	171.1/-141.

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 MCC (SLUDGE BL VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  24985.2 / -136. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    3.565 +j  13.995 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     3.926
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   0.874 +j   4.362 (PU)
                                              Z2:   0.874 +j   4.362 (PU)
                                              Z0:   1.817 +j   5.272 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   29600.6     25026.6     24986.9     24985.2     24985.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0014 /  174.8     1.0807 /   62.3

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                24985.2 /-135.7       0.0 /   0.0         0.0 /   0.0

 MCC (SLUDGE BL ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC (SLUDGE BL    480.0  0.0005 /-101.  1.0014 / 175.  1.0805 /  62.
   PANEL LP-1        208.0  0.6240 /-118.  0.5782 / 175.  1.0000 /  30.
   MCC (SLUDGE BL    480.0  0.0000 /-104.  1.0014 / 175.  1.0807 /  62.
   MCC (SLUDGE BL ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
NPW PUMP 1     MCC (SLUDGE BL                 480.     39.9/-141.     19.9/  39.     19.9/  39.
NPW PUMP 3     MCC (SLUDGE BL                 480.     39.9/-141.     19.9/  39.     19.9/  39.
NPW PUMP 2     MCC (SLUDGE BL                 480.     39.9/-141.     19.9/  39.     19.9/  39.
MCC (SLUDGE BL MCC (SLUDGE BL MCC (SLUDGE BL   480.  24525.6/-136.    230.9/-141.    230.9/-141.
MCC (SLUDGE BL PANEL LP-1     XFMR-LP-1        208.      0.0/   0.      0.0/   0.      0.0/   0.
MCC (SLUDGE BL MCC (SLUDGE BL MCC (SLUDGE BL   480.    342.2/  39.    171.1/-141.    171.1/-141.

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MCC-2A VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 28201.8 / -135. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 3.411 +j 12.332 (PU)
THEVENIN IMPEDANCE X/R RATIO: 3.615
SEQUENCE EQUIVALENT IMPEDANCE Z1: 0.879 +j 3.984 (PU)
Z2: 0.879 +j 3.984 (PU)
Z0: 1.654 +j 4.364 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
32787.9	28228.7	28202.6	28201.8	28201.8

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.9808 / 176.3	1.0662 / 60.7

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
28201.8 /-134.5	0.0 / 0.0	0.0 / 0.0

MCC-2A ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
SWBD-2A	480.0	0.1321 /-101.	0.9942 / 179.	1.0135 / 60.
MCC-2A (CONT)	480.0	0.0000 /-101.	0.9808 / 176.	1.0662 / 61.

MCC-2A ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
IFAS REACTOR 1 MCC-2A			480.	18.1/-141.	9.0/ 39.	9.0/ 39.
IFAS REACTOR 2 MCC-2A			480.	18.1/-141.	9.0/ 39.	9.0/ 39.
IFAS REACTOR 1 MCC-2A			480.	18.1/-141.	9.0/ 39.	9.0/ 39.
IFAS REACTOR 1 MCC-2A			480.	18.1/-141.	9.0/ 39.	9.0/ 39.
IFAS REACTOR 3 MCC-2A			480.	18.1/-141.	9.0/ 39.	9.0/ 39.
IFAS REACTOR 2 MCC-2A			480.	18.1/-141.	9.0/ 39.	9.0/ 39.
IFAS REACTOR 3 MCC-2A			480.	18.1/-141.	9.0/ 39.	9.0/ 39.
IFAS REACTOR 2 MCC-2A			480.	18.1/-141.	9.0/ 39.	9.0/ 39.
IFAS REACTOR 2 MCC-2A			480.	18.1/-141.	9.0/ 39.	9.0/ 39.
IFAS REACTOR 1 MCC-2A			480.	18.1/-141.	9.0/ 39.	9.0/ 39.
SWBD-2A	MCC-2A	CABLE TO MCC-2	480.	27297.1/-134.	455.6/-141.	455.6/-141.

MCC-2A ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC-2A	MCC-2A (CONT)	MCC-2A BUSWAY	480.	730.2/ 39.	365.1/-141.	365.1/-141.

MCC-2A (CONT 2 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 28171.1 / -134. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 3.425 +j 12.343 (PU)
THEVENIN IMPEDANCE X/R RATIO: 3.604
SEQUENCE EQUIVALENT IMPEDANCE Z1: 0.880 +j 3.985 (PU)
Z2: 0.880 +j 3.985 (PU)
Z0: 1.665 +j 4.372 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
32729.1	28197.4	28171.9	28171.1	28171.1

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.9808 / 176.2	1.0670 / 60.7

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
28171.1 /-134.5	0.0 / 0.0	0.0 / 0.0

MCC-2A (CONT 2 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC-2A (CONT)	480.0	0.0007 / -97.	0.9808 / 176.	1.0666 / 61.
BUS-0194	208.0	0.6160 /-119.	0.5663 / 176.	1.0000 / 30.
PANEL DP2A (IN	480.0	0.0000 / 0.	0.9808 / 176.	1.0670 / 61.
BUS-0235	480.0	0.0000 / 0.	0.9808 / 176.	1.0670 / 61.

MCC-2A (CONT 2 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
IFAS R3 FOAM S MCC-2A (CONT 2	480.	6.0/-141.	3.0/ 39.	3.0/ 39.
PREAERATION TA MCC-2A (CONT 2	480.	7.9/-141.	3.9/ 39.	3.9/ 39.
IFAS R1 FOAM P MCC-2A (CONT 2	480.	18.0/-141.	9.0/ 39.	9.0/ 39.
IFAS R3 FOAM P MCC-2A (CONT 2	480.	18.0/-141.	9.0/ 39.	9.0/ 39.
IFAS R2 FOAM S MCC-2A (CONT 2	480.	6.0/-141.	3.0/ 39.	3.0/ 39.
IFAS R2 FOAM P MCC-2A (CONT 2	480.	18.0/-141.	9.0/ 39.	9.0/ 39.
IFAS R1 FOAM S MCC-2A (CONT 2	480.	6.0/-141.	3.0/ 39.	3.0/ 39.
ODOR CONTROL F MCC-2A (CONT 2	480.	243.6/-141.	121.8/ 39.	121.8/ 39.
ODOR CONTROL F MCC-2A (CONT 2	480.	243.6/-141.	121.8/ 39.	121.8/ 39.

MCC-2A (CONT 2 ================ FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ================

MCC-2A (CONT)	MCC-2A (CONT 2	MCC-2A BUSWAY	480.	27608.0/-134.	283.6/-141.	283.6/-141.
MCC-2A (CONT 2	BUS-0194	TX-MCC-2A	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC-2A (CONT 2	PANEL DP2A (IN	CABLE TO PANEL	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC-2A (CONT 2	BUS-0235	CABLE TO ATS-D	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

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 MCC-2A (CONT)  VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  28186.5 / -135. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    3.418 +j  12.337 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     3.609
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   0.879 +j   3.984 (PU)
                                              Z2:   0.879 +j   3.984 (PU)
                                              Z0:   1.660 +j   4.368 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   32758.5     28213.1     28187.3     28186.5     28186.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     0.9808 /  176.2     1.0666 /   60.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                28186.5 /-134.5       0.0 /   0.0         0.0 /   0.0

 MCC-2A (CONT)  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2A            480.0  0.0007 / -97.  0.9808 / 176.  1.0662 /  61.
   IFAS R1 NRCY P    480.0  0.0037 /-138.  0.9795 / 176.  1.0683 /  61.
   IFAS R1 NRCY P    480.0  0.0038 /-138.  0.9795 / 176.  1.0684 /  61.
   IFAS R2 NRCY P    480.0  0.0033 /-138.  0.9796 / 176.  1.0682 /  61.
   IFAS R2 NRCY P    480.0  0.0040 /-138.  0.9794 / 176.  1.0685 /  61.
   IFAS R3 NRCY P    480.0  0.0035 /-138.  0.9795 / 176.  1.0683 /  61.
   IFAS R3 NRCY P    480.0  0.0043 /-138.  0.9793 / 176.  1.0686 /  61.
   CENTRATE REC P    480.0  0.0061 /-138.  0.9787 / 176.  1.0695 /  61.
   MCC-2A (CONT 2    480.0  0.0000 /-101.  0.9808 / 176.  1.0666 /  61.
   MCC-2A (CONT)  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS REACTOR 3 MCC-2A (CONT)                   480.     18.1/-141.      9.0/  39.      9.0/  39.
IFAS REACTOR 3 MCC-2A (CONT)                   480.     18.1/-141.      9.0/  39.      9.0/  39.
MCC-2A         MCC-2A (CONT)  MCC-2A BUSWAY    480.  27461.6/-134.    365.0/-141.    365.0/-141.
MCC-2A (CONT)  IFAS R1 NRCY P CABLE TO IFAS    480.     18.1/  39.      9.0/-141.      9.0/-141.
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MCC-2A (CONT) ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC-2A (CONT)	IFAS R1 NRCY P CABLE TO IFAS	480.	18.1/	39.	9.0/-141.	9.0/-141.
MCC-2A (CONT)	IFAS R2 NRCY P CABLE TO IFAS	480.	18.1/	39.	9.0/-141.	9.0/-141.
MCC-2A (CONT)	IFAS R2 NRCY P CABLE TO IFAS	480.	18.1/	39.	9.0/-141.	9.0/-141.
MCC-2A (CONT)	IFAS R3 NRCY P CABLE TO IFAS	480.	18.1/	39.	9.0/-141.	9.0/-141.
MCC-2A (CONT)	IFAS R3 NRCY P CABLE TO IFAS	480.	18.1/	39.	9.0/-141.	9.0/-141.
MCC-2A (CONT)	CENTRATE REC P CABLE TO CENTR	480.	18.0/	39.	9.0/-141.	9.0/-141.
MCC-2A (CONT)	MCC-2A (CONT 2 MCC-2A BUSWAY	480.	567.3/	39.	283.7/-141.	283.7/-141.

MCC-2B VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 11886.5 / -120. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 15.166 +j 26.298 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.734
SEQUENCE EQUIVALENT IMPEDANCE Z1: 3.058 +j 7.034 (PU)
Z2: 3.058 +j 7.034 (PU)
Z0: 9.050 +j 12.229 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
12199.5	11886.5	11886.5	11886.5	11886.5

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.0803 / 166.3	1.2096 / 68.1

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
11886.5 /-120.0	0.0 / 0.0	0.0 / 0.0

MCC-2B ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
SWBD-2A	480.0	0.6596 / -71.	0.9998 / 180.	1.0068 / 60.
MCC-2B (CONT)	480.0	0.0000 / -97.	1.0803 / 166.	1.2096 / 68.

MCC-2B ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
IFAS REACTOR 5 MCC-2B			480.	14.3/-138.	7.2/ 42.	7.2/ 42.
IFAS REACTOR 6 MCC-2B			480.	14.3/-138.	7.2/ 42.	7.2/ 42.
IFAS REACTOR 5 MCC-2B			480.	14.3/-138.	7.2/ 42.	7.2/ 42.
IFAS REACTOR 5 MCC-2B			480.	14.3/-138.	7.2/ 42.	7.2/ 42.
IFAS REACTOR 5 MCC-2B			480.	14.3/-138.	7.2/ 42.	7.2/ 42.
IFAS REACTOR 4 MCC-2B			480.	14.3/-138.	7.2/ 42.	7.2/ 42.
IFAS REACTOR 4 MCC-2B			480.	14.3/-138.	7.2/ 42.	7.2/ 42.
IFAS REACTOR 6 MCC-2B			480.	14.3/-138.	7.2/ 42.	7.2/ 42.
IFAS REACTOR 4 MCC-2B			480.	14.3/-138.	7.2/ 42.	7.2/ 42.
IFAS REACTOR 4 MCC-2B			480.	14.3/-138.	7.2/ 42.	7.2/ 42.
SWBD-2A	MCC-2B	CABLE TO MCC-2	480.	11586.6/-120.	157.6/-138.	157.6/-138.

MCC-2B ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC-2B	MCC-2B (CONT)	MCC-2B BUSWAY	480.	171.7/ 42.	85.9/-138.	85.9/-138.

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 MCC-2B (CONT 2 VOLTAGE BASE LL:                 480.0 (VOLTS)
               INI. SYM. RMS FAULT CURRENT:  11880.1 / -120. ( AMPS/DEG )
               THEVENIN EQUIVALENT IMPEDANCE:   15.180 +j  26.308 (PU)
               THEVENIN IMPEDANCE X/R RATIO:     1.733
               SEQUENCE EQUIVALENT IMPEDANCE Z1:   3.060 +j   7.036 (PU)
                                             Z2:   3.060 +j   7.036 (PU)
                                             Z0:   9.060 +j  12.237 (PU)

                ASYM    RMS   INTERRUPTING AMPS
               1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                  12192.5     11880.1     11880.1     11880.1     11880.1

               INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               0.0000 /    0.0     1.0804 /  166.3     1.2098 /   68.1

               INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               11880.1 /-120.0       0.0 /   0.0         0.0 /   0.0

 MCC-2B (CONT 2 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                   FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                      ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2B (CONT)     480.0  0.0003 / -82.  1.0803 / 166.  1.2096 /  68.
   PANEL DP2B (IN    480.0  0.0000 /   0.  1.0804 / 166.  1.2098 /  68.
   BUS-0195          208.0  0.6985 /-112.  0.6238 / 166.  1.0000 /  30.
   MCC-2B (CONT 2 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                            FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                           BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
IFAS R4 FOAM P MCC-2B (CONT 2                 480.     14.3/-138.      7.1/  42.      7.1/  42.
IFAS R5 FOAM S MCC-2B (CONT 2                 480.      4.8/-138.      2.4/  42.      2.4/  42.
IFAS R4 FOAM S MCC-2B (CONT 2                 480.      4.8/-138.      2.4/  42.      2.4/  42.
IFAS R5 FOAM P MCC-2B (CONT 2                 480.     14.3/-138.      7.1/  42.      7.1/  42.
IFAS R6 FOAM P MCC-2B (CONT 2                 480.     14.3/-138.      7.1/  42.      7.1/  42.
IFAS R6 FOAM S MCC-2B (CONT 2                 480.      4.8/-138.      2.4/  42.      2.4/  42.
MCC-2B (CONT)  MCC-2B (CONT 2 MCC-2B BUSWAY    480.  11825.8/-120.     28.5/-138.     28.5/-138.
MCC-2B (CONT 2 PANEL DP2B (IN CABLE TO PANEL   480.      0.0/   0.      0.0/   0.      0.0/   0.
MCC-2B (CONT 2 BUS-0195       TX-2B            480.      0.0/   0.      0.0/   0.      0.0/   0.

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MCC-2B (CONT) VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 11883.3 / -120. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 15.173 +j 26.303 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.734
SEQUENCE EQUIVALENT IMPEDANCE Z1: 3.059 +j 7.035 (PU)
Z2: 3.059 +j 7.035 (PU)
Z0: 9.055 +j 12.233 (PU)

ASYM RMS INTERRUPTING AMPS

1/2 CYCLES	2 CYCLES	3 CYCLES	5 CYCLES	8 CYCLES
12196.0	11883.3	11883.3	11883.3	11883.3

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.0803 / 166.3	1.2097 / 68.1

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
11883.3 /-120.0	0.0 / 0.0	0.0 / 0.0

MCC-2B (CONT) ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC-2B	480.0	0.0003 / -82.	1.0803 / 166.	1.2095 / 68.
IFAS R4 NRCY P	480.0	0.0027 /-135.	1.0796 / 166.	1.2109 / 68.
IFAS R4 NRCY P	480.0	0.0026 /-135.	1.0797 / 166.	1.2109 / 68.
IFAS R5 NRCY P	480.0	0.0024 /-135.	1.0797 / 166.	1.2108 / 68.
IFAS R5 NRCY P	480.0	0.0025 /-135.	1.0797 / 166.	1.2108 / 68.
IFAS R6 NRCY P	480.0	0.0029 /-135.	1.0796 / 166.	1.2110 / 68.
IFAS R6 NRCY P	480.0	0.0032 /-135.	1.0795 / 166.	1.2112 / 68.
MCC-2B (CONT 2	480.0	0.0000 / 0.	1.0803 / 166.	1.2097 / 68.

MCC-2B (CONT) ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
IFAS REACTOR 6	MCC-2B (CONT)		480.	14.3/-138.	7.2/ 42.	7.2/ 42.
IFAS REACTOR 6	MCC-2B (CONT)		480.	14.3/-138.	7.2/ 42.	7.2/ 42.
MCC-2B	MCC-2B (CONT)	MCC-2B BUSWAY	480.	11719.8/-120.	85.9/-138.	85.9/-138.
MCC-2B (CONT)	IFAS R4 NRCY P	CABLE TO IFAS	480.	14.3/ 42.	7.2/-138.	7.2/-138.
MCC-2B (CONT)	IFAS R4 NRCY P	CABLE TO IFAS	480.	14.3/ 42.	7.2/-138.	7.2/-138.

MCC-2B (CONT) ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC-2B (CONT)	IFAS R5 NRCY P CABLE TO IFAS	480.	14.3/	42.	7.2/-138.	7.2/-138.
MCC-2B (CONT)	IFAS R5 NRCY P CABLE TO IFAS	480.	14.3/	42.	7.2/-138.	7.2/-138.
MCC-2B (CONT)	IFAS R6 NRCY P CABLE TO IFAS	480.	14.3/	43.	7.2/-137.	7.2/-137.
MCC-2B (CONT)	IFAS R6 NRCY P CABLE TO IFAS	480.	14.3/	43.	7.2/-137.	7.2/-137.
MCC-2B (CONT)	MCC-2B (CONT 2 MCC-2B BUSWAY	480.	57.1/	42.	28.5/-138.	28.5/-138.

MCC-2C VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 8265.4 / -117. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 24.011 +j 36.461 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.518
SEQUENCE EQUIVALENT IMPEDANCE Z1: 4.637 +j 9.230 (PU)
Z2: 4.637 +j 9.230 (PU)
Z0: 14.738 +j 18.002 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
8396.3	8265.4	8265.4	8265.4	8265.4

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.1161 / 164.6	1.2378 / 70.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
8265.4 /-116.6	0.0 / 0.0	0.0 / 0.0

MCC-2C ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
SWBD-2B	480.0	0.7698 / -68.	1.0007 / 180.	1.0053 / 60.
MCC-2C (CONT)	480.0	0.0000 / -96.	1.1161 / 165.	1.2378 / 70.

MCC-2C ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
IFAS REACTOR 7 MCC-2C			480.	13.4/-138.	6.7/ 42.	6.7/ 42.
IFAS REACTOR 8 MCC-2C			480.	13.4/-138.	6.7/ 42.	6.7/ 42.
IFAS REACTOR 9 MCC-2C			480.	13.4/-138.	6.7/ 42.	6.7/ 42.
IFAS REACTOR 7 MCC-2C			480.	13.4/-138.	6.7/ 42.	6.7/ 42.
IFAS REACTOR 7 MCC-2C			480.	13.4/-138.	6.7/ 42.	6.7/ 42.
IFAS REACTOR 8 MCC-2C			480.	13.4/-138.	6.7/ 42.	6.7/ 42.
IFAS REACTOR 8 MCC-2C			480.	13.4/-138.	6.7/ 42.	6.7/ 42.
IFAS REACTOR 8 MCC-2C			480.	13.4/-138.	6.7/ 42.	6.7/ 42.
IFAS REACTOR 7 MCC-2C			480.	13.4/-138.	6.7/ 42.	6.7/ 42.
IFAS REACTOR 9 MCC-2C			480.	13.4/-138.	6.7/ 42.	6.7/ 42.
SWBD-2B	MCC-2C	CABLE TO MCC-2	480.	7990.4/-116.	147.5/-138.	147.5/-138.

MCC-2C ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC-2C	MCC-2C (CONT)	MCC-2C BUSWAY	480.	160.8/ 43.	80.4/-137.	80.4/-137.

MCC-2C (CONT 2 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 8262.3 / -117. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 24.025 +j 36.472 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.518
SEQUENCE EQUIVALENT IMPEDANCE Z1: 4.638 +j 9.231 (PU)
Z2: 4.638 +j 9.231 (PU)
Z0: 14.748 +j 18.010 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
8392.9	8262.3	8262.3	8262.3	8262.3

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.1162 / 164.6	1.2379 / 70.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
8262.3 /-116.6	0.0 / 0.0	0.0 / 0.0

MCC-2C (CONT 2 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC-2C (CONT)	480.0	0.0002 / -79.	1.1161 / 165.	1.2378 / 70.
PANEL DP2C (IN	480.0	0.0000 / 0.	1.1162 / 165.	1.2379 / 70.
BUS-0196	208.0	0.7147 /-110.	0.6444 / 165.	1.0000 / 30.

MCC-2C (CONT 2 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

	BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
IFAS R9 FOAM P MCC-2C (CONT 2		480.	13.4/-138.	6.7/ 42.	6.7/ 42.
IFAS R9 FOAM S MCC-2C (CONT 2		480.	4.5/-138.	2.2/ 42.	2.2/ 42.
IFAS R7 FOAM P MCC-2C (CONT 2		480.	13.4/-138.	6.7/ 42.	6.7/ 42.
IFAS R8 FOAM P MCC-2C (CONT 2		480.	13.4/-138.	6.7/ 42.	6.7/ 42.
IFAS R7 FOAM S MCC-2C (CONT 2		480.	4.5/-138.	2.2/ 42.	2.2/ 42.
IFAS R8 FOAM S MCC-2C (CONT 2		480.	4.5/-138.	2.2/ 42.	2.2/ 42.
MCC-2C (CONT) MCC-2C (CONT 2	MCC-2C BUSWAY	480.	8212.4/-116.	26.7/-138.	26.7/-138.
MCC-2C (CONT 2 PANEL DP2C (IN	CABLE TO PANEL	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC-2C (CONT 2 BUS-0196	TX-2C	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

MCC-2C (CONT) VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 8263.8 / -117. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 24.018 +j 36.466 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.518
SEQUENCE EQUIVALENT IMPEDANCE Z1: 4.638 +j 9.230 (PU)
Z2: 4.638 +j 9.230 (PU)
Z0: 14.743 +j 18.006 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
8394.6	8263.8	8263.8	8263.8	8263.8

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.1162 / 164.6	1.2379 / 70.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
8263.8 /-116.6	0.0 / 0.0	0.0 / 0.0

MCC-2C (CONT) ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC-2C	480.0	0.0002 / -79.	1.1161 / 165.	1.2378 / 70.
IFAS R7 NRCY P	480.0	0.0025 /-135.	1.1155 / 165.	1.2390 / 70.
IFAS R7 NRCY P	480.0	0.0024 /-135.	1.1156 / 165.	1.2390 / 70.
IFAS R8 NRCY P	480.0	0.0023 /-135.	1.1156 / 165.	1.2389 / 70.
IFAS R8 NRCY P	480.0	0.0024 /-135.	1.1156 / 165.	1.2390 / 70.
IFAS R9 NRCY P	480.0	0.0027 /-134.	1.1155 / 165.	1.2391 / 70.
IFAS R9 NRCY P	480.0	0.0030 /-134.	1.1154 / 165.	1.2392 / 70.
MCC-2C (CONT 2	480.0	0.0000 / 0.	1.1162 / 165.	1.2379 / 70.

MCC-2C (CONT) ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
IFAS REACTOR 9	MCC-2C (CONT)		480.	13.4/-138.	6.7/ 42.	6.7/ 42.
IFAS REACTOR 9	MCC-2C (CONT)		480.	13.4/-138.	6.7/ 42.	6.7/ 42.
MCC-2C	MCC-2C (CONT)	MCC-2C BUSWAY	480.	8113.8/-116.	80.4/-137.	80.4/-137.
MCC-2C (CONT)	IFAS R7 NRCY P	CABLE TO IFAS	480.	13.4/ 43.	6.7/-137.	6.7/-137.
MCC-2C (CONT)	IFAS R7 NRCY P	CABLE TO IFAS	480.	13.4/ 43.	6.7/-137.	6.7/-137.

MCC-2C (CONT) ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC-2C (CONT)	IFAS R8 NRCY P CABLE TO IFAS	480.	13.4/	43.	6.7/-137.	6.7/-137.
MCC-2C (CONT)	IFAS R8 NRCY P CABLE TO IFAS	480.	13.4/	43.	6.7/-137.	6.7/-137.
MCC-2C (CONT)	IFAS R9 NRCY P CABLE TO IFAS	480.	13.4/	43.	6.7/-137.	6.7/-137.
MCC-2C (CONT)	IFAS R9 NRCY P CABLE TO IFAS	480.	13.4/	43.	6.7/-137.	6.7/-137.
MCC-2C (CONT)	MCC-2C (CONT 2 MCC-2C BUSWAY	480.	53.4/	42.	26.7/-138.	26.7/-138.

MCC-5B VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 7657.7 / -120. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 23.795 +j 40.672 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.709
SEQUENCE EQUIVALENT IMPEDANCE Z1: 4.136 +j 9.305 (PU)
Z2: 4.136 +j 9.305 (PU)
Z0: 15.524 +j 22.061 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
7849.3	7657.7	7657.7	7657.7	7657.7

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.1674 / 162.9	1.2696 / 72.4

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
7657.7 /-119.7	0.0 / 0.0	0.0 / 0.0

MCC-5B ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MAIN MCC	480.0	0.8026 / -65.	1.0190 / 179.	1.0123 / 62.
PANEL P5B	480.0	0.0000 / 0.	1.1674 / 163.	1.2696 / 72.
PANEL P5C	480.0	0.0000 / 0.	1.1674 / 163.	1.2696 / 72.
SCREEN 2 CP01-	480.0	0.0000 / 0.	1.1674 / 163.	1.2696 / 72.

MCC-5B ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

BRANCH NAME		VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
ID FAN M-4-4-1	MCC-5B	480.	315.3/-138.	157.6/ 42.	157.6/ 42.
RECIRCULATION	MCC-5B	480.	28.0/-138.	14.0/ 42.	14.0/ 42.
RECIRCULATION	MCC-5B	480.	28.0/-138.	14.0/ 42.	14.0/ 42.
ID FAN M-4-4-2	MCC-5B	480.	315.3/-138.	157.6/ 42.	157.6/ 42.
CLASSIFIER M-2	MCC-5B	480.	2.8/-138.	1.4/ 42.	1.4/ 42.
CLASSIFIER M-2	MCC-5B	480.	2.8/-138.	1.4/ 42.	1.4/ 42.
RECIRCULATION	MCC-5B	480.	28.0/-138.	14.0/ 42.	14.0/ 42.
CLASSIFIER M-2	MCC-5B	480.	2.8/-138.	1.4/ 42.	1.4/ 42.
SUPPLY FAN SF-	MCC-5B	480.	2.8/-138.	1.4/ 42.	1.4/ 42.

MCC-5B ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MAIN MCC	MCC-5B	CABLE TO MCC-5	480.	6972.3/-118.	362.8/-138.	362.8/-138.
MCC-5B	PANEL P5B	CABLE TO PANEL	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC-5B	PANEL P5C	CABLE TO PANEL	480.	0.0/ 19.	0.0/ 19.	0.0/ 19.
MCC-5B	SCREEN 2 CP01-	CABLE TO SCREE	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

MCC-CC103 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 7392.4 / -115. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 27.683 +j 40.204 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.452
SEQUENCE EQUIVALENT IMPEDANCE Z1: 3.983 +j 7.105 (PU)
Z2: 3.983 +j 7.105 (PU)
Z0: 19.718 +j 25.993 (PU)

ASYM RMS INTERRUPTING AMPS

1/2 CYCLES	2 CYCLES	3 CYCLES	5 CYCLES	8 CYCLES
7489.4	7392.4	7392.4	7392.4	7392.4

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.2944 / 159.3	1.3546 / 77.7

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
7392.4 /-115.4	0.0 / 0.0	0.0 / 0.0

MCC-CC103 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
BUS-0101	480.0	0.2130 / -69.	1.2415 / 161.	1.3023 / 76.
PDP103	208.0	0.7821 /-102.	0.7473 / 159.	1.0000 / 30.
RETURN PUMP 3	480.0	0.0031 /-127.	1.2939 / 159.	1.3560 / 78.
RETURN PUMP 4	480.0	0.0031 /-127.	1.2939 / 159.	1.3560 / 78.
STARTER RACK (	480.0	0.0033 /-134.	1.2937 / 159.	1.3560 / 78.
STARTER RACK 1	480.0	0.0018 /-131.	1.2941 / 159.	1.3554 / 78.
STARTER RACK (	480.0	0.0004 /-135.	1.2943 / 159.	1.3548 / 78.
STARTER RACK (	480.0	0.0009 /-135.	1.2942 / 159.	1.3550 / 78.
STARTER RACK (	480.0	0.0010 /-135.	1.2942 / 159.	1.3550 / 78.

MCC-CC103 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
RPS 1 ROOF VEN	MCC-CC103		480.	0.4/-139.	0.2/ 41.	0.2/ 41.
BUS-0101	MCC-CC103	CABLE TO MCC-C	480.	6408.4/-112.	542.3/-138.	542.3/-138.
MCC-CC103	PDP103	XFMR-103	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC-CC103	RETURN PUMP 3	CABLE TO RETUR	480.	532.5/ 42.	266.3/-138.	266.3/-138.

MCC-CC103 ========== FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ==========

MCC-CC103	RETURN PUMP 4	CABLE TO RETUR	480.	532.5/	42.	266.3/-138.	266.3/-138.
MCC-CC103	STARTER RACK (	CABLE TO START	480.	7.7/	42.	3.9/-138.	3.9/-138.
MCC-CC103	STARTER RACK 1	CABLE TO START	480.	7.7/	41.	3.8/-139.	3.8/-139.
MCC-CC103	STARTER RACK (	CABLE TO START	480.	0.9/	41.	0.4/-139.	0.4/-139.
MCC-CC103	STARTER RACK (	CABLE TO START	480.	1.5/	41.	0.7/-139.	0.7/-139.
MCC-CC103	STARTER RACK (	CABLE TO START	480.	1.5/	41.	0.7/-139.	0.7/-139.

MCC-CC103A VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 8462.3 / -117. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 23.091 +j 35.848 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.552
SEQUENCE EQUIVALENT IMPEDANCE Z1: 2.620 +j 6.020 (PU)
Z2: 2.620 +j 6.020 (PU)
Z0: 17.852 +j 23.808 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
8608.9	8462.3	8462.3	8462.3	8462.3

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.3103 / 157.2	1.4052 / 78.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
8462.3 /-117.2	0.0 / 0.0	0.0 / 0.0

MCC-CC103A ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
BUS-0101	480.0	0.1038 / -68.	1.2759 / 159.	1.3649 / 77.
PANEL PDP-103A	208.0	0.8113 /-102.	0.7565 / 157.	1.0000 / 30.
RETURN PUMP 1	480.0	0.0365 /-121.	1.3079 / 156.	1.4225 / 78.
RETURN PUMP 2	480.0	0.0365 /-121.	1.3079 / 156.	1.4225 / 78.
RETURN PUMP 5	480.0	0.0239 /-115.	1.3099 / 157.	1.4169 / 78.
RETURN PUMP 6	480.0	0.0145 /-116.	1.3099 / 157.	1.4123 / 78.

MCC-CC103A ========== INI. RMS SYSTEM BRANCH FLOWS (AMPS) ==========
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
BUS-0101	MCC-CC103A	CABLE TO MCC-C	480.	5789.7/-110.	1399.3/-131.	1399.3/-131.
MCC-CC103A	PANEL PDP-103A	XFMR-103A	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC-CC103A	RETURN PUMP 1	CABLE TO RETUR	480.	131.2/ 52.	65.6/-128.	65.6/-128.
MCC-CC103A	RETURN PUMP 2	CABLE TO RETUR	480.	131.2/ 52.	65.6/-128.	65.6/-128.
MCC-CC103A	RETURN PUMP 5	CABLE TO RETUR	480.	1260.0/ 49.	630.0/-131.	630.0/-131.
MCC-CC103A	RETURN PUMP 6	CABLE TO RETUR	480.	1276.9/ 47.	638.5/-133.	638.5/-133.

MCC-CC113 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 4559.9 / -125. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 33.921 +j 71.495 (PU)
THEVENIN IMPEDANCE X/R RATIO: 2.108
SEQUENCE EQUIVALENT IMPEDANCE Z1: 8.026 +j 14.921 (PU)
Z2: 8.026 +j 14.921 (PU)
Z0: 17.869 +j 41.654 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
4785.7	4559.9	4559.9	4559.9	4559.9

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.2427 / 166.3	1.1966 / 75.8

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
4559.9 /-124.6	0.0 / 0.0	0.0 / 0.0

MCC-CC113 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
CL2 PUMPS, NPW	480.0	0.0227 / -84.	1.2392 / 167.	1.1913 / 76.
PANEL PDP113	208.0	0.6909 /-104.	0.7175 / 166.	1.0000 / 30.
STARTER RACK 1	480.0	0.0075 /-142.	1.2404 / 166.	1.1996 / 76.

MCC-CC113 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
CHLORINATED PU	MCC-CC113		480.	85.6/-147.	42.8/ 33.	42.8/ 33.
NPW ROOF VENTI	MCC-CC113		480.	2.8/-147.	1.4/ 33.	1.4/ 33.
CHLORINATED PU	MCC-CC113		480.	85.6/-147.	42.8/ 33.	42.8/ 33.
NPW PUMP 4	MCC-CC113		480.	131.0/-147.	65.5/ 33.	65.5/ 33.
CL2 PUMPS, NPW	MCC-CC113	CABLE TO START	480.	4247.5/-123.	170.1/-147.	170.1/-147.
MCC-CC113	PANEL PDP113	XFMR-PDP113	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
MCC-CC113	STARTER RACK 1	CABLE TO START	480.	35.2/ 34.	17.6/-146.	17.6/-146.

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 MCC-G1          VOLTAGE BASE LL:                  480.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:   1728.5 /  -89. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:  182.844 +j 100.750 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     0.551
                 SEQUENCE EQUIVALENT IMPEDANCE Z1:  32.108 +j  24.656 (PU)
                                               Z2:  32.108 +j  24.656 (PU)
                                               Z0: 118.628 +j  51.438 (PU)

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     1728.5      1728.5      1728.5      1728.5      1728.5

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     1.2088 /  160.1     1.3285 /   74.1

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                  1728.5 / -88.9        0.0 /   0.0         0.0 /   0.0

 MCC-G1          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANEL DP47        480.0  0.0223 / -75.  1.2040 / 160.  1.3204 /  74.
   MCC-G1          ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
NaOH PUMP 1    MCC-G1                          480.      4.8/-136.      2.4/  44.      2.4/  44.
NaOH PUMP 2    MCC-G1                          480.      4.8/-136.      2.4/  44.      2.4/  44.
PANEL DP47     MCC-G1         CABLE TO MCC-G   480.   1721.9/ -89.      4.8/-136.      4.8/-136.

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 MV MAIN SWGR   VOLTAGE BASE LL:                4160.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   7578.2 / -113. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:    0.678 +j   5.452 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     8.040
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   0.236 +j   1.612 (PU)
                                              Z2:   0.236 +j   1.612 (PU)
                                              Z0:   0.206 +j   2.228 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   10488.2      7903.8      7647.6      7581.3      7578.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.0754 / -154.6     1.0439 /   95.8

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 7578.2 /-112.9        0.0 /   0.0         0.0 /   0.0

 MV MAIN SWGR   ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-0168         4160.0  0.0277 / -57.  1.0745 /-154.  1.0312 /  95.
   BUS-0169         4160.0  0.0088 / -71.  1.0749 /-155.  1.0482 /  96.
   BUS-0170         4160.0  0.0026 / -65.  1.0754 /-155.  1.0452 /  96.
   BUS-0171         4160.0  0.0127 / -71.  1.0747 /-155.  1.0501 /  96.
   MV MAIN SWGR   ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-0168       MV MAIN SWGR   CABLE TO MV SW  4160.   5851.0/-114.    864.7/-110.    864.7/-110.
MV MAIN SWGR   BUS-0169       CABLE TO TX-2A  4160.    525.3/  67.    262.6/-113.    262.6/-113.
MV MAIN SWGR   BUS-0170       CABLE TO TX-1   4160.    764.4/  73.    382.2/-107.    382.2/-107.
MV MAIN SWGR   BUS-0171       CABLE TO TX-3   4160.    442.1/  67.    221.1/-113.    221.1/-113.

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 NAOH RECIRC PU VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1497.4 /  -86. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  216.563 +j 105.685 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.488
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  38.141 +j  26.155 (PU)
                                              Z2:  38.141 +j  26.155 (PU)
                                              Z0: 140.280 +j  53.376 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1497.4      1497.4      1497.4      1497.4      1497.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2152 /  160.0     1.3300 /   74.4

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1497.4 / -86.0        0.0 /   0.0         0.0 /   0.0

 NAOH RECIRC PU ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   PANEL DP47        480.0  0.1635 / -78.  1.1838 / 163.  1.2650 /  73.
   NAOH RECIRC PU ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
NAOH RECIRC PU NAOH RECIRC PU                  480.     76.8/-136.     38.4/  44.     38.4/  44.
PANEL DP47     NAOH RECIRC PU CABLE TO NAOH    480.   1449.1/ -84.     38.4/-136.     38.4/-136.

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 NAOH RECIRC PU VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1531.0 /  -86. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  211.116 +j 104.798 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.496
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  37.162 +j  25.894 (PU)
                                              Z2:  37.162 +j  25.894 (PU)
                                              Z0: 136.792 +j  53.010 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1531.0      1531.0      1531.0      1531.0      1531.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2143 /  160.0     1.3299 /   74.4

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1531.0 / -86.4        0.0 /   0.0         0.0 /   0.0

 NAOH RECIRC PU ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   PANEL DP47        480.0  0.1433 / -78.  1.1870 / 163.  1.2728 /  73.
   NAOH RECIRC PU ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
NAOH RECIRC PU NAOH RECIRC PU                   480.     76.9/-136.     38.4/  44.     38.4/  44.
PANEL DP47     NAOH RECIRC PU CABLE TO NAOH    480.   1482.1/ -84.     38.4/-136.     38.4/-136.

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 PANEL (DIGESTE VOLTAGE BASE LL:                 480.0 (VOLTS)
               INI. SYM. RMS FAULT CURRENT:   2324.0 / -100. ( AMPS/DEG )
               THEVENIN EQUIVALENT IMPEDANCE:  118.423 +j 100.419 (PU)
               THEVENIN IMPEDANCE X/R RATIO:     0.848
               SEQUENCE EQUIVALENT IMPEDANCE Z1:  23.210 +j  23.273 (PU)
                                             Z2:  23.210 +j  23.273 (PU)
                                             Z0:  72.004 +j  53.873 (PU)

                ASYM    RMS   INTERRUPTING AMPS
               1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   2325.4      2324.0      2324.0      2324.0      2324.0

               INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               0.0000 /    0.0     1.1887 /  163.2     1.2635 /   73.3

               INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
                2324.0 /-100.3        0.0 /   0.0         0.0 /   0.0

 PANEL (DIGESTE ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                   FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                      ---PHASE A---     ---PHASE B---     ---PHASE C---
   BUS-0234          480.0  0.0000 /   0.  1.1887 / 163.  1.2635 /  73.
   PANEL (DIGESTE ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
BUS-0234       PANEL (DIGESTE ATS-DIGESTER     480.   2324.0/-100.      0.0/   0.      0.0/   0.

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 PANEL DP2A (IN VOLTAGE BASE LL:                 480.0 (VOLTS)
               INI. SYM. RMS FAULT CURRENT:  26624.0 / -129. ( AMPS/DEG )
               THEVENIN EQUIVALENT IMPEDANCE:    4.780 +j  12.682 (PU)
               THEVENIN IMPEDANCE X/R RATIO:     2.653
               SEQUENCE EQUIVALENT IMPEDANCE Z1:   1.143 +j   4.061 (PU)
                                             Z2:   1.143 +j   4.061 (PU)
                                             Z0:   2.494 +j   4.560 (PU)

                ASYM    RMS   INTERRUPTING AMPS
               1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                  29010.4     26626.0     26624.0     26624.0     26624.0

               INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               0.0000 /    0.0     0.9705 /  174.1     1.1045 /   61.0

               INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               26624.0 /-129.3        0.0 /   0.0         0.0 /   0.0

 PANEL DP2A (IN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                   FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                      ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2A (CONT 2    480.0  0.1031 /-115.  0.9874 / 176.  1.0619 /  61.
   PANEL DP2A (IN ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC-2A (CONT 2 PANEL DP2A (IN CABLE TO PANEL   480.  26624.0/-129.      0.0/-129.      0.0/-129.

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 PANEL DP2B (IN VOLTAGE BASE LL:                 480.0 (VOLTS)
               INI. SYM. RMS FAULT CURRENT:  11506.0 / -118. ( AMPS/DEG )
               THEVENIN EQUIVALENT IMPEDANCE:   16.535 +j  26.648 (PU)
               THEVENIN IMPEDANCE X/R RATIO:     1.612
               SEQUENCE EQUIVALENT IMPEDANCE Z1:   3.323 +j   7.112 (PU)
                                             Z2:   3.323 +j   7.112 (PU)
                                             Z0:   9.889 +j  12.424 (PU)

                ASYM    RMS   INTERRUPTING AMPS
               1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                  11736.9     11506.0     11506.0     11506.0     11506.0

               INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               0.0000 /    0.0     1.0832 /  165.9     1.2167 /   68.3

               INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               11506.0 /-118.2       0.0 /   0.0         0.0 /   0.0

 PANEL DP2B (IN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                   FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                      ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2B (CONT 2    480.0  0.0445 /-104.  1.0843 / 167.  1.1983 /  68.
   PANEL DP2B (IN ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC-2B (CONT 2 PANEL DP2B (IN CABLE TO PANEL   480.  11506.0/-118.      0.0/-118.      0.0/-118.

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 PANEL DP2C (IN VOLTAGE BASE LL:                 480.0 (VOLTS)
               INI. SYM. RMS FAULT CURRENT:   8070.3 / -115. ( AMPS/DEG )
               THEVENIN EQUIVALENT IMPEDANCE:   25.380 +j  36.812 (PU)
               THEVENIN IMPEDANCE X/R RATIO:     1.450
               SEQUENCE EQUIVALENT IMPEDANCE Z1:   4.902 +j   9.307 (PU)
                                             Z2:   4.902 +j   9.307 (PU)
                                             Z0:  15.577 +j  18.197 (PU)

                ASYM    RMS   INTERRUPTING AMPS
               1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   8175.6      8070.3      8070.3      8070.3      8070.3

               INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               0.0000 /    0.0     1.1184 /  164.4     1.2413 /   70.1

               INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
                8070.3 /-115.4        0.0 /   0.0         0.0 /   0.0

 PANEL DP2C (IN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                   FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                      ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-2C (CONT 2    480.0  0.0312 /-101.  1.1182 / 165.  1.2284 /  70.
   PANEL DP2C (IN ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC-2C (CONT 2 PANEL DP2C (IN CABLE TO PANEL   480.   8070.3/-115.      0.0/-115.      0.0/-115.

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PANEL DP47 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 1766.4 / -89. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 178.354 +j 99.602 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.558
SEQUENCE EQUIVALENT IMPEDANCE Z1: 31.244 +j 24.395 (PU)
Z2: 31.244 +j 24.395 (PU)
Z0: 115.865 +j 50.813 (PU)

ASYM RMS INTERRUPTING AMPS				
1/2 CYCLES	2 CYCLES	3 CYCLES	5 CYCLES	8 CYCLES
1766.4	1766.4	1766.4	1766.4	1766.4

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.2078 / 160.0	1.3294 / 74.1

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
1766.4 / -89.2	0.0 / 0.0	0.0 / 0.0

PANEL DP47 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC-G1	480.0	0.0001 /-119.	1.2078 / 160.	1.3294 / 74.
SWBD-2B	480.0	0.9701 / -63.	1.0016 / 180.	1.0017 / 60.
NAOH RECIRC PU	480.0	0.0050 /-127.	1.2071 / 160.	1.3317 / 74.
NAOH RECIRC PU	480.0	0.0043 /-127.	1.2072 / 160.	1.3314 / 74.

PANEL DP47 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

	BRANCH NAME		VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
PANEL DP47	MCC-G1	CABLE TO MCC-G	480.	9.6/ 45.	4.8/-135.	4.8/-135.
SWBD-2B	PANEL DP47	CABLE TO PANEL	480.	1655.7/ -85.	82.2/-135.	82.2/-135.
PANEL DP47	NAOH RECIRC PU	CABLE TO NAOH	480.	77.4/ 45.	38.7/-135.	38.7/-135.
PANEL DP47	NAOH RECIRC PU	CABLE TO NAOH	480.	77.4/ 45.	38.7/-135.	38.7/-135.

PANEL JR1A VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 10331.9 / -110. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 22.678 +j 26.561 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.171
SEQUENCE EQUIVALENT IMPEDANCE Z1: 6.229 +j 6.658 (PU)
Z2: 6.229 +j 6.658 (PU)
Z0: 10.221 +j 13.244 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
10380.1	10331.9	10331.9	10331.9	10331.9

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.1523 / 171.5	1.0976 / 70.8

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
10331.9 /-109.5	0.0 / 0.0	0.0 / 0.0

PANEL JR1A ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
PANEL JRM	480.0	0.0087 / -89.	1.1520 / 172.	1.0942 / 71.
PANEL JR1B	480.0	0.0000 / 0.	1.1523 / 171.	1.0976 / 71.

PANEL JR1A ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
PANEL JRM	PANEL JR1A	CABLE TO PANEL	480.	10331.9/-110.	0.0/-110.	0.0/-110.
PANEL JR1A	PANEL JR1B	PANEL JR1B BUS	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

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 PANEL JR1B     VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:  10081.2 / -109. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   23.411 +j  27.076 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.157
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   6.321 +j   6.728 (PU)
                                              Z2:   6.321 +j   6.728 (PU)
                                              Z0:  10.769 +j  13.620 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                   10125.2     10081.2     10081.2     10081.2     10081.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1553 /  171.0     1.1064 /   71.1

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                10081.2 /-109.2       0.0 /   0.0         0.0 /   0.0

 PANEL JR1B     ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANEL JR1A        480.0  0.0250 / -74.  1.1492 / 172.  1.0937 /  71.
   BKR TO INDUCTI    480.0  0.0000 /   0.  1.1553 / 171.  1.1064 /  71.
   PANEL JR1B     ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
PANEL JR1A     PANEL JR1B     PANEL JR1B BUS   480.  10081.2/-109.      0.0/-109.      0.0/-109.
PANEL JR1B     BKR TO INDUCTI CABLE TO INDUC   480.      0.0/   0.      0.0/   0.      0.0/   0.

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 PANEL JR2      VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5730.8 /  -96. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   51.012 +j  36.912 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.724
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  11.729 +j   8.978 (PU)
                                              Z2:  11.729 +j   8.978 (PU)
                                              Z0:  27.555 +j  18.955 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5731.8      5730.8      5730.8      5730.8      5730.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1627 /  166.8     1.1907 /   72.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5730.8 / -95.9        0.0 /   0.0         0.0 /   0.0

 PANEL JR2      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANEL JRM         480.0  0.4839 / -76.  1.0995 / 176.  1.0207 /  67.
   JR2R              208.0  0.6874 /-108.  0.6713 / 167.  1.0000 /  30.
   PANEL JR2      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
PANEL JRM      PANEL JR2      CABLE TO PANEL   480.   5730.8/ -96.      0.0/ -96.      0.0/ -96.
PANEL JR2      JR2R           XFMR - JR2R      480.      0.0/   0.      0.0/   0.      0.0/   0.

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PANEL JRM VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 10410.9 / -110. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 22.392 +j 26.456 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.181
SEQUENCE EQUIVALENT IMPEDANCE Z1: 6.173 +j 6.635 (PU)
Z2: 6.173 +j 6.635 (PU)
Z0: 10.046 +j 13.187 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
10461.8	10410.9	10410.9	10410.9	10410.9

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.1526 / 171.6	1.0959 / 70.8

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
10410.9 /-109.8	0.0 / 0.0	0.0 / 0.0

PANEL JRM ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC (HYPO)	480.0	0.0184 / -61.	1.1492 / 172.	1.0907 / 71.
PANEL JR1R	208.0	0.6327 /-109.	0.6655 / 172.	1.0000 / 30.
PANEL JR1A	480.0	0.0000 / 0.	1.1526 / 172.	1.0959 / 71.
PANEL JR2	480.0	0.0000 / 0.	1.1526 / 172.	1.0959 / 71.

PANEL JRM ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
MCC (HYPO)	PANEL JRM	CABLE TO PANEL	480.	10410.9/-110.	0.0/-110.	0.0/-110.
PANEL JRM	PANEL JR1R	XFMR - JR1R	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANEL JRM	PANEL JR1A	CABLE TO PANEL	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANEL JRM	PANEL JR2	CABLE TO PANEL	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

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 PANEL P5B      VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   7471.1 / -119. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   24.781 +j  41.457 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.673
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   4.411 +j   9.478 (PU)
                                              Z2:   4.411 +j   9.478 (PU)
                                              Z0:  15.960 +j  22.501 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    7643.7      7471.1      7471.1      7471.1      7471.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1697 /  163.1     1.2649 /   72.5

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 7471.1 /-119.1       0.0 /   0.0         0.0 /   0.0

 PANEL P5B      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-5B            480.0  0.0261 / -81.  1.1650 / 163.  1.2605 /  72.
   PANEL P5B      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC-5B         PANEL P5B    CABLE TO PANEL   480.   7471.1/-119.      0.0/-119.      0.0/-119.

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PANEL P5C VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 5857.0 / -107. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 41.861 +j 45.203 (PU)
THEVENIN IMPEDANCE X/R RATIO: 1.080
SEQUENCE EQUIVALENT IMPEDANCE Z1: 7.643 +j 10.321 (PU)
Z2: 7.643 +j 10.321 (PU)
Z0: 26.576 +j 24.562 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
5874.4	5857.0	5857.0	5857.0	5857.0

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.1865 / 162.2	1.2825 / 73.2

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
5857.0 /-107.2	0.0 / 0.0	0.0 / 0.0

PANEL P5C ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MCC-5B	480.0	0.3023 / -93.	1.1676 / 168.	1.1601 / 72.
PANEL L5B0	208.0	0.7404 /-107.	0.6850 / 162.	1.0000 / 30.
SCREEN 1 CP01-	480.0	0.0000 / 0.	1.1865 / 162.	1.2825 / 73.
SCREEN 3 CP01-	480.0	0.0000 / 0.	1.1865 / 162.	1.2825 / 73.

PANEL P5C ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
MCC-5B	PANEL P5C	CABLE TO PANEL	480.	5857.0/-107.	0.0/ 3.	0.0/ 3.
PANEL P5C	PANEL L5B0	TX-5C	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANEL P5C	SCREEN 1 CP01-	CABLE TO SCREE	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANEL P5C	SCREEN 3 CP01-	CABLE TO SCREE	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

```
 PANEL PP-1 (IN VOLTAGE BASE LL:                 480.0 (VOLTS)
               INI. SYM. RMS FAULT CURRENT:  24970.8 / -136. ( AMPS/DEG )
               THEVENIN EQUIVALENT IMPEDANCE:    3.574 +j  14.002 (PU)
               THEVENIN IMPEDANCE X/R RATIO:     3.918
               SEQUENCE EQUIVALENT IMPEDANCE Z1:   0.875 +j   4.363 (PU)
                                             Z2:   0.875 +j   4.363 (PU)
                                             Z0:   1.823 +j   5.276 (PU)

                ASYM    RMS   INTERRUPTING AMPS
               1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                  29569.5     25011.6     24972.4     24970.8     24970.8

               INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               0.0000 /    0.0     1.0014 /  174.8     1.0811 /   62.3

               INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                       AT TIME =     0.5 CYCLES
               ---PHASE A---       ---PHASE B---       ---PHASE C---
               24970.8 /-135.7        0.0 /   0.0         0.0 /   0.0

 PANEL PP-1 (IN ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                   FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                      ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (SLUDGE BL    480.0  0.0012 /-101.  1.0015 / 175.  1.0804 /  62.
   PANEL PP-1 (IN ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (SLUDGE BL PANEL PP-1 (IN PANEL PP1 BUSW   480.  24970.8/-136.      0.0/-136.      0.0/-136.

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 PANEL PP1      VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5337.2 /  -97. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   53.748 +j  41.013 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.763
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  10.471 +j  10.261 (PU)
                                              Z2:  10.471 +j  10.261 (PU)
                                              Z0:  32.806 +j  20.491 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5338.6      5337.2      5337.2      5337.2      5337.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1609 /  162.6     1.2748 /   72.1

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5337.2 / -97.3       0.0 /   0.0         0.0 /   0.0

 PANEL PP1      ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (DEWATERIN    480.0  0.7405 / -73.  1.0461 / 177.  1.0273 /  64.
   PANEL PP1      ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (DEWATERIN PANEL PP1      CABLE TO PANEL   480.   5337.2/ -97.      0.0/ -97.      0.0/ -97.

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PANELBOARD A VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 33082.2 / -136. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 2.669 +j 10.576 (PU)
THEVENIN IMPEDANCE X/R RATIO: 3.963
SEQUENCE EQUIVALENT IMPEDANCE Z1: 0.734 +j 3.140 (PU)
Z2: 0.734 +j 3.140 (PU)
Z0: 1.201 +j 4.297 (PU)

ASYM RMS INTERRUPTING AMPS

1/2 CYCLES	2 CYCLES	3 CYCLES	5 CYCLES	8 CYCLES
39278.7	33140.4	33084.6	33082.2	33082.2

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.0485 / 174.2	1.0740 / 64.8

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
33082.2 /-135.8	0.0 / 0.0	0.0 / 0.0

PANELBOARD A ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MAIN MCC	480.0	0.0339 / -86.	1.0479 / 175.	1.0623 / 65.
STARTER RACK 1	480.0	0.0501 /-116.	1.0401 / 173.	1.0990 / 65.
STARTER RACK 9	480.0	0.0125 /-126.	1.0454 / 174.	1.0801 / 65.
MCC (SCUM BLDG	480.0	0.0131 /-131.	1.0448 / 174.	1.0803 / 65.
STARTER RACK (	480.0	0.0000 / 0.	1.0485 / 174.	1.0740 / 65.
PANEL LP-500	208.0	0.6200 /-115.	0.6054 / 174.	1.0000 / 30.

PANELBOARD A ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
MAIN MCC	PANELBOARD A	CABLE TO PANEL	480.	32761.3/-136.	160.8/-140.	160.8/-140.
PANELBOARD A	STARTER RACK 1	CABLE TO START	480.	249.9/ 41.	124.9/-139.	124.9/-139.
PANELBOARD A	STARTER RACK 9	CABLE TO START	480.	40.0/ 38.	20.0/-142.	20.0/-142.
PANELBOARD A	MCC (SCUM BLDG	CABLE TO MCC (	480.	31.8/ 38.	15.9/-142.	15.9/-142.
PANELBOARD A	STARTER RACK (	CABLE TO START	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANELBOARD A	PANEL LP-500	XFMR-LP500	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

PANELBOARD B VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 33077.1 / -136. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 2.670 +j 10.577 (PU)
THEVENIN IMPEDANCE X/R RATIO: 3.962
SEQUENCE EQUIVALENT IMPEDANCE Z1: 0.734 +j 3.140 (PU)
Z2: 0.734 +j 3.140 (PU)
Z0: 1.201 +j 4.297 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
39270.5	33135.2	33079.5	33077.1	33077.1

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.0485 / 174.2	1.0739 / 64.8

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
33077.1 /-135.8	0.0 / 0.0	0.0 / 0.0

PANELBOARD B ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MAIN MCC	480.0	0.0339 / -86.	1.0479 / 175.	1.0623 / 65.
PANEL LP-D	208.0	0.6200 /-115.	0.6054 / 174.	1.0000 / 30.
PANEL (ADMIN)	208.0	0.6200 /-115.	0.6054 / 174.	1.0000 / 30.
STARTER RACK 1	480.0	0.0094 /-126.	1.0461 / 174.	1.0785 / 65.

PANELBOARD B ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
CRANE	PANELBOARD B		480.	104.6/-143.	52.3/ 37.	52.3/ 37.
SEWAGE INJECTO	PANELBOARD B		480.	42.6/-143.	21.3/ 37.	21.3/ 37.
AIR COMPRESSOR	PANELBOARD B		480.	11.1/-143.	5.6/ 37.	5.6/ 37.
MAIN MCC	PANELBOARD B	CABLE TO PANEL	480.	32882.4/-136.	98.2/-143.	98.2/-143.
PANELBOARD B	PANEL LP-D	XFMR-LPD	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANELBOARD B	PANEL (ADMIN)	XFMR - ADMIN	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANELBOARD B	STARTER RACK 1	CABLE TO START	480.	38.0/ 38.	19.0/-142.	19.0/-142.

PANELBOARD C VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 33087.2 / -136. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 2.671 +j 10.574 (PU)
THEVENIN IMPEDANCE X/R RATIO: 3.958
SEQUENCE EQUIVALENT IMPEDANCE Z1: 0.735 +j 3.141 (PU)
Z2: 0.735 +j 3.141 (PU)
Z0: 1.202 +j 4.292 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
39273.4	33145.0	33089.7	33087.2	33087.2

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.0482 / 174.2	1.0737 / 64.8

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
33087.2 /-135.8	0.0 / 0.0	0.0 / 0.0

PANELBOARD C ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
MAIN MCC	480.0	0.0338 / -86.	1.0478 / 175.	1.0622 / 65.
PANEL LP-400	208.0	0.6199 /-115.	0.6052 / 174.	1.0000 / 30.
STARTER RACK 1	480.0	0.0935 / -71.	1.0081 / 179.	1.0172 / 61.
BUS-0085	480.0	0.0066 /-130.	1.0463 / 174.	1.0769 / 65.

PANELBOARD C ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

	BRANCH NAME		VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
ROOF-TOP A/C	PANELBOARD C		480.	38.3/-143.	19.1/ 37.	19.1/ 37.
MAIN MCC	PANELBOARD C	CABLE TO PANEL	480.	32917.2/-136.	116.1/ 111.	116.1/ 111.
PANELBOARD C	PANEL LP-400	XFMR-LP400	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
PANELBOARD C	STARTER RACK 1	CABLE TO START	480.	148.0/ 86.	127.6/ 98.	127.6/ 98.
PANELBOARD C	BUS-0085	CABLE TO START	480.	22.2/ 37.	11.1/-143.	11.1/-143.

```
 POLYMER SYSTEM VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5816.7 /  -91. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   53.319 +j  31.710 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.595
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  10.386 +j   8.175 (PU)
                                              Z2:  10.386 +j   8.175 (PU)
                                              Z0:  32.548 +j  15.360 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5816.9      5816.7      5816.7      5816.7      5816.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1677 /  162.1     1.2850 /   72.4

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5816.7 / -90.7       0.0 /   0.0         0.0 /   0.0

 POLYMER SYSTEM ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (DEWATERIN    480.0  0.7506 / -77.  1.0567 / 177.  1.0218 /  64.
   POLYMER SYSTEM ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC (DEWATERIN POLYMER SYSTEM CABLE TO POLY    480.   5816.7/ -91.      0.0/ -91.      0.0/ -91.

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 RETURN PUMP 1  VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1825.8 /  -79. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  187.388 +j  62.807 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.335
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  32.450 +j  14.008 (PU)
                                              Z2:  32.450 +j  14.008 (PU)
                                              Z0: 122.487 +j  34.791 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1825.8      1825.8      1825.8      1825.8      1825.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2672 /  160.4     1.3274 /   76.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1825.8 / -78.5       0.0 /   0.0         0.0 /   0.0

 RETURN PUMP 1  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103A        480.0  0.8501 / -69.  1.1058 / 177.  1.0085 /  67.
   RETURN PUMP 1  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
RETURN SLUDGE  RETURN PUMP 1                   480.    157.7/-139.     78.9/  41.     78.9/  41.
MCC-CC103A     RETURN PUMP 1  CABLE TO RETUR   480.   1754.6/ -74.     78.9/-139.     78.9/-139.

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 RETURN PUMP 2  VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1825.8 /  -79. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  187.388 +j  62.807 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.335
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  32.450 +j  14.008 (PU)
                                              Z2:  32.450 +j  14.008 (PU)
                                              Z0: 122.487 +j  34.791 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1825.8      1825.8      1825.8      1825.8      1825.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2672 /  160.4     1.3274 /   76.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1825.8 / -78.5        0.0 /   0.0         0.0 /   0.0

 RETURN PUMP 2  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103A        480.0  0.8501 / -69.  1.1058 / 177.  1.0085 /  67.
   RETURN PUMP 2  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
RETURN SLUDGE  RETURN PUMP 2                   480.    157.7/-139.     78.9/  41.     78.9/  41.
MCC-CC103A     RETURN PUMP 2  CABLE TO RETUR   480.   1754.6/ -74.     78.9/-139.     78.9/-139.

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 RETURN PUMP 3  VOLTAGE BASE LL:                  480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   7035.2 / -113. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   30.965 +j  40.889 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.320
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   4.526 +j   7.279 (PU)
                                              Z2:   4.526 +j   7.279 (PU)
                                              Z0:  21.913 +j  26.331 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    7095.3      7035.2      7035.2      7035.2      7035.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2938 /  159.3     1.3540 /   77.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 7035.2 /-112.9        0.0 /   0.0         0.0 /   0.0

 RETURN PUMP 3  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103         480.0  0.0681 /-102.  1.2919 / 161.  1.3231 /  78.
   RETURN PUMP 3  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
RETURN SLUDGE  RETURN PUMP 3                   480.    534.8/-139.    267.4/  41.    267.4/  41.
MCC-CC103      RETURN PUMP 3  CABLE TO RETUR   480.   6559.4/-111.    267.4/-139.    267.4/-139.

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 RETURN PUMP 4  VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   7035.2 / -113. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   30.965 +j  40.889 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.320
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   4.526 +j   7.279 (PU)
                                              Z2:   4.526 +j   7.279 (PU)
                                              Z0:  21.913 +j  26.331 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    7095.3      7035.2      7035.2      7035.2      7035.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2938 /  159.3     1.3540 /   77.7

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 7035.2 /-112.9        0.0 /   0.0         0.0 /   0.0

 RETURN PUMP 4  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103         480.0  0.0681 /-102.  1.2919 / 161.  1.3231 /  78.
   RETURN PUMP 4  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
RETURN SLUDGE  RETURN PUMP 4                   480.    534.8/-139.    267.4/  41.    267.4/  41.
MCC-CC103      RETURN PUMP 4  CABLE TO RETUR   480.   6559.4/-111.    267.4/-139.    267.4/-139.

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 RETURN PUMP 5  VOLTAGE BASE LL:                  480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   7163.2 / -110. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   32.146 +j  38.785 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.207
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   3.693 +j   6.708 (PU)
                                              Z2:   3.693 +j   6.708 (PU)
                                              Z0:  24.759 +j  25.370 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    7202.3      7163.2      7163.2      7163.2      7163.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.3100 /  156.6     1.4186 /   77.9

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 7163.2 /-110.3        0.0 /   0.0         0.0 /   0.0

 RETURN PUMP 5  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103A        480.0  0.2085 / -94.  1.2916 / 161.  1.3116 /  78.
   RETURN PUMP 5  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
RETURN SLUDGE  RETURN PUMP 5                   480.   1284.4/-133.    642.2/  47.    642.2/  47.
MCC-CC103A     RETURN PUMP 5  CABLE TO RETUR   480.   6003.2/-106.    642.2/-133.    642.2/-133.

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```
 RETURN PUMP 6  VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   7642.7 / -113. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   28.555 +j  37.601 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.317
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   3.279 +j   6.428 (PU)
                                              Z2:   3.279 +j   6.428 (PU)
                                              Z0:  21.996 +j  24.745 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    7707.1      7642.7      7642.7      7642.7      7642.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.3100 /  156.8     1.4131 /   77.9

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 7642.7 /-112.8        0.0 /   0.0         0.0 /   0.0

 RETURN PUMP 6  ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103A        480.0  0.1341 / -97.  1.3001 / 160.  1.3449 /  78.
   RETURN PUMP 6  ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
RETURN SLUDGE  RETURN PUMP 6                   480.   1291.4/-134.    645.7/  46.    645.7/  46.
MCC-CC103A     RETURN PUMP 6  CABLE TO RETUR   480.   6456.7/-109.    645.7/-134.    645.7/-134.

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```
 SCREEN 1 CP01- VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5857.0 / -107. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   41.861 +j  45.203 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.080
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   7.643 +j  10.321 (PU)
                                              Z2:   7.643 +j  10.321 (PU)
                                              Z0:  26.576 +j  24.562 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5874.4      5857.0      5857.0      5857.0      5857.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1865 /  162.2     1.2825 /   73.2

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5857.0 /-107.2        0.0 /   0.0         0.0 /   0.0

 SCREEN 1 CP01- ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANEL P5C         480.0  0.0000 /   0.  1.1865 / 162.  1.2825 /  73.
   SCREEN 1 CP01- ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
PANEL P5C      SCREEN 1 CP01- CABLE TO SCREE   480.   5857.0/-107.      0.0/-107.      0.0/-107.

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```
 SCREEN 2 CP01- VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   7657.7 / -120. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   23.795 +j  40.672 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.709
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   4.136 +j   9.305 (PU)
                                              Z2:   4.136 +j   9.305 (PU)
                                              Z0:  15.524 +j  22.061 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    7849.3      7657.7      7657.7      7657.7      7657.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1674 /  162.9     1.2696 /   72.4

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 7657.7 /-119.7       0.0 /   0.0         0.0 /   0.0

 SCREEN 2 CP01- ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-5B            480.0  0.0000 /   0.  1.1674 / 163.  1.2696 /  72.
   SCREEN 2 CP01- ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC-5B         SCREEN 2 CP01- CABLE TO SCREE   480.   7657.7/-120.      0.0/-120.      0.0/-120.

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 SCREEN 3 CP01- VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   5857.0 / -107. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   41.861 +j  45.203 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     1.080
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   7.643 +j  10.321 (PU)
                                              Z2:   7.643 +j  10.321 (PU)
                                              Z0:  26.576 +j  24.562 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    5874.4      5857.0      5857.0      5857.0      5857.0

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1865 /  162.2     1.2825 /   73.2

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 5857.0 /-107.2       0.0 /   0.0         0.0 /   0.0

 SCREEN 3 CP01- ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANEL P5C         480.0  0.0000 /   0.  1.1865 / 162.  1.2825 /  73.
   SCREEN 3 CP01- ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                             FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                            BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
PANEL P5C      SCREEN 3 CP01- CABLE TO SCREE   480.   5857.0/-107.      0.0/-107.      0.0/-107.

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 STARTER RACK ( VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1932.8 /  -73. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  182.096 +j  41.175 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.226
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  35.565 +j   9.997 (PU)
                                              Z2:  35.565 +j   9.997 (PU)
                                              Z0: 110.967 +j  21.180 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1932.8      1932.8      1932.8      1932.8      1932.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2332 /  162.6     1.2755 /   75.3

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1932.8 / -72.7       0.0 /   0.0         0.0 /   0.0

 STARTER RACK ( ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANELBOARD A      480.0  0.9750 / -63.  1.0067 / 180.  0.9972 /  60.
   STARTER RACK ( ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
PANELBOARD A   STARTER RACK ( CABLE TO START   480.   1932.8/ -73.      0.0/   0.      0.0/   0.

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STARTER RACK (VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 2903.3 / -104. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 89.348 +j 86.394 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.967
SEQUENCE EQUIVALENT IMPEDANCE Z1: 14.930 +j 19.331 (PU)
Z2: 14.930 +j 19.331 (PU)
Z0: 59.488 +j 47.731 (PU)

ASYM RMS INTERRUPTING AMPS				
1/2 CYCLES	2 CYCLES	3 CYCLES	5 CYCLES	8 CYCLES
2907.7	2903.3	2903.3	2903.3	2903.3

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.2042 / 160.4	1.3208 / 73.9

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
2903.3 /-104.0	0.0 / 0.0	0.0 / 0.0

STARTER RACK (==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
STARTER RACK 1	480.0	0.0151 /-125.	1.2023 / 160.	1.3279 / 74.
BUS-0162	208.0	0.7625 /-106.	0.6953 / 160.	1.0000 / 30.
BUS-0238	480.0	0.1279 / -57.	1.1697 / 161.	1.2986 / 72.

STARTER RACK (================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
RAW SLUDGE PUM STARTER RACK (	480.	48.6/-136.	24.3/ 44.	24.3/ 44.
DIGESTER SUMP STARTER RACK (	480.	4.9/-136.	2.4/ 44.	2.4/ 44.
RAW SLUDGE PUM STARTER RACK (	480.	48.6/-136.	24.3/ 44.	24.3/ 44.
SLUDGE RECIRC STARTER RACK (	480.	48.6/-136.	24.3/ 44.	24.3/ 44.
PRIMARY PUMP 3 STARTER RACK (	480.	25.4/-136.	12.7/ 44.	12.7/ 44.
MOV 1&2 SLDG T STARTER RACK (	480.	4.9/-136.	2.4/ 44.	2.4/ 44.
SLUDGE RECIRC STARTER RACK (	480.	48.6/-136.	24.3/ 44.	24.3/ 44.
WEMCO PUMP (UN STARTER RACK (	480.	62.4/-136.	31.2/ 44.	31.2/ 44.
VALVE ACTUATOR STARTER RACK (	480.	4.9/-136.	2.4/ 44.	2.4/ 44.
VALVE ACTUATOR STARTER RACK (	480.	4.9/-136.	2.4/ 44.	2.4/ 44.

STARTER RACK (================ FIRST BRANCH SYSTEM BRANCH FLOWS (AMPS) ================

STARTER RACK (	STARTER RACK 1	CABLE TO START	480.	86.0/ 46.	43.0/-134.	43.0/-134.
STARTER RACK (	BUS-0162	XFMR - DIGESTE	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
BUS-0238	STARTER RACK (	CABLE TO START	480.	2580.9/-100.	193.7/-136.	193.7/-136.

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 STARTER RACK ( VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   4510.8 / -125. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   33.767 +j  72.520 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     2.148
                SEQUENCE EQUIVALENT IMPEDANCE Z1:   7.991 +j  15.112 (PU)
                                              Z2:   7.991 +j  15.112 (PU)
                                              Z0:  17.784 +j  42.296 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    4746.5      4510.8      4510.8      4510.8      4510.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2436 /  166.3     1.1975 /   75.9

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 4510.8 /-125.0       0.0 /   0.0         0.0 /   0.0

 STARTER RACK ( ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   CL2 PUMPS, NPW    480.0  0.0315 / -63.  1.2349 / 167.  1.1908 /  75.
   PANEL LP (NPW)    208.0  0.6914 /-104.  0.7180 / 166.  1.0000 /  30.
   STARTER RACK ( ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
NPW WATER PUMP STARTER RACK (                 480.    130.7/-147.     65.4/  33.     65.4/  33.
NPW WATER PUMP STARTER RACK (                 480.    130.7/-147.     65.4/  33.     65.4/  33.
CL2 PUMPS, NPW STARTER RACK ( CABLE TO MCC-C   480.   4269.8/-124.    130.7/-147.    130.7/-147.
STARTER RACK ( PANEL LP (NPW) XFMR-LP(NPW)     480.      0.0/   0.      0.0/   0.      0.0/   0.

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 STARTER RACK ( VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1215.1 /  -71. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  291.459 +j  56.865 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.195
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  55.167 +j  10.872 (PU)
                                              Z2:  55.167 +j  10.872 (PU)
                                              Z0: 181.124 +j  35.121 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1215.1      1215.1      1215.1      1215.1      1215.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2715 /  162.9     1.2729 /   77.1

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1215.1 / -71.0       0.0 /   0.0         0.0 /   0.0

 STARTER RACK ( ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-CC103          480.0  0.8901 / -67.  1.0778 / 178.  0.9902 /  65.
   STARTER RACK ( ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
SCRAPER DRIVE  STARTER RACK (                  480.      1.0/-144.      0.5/  36.      0.5/  36.
MCC-CC103      STARTER RACK ( CABLE TO START   480.   1214.9/ -71.      0.5/-144.      0.5/-144.

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 STARTER RACK ( VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:    842.5 /  -69. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  423.245 +j  65.467 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.155
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  80.709 +j  12.891 (PU)
                                              Z2:  80.709 +j  12.891 (PU)
                                              Z0: 261.827 +j  39.684 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     842.5       842.5       842.5       842.5       842.5

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2670 /  162.9     1.2709 /   76.9

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                  842.5 / -68.8       0.0 /   0.0         0.0 /   0.0

 STARTER RACK ( ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103         480.0  0.9256 / -65.  1.0546 / 179.  0.9903 /  63.
   STARTER RACK ( ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
SCRAPER DRIVE  STARTER RACK (                 480.      1.7/-144.      0.8/  36.      0.8/  36.
MCC-CC103      STARTER RACK ( CABLE TO START  480.    842.1/ -69.      0.8/-144.      0.8/-144.

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 STARTER RACK ( VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:    793.8 /  -68. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  449.608 +j  67.181 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.149
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  85.820 +j  13.292 (PU)
                                              Z2:  85.820 +j  13.292 (PU)
                                              Z0: 277.968 +j  40.597 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                     793.8       793.8       793.8       793.8       793.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2664 /  163.0     1.2706 /   76.8

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                  793.8 / -68.5       0.0 /   0.0         0.0 /   0.0

 STARTER RACK ( ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103         480.0  0.9301 / -65.  1.0515 / 179.  0.9905 /  63.
   STARTER RACK ( ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
SCRAPER DRIVE  STARTER RACK (                  480.      1.7/-144.      0.8/  36.      0.8/  36.
MCC-CC103      STARTER RACK ( CABLE TO START   480.    793.3/ -68.      0.8/-144.      0.8/-144.

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 STARTER RACK ( VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1650.1 /  -75. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  210.980 +j  57.515 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.273
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  54.922 +j  11.219 (PU)
                                              Z2:  54.922 +j  11.219 (PU)
                                              Z0: 101.137 +j  35.077 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1650.1      1650.1      1650.1      1650.1      1650.1

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.1727 /  171.3     1.0969 /   71.9

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1650.1 / -75.2        0.0 /   0.0         0.0 /   0.0

 STARTER RACK ( ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-CC103          480.0  0.8426 / -70.  1.1029 / 178.  0.9970 /  66.
   STARTER RACK ( ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
SCUM PUMP 4B   STARTER RACK (                  480.      5.9/-148.      3.0/  32.      3.0/  32.
SCUM PUMP 4A   STARTER RACK (                  480.      5.9/-148.      3.0/  32.      3.0/  32.
MCC-CC103      STARTER RACK ( CABLE TO START   480.   1646.6/ -75.      5.9/-148.      5.9/-148.

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 STARTER RACK ( VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1613.6 /  -76. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  215.152 +j  60.986 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.283
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  40.252 +j  11.914 (PU)
                                              Z2:  40.252 +j  11.914 (PU)
                                              Z0: 134.647 +j  37.159 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1613.6      1613.6      1613.6      1613.6      1613.6

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2714 /  162.5     1.2803 /   77.0

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1613.6 / -75.8        0.0 /   0.0         0.0 /   0.0

 STARTER RACK ( ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                       ---PHASE A---      ---PHASE B---      ---PHASE C---
   STARTER RACK 1    480.0  0.2031 / -71.  1.2246 / 166.  1.2079 /  75.
   STARTER RACK ( ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
SCUM PUMP 5    STARTER RACK (                 480.      8.7/-144.      4.3/  36.      4.3/  36.
STARTER RACK 1 STARTER RACK ( CABLE TO SR (S   480.   1610.3/ -76.      4.3/-144.      4.3/-144.

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STARTER RACK 1 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 2578.0 / -81. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 131.102 +j 49.035 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.374
SEQUENCE EQUIVALENT IMPEDANCE Z1: 36.380 +j 11.801 (PU)
Z2: 36.380 +j 11.801 (PU)
Z0: 58.342 +j 25.432 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
2578.0	2578.0	2578.0	2578.0	2578.0

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.1305 / 173.0	1.0735 / 69.4

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
2578.0 / -80.5	0.0 / 0.0	0.0 / 0.0

STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
BUS-0085	480.0	0.0234 / -64.	1.1273 / 173.	1.0714 / 69.
PANEL LP-100	208.0	0.6198 /-111.	0.6527 / 173.	1.0000 / 30.

STARTER RACK 1 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
GRIT PUMP 4	STARTER RACK 1		480.	3.5/-147.	1.8/ 33.	1.8/ 33.
GRIT RAKE ARM	STARTER RACK 1		480.	6.8/-147.	3.4/ 33.	3.4/ 33.
GRIT PUMP 3	STARTER RACK 1		480.	3.5/-147.	1.8/ 33.	1.8/ 33.
GRIT RAKE ARM	STARTER RACK 1		480.	6.8/-147.	3.4/ 33.	3.4/ 33.
BUS-0085	STARTER RACK 1	CABLE TO START	480.	2569.8/ -80.	10.3/-147.	10.3/-147.
STARTER RACK 1	PANEL LP-100	XFMR-LP100	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

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 STARTER RACK 1 VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2882.8 /  -86. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  112.778 +j  54.305 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.482
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  20.771 +j  13.467 (PU)
                                              Z2:  20.771 +j  13.467 (PU)
                                              Z0:  71.236 +j  27.370 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2882.8      2882.8      2882.8      2882.8      2882.8

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2069 /  161.0     1.3099 /   74.1

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2882.8 / -85.7        0.0 /   0.0         0.0 /   0.0

 STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   PANELBOARD A      480.0  0.9509 / -64.  1.0104 / 180.  0.9992 /  61.
   PANEL PDP101      208.0  0.7563 /-106.  0.6968 / 161.  1.0000 /  30.
   STARTER RACK 1 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
AIR COMPRESSOR STARTER RACK 1                 480.      4.9/-137.     2.4/  43.     2.4/  43.
DRAINAGE PUMP  STARTER RACK 1                 480.    121.0/-137.    60.5/  43.    60.5/  43.
DRAINAGE PUMP  STARTER RACK 1                 480.     48.9/-137.    24.4/  43.    24.4/  43.
PANELBOARD A   STARTER RACK 1 CABLE TO START  480.   2777.0/ -83.    87.4/-137.    87.4/-137.
STARTER RACK 1 PANEL PDP101   XFMR-PDP101     480.      0.0/   0.     0.0/   0.     0.0/   0.
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 STARTER RACK 1 VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2849.4 / -103. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:   92.320 +j  86.687 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.939
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  16.416 +j  19.478 (PU)
                                              Z2:  16.416 +j  19.478 (PU)
                                              Z0:  59.488 +j  47.731 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2852.9      2849.4      2849.4      2849.4      2849.4

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2019 /  161.5     1.2991 /   73.9

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2849.4 /-103.2       0.0 /   0.0         0.0 /   0.0

 STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---     ---PHASE B---     ---PHASE C---
   PC34SR-LP          208.0  0.7500 /-106.  0.6939 / 161.  1.0000 /  30.
   BUS-0238           480.0  0.1353 / -60.  1.1691 / 162.  1.2842 /  72.
   STARTER RACK 1 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                              FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                             BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
SCUM PUMP 3A   STARTER RACK 1                  480.      5.0/-138.      2.5/  42.      2.5/  42.
PRIMARY SCRAPE STARTER RACK 1                  480.      5.0/-138.      2.5/  42.      2.5/  42.
PRIMARY VALVE  STARTER RACK 1                  480.      5.0/-138.      2.5/  42.      2.5/  42.
SCUM PUMP 4    STARTER RACK 1                  480.      5.0/-138.      2.5/  42.      2.5/  42.
PRIMARY VALVE  STARTER RACK 1                  480.      5.0/-138.      2.5/  42.      2.5/  42.
PRIMARY SCRAPE STARTER RACK 1                  480.      5.0/-138.      2.5/  42.      2.5/  42.
STARTER RACK 1 PC34SR-LP      XFMR-LP-107      480.      0.0/   0.      0.0/   0.      0.0/   0.
BUS-0238       STARTER RACK 1 CABLE TO START   480.   2824.8/-103.     14.9/-138.     14.9/-138.

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STARTER RACK 1 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 2970.9 / -85. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 109.958 +j 51.589 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.469
SEQUENCE EQUIVALENT IMPEDANCE Z1: 24.942 +j 13.582 (PU)
Z2: 24.942 +j 13.582 (PU)
Z0: 60.074 +j 24.425 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
2970.9	2970.9	2970.9	2970.9	2970.9

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.1483 / 165.9	1.2101 / 71.4

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
2970.9 / -85.1	0.0 / 0.0	0.0 / 0.0

STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
PANELBOARD C	480.0	0.9517 / -64.	1.0021 / 180.	0.9997 / 60.
PANEL LP-10A	208.0	0.6630 / -14.	1.0000 /-150.	0.6986 / 71.

STARTER RACK 1 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
RAKE DRIVE 1	STARTER RACK 1		480.	9.4/-141.	4.7/ 39.	4.7/ 39.
RAKE DRIVE 2	STARTER RACK 1		480.	9.4/-141.	4.7/ 39.	4.7/ 39.
PANELBOARD C	STARTER RACK 1	CABLE TO START	480.	2737.7/ -84.	217.9/ 92.	217.9/ 92.
STARTER RACK 1	PANEL LP-10A	XFMR-LP-10A	480.	223.6/ 90.	223.6/ 90.	223.6/ 90.

STARTER RACK 1 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 2309.4 / -78. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 148.664 +j 48.091 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.323
SEQUENCE EQUIVALENT IMPEDANCE Z1: 28.833 +j 11.741 (PU)
Z2: 28.833 +j 11.741 (PU)
Z0: 90.999 +j 24.609 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
2309.4	2309.4	2309.4	2309.4	2309.4

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.2217 / 162.3	1.2827 / 74.8

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
2309.4 / -77.9	0.0 / 0.0	0.0 / 0.0

STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
PANELBOARD B	480.0	0.9654 / -64.	1.0080 / 180.	0.9975 / 60.
PANEL LP-10B	208.0	0.7406 /-105.	0.7054 / 162.	1.0000 / 30.

STARTER RACK 1 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
GRIT PUMP 2	STARTER RACK 1		480.	4.9/-140.	2.5/ 40.	2.5/ 40.
COLLECTOR DRIV	STARTER RACK 1		480.	8.0/-140.	4.0/ 40.	4.0/ 40.
COLLECTOR DRIV	STARTER RACK 1		480.	8.0/-140.	4.0/ 40.	4.0/ 40.
GRIT PUMP 1	STARTER RACK 1		480.	4.9/-140.	2.5/ 40.	2.5/ 40.
PANELBOARD B	STARTER RACK 1	CABLE TO START	480.	2297.5/ -77.	12.9/-140.	12.9/-140.
STARTER RACK 1	PANEL LP-10B	XFMR - LP10B	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

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 STARTER RACK 1 VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1968.3 /  -86. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  164.473 +j  80.980 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.492
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  32.951 +j  17.381 (PU)
                                              Z2:  32.951 +j  17.381 (PU)
                                              Z0:  98.572 +j  46.218 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1968.3      1968.3      1968.3      1968.3      1968.3

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2305 /  163.6     1.2542 /   75.2

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1968.3 / -86.2        0.0 /   0.0         0.0 /   0.0

 STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                        ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC-CC113          480.0  0.7170 / -82.  1.1496 / 178.  0.9769 /  69.
   STARTER RACK 1 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
DRAINAGE PUMP  STARTER RACK 1                   480.     33.5/-143.     16.7/  37.     16.7/  37.
MCC-CC113      STARTER RACK 1 CABLE TO START   480.   1950.0/ -85.     16.7/-143.     16.7/-143.

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STARTER RACK 1 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 1897.0 / -93. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 159.208 +j 104.094 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.654
SEQUENCE EQUIVALENT IMPEDANCE Z1: 33.714 +j 23.992 (PU)
Z2: 33.714 +j 23.992 (PU)
Z0: 91.779 +j 56.110 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
1897.1	1897.0	1897.0	1897.0	1897.0

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.1937 / 164.7	1.2305 / 73.6

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
1897.0 / -93.2	0.0 / 0.0	0.0 / 0.0

STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
PANEL PDP114	208.0	0.7104 /-106.	0.6892 / 165.	1.0000 / 30.
STARTER RACK (	480.0	0.3870 / -80.	1.1606 / 168.	1.1713 / 72.
STARTER RACK 1	480.0	0.0013 /-138.	1.1934 / 165.	1.2311 / 74.
STARTER RACK 1	480.0	0.0013 /-138.	1.1934 / 165.	1.2311 / 74.

STARTER RACK 1 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

	BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
THICKENED SLUD STARTER RACK 1		480.	28.2/-142.	14.1/ 38.	14.1/ 38.
MUFFIN MONSTER STARTER RACK 1		480.	12.3/-142.	6.1/ 38.	6.1/ 38.
MUFFIN MONSTER STARTER RACK 1		480.	12.3/-142.	6.1/ 38.	6.1/ 38.
THICKENED SLUD STARTER RACK 1		480.	28.2/-142.	14.1/ 38.	14.1/ 38.
STARTER RACK 1 PANEL PDP114	XFMR-PDP114	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.
STARTER RACK (STARTER RACK 1	CABLE TO START	480.	1835.1/ -91.	48.1/-142.	48.1/-142.
STARTER RACK 1 STARTER RACK 1	CABLE TO START	480.	7.7/ 38.	3.8/-142.	3.8/-142.
STARTER RACK 1 STARTER RACK 1	CABLE TO START	480.	7.7/ 38.	3.8/-142.	3.8/-142.

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 STARTER RACK 1 VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1258.2 /  -83. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  264.357 +j 111.179 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.421
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  54.007 +j  25.709 (PU)
                                              Z2:  54.007 +j  25.709 (PU)
                                              Z0: 156.342 +j  59.761 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1258.2      1258.2      1258.2      1258.2      1258.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2109 /  163.7     1.2516 /   74.4

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1258.2 / -82.8        0.0 /   0.0         0.0 /   0.0

 STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---      ---PHASE B---      ---PHASE C---
   STARTER RACK 1    480.0  0.3681 / -79.  1.1515 / 171.  1.1143 /  71.
   STARTER RACK 1 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
GRAVITY THICKE STARTER RACK 1                   480.      7.4/-142.      3.7/  38.      3.7/  38.
STARTER RACK 1 STARTER RACK 1 CABLE TO START   480.   1254.4/ -83.      3.7/-142.      3.7/-142.

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 STARTER RACK 1 VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   1258.2 /  -83. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  264.357 +j 111.179 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.421
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  54.007 +j  25.709 (PU)
                                              Z2:  54.007 +j  25.709 (PU)
                                              Z0: 156.342 +j  59.761 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    1258.2      1258.2      1258.2      1258.2      1258.2

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2109 /  163.7     1.2516 /   74.4

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 1258.2 / -82.8        0.0 /   0.0         0.0 /   0.0

 STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                         ---PHASE A---      ---PHASE B---      ---PHASE C---
   STARTER RACK 1    480.0  0.3681 / -79.  1.1515 / 171.  1.1143 /  71.
   STARTER RACK 1 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                               FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                              BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
GRAVITY THICKE STARTER RACK 1                   480.      7.4/-142.      3.7/  38.      3.7/  38.
STARTER RACK 1 STARTER RACK 1 CABLE TO START   480.   1254.4/ -83.      3.7/-142.      3.7/-142.

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 STARTER RACK 1 VOLTAGE BASE LL:                 480.0 (VOLTS)
                INI. SYM. RMS FAULT CURRENT:   2012.7 /  -79. ( AMPS/DEG )
                THEVENIN EQUIVALENT IMPEDANCE:  169.942 +j  57.113 (PU)
                THEVENIN IMPEDANCE X/R RATIO:     0.336
                SEQUENCE EQUIVALENT IMPEDANCE Z1:  31.514 +j  10.984 (PU)
                                              Z2:  31.514 +j  10.984 (PU)
                                              Z0: 106.914 +j  35.145 (PU)

                 ASYM    RMS   INTERRUPTING AMPS
                1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    2012.7      2012.7      2012.7      2012.7      2012.7

                INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                0.0000 /    0.0     1.2751 /  162.4     1.2835 /   77.2

                INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                        AT TIME =     0.5 CYCLES
                ---PHASE A---       ---PHASE B---       ---PHASE C---
                 2012.7 / -78.6       0.0 /   0.0         0.0 /   0.0

 STARTER RACK 1 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                    FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---     ---PHASE B---     ---PHASE C---
   MCC-CC103         480.0  0.7995 / -72.  1.1225 / 177.  1.0057 /  68.
   STARTER RACK (    480.0  0.0006 /-138.  1.2749 / 162.  1.2838 /  77.
   STARTER RACK 1 ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
MCC-CC103      STARTER RACK 1 CABLE TO START   480.   2009.1/ -78.      4.3/-144.      4.3/-144.
STARTER RACK 1 STARTER RACK ( CABLE TO SR (S   480.      8.6/  36.      4.3/-144.      4.3/-144.

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STARTER RACK 9 VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 1846.2 / -77. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 186.584 +j 58.195 (PU)
THEVENIN IMPEDANCE X/R RATIO: 0.312
SEQUENCE EQUIVALENT IMPEDANCE Z1: 36.050 +j 14.137 (PU)
Z2: 36.050 +j 14.137 (PU)
Z0: 114.485 +j 29.922 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
1846.2	1846.2	1846.2	1846.2	1846.2

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	1.2253 / 162.2	1.2838 / 75.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
1846.2 / -77.3	0.0 / 0.0	0.0 / 0.0

STARTER RACK 9 ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
PANELBOARD A	480.0	0.9727 / -63.	1.0064 / 180.	0.9980 / 60.
PANEL LP-9	208.0	0.7412 /-105.	0.7074 / 162.	1.0000 / 30.

STARTER RACK 9 ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
PRIMARY VALVE	STARTER RACK 9		480.	3.7/-140.	1.9/ 40.	1.9/ 40.
PRI. CLAR. SCU	STARTER RACK 9		480.	3.7/-140.	1.9/ 40.	1.9/ 40.
PRIMARY VALVE	STARTER RACK 9		480.	3.7/-140.	1.9/ 40.	1.9/ 40.
DRIVE MOTOR 1	STARTER RACK 9		480.	7.9/-140.	4.0/ 40.	4.0/ 40.
DRIVE MOTOR 2	STARTER RACK 9		480.	7.9/-140.	4.0/ 40.	4.0/ 40.
PANELBOARD A	STARTER RACK 9	CABLE TO START	480.	1834.1/ -77.	13.5/-140.	13.5/-140.
STARTER RACK 9	PANEL LP-9	XFMR-LP9	480.	0.0/ 0.	0.0/ 0.	0.0/ 0.

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 SWBD-1          VOLTAGE BASE LL:                 480.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:  35080.5 / -137. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:    2.233 +j  10.041 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     4.498
                 SEQUENCE EQUIVALENT IMPEDANCE Z1:   0.678 +j   3.071 (PU)
                                               Z2:   0.678 +j   3.071 (PU)
                                               Z0:   0.877 +j   3.899 (PU)

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    42888.3     35211.5     35088.5     35080.5     35080.5

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     1.0426 /  176.0     1.0451 /   63.9

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 35080.5 /-137.5        0.0 /   0.0         0.0 /   0.0

 SWBD-1          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                           ---PHASE A---     ---PHASE B---     ---PHASE C---
   MAIN MCC          480.0  0.0102 / -71.  1.0442 / 176.  1.0487 /  64.
   BUS-0176          480.0  0.0750 / -82.  1.0364 / 178.  1.0100 /  63.
   SWBD-1         ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
SWBD-1          MAIN MCC       CABLE TO MAIN    480.  10557.5/  47.   5153.3/-135.   5153.3/-135.
BUS-0176        SWBD-1         CABLE TO SWBD-   480.  24568.9/-139.   5153.3/-135.   5153.3/-135.

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SWBD-2A VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 31146.9 / -140. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 2.036 +j 11.405 (PU)
THEVENIN IMPEDANCE X/R RATIO: 5.601
SEQUENCE EQUIVALENT IMPEDANCE Z1: 0.629 +j 3.786 (PU)
Z2: 0.629 +j 3.786 (PU)
Z0: 0.779 +j 3.833 (PU)

ASYM RMS INTERRUPTING AMPS

1/2 CYCLES	2 CYCLES	3 CYCLES	5 CYCLES	8 CYCLES
40026.5	31495.6	31184.1	31147.4	31146.9

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.9928 / 179.3	1.0136 / 60.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
31146.9 /-139.9	0.0 / 0.0	0.0 / 0.0

SWBD-2A ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
BUS-0175	480.0	0.0553 / -83.	0.9918 /-179.	0.9905 / 59.
AERATIAON BLOW	480.0	0.0211 /-100.	0.9910 / 179.	1.0235 / 60.
AERATIAON BLOW	480.0	0.0194 /-101.	0.9911 / 179.	1.0228 / 60.
SWBD-2B	480.0	0.0000 /-114.	0.9928 / 179.	1.0136 / 60.
MCC-2A	480.0	0.0028 /-106.	0.9924 / 179.	1.0149 / 60.
MCC-2B	480.0	0.0145 / -90.	0.9928 / 179.	1.0199 / 60.

SWBD-2A ========== INI. RMS SYSTEM BRANCH FLOWS (AMPS) ==========
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
BUS-0175	SWBD-2A	CABLE TO SWBD-	480.	24412.9/-139.	3371.2/-142.	3371.2/-142.
SWBD-2A	AERATIAON BLOW	CABLE TO AERAT	480.	1575.2/ 38.	787.6/-142.	787.6/-142.
SWBD-2A	AERATIAON BLOW	CABLE TO AERAT	480.	1578.2/ 38.	789.1/-142.	789.1/-142.
SWBD-2A	SWBD-2B	SWBD-2A BUSWAY	480.	2239.8/ 38.	1119.9/-142.	1119.9/-142.
SWBD-2A	MCC-2A	CABLE TO MCC-2	480.	943.9/ 37.	471.9/-143.	471.9/-143.
SWBD-2A	MCC-2B	CABLE TO MCC-2	480.	405.4/ 37.	202.7/-143.	202.7/-143.

SWBD-2B VOLTAGE BASE LL: 480.0 (VOLTS)
INI. SYM. RMS FAULT CURRENT: 31143.1 / -140. (AMPS/DEG)
THEVENIN EQUIVALENT IMPEDANCE: 2.038 +j 11.406 (PU)
THEVENIN IMPEDANCE X/R RATIO: 5.596
SEQUENCE EQUIVALENT IMPEDANCE Z1: 0.629 +j 3.786 (PU)
Z2: 0.629 +j 3.786 (PU)
Z0: 0.781 +j 3.834 (PU)

ASYM 1/2 CYCLES	RMS 2 CYCLES	INTERRUPTING AMPS 3 CYCLES	5 CYCLES	8 CYCLES
40013.1	31490.2	31180.1	31143.5	31143.1

INI. SYM. RMS FAULTED BUS VOLTAGES (PU / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
0.0000 / 0.0	0.9927 / 179.3	1.0137 / 60.0

INI. RMS FAULTED CURRENT (AMPS / DEG)
AT TIME = 0.5 CYCLES

---PHASE A---	---PHASE B---	---PHASE C---
31143.1 /-139.9	0.0 / 0.0	0.0 / 0.0

SWBD-2B ==== INI. SYM. RMS SYSTEM BUS VOLTAGES (PU / DEG) =======
FIRST BUS FROM FAULT AT TIME = 0.5 CYCLES

		---PHASE A---	---PHASE B---	---PHASE C---
SWBD-2A	480.0	0.0002 /-114.	0.9928 / 179.	1.0136 / 60.
AERATIAON BLOW	480.0	0.0169 /-101.	0.9913 / 179.	1.0217 / 60.
PANEL DP47	480.0	0.0884 /-109.	0.9797 / 177.	1.0571 / 60.
MCC-2C	480.0	0.0242 / -90.	0.9929 / 179.	1.0242 / 60.

SWBD-2B ================ INI. RMS SYSTEM BRANCH FLOWS (AMPS) ================
FIRST BRANCH FROM FAULT AT TIME = 0.5 CYCLES

		BRANCH NAME	VBASE LL	-PHASE A-	-PHASE B-	-PHASE C-
SWBD-2A	SWBD-2B	SWBD-2A BUSWAY	480.	28905.0/-140.	1119.8/-142.	1119.8/-142.
SWBD-2B	AERATIAON BLOW	CABLE TO AERAT	480.	1582.7/ 37.	791.3/-143.	791.3/-143.
SWBD-2B	PANEL DP47	CABLE TO PANEL	480.	258.0/ 43.	129.0/-137.	129.0/-137.
SWBD-2B	MCC-2C	CABLE TO MCC-2	480.	400.2/ 38.	200.1/-142.	200.1/-142.

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 SWBD-3          VOLTAGE BASE LL:                 480.0 (VOLTS)
                 INI. SYM. RMS FAULT CURRENT:  25526.8 / -136. ( AMPS/DEG )
                 THEVENIN EQUIVALENT IMPEDANCE:    3.368 +j  13.729 (PU)
                 THEVENIN IMPEDANCE X/R RATIO:     4.076
                 SEQUENCE EQUIVALENT IMPEDANCE Z1:   0.838 +j   4.305 (PU)
                                               Z2:   0.838 +j   4.305 (PU)
                                               Z0:   1.692 +j   5.120 (PU)

                  ASYM    RMS   INTERRUPTING AMPS
                 1/2 CYCLES    2 CYCLES    3 CYCLES    5 CYCLES    8 CYCLES
                    30505.0     25580.3     25529.3     25526.8     25526.8

                 INI. SYM. RMS FAULTED BUS VOLTAGES ( PU / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 0.0000 /    0.0     0.9998 /  175.2     1.0748 /   62.1

                 INI.    RMS   FAULTED CURRENT ( AMPS / DEG )
                         AT TIME =     0.5 CYCLES
                 ---PHASE A---       ---PHASE B---       ---PHASE C---
                 25526.8 /-136.2        0.0 /   0.0         0.0 /   0.0

 SWBD-3          ==== INI. SYM. RMS SYSTEM BUS VOLTAGES ( PU / DEG ) =======
                     FIRST BUS FROM FAULT    AT TIME =     0.5 CYCLES
                          ---PHASE A---      ---PHASE B---      ---PHASE C---
   MCC (SLUDGE BL    480.0  0.0004 / -84.  0.9998 / 175.  1.0749 /  62.
   MCC (DEWATERIN    480.0  0.0224 / -83.  1.0022 / 175.  1.0840 /  62.
   CENTRIFUGE 1 C    480.0  0.0025 / -89.  0.9999 / 175.  1.0758 /  62.
   CENTRIFUGE 2 C    480.0  0.0025 / -89.  0.9999 / 175.  1.0758 /  62.
   CENTRIFUGE 3 C    480.0  0.0025 / -89.  0.9999 / 175.  1.0758 /  62.
   BUS-0177          480.0  0.2152 / -79.  0.9866 /-179.  0.9886 /  59.
   SWBD-3         ================ INI.    RMS   SYSTEM BRANCH FLOWS ( AMPS ) ================
                                FIRST BRANCH FROM FAULT AT TIME =     0.5 CYCLES
                               BRANCH NAME   VBASE LL  -PHASE A-     -PHASE B-     -PHASE C-
SWBD-3          MCC (SLUDGE BL CABLE TO MCC (   480.    593.7/  39.    296.8/-141.    296.8/-141.
SWBD-3          MCC (DEWATERIN CABLE TO MCC (   480.   1408.7/  39.    704.3/-141.    704.3/-141.
SWBD-3          CENTRIFUGE 1 C CABLE TO CENTR   480.   1098.5/  39.    549.3/-141.    549.3/-141.
SWBD-3          CENTRIFUGE 2 C CABLE TO CENTR   480.   1098.5/  39.    549.3/-141.    549.3/-141.
SWBD-3          CENTRIFUGE 3 C CABLE TO CENTR   480.   1098.5/  39.    549.3/-141.    549.3/-141.
BUS-0177        SWBD-3         CABLE TO SWBD-   480.  20254.1/-135.   2648.9/-141.   2648.9/-141.

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********** F A U L T A N A L Y S I S S U M M A R Y **********

BUS NAME	VOLTAGE L-L	AVAILABLE FAULT CURRENT 3 PHASE	X/R	LINE/GRND	X/R
AERATIAON BLOW	480.	24221.0	3.0	20421.54	2.1
AERATIAON BLOW	480.	24683.2	3.1	21037.58	2.1
AERATIAON BLOW	480.	25406.7	3.2	22023.54	2.3
BKR TO INDUCTI	480.	2521.5	0.2	1534.05	0.2
CENT FEED PUMP	480.	14239.6	0.8	9651.08	0.6
CENT FEED PUMP	480.	14239.6	0.8	9651.08	0.6
CENT FEED PUMP	480.	14239.6	0.8	9651.08	0.6
CENTRATE REC P	480.	2878.4	0.2	1691.79	0.1
CENTRIFUGE 1 C	480.	26165.2	4.6	23725.38	3.5
CENTRIFUGE 2 C	480.	26165.2	4.6	23725.38	3.5
CENTRIFUGE 3 C	480.	26165.2	4.6	23725.38	3.5
DIGEST COMPRES	480.	6019.2	0.8	3812.79	0.7
DIGEST COMPRES	480.	6853.4	0.9	4383.85	0.7
DWC POLY FD PU	480.	5510.0	0.3	3291.08	0.2
DWC POLY FD PU	480.	5510.0	0.3	3291.08	0.2
DWC POLY FD PU	480.	5510.0	0.3	3291.08	0.2
GRINDER 1 CONT	480.	4666.0	0.2	2769.07	0.2
GRINDER 2 CONT	480.	4666.0	0.2	2769.07	0.2
GRINDER 3 CONT	480.	4666.0	0.2	2769.07	0.2
HYDRAULIC POWE	480.	5474.7	0.3	3262.81	0.2
IFAS R1 NRCY P	480.	4678.8	0.2	2776.95	0.1
IFAS R1 NRCY P	480.	4537.4	0.2	2690.77	0.1
IFAS R2 NRCY P	480.	5160.5	0.2	3071.94	0.1
IFAS R2 NRCY P	480.	4278.6	0.2	2533.47	0.1
IFAS R3 NRCY P	480.	4829.2	0.2	2868.80	0.1
IFAS R3 NRCY P	480.	4047.5	0.2	2393.49	0.1
IFAS R4 NRCY P	480.	4457.7	0.3	2658.20	0.2
IFAS R4 NRCY P	480.	4590.8	0.3	2741.01	0.2
IFAS R5 NRCY P	480.	4881.3	0.3	2922.76	0.3
IFAS R5 NRCY P	480.	4731.8	0.3	2829.03	0.3
IFAS R6 NRCY P	480.	4212.7	0.3	2506.52	0.2
IFAS R6 NRCY P	480.	3890.8	0.3	2308.49	0.2
IFAS R7 NRCY P	480.	4121.5	0.4	2456.78	0.3
IFAS R7 NRCY P	480.	4233.1	0.4	2526.45	0.3
IFAS R8 NRCY P	480.	4474.1	0.4	2677.91	0.3
IFAS R8 NRCY P	480.	4350.4	0.4	2600.05	0.3

********** F A U L T A N A L Y S I S S U M M A R Y **********

BUS NAME	VOLTAGE L-L	AVAILABLE FAULT CURRENT 3 PHASE	X/R	LINE/GRND	X/R
IFAS R9 NRCY P	480.	3914.5	0.4	2328.06	0.3
IFAS R9 NRCY P	480.	3638.7	0.3	2157.88	0.3
INDUCTION MIXE	480.	2479.6	0.2	1507.39	0.2
MAIN MCC	480.	38138.7	4.5	34111.35	4.2
MCC (DEWATERIN	480.	20519.9	3.5	16448.93	2.5
MCC (DEWATERIN	480.	20516.9	3.5	16443.38	2.5
MCC (DEWATERIN	480.	20513.6	3.5	16437.68	2.5
MCC (HYPO)	480.	13471.7	1.1	10605.46	1.2
MCC (SCUM BLDG	480.	2372.4	0.3	1395.95	0.2
MCC (SLUDGE BL	480.	27042.7	5.0	24994.31	3.9
MCC (SLUDGE BL	480.	27034.8	5.0	24976.04	3.9
MCC (SLUDGE BL	480.	27038.8	5.0	24985.19	3.9
MCC-2A	480.	29484.5	4.5	28201.79	3.6
MCC-2A (CONT 2	480.	29472.2	4.5	28171.10	3.6
MCC-2A (CONT)	480.	29478.4	4.5	28186.47	3.6
MCC-2B	480.	15681.3	2.3	11886.46	1.7
MCC-2B (CONT 2	480.	15677.2	2.3	11880.10	1.7
MCC-2B (CONT)	480.	15679.2	2.3	11883.29	1.7
MCC-2C	480.	11645.2	2.0	8265.41	1.5
MCC-2C (CONT 2	480.	11642.9	2.0	8262.27	1.5
MCC-2C (CONT)	480.	11644.1	2.0	8263.85	1.5
MCC-5B	480.	11812.0	2.2	7657.74	1.7
MCC-CC103	480.	14766.7	1.8	7392.38	1.5
MCC-CC103A	480.	18320.1	2.3	8462.29	1.6
MCC-CC113	480.	7099.4	1.9	4559.90	2.1
MCC-G1	480.	2971.2	0.8	1728.47	0.6
MV MAIN SWGR	4160.	8518.0	6.8	7578.19	8.0
NAOH RECIRC PU	480.	2600.8	0.7	1497.44	0.5
NAOH RECIRC PU	480.	2655.6	0.7	1530.97	0.5
PANEL (DIGESTE	480.	3659.5	1.0	2324.01	0.8
PANEL DP2A (IN	480.	28508.5	3.6	26623.98	2.7
PANEL DP2B (IN	480.	15322.5	2.1	11505.98	1.6
PANEL DP2C (IN	480.	11434.8	1.9	8070.25	1.5
PANEL DP47	480.	3034.4	0.8	1766.41	0.6
PANEL JR1A	480.	13192.5	1.1	10331.88	1.2
PANEL JR1B	480.	13029.3	1.1	10081.18	1.2
PANEL JR2	480.	8143.2	0.8	5730.78	0.7
PANEL JRM	480.	13272.7	1.1	10410.89	1.2
PANEL P5B	480.	11505.8	2.1	7471.06	1.7
PANEL P5C	480.	9365.8	1.4	5856.98	1.1

********** F A U L T A N A L Y S I S S U M M A R Y **********

BUS NAME	VOLTAGE L-L	AVAILABLE FAULT CURRENT 3 PHASE	X/R	LINE/GRND	X/R
PANEL PP-1 (IN	480.	27032.2	5.0	24970.77	3.9
PANEL PP1	480.	8204.5	1.0	5337.23	0.8
PANELBOARD A	480.	37304.8	4.3	33082.16	4.0
PANELBOARD B	480.	37295.1	4.3	33077.08	4.0
PANELBOARD C	480.	37287.2	4.3	33087.23	4.0
POLYMER SYSTEM	480.	9100.5	0.8	5816.71	0.6
RETURN PUMP 1	480.	3403.1	0.4	1825.82	0.3
RETURN PUMP 2	480.	3403.1	0.4	1825.82	0.3
RETURN PUMP 3	480.	14032.4	1.6	7035.20	1.3
RETURN PUMP 4	480.	14032.4	1.6	7035.20	1.3
RETURN PUMP 5	480.	15708.6	1.8	7163.17	1.2
RETURN PUMP 6	480.	16668.8	2.0	7642.69	1.3
SCREEN 1 CP01-	480.	9365.8	1.4	5856.98	1.1
SCREEN 2 CP01-	480.	11812.0	2.2	7657.74	1.7
SCREEN 3 CP01-	480.	9365.8	1.4	5856.98	1.1
STARTER RACK (	480.	3255.9	0.3	1932.82	0.2
STARTER RACK (	480.	4924.4	1.3	2903.34	1.0
STARTER RACK (	480.	7036.1	1.9	4510.78	2.1
STARTER RACK (	480.	2139.1	0.2	1215.15	0.2
STARTER RACK (	480.	1471.7	0.2	842.55	0.2
STARTER RACK (	480.	1385.0	0.2	793.76	0.1
STARTER RACK (	480.	2145.7	0.2	1650.10	0.3
STARTER RACK (	480.	2865.3	0.3	1613.59	0.3
STARTER RACK 1	480.	3144.9	0.3	2577.97	0.4
STARTER RACK 1	480.	4858.9	0.6	2882.81	0.5
STARTER RACK 1	480.	4721.9	1.2	2849.38	0.9
STARTER RACK 1	480.	4235.3	0.5	2970.93	0.5
STARTER RACK 1	480.	3863.6	0.4	2309.41	0.3
STARTER RACK 1	480.	3228.7	0.5	1968.30	0.5
STARTER RACK 1	480.	2906.8	0.7	1897.00	0.7
STARTER RACK 1	480.	2010.9	0.5	1258.24	0.4
STARTER RACK 1	480.	2010.9	0.5	1258.24	0.4
STARTER RACK 1	480.	3604.2	0.3	2012.72	0.3
STARTER RACK 9	480.	3106.2	0.4	1846.23	0.3
SWBD-1	480.	38245.9	4.5	35080.50	4.5
SWBD-2A	480.	31342.0	6.0	31146.93	5.6
SWBD-2B	480.	31340.8	6.0	31143.13	5.6
SWBD-3	480.	27427.7	5.1	25526.83	4.1

********** FAULT ANALYSIS REPORT COMPLETED **********

Appendix JRTP-E

Arc Flash Evaluation Table (Label Data)

Hampton Roads Sanitation District
James River Treatment Plant
Arc Flash Study
Arc Flash Evaluation Table - Existing Condition (Label Data)

Bus Name	PPE Category	Incident Energy (cal/cm2)	Arc Flash Boundary (in)	Bus kV	Working Distance (in)
AERATIAON BLOWER 4 PANEL (AERATION BLOWERS BLDG)	Category 1	1.2	18	0.48	18
AERATIAON BLOWER 5 PANEL (AERATION BLOWERS BLDG)	Category 1	1.2	18	0.48	18
AERATIAON BLOWER 6 PANEL (AERATION BLOWERS BLDG)	Category 1	1.2	18	0.48	18
BKR TO INDUCTION MIXER CP (HYPOCHLORITE BLDG)	Category 0	0.15	5	0.48	18
CENT FEED PUMP 121 VFD (SLUDGE BLDG)	Category 0	0.41	9	0.48	18
CENT FEED PUMP 122 VFD (SLUDGE BLDG)	Category 0	0.41	9	0.48	18
CENT FEED PUMP 123 VFD (SLUDGE BLDG)	Category 0	0.41	9	0.48	18
CENTRATE REC PUMP VFD (AERATION BLOWERS BLDG)	Category 0	0.17	5	0.48	18
CENTRIFUGE 1 CP (SLUDGE BLDG)	Category 0	1.1	17	0.48	18
CENTRIFUGE 2 CP (SLUDGE BLDG)	Category 0	1.1	17	0.48	18
CENTRIFUGE 3 CP (SLUDGE BLDG)	Category 0	1.1	17	0.48	18
DIGEST COMPRESSOR CP LP-5-10-1 (DIGESTER BLDG)	Category 0	0.25	7	0.48	18
DIGEST COMPRESSOR CP LP-5-10-2 (DIGESTER BLDG)	Category 0	0.28	7	0.48	18
DWC POLY FD PUMP 1 VFD (SLUDGE BLDG)	Category 0	0.20	6	0.48	18
DWC POLY FD PUMP 2 VFD (SLUDGE BLDG)	Category 0	0.20	6	0.48	18
DWC POLY FD PUMP 3 VFD (SLUDGE BLDG)	Category 0	0.20	6	0.48	18
GRINDER 1 CONTROL PANEL (SLUDGE BLDG)	Category 0	0.17	6	0.48	18
GRINDER 2 CONTROL PANEL (SLUDGE BLDG)	Category 0	0.17	6	0.48	18
GRINDER 3 CONTROL PANEL (SLUDGE BLDG)	Category 0	0.17	6	0.48	18
HYDRAULIC POWER PACK CP (SLUDGE BLDG)	Category 0	0.19	6	0.48	18
IFAS R1 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	Category 0	0.26	7	0.48	18
IFAS R1 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	Category 0	0.25	7	0.48	18
IFAS R2 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	Category 0	0.29	8	0.48	18
IFAS R2 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	Category 0	0.24	7	0.48	18
IFAS R3 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	Category 0	0.27	7	0.48	18
IFAS R3 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	Category 0	0.23	7	0.48	18
IFAS R4 NRCY PUMP 1 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.25	7	0.48	18
IFAS R4 NRCY PUMP 2 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.26	7	0.48	18
IFAS R5 NRCY PUMP 1 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.27	7	0.48	18
IFAS R5 NRCY PUMP 2 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.26	7	0.48	18
IFAS R6 NRCY PUMP 1 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.24	7	0.48	18
IFAS R6 NRCY PUMP 2 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.22	6	0.48	18
IFAS R7 NRCY PUMP 1 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.23	7	0.48	18
IFAS R7 NRCY PUMP 2 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.24	7	0.48	18
IFAS R8 NRCY PUMP 1 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.25	7	0.48	18
IFAS R8 NRCY PUMP 2 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.24	7	0.48	18
IFAS R9 NRCY PUMP 1 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.22	6	0.48	18
IFAS R9 NRCY PUMP 2 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.21	6	0.48	18
INDUCTION MIXER CP (HYPOCHLORITE BLDG)	Category 0 (*N3)	0.15	5	0.48	18
MAIN MCC (MAIN BLDG)	Category 2	5.2	44	0.48	18
MCC (DEWATERING BLDG) (DEWATERING BLDG)	Category 0	1.0	16	0.48	18
MCC (DEWATERING BLDG) MAIN CIRCUIT BREAKER (DEWATERING BLDG)	Category 0	1.0	16	0.48	18
MCC (HYPO) (HYPOCHLORITE BLDG)	Category 0	0.41	9	0.48	18
MCC (HYPO) MAIN CIRCUIT BREAKER (HYPOCHLORITE BLDG)	Category 0	0.41	9	0.48	18
MCC (SCUM BLDG)	Category 0	0.12	4	0.48	18
MCC (SLUDGE BLDG)	Category 1	1.7	22	0.48	18
MCC (SLUDGE BLDG) MAIN CIRCUIT BREAKER (SLUDGE BLDG)	Category 1	1.7	22	0.48	18
MCC-2A (AERATION BLOWERS BLDG)	Category 0	1.4	20	0.48	18
MCC-2B (IFAS ELECTRICAL BLDG 1)	Category 0	0.80	14	0.48	18
MCC-2B MAIN CIRCUIT BREAKER (IFAS ELECTRICAL BLDG 1)	Category 0	0.80	14	0.48	18
MCC-2C (IFAS ELECTRICAL BLDG 2)	Category 0	0.61	12	0.48	18
MCC-2C MAIN CIRCUIT BREAKER (IFAS ELECTRICAL BLDG 2)	Category 0	0.61	12	0.48	18
MCC-5B (HEADWORKS & SCRUBBER FACILITY)	Category 0	0.29	8	0.48	18

Hampton Roads Sanitation District
James River Treatment Plant
Arc Flash Study
Arc Flash Evaluation Table - Existing Condition (Label Data)

Bus Name	PPE Category	Incident Energy (cal/cm2)	Arc Flash Boundary (in)	Bus kV	Working Distance (in)
MCC-5B MAIN CIRCUIT BREAKER (HEADWORKS & SCRUBBER FACILITY)	Category 0	0.31	8	0.48	18
MCC-CC103 (RETURN PUMP STATION 1)	Category 1	1.3	19	0.48	18
MCC-CC103 MAIN CIRCUIT BREAKER (RETURN PUMP STATION 1)	Category 1	1.8	23	0.48	18
MCC-CC103A (RETURN PUMP STATION 2)	Category 0 (*N3)	0.86	15	0.48	18
MCC-CC103A MAIN CIRCUIT BREAKER (RETURN PUMP STATION 2)	Category 1 (*N3)	1.8	23	0.48	18
MCC-CC113 (NPW/EFFLUENT BLDG)	Category 0	0.20	6	0.48	18
MCC-G1 (SODIUM HYDROXIDE BLDG)	Category 0	0.13	5	0.48	18
MCC-G1 MAIN CIRCUIT BREAKER (SODIUM HYDROXIDE BLDG)	Category 0	0.15	5	0.48	18
MV MAIN SWGR (MAIN BLDG)	Category 2 (*N5) (*N9)	4.3	135	4.16	36
MV MAIN SWGR MAIN CIRCUIT BREAKER (MAIN BLDG)	Category 2 (*N5) (*N9)	4.3	135	4.16	36
NAOH RECIRC PUMP 5 STARTER (SODIUM HYDROXIDE BLDG)	Category 0 (*N5)	0.15	5	0.48	18
NAOH RECIRC PUMP 6 STARTER (SODIUM HYDROXIDE BLDG)	Category 0 (*N5)	0.15	5	0.48	18
PANEL (DIGESTER) (DIGESTER BLDG)	Category 0	0.42	9	0.48	18
PANEL DP2A (IN MCC) (AERATION BLOWERS BLDG)	Category 0	1.3	19	0.48	18
PANEL DP2B (IN MCC) (AERATION BLOWERS BLDG)	Category 0	0.75	14	0.48	18
PANEL DP2C (IN MCC) (AERATION BLOWERS BLDG)	Category 0	0.57	11	0.48	18
PANEL DP47 (SODIUM HYDROXIDE BLDG)	Category 1 (*N3)	1.6	22	0.48	18
PANEL JR1A (HYPOCHLORITE BLDG)	Category 0	0.45	10	0.48	18
PANEL JR1B (HYPOCHLORITE BLDG)	Category 0	0.45	10	0.48	18
PANEL JR2 (BISULFITE BLDG)	Category 0	0.29	8	0.48	18
PANEL JRM (HYPOCHLORITE BLDG)	Category 0 (*N5)	0.41	9	0.48	18
PANEL P5B (HEADWORKS & SCRUBBER FACILITY)	Category 0 (*N5)	0.29	8	0.48	18
PANEL P5C (HEADWORKS & SCRUBBER FACILITY)	Category 0 (*N5)	0.26	7	0.48	18
PANEL PP1 (DEWATERING BLDG)	Category 0	0.37	9	0.48	18
PANEL PP-1 (IN MCC) (SLUDGE BLDG)	Category 0	0.68	13	0.48	18
PANELBOARD A (MAIN BLDG (IN MCC))	Category 0	0.91	15	0.48	18
PANELBOARD B (MAIN BLDG (IN MCC))	Category 0	0.91	15	0.48	18
PANELBOARD C (MAIN BLDG (IN MCC))	Category 0	0.91	15	0.48	18
POLYMER SYSTEM CP17-2001 (DEWATERING BLDG)	Category 0	0.28	7	0.48	18
RETURN PUMP 1 VFD (RETURN PS 2)	Category 0	0.13	5	0.48	18
RETURN PUMP 2 VFD (RETURN PS 2)	Category 0	0.13	5	0.48	18
RETURN PUMP 3 VFD (RETURN PS 1)	Category 1	1.2	18	0.48	18
RETURN PUMP 4 VFD (RETURN PS 1)	Category 1	1.2	18	0.48	18
RETURN PUMP 5 VFD (RETURN PS 2)	Category 0	1.1	17	0.48	18
RETURN PUMP 6 VFD (RETURN PS 2)	Category 0	1.1	17	0.48	18
SCREEN 1 CP01-1210 (HEADWORKS & SCRUBBER FACILITY)	Category 0 (*N5)	0.29	8	0.48	18
SCREEN 2 CP01-1220 (HEADWORKS & SCRUBBER FACILITY)	Category 0 (*N5)	0.29	8	0.48	18
SCREEN 3 CP01-1230 (HEADWORKS & SCRUBBER FACILITY)	Category 0 (*N5)	0.29	8	0.48	18
STARTER RACK (AT) (AERATION TANKS)	Category 0	0.14	5	0.48	18
STARTER RACK (AT) MAIN CIRCUIT BREAKER (AERATION TANKS)	Category 0	0.14	5	0.48	18
STARTER RACK (DIGESTER) (DIGESTER BLDG)	Category 0 (*N5)	0.34	8	0.48	18
STARTER RACK (DIGESTER) MAIN CIRCUIT BREAKER (DIGESTER BLDG)	Category 0	0.34	8	0.48	18
STARTER RACK (NPW) (NPW/CHLORINE CONTACT TANKS)	Category 0 (*N5)	0.43	10	0.48	18
STARTER RACK (NPW) MAIN CIRCUIT BREAKER (NPW/CHLORINE CONTACT TANKS)	Category 0	0.20	6	0.48	18
STARTER RACK (SCRAPER DRIVE 3) (SECONDARY CLARIFIER 3)	Category 0 (*N3)	0.38	9	0.48	18
STARTER RACK (SCRAPER DRIVE 4) (SECONDARY CLARIFIER 4)	Category 0 (*N3)	0.50	11	0.48	18
STARTER RACK (SCRAPER DRIVE 5) (SECONDARY CLARIFIER 5)	Category 0 (*N3)	0.52	11	0.48	18
STARTER RACK (SCUM PUMP 4A,4B) (SECONDARY CLARIFIERS 3 & 4)	Category 0 (*N3)	0.38	9	0.48	18
STARTER RACK (SCUM PUMP 5) (SECONDARY CLARIFIER 5)	Category 0 (*N3)	0.79	14	0.48	18
STARTER RACK 100 (GRIT COLLECTORS 3 & 4)	Category 0	0.06	3	0.48	18
STARTER RACK 100 MAIN FUSES (GRIT COLLECTORS 3 & 4)	Category 0	0.13	5	0.48	18

Hampton Roads Sanitation District
James River Treatment Plant
Arc Flash Study
Arc Flash Evaluation Table - Existing Condition (Label Data)

Bus Name	PPE Category	Incident Energy (cal/cm2)	Arc Flash Boundary (in)	Bus kV	Working Distance (in)
STARTER RACK 101 (DRAINAGE PS)	Category 0	0.17	6	0.48	18
STARTER RACK 101 MAIN CIRCUIT BREAKER (DRAINAGE PS)	Category 0	0.18	6	0.48	18
STARTER RACK 107 (PRIMARY CLARIFIERS 3 & 4)	Category 0 (*N3)	0.07	3	0.48	18
STARTER RACK 107 MAIN FUSES (PRIMARY CLARIFIERS 3 & 4)	Category 0	0.17	5	0.48	18
STARTER RACK 10A (SECONDARY CLARIFIERS 1 & 2)	Category 0	0.16	5	0.48	18
STARTER RACK 10A MAIN CIRCUIT BREAKER (SECONDARY CLARIFIERS 1 & 2)	Category 0	0.16	5	0.48	18
STARTER RACK 10B (GRIT COLLECTORS 1 & 2)	Category 0	0.15	5	0.48	18
STARTER RACK 10B MAIN CIRCUIT BREAKER (GRIT COLLECTORS 1 & 2)	Category 0	0.15	5	0.48	18
STARTER RACK 112 (DRAINAGE PUMP (SECONDARY CLARIFIER 4))	Category 0	0.14	5	0.48	18
STARTER RACK 112 MAIN CIRCUIT BREAKER (DRAINAGE PUMP (SECONDARY CLARIFIER 4))	Category 0	0.14	5	0.48	18
STARTER RACK 114 (GRAVITY THICKENER BLDG)	Category 3 (*N3) (*N9)	9.5	64	0.48	18
STARTER RACK 114 MAIN CIRCUIT BREAKER (GRAVITY THICKENER BLDG)	Category 3 (*N3) (*N9)	9.5	64	0.48	18
STARTER RACK 115 (GRAVITY THICKENER 1)	Category 0	0.09	4	0.48	18
STARTER RACK 116 (GRAVITY THICKENER 2)	Category 0	0.08	3	0.48	18
STARTER RACK 118 (SECONDARY CLARIFIER 5)	Category 0 (*N3)	0.68	13	0.48	18
STARTER RACK 9 (PRIMARY CLARIFIERS 1 & 2)	Category 0	0.13	5	0.48	18
STARTER RACK 9 MAIN CIRCUIT BREAKER (PRIMARY CLARIFIERS 1 & 2)	Category 0	0.13	5	0.48	18
SWBD-1 (MAIN BLDG)	Greater Than Category 4 (*N9)	80	233	0.48	18
SWBD-2A (AERATION BLOWERS BLDG)	Greater Than Category 4 (*N3) (*N9)	36	143	0.48	18
SWBD-2A MAIN CIRCUIT BREAKER (AERATION BLOWERS BLDG)	Greater Than Category 4 (*N9)	78	230	0.48	18
SWBD-2B (AERATION BLOWERS BLDG)	Category 1	3.5	35	0.48	18
SWBD-3 (SLUDGE BLDG)	Greater Than Category 4 (*N9)	40	154	0.48	18
SWBD-3 MAIN CIRCUIT BREAKER (SLUDGE BLDG)	Greater Than Category 4 (*N9)	71	216	0.48	18

General Notes:

Equipment that was added per the James River Treatment Plant Phase I Improvements project dated May 2009 or existing equipment that changed arc flash hazard/risk categories in this study update are highlighted in yellow. Note these are category changes only; the equipment name, incident energy, or arc flash boundary may have changed.

(*N3) - Arcing Current Low Tolerances Used
(*N5) - Miscoordinated, Upstream Device Tripped
(*N9) - Max Arcing Duration Reached

Hampton Roads Sanitation District
James River Treatment Plant
Arc Flash Study
Arc Flash Evaluation Table - After All Recommendations Implemented (Label Data)

Bus Name	PPE Category	Incident Energy (cal/cm2)	Arc Flash Boundary (in)	Bus kV	Working Distance (in)
AERATIAON BLOWER 4 PANEL (AERATION BLOWERS BLDG)	Category 1	1.2	18	0.48	18
AERATIAON BLOWER 5 PANEL (AERATION BLOWERS BLDG)	Category 1	1.2	18	0.48	18
AERATIAON BLOWER 6 PANEL (AERATION BLOWERS BLDG)	Category 1	1.2	18	0.48	18
BKR TO INDUCTION MIXER CP (HYPOCHORITE BLDG)	Category 0	0.10	4	0.48	18
CENT FEED PUMP 121 VFD (SLUDGE BLDG)	Category 0	0.41	9	0.48	18
CENT FEED PUMP 122 VFD (SLUDGE BLDG)	Category 0	0.41	9	0.48	18
CENT FEED PUMP 123 VFD (SLUDGE BLDG)	Category 0	0.41	9	0.48	18
CENTRATE REC PUMP VFD (AERATION BLOWERS BLDG)	Category 0	0.17	5	0.48	18
CENTRIFUGE 1 CP (SLUDGE BLDG)	Category 0	1.0	16	0.48	18
CENTRIFUGE 2 CP (SLUDGE BLDG)	Category 0	1.0	16	0.48	18
CENTRIFUGE 3 CP (SLUDGE BLDG)	Category 0	1.0	16	0.48	18
DIGEST COMPRESSOR CP LP-5-10-1 (DIGESTER BLDG)	Category 0	0.25	7	0.48	18
DIGEST COMPRESSOR CP LP-5-10-2 (DIGESTER BLDG)	Category 0	0.28	7	0.48	18
DWC POLY FD PUMP 1 VFD (SLUDGE BLDG)	Category 0	0.20	6	0.48	18
DWC POLY FD PUMP 2 VFD (SLUDGE BLDG)	Category 0	0.20	6	0.48	18
DWC POLY FD PUMP 3 VFD (SLUDGE BLDG)	Category 0	0.20	6	0.48	18
GRINDER 1 CONTROL PANEL (SLUDGE BLDG)	Category 0	0.17	6	0.48	18
GRINDER 2 CONTROL PANEL (SLUDGE BLDG)	Category 0	0.17	6	0.48	18
GRINDER 3 CONTROL PANEL (SLUDGE BLDG)	Category 0	0.17	5	0.48	18
HYDRAULIC POWER PACK CP (SLUDGE BLDG)	Category 0	0.19	6	0.48	18
IFAS R1 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	Category 0	0.26	7	0.48	18
IFAS R1 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	Category 0	0.25	7	0.48	18
IFAS R2 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	Category 0	0.29	8	0.48	18
IFAS R2 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	Category 0	0.24	7	0.48	18
IFAS R3 NRCY PUMP 1 VFD (AERATION BLOWERS BLDG)	Category 0	0.27	7	0.48	18
IFAS R3 NRCY PUMP 2 VFD (AERATION BLOWERS BLDG)	Category 0	0.23	7	0.48	18
IFAS R4 NRCY PUMP 1 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.25	7	0.48	18
IFAS R4 NRCY PUMP 2 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.26	7	0.48	18
IFAS R5 NRCY PUMP 1 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.27	7	0.48	18
IFAS R5 NRCY PUMP 2 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.26	7	0.48	18
IFAS R6 NRCY PUMP 1 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.24	7	0.48	18
IFAS R6 NRCY PUMP 2 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.22	6	0.48	18
IFAS R7 NRCY PUMP 1 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.23	7	0.48	18
IFAS R7 NRCY PUMP 2 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.24	7	0.48	18
IFAS R8 NRCY PUMP 1 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.25	7	0.48	18
IFAS R8 NRCY PUMP 2 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.24	7	0.48	18
IFAS R9 NRCY PUMP 1 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.22	6	0.48	18
IFAS R9 NRCY PUMP 2 VFD (IFAS ELECTRICAL BLDG 1)	Category 0	0.21	6	0.48	18
INDUCTION MIXER CP (HYPOCHLORITE BLDG)	Category 0	0.10	4	0.48	18
MAIN MCC (MAIN BLDG)	Category 2	7.6	56	0.48	18
MCC (DEWATERING BLDG) (DEWATERING BLDG)	Category 0	0.84	15	0.48	18
MCC (DEWATERING BLDG) MAIN CIRCUIT BREAKER (DEWATERING BLDG)	Category 0	0.84	15	0.48	18
MCC (HYPO) (HYPOCHLORITE BLDG)	Category 0	0.41	9	0.48	18
MCC (HYPO) MAIN CIRCUIT BREAKER (HYPOCHLORITE BLDG)	Category 0	0.41	9	0.48	18
MCC (SCUM BLDG)	Category 0	0.12	4	0.48	18
MCC (SLUDGE BLDG)	Category 1	1.7	22	0.48	18
MCC (SLUDGE BLDG) MAIN CIRCUIT BREAKER (SLUDGE BLDG)	Category 1	1.7	22	0.48	18
MCC-2A (AERATION BLOWERS BLDG)	Category 0	1.4	20	0.48	18
MCC-2B (IFAS ELECTRICAL BLDG 1)	Category 0	0.80	14	0.48	18
MCC-2B MAIN CIRCUIT BREAKER (IFAS ELECTRICAL BLDG 1)	Category 0	0.80	14	0.48	18
MCC-2C (IFAS ELECTRICAL BLDG 2)	Category 0	0.61	12	0.48	18
MCC-2C MAIN CIRCUIT BREAKER (IFAS ELECTRICAL BLDG 2)	Category 0	0.61	12	0.48	18
MCC-5B (HEADWORKS & SCRUBBER FACILITY)	Category 0	0.33	8	0.48	18

Hampton Roads Sanitation District
James River Treatment Plant
Arc Flash Study
Arc Flash Evaluation Table - After All Recommendations Implemented (Label Data)

Bus Name	PPE Category	Incident Energy (cal/cm2)	Arc Flash Boundary (in)	Bus kV	Working Distance (in)
MCC-5B MAIN CIRCUIT BREAKER (HEADWORKS & SCRUBBER FACILITY)	Category 0	0.36	9	0.48	18
MCC-CC103 (RETURN PUMP STATION 1)	Category 0	1.2	18	0.48	18
MCC-CC103 MAIN CIRCUIT BREAKER (RETURN PUMP STATION 1)	Category 0	1.2	18	0.48	18
MCC-CC103A (RETURN PUMP STATION 2)	Category 0	0.65	12	0.48	18
MCC-CC103A MAIN CIRCUIT BREAKER (RETURN PUMP STATION 2)	Category 0	0.65	12	0.48	18
MCC-CC113 (NPW/EFFLUENT BLDG)	Category 0	0.26	7	0.48	18
MCC-G1 (SODIUM HYDROXIDE BLDG)	Category 0	0.13	5	0.48	18
MCC-G1 MAIN CIRCUIT BREAKER (SODIUM HYDROXIDE BLDG)	Category 0	0.15	5	0.48	18
MV MAIN SWGR (MAIN BLDG)	Category 2 (*N5) (*N9)	4.3	135	4.16	36
MV MAIN SWGR MAIN CIRCUIT BREAKER (MAIN BLDG)	Category 2 (*N5) (*N9)	4.3	135	4.16	36
NAOH RECIRC PUMP 5 STARTER (SODIUM HYDROXIDE BLDG)	Category 0 (*N5)	0.15	5	0.48	18
NAOH RECIRC PUMP 6 STARTER (SODIUM HYDROXIDE BLDG)	Category 0 (*N5)	0.15	5	0.48	18
PANEL (DIGESTER) (DIGESTER BLDG)	Category 0	0.42	9	0.48	18
PANEL DP2A (IN MCC) (AERATION BLOWERS BLDG)	Category 1	1.3	19	0.48	18
PANEL DP2B (IN MCC) (AERATION BLOWERS BLDG)	Category 0	0.75	14	0.48	18
PANEL DP2C (IN MCC) (AERATION BLOWERS BLDG)	Category 0	0.57	11	0.48	18
PANEL DP47 (SODIUM HYDROXIDE BLDG)	Category 1 (*N3)	1.6	22	0.48	18
PANEL JR1A (HYPOCHLORITE BLDG)	Category 0	0.45	10	0.48	18
PANEL JR1B (HYPOCHLORITE BLDG)	Category 0	0.45	10	0.48	18
PANEL JR2 (BISULFITE BLDG)	Category 0	0.29	8	0.48	18
PANEL JRM (HYPOCHLORITE BLDG)	Category 0 (*N5)	0.41	9	0.48	18
PANEL P5B (HEADWORKS & SCRUBBER FACILITY)	Category 0 (*N5)	0.33	8	0.48	18
PANEL P5C (HEADWORKS & SCRUBBER FACILITY)	Category 0 (*N5)	0.29	8	0.48	18
PANEL PP1 (DEWATERING BLDG)	Category 0	0.37	9	0.48	18
PANEL PP-1 (IN MCC) (SLUDGE BLDG)	Category 0	0.68	13	0.48	18
PANELBOARD A (MAIN BLDG (IN MCC))	Category 0	0.91	15	0.48	18
PANELBOARD B (MAIN BLDG (IN MCC))	Category 0	0.91	15	0.48	18
PANELBOARD C (MAIN BLDG (IN MCC))	Category 0	0.91	15	0.48	18
POLYMER SYSTEM CP17-2001 (DEWATERING BLDG)	Category 0	0.28	7	0.48	18
RETURN PUMP 1 VFD (RETURN PS 2)	Category 0	0.13	5	0.48	18
RETURN PUMP 2 VFD (RETURN PS 2)	Category 0	0.13	5	0.48	18
RETURN PUMP 3 VFD (RETURN PS 1)	Category 0	1.1	17	0.48	18
RETURN PUMP 4 VFD (RETURN PS 1)	Category 0	1.1	17	0.48	18
RETURN PUMP 5 VFD (RETURN PS 2)	Category 0	1.1	17	0.48	18
RETURN PUMP 6 VFD (RETURN PS 2)	Category 0	1.1	17	0.48	18
SCREEN 1 CP01-1210 (HEADWORKS & SCRUBBER FACILITY)	Category 0 (*N5)	0.29	8	0.48	18
SCREEN 2 CP01-1220 (HEADWORKS & SCRUBBER FACILITY)	Category 0 (*N5)	0.33	8	0.48	18
SCREEN 3 CP01-1230 (HEADWORKS & SCRUBBER FACILITY)	Category 0 (*N5)	0.29	8	0.48	18
STARTER RACK (AT) (AERATION TANKS)	Category 0	0.14	5	0.48	18
STARTER RACK (AT) MAIN CIRCUIT BREAKER (AERATION TANKS)	Category 0	0.14	5	0.48	18
STARTER RACK (DIGESTER) (DIGESTER BLDG)	Category 0	0.36	9	0.48	18
STARTER RACK (DIGESTER) MAIN CIRCUIT BREAKER (DIGESTER BLDG)	Category 0	0.36	9	0.48	18
STARTER RACK (NPW) (NPW/CHLORINE CONTACT TANKS)	Category 0 (*N5)	0.48	10	0.48	18
STARTER RACK (NPW) MAIN CIRCUIT BREAKER (NPW/CHLORINE CONTACT TANKS)	Category 0	0.48	10	0.48	18
STARTER RACK (SCRAPER DRIVE 3) (SECONDARY CLARIFIER 3)	Category 0 (*N3)	0.38	9	0.48	18
STARTER RACK (SCRAPER DRIVE 4) (SECONDARY CLARIFIER 4)	Category 0 (*N3)	0.50	11	0.48	18
STARTER RACK (SCRAPER DRIVE 5) (SECONDARY CLARIFIER 5)	Category 0 (*N3)	0.52	11	0.48	18
STARTER RACK (SCUM PUMP 4A,4B) (SECONDARY CLARIFIERS 3 & 4)	Category 0 (*N3)	0.38	9	0.48	18
STARTER RACK (SCUM PUMP 5) (SECONDARY CLARIFIER 5)	Category 0 (*N3)	0.79	14	0.48	18
STARTER RACK 100 (GRIT COLLECTORS 3 & 4)	Category 0	0.06	3	0.48	18
STARTER RACK 100 MAIN FUSES (GRIT COLLECTORS 3 & 4)	Category 0	0.13	5	0.48	18

Hampton Roads Sanitation District
James River Treatment Plant
Arc Flash Study
Arc Flash Evaluation Table - After All Recommendations Implemented (Label Data)

Bus Name	PPE Category	Incident Energy (cal/cm2)	Arc Flash Boundary (in)	Bus kV	Working Distance (in)
STARTER RACK 101 (DRAINAGE PS)	Category 0	0.17	5	0.48	18
STARTER RACK 101 MAIN CIRCUIT BREAKER (DRAINAGE PS)	Category 0	0.18	6	0.48	18
STARTER RACK 107 (PRIMARY CLARIFIERS 3 & 4)	Category 0 (*N3)	0.07	3	0.48	18
STARTER RACK 107 MAIN FUSES (PRIMARY CLARIFIERS 3 & 4)	Category 0 (*N3)	0.23	7	0.48	18
STARTER RACK 10A (SECONDARY CLARIFIERS 1 & 2)	Category 0	0.16	5	0.48	18
STARTER RACK 10A MAIN CIRCUIT BREAKER (SECONDARY CLARIFIERS 1 & 2)	Category 0	0.16	5	0.48	18
STARTER RACK 10B (GRIT COLLECTORS 1 & 2)	Category 0	0.15	5	0.48	18
STARTER RACK 10B MAIN CIRCUIT BREAKER (GRIT COLLECTORS 1 & 2)	Category 0	0.15	5	0.48	18
STARTER RACK 112 (DRAINAGE PUMP (SECONDARY CLARIFIER 4))	Category 0	0.14	5	0.48	18
STARTER RACK 112 MAIN CIRCUIT BREAKER (DRAINAGE PUMP (SECONDARY CLARIFIER 4))	Category 0	0.14	5	0.48	18
STARTER RACK 114 (GRAVITY THICKENER BLDG)	Category 0	0.27	7	0.48	18
STARTER RACK 114 MAIN CIRCUIT BREAKER (GRAVITY THICKENER BLDG)	Category 0	0.27	7	0.48	18
STARTER RACK 115 (GRAVITY THICKENER 1)	Category 0	0.09	4	0.48	18
STARTER RACK 116 (GRAVITY THICKENER 2)	Category 0	0.08	3	0.48	18
STARTER RACK 118 (SECONDARY CLARIFIER 5)	Category 0	0.41	9	0.48	18
STARTER RACK 9 (PRIMARY CLARIFIERS 1 & 2)	Category 0	0.13	5	0.48	18
STARTER RACK 9 MAIN CIRCUIT BREAKER (PRIMARY CLARIFIERS 1 & 2)	Category 0	0.13	5	0.48	18
SWBD-1 (MAIN BLDG)	Category 3	20	101	0.48	18
SWBD-2A (AERATION BLOWERS BLDG)	Category 3 (*N3)	17	90	0.48	18
SWBD-2A MAIN CIRCUIT BREAKER (AERATION BLOWERS BLDG)	Category 4	30	129	0.48	18
SWBD-2B (AERATION BLOWERS BLDG)	Category 1	3.5	35	0.48	18
SWBD-3 (SLUDGE BLDG)	Category 3	16	86	0.48	18
SWBD-3 MAIN CIRCUIT BREAKER (SLUDGE BLDG)	Category 4	27	122	0.48	18

Notes:

Equipment that was added per the James River Treatment Plant Phase I Improvements project dated May 2009 or existing equipment that changed arc flash hazard/risk categories in this study update are highlighted in yellow. Note these are category changes only; the equipment name, incident energy, or arc flash boundary may have changed.

(*N3) - Arcing Current Low Tolerances Used
(*N5) - Miscoordinated, Upstream Device Tripped
(*N9) - Max Arcing Duration Reached

Appendix JRTP-F

Example Arc Flash Labels

WARNING

Arc Flash and Shock Hazard Appropriate PPE Required

Arc Flash Protection

44 in	Flash Hazard Boundry
5.2 cal/cm^2 Flash Hazard at 18 in	
4.0 - 8.0 cal/cm^2	Flash Hazard Range

Shock Protection

480 VAC	Shock Hazard
42 in	Limited Approach Boundary
12 in	Restricted Approach Boundary
1 in	Prohibited Approach Boundary

PPE Level

- Cotton Underwear + FR Shirt & Pants
- Hardhat + Polycarbonate Face Shield + Safety Glasses + Ear Canal Inserts
- Voltage Rated Electrical Gloves
- Rubber Soled Leather Boots

Equipment Name: SWBD-1 MCB **Date: 03/25/15**

WARNING

Arc Flash and Shock Hazard Appropriate PPE Required

Arc Flash Protection

20 in	Flash Hazard Boundry
1.4 cal/cm^2 Flash Hazard at 18 in	
1.2 - 4.0 cal/cm^2	Flash Hazard Range

Shock Protection

480 VAC	Shock Hazard
42 in	Limited Approach Boundary
12 in	Restricted Approach Boundary
1 in	Prohibited Approach Boundary

PPE Level

- FR Shirt & Pants
- Hardhat + Polycarbonate Face Shield + Safety Glasses
- Voltage Rated Electrical Gloves
- Rubber Soled Leather Boots

Equipment Name: BKR TO MCC-2A **Date: 03/25/15**



WARNING

Arc Flash and Shock Hazard
Appropriate PPE Required

Arc Flash Protection

135 in	Flash Hazard Boundry
4.3 cal/cm^2 Flash Hazard at 36 in	
4.0 - 8.0 cal/cm^2	Flash Hazard Range

Shock Protection

4160 VAC	Shock Hazard
60 in	Limited Approach Boundary
26 in	Restricted Approach Boundary
7 in	Prohibited Approach Boundary

PPE Level

- Cotton Underwear + FR Shirt & Pants
- Hardhat + Polycarbonate Face Shield + Safety Glasses + Ear Canal Inserts
- Voltage Rated Electrical Gloves
- Rubber Soled Leather Boots

Equipment Name: GENERATOR BREAKER (TRAILER) **Date: 03/25/15**

Appendix JRTP-G

Cost Estimates for Recommendations

Hampton Roads Sanitation District
James River Treatment Plant
Arc Flash Study
Cost Estimates for Recommendations

ITEM	QUANT.	UNIT	MATERIAL COST	LABOR COST	TOTAL
CENTRIFUGE 1 CP (SLUDGE BLDG) - Adjust trip settings.	1	ea	$ -	$ -	$ -
CENTRIFUGE 2 CP (SLUDGE BLDG) - Adjust trip settings.	1	ea	$ -	$ -	$ -
CENTRIFUGE 3 CP (SLUDGE BLDG) - Adjust trip settings.	1	ea	$ -	$ -	$ -
MAIN MCC (MAIN BLDG) - Adjust trip settings.	1	ea	$ -	$ -	$ -
MCC (DEWATERING BLDG) - Adjust trip settings. Replace underrated breakers.	5	ea	$ 700	$ 200	$ 4,500
MCC (HYPO) (HYPOCHLORITE BLDG) - Adjust trip settings.	1	ea	$ -	$ -	$ -
MCC (SLUDGE BLDG) - Adjust trip settings. Replace underrated breakers.	2	ea	$ 700	$ 200	$ 1,800
MCC-5B (HEADWORKS & SCRUBBER FACILITY) - Adjust trip settings.	1	ea	$ -	$ -	$ -
MCC-CC103 (RETURN PUMP STATION 1) - Adjust trip settings. Replace underrated breakers.	2	ea	$ 700	$ 200	$ 1,800
MCC-CC103A (RETURN PUMP STATION 2) - Adjust trip settings. Replace underrated breakers.	5	ea	$ 700	$ 200	$ 4,500
MV MAIN SWGR (MAIN BLDG) - Adjust trip settings.	1	ea	$ -	$ -	$ -
PANEL JR1A (HYPOCHORITE BLDG) - Adjust trip settings.	1	ea	$ -	$ -	$ -
PANEL JR1B (HYPOCHORITE BLDG) - Replace breaker.	1	ea	$ 700	$ 200	$ 900
PANEL JRM (HYPOCHORITE BLDG) - Adjust trip settings.	1	ea	$ -	$ -	$ -
RETURN PUMP 3 VFD (RETURN PS 1) - Replace underrated breaker.	1	ea	$ 700	$ 200	$ 900
RETURN PUMP 4 VFD (RETURN PS 1) - Replace underrated breaker.	1	ea	$ 700	$ 200	$ 900
RETURN PUMP 5 VFD (RETURN PS 2) - Replace underrated breaker.	1	ea	$ 700	$ 200	$ 900
RETURN PUMP 6 VFD (RETURN PS 2) - Replace underrated breaker.	1	ea	$ 700	$ 200	$ 900
STARTER RACK (DIGESTER) (DIGESTER BLDG) - Adjust trip settings. Replace breaker with 3P, 70A breaker (explosion-proof).	1	ea	$ 1,600	$ 200	$ 1,800
STARTER RACK (NPW) (NPW/CHLORINE CONTACT TANKS) - Adjust trip settings.	1	ea	$ -	$ -	$ -
STARTER RACK 114 (GRAVIRTY THICKENER BLDG) - Replace breaker with 3P, 70A breaker.	1	ea	$ 700	$ 200	$ 900
SWBD-1 (MAIN BLDG) - Adjust trip settings.	1	ea	$ -	$ -	$ -
SWBD-2A (AERATION BLOWERS BLDG) - Adjust trip settings.	1	ea	$ -	$ -	$ -
SWBD-3 (SLUDGE BLDG) - Adjust trip settings.	1	ea	$ -	$ -	$ -
				Estimated Total:	**$ 19,800**

Notes:

Note 1 - Estimated cost based on RS Means 2014.

Note 2 - Overhead and profit not included.

Note 3 - Assumed trip setting adjustments would be performed by HRSD, so no cost is associated with this work.

Last Revision: 5/28/2020

Unit Process Standards

Unit Process Number	Description	ALARM SCREEN FILTER CHARACTER	NOTES
00	Not Assigned		
01	Influent Screening or Solids Screening		
02	Plant Influent Pumping		
03	Grit Removal		
04	Primary Clarifiers		
05	Biological Treatment		
06	Secondary Clarification		
07	Plant NPW Water Pumping		
08	RAS / WAS Pumping		
09	TWAS Biosolids Storage, Pumping, and Thickening		
10	Anaerobic Digestion		
11	Primary Biosolids Storage, Pumping, and Thickening		
12	Dewatering		
13	Incineration		
14	Aeration Blowers		
15	Chlorination		
16	Dechlorination		
17	Polymer Systems		
18	Odor Control		
19	Equipment Restart following Loss of Power		
20	Gas Monitoring		
21	Norfolk Water Solids		
22	Water Solids Centrifuges		
23	Water Solids Polymer		
24	Water Solids Conveying and Mixing		
25	Biosolids Receiving		
26	Drain Pump Station		
27	Intermediate Pump Station		
28	Centrate Treatment System		
29	Struvite Recovery System		
30	Scum Concentration		
31	Foam System		
32	Residual		
33	Effluent Pumping or Outfall Control		
34	THP - Thermal Hydrolysis Process		
35	FOG - Fats Oils and Grease		
36	Intermediate Treatment - Oxidation Towers & Intermediate Clarifiers		
37	SWRI Aquifer Injection Process		
38	HVAC		added as part of SWIFT
39	WAS Strip Process		
40	Standby Generators		
41	Power Monitoring		
42	WASSTRIP		
43	MBBR - Moving Bed Biofilm Reactor		added for JR upgrade 2019
44	Not Assigned		
45	Ferric Chloride/ Alum Storage and Feed		
46	Supplemental Carbon Feed System's		
47	Sodium Hydroxide		
48	Atlantic Plant WAS-Strip Process or Phosphorus Release		
49	Not Assigned		
50	Nitrification Enhancement Facility		
51	Denitrification Filters		
52	Bypass Pumping		
53	Off-line Storage		
54	Not Assigned		
55	Grinders		
56	Control Valve		
57	Collection System Monitoring		
58	Not Assigned		
59	Not Assigned		
60	EDS - LIMS System		
61	Not Assigned		
62	Not Assigned		
63	Not Assigned		
64	Not Assigned		
65	Not Assigned		
66	Not Assigned		
67	Not Assigned		
68	Not Assigned		
69	Not Assigned		
70	Compost		
71	Not Assigned		
72	Not Assigned		
73	Not Assigned		
74	Not Assigned		
75	SWIFT		SWIFT was conceived in HRSD's 75th year - Ryan Duke
76	Rapid Mix / Floc / Sed - SWIFT		SWIFT
77	Ozone - SWIFT		SWIFT
78	BAC - SWIFT		SWIFT
79	GAC - SWIFT		SWIFT
80	UV - SWIFT		SWIFT
81	SWIFT Chemical Systems		SWIFT
82	SWIFT Recharge Wells		
83	Not Assigned		

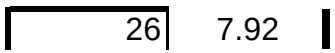
84	Not Assigned
85	Not Assigned
86	Not Assigned
87	Not Assigned
88	Not Assigned
89	Not Assigned
90	Plant Flow Metering
91	PRS
92	PCV
93	Gravity Pump Station
94	Monitoring Sites & MMP Sites
95	Reserved for SCADA
96	Reserved for SCADA
97	Reserved for SCADA
98	Reserved for SCADA
99	DCS Unit Process (Cabinet Door Alarms and UPS Alarms, etc.)

	BS	BT	BU	BV	BW
1	Pore Press	Tip	Zone	b	m
2					
3					
4					
5	0.8	1	1		
6	1.32	10		0.0289427	83.767764
7	1.4	9		56.885109	0.2679362
8					
9	0.2	1	2		
10	0.52	2		0.6484198	8.7240619
11	0.8	1		7.2457893	0.0841188
12					
13	-0.1	3	3		
14	-0.09	4.7		267.23128	3.145E+19
15	0	3.4		3.4	0.0273884
16	0.75	34		3.4	21.544347
17	1.32	10		170.13485	0.1168371
18					
19	-0.09	4	4		
20	-0.08	7		615.74718	2.013E+24
21	0	5		5	0.0149073
22	0.48	57		5	159.17876
23	0.75	34		142.82393	0.147538
24					
25	-0.08	7	5		
26	-0.07	12		522.11202	2.56E+23
27	0	9		9	0.016412
28	0.29	80		9	1870.1991
29	0.48	57		134.21058	0.1679514
30					
31	-0.07	12	6		
32	-0.06	25		2044.055	7.514E+31
33	0	17		17	0.0016162
34	0.2	120		17	17525.145
35	0.22	100		743.00837	0.0001099
36	0.29	80		201.6389	0.041264
37					
38	-0.06	25	7		
39	-0.05	40		419.4304	2.582E+20
40	0	34		34	0.0387595
41	0.15	200		34	135002.1
42	0.2	120		925.92593	3.656E-05
43					
44	-0.05	40	8		
45	-0.04	100		3906.25	6.223E+39
46	0	70		70	0.0001341
47	0.1	300		70	2090413.2
48	0.15	200		675	0.0003007
49					
50	-0.04	80	9,11,12		
51	-0.03	250		7629.3945	3.055E+49
52	0	200		200	0.0005884
53	0.05	500		200	90949470
54	0.1	300		833.33333	3.656E-05
55					
56	-0.03	250	10,11,12		
57	-0.02	1000		16000	1.607E+60
58	0.05	1000		1000	1
59	0.05	500		707.10678	1

Project	Advanced Nutrient Reduction Improvements-JRTP					
Location	Newport News, Virginia		JE-CPT-3	N37.086333	W-76.533352	
Sounding	JE-CPT-3					
Sounding Date	12/2/19					
Ground Elev	26 feet					
Water Depth	~20.5 feet		20.50	feet	6.25	meters
Depth min		0	ft			
Depth max		120	ft			
major tic		5	ft			
Depth per page		60	ft			
Number of Pages		2				
Results Page						
Tip Max		1200	tsf			
Enlarged Tip Max		60	tsf			
Sleeve Friction Max		5	tsf			
Sleeve Friction Major Tick		1				
Pore Pressure Max		800	feet of water			
Pore Pressure Major Tick		200				
Soil Behavior Type Page						
Ic Min		1				
Ic Max		4				
Ic Major Tick		0.5				
Strength Page						
SPT Max		100	bpf			
FrictionAngle Min		20	degrees			
FrictionAngle Max		50	degrees			
Su Max		5	tsf			
Su Major Tick		1	tsf			
Sensitivity Max		10	Constant volume phi angle =		32	degrees =
Sensitivity Major Tick		2				

	Nkt	Ndu
Site	15	5
Holocene	15	6
Nanjemoy	15	4
Marlboro	18	5
Aquia	24	7

Modulus Page	alpha for sand	6	alpha for clay	6
OCR Max	40		Clay PI	10
major tick	5			
E25 Max	4000	tsf		
M Max	4000	tsf		



0.558505 radians

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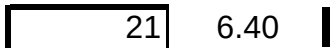
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	BS	BT	BU	BV	BW
1	Pore Press	Tip	Zone	b	m
2					
3					
4					
5	0.8	1	1		
6	1.32	10		0.0289427	83.767764
7	1.4	9		56.885109	0.2679362
8					
9	0.2	1	2		
10	0.52	2		0.6484198	8.7240619
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13	-0.1	3	3		
14	-0.09	4.7		267.23128	3.145E+19
15	0	3.4		3.4	0.0273884
16	0.75	34		3.4	21.544347
17	1.32	10		170.13485	0.1168371
18					
19	-0.09	4	4		
20	-0.08	7		615.74718	2.013E+24
21	0	5		5	0.0149073
22	0.48	57		5	159.17876
23	0.75	34		142.82393	0.147538
24					
25	-0.08	7	5		
26	-0.07	12		522.11202	2.56E+23
27	0	9		9	0.016412
28	0.29	80		9	1870.1991
29	0.48	57		134.21058	0.1679514
30					
31	-0.07	12	6		
32	-0.06	25		2044.055	7.514E+31
33	0	17		17	0.0016162
34	0.2	120		17	17525.145
35	0.22	100		743.00837	0.0001099
36	0.29	80		201.6389	0.041264
37					
38	-0.06	25	7		
39	-0.05	40		419.4304	2.582E+20
40	0	34		34	0.0387595
41	0.15	200		34	135002.1
42	0.2	120		925.92593	3.656E-05
43					
44	-0.05	40	8		
45	-0.04	100		3906.25	6.223E+39
46	0	70		70	0.0001341
47	0.1	300		70	2090413.2
48	0.15	200		675	0.0003007
49					
50	-0.04	80	9,11,12		
51	-0.03	250		7629.3945	3.055E+49
52	0	200		200	0.0005884
53	0.05	500		200	90949470
54	0.1	300		833.33333	3.656E-05
55					
56	-0.03	250	10,11,12		
57	-0.02	1000		16000	1.607E+60
58	0.05	1000		1000	1
59	0.05	500		707.10678	1

Project	Advanced Nutrient Reduction Improvements-JRTP					
Location	Newport News, Virginia		JE-CPT-1	N37.084964	W-76.533326	
Sounding	JE-CPT-1					
Sounding Date	12/2/19					
Ground Elev	21 feet					
Water Depth	17.0 feet		17.00	feet	5.18	meters
Depth min		0	ft			
Depth max		120	ft			
major tic		5	ft			
Depth per page		60	ft			
Number of Pages		2				
Results Page						
Tip Max		1200	tsf			
Enlarged Tip Max		60	tsf			
Sleeve Friction Max		5	tsf			
Sleeve Friction Major Tick		1				
Pore Pressure Max		800	feet of water			
Pore Pressure Major Tick		200				
Soil Behavior Type Page						
Ic Min		1				
Ic Max		4				
Ic Major Tick		0.5				
Strength Page						
SPT Max		100	bpf			
FrictionAngle Min		20	degrees			
FrictionAngle Max		50	degrees			
Su Max		5	tsf			
Su Major Tick		1	tsf			
Sensitivity Max		10	Constant volume phi angle =		32	degrees =
Sensitivity Major Tick		2				

	Nkt	Ndu
Site	15	5
Holocene	15	6
Nanjemoy	15	4
Marlboro	18	5
Aquia	24	7

Modulus Page	alpha for sand	6	alpha for clay	6
OCR Max	40		Clay PI	10
major tick	5			
E25 Max	4000	tsf		
M Max	4000	tsf		



0.558505 radians

Spreadsheet Template Agreement

Although In-Situ Soil Testing, L.C. has tested the spreadsheet template for accuracy, we r
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	BS	BT	BU	BV	BW
1	Pore Press	Tip	Zone	b	m
2					
3					
4					
5	0.8	1	1		
6	1.32	10		0.0289427	83.767764
7	1.4	9		56.885109	0.2679362
8					
9	0.2	1	2		
10	0.52	2		0.6484198	8.7240619
11	0.8	1		7.2457893	0.0841188
12					
13	-0.1	3	3		
14	-0.09	4.7		267.23128	3.145E+19
15	0	3.4		3.4	0.0273884
16	0.75	34		3.4	21.544347
17	1.32	10		170.13485	0.1168371
18					
19	-0.09	4	4		
20	-0.08	7		615.74718	2.013E+24
21	0	5		5	0.0149073
22	0.48	57		5	159.17876
23	0.75	34		142.82393	0.147538
24					
25	-0.08	7	5		
26	-0.07	12		522.11202	2.56E+23
27	0	9		9	0.016412
28	0.29	80		9	1870.1991
29	0.48	57		134.21058	0.1679514
30					
31	-0.07	12	6		
32	-0.06	25		2044.055	7.514E+31
33	0	17		17	0.0016162
34	0.2	120		17	17525.145
35	0.22	100		743.00837	0.0001099
36	0.29	80		201.6389	0.041264
37					
38	-0.06	25	7		
39	-0.05	40		419.4304	2.582E+20
40	0	34		34	0.0387595
41	0.15	200		34	135002.1
42	0.2	120		925.92593	3.656E-05
43					
44	-0.05	40	8		
45	-0.04	100		3906.25	6.223E+39
46	0	70		70	0.0001341
47	0.1	300		70	2090413.2
48	0.15	200		675	0.0003007
49					
50	-0.04	80	9,11,12		
51	-0.03	250		7629.3945	3.055E+49
52	0	200		200	0.0005884
53	0.05	500		200	90949470
54	0.1	300		833.33333	3.656E-05
55					
56	-0.03	250	10,11,12		
57	-0.02	1000		16000	1.607E+60
58	0.05	1000		1000	1
59	0.05	500		707.10678	1

Project	Advanced Nutrient Reduction Improvements-JRTP					
Location	Newport News, Virginia		JE-CPT-2	N37.084505	W-76.532785	
Sounding	JE-CPT-2					
Sounding Date	12/5/19					
Ground Elev	22 feet					
Water Depth	~16 feet		16.00	feet	4.8768593	meters
Depth min		0	ft			
Depth max		120	ft			
major tic		5	ft			
Depth per page		60	ft			
Number of Pages		2				
Results Page						
Tip Max		1200	tsf			
Enlarged Tip Max		60	tsf			
Sleeve Friction Max		5	tsf			
Sleeve Friction Major Tick		1				
Pore Pressure Max		800	feet of water			
Pore Pressure Major Tick		200				
Soil Behavior Type Page						
Ic Min		1				
Ic Max		4				
Ic Major Tick		0.5				
Strength Page						
SPT Max		100	bpf			
FrictionAngle Min		20	degrees			
FrictionAngle Max		50	degrees			
Su Max		5	tsf			
Su Major Tick		1	tsf			
Sensitivity Max		10	Constant volume phi angle =		32	degrees =
Sensitivity Major Tick		2				

	Nkt	Ndu
Site	15	5
Holocene	15	6
Nanjemoy	15	4
Marlboro	18	5
Aquia	24	7

Modulus Page	alpha for sand	6	alpha for clay	6
OCR Max	40		Clay PI	10
major tick	5			
E25 Max	4000	tsf		
M Max	4000	tsf		



0.558505 radians

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FROEHLING & ROBERTSON, INC.

SUBSURFACE EXPLORATION PLAN

Drawing No. 2

Project No: 61X-0220G
Client: Hazen and Sawyer
Project: HRSD JRTP Advanced Nutrient Reduction Improvements
City/State: Newport News, Virginia

Source: Google Earth
Scale: NTS
Date: February 2020
Rev. 5/27/2020



MATCH LINE SHEET 7

MATCH LINE SHEET 6

MATCH LINE SHEET 5

MATCH LINE SHEET 3

MATCH LINE SHEET 2

APPROXIMATE LOCATION OF CPT-02

APPROXIMATE LOCATION OF BH-05

(SEE NOTE 1)

KEY MAP
N.T.S.

EXISTING CONDITIONS
FOR
TOPOGRAPHIC SURVEY OF
JAMES RIVER TREATMENT PLANT
NEWPORT NEWS, VIRGINIA
SCALE 1"=25' MARCH 17, 2020
SHEET 4

PRECISION MEASUREMENTS, INC.
SURVEYORS – GPS – GIS – MAPPING – 3-D LASER SCANNING
629 PHOENIX DRIVE, SUITE 100
VIRGINIA BEACH, VIRGINIA 23452
TEL.: (757) 368-0945
FAX: (757 368-9375
www.precisionmeasurements.com
VIRGINIA BEACH – NEWPORT NEWS – RICHMOND
CHANTILLY, VIRGINIA – BALTIMORE, MARYLAND

GRAPHIC SCALE
0 25 50 75
1"=25'

COMMONWEALTH OF VIRGINIA
IVAN R. LINEBERRY
Lic. No. 003230
3/13/2020
LAND SURVEYOR

MATCH LINE SHEET 10

MATCH LINE SHEET 7

MATCH LINE SHEET 4

MATCH LINE SHEET 3

BH-05 NOT PERFORMED HERE. SEE SHEET 4 FOR APPROXIMATE BORING LOCATION

BH-03 AND CPT-02 NOT PERFORMED HERE. SEE SHEETS 4 AND 6 FOR APPROXIMATE BORING LOCATIONS

APPROXIMATE LOCATION OF BH-03

NOW OR FORMERLY
CITY OF NEWPORT NEWS
D.B. 39, PG. 430
D.B. 37, PG. 544
PARCEL ID: 190000101
100 CITY FARM ROAD

PIN & CAP #102
N=3,560,493.467
E=12,056,995.009
ELEV=24.69

PIN & CAP #100
N=3,560,261.73
E=12,057,274.42
ELEV=24.99

(SEE NOTE 1)

COMMONWEALTH OF VIRGINIA
IVAN R. LINEBERRY
Lic. No. 002230
3/13/2020
LAND SURVEYOR

KEY MAP
N.T.S.

EXISTING CONDITIONS

FOR

TOPOGRAPHIC SURVEY OF
JAMES RIVER TREATMENT PLANT
NEWPORT NEWS, VIRGINIA
SCALE 1"=25' MARCH 17, 2020
SHEET 6

PRECISION MEASUREMENTS, INC.
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CHANTILLY, VIRGINIA – BALTIMORE, MARYLAND

0 25 50 75
GRAPHIC SCALE
1"=25'

On-plant Recharge Wells, Typical of 4
Electrical Load List

Prepared by: **Hazen**
Date Modified: **6/1/2020**

Phase: PROPOSED/FUTURE

Facility / Load	Description	Starter Type	Voltage	Phase	Power Factor	Proposed Loads							Future Loads							All Phases Total					Notes
						Connected Load				Demand Factor	Operating Load		Connected Load				Demand Factor	Operating Load		Connected Load		Operating Load			
						HP	KW	KVA	FLA		FLA	KW	HP	KW	KVA	FLA		FLA	KW	FLA	KVA	FLA	KW	KVA	
TOTAL LOADS (Summary of all loads below)	Recharge Well					150.9	7.5	0.0	#NAME?		#######	#NAME?	0.0	0.0	0.0	#NAME?		#######	#NAME?	#NAME?	#NAME?	#######	#######	#######	
	TOTAL LOAD								**#NAME?**		#######	**#NAME?**				**#NAME?**		#######	**#NAME?**	**#NAME?**	**#NAME?**	#######	#######	#######	
Recharge Well	Backflush Pump	VFD	480	3	0.90	150.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#######	#######	#######	
	Recharge Well Isolation Valve		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#######	#######	#######	
	Recharge Well Return Valve		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#######	#######	#######	
	Recharge Well Flow Control Valve		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#######	#######	#######	
	Lighting		480	3	0.90		0.5		#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#######	#######	#######	
	HVAC		480	3	0.90		7.0		#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#######	#######	#######	
	Subtotal								**#NAME?**		#######	**#NAME?**				**#NAME?**		#######	**#NAME?**	**#NAME?**	**#NAME?**	#######	#######	#######	

SUMMARY SHEET

Electrical Load List

Prepared by: **Hazen**

Date Modified **3/25/2020**

Phase: **SHOWALL**

		Proposed Loads						Future Loads						All Phases Total					Notes
		Connected Load				Operating Load		Connected Load				Operating Load		Connected		Operating Load			
Facility / Load	**Description**	**HP**	**KW**	**KVA**	**FLA**	**FLA**	**KW**	**HP**	**KW**	**KVA**	**FLA**	**FLA**	**KW**	**FLA**	**KVA**	**FLA**	**KW**	**KVA**	
TOTAL LOADS																			
	Process Building 1	490.3	188.0	675.0	#NAME?	#######	#######	100.0	0.0	0.0	######	#######	#NAME?	#NAME?	#NAME?	#NAME?	#######	#######	
	Process Building 2	2206.3	1266.0	0.0	#NAME?	#######	#######	0.0	0.0	0.0	######	#######	#NAME?	#NAME?	#NAME?	#NAME?	#######	#######	

Process Building 2
Electrical Load List

Prepared by: **Hazen**
Date Modified **6/1/2020**

Phase: SHOWALL

Facility / Load	DEMO Y/N	Description	Starter Type	Voltage	Phase	Power Factor	Proposed Loads							Future Loads							All Phases Total					Notes
							Connected Load				Demand Factor	Operating Load		Connected Load				Demand Factor	Operating Load		Connected		Operating Load			
							HP	KW	KVA	FLA		FLA	KW	HP	KW	KVA	FLA		FLA	KW	FLA	KVA	FLA	KW	KVA	
Process Building 2	NO	GAC Influent Pump 1	VFD	480	3	0.90	75.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Influent Pump 2	VFD	480	3	0.90	75.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Influent Pump 3	VFD	480	3	0.90	75.0			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF/GAC Backwash Pump 1	VFD	480	3	0.90	100.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF/GAC Backwash Pump 2	VFD	480	3	0.90	100.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF/GAC Backwash Pump 3	VFD	480	3	0.90	100.0			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF/GAC Backwash Low Flow Recirc Valve		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF/GAC Scour Blower 1	VFD	480	3	0.90	250.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF/GAC Scour Blower 2	VFD	480	3	0.90	250.0			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Inlet Control Valve 1		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Effluent Control Valve 1		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Intermediate PS Discharge Valve 1		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Recycle PS Discharge Valve 1		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Backwash Air Control Valve 1		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Backwash Water Control Valve 1		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Washwater Drain Channel Valve 1		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Inlet Control Valve 2		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Effluent Control Valve 2		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Intermediate PS Discharge Valve 2		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Recycle PS Discharge Valve 2		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Backwash Air Control Valve 2		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Backwash Water Control Valve 2		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Washwater Drain Channel Valve 2		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Inlet Control Valve 3		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Effluent Control Valve 3		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Intermediate PS Discharge Valve 3		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Recycle PS Discharge Valve 3		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Backwash Air Control Valve 3		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Backwash Water Control Valve 3		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Washwater Drain Channel Valve 3		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Inlet Control Valve 4		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Effluent Control Valve 4		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Intermediate PS Discharge Valve 4		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Recycle PS Discharge Valve 4		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Backwash Air Control Valve 4		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Backwash Water Control Valve 4		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Washwater Drain Channel Valve 4		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Inlet Control Valve 5		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Effluent Control Valve 5		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Intermediate PS Discharge Valve 5		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Recycle PS Discharge Valve 5		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Backwash Air Control Valve 5		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Backwash Water Control Valve 5		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Washwater Drain Channel Valve 5		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Inlet Control Valve 6		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Effluent Control Valve 6		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Intermediate PS Discharge Valve 6		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Recycle PS Discharge Valve 6		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Backwash Air Control Valve 6		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Backwash Water Control Valve 6		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Washwater Drain Channel Valve 6		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Inlet Control Valve 7		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Effluent Control Valve 7		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Intermediate PS Discharge Valve 7		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Recycle PS Discharge Valve 7		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Backwash Air Control Valve 7		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Backwash Water Control Valve 7		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	BAF Washwater Drain Channel Valve 7		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Inlet Control Valve 1		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Effluent Control Valve 1		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Seal Wier Discharge Valve 1		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Recycle PS Discharge Valve 1		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Backwash Air Control Valve 1		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Backwash Water Control Valve 1		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Washwater Drain Channel Valve 1		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Inlet Control Valve 2		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Effluent Control Valve 2		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Seal Wier Discharge Valve 2		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Recycle PS Discharge Valve 2		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Backwash Air Control Valve 2		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Backwash Water Control Valve 2		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Washwater Drain Channel Valve 2		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Inlet Control Valve 3		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Effluent Control Valve 3		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Seal Wier Discharge Valve 3		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Recycle PS Discharge Valve 3		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Backwash Air Control Valve 3		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Backwash Water Control Valve 3		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Washwater Drain Channel Valve 3		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Inlet Control Valve 4		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Effluent Control Valve 4		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Seal Wier Discharge Valve 4		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Recycle PS Discharge Valve 4		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Backwash Air Control Valve 4		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Backwash Water Control Valve 4		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Washwater Drain Channel Valve 4		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Inlet Control Valve 5		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Effluent Control Valve 5		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Seal Wier Discharge Valve 5		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

Process Building 2
Electrical Load List

Prepared by: **Hazen**
Date Modified **6/1/2020**

Phase: SHOWALL

Facility / Load	DEMO Y/N	Description	Starter Type	Voltage	Phase	Power Factor	Proposed Loads							Future Loads						All Phases Total					Notes
							Connected Load				Demand Factor	Operating Load		Connected Load				Demand Factor	Operating Load		Connected		Operating Load			
							HP	KW	KVA	FLA		FLA	KW	HP	KW	KVA	FLA		FLA	KW	FLA	KVA	FLA	KW	KVA	
	NO	GAC Recycle PS Discharge Valve 5		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Backwash Air Control Valve 5		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Backwash Water Control Valve 5		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Washwater Drain Channel Valve 5		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Inlet Control Valve 6		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Effluent Control Valve 6		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Seal Wier Discharge Valve 6		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Recycle PS Discharge Valve 6		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Backwash Air Control Valve 6		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Backwash Water Control Valve 6		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Washwater Drain Channel Valve 6		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Inlet Control Valve 7		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Effluent Control Valve 7		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Seal Wier Discharge Valve 7		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Recycle PS Discharge Valve 7		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Backwash Air Control Valve 7		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Backwash Water Control Valve 7		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	GAC Washwater Drain Channel Valve 7		480	3	0.90	0.3			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	H2O2 Feed In-line Blender	VFD	480	3	0.90	15.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	UV Reactor 1 Influent Valve		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	UV Reactor 2 Influent Valve		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	UV Reactor 3 Influent Valve		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	UV/AOP Reactor 1		480	3	0.99		362.0		#NAME?	1.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	UV/AOP Reactor 2		480	3	0.99		362.0		#NAME?	1.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	UV/AOP Reactor 3		480	3	0.99		362.0		#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	UV Reactor 1 Effluent Valve		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	UV Reactor 2 Effluent Valve		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	UV Reactor 3 Effluent Valve		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	SWIFT Water Chem Feed In-line Blender	VFD	480	3	0.90	15.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	SWIFT Water NH2CL Feed Channel Mixer	VFD	480	3	0.90	15.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	SWIFT Pump 1	VFD	480	3	0.90	250.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	SWIFT Pump 2	VFD	480	3	0.90	250.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	SWIFT Pump 3	VFD	480	3	0.90	250.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	SWIFT Pump 4	VFD	480	3	0.90	250.0			#NAME?	0.00	#######	#NAME?								#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	SWIFT Non-Potable Pump 1	VFD	480	3	0.90	15.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	SWIFT Non-Potable Pump 2	VFD	480	3	0.90	15.0			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	SWIFT Non-Potable Pump 3	VFD	480	3	0.90	20.0			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	Hydropneumatic Tank Compressor 1	FVNR	480	3	0.90	5.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	Hydropneumatic Tank Compressor 2	FVNR	480	3	0.90	5.0			#NAME?	0.00	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	Instrumentation, Receptacles, Misc		120	1	0.90		20.0		#NAME?	1.00	#######	#NAME?								#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	Lighting		120	1	0.90		10.0		#NAME?	1.00	#######	#NAME?								#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	NO	HVAC		480	3	0.90	50.0	150.0		#NAME?	1.00	#######	#NAME?								#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

Process Building 1
Electrical Load List

Prepared by: **Hazen**
Date Modified **6/1/2020**

Phase: SHOWALL

Facility / Load	Description	Starter Type	Voltage	Phase	Power Factor	Proposed Loads							Future Loads							All Phases Total					Notes
						Connected Load				Demand Factor	Operating Load		Connected Load				Demand Factor	Operating Load		Connected		Operating Load			
						HP	KW	KVA	FLA		FLA	KW	HP	KW	KVA	FLA		FLA	KW	FLA	KVA	FLA	KW	KVA	
Process Building 1	Rapid Mix 1	VFD	480	3	0.85	20.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Rapid Mix 2	VFD	480	3	0.90	20.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 1 Flow Control Valve		480	3	0.90	0.3			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 2 Flow Control Valve		480	3	0.90	0.3			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 3 Flow Control Valve		480	3	0.90	0.3			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 4 Flow Control Valve		480	3	0.90	0.3			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 1 Floc Zone 1 Mixer	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 1 Floc Zone 2 Mixer	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 1 Floc Zone 3 Mixer	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 2 Floc Zone 1 Mixer	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 2 Floc Zone 2 Mixer	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 2 Floc Zone 3 Mixer	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 3 Floc Zone 1 Mixer	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 3 Floc Zone 2 Mixer	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 3 Floc Zone 3 Mixer	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 4 Floc Zone 1 Mixer	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 4 Floc Zone 2 Mixer	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 4 Floc Zone 3 Mixer	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 1 Sludge Collector Drive	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	1.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 2 Sludge Collector Drive	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	2.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 3 Sludge Collector Drive	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	3.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Train 4 Sludge Collector Drive	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	4.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Settled Solids Pump 1	VFD	480	3	0.90	8.5			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Settled Solids Pump 2	VFD	480	3	0.90	8.5			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Settled Solids Pump 3	VFD	480	3	0.90	8.5			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Settled Solids Pump 4	VFD	480	3	0.90	8.5			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Settled Solids Pump 5	VFD	480	3	0.90	8.5			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	SWIFT Sanitary Grinder Pump 1	FVNR	480	3	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	1.90	########	#NAME?	0.0	0.0	0.0	0.0	0.0	
	SWIFT Sanitary Grinder Pump 2	FVNR	480	3	0.90	1.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	2.90	########	#NAME?	0.0	0.0	0.0	0.0	0.0	
	Ozone Generator 1		480	3	0.90			225.0	#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Ozone Generator 2		480	3	0.90			225.0	#NAME?	0.90	#NAME?	#NAME?				#NAME?	1.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Ozone Generator 3		480	3	0.90			225.0	#NAME?	0.00	#NAME?	#NAME?				#NAME?	2.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Open Loop CW Pump 1	FVNR	480	3	0.90	7.5			#NAME?	0.90	#NAME?	#NAME?				#NAME?	3.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Open Loop CW Pump 2	FVNR	480	3	0.90	7.5			#NAME?	0.00	#NAME?	#NAME?				#NAME?	4.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Closed Loop CW Pump 1	FVNR	480	3	0.90	7.5			#NAME?	0.90	#NAME?	#NAME?				#NAME?	5.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Closed Loop CW Pump 1	FVNR	480	3	0.90	7.5			#NAME?	0.00	#NAME?	#NAME?				#NAME?	6.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Ozone Destruct Blower 1	VFD	480	3	0.90	5.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	7.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Ozone Destruct Blower 2	VFD	480	3	0.90	5.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	8.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Ozone Destruct Heater 1		480	3	0.90		3.6		#NAME?	0.90	#NAME?	#NAME?				#NAME?	9.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Ozone Destruct Heater 2		480	3	0.90		3.6		#NAME?	0.00	#NAME?	#NAME?				#NAME?	10.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Ozone Destruct Blower 3		480	3	0.90	5.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	11.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Ozone Destruct Blower 4		480	3	0.90	5.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Ozone Destruct Heater 3		480	3	0.90		3.6		#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Ozone Destruct Heater 4		480	3	0.90		3.6		#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Post Ozone Blower 1	VFD	480	3	0.90				#NAME?	0.00	#NAME?	#NAME?	50.0			#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	Allowance for future, if needed
	Post Ozone Blower 2	VFD	480	3	0.90				#NAME?	0.00	#NAME?	#NAME?	50.0			#NAME?	0.00	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	Allowance for future, if needed
	Post Ozone Blower Blow Off Valve		480	3	0.90	0.3			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Instrumentation, Receptacles, and Misc Loads		120	1	0.90		20.0		#NAME?	1.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Lighting		120	1	0.90		10.0		#NAME?	1.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	HVAC	N/A	480	3	0.90	50.0	105.0		#NAME?	1.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
Chemical Building 1																									
	Aluminum Chlorohydrate Transfer Pump 1 (Duty)	FVNR	480	3	0.90	3.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Aluminum Chlorohydrate Transfer Pump 2 (Standby)	FVNR	480	3	0.90	3.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Aluminum Chlorohydrate Feed Pump 1 (Duty - Rapid Mix)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Aluminum Chlorohydrate Feed Pump 2 (Standby)		120	1	0.90	1.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Aluminum Chlorohydrate Sump Pump		120	1	0.90	0.4			#NAME?	0.50	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Hydroxide Feed Pump 1 (Duty - Post-UV)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Hydroxide Feed Pump 2 (Standby)		120	1	0.90	1.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Hydroxide Sump Pump		120	1	0.90	0.4			#NAME?	0.50	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Hypochlorite Transfer Pump 1 (Duty)	FVNR	480	3	0.90	3.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Hypochlorite Transfer Pump 2 (Standby)	FVNR	480	3	0.90	3.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Hypochlorite Feed Pump 1 (Duty - Rapid Mix)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Hypochlorite Feed Pump 2 (Duty - Pre-Filter)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Hypochlorite Feed Pump 3 (Duty - Filter Backwash)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Hypochlorite Feed Pump 4 (Duty - Post-UV Monochloramines)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Hypochlorite Feed Pump 5 (Standby)		120	1	0.90	1.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Hypochlorite Sump Pump		120	1	0.90	0.4			#NAME?	0.50	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Liquid Ammonium Sulfate Feed Pump 1 (Duty - Post-UV Monochloramines)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Liquid Ammonium Sulfate Feed Pump 2 (Standby)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Liquid Ammonium Sulfate Sump Pump		120	1	0.90	0.4			#NAME?	0.50	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Phosphoric Acid Tote Scale 1		120	1	0.90		0.1		#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Phosphoric Acid Tote Scale 2		120	1	0.90		0.1		#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Phosphoric Acid Feed Pump 1 (Duty - Pre-Filter)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Phosphoric Acid Feed Pump 2 (Standby)		120	1	0.90	1.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Phosphoric Acid Sump Pump		120	1	0.90	0.4			#NAME?	0.50	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Bisulfite Transfer Pump 1 (Duty)	FVNR	480	3	0.90	3.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Bisulfite Transfer Pump 2 (Standby)	FVNR	480	3	0.90	3.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Bisulfite Feed Pump 1 (Duty - Post-Ozone)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Bisulfite Feed Pump 2 (Duty - Post-UV)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Bisulfite Feed Pump 3 (Standby)		120	1	0.90	1.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Bisulfite Sump Pump		120	1	0.90	0.4			#NAME?	0.50	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Hydrogen Peroxide Transfer Pump 1 (Duty)	FVNR	480	3	0.90	3.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Hydrogen Peroxide Transfer Pump 2 (Standby)	FVNR	480	3	0.90	3.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Hydrogen Peroxide Feed Pump 1 (Duty - Ozone)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Hydrogen Peroxide Feed Pump 2 (Duty - UV)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Hydrogen Peroxide Feed Pump 3 (Standby)		120	1	0.90	1.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Hydrogen Peroxide Sump Pump		120	1	0.90	0.4			#NAME?	0.50	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Flocculation Aid Polymer Tote Scale 1		120	1	0.90		0.1		#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Flocculation Aid Polymer Tote Scale 2		120	1	0.90		0.1		#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Flocculation Aid Polymer Activation Unit 1 (Duty)		208	1	0.90		4.6		#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Flocculation Aid Polymer Activation Unit 2 (Standby)		208	1	0.90		4.6		#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Flocculation Aid Polymer Feed Pump 1 (Duty - Train 1)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Flocculation Aid Polymer Feed Pump 2 (Duty - Train 2)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Flocculation Aid Polymer Feed Pump 3 (Duty - Train 3)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	########	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

Process Building 1
Electrical Load List

Prepared by: **Hazen**
Date Modified **6/1/2020**

Phase: SHOWALL

Facility / Load	Description	Starter Type	Voltage	Phase	Power Factor	Proposed Loads							Future Loads							All Phases Total					Notes
						Connected Load				Demand Factor	Operating Load		Connected Load				Demand Factor	Operating Load		Connected		Operating Load			
						HP	KW	KVA	FLA		FLA	KW	HP	KW	KVA	FLA		FLA	KW	FLA	KVA	FLA	KW	KVA	
	Flocculation Aid Polymer Feed Pump 4 (Duty - Train 4)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Flocculation Aid Polymer Feed Pump 5 (Standby)		120	1	0.90	1.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Flocculation Aid Polymer Sump Pump		120	1	0.90	0.4			#NAME?	0.50	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Filter Aid Polymer Drum Scale 1		120	1	0.90		0.1		#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Filter Aid Polymer Drum Scale 2		120	1	0.90		0.1		#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Filter Aid Polymer Activation Unit 1 (Duty)		208	1	0.90		1.8		#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Filter Aid Polymer Activation Unit 2 (Standby)		208	1	0.90		1.8		#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Filter Aid Polymer Feed Pump 1 (Duty)		120	1	0.90	1.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Filter Aid Polymer Feed Pump 2 (Standby)		120	1	0.90	1.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Filter Aid Polymer Sump Pump		120	1	0.90	0.4			#NAME?	0.50	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Hydroxide Dilution Softened Water Feed Pump 1 (Duty)	FVNR	480	3	0.90	2.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Sodium Hydroxide Dilution Softened Water Feed Pump 2 (Standby)	FVNR	480	3	0.90	2.0			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Preformed Monochloramines Softened Water Feed Pump 1 (Duty)	FVNR	480	3	0.90	0.2			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Preformed Monochloramines Softened Water Feed Pump 2 (Standby)	FVNR	480	3	0.90	0.2			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Preformed Monochloramines Sump Pump		120	1	0.90	0.4			#NAME?	0.50	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Instrumentation, Receptacles, Misc loads		480	3	0.90		10.0		#NAME?	1.00	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Lighting		120	1	0.90		5.0		#NAME?	1.00	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	HVAC		480	3	0.90	20.0	10.0		#NAME?	1.00	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
Backwash EQ																										
	Residuals PS Wetwell Mixer 1	VFD	480	3	0.90	5.5			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Residuals PS Wetwell Mixer 2	VFD	480	3	0.90	5.5			#NAME?	0.00	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Backwash EQ Pump No.1	VFD	480	3	0.90	45.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Backwash EQ Pump No.2	VFD	480	3	0.90	45.0			#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
	Backwash EQ Pump No.3	VFD	480	3	0.90	45.0			#NAME?	0.00	#NAME?	#NAME?														
	Lighting (outdoor)	n/a	120	1	0.90		0.5		#NAME?	1.00	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	
			480	3	0.90				#NAME?	0.90	#NAME?	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	#NAME?	

Off-plant Recharge Wells, Typical of 6

Electrical Load List

Prepared by: **Hazen**

Date Modified: **6/1/2020**

Phase: PROPOSED/FUTURE

Facility / Load	Description	Starter Type	Voltage	Phase	Power Factor	Proposed Loads							Future Loads							All Phases Total					Notes
						Connected Load				Demand Factor	Operating Load		Connected Load				Demand Factor	Operating Load		Connected Load		Operating Load			
						HP	KW	KVA	FLA		FLA	KW	HP	KW	KVA	FLA		FLA	KW	FLA	KVA	FLA	KW	KVA	
TOTAL LOADS (Summary of all loads below)	Recharge Well					200.9	7.5	0.0	#NAME?		#######	#NAME?	0.0	0.0	0.0	#NAME?		#######	#NAME?	#NAME?	#NAME?	#######	#######	#######	
				TOTAL LOAD					**#NAME?**		#######	**#NAME?**				**#NAME?**		#######	**#NAME?**	**#NAME?**	**#NAME?**	#######	#######	#######	
Recharge Well	Backflush Pump	VFD	480	3	0.90	200.0			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#######	#######	#######	
	Recharge Well Isolation Valve		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#######	#######	#######	
	Recharge Well Return Valve		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#######	#######	#######	
	Recharge Well Flow Control Valve		480	3	0.90	0.3			#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#######	#######	#######	
	Lighting		480	3	0.90		0.5		#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#######	#######	#######	
	HVAC		480	3	0.90		7.0		#NAME?	0.90	#######	#NAME?				#NAME?	0.90	#######	#NAME?	#NAME?	#NAME?	#######	#######	#######	
	Subtotal								**#NAME?**		#######	**#NAME?**				**#NAME?**		#######	**#NAME?**	**#NAME?**	**#NAME?**	#######	#######	#######	

		NON MOTOR	MOTOR HP	CONN FLA	DEMAND FLA	CONN KVA	DEMAND KVA	KW	BKW
UTILITY METERED LOAD						**2187.00**	**2187.00**	**2009.00**	
SWGR-1A									
BLOWER NO.1			350	414.00	0.00	0.00	0.00	0.00	0.00
BLOWER NO.2			350	414.00	0.00	0.00	0.00	0.00	0.00
HEADWORKS	MCC-5C		0.00	0.00	0.00	0.00	0.00	0.00	0.00
SLUDGE CONTROL BLDG	DIGESTER MCC		0.00	0.00	0.00	0.00	0.00	0.00	0.00
DRAINAGE PUMP STATION -1973	MSR-101		0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRIMARY SETTLING TANKS	MSR-9		0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRIT COLLECTORS 1 and 2	MSR-10B		0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL SWGR-1A (INCLUDED IN METERED LOAD)			**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
SWGR-1B									
BLOWER NO.3			350	414.00	0.00	0.00	0.00	0.00	0.00
HEADWORKS	MCC-5D		0.00	0.00	0.00	0.00	0.00	0.00	0.00
GRIT COLLECTORS 3 and 4	MSR-100		0.00	0.00	0.00	0.00	0.00	0.00	0.00
AERATION TANKS	MSR-AT		0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRIMARY SETTLING TANKS 3 & 4-1973	MSR-107		0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL SWGR-1B (INCLUDED IN METERED LOAD)			**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
IFAS -SWBD-2A									
AERATION BLOWER NO.4	B14-2004		300	333.00	0.00	0.00	0.00	225.00	0.00
AERATION BLOWER NO.5	B14-2005		300	333.00	0.00	0.00	0.00	225.00	0.00
AERATION BLOWER NO.6	B14-2006		300	333.00	0.00	0.00	0.00	225.00	0.00
MCC-2A			0	0.00	0.00	0.00	0.00	0.00	0.00
MCC-2B			0	0.00	0.00	0.00	0.00	0.00	0.00
MCC-2C			0	0.00	0.00	0.00	0.00	0.00	0.00
DP-47			0	0.00	0.00	0.00	0.00	0.00	0.00
DP-28			0	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL SWBD-2A (INCLUDED IN METERED LOAD)			**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
CENTRIFUGE BLDG SWBD									
CENTRIFUGE NO.1(250AC,100DC)	302, 124		0	0.00	0.00	0.00	0.00	0.00	0.00
CENTRIFUGE NO.2	*125,25*		*0*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
CENTRIFUGE NO.3(250AC,100DC)	302, 124		0	0.00	0.00	0.00	0.00	0.00	0.00
CENTRIFUGE MCC			0.00	0.00	0.00	0.00	0.00	0.00	0.00
DEWATERING MCC			0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CENT BLDG SWBD (INCLUDED IN MTRD LOAD)			**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
SWGR-4A (MBBR-PRIMARY CLARIFIER)									
MCC-4A			265.00	453.88	325.36	375.60	268.75	262.75	234.08
MBBR BLOWER NO.1	M-63-9001		125.0	156.00	140.40	129.70	116.73	116.73	105.05
MBBR BLOWER NO.2	M-63-9002		125.0	156.00	140.40	129.70	116.73	116.73	105.05
SWIFT INFLUENT PUMP NO.1	P-76-1001		125.00	156.00	140.40	129.70	116.73	116.73	105.05
SWIFT INFLUENT PUMP NO.2	P-76-1002		125.00	156.00	140.40	129.70	116.73	116.73	105.05
MCC-4C			60.00	99.04	81.92	82.34	68.11	74.11	65.35
SWIFT WELL NO.1 PUMP (ONLY 1 RUNS AT SAME TIME)			0	0.00	0.00	0.00	0.00	0.00	0.00

TOTAL SWGR-4A			**825.00**	**1176.92**	**968.88**	**976.72**	**803.76**	**803.76**	**719.64**
SWGR-4B (MBBR-PRIMARY CLARIFIER)									
MCC-4B			265.00	453.88	325.36	375.60	268.75	262.75	230.04
MBBR BLOWER NO.3	M-63-9003		125.0	156.00	0.00	129.70	0.00	0.00	0.00
SWIFT INFLUENT PUMP NO.3	P-76-1003		125.00	156.00	0.00	129.70	0.00	0.00	0.00
MCC-4D			40.00	54.00	0.00	44.89	0.00	0.00	0.00
MCC NPW 1&2 (SHARES FDR WITH CC-113) **(INCLUDED IN MTRD LOAD)**			0.00	0.00	0.00	0.00	0.00	0.00	0.00
NPW/CHLORINE CONTACT TANK **(INCLUDED IN MTRD LOAD)**	CC-113		0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL SWGR-4B			**555.00**	**819.88**	**325.36**	**679.88**	**268.75**	**262.75**	**230.04**
SWIFT SWGR-5A									
OZONE BUILDING FROM HAZEN			593.3	2844.40	2019.80	1566.50	1083.00	973.70	973.70
TOTAL SWGR-5A			**593.30**	**2844.40**	**2019.80**	**1566.50**	**1083.00**	**973.70**	**973.70**
SWIFT SWGR-6A									
UV BUILDING FROM HAZEN			2386.3	3795.70	2594.90	3624.50	2315.80	2150.10	2150.10
TOTAL SWGR-6A			**2386.30**	**3795.70**	**2594.90**	**3624.50**	**2315.80**	**2150.10**	**2150.10**
SWIFT SWGR-5B									
OZONE BUILDING FROM HAZEN (ALL LUMPED ON A)				0.00	0.00	0.00	0.00	0.00	0.00
TOTAL SWGR-5B			**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
SWIFT SWGR-6B									
UV BUILDING FROM HAZEN (ALL LUMPED ON A)				0.00	0.00	0.00	0.00	0.00	0.00
TOTAL SWGR-6B			**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
SWGR-7A (WWTP CHEMICAL BLDG)									
MCC-7A			20.00	82.12	52.26	68.27	43.45	41.20	32.96
MCC-7C			40.00	226.06	166.54	187.94	138.46	133.90	107.12
SWIFT WELL NO.2 PUMP (ONLY 1 RUNS AT SAME TIME)			0	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL SWGR-7A			**60.00**	**308.18**	**218.80**	**256.22**	**181.91**	**175.10**	**140.08**
SWGR-7B (WWTP CHEMICAL BLDG)									
MCC-7B			20.00	64.08	46.04	53.28	35.95	34.45	27.56
MCC-7D			40.00	117.82	112.42	97.95	93.46	93.41	74.72
ADMIN BLDG No.2		75 KVA		90.21	36.08	75.00	30.00	24.00	19.20
TOTAL SWGR-7B			**60.00**	**272.11**	**194.54**	**226.23**	**159.41**	**151.85**	**121.48**
RECHARGE WELL(ONLY 1 RUNS AT THE SAME TIME)			**155.00**	**187.60**	**168.84**	**155.97**	**140.37**	**140.37**	**126.33**
GENERATOR BUILDING	MCC-9A&B		**0.00**	**50.08**	**30.64**	**41.64**	**25.47**	**23.97**	**19.18**
TOTALS			**N/A**	**N/A**	**N/A**	**9714.65**	**7165.47**	**N/A**	**N/A**

WELL	NON MOTOR	MTR HP	CONN FLA	DEMAND FLA
GROUND WATER RECHARGE PUMP		150	180	162
HVAC-2		5	7.6	6.84
		155.00	**187.60**	**168.84**

CONN KVA	DEMAND KVA	KW	BKW
149.65	134.68	134.68	121.22
6.32	5.69	5.69	5.12
155.97	**140.37**	**140.37**	**126.33**

PRIMARY CLARIFIERS			NON	MOTOR	CONN	DEMAND	CONN	DEMAND	KW	BKW
MCC-4A			**MOTOR**	**HP**	**FLA**	**FLA**	**KVA**	**KVA**		
HVAC 1				15	21.00	18.90	17.46	15.71	15.71	14.14
HVAC 2				15	21.00	18.90	17.46	15.71	15.71	14.14
ELECT RM ACU-1			45 A		45.00	45.00	35.85	35.85	35.85	32.27
ELECT RM ACCU-1			5.6 A		5.60	5.60	4.46	4.46	4.46	4.02
RAS PUMP 1	VFD			30	40.00	36.00	33.26	29.93	29.93	26.94
RAS PUMP 1/2	VFD			30	40.00	0.00	33.26	0.00	0.00	0.00
RAS PUMP 2	VFD			30	40.00	36.00	33.26	29.93	29.93	26.94
RAS PUMP 3	VFD			30	40.00	36.00	33.26	29.93	29.93	26.94
RAS PUMP 3/4	VFD			30	40.00	0.00	33.26	0.00	0.00	0.00
RAS PUMP 4	VFD			30	40.00	36.00	33.26	29.93	29.93	26.94
PRIMARY CLARIFIER 1 DRIVE 1				1	1.80	1.62	1.50	1.35	1.35	1.21
PRIMARY CLARIFIER 1 DRIVE 2				1	1.80	1.62	1.50	1.35	1.35	1.21
PRIMARY CLARIFIER 2 DRIVE 1				1	1.80	1.62	1.50	1.35	1.35	1.21
PRIMARY CLARIFIER 2 DRIVE 2				1	1.80	1.62	1.50	1.35	1.35	1.21
PRIMARY CLARIFIER 3 DRIVE 1				1	1.80	1.62	1.50	1.35	1.35	1.21
PRIMARY CLARIFIER 3 DRIVE 2				1	1.80	1.62	1.50	1.35	1.35	1.21
PRIMARY CLARIFIER 4 DRIVE 1				1	1.80	1.62	1.50	1.35	1.35	1.21
PRIMARY CLARIFIER 4 DRIVE 2				1	1.80	1.62	1.50	1.35	1.35	1.21
SCUM PUMP 1				1	1.80	1.62	1.50	1.35	1.35	1.21
SCUM PUMP 2				1	1.80	1.62	1.50	1.35	1.35	1.21
SCUM MIXER 1				1	1.80	1.62	1.50	1.35	1.35	1.21
SCUM MIXER 2				1	1.80	1.62	1.50	1.35	1.35	1.21
MBBR DRAIN PUMP 1				7.5	11.00	0.00	9.15	0.00	0.00	0.00
SEC CLARIFIER DRAIN PUMP 1				7.5	11.00	0.00	9.15	0.00	0.00	0.00
MBBR MIXER 1	VFD			10	14.00	12.60	11.64	10.48	10.48	9.43
MBBR MIXER 2	VFD			10	14.00	12.60	11.64	10.48	10.48	9.43
MBBR MIXER 3	VFD			2	3.40	3.06	2.83	2.54	2.54	2.29
MBBR MIXER 4	VFD			2	3.40	3.06	2.83	2.54	2.54	2.29
MBBR MIXER 5	VFD			2	3.40	3.06	2.83	2.54	2.54	2.29
MBBR MIXER 6	VFD			2	3.40	3.06	2.83	2.54	2.54	2.29
DP-4C/TX-LP-4A			30 KVA		36.08	36.08	30.00	30.00	24.00	19.20
				265.00	**453.88**	**325.36**	**375.60**	**268.75**	**262.75**	**234.08**
MCC-4B										
HVAC 3				15	21.00	18.90	17.46	15.71	15.71	14.14
HVAC 4				15	21.00	18.90	17.46	15.71	15.71	14.14
ELECT RM ACU-2			45 A		45.00	45.00	35.85	35.85	35.85	28.68
ELECT RM ACCU-2			5.6 A		5.60	5.60	4.46	4.46	4.46	3.57
RAS PUMP 5	VFD			30	40.00	36.00	33.26	29.93	29.93	26.94
RAS PUMP 5/6	VFD			30	40.00	0.00	33.26	0.00	0.00	0.00
RAS PUMP 6	VFD			30	40.00	36.00	33.26	29.93	29.93	26.94
RAS PUMP 7	VFD			30	40.00	36.00	33.26	29.93	29.93	26.94
RAS PUMP 7/8	VFD			30	40.00	0.00	33.26	0.00	0.00	0.00
RAS PUMP 8	VFD			30	40.00	36.00	33.26	29.93	29.93	26.94
PRIMARY CLARIFIER 5 DRIVE 1				1	1.80	1.62	1.50	1.35	1.35	1.21
PRIMARY CLARIFIER 5 DRIVE 2				1	1.80	1.62	1.50	1.35	1.35	1.21
PRIMARY CLARIFIER 6 DRIVE 1				1	1.80	1.62	1.50	1.35	1.35	1.21
PRIMARY CLARIFIER 6 DRIVE 2				1	1.80	1.62	1.50	1.35	1.35	1.21
PRIMARY CLARIFIER 7 DRIVE 1				1	1.80	1.62	1.50	1.35	1.35	1.21
PRIMARY CLARIFIER 7 DRIVE 2				1	1.80	1.62	1.50	1.35	1.35	1.21
PRIMARY CLARIFIER 8 DRIVE 1				1	1.80	1.62	1.50	1.35	1.35	1.21
PRIMARY CLARIFIER 8 DRIVE 2				1	1.80	1.62	1.50	1.35	1.35	1.21
SCUM PUMP 3				1	1.80	1.62	1.50	1.35	1.35	1.21
SCUM PUMP 4				1	1.80	1.62	1.50	1.35	1.35	1.21
SCUM MIXER 3				1	1.80	1.62	1.50	1.35	1.35	1.21
SCUM MIXER 4				1	1.80	1.62	1.50	1.35	1.35	1.21
MBBR DRAIN PUMP 2				7.5	11.00	0.00	9.15	0.00	0.00	0.00
SEC CLARIFIER DRAIN PUMP 2				7.5	11.00	0.00	9.15	0.00	0.00	0.00
MBBR MIXER 9				10	14.00	12.60	11.64	10.48	10.48	9.43
MBBR MIXER 10				10	14.00	12.60	11.64	10.48	10.48	9.43
MBBR MIXER 11				2	3.40	3.06	2.83	2.54	2.54	2.29
MBBR MIXER 12				2	3.40	3.06	2.83	2.54	2.54	2.29
MBBR MIXER 13				2	3.40	3.06	2.83	2.54	2.54	2.29
MBBR MIXER 14				2	3.40	3.06	2.83	2.54	2.54	2.29
DP-4B			30 KVA		36.08	36.08	30.00	30.00	24.00	19.20
				265.00	**453.88**	**325.36**	**375.60**	**268.75**	**262.75**	**230.04**
TOTAL				**530.00**	**907.76**	**650.72**	**751.19**	**537.49**	**525.50**	**464.12**

		NON MOTOR	MOTOR HP	CONN FLA	DEMAND FLA	CONN KVA	DEMAND KVA	KW	BKW	
MCC-4C										
SWIFT INFLUENT EQUALIZATION PUMP NO.1	VFD		20	27.00	24.30	22.45	20.20	20.20	18.18	
SWIFT INFLUENT EQUALIZATION PUMP NO.2	VFD		20	27.00	24.30	22.45	20.20	20.20	18.18	
WELL BACKFLUSH EQUALIZATION PUMP NO.1			20	27.00	24.30	22.45	20.20	20.20	18.18	
ATS-4B/DP-4D/TX-LP-4B		15 KVA		18.04	9.02	15.00	7.50	13.50	10.80	
TOTAL			**60.00**	**99.04**	**81.92**	**82.34**	**68.11**	**74.11**	65.35	
MCC-4D										
SWIFT INFLUENT EQUALIZATION PUMP NO.3	VFD		20	27.00	0.00	22.45	0.00	0.00	0.00	
WELL BACKFLUSH EQUALIZATION PUMP NO.2			20	27.00	0.00	22.45	0.00	0.00	0.00	
TOTAL			**40.00**	**54.00**	**0.00**	**44.89**	**0.00**	**0.00**	0.00	
TOTAL			**100.00**	**153.04**	**81.92**	**127.24**	**68.11**	**74.11**	**65.35**	

CHEMICAL BLDG		NON	MTR	CONN	DEMAND	CONN	DEMAND	KW	BKW
MCC-7A		MOTOR	HP	FLA	FLA	KVA	KVA		
DP-7A/TX-LP-7A		30 KVA		36.08	18.04	30.00	15.00	13.50	10.80
DP-7C/TX-LP-7C		15 KVA		18.04	9.02	15.00	7.50	6.75	5.40
HVAC-1			10	14	12.60	11.64	10.48	10.48	8.38
HVAC-2			10	14	12.60	11.64	10.48	10.48	8.38
			20.00	**82.12**	**52.26**	**68.27**	**43.45**	**41.20**	**32.96**
MCC-7B									
DP-7B/TX-LP-7B		30 KVA		36.08	18.04	30.00	15.00	13.50	10.80
HVAC-3			10	14	14.00	11.64	10.48	10.48	8.38
HVAC-4			10	14	14.00	11.64	10.48	10.48	8.38
			20.00	**64.08**	**46.04**	**53.28**	**35.95**	**34.45**	**27.56**
TOTAL			**40.00**	**146.20**	**98.30**	**121.55**	**79.40**	**75.65**	**60.52**

ADMIN BUILDING			NON	MOTOR	CONN	DEMAND	CONN	DEMAND	KW	BKW
MCC-7C			**MOTOR**	**HP**	**FLA**	**FLA**	**KVA**	**KVA**		
ACCU-1			15 TONS		63.82	63.82	53.06	53.06	53.00	42.40
HVAC 1				20	27.00	24.30	22.45	20.20	20.20	16.16
HVAC 2				20	27.00	24.30	22.45	20.20	20.20	16.16
ATS-7B/DP-7D/TX-LP-7D			30 KVA		36.08	18.04	30.00	15.00	13.50	10.80
ATS-7B/TX-LP-7E			30 KVA		36.08	18.04	30.00	15.00	13.50	10.80
ATS-7B/TX-LP-7F			30 KVA		36.08	18.04	30.00	15.00	13.50	10.80
				40.00	**226.06**	**166.54**	**187.94**	**138.46**	**133.90**	**107.12**
MCC-7D										
ACCU-2			15 TONS		63.82	63.82	53.06	53.06	53.00	42.40
HVAC 3				20	27.00	24.30	22.45	20.20	20.20	16.16
HVAC 4				20	27.00	24.30	22.45	20.20	20.20	16.16
				40.00	**117.82**	**112.42**	**97.95**	**93.46**	**93.41**	**74.72**
TOTAL				**80.00**	**343.88**	**278.96**	**285.90**	**231.92**	**227.31**	**181.84**

GENERATOR BUILDING		NON	MTR	CONN	DEMAND	CONN	DEMAND	KW	BKW
MCC-9A&9B		MOTOR	HP	FLA	FLA	KVA	KVA		
DP-9A/TX-LP-9A		30 KVA		36.08	18.04	30.00	15.00	13.50	10.80
EXHAUST FAN 1			20	0	0	0.00	0.00	0.00	0.00
EXHAUST FAN 2			20	0	0	0.00	0.00	0.00	0.00
EXHAUST FAN 3			20	0	0	0.00	0.00	0.00	0.00
EXHAUST FAN 4			20	0	0	0.00	0.00	0.00	0.00
EXHAUST FAN 5			20	0	0	0.00	0.00	0.00	0.00
EXHAUST FAN 6			20	0	0	0.00	0.00	0.00	0.00
HVAC			10	14	12.6	11.64	10.48	10.48	8.38
			130.00	**50.08**	**30.64**	**41.64**	**25.47**	**23.97**	**19.18**
EXHAUST FANS ARE OFF									
WHEN GENERATORS ARE OFF									

		NON MOTOR	MOTOR HP	CONN FLA	DEMAND FLA
CENTRIFUGE BLDG MCC					
CENTRIFUGE FEED PUMP NO.1	**AFD**		30	40.00	40.00
CENTRIFUGE FEED PUMP NO.2	**AFD**		30	40.00	40.00
CENTRIFUGE FEED PUMP NO.3	**AFD**		30	40.00	
GRINDER NO.1			7.5	11.00	11.00
GRINDER NO.2			7.5	11.00	11.00
GRINDER NO.3			7.5	11.00	
HYDRAULIC POWER PACK(2-7.5HP)			7.5	11.00	11.00
NON-POTABLE WATER PUMP NO.1			7.5	11.00	11.00
NON-POTABLE WATER PUMP NO.2			7.5	11.00	11.00
NON-POTABLE WATER PUMP NO.3			7.5	11.00	
BRIDGE CRANE			10	14.00	
POWER PANEL PP-1		100A MCB		50.00	50.00
PRV-1			3	4.80	4.80
PRV-2			3	4.80	
UNIT HEATER NO.1		15 KW		18.04	
UNIT HEATER NO.2		15 KW		18.04	
UNIT HEATER NO.3		15 KW		18.04	
UNIT HEATER NO.4		15 KW		18.04	
UNIT HEATER NO.5		15 KW		18.04	
UNIT HEATER NO.6		15 KW		18.04	
UNIT HEATER NO.7		12.5 KW		15.04	
UNIT HEATER NO.8		12.5 KW		15.04	
UNIT HEATER NO.9		12.5 KW		15.04	
UNIT HEATER NO.10		12.5 KW		15.04	
UNIT HEATER NO.11		12.5 KW		15.04	
UNIT HEATER NO.12		10 KW		12.03	
UNIT HEATER NO.13		10 KW		12.03	
UNIT HEATER NO.14		10 KW		12.03	
UNIT HEATER NO.15		10 KW		12.03	
UNIT HEATER NO.16		10 KW		12.03	
AHU-1		?	7.5	11.00	11.00
CU-1		?	7.5	11.00	11.00
LP-1		30 KVA		36.08	36.08
POLYMER FEED PUMP NO.1	**AFD**		7.5	11.00	11.00
POLYMER FEED PUMP NO.2	**AFD**		7.5	11.00	11.00
POLYMER FEED PUMP NO.3	**AFD**		7.5	11.00	
COOLING WATER PUMP NO.1			2	3.40	3.40
COOLING WATER PUMP NO.2			2	3.40	3.40
COOLING WATER PUMP NO.3			2	3.40	
TOTAL			**202.00**	**615.47**	**276.68**

CONN KVA	DEMAND KVA	KW	BKW
31.87	31.87	21.70	17.36
31.87	31.87	21.70	17.36
31.87			
8.76	8.76	6.58	5.26
8.76	8.76	6.58	5.26
8.76			
8.76	8.76	6.58	5.26
8.76	8.76	6.58	5.26
8.76	8.76	6.58	5.26
8.76			
11.15			
41.57	41.57	30.00	24.00
3.82	3.82	2.73	2.18
3.82			
15.00			
15.00			
15.00			
15.00			
15.00			
15.00			
12.50			
12.50			
12.50			
12.50			
12.50			
10.00			
10.00			
10.00			
10.00			
10.00			
8.76	8.76	6.58	5.26
8.76	8.76	6.58	5.26
30.00	30.00	24.00	19.20
8.76	8.76	6.58	5.26
8.76	8.76	6.58	5.26
8.76			
2.71	2.71	1.89	1.51
2.71	2.71	1.89	1.51
2.71	2.71		
501.79	**226.13**	**163.13**	**130.50**

	NON MOTOR	MOTOR HP	CONN FLA	DEMAND FLA
DP-28				
M28-701	3 KVA		3.61	3.61
HTR28-1201	50 KW		60.14	60.14
DP-27			33.44	33.44
M28-702	3 KVA		3.61	3.61
HTR28-1202	50 KW		60.14	60.14
TX-LP28	15 KVA		1.80	1.80
TOTAL		**0.00**	**162.74**	**162.74**

CONN KVA	DEMAND KVA	KW	BKW
3.00	3.00		
50.00	50.00		
27.80	27.80		
3.00	3.00		
50.00	50.00		
1.50	1.50		
135.30	**135.30**	**0.00**	**0.00**

		NON MOTOR	MOTOR HP	CONN FLA	DEMAND FLA
DEWATERING BLDG MCC					
NPW BOOSTER PUMP NO. 1			7.5	11.00	11.00
NPW BOOSTER PUMP NO. 2			7.5	11.00	
NPW BOOSTER PUMP NO. 3			7.5	11.00	
AIR COMPRESSOR NO.1			25	34.00	34.00
AIR COMPRESSOR NO.2			25	34.00	
EF-2			5	7.60	7.60
WELDING RECEPTACLE					
WELDING RECEPTACLE					
SLUDGE CAKE HOPPER GYRATOR			5	7.60	7.60
SLUDGE CAKE CONVEYOR			5	7.60	
SLUDGE TANK AGITATOR			40	52.00	52.00
H&V UNIT 1			25	34.00	34.00
AIR CONDITIONING UNIT 1		7 KW		8.42	
SEAL WATER PUMP LP NO.1			3	4.80	4.80
SEAL WATER PUMP LP NO.2			3	4.80	
SEAL WATER PUMP HP NO.1			3	4.80	4.80
SEAL WATER PUMP HP NO.2			3	4.80	
HOT WATER PUMP NO.1			2	3.40	3.40
HOT WATER PUMP NO.2			2	3.40	
MIXER NO. 1			3	4.80	4.80
MIXER NO. 2			3	4.80	
TWAB PUMP NO.1			15	21.00	21.00
TWAB PUMP NO.2			15	21.00	
WAB PUMP NO.1			10	14.00	14.00
WAB PUMP NO.2			10	14.00	
WAB PUMP NO.3			10	14.00	
FILTRATION PUMP NO. 1			5	7.60	7.60
FILTRATION PUMP NO. 2			5	7.60	
FILTRATION PUMP NO. 3			5	7.60	
GBT NO.1			15	21.00	21.00
GBT NO.2			15	21.00	
POLYMER FEED PUMP NO.1			0.75	1.00	1.00
POLYMER FEED PUMP NO.2			0.75	1.00	
POLYMER FEED PUMP NO.3			0.75	1.00	
POLYMER TRANSFER PUMP NO. 1			2	3.40	3.40
POLYMER TRANSFER PUMP NO. 2			2	3.40	
DIGESTER PUMP	P-5-6-1		30	40.00	40.00
DIGESTER PUMP	P-5-6-2		30	40.00	40.00
DIGESTER COMPRESSOR PANEL	LP-5-10-1				
DIGESTER COMPRESSOR PANEL	LP-5-10-2				
DIGESTER SUMP					
LP-A	480 V	20.5 KVA		24.66	24.66
LP-B	120/208	30 KVA		36.08	36.08
ODOR CONTROL PANEL PP		59 KVA		70.97	70.97
TOTAL			**345.75**	**624.13**	**443.71**

CONN KVA	DEMAND KVA	KW	BKW
8.76	8.76	6.58	5.26
8.76			
8.76			
27.09	27.09	21.18	16.94
27.09			
6.06	6.06	4.44	3.55
6.06	6.06	4.44	3.55
6.06			
41.43	41.43	33.51	26.81
27.09	27.09	21.18	16.94
6.71			
3.82	3.82	2.73	2.18
3.82			
3.82	3.82	2.73	2.18
3.82			
2.71	2.71	1.89	1.51
2.71			
3.82	3.82	2.73	2.18
3.82			
16.73	16.73	12.86	10.29
16.73			
11.15	11.15	8.67	6.94
11.15			
11.15			
6.06	6.06	4.44	3.55
6.06			
6.06			
16.73	16.73	12.86	10.29
16.73			
1.00	1.00	0.75	0.60
1.00			
1.00	1.00		
2.71	2.71	1.89	1.51
2.71			
31.87	31.87	33.51	26.81
31.87	31.87	33.51	26.81
20.50	20.50	20.50	16.40
30.00	30.00	24.00	19.20
59.00	59.00	48.00	38.40
502.44	**359.29**	**302.40**	**241.92**

		NON MOTOR	MOTOR HP	CONN FLA	DEMAND FLA
MCC-2A					
ODOR BLOWER 1	F18-1001		50	65.00	65.00
ODOR BLOWER 2	F18-1002		50	65.00	0.00
TX-2A/LP-2A	LP-2A	30 KVA		36.08	18.04
MIXER 1 TRAIN 1	M05-1001		4	6.70	6.70
MIXER 2 TRAIN 1	M05-2001		4	6.70	6.70
MIXER 3 TRAIN 1	M05-3001		4	6.70	6.70
MIXER 4 TRAIN 1	M05-5001		4	6.70	6.70
MIXER 1 TRAIN 2	M05-1002		4	6.70	6.70
MIXER 2 TRAIN 2	M05-2002		4	6.70	6.70
MIXER 3 TRAIN 2	M05-3002		4	6.70	6.70
MIXER 4 TRAIN 2	M05-5002		4	6.70	6.70
MIXER 1 TRAIN 3	M05-1003		4	6.70	6.70
MIXER 2 TRAIN 3	M05-2003		4	6.70	6.70
MIXER 3 TRAIN 3	M05-3003		4	6.70	6.70
MIXER 4 TRAIN 3	M05-5003		4	6.70	6.70
NRCY PUMP 1 TRAIN 1	P05-3001	**AFD**	4	6.70	6.70
NRCY PUMP 2 TRAIN 1	P05-5001	**AFD**	4	6.70	6.70
NRCY PUMP 1 TRAIN 2	P05-3002	**AFD**	4	6.70	6.70
NRCY PUMP 2 TRAIN 2	P05-5002	**AFD**	4	6.70	6.70
NRCY PUMP 1 TRAIN 3	P05-3003	**AFD**	4	6.70	6.70
NRCY PUMP 2 TRAIN 3	P05-5003	**AFD**	4	6.70	6.70
DP-2A				0.00	0.00
FOAM PUMP NO.1 TRAIN 1	P50--5001		2.2	4.80	4.80
FOAM PUMP NO.1 TRAIN 2	P50--5002		2.2	4.80	4.80
FOAM PUMP NO.1 TRAIN 3	P50--5003		2.2	4.80	4.80
FOAM SKIMMER NO.1 TRAIN 1	M05-5011		0.75	1.40	1.40
FOAM SKIMMER NO.1 TRAIN 2	M05-5012		0.75	1.40	1.40
FOAM SKIMMER NO.1 TRAIN 3	M05-5013		0.75	1.40	1.40
CENTRATE RECYCLE PUMP	P50-1001	**AFD**	4	6.70	6.70
MCC TOTAL			**184.85**	**311.98**	**228.94**

CONN KVA	DEMAND KVA	KW	BKW
51.79	51.79	41.89	33.51
51.79	0.00	0.00	0.00
30.00	15.00	15.00	12.00
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
0.00	0.00	0.00	0.00
3.82	3.82	2.73	2.18
3.82	3.82	2.73	2.18
3.82	3.82	2.73	2.18
1.12	1.12	0.75	0.60
1.12	1.12	0.75	0.60
1.12	1.12	0.75	0.60
5.34	5.34	2.90	2.32
249.82	**183.03**	**122.43**	**97.94**

		NON MOTOR	MOTOR HP	CONN FLA	DEMAND FLA
MCC-2B					
TX-2B/LP-2B		15 KVA		18.04	9.00
MIXER 1 TRAIN 4	M05-1004		4	6.70	6.70
MIXER 2 TRAIN 4	M05-2004		4	6.70	6.70
MIXER 3 TRAIN 4	M05-3004		4	6.70	6.70
MIXER 4 TRAIN 4	M05-5004		4	6.70	6.70
MIXER 1 TRAIN 5	M05-1005		4	6.70	6.70
MIXER 2 TRAIN 5	M05-2005		4	6.70	6.70
MIXER 3 TRAIN 5	M05-3005		4	6.70	6.70
MIXER 4 TRAIN 5	M05-5005		4	6.70	6.70
MIXER 1 TRAIN 6	M05-1006		4	6.70	6.70
MIXER 2 TRAIN 6	M05-2006		4	6.70	6.70
MIXER 3 TRAIN 6	M05-3006		4	6.70	6.70
MIXER 4 TRAIN 6	M05-5006		4	6.70	6.70
NRCY PUMP 1 TRAIN 4	P05-3004	**AFD**	4	6.70	6.70
NRCY PUMP 2 TRAIN 4	P05-5004	**AFD**	4	6.70	6.70
NRCY PUMP 1 TRAIN 5	P05-3005	**AFD**	4	6.70	6.70
NRCY PUMP 2 TRAIN 5	P05-5005	**AFD**	4	6.70	6.70
NRCY PUMP 1 TRAIN 6	P05-3006	**AFD**	4	6.70	6.70
NRCY PUMP 2 TRAIN 6	P05-5006	**AFD**	4	6.70	6.70
DP-2B				0.00	0.00
FOAM PUMP NO.1 TRAIN 4	P50--5004		2.2	4.80	4.80
FOAM PUMP NO.1 TRAIN 5	P50--5005		2.2	4.80	4.80
FOAM PUMP NO.1 TRAIN 6	P50--5006		2.2	4.80	4.80
FOAM SKIMMER NO.1 TRAIN 4	M05-5014		0.75	1.40	1.40
FOAM SKIMMER NO.1 TRAIN 5	M05-5015		0.75	1.40	1.40
FOAM SKIMMER NO.1 TRAIN 6	M05-5016		0.75	1.40	1.40
MCC TOTAL			**80.85**	**157.24**	**148.20**

CONN KVA	DEMAND KVA	KW	BKW
15.00	7.48	7.00	5.60
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
0.00	0.00	0.00	0.00
3.82	3.82	2.73	2.18
3.82	3.82	2.73	2.18
3.82	3.82	2.73	2.18
1.12	1.12	0.75	0.60
1.12	1.12	0.75	0.60
1.12	1.12	0.75	0.60
125.90	**118.39**	**69.64**	**55.71**

		NON MOTOR	MOTOR HP	CONN FLA	DEMAND FLA
MCC-2C					
TX-2C/LP-2C		15 KVA		18.04	9.00
MIXER 1 TRAIN 7	M05-1007		4	6.70	6.70
MIXER 2 TRAIN 7	M05-2007		4	6.70	6.70
MIXER 3 TRAIN 7	M05-3007		4	6.70	6.70
MIXER 4 TRAIN 7	M05-5007		4	6.70	6.70
MIXER 1 TRAIN 8	M05-1008		4	6.70	6.70
MIXER 2 TRAIN 8	M05-2008		4	6.70	6.70
MIXER 3 TRAIN 8	M05-3008		4	6.70	6.70
MIXER 4 TRAIN 8	M05-5008		4	6.70	6.70
MIXER 1 TRAIN 9	M05-1009		4	6.70	6.70
MIXER 2 TRAIN 9	M05-2009		4	6.70	6.70
MIXER 3 TRAIN 9	M05-3009		4	6.70	6.70
MIXER 4 TRAIN 9	M05-5009		4	6.70	6.70
NRCY PUMP 1 TRAIN 7	P05-3007	**AFD**	4	6.70	6.70
NRCY PUMP 2 TRAIN 7	P05-5007	**AFD**	4	6.70	6.70
NRCY PUMP 1 TRAIN 8	P05-3008	**AFD**	4	6.70	6.70
NRCY PUMP 2 TRAIN 8	P05-5008	**AFD**	4	6.70	6.70
NRCY PUMP 1 TRAIN 9	P05-3009	**AFD**	4	6.70	6.70
NRCY PUMP 2 TRAIN 9	P05-5009	**AFD**	4	6.70	6.70
DP-2C				0.00	0.00
FOAM PUMP NO.1 TRAIN 7	P50--5007		2.2	4.80	4.80
FOAM PUMP NO.1 TRAIN 8	P50--5008		2.2	4.80	4.80
FOAM PUMP NO.1 TRAIN 9	P50--5009		2.2	4.80	4.80
FOAM SKIMMER NO.1 TRAIN 7	M05-5017		0.75	1.40	1.40
FOAM SKIMMER NO.1 TRAIN 8	M05-5018		0.75	1.40	1.40
FOAM SKIMMER NO.1 TRAIN 9	M05-5019		0.75	1.40	1.40
MCC TOTAL			**80.85**	**157.24**	**148.20**

CONN KVA	DEMAND KVA	KW	BKW
15.00	7.48	7.00	5.60
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
5.34	5.34	2.90	2.32
0.00	0.00	0.00	0.00
3.82	3.82	2.73	2.18
3.82	3.82	2.73	2.18
3.82	3.82	2.73	2.18
1.12	1.12	0.75	0.60
1.12	1.12	0.75	0.60
1.12	1.12	0.75	0.60
125.90	**118.39**	**69.64**	**55.71**

		NON MOTOR	MOTOR HP	CONN FLA	DEMAND FLA
DP-47					
SODIUM HYDROXIDE RECYCLE PUMP NO. 5			25	34.00	
SODIUM HYDROXIDE RECYCLE PUMP NO. 6			25	34.00	
EXST UNIT HEATER	**MCC-G1**	5 KW		6.01	6.01
EXST XFMR/LPA 120/240 V	**MCC-G1**	15 KVA		31.25	15.00
EXST CHEMICAL TANK HEATERS	**MCC-G1**	6 KW		7.22	7.22
TOTAL			**50.00**	**112.48**	**28.23**

CONN KVA	DEMAND KVA	KW	BKW
27.09			
27.09			
5.00	5.00		
15.00	15.00		
6.00	6.00		
80.18	**26.00**	**0.00**	**0.00**

AERATION BASIN		NON MOTOR	MOTOR HP	CONN FLA	DEMAND FLA	CONN KVA	DEMAND KVA	KW	BKW
MSR-AT									
XFMR		15 KVA		18.04	5.00	15.00	3.98	2.00	1.60
TOTAL				**18.04**	**5.00**	**15.00**	**3.98**	**2.00**	**1.60**

		NON MOTOR	MOTOR HP	CONN FLA
DIGESTER MCC				
DIGESTER RECIRC PUMP NO.1			15	21.00
DIGESTER RECIRC PUMP NO.2			15	21.00
PRIMARY CLARIFIER SLUDGE PUMP NO.1	***1/20/2020***		***7.5***	***11.00***
PRIMARY CLARIFIER SLUDGE PUMP NO.2	***1/20/2020***		***7.5***	***11.00***
PRIMARY CLARIFIER SLUDGE PUMP NO.3	***1/20/2020***		***7.5***	***11.00***
DIGESTER HEAT EXCHANGER			3	4.80
SUMP PUMP			0.5	1.00
120/208 PANEL		15 KVA		18.04
THICKENED SLUDGE PUMP NO.1	MSR-114		25	34.00
THICKENED SLUDGE PUMP NO.2	MSR-114		25	34.00
XFMR/PANEL	MSR-114	15 KVA		18.04
UNIT HEATER	MSR-114	7.5 KW		9.02
GRAVITY THICKENER CENTER DRIVE 1	MSR-115		1.5	2.60
GRAVITY THICKENER CENTER DRIVE 2	MSR-116		1.5	2.60
HAZEN GRINDER NO.1	***12/17/2019***		***5***	***7.60***
HAZEN GRINDER NO.2	***12/17/2019***		***5***	***7.60***
TOTAL			**119.00**	**214.30**

DEMAND FLA	CONN KVA	DEMAND KVA	KW	BKW
21.00	16.73	16.73	12.86	10.29
	16.73			
11.00	***8.76***	***8.76***	***6.58***	***5.26***
11.00	***8.76***	***8.76***	***6.58***	***5.26***
	8.76			
4.80	3.82	3.82	2.73	2.18
1.00	0.80	0.80	0.59	0.47
9.00	15.00	7.48	12.00	9.60
34.00	27.09	27.09	21.18	16.94
	27.09			
9.00	15.00	7.48	12.00	9.60
9.02	7.50	7.50	7.50	7.50
2.60	2.07	2.07	2.00	1.60
2.60	2.07	2.07	2.00	1.60
7.60	***6.06***	***6.06***	***4.44***	***3.55***
7.60	***6.06***	***6.06***	***4.44***	***3.55***
130.22	**172.30**	**104.69**	**94.90**	**77.42**

		NON	MOTOR	CONN	DEMAND	CONN	DEMAND	KW	BKW
		MOTOR	HP	FLA	FLA	KVA	KVA		
MCC-5B									
ID FAN NO.1	M-4-4-1		100	124.00	111.60	103.09	92.78	92.78	83.50
ID FAN NO.2	M-4-4-2		100	124.00	0.00	103.09	0.00	0.00	0.00
RECIRCULATION PUMP NO.1	**P-4-3-1**		7.5	11.00	9.90	9.15	8.23	8.23	7.41
RECIRCULATION PUMP NO.2	**P-4-3-2**		7.5	11.00	9.90	9.15	8.23	8.23	7.41
RECIRCULATION PUMP NO.3	**P-4-3-3**		7.5	11.00	9.90	9.15	8.23	8.23	7.41
SCREENINGS PRESS NO.2	**CP01-1220**		10.5	15.80	14.22	13.14	11.82	11.82	10.64
CLASSIFIER NO.1	**M-2-2-1**		0.5	1.00	0.90	0.83	0.75	0.75	0.67
CLASSIFIER NO.2	**M-2-2-2**		0.5	1.00	0.90	0.83	0.75	0.75	0.67
CLASSIFIER NO.3	**M-2-2-3**		0.5	1.00	0.00	0.83	0.00	0.00	0.00
SUPPLY FAN	**SF-1**		0.5	1.00	0.90	0.83	0.75	0.75	0.67
PANEL P5C				63.00	48.00	50.19	38.24	30.00	24.00
PANEL P5B				132.30	13.70	105.41	10.92	110.00	88.00
TOTAL			**235.00**	**496.10**	**219.92**	**405.68**	**180.70**	**271.54**	**230.39**

LOCATED IN BUILDING 62-IDENTIFIED AS		**NON**	**MOTOR**	**CONN**	**DEMAND**	**CONN**	**DEMAND**	**KW**	**BKW**
NPW PUMPING ON BLDG INDEX		**MOTOR**	**HP**	**FLA**	**FLA**	**KVA**	**KVA**		
CC-113									
NPW PUMP NO.3	NPW-3		40	49.00	49.00	40.74	36.66	36.66	33.00
NPW PUMP NO.4	NPW-4		40	49.00		40.74			
CHLORINATED EFFLUENT PUMP NO.1	CE-1		25	32.50	32.50	27.02	24.32	22.00	17.60
CHLORINATED EFFLUENT PUMP NO.2	CE-2		25	32.50		27.02			
ROOF VENTILATOR			0.5	1.00	1.00	0.83	0.75	0.59	0.47
DRAINAGE PUMP	**MSR-112**		10	14.00	14.00	11.64	10.48	2.00	1.60
UNIT HEATER		15 KW		18.04	18.04	15.00	15.00	15.00	15.00
XMFR/PANELBOARD	**PDP-112**	9 KVA		10.82	10.82	9.00	9.00	0.59	0.47
TOTAL			**140.50**	**206.86**	**125.36**	**171.98**	**96.20**	**76.84**	**68.14**

LOCATED ON BLDG 60 IDENTIFIED AS		**NON**	**MOTOR HP**	**CONN**	**DEMAND**	**CONN**	**DEMAND**	**KW**	**BKW**	**NAMEPLATE**
CHLORINE CONTACT TANK 1 ON BLDG INDEX		**MOTOR**		**FLA**	**FLA**	**KVA**	**KVA**			**PF**
MCC NPW 1&2										
NPW PUMP NO.1	NPW-1		60	69.90	69.90	55.69	55.69	47.06	37.65	0.845
NPW PUMP NO.2	NPW-2		60	66.70	66.70	53.14	53.14			
NPW STRAINER NO.1			1	1.80	1.80	1.43	1.43	1.02	0.82	
NPW STRAINER NO.2			1	1.80		1.43				
XMFR/PANELBOARD		15 KVA		18.04	2.00	15.00	1.66	1.50	1.20	
TOTAL			**122.00**	**158.24**	**140.40**	**126.70**	**111.93**	**49.58**	**39.66**	

CC-103		NON	MOTOR HP	CONN	DEMAND	CONN	DEMAND	KW	BKW
		MOTOR		FLA	FLA	KVA	KVA		
FINAL SLUDGE PS NO.1									
RETURN SLUDGE PUMP NO.3	VFD		30	40.00	40.00	31.87	31.87	33.18	26.54
RETURN SLUDGE PUMP NO.4	VFD		30	40.00		31.87			
SECONDARY CLARIFIER NO.3			1	1.80	1.80	1.43	1.43	1.22	0.98
SECONDARY CLARIFIER NO.4			1	1.80	1.80	1.43	1.43	1.22	0.98
SCUM PUMP NO.3			2	3.40	3.40	2.71	2.71	2.32	1.86
SCUM PUMP NO.4			2	3.40	3.40	2.71	2.71	2.32	1.86
ROOF VENTILATOR			0.5	1.00	1.00	0.80	0.80	0.59	0.47
MSR-118			10	14.00	14.00	11.15	11.15	9.48	7.58
UNIT HEATER		18 KW		21.67	21.67	18.02	18.02	18.00	18.00
XFMR/PDP		15 KVA		18.04	9.00	15.00	7.48	5.00	4.00
TOTAL				**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

MCC-103A		NON MOTOR	MOTOR HP	CONN FLA	DEMAND FLA	CONN KVA	DEMAND KVA	KW	BKW
DEMOED!!!!!!!!									
FINAL SLUDGE PS NO.2									
SECONDARY SLUDGE PUMP NO.5	VFD		50	65.00	65.00	51.79	51.79	44.02	35.22
SECONDARY SLUDGE PUMP NO.6	VFD		50	65.00		51.79			
CHLORINATED EFFLUENT PUMP NO.1	**CE-1**		25	32.50	32.50	25.89	25.89	22.00	17.60
CHLORINATED EFFLUENT PUMP NO.2	**CE-2**		25	32.50		25.89			
SECONDARY SLUDGE PUMP NO.1	VFD		15	21.00	21.00	16.73	16.73	15.00	12.00
SECONDARY SLUDGE PUMP NO.2	VFD		15	21.00		16.73			
ROOF FAN			0.5	1.00	1.00	0.80	0.80	0.59	0.47
UNIT HEATER		15 KW		18.04	18.04	15.00	15.00	0.59	0.47
XFMR	**PDP-103A**	15 KVA		18.04		15.00			
TOTAL				**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

HYPOCHLORITE DEMOED!!!!!!!!!		**NON MOTOR**	**MOTOR HP**	**CONN FLA**	**DEMAND FLA**	**CONN KVA**
MCC-HYPO						
DRAIN PUMP			1.5	2.60		2.07
SAMPLE PUMP			0.5	1.00	1.00	0.80
EUH-3		5 KW		6.28	6.28	5.00
XFMR		15 KVA		18.04	5.00	15.00
XFMR TR-JR1	**PANEL JRM**	15 KVA		18.04	5.00	15.00
UH-8	***PANEL JR2***	*15 KW*		*0.00*	*0.00*	*0.00*
UH-9	***PANEL JR2***	*15 KW*		*0.00*	*0.00*	*0.00*
P-14	***PANEL JR2***		*0.75*	*0.00*	*0.00*	*0.00*
P-15	***PANEL JR2***		*0.75*	*0.00*	*0.00*	*0.00*
P-16	***PANEL JR2***		*0.75*	*0.00*	*0.00*	*0.00*
P-17	***PANEL JR2***		*0.75*	*0.00*	*0.00*	*0.00*
UH-22	***PANEL JR2***	*5 KW*		*0.00*	*0.00*	*0.00*
RECIRC PUMP-24	***PANEL JR2***		*2*	*0.00*	*0.00*	*0.00*
UH-10	**PANEL JR1B**	10 KW		12.03	12.03	10.00
INDUCTION MIXER M-01	**PANEL JR1B**		10	14.00	14.00	11.15
P-1	**PANEL JR1A**		0.75	1.40	1.40	1.12
P-2	**PANEL JR1A**		0.75	1.40	1.40	1.12
P-3	**PANEL JR1A**		0.75	1.40	1.40	1.12
P-4	**PANEL JR1A**		0.75	1.40		1.12
P-5	**PANEL JR1A**		0.75	1.40		1.12
P-6	**PANEL JR1A**		0.75	1.40		1.12
P-7	**PANEL JR1A**		0.75	1.40	1.40	1.12
P-8	**PANEL JR1A**		0.75	1.40	1.40	1.12
P-9	**PANEL JR1A**		0.75	1.40	1.40	1.12
P-10	**PANEL JR1A**		0.75	1.40	1.40	1.12
TOTAL				**0.00**	**0.00**	**0.00**

DEMAND KVA	KW	BKW	
0.80	0.50	0.40	
5.00	3.00	3.00	
3.98	2.00	1.60	
3.98	2.00	1.60	
0.00	*0.00*	*0.00*	*BISUFILTE BLDG DEMOED*
0.00	*0.00*	*0.00*	*BISUFILTE BLDG DEMOED*
0.00	*0.00*	*0.00*	*BISUFILTE BLDG DEMOED*
0.00	*0.00*	*0.00*	*BISUFILTE BLDG DEMOED*
0.00	*0.00*	*0.00*	*BISUFILTE BLDG DEMOED*
0.00	*0.00*	*0.00*	*BISUFILTE BLDG DEMOED*
0.00	*0.00*	*0.00*	*BISUFILTE BLDG DEMOED*
0.00	*0.00*	*0.00*	*BISUFILTE BLDG DEMOED*
10.00	10.00	10.00	
11.15	8.32	6.66	
1.12	1.00	0.80	
1.12	1.00	0.80	
1.12	1.00	0.80	
1.12	1.00	0.80	
1.12	1.00	0.80	
1.12	1.00	0.80	
1.12	1.00	0.80	
0.00	**0.00**	**0.00**	

DRAIN PUMP STATION		NON MOTOR	MOTOR HP	CONN FLA	DEMAND FLA	CONN KVA	DEMAND KVA	KW	BKW
MSR-101									
DRAIN PUMP NO.1			15	21.00	21.00	16.73	16.73	44.02	35.22
DRAIN PUMP NO.2			40	52.00		41.43			
UNIT HEATER		3 KW		3.61	3.61	2.88	2.88	3.00	3.00
AIR COMPRESSOR			1	1.80		1.43			
XFMR		9KVA		10.83	5.00	9.00	3.98	2.00	1.60
TOTAL			**56.00**	**89.24**	**29.61**	**71.48**	**23.59**	**49.02**	**39.82**

PRIMARY CLARIFIERS 1 AND 2		NON MOTOR	MOTOR HP	CONN FLA	DEMAND FLA	CONN KVA	DEMAND KVA	KW	BKW
MSR-9									
PRIMARY CLARIIFIER NO.1 DRIVE	**MSR-108**		2	3.40	3.40	2.71	2.71	2.30	1.84
PRIMARY CLARIIFIER NO.2 DRIVE	**MSR-109**		2	3.40	3.40	2.71	2.71	2.30	1.84
SCUM PUMP	**MSR-110**		0.75	1.40	1.40	1.12	1.12	0.95	0.76
XFMR/PDP	**PDP**	9KVA		10.83	2.00	9.00	1.59	2.00	1.60
TOTAL			**4.00**	**19.03**	**10.20**	**15.54**	**8.13**	**7.55**	**6.04**

PRIMARY CLARIFIERS 3 AND 4		**NON**	**MOTOR HP**	**CONN**	**DEMAND**	**CONN**	**DEMAND**	**KW**	**BKW**
		MOTOR		**FLA**	**FLA**	**KVA**	**KVA**		
MSR-107									
PRIMARY CLARIIFIER NO.3 SCRAPPER	**MSR-108**		1	1.80	1.80	1.43	1.43	1.22	0.98
PRIMARY CLARIIFIER NO.4 SCRAPPER	**MSR-109**		1	1.80	1.80	1.43	1.43	1.22	0.98
SCUM PUMP FOR NO.3	**MSR-110**		1	1.80	1.80	1.43	1.43	1.22	0.98
SCUM PUMP FOR NO.4	**MSR-111**		1	1.80	1.80	1.43	1.43	1.22	0.98
XFMR/PDP-107	**PDP-107**	9KVA		10.83	2.00	9.00	1.59	2.00	1.60
TOTAL			**4.00**	**18.03**	**9.20**	**14.74**	**7.33**	**6.88**	**5.50**

SECONDARY CLARIFIERS 1 AND 2		NON MOTOR	IOTOR HP	CONN FLA	DEMAND FLA	CONN KVA
DEMOED!!!!!!!!						
MSR-10A						
SECONDARY CLARIFER 1			2	3.40	3.40	2.71
SECONDARY CLARIFER 2			2	3.40	3.40	2.71
RETURN SLUDGE PUMP 1			7.5	11.00	11.00	8.76
RETURN SLUDGE PUMP 2			7.5	11.00	11.00	8.76
SCUM PUMP			1	1.80	1.80	1.43
XFMR/PDP	**PDP**	9KVA		10.83	2.00	9.00
TOTAL				**0.00**	**0.00**	**0.00**

DEMAND KVA	KW	BKW
2.71	2.30	1.84
2.71	2.30	1.84
8.76	6.58	5.26
8.76	6.58	5.26
1.43	1.22	0.98
1.59	2.00	1.60
0.00	**0.00**	**0.00**

GRIT COLLECTORS 1 AND 2		NON MOTOR	MOTOR HP	CONN FLA	DEMAND FLA	CONN KVA	DEMAND KVA	KW	BKW
MSR-10B									
GRIT COLLECTOR NO.1 DRIVE			2	3.40	3.40	2.71	2.71	2.30	1.84
RETURN PUMP NO.1			1	1.80	1.80	1.43	1.43	1.22	0.98
GRIT COLLECTOR NO.1 RAKE			2	3.40	3.40	2.71	2.71	2.30	1.84
GRIT COLLECTOR NO.1 DRIVE			2	3.40	3.40	2.71	2.71	2.30	1.84
RETURN PUMP NO.1			1	1.80	1.80	1.43	1.43	1.22	0.98
GRIT COLLECTOR NO.1 RAKE			2	3.40	3.40	2.71	2.71	2.30	1.84
XFMR/PDP	**PDP**	9KVA		10.83	2.00	9.00	1.59	2.00	1.60
TOTAL			**10.00**	**28.03**	**19.20**	**22.71**	**15.30**	**13.64**	**10.91**

GRIT COLLECTORS 3 AND 4		NON	MOTOR	CONN	DEMAND	CONN	DEMAND	KW	BKW
		MOTOR	HP	FLA	FLA	KVA	KVA		
MSR-100									
GRIT COLLECTOR NO.3 DRIVE			1	1.80	1.80	1.43	1.43	1.22	0.98
RETURN PUMP NO.3			0.5	1.00	1.00	0.80	0.80	0.68	0.54
GRIT COLLECTOR NO.3 RAKE			1	1.80	1.80	1.43	1.43	1.22	0.98
GRIT COLLECTOR NO.4 DRIVE			1	1.80	1.80	1.43	1.43	1.22	0.98
RETURN PUMP NO.4			0.5	1.00	1.00	0.80	0.80	0.68	0.54
GRIT COLLECTOR NO.4 RAKE			1	1.80	1.80	1.43	1.43	1.22	0.98
XFMR/PDP	**PDP**	9KVA		10.83	2.00	9.00	1.59	2.00	1.60
TOTAL			**4.00**	**20.03**	**11.20**	**16.33**	**8.92**	**8.24**	**6.59**

Date: June 11, 2020

AMENDMENT/ADDENDUM NO. 2
to the PROPOSAL DOCUMENTS
for the Design-Build of
JAMES RIVER SWIFT FACILITY and
JAMES RIVER TREATMENT PLANT ADVANCED NUTRIENT REDUCTION IMPROVEMENTS
CIP No. GN016360 and JR013400
City of Newport News, Virginia

To All Proposers:

The following changes, additions and/or deletions are hereby made part of the Proposal Documents for the Design-Build of the JAMES RIVER SWIFT FACILITY and JAMES RIVER TREATMENT PLANT ADVANCED NUTRIENT REDUCTION IMPROVEMENTS, Newport News, Virginia, for HRSD dated April 2020, as fully and completely as if the same were fully set forth therein.

CHANGES TO VOLUME 2 OF 3

A. Basis of Design Report, make the following changes:

1. ADD bold text to Section 1.6.4.1 Piping Materials:

   The piping material for the wet pipe fire sprinkler system is as follows:

   - **Interior:**
     - Schedule 40 black steel pipe, 3 inches and smaller
     - **Schedule 10 black steel pipe, 4 inches and larger**
   - **Exterior** Cement-lined ductile iron pipe, 4 inches and larger

2. ADD bold text to Section 1.7.6 Electrical System Description after the first sentence:

   The new electrical system is proposed to be a 19.2 kV Dominion Energy buried incoming feeder that is split to two 5 MVA transformers. **The (2) new utility 5 MVA transformers and primary cables, shall be provided by the Utility company.** The transformers shall have 4.16 kV secondaries. One secondary shall connect the incoming service to a lineup of 4.16 kV switchgear designated MVSWGR-A, and the other secondary shall connect the incoming service to a lineup of 4.16 kV switchgear designated MVSWGR-B.

3. ADD the bold text and strike through to Section 1.8.3 Data Communications Networks bullet 10:

   - The Design-Builder will provide an ~~I-Star~~ **iSTAR door controller** ~~system for~~ **as the interface system for door locks, card readers and gate control** that will tie into the existing HRSD business network. The Design-Builder will provide the **iSTAR door controller model iSTAR Ultra SE (or approved equal iSTAR door controller**), cabling, conduits, connectors, and all peripheral equipment needed to make this system fully functional. **The new iSTAR door controller and hardware will integrate all doors and gates for the JRTP and SWIFT Facility. HRSD owns the software licenses and support for iSTAR door controllers.**

4. REPLACE Section 2.1.2 Design Loadings, Table 2-3 JRTP Design flows and Loads; units for TKN, NH3 and TP load values mg/L with lbs N/day for TKN and NH3 and lbs P/day for TP.

5. REPLACE BODR Sections 2.4.4.1 Background and Treatment Objections and 2.4.4.2 Design

Criteria with the attached.

6. ADD the bold text to Section 2.8 JRTP ANRI Building Services (Plumbing, HVAC and Fire Protection) at the end of the first sentence:

   The building services' conceptual design for the ANRI project-related facilities is based on the approach and concepts described in Section 2.8, **refer to the Building Code Data sheets in Appendix H (JRTP ANRI Architectural). Sprinkler alarm system to report to plant monitoring system.**

7. ADD the bold text to Section 2.8.1.3 Fire protection bullet 2:

   Network, electrical, and laboratory/control rooms shall be provided with a double-**p**reaction wet-type sprinkler system.

8. ADD the bold text to Section 2.9.1 System Architecture in the 4th paragraph 3rd sentence:

   A **secondary backup power source permanent** generator and automatic transfer switch (ATS) shall be provided to power the hypo and bisulfite pumps when utility and main generator power is not available.

9. MODIFY the following in Section 3:

   Table 3-36*:* Monochloramine dilution water shall be revised from 27 gpm to 7.5 gpm and the SWIFT NPW demands shall be revised accordingly. The SWIFT NPW pump capacities and motor sizes listed in Table 3-37 shall be revised accordingly.

   Table 3-45*:* the third bullet under Design Approach shall be revised to read as follows: Softened water pumps for the preformed monochloramines application point are sized to provide a consistent pressure and flow rate that provides 25:1 dilution of the sodium hypochlorite feed rate; this minimizes the exothermic reaction and elevated pH concerns.

   Table 3-46: The preformed monochloramines – post-UV softened water flow rate shall be revised from 27 gpm to 7.5 gpm

   Table 3-47: The water softening design capacity shall be revised from 75 gpm to 20 gpm. softened water storage tank volume shall be revised from 1,200 gallons to 600 gallons. Tank dimensions shall be as required.

   Table 3-49: The Softened water design flow for preformed monochloramines – post UV shall be revised from 13 gpm to 7.5 gpm

B. Basis of Design Drawings, make the following changes:

   1. DELETE the following drawings and REPLACE with the attached drawings:

      a. I-1200 series

      b. I-1300 series

      c. I-1400 series

      d. I-1500 series

      e. I-1600 series

CHANGES TO VOLUME 3 OF 3

A. Reference Document 28:

   1. ADD JRWWTP JE-CPT-3 Output.xls CPT-03 output data to Reference Document 28.

B. Reference Document 30:

1. ADD JRWWTP JE-CPT-1 Output.xls and JRWWTP JE-CPT-2 Output.xls CPT-01 and CPT-02 output.

2. REPLACE figure in Appendix I labeled F&R Drawing No. 2 attached.

CLARIFICATIONS

A. "Or Equals" and Substitutions: For the requirements of Technical Proposal "Or Equals" and Substitutions refer to ARTICLES 8 and 11 of the RFP and Article 7 paragraph 7.06 in the General Conditions. The Design-builder shall submit all proposed "or equals" and Substitutions as Proposal Alternatives under the Price Proposal.

B. Boring Location: The locations of borings BOR/JE-BH-03, BOR/JE-BH-05 and BOR/JE-CPT-02 are shown incorrectly on the March 17th topographic survey and BODR site/civil drawings Areas 3 and 6 (sheets C103, C106, C203, C206, C403, and C406). See annotated survey sheets 4 and 6, indicating the approximate actual locations for BOR/JE-BH-03, BOR/JE-BH-05 and BOR/JE-CPT-02. The annotated survey sheets show approximate locations only based on descriptions provided by the geotechnical engineer. This information is provided as a .pdf.

C. Plantings and Tree Protection: The Design-Builder shall try to preserve as many trees and plantings on HRSD's and the City's property as possible, refer to Protection of Environment 01 35 43 paragraph 1.07. Tree recompense for the site work is not required. Refer to BODR Sections 1.2.1.13 Stormwater Improvements and 1.2.1.24 Landscaping for site landscaping and stormwater requirements.

D. Power Utility Charges:

1. JRTP Interim Power – HRSD shall pay for all temporary interim power usage to accommodate operation of the JRTP.

2. Temporary Construction Power - Refer to Temporary Facilities Section 01 50 00 paragraph 1.02.

E. Chemicals for startup: Refer to the General Conditions Article 7 paragraph 7.05. The Design-Builder is responsible for all chemicals needed for startup and commissioning activities.

F. Reference Document 31, Hazardous Materials: Table 4 provides surveyed equipment or items observed with the potential for petroleum. All observed equipment or items are within existing structures.

ATTACHMENTS

A. BODR Sections 2.4.4.1 Background and Treatment Objections and 2.4.4.2 Design Criteria as a .pdf

B. James River Treatment Plant Dominion Power Billing Information as a .pdf

C. Basis of Design Drawings as a .pdf:

1. I-1200 series

2. I-1300 series

3. I-1400 series

4. I-1500 series

5. I-1600 series

D. James River Treatment Plant I/O list for existing DCU-1 as an excel file

E. Existing James River Treatment Plant arc flash study as a .pdf

F. James River Treatment Plant list of predefined two-digit UP designations for the entire project as an excel file

G. F&R CPT-03 output as an excel file

H. F&R CPT-01 output as an excel file

I. F&R CPT-02 output as an excel file

J. X0110-DWG.R1 F&R Drawing No. 2 update as a .pdf

K. PMI Survey – Geotech Relocation markup as a .pdf

L. On-Plant recharge Well electrical loads as an excel file

M. JRTP SWIFT electrical load list as an excel file

N. Off-plant recharge well electrical loads as an excel file

O. JRTP total plant electrical load calculation as an excel file

PROPOSERS MUST ACKNOWLEDGE RECEIPT OF THIS AMENDMENT/ADDENDUM IN THE ONLINE SOLICITATION IN ORDER TO SUBMIT PROPOSAL. FAILURE TO ACKNOWLEDGE AMENDMENT WILL NOT ALLOW PROPOSER TO SUBMIT PROPOSAL.

Solicitation 404776,2

Title **JR SWIFT Facility (GN016360) and JRTP Advanced NRI (JR013400)**
Amendment Date **11-JUN-2020 14:41:55**
Amendment Description **Miscellaneous updates to Volumes 2 & 3 and Clarifications.**

Due Date **30-JUL-2020 11:00:00** Award Date **Not Specified**
Time Zone **Eastern Time**

Note **All Proposers are encouraged to attend a virtual pre-proposal conference, which will be held online on April 29, 2020 at 10:00 a.m. local time. Attendance at the pre-proposal conference shall not be mandatory for Proposers to submit a Technical Proposal or Price Proposal. The pre-proposal conference will include a review of the Project. A link to the virtual pre-proposal conference will be sent through HRSD's Online Oracle ERP system as an online discussion.**

All Proposers are scheduled to attend a virtual individual proprietary meeting, which will be held online on May 20, 2020, with HRSD and its Owner's Consultant. Each meeting would be private, in that only 1 Proposer would meet with HRSD at a time and is expected to last no longer than 2 hours per Proposer. Proposers are not required to accept an invitation to the Proprietary meeting. A link to the virtual pre-proposal conference will be sent through HRSD's Online Oracle ERP system as an online discussion.

The purpose of the Proprietary meetings is to give each Proposer, in a confidential setting, an opportunity to ask questions and discuss concerns related to the Project, details of the Project scope, administrative procedures and for the Proposer to discuss any proposed deviations to the RFP. The meetings are also intended to enable HRSD to express, among other things, whether the Proposer is pursuing an approach that will not meet the RFP Documents or is otherwise unacceptable to HRSD. At least 5 calendar days before each meeting the Proposer shall submit to the Contract Specialist, identified in Article 6.01.A, via email the names and functions of each of its attendees and the issues and questions to be discussed. No more than 5 team members may attend such meetings.

Site visits of the HRSD JRTP will be on May 28, 2020 at 8:30 a.m. or 1:00 p.m. To reinforce the Commonwealth's response to COVID-19 and in furtherance of Governor's Executive Order 55 (Temporary Stay at Home Order) minimizing in-person gatherings, site visits will be limited to 9 individuals from each Proposers team. Please refer to paragraph "Pre-Bid & Pre-Proposal Conferences, Site Visits, and other related meetings" in Attachment 1 – Copy of ERP Notification for the Centers for Disease Control and Prevention (CDC) guidelines. Please contact the Contract Specialist, identified in Article 6.01.A, to schedule a site visit. Times will be scheduled as requested on a first come basis. Site visits will be limited to a 4-hour duration from the scheduled start time. There will be no other site visits during the RFP process.

Interviews shall be held with each short-listed Proposer, which will be held virtually on August 19, 2020 with HRSD and its Owner's Consultant and is expected to last no longer than 2 hours. The initial 45 minutes of the interviews will be available for presentations by the Proposers. Presentations should be limited to items directly related to this Project with emphasis on qualifications, proposed services, relevant experience, and details of the Technical Proposal. The remainder of the time will be used for questions by the Committee.

Please submit your response online only:

Organization **HRSD**
Purchaser **Rice, Shannon**
Phone **(757) 460-7005**
Email **srice@hrsd.com**

Responses shall only be accepted online through Hampton Roads Sanitation District 's (HRSD) Oracle ERP system "iSupplier Portal" by the due date and time specified. Late responses and other types of responses shall not be accepted.

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1 Header Information

1.1 General Information

Title **JR SWIFT Facility (GN016360) and JRTP Advanced NRI (JR013400)**

Description **The Hampton Roads Sanitation District (HRSD) desires to contract with an experienced Design-Builder for the design, construction, and commission of 2 capital projects: JAMES RIVER SWIFT FACILITY (GN016360) and JAMES RIVER TREATMENT PLANT ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) (Project).**

HRSD (Owner) has reviewed Statement of Qualifications (SOQ) submitted in response to the RFQ issued on February 9, 2020 and is inviting only Design-Builders short-listed under the RFQ to submit Technical and Price Proposals in response to this RFP. Only Technical and Price Proposals from Design-Builders short-listed under the RFQ will be accepted. HRSD's Online Oracle Enterprise Resource Planning (ERP) system will not accept Technical and Price Proposals from any other Proposer.

A separate solicitation will be issued for the submission of Price Proposals.

Proposer must be aware of the Virginia Clean Water Revolving Loan Fund (VCWRLF) and the Water Infrastructure Finance and Innovation Act (WIFIA) and various Contract inserts in Volume 1 and statements have been added to the RFP.

Proposer must be certain to comply with the MBE/WBE requirements as stated in Article 22 of the RFP, other documents in Volume 1, and show proof of advertisement or contacts.

Amendment Date **11-JUN-2020 14:41:55**

Amendment Description **Miscellaneous updates to Volumes 2 & 3 and Clarifications.**

Due Date **30-JUL-2020 11:00:00** Award Date **Not Specified**

Purchaser **Rice, Shannon**

Email **srice@hrsd.com**

This is a Two-Step IFB and all responses will be evaluated in two stages - Technical and Price.

Note All Proposers are encouraged to attend a virtual pre-proposal conference, which will be held online on April 29, 2020 at 10:00 a.m. local time. Attendance at the pre-proposal conference shall not be mandatory for Proposers to submit a Technical Proposal or Price Proposal. The pre-proposal conference will include a review of the Project. A link to the virtual pre-proposal conference will be sent through HRSD's Online Oracle ERP system as an online discussion.

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days before each meeting the Proposer shall submit to the Contract Specialist, identified in Article 6.01.A, via email the names and functions of each of its attendees and the issues and questions to be discussed. No more than 5 team members may attend such meetings.

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Interviews shall be held with each short-listed Proposer, which will be held virtually on August 19, 2020 with HRSD and its Owner's Consultant and is expected to last no longer than 2 hours. The initial 45 minutes of the interviews will be available for presentations by the Proposers. Presentations should be limited to items directly related to this Project with emphasis on qualifications, proposed services, relevant experience, and details of the Technical Proposal. The remainder of the time will be used for questions by the Committee.

1.2 Terms

Ship-To Address	**Design-Const SWIFT** **1434 Air Rail Avenue** **Virginia Beach, VA 23455** **United States**	Bill-To Address	**Accounts Payable** **PO BOX 5915** **Virginia Beach, VA 23471-0915** **United States**
Payment Terms	**Net 30**	Carrier	**Best Way**
FOB	**Destination**	Freight Terms	**No Freight Terms Apply**

1.3 Requirements

Proposer Certification	**Solicitation Step - Technical**
By the submission of this online Proposal, the Proposer is duly authorized to bind the company and is familiar with all requirements detailed in the Proposal Documents. ..... Circle one from the response values below: YES NO	
Proposer's Acknowledgements	**Solicitation Step - Technical**
Proposer agrees, if this Technical Proposal is accepted and the Proposer is selected to enter into an Agreement with HRSD in the form included in the RFP, subject to modification after negotiation. ..... Circle one from the response values below: Yes No	
Proposer is aware of the Virginia Clean Water Revolving Loan Fund (VCWRLF) Program Requirements. ..... Circle one from the response values below: Yes No	
Proposer is aware of the Water Infrastructure Finance and Innovation Act (WIFIA) Program Requirements. ..... Circle one from the response values below:	

Proposer's Acknowledgements	Solicitation Step - Technical
Yes No	
Proposer is aware of the Water Quality Improvement Fund (WQIF) Grant Program Requirements. ..... Circle one from the response values below: YES NO	

1.4 Attachments

Name	Data Type	Description
JR SWIFT Facility & JRTP Advanced NRI Volume 1 of 3	File	Volume 1 of 3
JR SWIFT Facility & JRTP Advanced NRI Volume 2 of 3	File	Volume 2 of 3
JR SWIFT Facility & JRTP Advanced NRI Volume 3 of 3	File	Volume 3 of 3
JR SWIFT Facility & JRTP Advanced NRI Agreement for Transfer of Digital Model Fi	File	Agreement for Transfer of Digital Model Files
Baseline GHG Assessment Carbon Footprint Tool	File	Baseline GHG Assessment Carbon Footprint Tool
Addendum #1	File	Updates to the RFP - Proprietary Meeting Minutes due date (match RFQ language) and Interviews are now virtual.
Addendum #2: Attachment A	File	BODR Sections 2.4.4.1 Background and Treatment Objections and 2.4.4.2 Design Criteria
Addendum #2: Attachment B	File	James River Treatment Plant Dominion Power Billing Information
Addendum #2: Attachment C	File	Basis of Design Drawings
Addendum #2: Attachment D	File	James River Treatment Plant I/O list for existing DCU-1
Addendum #2: Attachment E	File	Existing James River Treatment Plant arc flash study
Addendum #2: Attachment F	File	James River Treatment Plant list of predefined two-digit UP designations for the entire project
Addendum #2: Attachment G	File	F&R CPT-03 output
Addendum #2: Attachment H	File	F&R CPT-01 output
Addendum #2: Attachment I	File	F&R CPT-02 output
Addendum #2: Attachment J	File	X0110-DWG.R1 F&R Drawing No. 2 update
Addendum #2	File	Miscellaneous updates to Volumes 2 & 3 and Clarifications
Addendum #2: Attachment K	File	PMI Survey – Geotech Relocation markup
Addendum #2: Attachment L	File	On-Plant recharge Well electrical loads
Addendum #2: Attachment M	File	JRTP SWIFT electrical load list
Addendum #2: Attachment N	File	Off-plant recharge well electrical loads
Addendum #2: Attachment O	File	JRTP total plant electrical load calculation

2 Price Schedule

2.1 Line Information

Retainage

Retainage Attributes	Negotiable
Maximum Retainage Amount	No
Retainage Rate (%)	No

Line	Item, Rev	Target Quantity (N/A)	Unit	Unit Price	Amount	Promised Date
1 For the purposes of submitting the Technical Proposal, Proposers must enter $1. A separate solicitation will be issued for the Price Proposal.						

2.2 Line Details

2.2.1 Line 1 For the purposes of submitting the Technical Proposal, Proposers must enter $1. A separate solicitation will be issued for the Price Proposal.

Need-By Date **Not Specified**

NIGP Code (CURRENCY_CODE=USD) **Not Specified**

Ship-To Address **Eng**
1434 Air Rail Avenue
Virginia Beach, VA
23455
United States



Figure 01 50 00-3 Proposed Location of Laydown and Staging on City Property

SECTION 01 31 13
PROJECT COORDINATION

PART 1 GENERAL

1.01 SUMMARY

A. The Design-Builder shall be solely responsible for coordination of the Work. They shall supervise, direct, and cooperate fully with all subcontractors, manufacturers, fabricators, suppliers, distributors, installers, testing agencies, and all others whose services, materials, or equipment are required to ensure the Work meets the requirements in the Contract Documents.

B. The Design-Builder shall cooperate with, and coordinate the Work with, the work of any other contractors, subcontractors, utility service companies, or Owner's employees performing work at the Site.

C. The Design-Builder shall also coordinate its Work with the work of others under separate contract with the Owner or other parties to ensure compliance with schedules.

D. The Design-Builder shall attend and participate in all project coordination or progress meetings and report on the progress of all Work and compliance with schedules.

1.02 WORK BY OTHERS

A. Other work that is either directly or indirectly related to scheduled performance of the Work under these Conceptual Documents, listed henceforth, is anticipated to be performed at the Site by others.

B. The Design-Builder shall coordinate with the Owner and others as specified in the General Conditions. Include sequencing constraints as a part of progress schedule to accommodate the work.

1. Emerson DCS

a. A negotiated scope of work with Emerson DCS is provided as an exhibit to the Agreement. The scope of work defines the minimum work and products for the Project.

b. The Design-Builder shall execute an agreement with Emerson prior to the Owner issuance of an agreement with the Design-Builder.

c. The Design-Builder shall negotiate additional services with Emerson to provide successful installation and implementation of the equipment.

2. JRTP wells

    a. The JRTP wells are required to be a minimum of 800 feet apart with a preferred separation of 1000 feet. Wells were located based on spacing requirements and coordination with the City.

        1) The Design-Builder may provide proposed alternative locations for on-site wells as part of its proposal. The Owner reserves the right to reject any proposed alternative well locations.

    b. The Owner will procure a well designer in 2020 and a well drilling contractor in winter 2021. Well drilling is proposed for 2021 to 2024 with on-site well drilling from 2021 to 2022. Well drilling contractor requires a minimum area of 100 feet by 100 feet for laydown and staging.

    c. The well driller is responsible for constructing the well casing and screen, maintaining the well, and completing site work for drilling and site repair of each JR SWIFT recharge and monitoring well. The Design-Builder is responsible for outfitting the well, utilities for the well, well building, piping, and final site work.

    d. The well driller requires continued access to the wells for well maintenance, projected to occur every 6 months after the well is drilled. The Design-Builder shall coordinate with the well driller. **The well driller has the primary right to HRSD's easements for well drilling. With reasonable advance notice the Design-Builder shall accommodate driller access to the wells for maintenance.**

    e. **The Design-Builder shall maintain roadway access to the communications tower and utility building adjacent to proposed Well 5.**

3. Shoreline and trail

    a. The Owner will procure a shoreline stabilization/trail designer in 2021 and contractor in 2022 and 2025. The Flax Mill Creek and James River Trails are depicted on the BODR drawings for reference. The Owner will work with the City to finalize the trail design. Construction is proposed for 2022 for Flax Mill Creek Trail, the shoreline stabilization, and a portion of the James River Trail and in 2025 for the completion of the James River Trail.

    b. Construction of Flax Mill Creek and James River Trail will be sequenced to accommodate the Design-Builder's work in Riverview Farm Park. The sequencing will not disturb construction of the trail.

    c. The trail contractor may require access to the shoreline stabilization/trail work via the JRTP. The Design-Builder shall coordinate with the contractor.

4. Dominion Energy

a. The Owner has coordinated conceptual power upgrades with Dominion Energy. The Design-Builder shall not contact Dominion Energy during the RFP phase.

b. Upon execution of the Agreement, the Design-Builder shall be responsible for all Dominion Energy coordination and design requirements. The Owner will coordinate with the Design-Builder and review all documents as needed. The Owner will submit to Dominion Energy a Letter of Authorization and is responsible for the cost of power upgrades owned by Dominion Energy.

5. Centrifuge project

   a. The Owner will procure a contractor to replace the existing centrifuges in the Solids Handling Building, which is projected to occur in late 2021.

   b. The Design-Builder shall coordinate and not interfere with the work in the Solids Handling Building.

6. Outfall

   a. The Owner will procure an off-shore outfall designer and contractor. Access to the work is anticipated via the waterway or JRTP.

   b. The Design-Builder shall incorporate the final outfall design into the JRTP hydraulic profile.

   c. The Design-Builder shall coordinate with the outfall contractor.

7. The Owner shall perform the following:

   a. Landscaping

      1) JRTP ANRI and JR SWIFT ornamental shrubs and trees

      2) Well buildings

   b. Outfitting the new Administration/Maintenance Building with furniture, appliances, monitors, computers, phones, televisions, and laboratory equipment

   c. Relocation of staff; refer to Section 01 50 00, Temporary Facilities.

      1) The Owner shall coordinate with Verizon to move the existing service for the business network to Administration Building No. 2.

   d. The Design-Builder shall coordinate with the Owner to ensure that continued access will be available for ongoing research conducted at the IFAS tanks.

8. **Owner Maintenance Shop:**

    1) **The Owner maintenance shop is proposed on the site within the space reserved for HRSD Storage Area During Construction on the Drawings. The Owner proposes to construct the maintenance shop in advance of Design-Builder mobilization. The maintenance shop and drive access impervious area, approximately 13,000 square feet shall be included in the Design-Builder's site design and stormwater quantity and quality permitting.**

    2) **The maintenance shop shall be included in the utility power and permeant generator back-up requirements of the JRTP. The power consumption shall be similar to the existing maintenance shop's requirements. The maintenance shop does not require maintenance with temporary generators during construction.**

1.03 UTILITY NOTIFICATION AND COORDINATION

A. Coordinate the Work with various utilities within Project limits. Notify applicable utilities prior to commencing Work, if damage occurs, or if conflicts or emergencies arise during the Work. The Design-Builder shall abide by all Miss Utility laws and notification requirements. The utilities include but may not be limited to the following:

    1. Verizon

    2. Newport News Public Works

    3. Dominion Energy

    4. City of Newport News Waterworks

    5. Virginia Natural Gas

1.04 **FULL SCALE IMPLEMENTATION SUPPORT**

A. **SWIFT Full-Scale Implementation is monitored by the Potomac Aquifer Recharge Oversight Committee and Potomac Aquifer Recharge Monitoring Laboratory. These groups may review the design submittals for JR SWIFT and JRTP ANRI.**

B. **The Design-Builder will distribute design submittals and invite attendees from, Virginia Department of Health and Virginia Department of Environmental Quality. These agencies may provide review comments to the Owner.**

1.05 CITY OF NEWPORT NEWS

A. The Design-Builder, in conjunction with the Owner, shall coordinate with the City and agencies. Coordination may include but not be limited to permitting, attending

meetings, providing public outreach and notification, and coordinating with utility owners, both public and private.

1. The Design-Builder shall provide a detailed construction coordination plan for the Riverview Farm Park (JRTP Construction Coordination Plan). A schedule including graphics of the construction sequence is required as part of the submittal to the Owner.

~~B. The Design-Builder, in conjunction with the Owner, will coordinate with the City to finalize the off-site SWIFT Recharge Well Building amenities. The BODR provides the proposed type of well building for each well within the Contract Cost Limit.~~

C. ~~The Owner conferred with the City on the Conceptual Design.~~ The **Owner** ~~Design-Builder shall~~ **will** submit the Conditional Use Permit **(CUP)** ~~within 1 month after the Comprehensive Agreement~~ **as a condition of the property purchase agreement with the City. The Owner's submission of the CUP will restrict major changes to the Administration/ Maintenance Building location and aesthetics only.**

D. Restrictions on construction

1. City-owned facilities, such as the Visitor Center, Gymnastics Center, Fido Field, and Riverview Farm Park must be safely accessible by the public throughout construction. Any service interruptions of power, water, sewer, natural gas, trail, and communications (e.g., telephone, cable, internet) must be approved by the City and the Owner a minimum of 30 days prior to the interruption.

    a. Relocation of access roads, utilities that service the City's amenities, and relocation of Fido Field shall be completed as early as possible to minimize impacts to the public.

        1) Provide a temporary road for Visitor Center **and Trail** access~~.~~ The Design-Builder shall provide the existing City Farm Road for the public's Visitor Center access until the Riverview Farm Park property has been vacated. The existing gate shall be relocated to separate public access from Riverview Farm Park property. Visitor Center **and Trail** parking shall be maintained with a four parking spaces within the recreational easement.

        2) Access to the Gymnastics Center and Fido Field shall be separate from the Design-Builder's access to JRTP from City Farm Road. A proposed location is depicted on the BODR Drawings. Coordination with the Owner and City is required.

    b. Portions of Riverview Farm Park and trails require closure for Design-Builder access and construction of the well buildings and piping. The Design-Builder shall provide adequate signage, barricades and fencing, and means of public ingress/egress around the construction to minimize public interaction with the construction.

c. **The Visitor Center shall remain accessible until the Design-Builder provides a Temporary Meeting Space or constructs the new Administration/Maintenance Building with the conference room available for public usage. The Design-Builder shall demolish the Visitor Center and demolish/abandon utilities as appropriate when the Temporary Meeting Space or the new Administration/Maintenance Building conference room is available for public usage.**

d. **Temporary Meeting Space shall be coordinated with the former berm area in front of the Gymnastic Center. The Temporary Meeting space requires the following but not limited to:**

1) **All underground or above ground utility piping, wiring or cabling for water, power, sewage and internet services.**

2) **A trailer which adheres to all HRSD hurricane requirements provided with heat and air conditioning and a minimum usable space of 24'x44'. Usable space shall include a conference room, male and female restrooms, kitchenette with sink and refrigerator and two offices. Conference room shall have hookups for audio-visual equipment.**

3) **Remain for public usage until HRSD's new Administration/ Maintenance Building conference room is available for the public usage.**

4) **Removal from the site with utility demolition or abandonment.**

5) **Site work.**

2. The City's archeologist will be notified of digging/excavations for portions of Riverview Farm Park. The Design-Builder shall coordinate with the Owner to allow the Owner time to notify the City of the schedule for digging/excavations.

3. Removal of trees and shrubs requires approval by the City's Director of Parks and Recreation.

a. Trees lining Riverview Parkway in front of the Gymnastics Center cannot be removed.

b. The Design-Builder shall protect trees from construction activities.

E. Schools – The Design-Builder shall be aware of City schools. Menchville High School and B.C. Charles Elementary School are located off Menchville Road. The Design-Builder shall anticipate foot and vehicular traffic for the following approximate times: B.C. Charles: 8:30 to 9 a.m. and 3:30 to 4 p.m.; and Menchville High School: 6:45 a.m. to 7:15 a.m. and 2 p.m. to 2:30 p.m.

1.06 PUBLIC PARTICIPATION PROGRAM

A. Refer to Section 11 of *HRSD Design and Construction Standards*.

B. The Design-Builder shall develop public information materials for Work impacting areas surrounding JRTP as requested by the Owner.

1. The Design-Builder shall develop notification flyers and provide information for the Project **on HRSD's website** ~~online.~~

2. **The Design-Builder shall provide information for HRSD to release to the public, which may include press releases via Twitter, Facebook and LinkedIn. Information shall include visual clips using drone fly overs, weekly progress photos and/or other visualizations.**

3. **The Design-Builder shall provide monthly written updates for HRSD to release to the City of Newport News. Updates shall be integrated with progress photos or other visualizations similar to public releases.**

4. **The Owner will approve all notifications prior to distribution to property owners and the public.**

C. **The Design-Builder shall participate in at least three ~~two~~ Public open houses. The Public open houses are proposed at project kick-off, beginning of the work in the park and one major milestone to be agreed upon with HRSD.**

1. **The Design-Builder is responsible for all public information materials at the open houses.**

1.07 ADJACENT FACILITIES AND PROPERTIES

A. Examination

1. Before Work at the Site is started, the Design-Builder, Owner, and affected property owners and utility owners shall make a thorough examination of pre-existing conditions including existing buildings, structures, and other improvements in the vicinity of the Site that could be damaged by construction operations, as applicable.

2. Periodic reexamination shall be jointly performed to include, but not be limited to, cracks in structures, settlement, leakage, and similar conditions.

B. Documentation

1. Record and submit documentation of observations made on examination inspections in accordance with Article 1.07.

2. Such documentation shall be used as indisputable evidence in ascertaining whether and to what extent damage occurred as a result of the Design-Builder's

operations, and is for the protection of adjacent property owners, the Design-Builder, and the Owner.

1.08 CONSTRUCTION PHOTOGRAPHS

A. Design-Builder's general requirements

1. Photo document all phases of the Project including preconstruction, construction progress, and post-construction.

a. Photographs shall be submitted with progress payments standard files and a PDF. The PDF shall include a summary of major work progression for the month with a maximum of 10 photos.

b. All photographs shall be taken with global positioning system (GPS)-enabled devices to accommodate georeferencing and review using GIS software and shall be in digital (jpeg) format.

c. Provide an index with each photograph's description, direction of image, date, time, project name, and location.

1) All photographs file names shall include:

i) Date – YearMonthDate (e.g., 20210215)

ii) Location (e.g., FlocSed)

iii) No special characters

iv) The Design-Builder shall develop a standard naming convention for photographs.

d. Provide digital aerial photographs with sufficient clarity for enlargement to at least 16 inches x 20 inches at the completion of the Project. The Design-Builder shall take progress aerial photographs every 6 months that include the entire Site. Photographing shall begin in 2021 to Project completion.

2. Digital images – No post-session electronic editing of images is allowed. Stored images shall be actual images as captured without cropping or other edits.

3. KMZ files with Google Earth

a. The Design-Builder shall submit KMZ files with georeferenced photographs.

b. Alternative file formats are acceptable if approved by the Owner.

B. Preconstruction and post-construction

1. Prior to Design-Builder mobilization for the Work at the JRTP property and Riverview Farm Park is started and again upon issuance of Substantial Completion, take a minimum of 48 photographs of the Site and property adjacent to the Site.

2. Particular emphasis shall be given to structures inside and outside the perimeter of the Site.

C. Construction progress photographs

1. Photographically demonstrate progress of construction, showing every aspect of the Site and adjacent properties as well as interior and exterior of new or impacted structures.

2. Take photographs weekly that adequately represent the progress of the Work.

D. Documentation

1. Digital images

a. Electronic images shall have the date taken embedded in the image.

b. Archive using a commercially available photograph management system that provides a listing of photographs including date, keyword description, and direction of photograph.

c. Label file folders or database records with the project name and the Owner's name, and month and year images were produced.

1.09 AUDIO-VIDEO RECORDINGS

A. Prior to Design-Builder mobilization of the Work at the JRTP property and Riverview Farm Park, videograph the Site and property adjacent to the Site.

B. In the case of preconstruction recording, no Work shall begin in the area prior to Owner's review and approval of content and quality of video for that area.

C. Particular emphasis shall be directed to physical condition of existing vegetation, structures, and pavements within the Site, areas adjacent to and within the right-of-way or easement, and on the Design-Builder's storage and staging areas.

D. Video format and quality

1. All video shall be taken with GPS-enabled devices to accommodate georeferencing and review using GIS software.

2. Video

    a. Produce bright, sharp, and clear images with accurate colors, free of distortion, and other forms of picture imperfections.

    b. Electronically and accurately display the month, day, year, and time of day of the recording.

3. Audio

    a. Audio documentation shall be clear, precise, and moderately paced.

    b. Indicate date, project name, and a brief description of the location of recording.

1.10 REFERENCE POINTS AND SURVEYS

A. Owner's responsibilities

1. Establish benchmarks convenient to the Work and at least every 500 feet on pipelines and roads.

B. Design-Builder's responsibilities

1. Provide survey and layout required to lay out the Work.

2. Check and establish exact location of existing facilities prior to construction of new facilities and any connections thereto.

3. In the event of discrepancy in data or staking provided by Owner, request clarification before proceeding with the Work.

4. Retain a professional land surveyor or civil engineer registered in the Commonwealth of Virginia who shall perform or supervise engineering surveying necessary for additional construction staking and layout.

5. Maintain a complete and accurate log of survey work as it progresses as a Record Document.

6. On request of Owner, submit documentation.

PART 2 PRODUCTS (NOT USED)

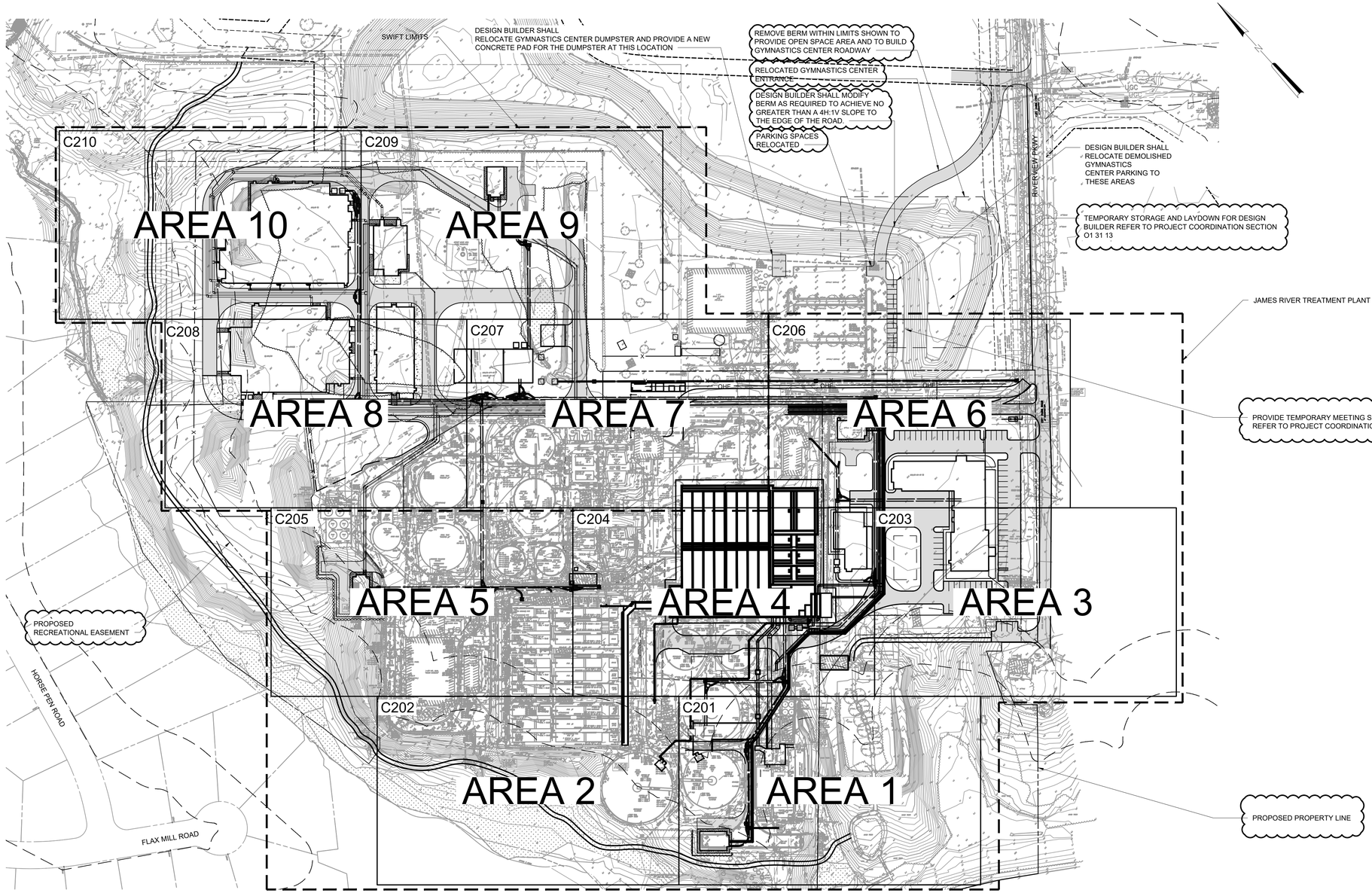
PART 3 EXECUTION (NOT USED)

END OF SECTION

James River Treatment Plant Water Quality Summary (Rev 1 - 6/11/2020)
January 2017 through February 2020

Parameter	Sample Location	Units	n	1%	Median	99%	Maximum	Mean	Std. Dev.	Notes
Temperature	FNE	°C	1155	14.8	21.5	29.0	29.3	21.8	4.6	
pH	FNE	s.u.	1155	6.8	7.1	7.3	7.7	7.1	0.1	
Alkalinity	FNE	mg/L as CaCO3	491	57.4	89.9	132.2	178.0	90.5	15.7	
Calcium	SCE	mg/L	2	28.9	29.7	30.5	30.5	29.7	1.1	
Magnesium	SCE	mg/L	2	2.2	4.2	6.2	6.3	4.2	2.9	
Total Dissolved Solids	SCE	mg/L	6	346.8	379.0	389.9	390.0	374.0	16.9	
Ammonia	FNE	mg/L	634	0.1	1.8	12.0	17.0	2.5	2.5	
Total phosphorus	FNE	mg/L	825	0.1	0.2	3.3	5.4	0.5	0.6	
BOD	FNE	mg/L	793	2.0	3.0	18.1	35.0	3.8	3.0	
COD	FNE	mg/L	487	21.0	33.0	73.4	102.0	34.6	9.7	
Turbidity	FNE	NTU	1155	1.1	1.9	13.1	51.9	2.3	2.7	
Fecal coliform	FNE	No./100 ml	166	1.0	1.0	28.1	31.0	2.7	4.8	
Total nitrogen	FNE	mg/L	659	4.2	7.8	16.8	20.3	8.3	2.5	
Nitrate	FNE	mg/L	660	1.5	4.5	7.8	9.5	4.5	1.4	
Nitrite	FNE	mg/L	154	0.0	0.3	0.7	1.1	0.3	0.2	
TKN	FNE	mg/L	658	1.2	3.1	13.7	19.7	3.8	2.6	
Ortho-P	FNE	mg/L	822	1.1	2.5	24.7	60.0	3.4	4.5	
Total suspended solids	FNE	mg/L	822	1.1	2.5	24.7	60.0	3.4	4.5	
TOC	SCE	mg/L	2	9.3	10.0	10.7	10.7	10.0	1.0	
Bromide	SCE	mg/L	83	0.1	0.2	0.4	0.4	0.2	0.1	
Chlorate	SCE	mg/L	1	0.012	0.012	0.012	0.012	0.012	0.0	
Chloride	SCE	mg/L	8	46.3	73.5	87.2	87.4	73.2	13.5	
Fluoride	SCE	mg/L	13	0.4	0.7	0.9	0.9	0.7	0.1	
Sulfate	SCE	mg/L	8	38.2	50.7	68.9	69.2	52.5	10.5	
Color	SCE	CU	6	346.8	379.0	389.9	390.0	374.0	16.9	
Conductivity	SCE	µS/cm	78	502.5	642.0	747.7	750.0	631.1	61.1	
Aluminum (total)	SCE	mg/L	6	0.0	0.0	0.0	0.0	0.0	0.0	Note 1
Barium	SCE	mg/L	13	0.01	0.01	0.02	0.02	0.01	0.00	
Iron (total)	SCE	mg/L	6	0.1	0.2	1.1	1.1	0.3	0.4	
Manganese (total)	SCE	mg/L	7	0.01	0.03	0.05	0.05	0.03	0.01	
Silver	SCE	mg/L	6	0.0	0.0	0.0	0.0	0.0	0.0	Note 2
Sodium	SCE	mg/L	1	69.0	69.0	69.0	69.0	69.0	0.0	
Zinc	SCE	mg/L	6	0.0	0.0	0.0	0.0	0.0	0.0	Note 3
1,4-Dioxane	SCE	µg/L	42	0.5	0.7	1.6	1.6	0.8	0.3	
NDMA	SCE	ng/L	22	1.3	4.7	14.6	15.0	6.3	3.9	

FNE - Final Effluent
SCE - Secondary Clarifier Effluent
Note 1 - All values below detection limit (<0.04)
Note 2 - All values below detection limit (<0.005)
Note 3 - All values below detection limit (<0.03)



SCALE: 1" = 100'

100 50 0 100'

REV	ISSUED FOR	DATE	BY
1	ADDENDUM 3	6/19/2020	--
0	REQUEST FOR PROPOSAL	4/10/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PROJECT ENGINEER:	A. NEWBOLD
DESIGNED BY:	B. SLAUGHTER
DRAWN BY:	E. PAGSANJAN
CHECKED BY:	M. SANTOWASSO

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

Hazen

AECOM

HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

SITE KEY PLAN

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	C200

File: C:\BIM\HAZEN-PW\20-11568\R\C200 Saved by isalesby Save date: 6/23/2020 4:53 PM
PLOT DATE: 6/23/2020 4:57 PM BY: LSALESBY

MATCHLINE - SEE DWG C206

NOW OR FORMERLY
HAMPTON ROADS SANITATION DISTRICT
D.B. 495, PG. 525
PARCEL ID: 190000114
101 CITY FARM ROAD

ADMINISTRATION / MAINTENANCE BUILDING

SEE NOTE 4

SEE NOTE 5

30' FRONT SETBACK AND
30' TRANSITIONAL BUFFER

POTENTIAL NEW
HRSD PROPERTY LINE

SEE NOTE 6

ASPHALT PAVEMENT, TYP

NOW OR FORMERLY
CITY OF NEWPORT NEWS
D.B. 39, PG. 430
PARCEL ID: 190000101
100 CITY FARM ROAD

MATCHLINE - SEE DWG C204

PLANT ACCESS GATE

PROPOSED RECREATIONAL EASEMENT

FLAXMILL CREEK TRAIL, BY
OTHERS, NOT IN CONTRACT

LANDWARD RESOURCE
PROTECTION AREA LIMITS

PROPOSED PROPERTY LINE

LANDWARD RESOURCE
MANAGEMENT AREA LIMITS

LANDWARD RESOURCE
MANAGEMENT AREA LIMITS

MATCHLINE - SEE DWG C201

NOTES:

1. BASE INFORMATION PER GIS AND AERIAL DATA. SURVEY PERFORMED IN THIS AREA NOT USED.
2. STRUCTURES AND UTILITIES SHOWN FULL TONE REPRESENT NEW FACILITIES.
3. STRUCTURES AND UTILITIES SHOWN HALF TONE REPRESENT EXISTING FACILITIES TO REMAIN.
4. REFER TO BODR FOR ALL LANDSCAPING REQUIREMENTS.
5. SPACE RESERVED FOR HRSD MAINTENANCE BUILDING NOT-IN-CONTRACT. THIS AREA IS AVAILABLE FOR DESIGN-BUILDER LAYDOWN.
6. THE DESIGN-BUILDER SHALL PROVIDE A TEMPORARY ROAD ON HRSD PROPERTY AS NECESSARY FOR PUBLIC ACCESS TO THE CITY'S VISITOR CENTER. THE DESIGN-BUILDER WITH AUTHORIZATION FROM HRSD SHALL IMPROVE CITY FARM ROAD THEN REMOVE THE TEMPORARY ACCESS ROAD ON HRSD PROPERTY. A CONSTRUCTION ENTRANCE FROM THE SECTION OF CITY FARM ROAD IS PROHIBITED.

SCALE: 1" = 20'

20 10 0 20'

REV	ISSUED FOR	DATE	BY
1	ADDENDUM 3	6/19/2020	--
0	REQUEST FOR PROPOSAL	4/10/2020	--

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	M. OSBORNE
DRAWN BY:	J. FIGUEROA
CHECKED BY:	N. JOHNSON
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

JACOBS

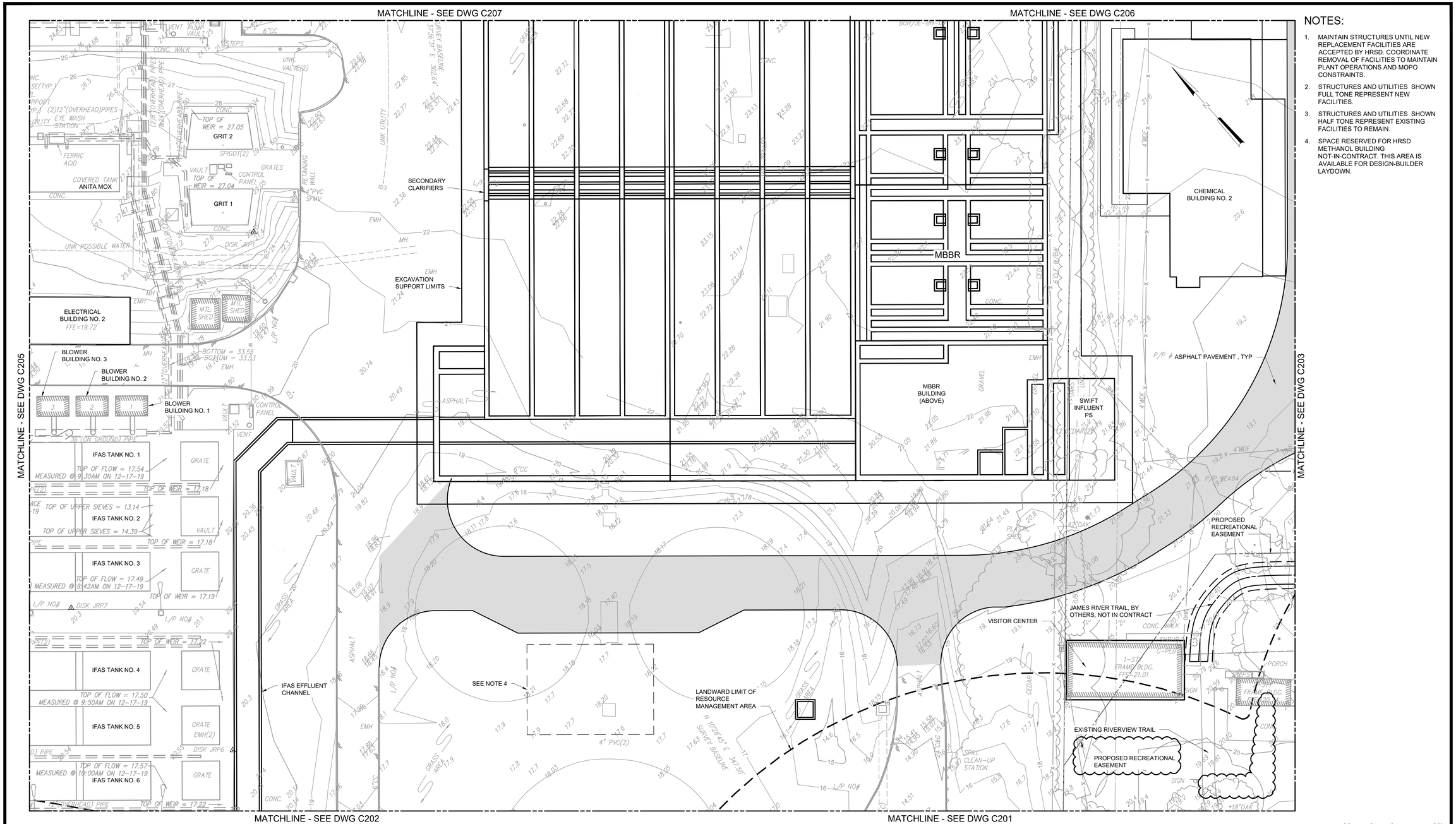
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

JAMES RIVER TREATMENT PLANT
PARTIAL SITE PLAN - AREA 3

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	C203

File: C:\BMSHADZN-PW\D0159886\C203-Saved by Halkedy Steve date: 6/19/2020 4:44 PM
PLOT DATE: 6/23/2020 4:49 PM BY: LSALESKY



NOTES:

1. MAINTAIN STRUCTURES UNTIL NEW REPLACEMENT FACILITIES ARE ACCEPTED BY HRSD. COORDINATE REMOVAL OF FACILITIES TO MAINTAIN PLANT OPERATIONS AND MOPO CONSTRAINTS.
2. STRUCTURES AND UTILITIES SHOWN FULL TONE REPRESENT NEW FACILITIES.
3. STRUCTURES AND UTILITIES SHOWN HALF TONE REPRESENT EXISTING FACILITIES TO REMAIN.
4. SPACE RESERVED FOR HRSD METHANOL BUILDING NOT-IN-CONTRACT. THIS AREA IS AVAILABLE FOR DESIGN-BUILDER LAYDOWN.

REV	ISSUED FOR	DATE	BY
1	ADDENDUM 3	6/19/2020	--
0	REQUEST FOR PROPOSAL	4/10/2020	--

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	M. OSBORNE
DRAWN BY:	J. FIGUEROA
CHECKED BY:	N. JOHNSON

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0, 1/2", 1")

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

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HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

JAMES RIVER TREATMENT PLANT
PARTIAL SITE PLAN - AREA 4

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	C204

File: C:\BIM\HADEN-RIVER\159695\C204.3send by bateedy Save date: 6/19/2020 4:44 PM
PLOT DATE: 6/19/2020 4:45 PM BY: LBALEEM

MATCHLINE - SEE DWG C208

MATCHLINE - SEE DWG C207

MATCHLINE - SEE DWG C204

MATCHLINE - SEE DWG C202

8 FT CHAINLINK FENCE, TYP

TANK 6

TANK 5

TANK 4

TANK 3

TANK 2

TANK 1

FERRIC SULFATE CONTROL PANEL

L/P SWITCH

LADDER

L/P NO#

GRAVITY THICKENER PUMPSTATION FFE=26.99

CONC. TANK GRAVITY THICKENER NO. 2

HAND HOLE

12" SWIFT

16" WBF

SEE NOTE 5

R12'

R5'

20.00'

R20

5 FT SIDEWALK, TYP

RECHARGE WELL NO. 3

PROPOSED RECREATION EASEMENT

ASPHALT PAVEMENT, TYP

PK NAIL N=3,560,278.883 E=12,054,108.902 ELEV=20.80

SEE NOTE 4

FLAXMILL CREEK TRAIL, BY OTHERS, NOT IN CONTRACT

SURVEY BASELINE S 43°55'12" W 205.26'

SURVEY BASELINE S 43°55'12" W 225.33'

DIGESTER BUILDING FFE=24.27

E-CAB CONTROL PANEL

CONC. RAMP

CONC. TANK DIGESTER NO. 2

8"(OVERHEAD) PIPE

PUMP SHELTER

DIGESTER TRANSFER STATION

UNDERGROUND ACCESS

VENT

CONTROL PANEL

VAULT

STEPS

BOLLARD

6"PVC PIPE

BOLLARD(3) VAULT

SHOWER

6"CI WASTE SLUDGE(QL-C)

SODIUM HYDROXIDE TANKS

EX. STACK

2-STY SLUDGE HOLDING TANK

CONC. WALK

RAISED CONC.

SOLIDS DEWATERING BUILDING ODOR CONTROL

8"CI(QL-C) DRAIN

GRAVEL

A/C UNIT

15"CEDAR

4"PVC

SHOWER

SHOWER CONTROL PANEL

T-PED(2)

STEPS FFE=20.71

18"CEDAR(TYP.)

A/C UNIT

2"CI

SOLIDS HANDLING BUILDING

STEPS FFE=20.80

STEPS FFE=20.79

1-STY BR. "CENTRIFUGE BLDG."

CONC. RAMP

SPILL CLEAN UP STATION

PROPANE TANK

FRENCH DRAIN

PICK-UP AREA

CONC. WALK

VACUUM DISCHARGE

BOLLARDS(6)

PRIMARY CLARIFIER NO. 3 TANKS(TYP.)

ELECTRICAL SHOP BUILDING

"FLAMMABLE LIQUIDS" ACCESS BOX

1-STY BR.

POWER REMOVAL (RANGE-D)

6"SCUM DISCHARGE

6"CI(QL-C) SCUM DISCHARGE

PRIMARY CLARIFIER NO. 2

BOTTOM OF V-NOTCH WEIR = 22.53 BOTTOM OF CHANNEL=21.26

MTL WALKWAY

COVERED CONC. TANK

PRIMARY CLARIFIER NO. 1

BOTTOM OF V-NOTCH WEIR = 22.49 BOTTOM OF CHANNEL=21.20

SPIGOT CONTROL PANEL

CONTROL PANEL SPIGOT

6"CI(QL-C)

36"CI(PA)

24"(OVERHEAD)

6"SUPERNATANT RETURN (QL-C)

12"CI DRAIN

36"CI BY-PASS

6"CI (RASLS)

4"THICKENED SLUDGE (QL-C)

L/P NO#

6"CC

10"CI DRAIN(QL-C)

HVMH-1

EMH

FAN TURBINES(3)

"IFAS BLOWER ELECTRICAL BLDG."

4"CI E-TRANS CONTROL PANEL

AIR

12"(ON GROUND) CLARIFIERS PIPE

18"(ON GROUND) PIPE

12"(OVERHEAD) PIPE

BLOWER BUILDING NO. 3

BLOWER BUILDING NO. 2

BLOWER BUILDING NO. 1

36"(OVERHEAD) PIPE

IFAS TANK NO. 1

IFAS TANK NO. 2

IFAS TANK NO. 3

IFAS TANK NO. 4

IFAS TANK NO. 5

IFAS TANK NO. 6

INFLUENT FLUME THROAT = 17.32

TOP OF WALL = 16.40

TOP OF WALL = 16.43

BOTTOM = 32.15

INFLUENT FLUME THROAT = 17.29

TOP OF WALL = 16.42

BOTTOM = 30.53

INFLUENT FLUME THROAT = 17.21

INFLUENT FLUME THROAT = 17.35

BOTTOM = 31.49

TOP OF WALL = 16.41

INFLUENT FLUME THROAT = 17.31

TOP OF WALL = 16.43

BOTTOM = 25.11

NOTES:

1. MAINTAIN STRUCTURES UNTIL NEW REPLACEMENT FACILITIES ARE ACCEPTED BY HRSD. COORDINATE REMOVAL OF FACILITIES TO MAINTAIN PLANT OPERATIONS AND MOPO CONSTRAINTS.
2. STRUCTURES AND UTILITIES SHOWN FULL TONE REPRESENT NEW FACILITIES.
3. STRUCTURES AND UTILITIES SHOWN HALF TONE REPRESENT EXISTING FACILITIES TO REMAIN.
4. HISTORICAL ACCOUNTS INDICATE CONSTRUCTION-TYPE DEBRIS SUCH AS METAL, CONCRETE, 55-GALLON DRUMS AND SOIL WERE USED TO CONSTRUCT THE BERM. THE DESIGN-BUILDER SHALL INCLUDE THE COST OF REMOVAL IN THE PRICE PROPOSAL. REMOVE SECTION OF BERM TO AREA SOUTH OF RECHARGE WELL NO. 3 TO CONSTRUCT IMPROVEMENTS.
5. CONCRETE VAULT LOCATED IN THIS GENERAL VICINITY. HISTORICAL ACCOUNTS INDICATE THIS VAULT MAY HAVE BEEN PART OF FORMER POWER INFRASTRUCTURE THAT HAS SINCE BEEN ABANDONED.

SCALE: 1" = 20'

20 10 0 20'

REV	ISSUED FOR	DATE	BY
1	ADDENDUM 3	6/19/2020	--
0	REQUEST FOR PROPOSAL	4/10/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	M. OSBORNE
DRAWN BY:	J. FIGUEROA
CHECKED BY:	N. JOHNSON

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

JACOBS

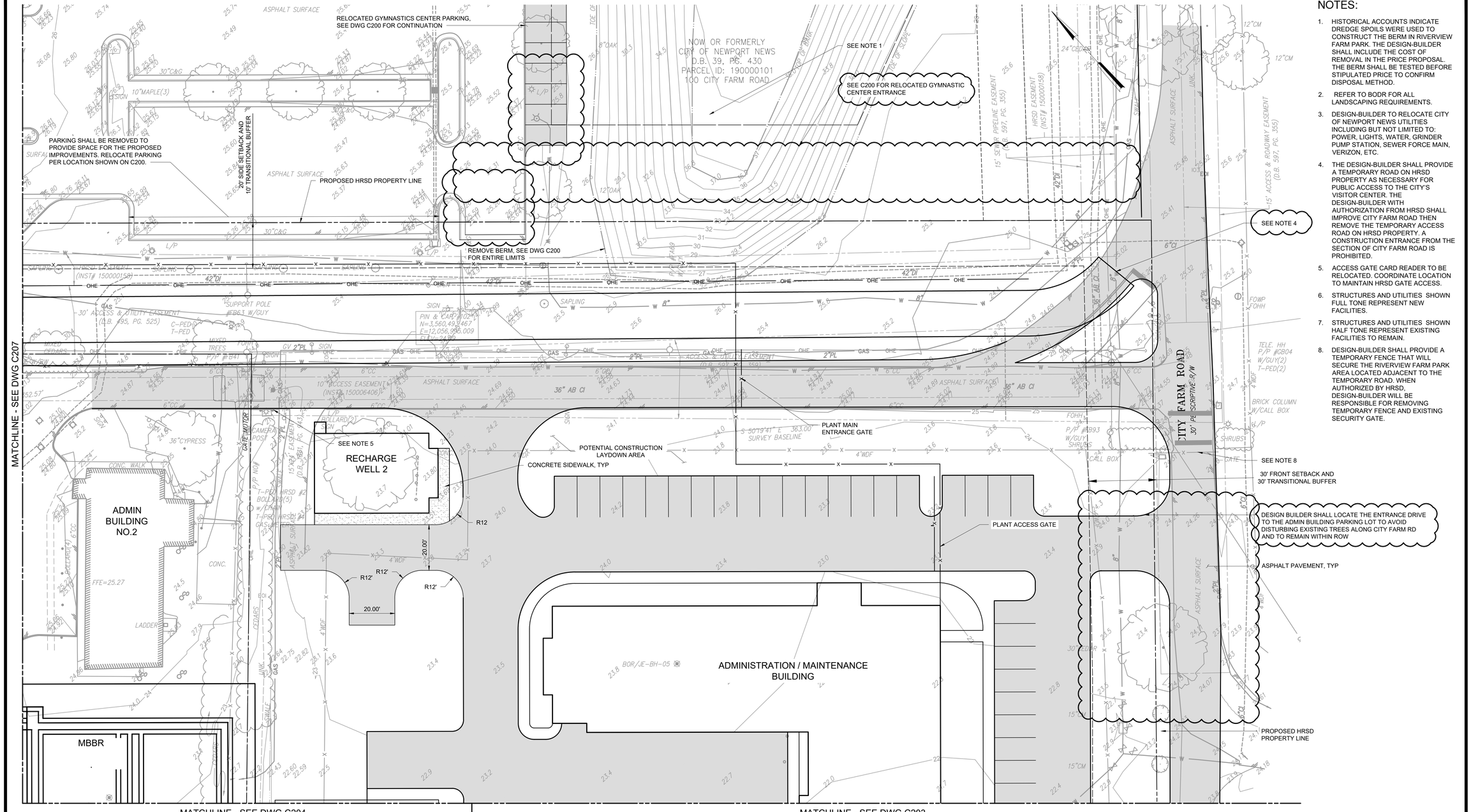
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

JAMES RIVER TREATMENT PLANT
PARTIAL SITE PLAN - AREA 5

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	C205

File: C:\BIM\HAZEN-PW\D0135899\C205.Saved by hsieberly Save date: 6/19/2020 4:42 PM
PLOT DATE: 6/23/2020 7:01 PM BY: DALEJEF



NOTES:

1. HISTORICAL ACCOUNTS INDICATE DREDGE SPOILS WERE USED TO CONSTRUCT THE BERM IN RIVERVIEW FARM PARK. THE DESIGN-BUILDER SHALL INCLUDE THE COST OF REMOVAL IN THE PRICE PROPOSAL. THE BERM SHALL BE TESTED BEFORE STIPULATED PRICE TO CONFIRM DISPOSAL METHOD.
2. REFER TO BODR FOR ALL LANDSCAPING REQUIREMENTS.
3. DESIGN-BUILDER TO RELOCATE CITY OF NEWPORT NEWS UTILITIES INCLUDING BUT NOT LIMITED TO: POWER, LIGHTS, WATER, GRINDER PUMP STATION, SEWER FORCE MAIN, VERIZON, ETC.
4. THE DESIGN-BUILDER SHALL PROVIDE A TEMPORARY ROAD ON HRSD PROPERTY AS NECESSARY FOR PUBLIC ACCESS TO THE CITY'S VISITOR CENTER. THE DESIGN-BUILDER WITH AUTHORIZATION FROM HRSD SHALL IMPROVE CITY FARM ROAD THEN REMOVE THE TEMPORARY ACCESS ROAD ON HRSD PROPERTY. A CONSTRUCTION ENTRANCE FROM THE SECTION OF CITY FARM ROAD IS PROHIBITED.
5. ACCESS GATE CARD READER TO BE RELOCATED. COORDINATE LOCATION TO MAINTAIN HRSD GATE ACCESS.
6. STRUCTURES AND UTILITIES SHOWN FULL TONE REPRESENT NEW FACILITIES.
7. STRUCTURES AND UTILITIES SHOWN HALF TONE REPRESENT EXISTING FACILITIES TO REMAIN.
8. DESIGN-BUILDER SHALL PROVIDE A TEMPORARY FENCE THAT WILL SECURE THE RIVERVIEW FARM PARK AREA LOCATED ADJACENT TO THE TEMPORARY ROAD. WHEN AUTHORIZED BY HRSD, DESIGN-BUILDER WILL BE RESPONSIBLE FOR REMOVING TEMPORARY FENCE AND EXISTING SECURITY GATE.

REV	ISSUED FOR	DATE	BY
1	ADDENDUM 3	6/19/2020	--
0	REQUEST FOR PROPOSAL	4/10/2020	--

PROJECT ENGINEER:	G PALEN
DESIGNED BY:	M. OSBORNE
DRAWN BY:	J. FIGUEROA
CHECKED BY:	N. JOHNSON

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0, 1/2", 1")

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

JACOBS®

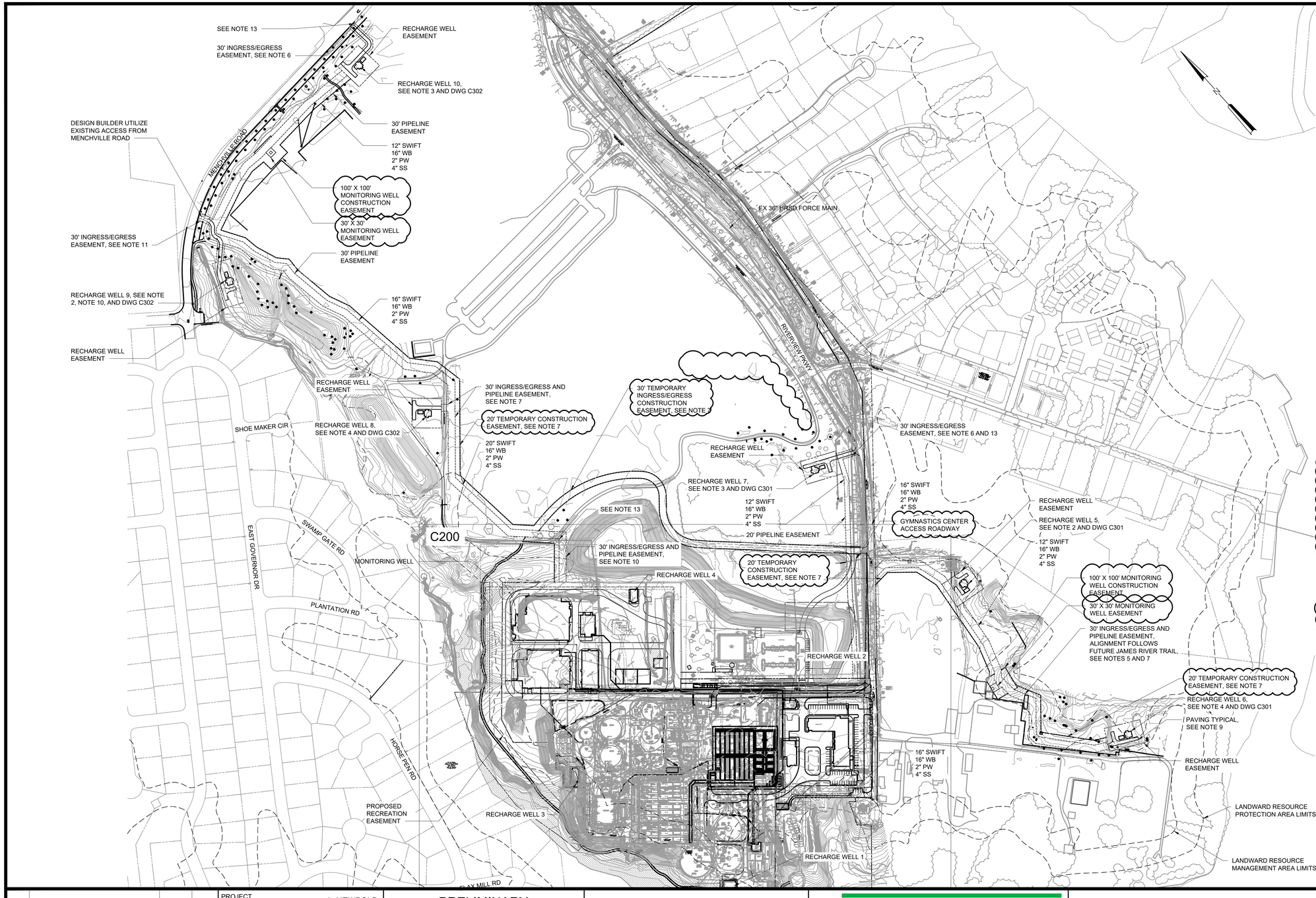
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

JAMES RIVER TREATMENT PLANT
PARTIAL SITE PLAN - AREA 6

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	C206

File: C:\BIM\SWIZEN-PW\D0135866\RC206.Stored by Isabelby Save date: 6/19/2020 4:42 PM
PLOT DATE: 6/19/2020 4:43 PM BY: ISABELBY



NOTES:

1. THE BACKGROUND DATA ON THIS SHEET IS A COMBINATION OF THE SOURCES LISTED BELOW.
   - A. PROJECT SURVEY - HRSD PROPERTIES, HRSD-PURCHASED AREA ON RIVERVIEW FARM PARK, AND RIVERVIEW PKWY CORRIDOR.
   - B. BING MAPS (© 2020 MICROSOFT) - BUILDINGS, PAVEMENT, AND TRAILS ON NON-SURVEYED RIVERVIEW FARM PARK.
   - C. CITY OF NEWPORT NEWS GIS DATA, DATED AUGUST 22, 2019 - NON-SURVEYED PROPERTY LINES AND RESOURCE MANAGEMENT AREAS/RESOURCE PROTECTION AREAS NOT SHOWN IN THE CHESAPEAKE BAY PRESERVATION AREAS MAP INCLUDED IN THE BODR.
   - D. AECOM SURVEY:
     a. HORIZONTAL DATUM IS BASED ON THE VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM 1983 (NAD83) IN US SURVEY FEET.
     b. VERTICAL DATUM IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
     c. THIS SURVEY IS THE RESULT OF A CURRENT FIELD SURVEY PERFORMED BY AECOM IN APRIL AND MAY 2020.
     d. THIS SURVEY DOES NOT REPRESENT A COMPLETE RECORD OF EASEMENTS THAT MAY ENCUMBER THE PROPERTY. EASEMENTS SHOWN ARE TAKEN FROM DEEDS AND MAPS OF RECORD.
     e. NO WETLANDS DELINEATION OR HAZARDOUS MATERIAL LOCATION WERE PERFORMED IN THE COURSE OF THIS SURVEY.
     f. NO TITLE REPORT HAS BEEN PROVIDED TO AECOM IN THE COURSE OF THIS SURVEY.
     g. THE TOPOGRAPHY AND PHYSICAL FEATURES SHOWN ON THIS MAP WERE OBTAINED UNDER THE DIRECT AND RESPONSIBLE CHARGE AND SUPERVISION OF MARK A. LAWSON, LS. THIS PLAT, MAP, OR DIGITAL GEOSPATIAL DATA INCLUDING METADATA MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.
2. WELL BUILDINGS 5 AND 9 ARE PROPOSED AS STANDARD WITH NO FEATURES.
3. WELL BUILDINGS 7 AND 10 ARE PROPOSED WITH RESTROOMS.
4. WELL BUILDING 8 AND 6 ARE PROPOSED WITH AN EXTENDED OVERHANG.
5. CITY OF NEWPORT NEWS TRAILS NOT IN THE DESIGN-BUILDERS CONTRACT.
6. DESIGN-BUILDER SHALL PROVIDE 20' PERMANENT ASPHALT ROAD WITHIN INGRESS/EGRESS EASEMENT.
7. DESIGN-BUILDER SHALL PROVIDE 20' TEMPORARY GRAVEL ROAD WITHIN CONSTRUCTION EASEMENTS AND GRAVEL WITHIN HRSD WELL EASEMENTS AS NEEDED FOR ACCESS DURING CONSTRUCTION AND TO COMPLETE THE WORK. THE DESIGN-BUILDER SHALL REMOVE ALL GRAVEL AT THE END OF CONSTRUCTION AND STABILIZE THE AREA WITH TURF. UPON REMOVAL OF THE GRAVEL ROAD, THE SITE SHALL BE REPAIRED TO EXISTING OR BETTER CONDTIONS. UNLESS OTHERWISE NOTED GRAVEL SHALL BE REMOVED.
8. NOT USED
9. FOR RECHARGE WELLS 5-10, THE PAVING IMMEDIATELY ADJACENT TO THE WELL BUILDINGS AND VAULT SHOWN BY A SOLID FULL TONE LINE, SHALL BE ASPHALT OR CONCRETE PAVING. FOR RECHARGE WELLS 1-4, REFER TO THE C200-SERIES SHEETS FOR PAVING REQUIREMENTS.
10. DESIGN-BUILDER SHALL PROVIDE 20' PERMANENT GRAVEL ROAD WITHIN EASEMENT THAT WILL TERMINATE WITHIN 10' OF THE PAVED PARK TRAIL.
11. DESIGN-BUILDER SHALL UTILIZE EXISTING ACCESS ROAD TO THE EXTENT POSSIBLE. PROVIDE PERMANENT 20' GRAVEL ROAD WITHIN EASEMENT.
12. DESIGN-BUILDER SHALL PROVIDE ROADWAY FLARES ON CONNECTIONS TO TEMPORARY AND PERMANENT ROADS WHERE TURNING MOVEMENTS ARE NECESSARY TO ACCOMMODATE.
13. PROVIDE DOUBLE SWING ACCESS GATE WITH LOCK.

SWIFT WELL LOCATIONS

WELL NUMBER	NORTHING	EASTING
1	3560065.53	12056259.19
2	3560461.01	12056959.91
3	3560850.38	12056082.93
4	3561619.76	12056362.60
5	3560348.47	12057848.20
6	3559406.95	12057938.01
7	3561130.15	12057704.47
8	3562404.56	12056646.95
9	3563382.24	12056398.41
10	3563693.80	12057415.17

SCALE: 1" = 200'

200 100 0 200'

REV	ISSUED FOR	DATE	BY
1	ADDENDUM 3	6/19/2020	--
0	REQUEST FOR PROPOSAL	4/10/2020	--

PROJECT ENGINEER: A. NEWBOLD
DESIGNED BY: B. SLAUGHTER
DRAWN BY: E. PAGSANJAN
CHECKED BY: M. SANTOWASSO
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

Hazen AECOM

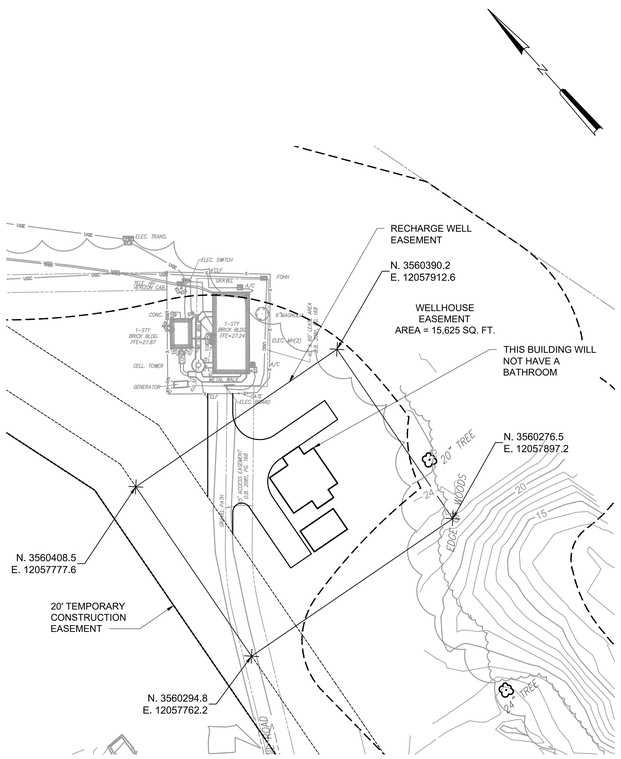
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

OVERALL SITE PLAN

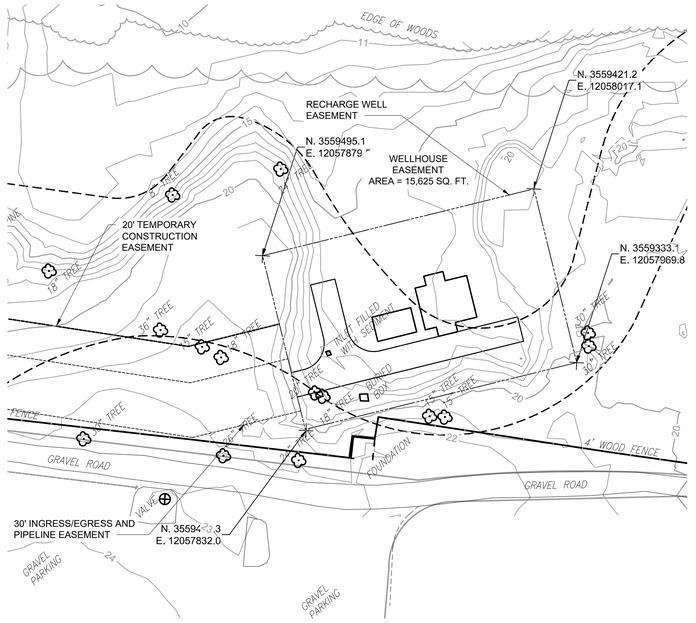
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CONTRACT NO.: -
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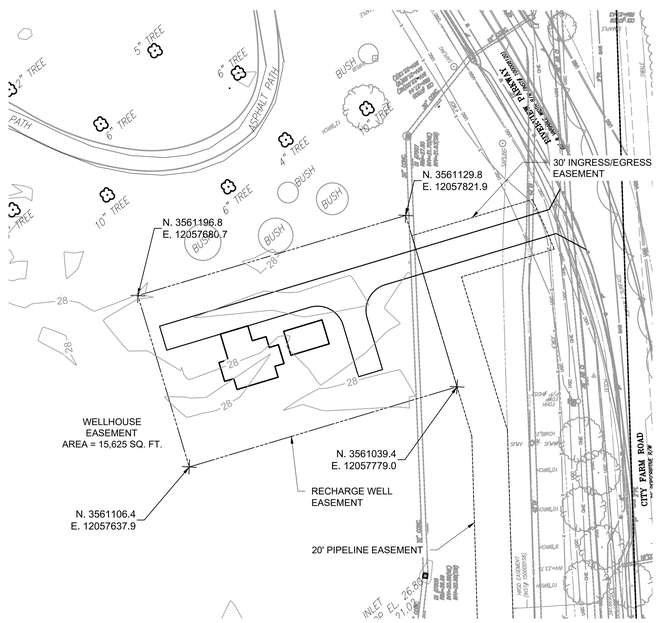
RECHARGE WELL NO. 5

SCALE: 1" = 40'



RECHARGE WELL NO. 6

SCALE: 1" = 40'



RECHARGE WELL NO. 7

SCALE: 1" = 40'

SCALE: 1" = 40'

40 20 0 40'

REV	ISSUED FOR	DATE	BY
1	ADDENDUM 3	6/19/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0, 1/2", 1")

PROJECT ENGINEER:	A. NEWBOLD
DESIGNED BY:	B. SLAUGHTER
DRAWN BY:	A. DARNELL
CHECKED BY:	L. SALEEBY

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

Hazen

AECOM

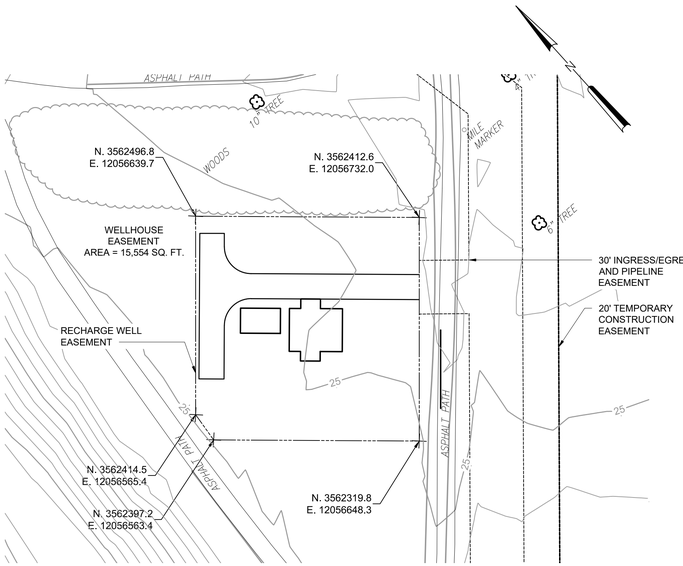
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JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

RECHARGE WELLS 5, 6 AND 7 ENLARGED PLANS

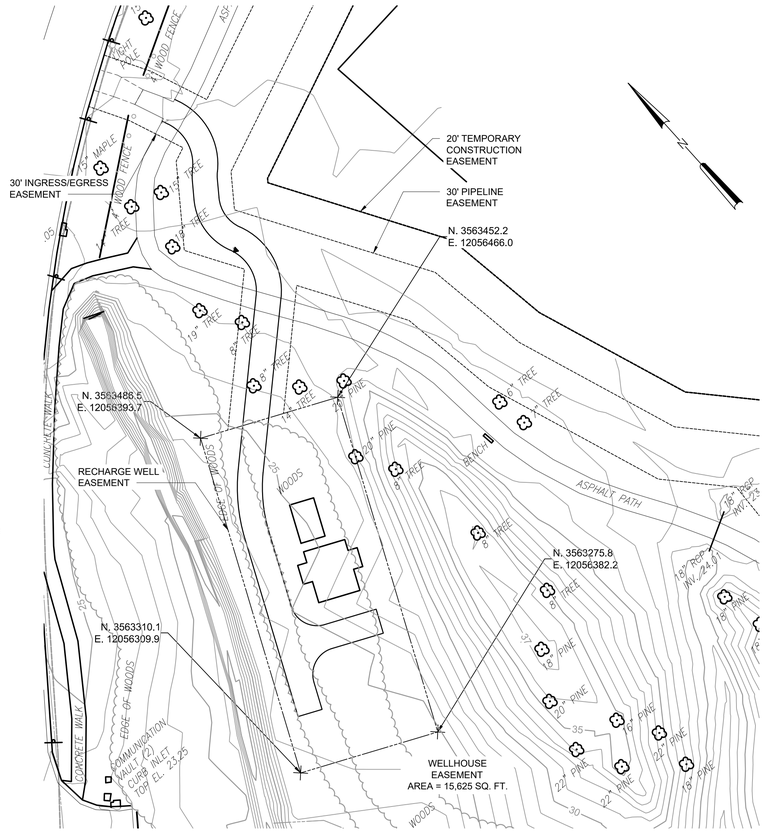
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PROJECT NO.:	32480
CONTRACT N0.:	-
DRAWING NUMBER:	C301

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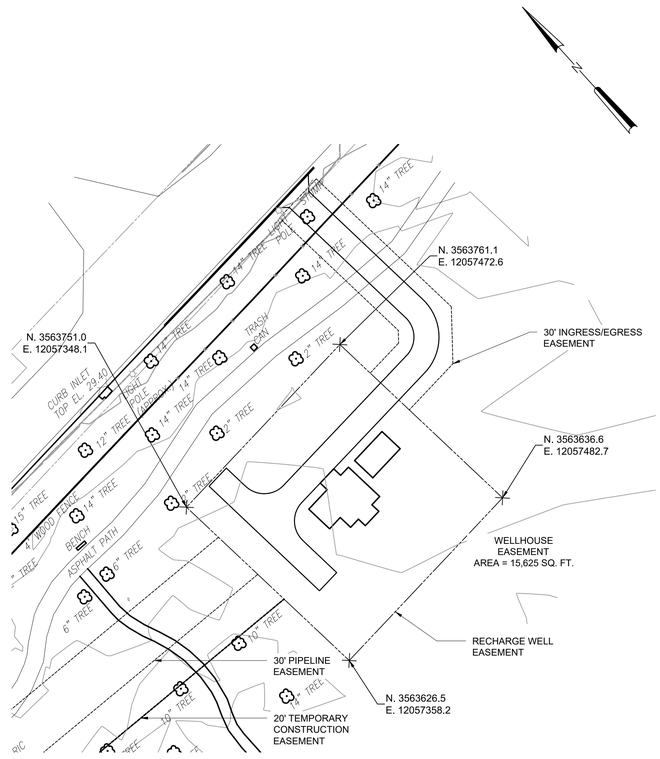
RECHARGE WELL NO 8

SCALE: 1" = 40'



RECHARGE WELL NO 9

SCALE: 1" = 40'



RECHARGE WELL NO 10

SCALE: 1" = 40'

SCALE: 1" = 40'

40 20 0 40

REV	ISSUED FOR	DATE	BY
1	ADDENDUM 3	6/19/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PROJECT ENGINEER:	A. NEWBOLD
DESIGNED BY:	B. SLAUGHTER
DRAWN BY:	A. DARNELL
CHECKED BY:	L. SALEEBY

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

Hazen

AECOM

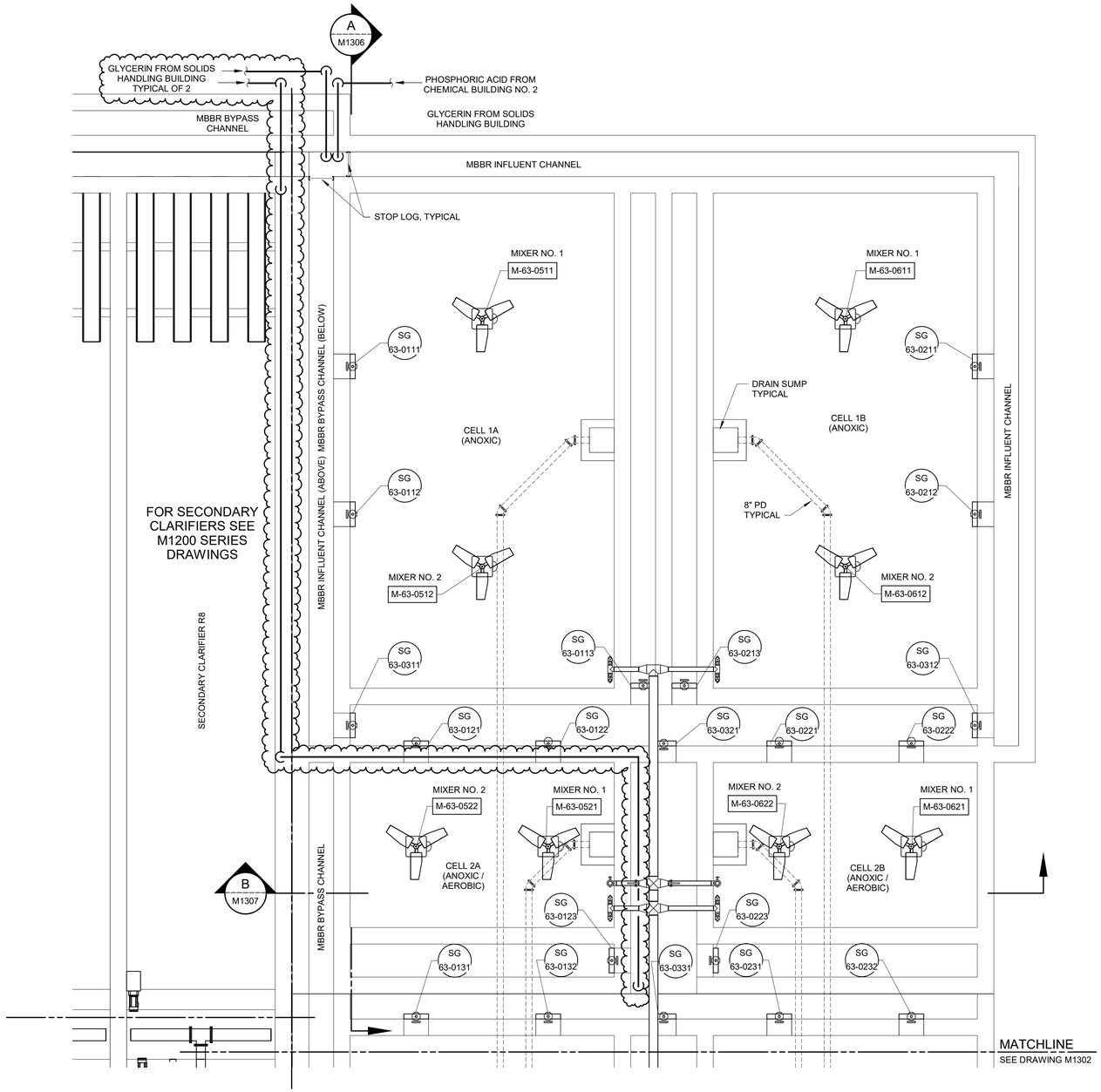
HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

RECHARGE WELLS 8, 9 AND 10 ENLARGED PLANS

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	C302

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PARTIAL PLAN - LOWER NORTH

1/8" = 1'-0"

REV	REVISION DESCRIPTION	DATE	BY
1	ADDENDUM NO. 3	6/11/2020	JM/LM
0	REQUEST FOR PROPOSAL	4/10/2020	--

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PROJECT ENGINEER:	G. PALEN
DESIGNED BY:	A. NEMATI
DRAWN BY:	L. MACGILLIVRAY
CHECKED BY:	N. JOHNSON

PRELIMINARY DRAWINGS - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

JACOBS®

HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITIES (GN016360)

MBBR
MECHANICAL
PARTIAL PLAN - LOWER NORTH

DATE:	2020
PROJECT NO.:	32480
CONTRACT NO.:	-
DRAWING NUMBER:	M1301

BIM 360://32480-001_HRSD James River Treatment Plant - SWIFT - WW/32480-002-123-MBB-M.rvt
6/11/2020 1:05:59 PM

AIR FLOW (6)

MODULATING AIR VALVE (6)

(8) AIR LIFT — HSO 63-1102

(8) SPAGE — HSO 63-1202

FLOW — FITX 63-1303

REMOTE — HSAS 63-1303

POSITION COMMAND — ZC 63-1303

POSITION FEEDBACK — ZI 63-1303

HMI

-5

DCU-5

ES 120V TYP

ES 120V TYP

TO AIR FLOW TRANSMITTERS (FIT)

TO MODULATING VALVES (FCV)

CELL 1B

CELL 2B

CELL 3B

CELL 4B

AIR LIFT PUMP (SCUM AND FOAM CONTROL), TYP

AIR SPARGE, (TO CLEAN FLAT SCREENS) TYP

SV 63-1202

SV 63-1102

FCV 63-1404

SV 63-1204

SV 63-1104

SV 63-1206

SV 63-1106

FCV 63-1408

SV 63-1208

SV 63-1108

FE 63-1304

FIT 63-1304

120V TYP ES

FE 63-1308

FIT 63-1308

A

A I1302

MBBR BLOWERS

FE 63-1303

FIT 63-1303

FE 63-1307

FIT 63-1307

SV 63-1101

SV 63-1201

FCV 63-1403

SV 63-1203

SV 63-1103

SV 63-1205

SV 63-1105

FCV 63-1407

SV 63-1207

SV 63-1107

A I1600 PHOS A

PHOSPHORIC ACID

GLYCERIN (FROM EXST SOLIDS HANDLING BUILDING) TYPICAL OF 2

1

CELL 1A

CELL 2A

CELL 3A

CELL 4A

MBBR BYPASS CHANNEL

ANOXIC

MBBR INLET CHANNEL ABOVE / MBBR MYPASS CHANNEL BENEATH

ANOXIC / AEROBIC

ANOXIC

ANOXIC / AEROBIC

NOTES:

1. 24 VDC OIL INTERPOSING RELAY LOCATED IN INTERPOSING PANEL X FORM C CONTACT 10A @ 120V.

REV	ISSUED FOR	DATE	BY
1	ADDENDUM NO. 3	6/11/2020	JM/LM
0	REQUEST FOR PROPOSAL	4/10/2020	--

PROJECT ENGINEER: G PALEN

DESIGNED BY: D. MUNZER

DRAWN BY: Z. HUNERS

CHECKED BY: N. JOHNSON

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PRELIMINARY DRAWING - FOR REVIEW PURPOSES ONLY - NOT RELEASED FOR CONSTRUCTION

JACOBS®

HRSD

JAMES RIVER ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) AND SWIFT FACILITY (GN016360)

INSTRUMENTATION MBBR AIR

DATE: 2020

PROJECT NO.: 32480

CONTRACT NO.: -

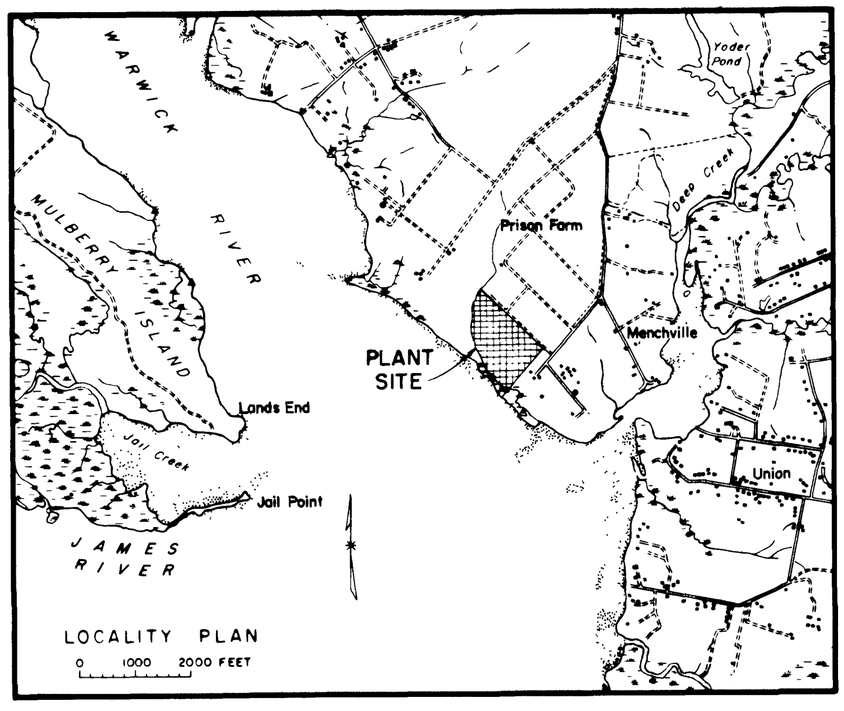
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HAMPTON ROADS SANITATION DISTRICT

NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT



FRANK H. MILLER
General Manager and Chief Engineer

COMMISSIONERS

J.C. MORRIS - Chairman -	NEWPORT NEWS
G.A. TREAKLE - Vice Chairman	- CHESAPEAKE
E.T. GRESHAM -	NORFOLK
CLARK R. NICKERSON -	HAMPTON
ROBERT F. RIPLEY -	NORFOLK

AS-BUILT DRAWING
January, 1968

BUCK, SEIFERT AND JOST
Consulting Engineers
New York 3, N.Y.

JULY, 1964

HAMPTON ROADS SANITATION DISTRICT

NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

INDEX TO DRAWINGS

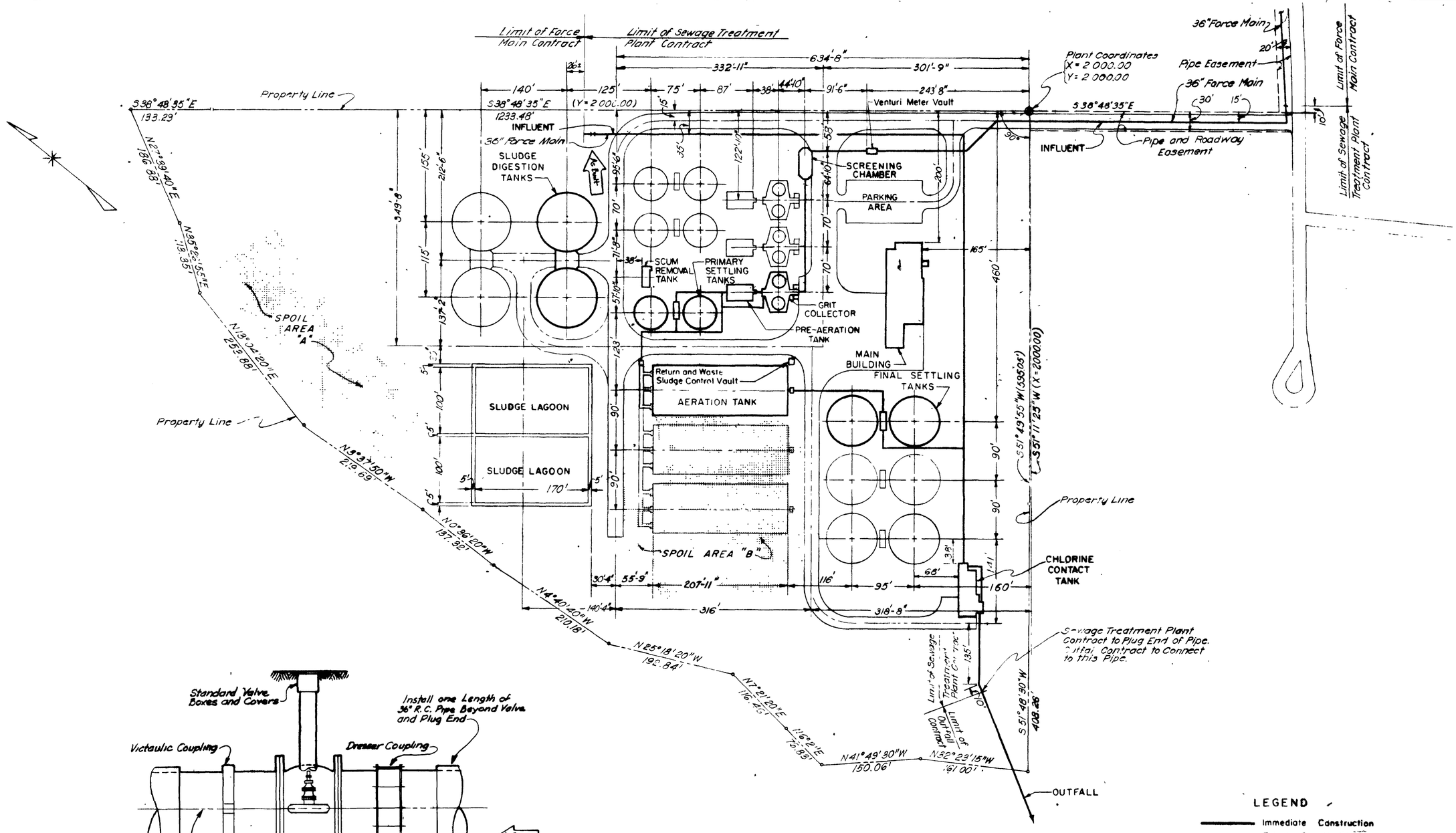
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DATE January 2, 1968

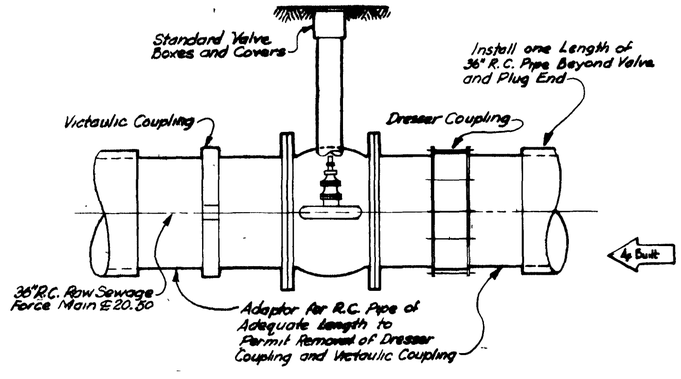
DWG. NO.	TITLE
	PLANT DRAWINGS
1	GENERAL PLAN
2	BORING PLAN
3	BORING LOGS
4	BORING LOGS
5	LOCATION AND GRADING PLAN
6	OUTSIDE PIPING PLAN, PART I
7	OUTSIDE PIPING PLAN, PART II
	SCREENING CHAMBER
	EQUIPMENT AND PIPING
8	PLAN AND SECTIONS
	CONCRETE REINFORCING DETAILS
9	PLANS, SECTIONS A-A AND B-B
10	SECTION C-C AND MISCELLANEOUS DETAILS
	GRIT COLLECTORS
	EQUIPMENT AND PIPING
11	PLAN
12	SECTIONS AND MISCELLANEOUS DETAILS
	CONCRETE REINFORCING DETAILS
13	PLAN, SECTIONS A-A THROUGH E-E, INCLUSIVE
14	SECTIONS F-F THROUGH N-N, INCLUSIVE
	PRE-AERATION TANK
	EQUIPMENT AND PIPING
15	SECTIONAL PLAN AT ELEV. 18.00 AND SECTION A-A
16	PLAN ABOVE ELEV. 28.50 AND SECTION B-B
17	SECTIONS C-C, D-D, E-E AND MISCELLANEOUS DETAILS
	CONCRETE REINFORCING DETAILS
18	SECTIONAL PLAN AT ELEV. 18.00, SECTIONS A-A, C-C, H-H AND J-J
19	PLAN AT ELEV. 28.50, SECTIONS B-B, D-D, E-E, F-F, G-G, K-K AND L-L
	PRIMARY SETTLING TANKS
	EQUIPMENT AND PIPING
20	PLANS
21	SECTIONS
	CONCRETE REINFORCING DETAILS
22	SECTIONAL PLAN AT ELEV. 15.50
23	PLANS, SECTIONS A-A AND B-B
24	SECTIONS C-C, D-D, E-E, F-F AND MISCELLANEOUS DETAILS
	AERATION TANK
	EQUIPMENT AND PIPING
25	SECTIONAL PLAN AT ELEV. 13.00 AND SECTION A-A
26	PLAN ABOVE ELEV. 22.25, SECTIONS B-B, C-C AND D-D
27	AIR PIPING DETAILS
28	AIR HEADER AND STABILIZED SLUDGE PIPING DETAILS
29	SPRAY WATER PIPING DETAILS
	CONCRETE REINFORCING DETAILS
30	SECTIONAL PLAN AT ELEV. 17.00, SECTIONS A-A AND B-B
31	PLAN ABOVE ELEV. 22.25, SECTIONS C-C, D-D, E-E AND F-F
32	SECTIONS G-G, H-H, J-J, K-K AND L-L
33	PARSHALL FLUME, MANHOLE NO. 8 AND MISCELLANEOUS DETAILS

DWG. NO.	TITLE
	FINAL SETTLING TANKS
	EQUIPMENT AND PIPING
34	PLAN
35	PLANS, SECTIONS A-A, B-B AND C-C
36	SECTION D-D AND MISCELLANEOUS DETAILS
	CONCRETE REINFORCING DETAILS
37	SECTIONAL PLAN AT ELEV. 10.50 AND SECTION A-A
38	PLANS, SECTIONS B-B, C-C AND D-D
	CHLORINE CONTACT TANK
	EQUIPMENT AND PIPING
39	PLANS AND SECTIONS
40	MISCELLANEOUS DETAILS
	CONCRETE REINFORCING DETAILS
41	SECTIONAL PLAN AT ELEV. 16.00, SECTIONS A-A AND B-B
42	PLAN ABOVE ELEV. 17.00, SECTIONS C-C AND D-D
43	SECTIONS E-E, F-F, G-G AND H-H
	SLUDGE DIGESTION FACILITIES
44	ROOF PLAN
	ARCHITECTURAL
45	SLUDGE CONTROL BUILDING - ELEVATIONS AND DETAILS
	EQUIPMENT AND PIPING
46	PLAN AT ELEV. 31.00 AND SECTION A-A
47	PLAN AT ELEV. 18.50
48	PLAN AT ELEV. 23.50
49	PLAN AT ELEV. 36.00
50	SECTION B-B
51	SECTION C-C
52	SECTIONS D-D, E-E AND F-F
	CONCRETE REINFORCING DETAILS
53	SLUDGE CONTROL BUILDING - BASEMENT PLAN AND MISC. DETAILS
54	SLUDGE CONTROL BUILDING - FIRST FLOOR AND ROOF PLANS
55	SLUDGE CONTROL BUILDING - SECTIONS A-A AND B-B
56	SLUDGE DIGESTION TANKS - PLANS, SECTIONS AND DETAILS
57	SLUDGE DIGESTION TANKS - PIPE SUPPORT DETAILS
58	MISCELLANEOUS DETAILS
59	MISCELLANEOUS DETAILS
	MISCELLANEOUS
60	VENTURI METER VAULT
61	RETURN AND WASTE SLUDGE CONTROL VAULT
62	MANHOLE DETAILS - MANHOLES NOS. 2,7 AND 9
63	MANHOLE DETAILS - MANHOLES NOS. 1,3,4,5 AND 6
64	MANHOLE DETAILS - MANHOLES NOS. 10,11,12,13 AND 14
65	MANHOLE DETAILS - MANHOLES NOS. 15,16,17,18 AND 19
66	MANHOLE DETAILS - MANHOLES NOS. 20,21,22,23 AND 24
67	MISCELLANEOUS DETAILS
68	MISCELLANEOUS DETAILS
69	MISCELLANEOUS DETAILS
70	MISCELLANEOUS DETAILS
71	SCUM REMOVAL TANK
71-A	EMERGENCY OUTFALL AND REVISIONS TO MANHOLE NO 25

DWG. NO.	TITLE
	MAIN BUILDING
72	FOUNDATION-BASEMENT PLAN AND DETAILS
73	GROUND FLOOR FRAMING PLAN & DETAILS, PIPE TUNNEL & STAIR DETAILS
74	GROUND FLOOR PLAN & FINISH SCHEDULE, COMPARTMENT & CABINET DETAILS
75	NORTHWEST BUILDING ELEV., NORTHEAST BUILDING ELEV.
76	SOUTHEAST BUILDING ELEV., SOUTHWEST BUILDING ELEV. AND DETAILS
77	BUILDING SECTIONS A-A, B-B, C-C AND DETAILS
78	WALL SECTIONS AND DETAILS
79	ROOF PLAN AND DETAILS
80	ROOF FRAMING PLAN AND DETAILS, LINTEL SCHEDULE
81	FILTER ROOM SECTION, MISCELLANEOUS DETAILS
82	DOOR AND WINDOW SCHEDULE, DOOR AND WINDOW DETAILS
83	MECHANICAL FLOOR PLANS AND DETAILS
84	MECHANICAL SCHEDULES AND DIAGRAMS
85	EQUIPMENT AND PIPING-GROUND FLOOR PLAN AND SECTION A-A
86	EQUIPMENT AND PIPING-BASEMENT PLAN AND SECTION B-B
87	EQUIPMENT AND PIPING-BLOWER ROOM AND CHLORINE FACILITIES
88	EQUIPMENT AND PIPING-SECTIONS C-C, D-D AND E-E
89	EQUIPMENT AND PIPING-SECTIONS F-F, G-G, H-H, J-J AND K-K
90	EQUIPMENT AND PIPING-GROUND FLOOR DRAINAGE, PLAN AND ISOMETRIC
91	EQUIPMENT AND PIPING-BLOWER AND PIPING DETAILS
92	EQUIPMENT AND PIPING-EMERGENCY ENGINE-GENERATOR, ISOMETRIC
93	EQUIPMENT AND PIPING-NON-POTABLE AND POTABLE WATER SUPPLY
	ELECTRICAL
94	GENERAL PLAN
95	SCREENING CHAMBER
96	GRIT COLLECTOR
97	PRE-AERATION TANK
98	PRIMARY SETTLING TANKS
	AERATION TANK AND RETURN AND WASTE SLUDGE CONTROL VAULT
99	PLANS AND SECTION
100	DIAGRAMS
101	FINAL SETTLING TANKS
102	CHLORINE CONTACT TANK
	SLUDGE DIGESTION FACILITIES
103	ROOF
104	BASEMENT
105	FIRST FLOOR
106	SECTIONS A-A, B-B AND LIGHTING FIXTURES SCHEDULE
107	SECTIONS C-C AND D-D
108	MOTOR STARTERS AND BREAKERS - WIRING DIAGRAM
109	VENTURI METER VAULT
	MAIN BUILDING
110	POWER - GROUND FLOOR
111	POWER - BASEMENT
112	LIGHTING - GROUND FLOOR AND BASEMENT
113	POWER CENTER
114	POWER CENTER AND WIRING DIAGRAMS
115	ONE LINE WIRING DIAGRAM
116	WIRING DIAGRAMS AND MISCELLANEOUS DETAILS
117	CABLE AND CONDUIT SCHEDULE
118	CABLE AND CONDUIT SCHEDULE
119	CABLE AND CONDUIT SCHEDULE
120	CABLE AND CONDUIT SCHEDULE
121	MISCELLANEOUS DETAILS

As Built





INSTALLATION OF 36" GATE VALVE

Not to Scale

LEGEND

- Immediate Construction
- Future Construction
- Concrete Monument on Property Line
- Pipe Set on Property Line

AS-BUILT DRAWING

DATE January 2, 1968

DRAWING NO. 438.22(a-1)-1

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

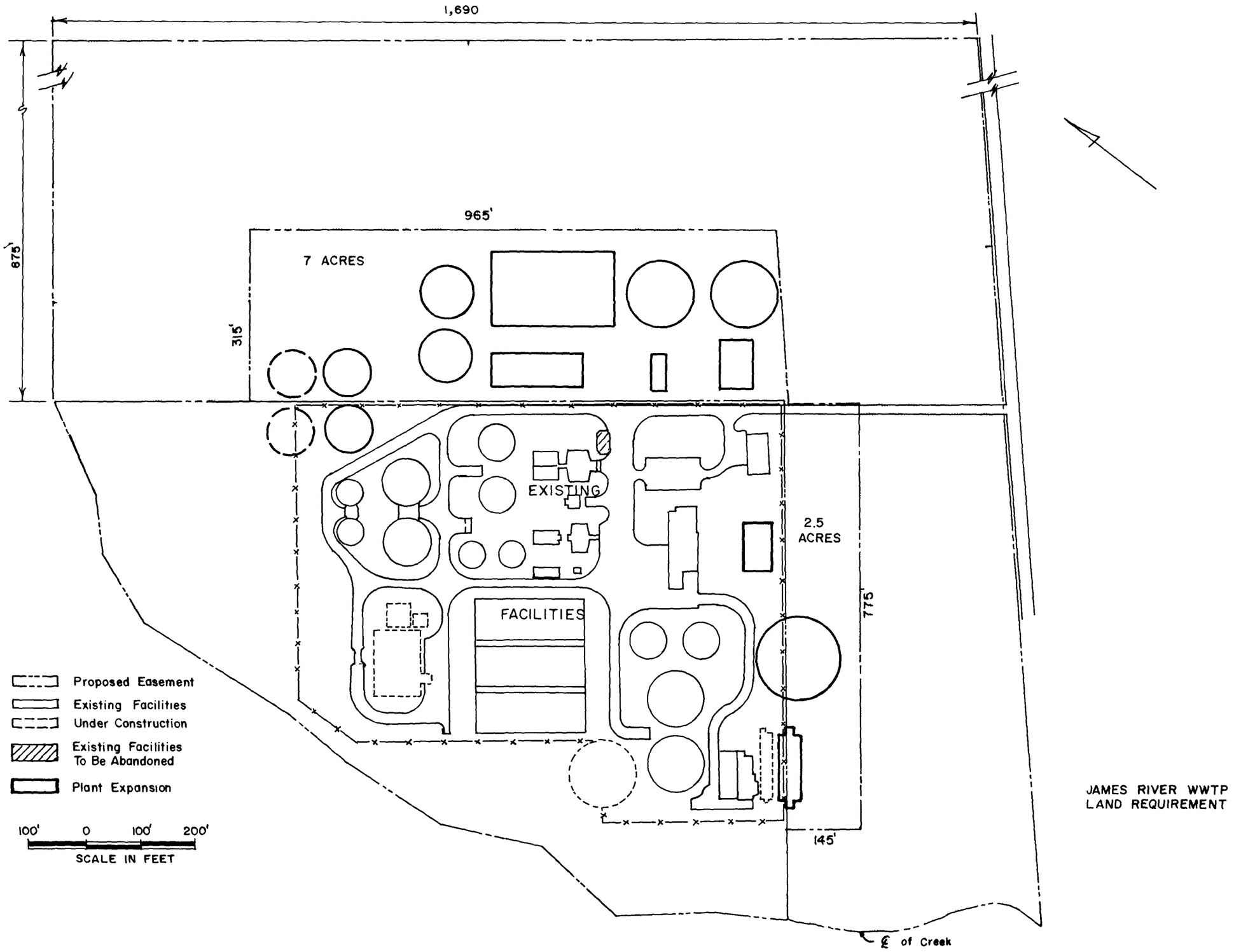
GENERAL PLAN

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

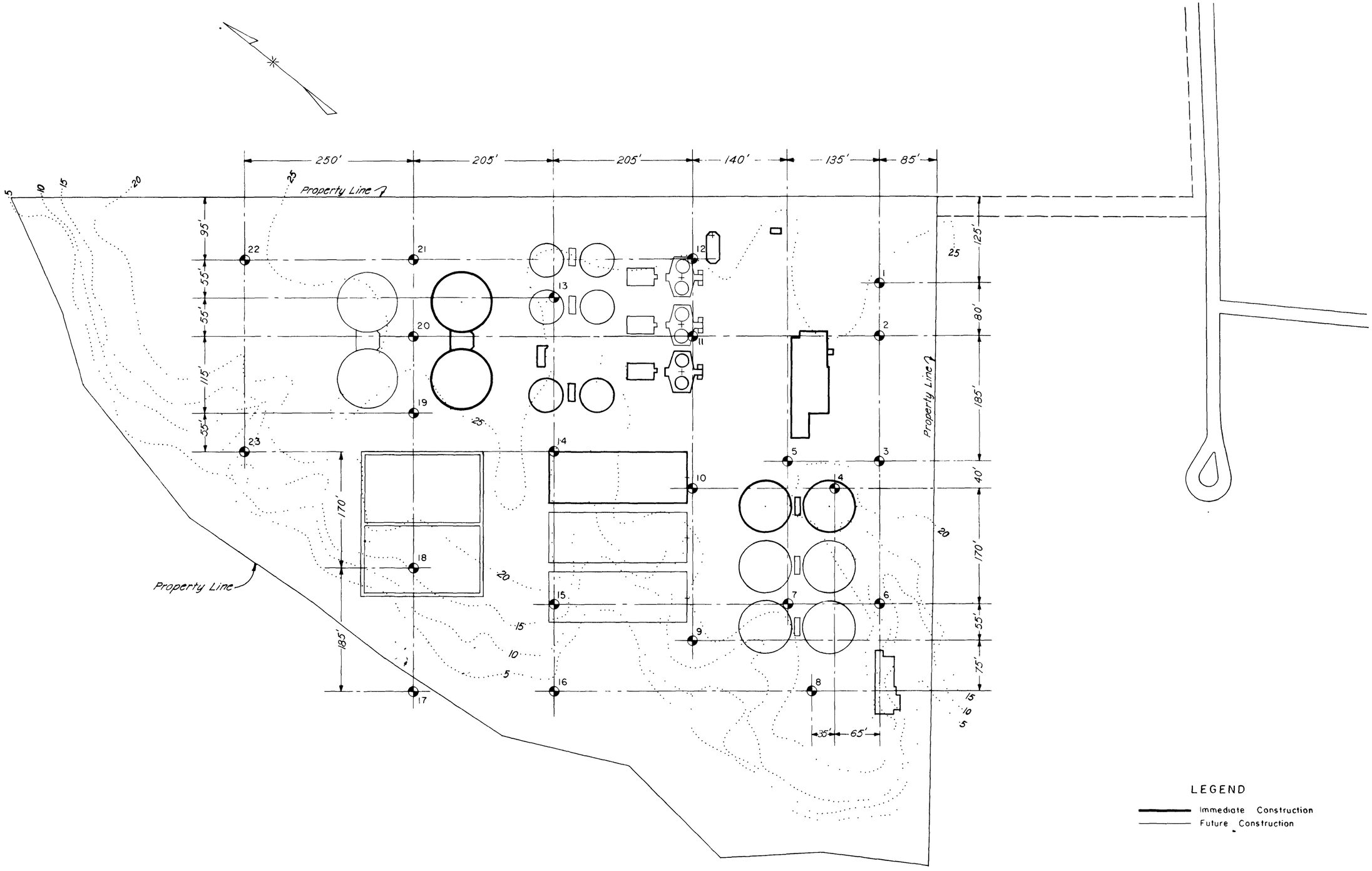
Scale: 1" = 100'-0"

July, 1964

Drawn by: H.C.	Traced by: H.C.	Checked by:	Examined by:	Approved by:
Revisions:	As-built 1/68			



JAMES RIVER WWTP
LAND REQUIREMENT



LEGEND

Immediate Construction

Future Construction

Note:
For Boring Logs, see Dwgs. Nos. 438.22(a-1)-3 and 4

AS-BUILT DRAWING
DATE January 2 1968

DRAWING NO. 438.22(a-1)-2

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

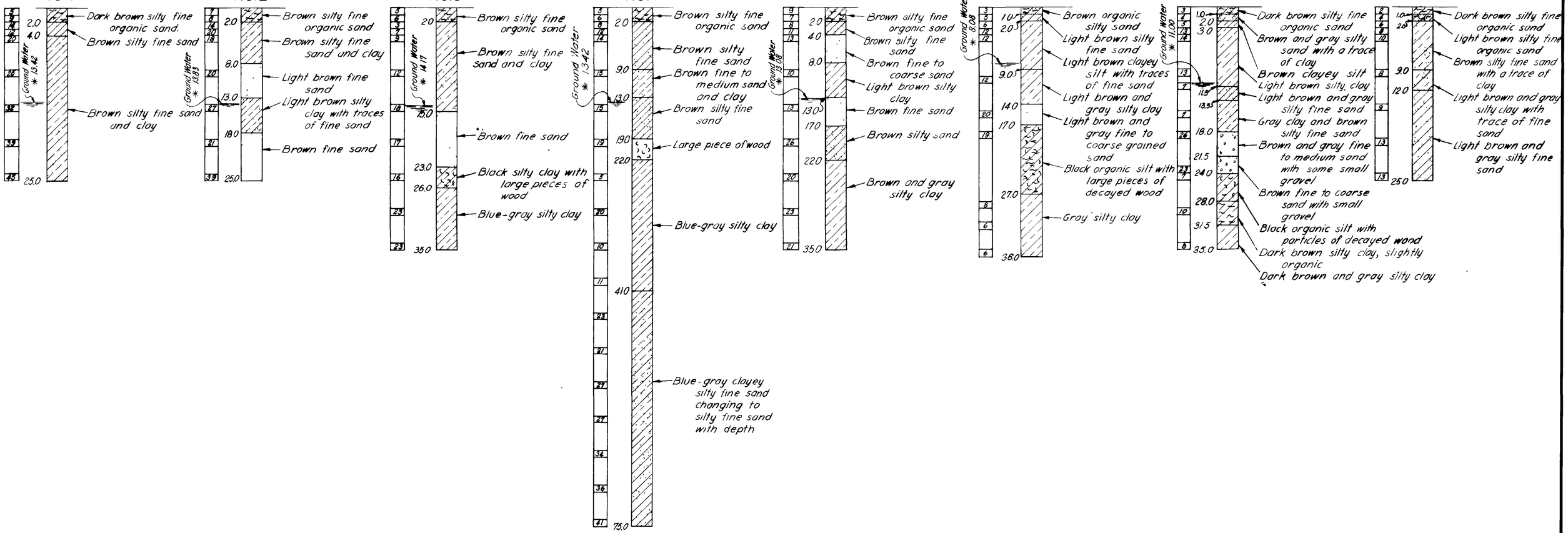
BORING PLAN

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1"=100'-0"

July, 1964

Drawn by: O.R.	Traced by: O.R.	Checked by: V.N. G.V.A.	Examined by: D.P.	Approved by:
Revisions:				



Note Ground Water Elevation not given

Notes:

For Location of Borings, see Boring Plan, Dwg. No. 438.22(a-1)- 2

Test Borings were made by means of Wash Borings.

Penetration Resistance was determined by means of Standard Penetration Test.

14 Indicates Number of Blows required to advance Sample Spoon One Foot in the Material opposite which the Figure appears.

Weight of Drive Hammer on Sample Spoon - 140#.

Average Drop - 2'-6".

Diameter of Spoon - 1⅜" I.D
" " " 2" O.D.

For Boring Logs No's 17 through 23, see Dwg. No. 438.22(a-1)- 4

✳ Denotes Depth of Ground Water measured from Existing Ground Surface Elevation

AS-BUILT DRAWING
DATE January, 1968

DRAWING NO. 438.22(a-1)-3

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

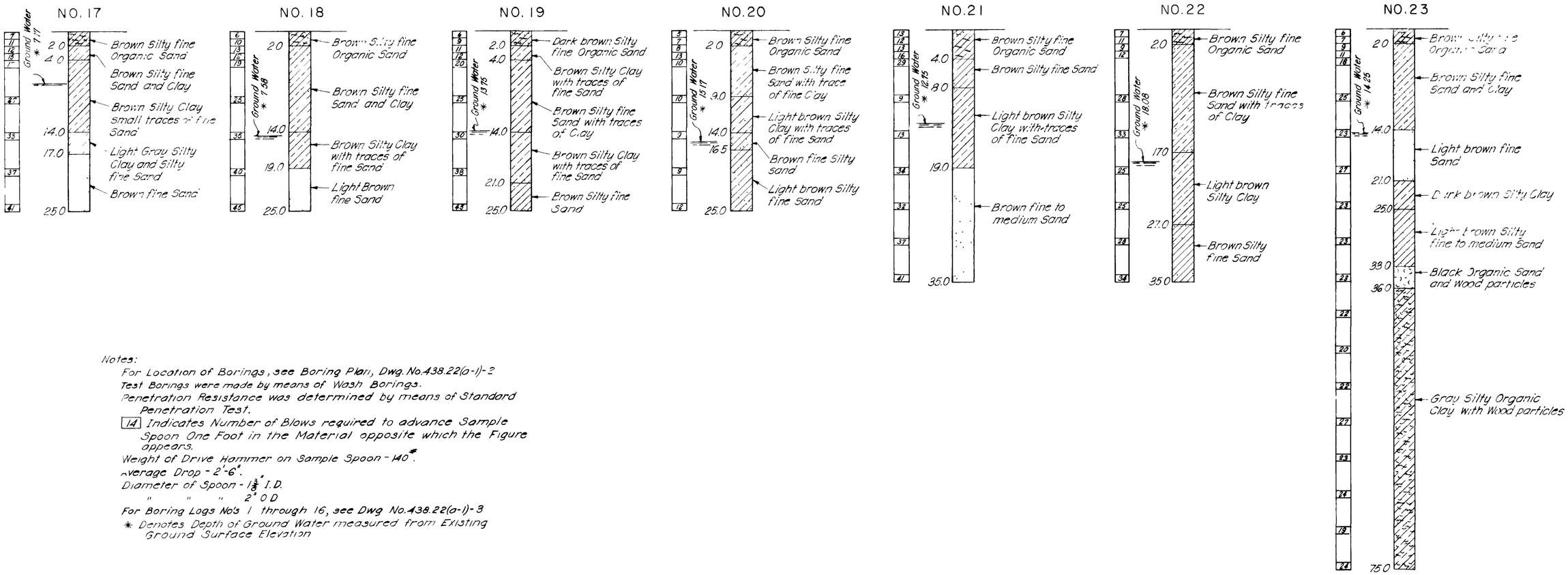
BORING LOGS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1" = 10'

July, 1964

Drawn by: H.C.	Traced by: H.C.	Checked by: V.N. G.V.A	Examined by: D.A	Approved by:
Revisions:				



Notes:

For Location of Borings, see Boring Plan, Dwg. No. 438.22(a-1)-2

Test Borings were made by means of Wash Borings.

Penetration Resistance was determined by means of Standard Penetration Test.

[14] Indicates Number of Blows required to advance Sample Spoon One Foot in the Material opposite which the Figure appears.

Weight of Drive Hammer on Sample Spoon - 140#.

Average Drop - 2'-6".

Diameter of Spoon - 1 3/8" I.D.
" " " 2" O.D

For Boring Logs No's 1 through 16, see Dwg. No. 438.22(a-1)-3

* Denotes Depth of Ground Water measured from Existing Ground Surface Elevation

AS-BUILT DRAWING
DATE January, 1968

DRAWING NO. 438.22(a-1)-4

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

BORING LOGS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1" = 10'

July, 1964

Drawn by: R.B.	Traced by: R.B.	Checked by: V.N. G.V.A.	Examined by: DP	Approved by:
Revisions:				

TELEPHONE CABLE 3.2' to 4.5'

REVISION ②

REVISION ①

Note: Clean-out Existing Ditches and Slope as shown

12" Corrugated Metal Drain

Existing 6" Culvert

℄ Existing Ditch

℄ Existing 10' Wide Roadway

Slope Slope

8" Corrugated Metal Drain

12" Corrugated Metal Culvert

Storm Water Inlet (Type II)

Existing 8" Culvert to be abandoned

Existing Ditch to be filled from City Farm Road to Storm Water Inlet (Type II)

℄ Existing City Farm Road

Slope to meet existing Elev. of City Farm Road

Property Line

S 38°48'35" E (Y=2000.00)

ACCESS ROAD

Pt C

Pt B

Pt P

Pt A

Gate

Pt Q

Pt R

Pt S

Pt T

Pt U

Pt V

Pt G

Pt H

Pt J

Pt K

Pt L

Pt D

Pt E

Pt F

Pt M

Pt N

SCREENING CHAMBER

Venturi Meter Vault

PARKING AREA

MAIN BUILDING (24.50)

GRIT COLLECTOR

SCUM REMOVAL TANK

PRE-AERATION TANK

PRIMARY SETTLING TANK No. 1

PRIMARY SETTLING TANK No. 2

AERATION TANK (21.75)

Return and Waste Sludge Control Vault

For Continuation, see Dwg. No. 438.22(a-1)-26

FINAL SETTLING TANK No. 1

FINAL SETTLING TANK No. 2

CHLORINE CONTACT TANK

SLUDGE DIGESTION TANK No. 1

SLUDGE DIGESTION TANK No. 2

SLUDGE CONTROL BUILDING

SLUDGE LAGOON No. 1

SLUDGE LAGOON No. 2

Top of Berm Elev. 21.00

Bottom of Lagoon, Elev. 16.00 (Typ.)

Spoil Area "B"

Existing Creek

Property Line

Swale

2' Wide Ditch (Typical)

Ditch Width Varies

Walkway (Typ)

Height of curb above pavement to vary from 2" at Building Line to 4" at end of Curve

Existing 10' Wide Roadway

18" "V" Type Ditch

Telephone Cable 4.4' Avg.

Tele. Pull Box X = 1836.17 Y = 1673.67

Edge of Depressed Curb

30' Wide Easement

50'±

410'±

8" Corrugated Metal Culvert

12" Corrugated Metal Culvert

As Built

12" Vitrified Clay Pipe Storm Drain

12" R.C. Storm Drain

10" C.I. Soil Pipe Storm Drain

24" Storm Drain

Storm Water Inlet (Type I) Top 20.00 Inv. 16.50

Storm Water Inlet (Type I) Top 19.10 Inv. 15.50

Storm Water Inlet (Type I) Top 18.50 Inv. 16.33

Storm Water Inlet (Type I) Top 18.00 Inv. 15.75

Storm Water Inlet (Type II) Top 19.10 Inv. 15.25

Storm Water Inlet (Type II) Top 18.00 Inv. 15.67

Wye Inv. 15.75

Inv. 15.25

Inv. 15.67

Inv. 15.75

Inv. 15.50

Inv. 16.33

Inv. 16.75

Inv. 15.67

Inv. 15.32

Inv. 15.25

Inv. 15.00

Inv. 15.10

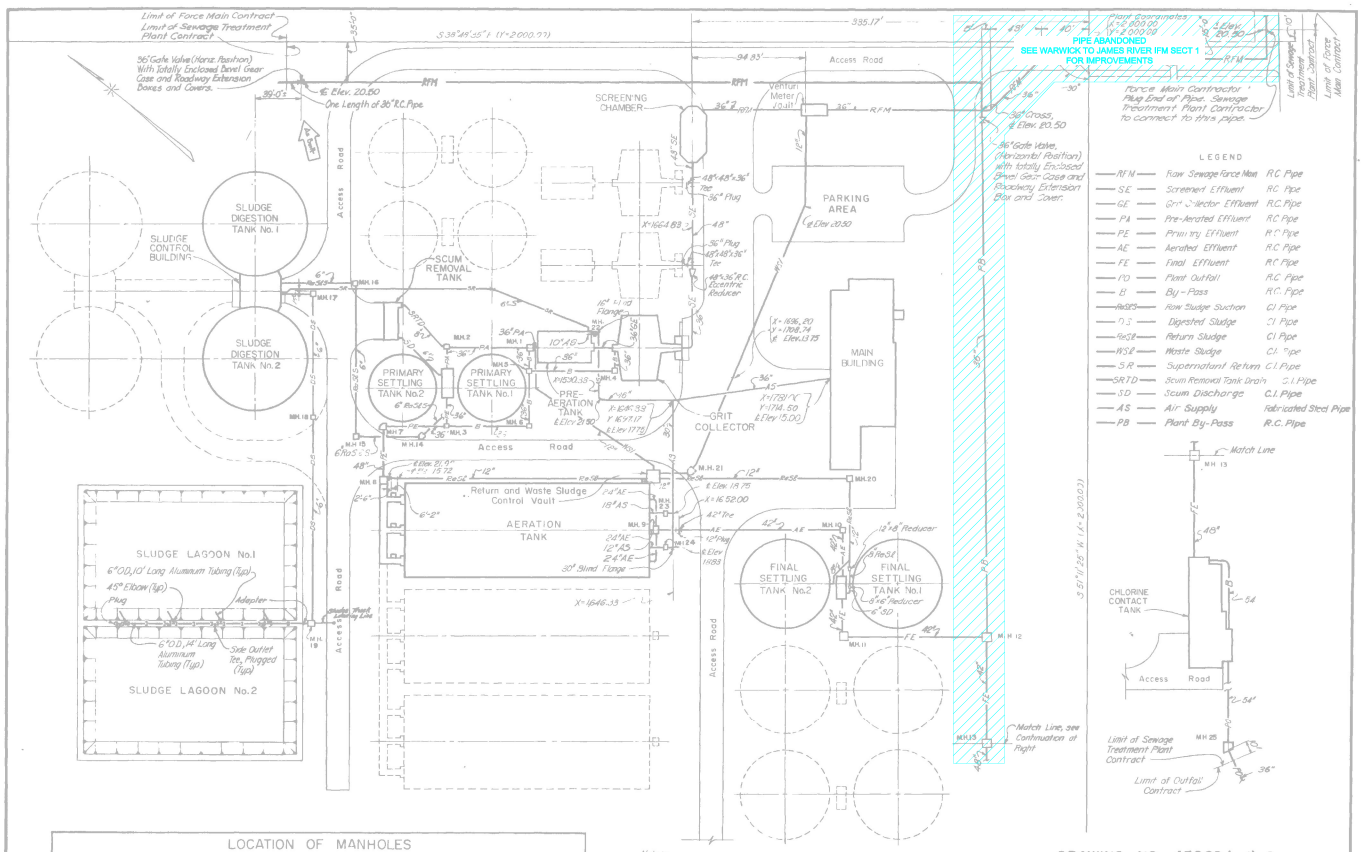
Inv. 15.00

Inv. 15.50

Inv. 15.00

Inv. 15.00

Inv. 15.00



LOCATION OF MANHOLES

M.H. NO.	COORDINATES F X	COORDINATES F Y	M.H. NO.	COORDINATES F X	COORDINATES F Y	M.H. NO.	COORDINATES F X	COORDINATES F Y
1	1538.30	1737.17	8	1403.58	1624.32	17	1342.00	1764.50
2	1457.50	1739.17	9	1634.17	1582.00	18	1342.00	1683.00
3	1457.50	1673.00	10	1792.50	1582.00	19	1342.00	1512.83
4	1539.96	1717.17	11	1792.50	1498.00	20	1738.92	1624.92
5	1526.50	1717.17	12	1913.17	1498.00	21	1661.33	1629.94
6	1526.50	1673.00	13	1913.17	1408.00	22	1586.08	1750.25
7	1403.58	1673.00	14	1436.00	1665.00	23	1641.58	1595.08
			15	1380.00	1665.00	24	1641.58	1568.92
			16	1380.00	1794.50	25	1989.50	1084.00

Notes: F. Coordinates for Manholes are defined as either the intersection of Pipe ℄'s or Pipe ℄ and ℄ of Manhole

As Built

Notes:
X=1645.33 Y=1671.17 Designates Plant Coordinates
For General Plan, see Dwg No. 438.22(a-1)-1
For Storm Plan, see Dwg No. 438.22(a-1)-2
For Storm Laydown Lengths Nos. 4,5,9,22 (a-1)-3 and 4
For Location and Grading Plan, see Dwg. No. 438.22(a-1)-5
For Outside Piping Plan (Part I), see Dwg. No. 438.22(a-1)-7
For Manhole Details, except Manholes Nos. 6 and 25, see Dwgs. Nos. 438.12 (a-1) - 62 thru 66
For Detail of Manhole No. 25, see Dwg. No. 438.22(a-1)-33
For Detail of Manhole No. 6, see Dwg. No. 438.22(a-1)-56

AS-BUILT DRAWING
January, 1968

DRAWING NO. 438.22 (a-1)-6

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
OUTSIDE PIPING PLAN
PART I

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1"=50'-0" July, 1964

Drawn by: J.P.	Traced by: O.M.	Checked by: G.V.A.	Examined by: J.P.	Approved by:
Revisions: As Built				

S 38°48'35" E (Y=2000.00)

Plant Coordinates
X = 2 000.00
Y = 2 000.00

20'

℄ Existing City Farm Road

Limit of 4" Potable Water Supply

90°

Access Road

Venturi Meter Vault

2" W.I Drain to Dry Well

Back Flushing Water Supply

2" W.I.

SCREENING CHAMBER

4" C.I. Soil Drain (Discharge thru Curb - into Road)

SLUDGE DIGESTION TANK No. 1

SLUDGE DIGESTION TANK No. 2

SLUDGE CONTROL BUILDING

1" W.I. Pilot

Waste Gas Burner

4" C.I. Gas

Fuel Tank

2-1" FO

M.H. 16

M.H. 17

SCUM REMOVAL TANK

M.H. 2

6" Plug

PRIMARY SETTLING TANK No. 2

PRIMARY SETTLING TANK No. 1

M.H. 1

M.H. 22

4" Plug

M.H. 5

M.H. 4

PRE-AERATION TANK

As Built

GRIT COLLECTOR

M.H. 18

M.H. 15

M.H. 7

M.H. 14

M.H. 3

M.H. 6

Drip Trap Manhole

Access Road

Boss and Tap for 2" Connection

2" W.I.

6" Plug

M.H. 8

Return and Waste Sludge Control Vault

M.H. 21

M.H. 23

M.H. 9

M.H. 24

1½" W.I.

¾" W.I.

AERATION TANK

6" Plug

PARKING AREA

Boss and Tap for 2" Connection

12" Concrete Sewer Pipe Storm Drain, for Continuation see Dwg. No. 438.22 (a-1)- 5

Fuel Tank

2-½" FO

5" C.I. Soil Pipe Storm Drain

MAIN BUILDING

Thrust Block poured against undisturbed Ground 4.59 ft. minimum Bearing Area. (Typ.)

22-1"

5" C.I. Soil Pipe Storm Drain

M.H. 20

M.H. 10

FINAL SETTLING TANK No. 2

FINAL SETTLING TANK No. 1

M.H. 11

3" Plug

M.H. 12

M.H. 13

Match line

S 51°11'25" W (X=2000.00)

SLUDGE LAGOON No. 1

SLUDGE LAGOON No. 2

M.H. 19

Access Road

CHLORINE CONTACT TANK

Thrust Block

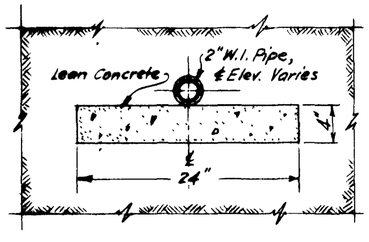
Access Road

LEGEND

SSD	Sampling Sink Drain	C.I. Soil Pipe
CS	Chlorine Solution	P.V.C. Pipe
NPW	Non-Potable Water	C.I. & W.I. Pipe
PG *	Plant Gas Service	W.I. Pipe
PS	Plant Sewer	C.I. Pipe
PW	Potable Water	C.I. & R.B. Pipe
FO	Fuel Oil	W.I. Pipe

H — Hydrant and Gate Valve, see detail below - at left.

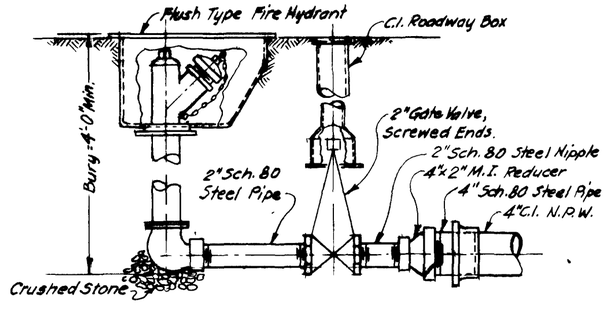
Note;
* = Plant Gas Service to be laid on a Concrete Cradle, see detail below - at left.



CONCRETE CRADLE FOR BURIED PLANT GAS SERVICE PIPE

(Typical from Sludge Control Building to Main Building)

Scale: 1"=1'-0"



TYPICAL HYDRANT CONNECTION

Scale: 1"=1'-0"

Notes:
For General Plan, see Dwg. No. 438.22(a-1)-1
For Boring Plan, see Dwg. No. 438.22(a-1)-2
For Boring Logs, see Dwgs. Nos. 438.22(a-1)-3 and 4
For Location and Grading Plan, see Dwg. No. 438.22(a-1)-5
For Outside Piping Plan, Part I, see Dwg. No. 438.22(a-1)-6
For Manhole Details, except Manhole No. 8, see Dwgs. Nos. 438.22(a-1)-62 thru 66
For Detail of Manhole No. 8, see Dwg. No. 438.22(a-1)-33

AS-BUILT DRAWING

DATE January 9, 1968

DRAWING NO. 438.22 (a-1)-7

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

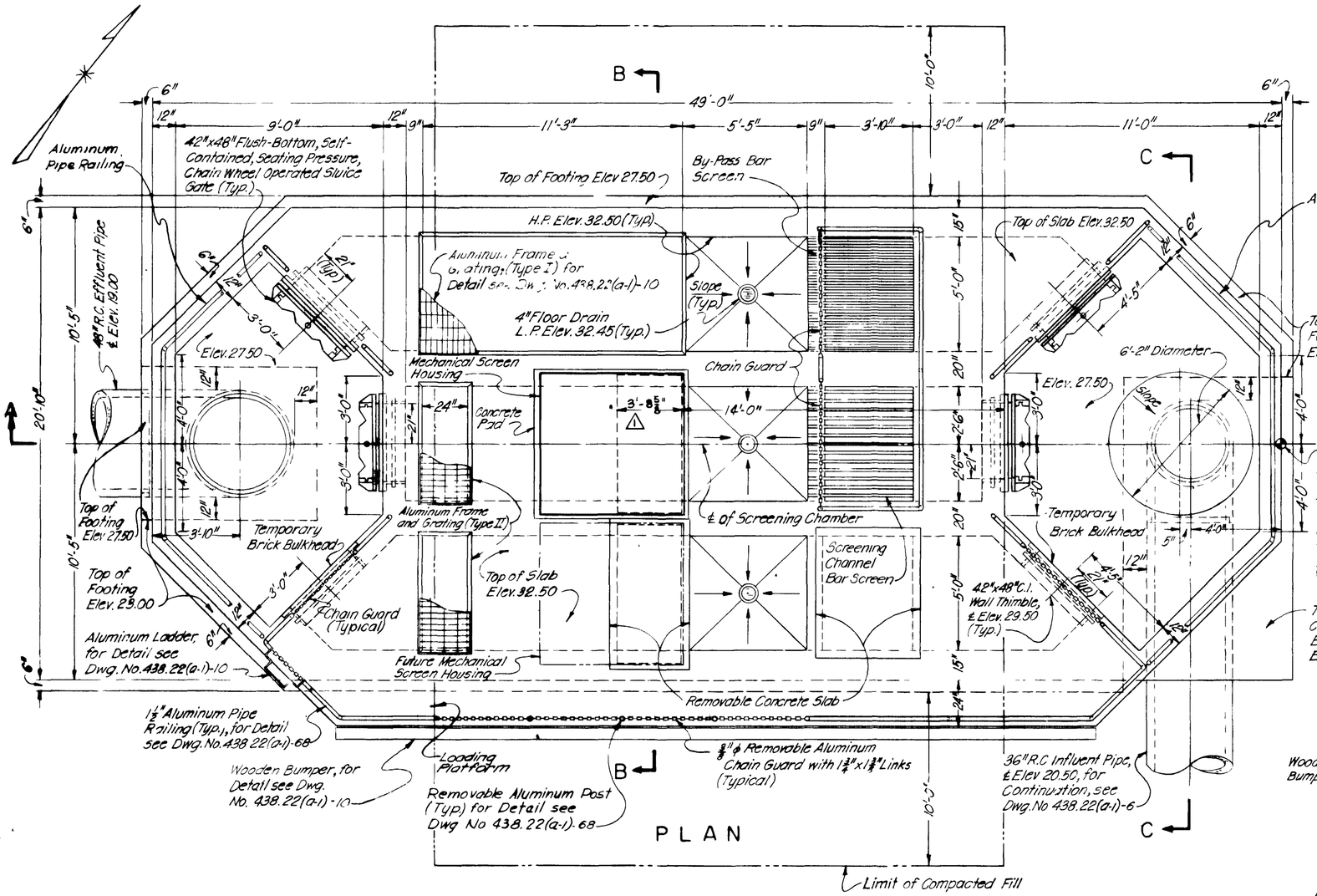
OUTSIDE PIPING PLAN PART II

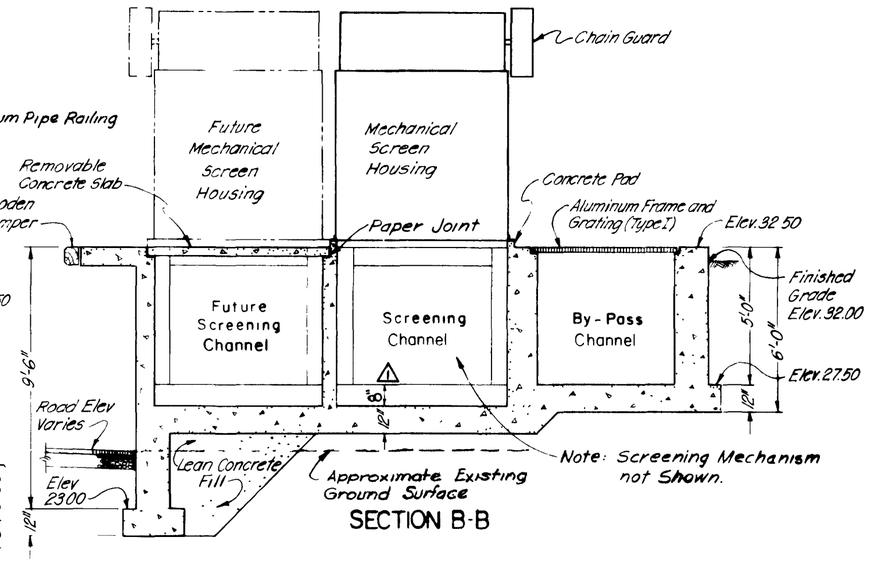
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

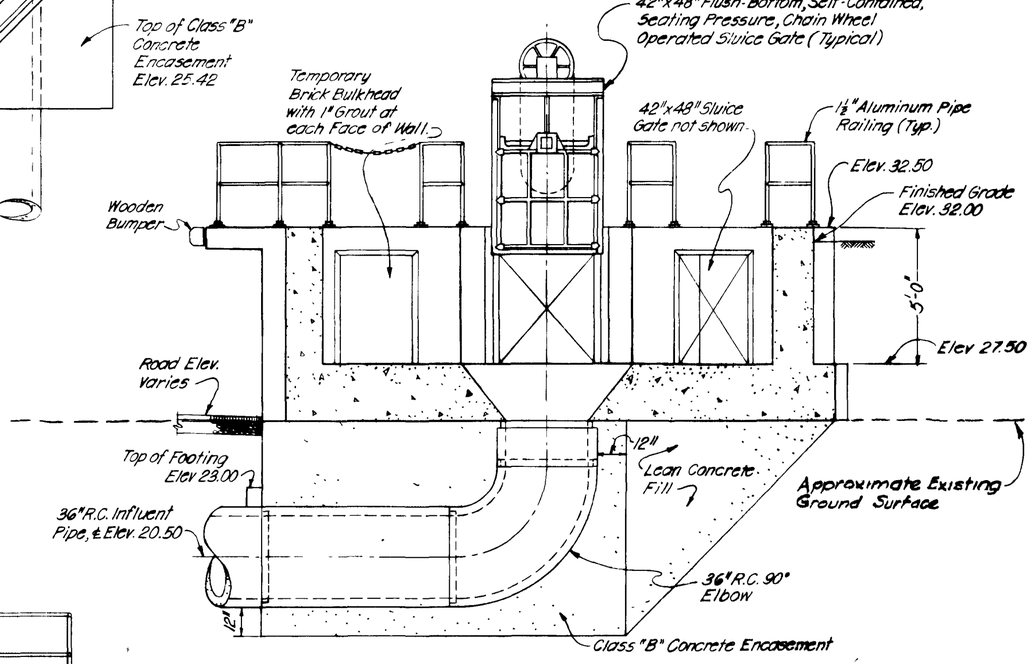
Scale: 1"=50'-0"

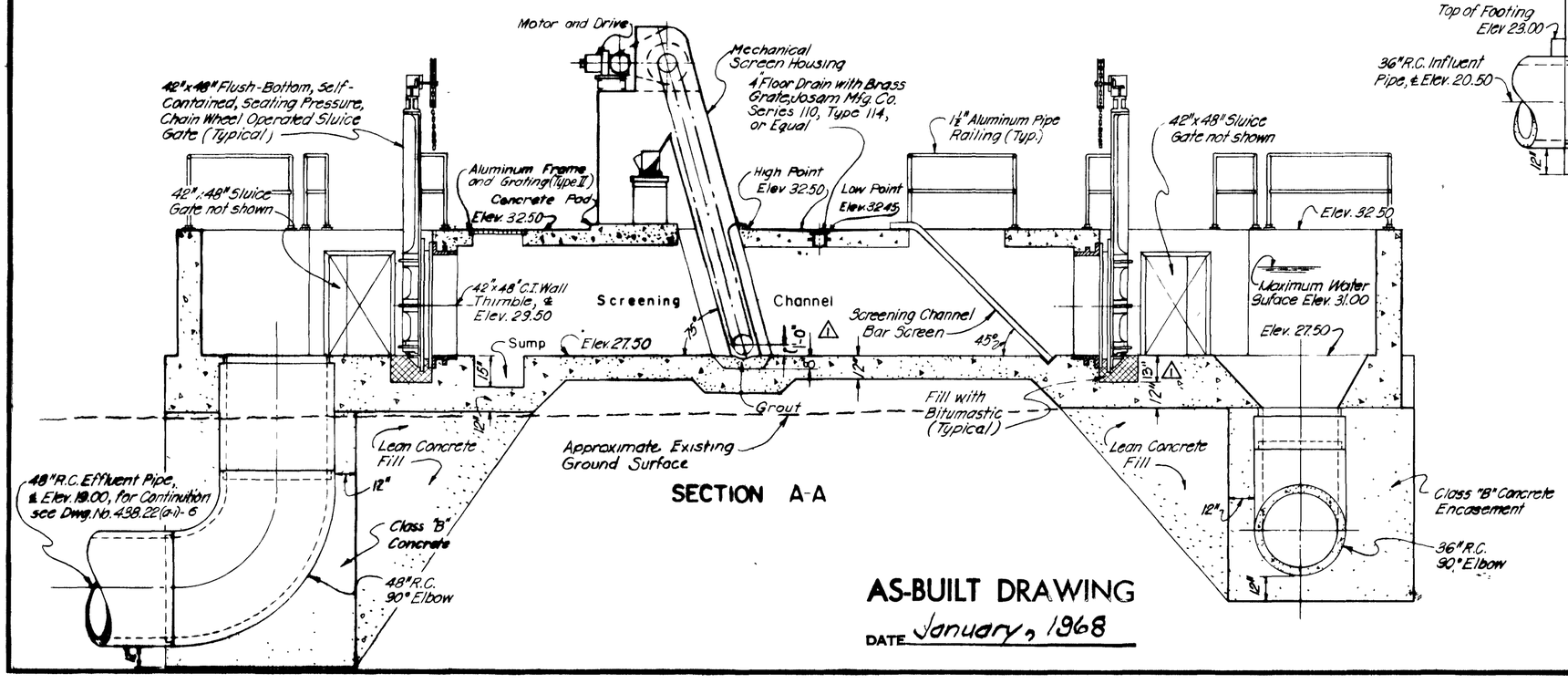
July, 1964

Drawn by: J.P.	Traced by: O.M.	Checked by: G.M. C.V.A.	Examined by: DP	Approved by: ℄
Revisions:	As Built 1/68 RSM			









AS-BUILT DRAWING

DATE January, 1968

Notes:

* Dimensions to be determined by Equipment furnished

For Plans showing location of Screening Chamber, see Dwgs. Nos. 438.22(a-1)-1 and 5

For Outside Piping Plan, see Dwg. No. 438.22(a-1)-6

For Concrete Reinforcing Details, see Dwgs. Nos. 438.22(a-1)-8 and 9

For Details of By-Pass and Screening Channel Bar Screens, see Dwg. No. 438.22(a-1)-10

DRAWING NO. 43822(a-1)-8

HAMPTON ROADS SANITATION DISTRICT

NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

SCREENING CHAMBER

EQUIPMENT AND PIPING

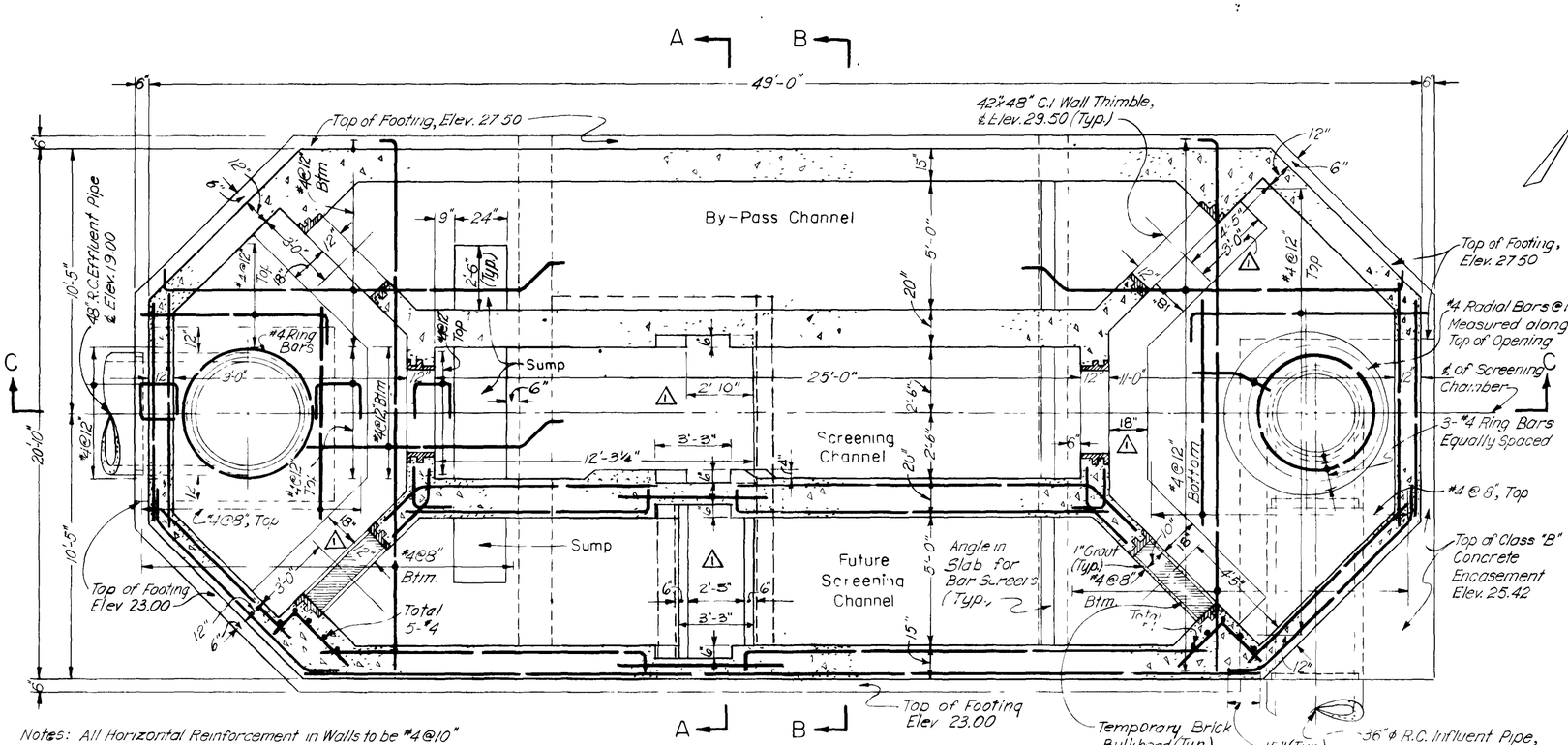
PLAN AND SECTIONS

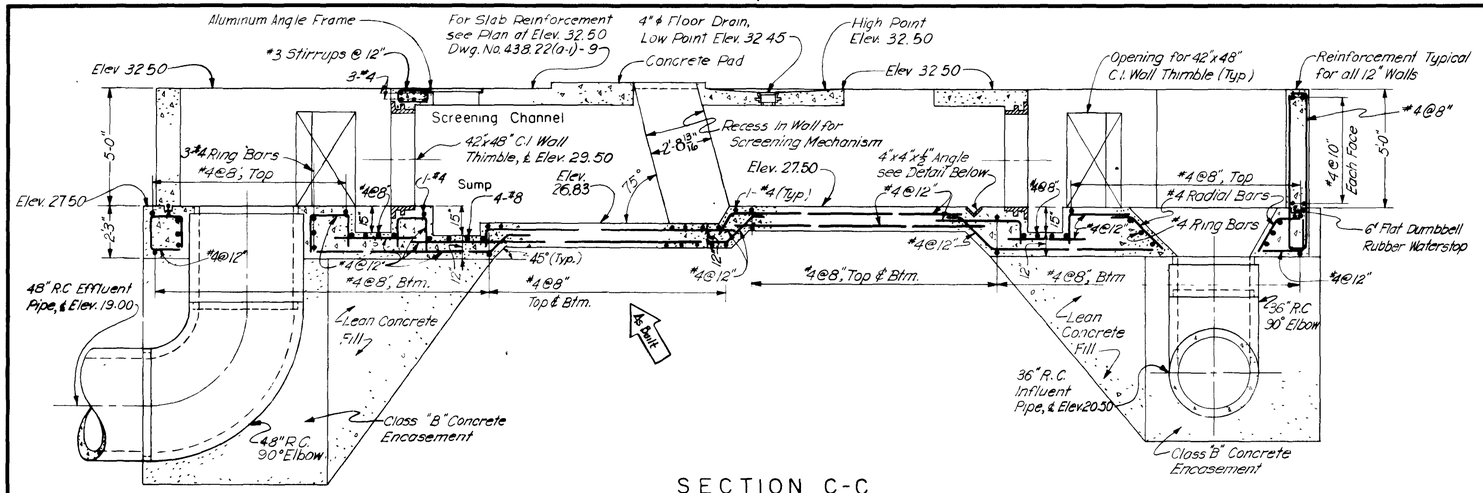
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: ¼" = 1'-0"

July, 1964

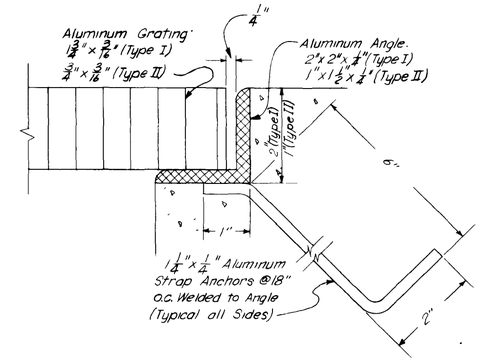
Drawn by: J.P.	Traced by: RGM/RD	Checked by: JJ. GVA	Examined by: DP	Approved by:
Revisions: 3/22	1 RGM 5/22/67			


A
B
49'-0"
Top of Footing, Elev. 27.50
42"x48" C.I. Wall Thimble, ℄ Elev. 29.50 (Typ.)
48" R.C. Effluent Pipe ℄ Elev. 19.00
By-Pass Channel
Screening Channel
Future Screening Channel
Sump
Sump
Top of Footing Elev 23.00
Total 5-#4
Angle in Slab for Bar Screens (Typ.)
1" Grout (Typ.)
Temporary Brick Bulkhead (Typ.)
Top of Footing, Elev. 27.50
#4 Radial Bars @ 12", Measured along Top of Opening
℄ of Screening Chamber
3-#4 Ring Bars Equally Spaced
#4 @ 8", Top
Top of Class "B" Concrete Encasement Elev. 25.42
Top of Footing Elev 23.00
36" ϕ R.C. Influent Pipe, ℄ Elev. 20.50 For Continuation see Dwg. No. 438.22(a-1)-6
C
20'-0"
10'-5"
10'-5"
25'-0"
12'-3¼"
2'-10"
3'-3"
2'-5"
3'-3"
11'-0"
5'-0"
5'-0"
2'-6"
2'-6"
20"
15"
15"
12"
6"
4'-5"
3'-0"
#4@12" Top
#4@12" Bottom
#4@12" Btm
#4@12" Top
#4@8" Btm.
#4 Ring Bars
#4@8", Top
#4@8" Top
#4@8" Top
#4@8"



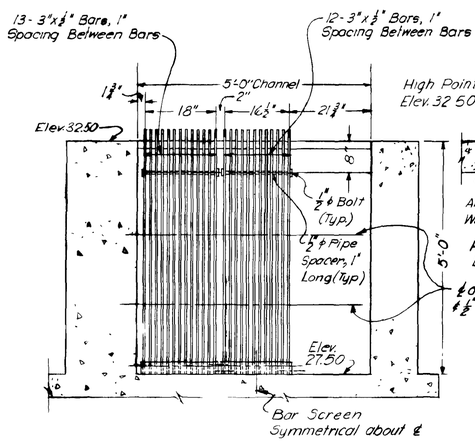
SECTION C-C

Scale: $\frac{1}{4}$" = 1'-0"



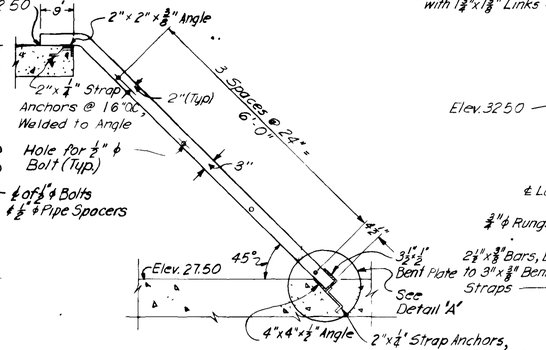
ALUMINUM FRAME AND GRATING

Scale: None



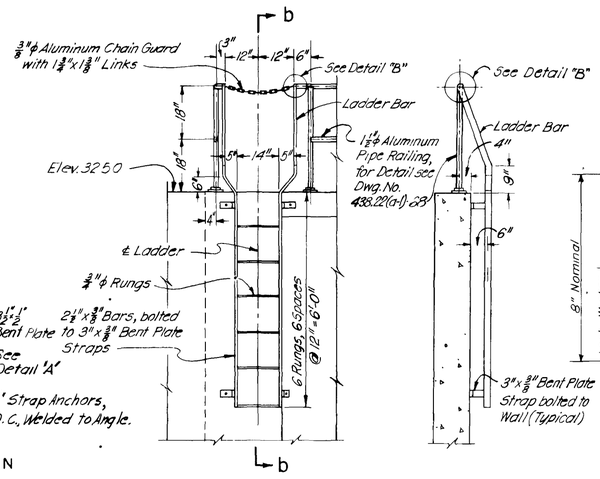
ELEVATION OF BY-PASS CHANNEL BAR SCREEN

Scale: $\frac{1}{2}$" = 1'-0"

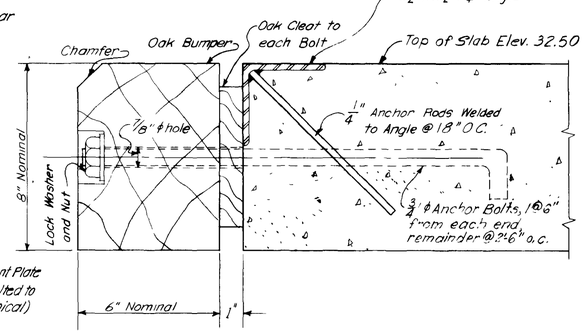


TYPICAL SECTION THRU BAR SCREEN

Scale: $\frac{1}{2}$" = 1'-0"

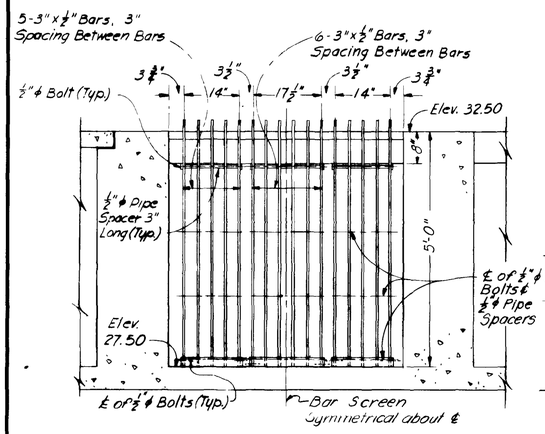


ELEVATION SECTION b-b



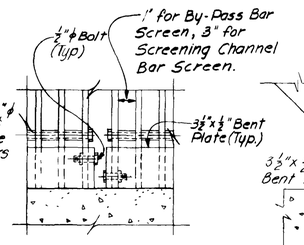
WOODEN BUMPER

Scale: 3" = 1'-0"



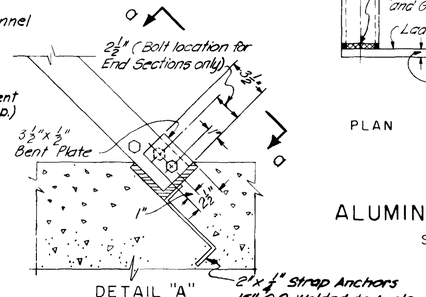
ELEVATION OF SCREENING CHANNEL BAR SCREEN

Scale: $\frac{1}{2}$" = 1'-0"



SECTION a-a

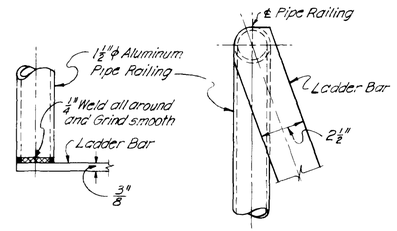
Scale: None



DETAIL "A"

Scale: 1" = 1'-0"

BAR SCREENS



PLAN ELEVATION

DETAIL "B"

ALUMINUM LADDER

Scale: None

Notes:

For Plan showing location of Section C-C, see Dwg No. 438.22(a-1)-9

For Plan and Sections showing locations of Aluminum Frame and Grating, Bar Screens, Aluminum Ladder and Wooden Bumper, see Dwg. No. 438.22(a-1)-8

DRAWING NO. 438.22(a-1)-10

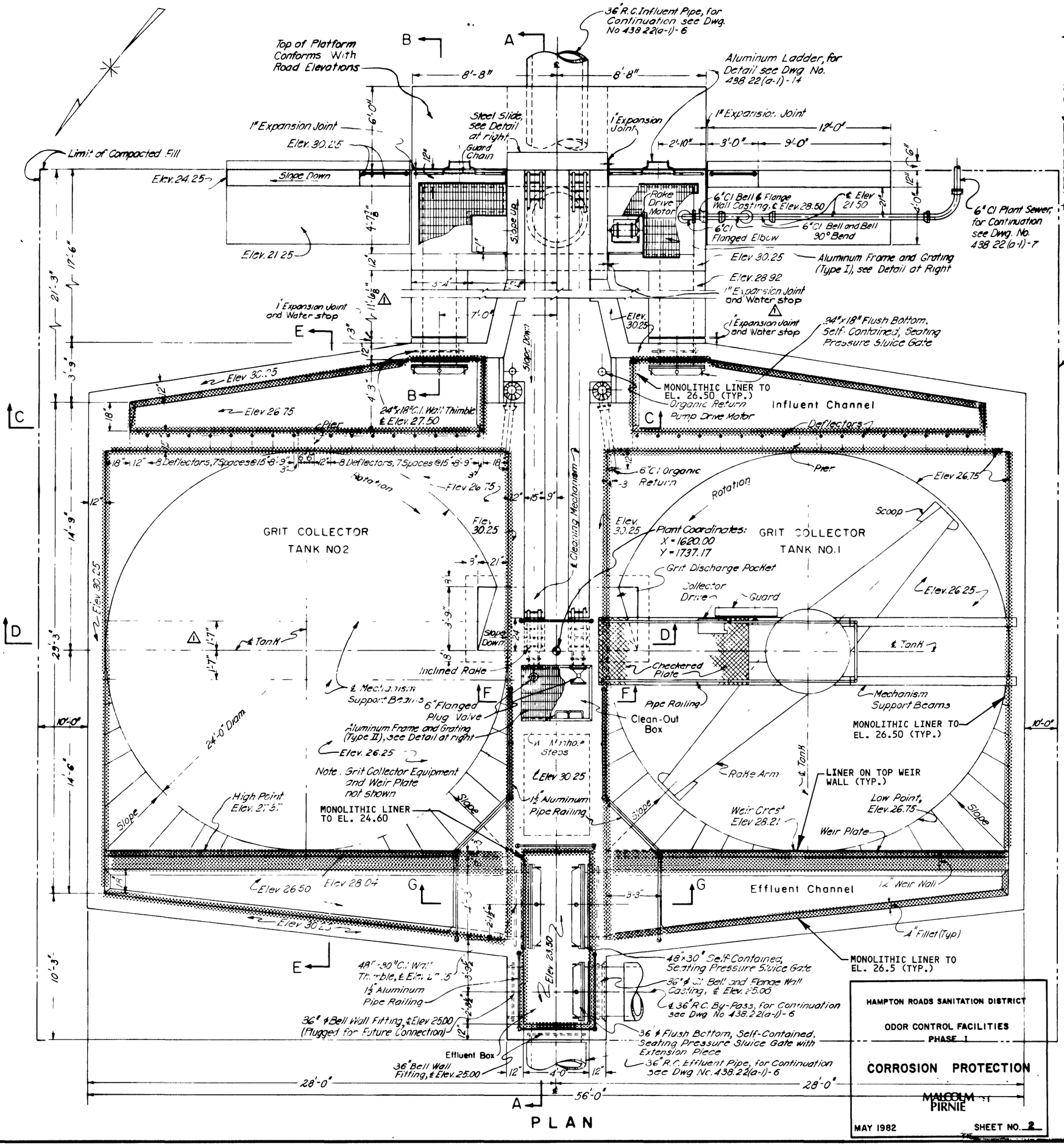
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SCREENING CHAMBER
CONCRETE REINFORCING DETAILS
SECTION C-C AND MISCELLANEOUS DETAILS

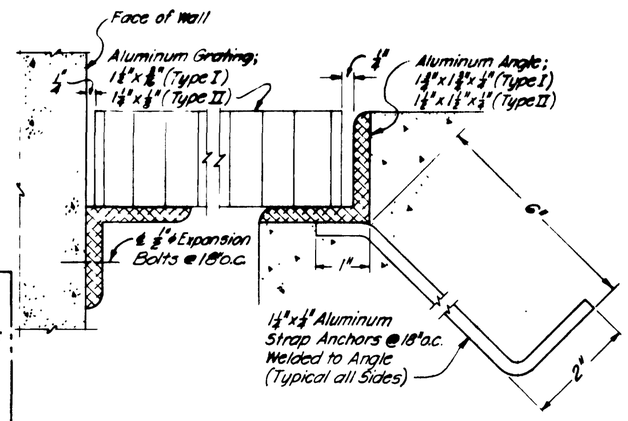
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As shown — July, 1964

Drawn by: J.P.	Traced by: F.T.D	Checked by: MF, GVA	Examined by: JA	Approved by:
Revisions:	As Built 1/68 RCH			

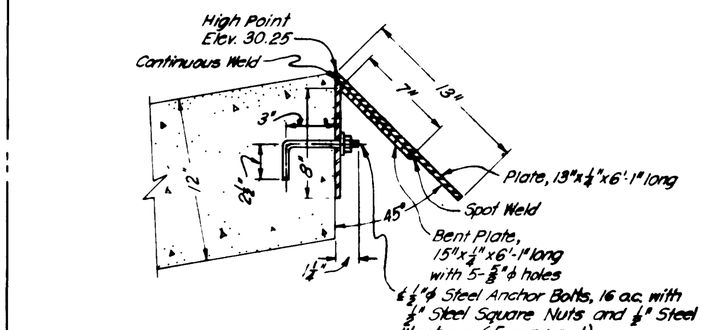
AS-BUILT DRAWING
DATE January, 1968





ALUMINUM FRAME AND GRATING

Scale. None



STEEL SLIDE

Scale None

Notes

For Plans showing location of Grit Collectors, see Dwgs. Nos 438 22(a-1)-1 and 5

For Outside Piping Plan, see Dwg No. 438.22(a-1)-6

For Sections A-A, B-B, C-C, D-D, E-E, F-F and G-G, Deflectors and Weir Plate Details, see Dwg No 438.22(a-1)-12

For Concrete Reinforcing Details, see Dwgs. Nos. 438 22(a-1)-13 and 14

For Aluminum Pipe Railing, Manhole Steps, C.I Sleeve and C.I. Casting Details, see Dwg. No. 438.22(a-1)-6

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-11

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
GRIT COLLECTORS
EQUIPMENT AND PIPING
PLAN

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: ¼" = 1'-0" & As Shown — July, 1964

Drawn by: S.V.	Traced by: GHL SV	Checked by: JO GVA	Examined by: PJ	Approved by:
Revisions:	⚠ RGM 3/22/67			

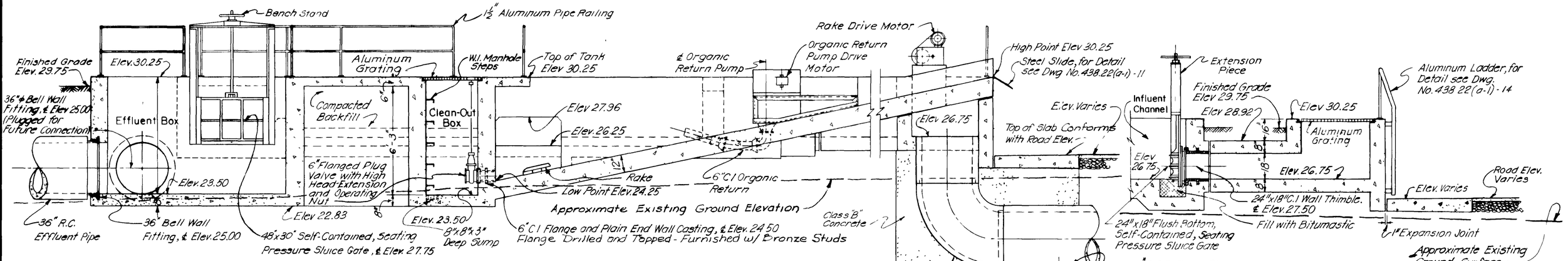
HAMPTON ROADS SANITATION DISTRICT

ODOR CONTROL FACILITIES
PHASE I

CORROSION PROTECTION

MALCOLM PIRNIE

MAY 1982 — SHEET NO. 2



SECTION A-A

SECTION B-B

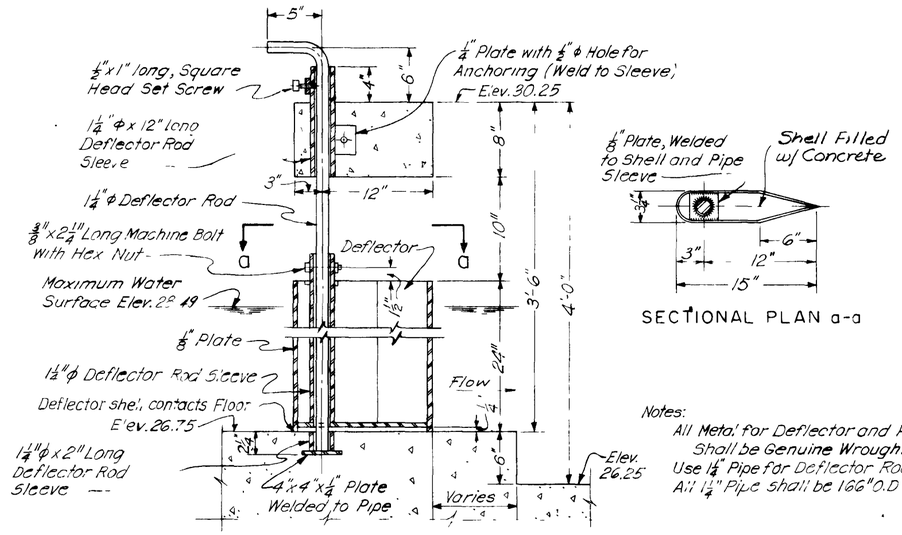
SECTION C-C

SECTION D-D

SECTION E-E

SECTION F-F

SECTION G-G



TYPICAL SECTION

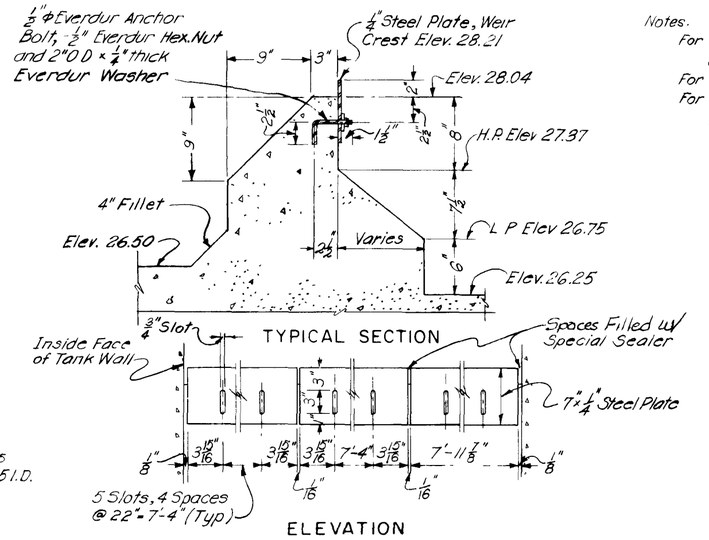
SECTIONAL PLAN a-a

DEFLECTORS

(Total Required - 32)

Scale: 1" = 1'-0"

Notes:
All Metal for Deflector and Parts Shall be Genuine Wrought Iron.
Use 1¼" Pipe for Deflector Rod Sleeves
All 1¼" Pipe Shall be 1.66" O.D and 1.375 I.D.



ELEVATION

WEIR PLATE

(Total Required - 6)

Scale: 1" = 1'-0"

Notes.
For Plan showing locations of Sections A-A, B-B, C-C, D-D, E-E, F-F and G-G, and Deflectors and Weir Plate, see Dwg No 438.22(a-1)-11
For Aluminum Frame and Grating Detail, see Dwg No 438.22(a-1)-11
For Aluminum Pipe Railing, C.I. Sleeve and C.I. Casting Details, see Dwg No. 438.22(a-1)-68

AS-BUILT DRAWING
DATE January, 1968

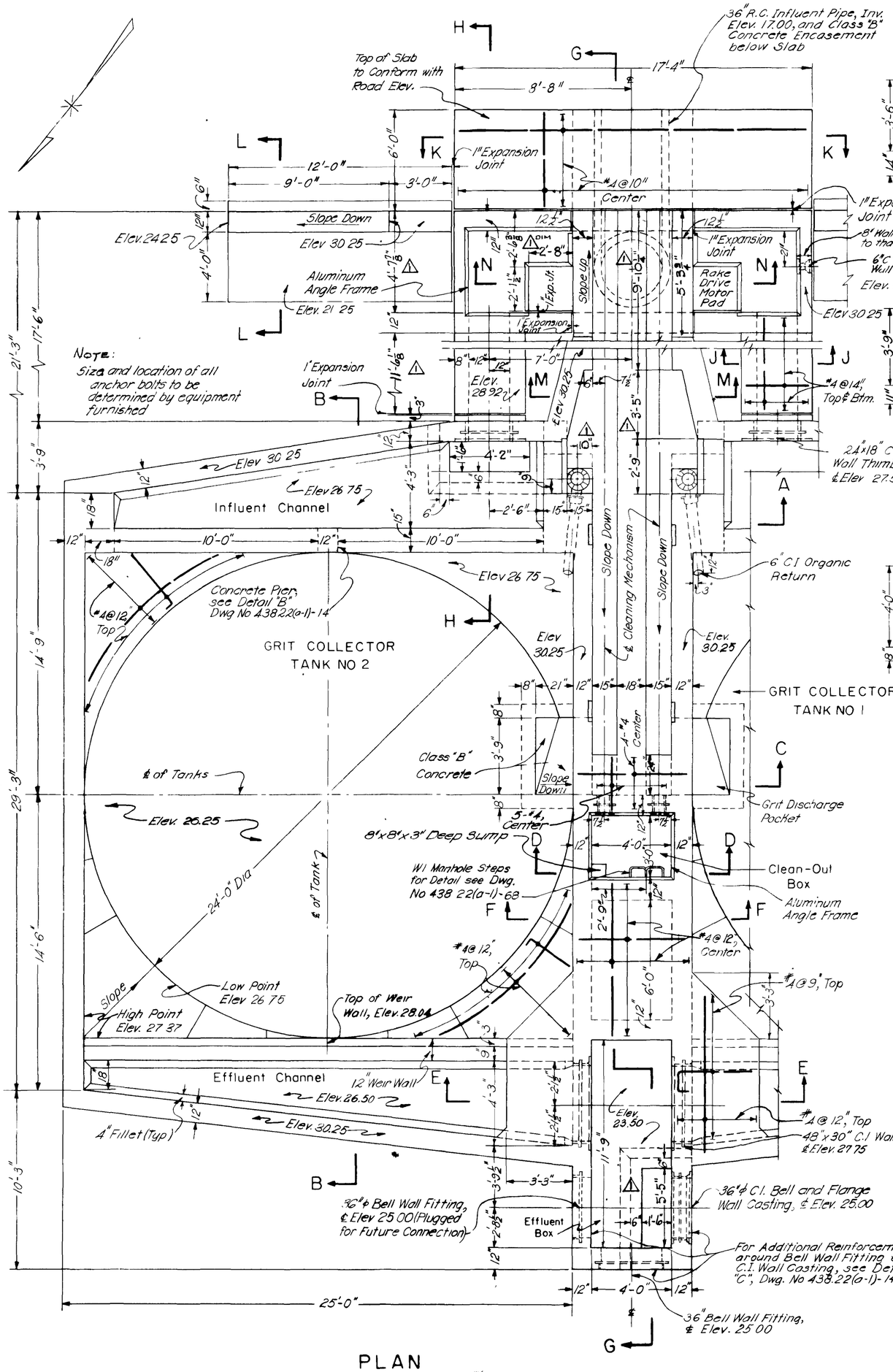
DRAWING NO. 438.22(a-1)-12

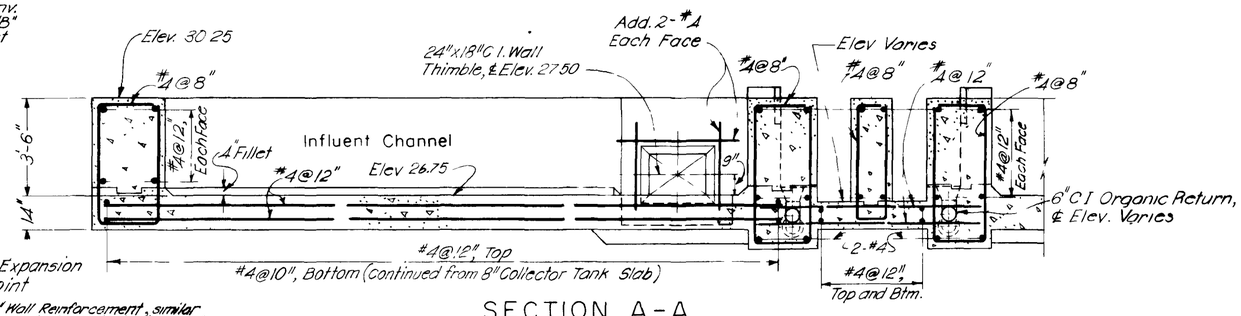
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
GRIT COLLECTORS
EQUIPMENT AND PIPING
SECTIONS AND MISCELLANEOUS DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

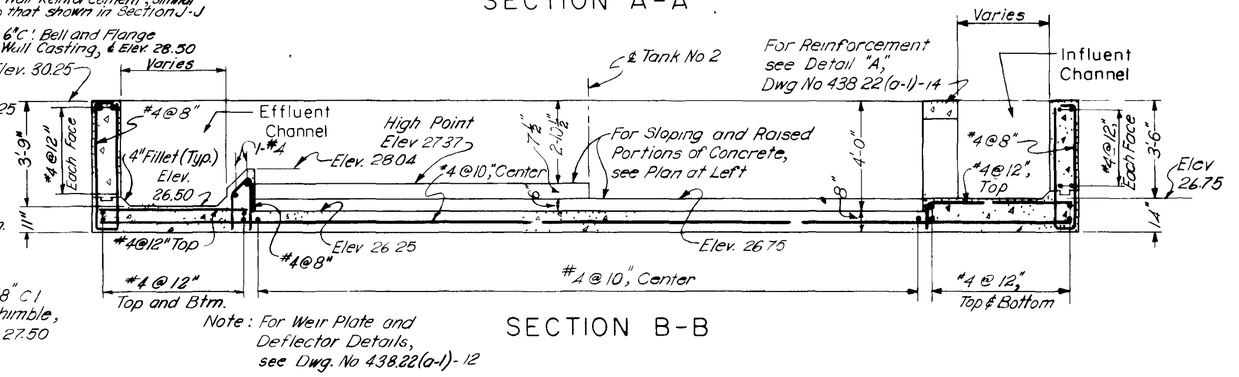
Scale: ¼"=1'-0" & As Shown
July, 1964

Drawn by: S.V.	Traced by: SV GHI	Checked by: JJO GVA	Examined by: DP	Approved by:
Revisions:				



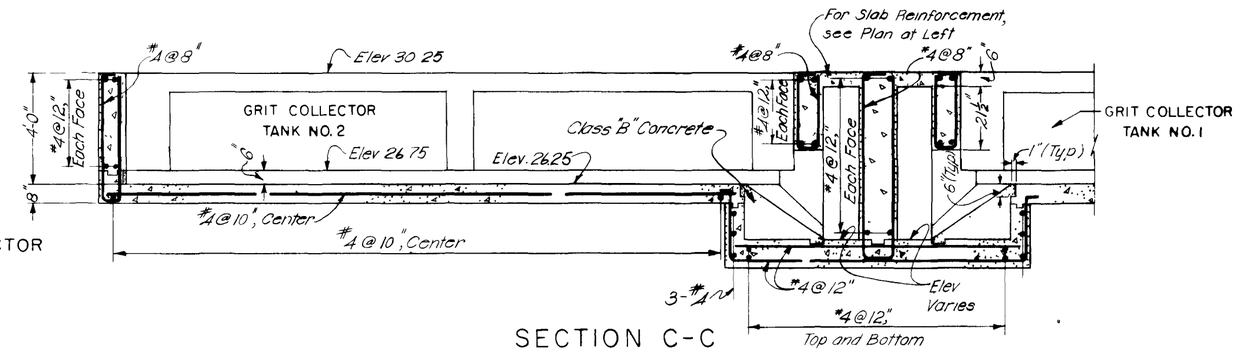


SECTION A-A

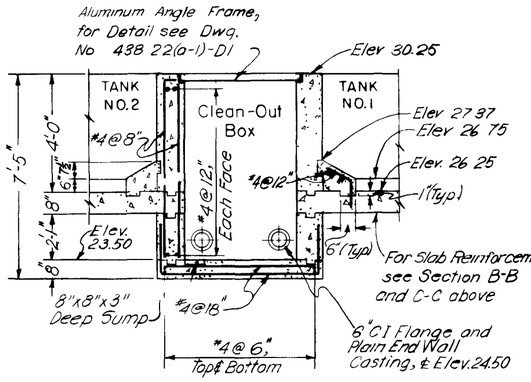


Note: For Weir Plate and Deflector Details, see Dwg. No 438.22(a-1)-12

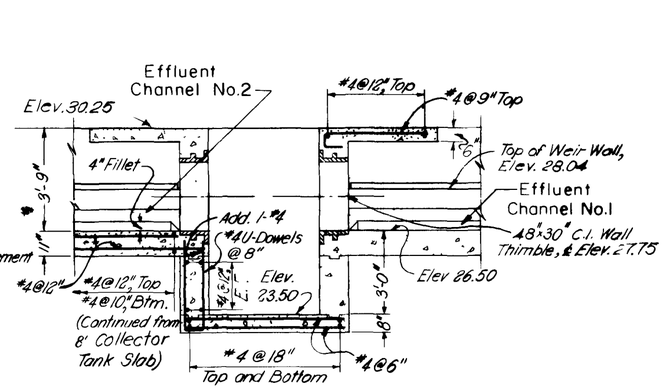
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

Notes:

For Plan, Sections and Miscellaneous Details showing Equipment and Piping, see Dwgs. Nos. 438.22(a-1)-11 and 12

For Sections F-F, G-G, H-H, J-J, K-K, L-L, M-M and N-N and Reinforcement at Wall Intersections, see Dwg No. 438.22(a-1)-14

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22 (a-1)-13

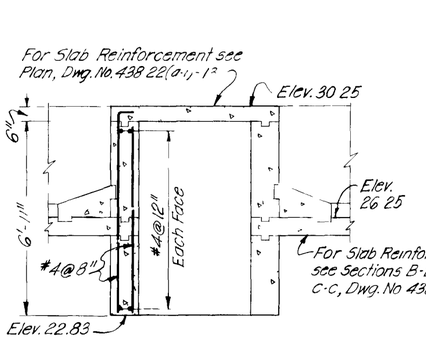
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
GRIT COLLECTORS
CONCRETE REINFORCING DETAILS
PLAN, SECTIONS A-A THROUGH E-E, INCLUSIVE

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4"=1'-0"

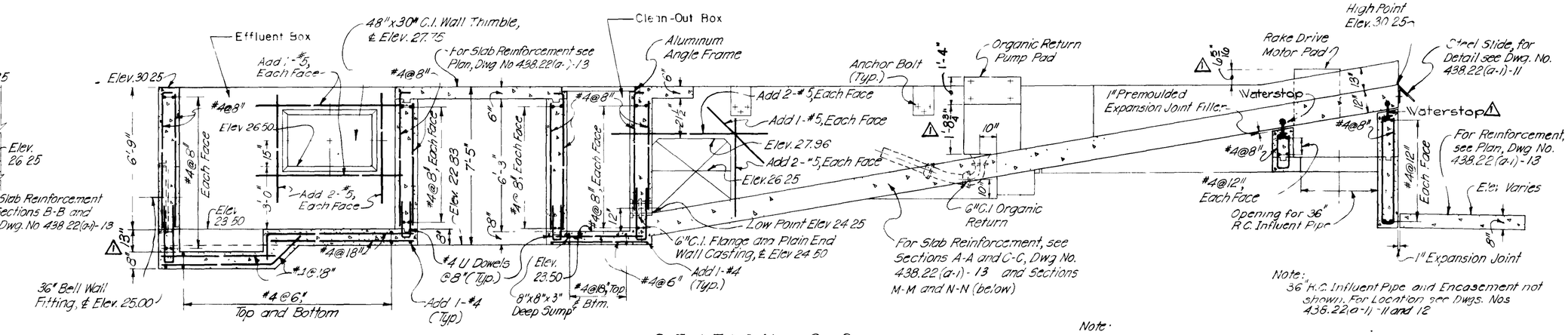
July, 1964

Drawn by: S.V.	Traced by: S.V.	Checked by:	Examined by:	Approved by:
Revisions:	4/5/67 RGM			



SECTION F-F

Scale $\frac{1}{4}$" = 1'-0"

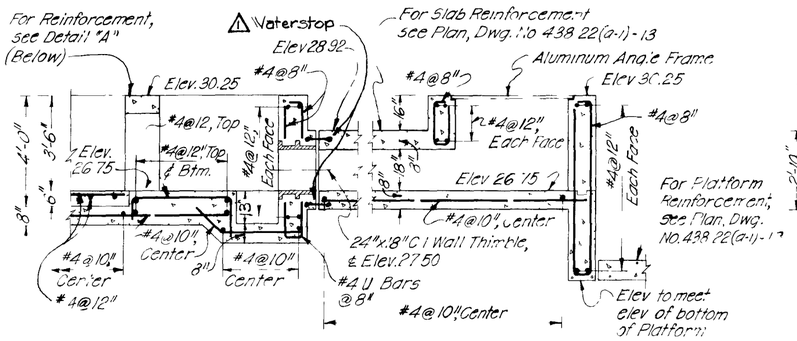


SECTION G-G

Scale $\frac{1}{4}$" = 1'-0"

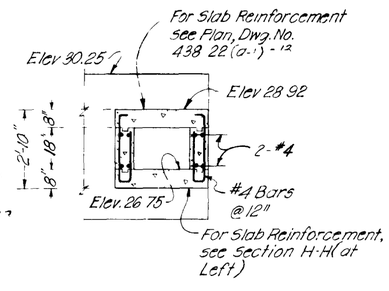
Note:
Size and location of all anchor bolts to be determined by equipment furnished.

Note:
36" R.C. Influent Pipe and Encasement not shown. For Location see Dwgs. Nos. 438.22(a-1)-11 and 12



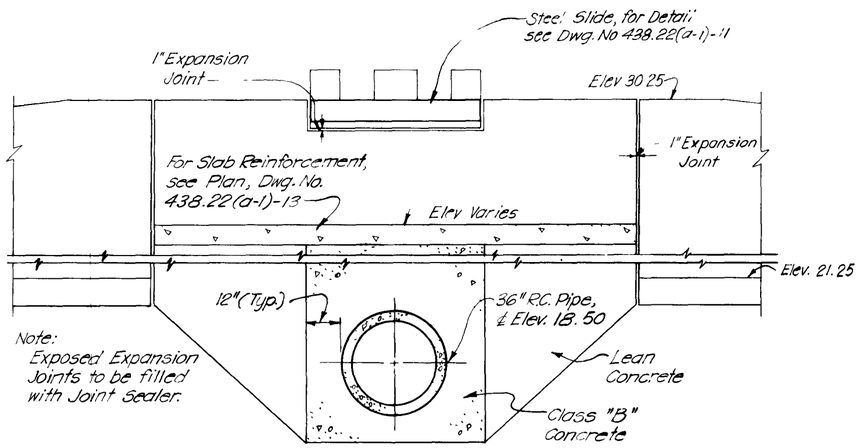
SECTION H-H

Scale $\frac{1}{4}$" = 1'-0"



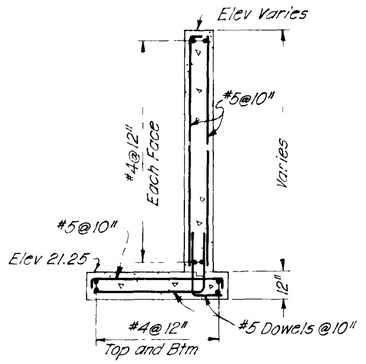
SECTION J J

Scale $\frac{1}{4}$" = 1'-0"



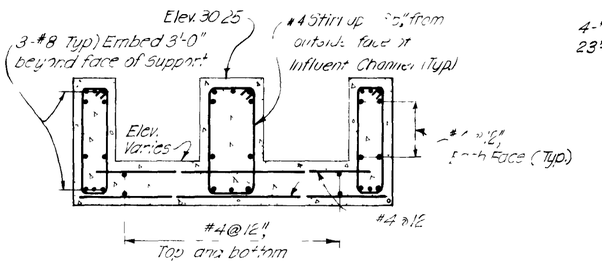
SECTION K-K

Scale $\frac{1}{4}$" = 1'-0"



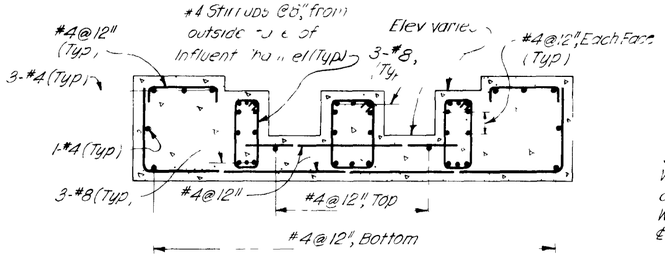
SECTION L L

Scale: $\frac{1}{4}$" = 1'-0"



SECTION M-M

Scale: $\frac{3}{8}$" = 1'-0"

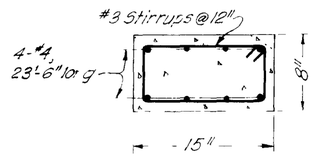


SECTION N-N

Scale $\frac{3}{8}$" = 1'-0"

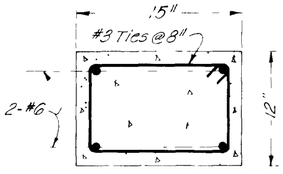
AS-BUILT DRAWING

DATE January, 1968



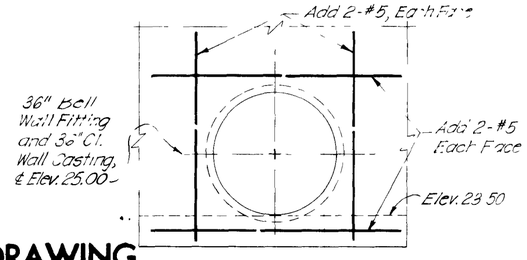
DETAIL "A"

Not to Scale



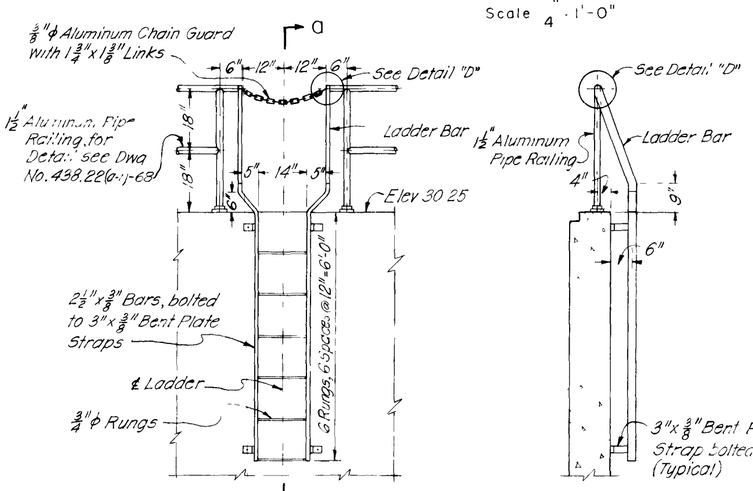
DETAIL "B"

Not to Scale



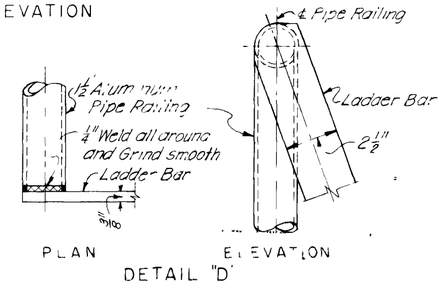
DETAIL "C"

Scale $\frac{3}{8}$" = 1'-0"



ELEVATION

SECTION a-a



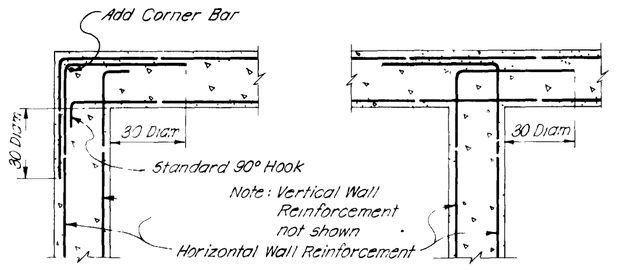
PLAN

ELEVATION

DETAIL "D"

ALUMINUM LADDER

Scale: None



REINFORCEMENT AT WALL INTERSECTIONS

Scale. None

Note: For Plan showing location of Sections F-F, G-G, H-H, J-J, K-K, L-L, M-M and N-N and Details "A", "B" and "C" and Aluminum Ladder, see Dwg. No. 438.22(a-1)-13

DRAWING NO. 438.22(a-1)-14

HAMPTON ROADS SANITATION DISTRICT

NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

GRIT COLLECTORS

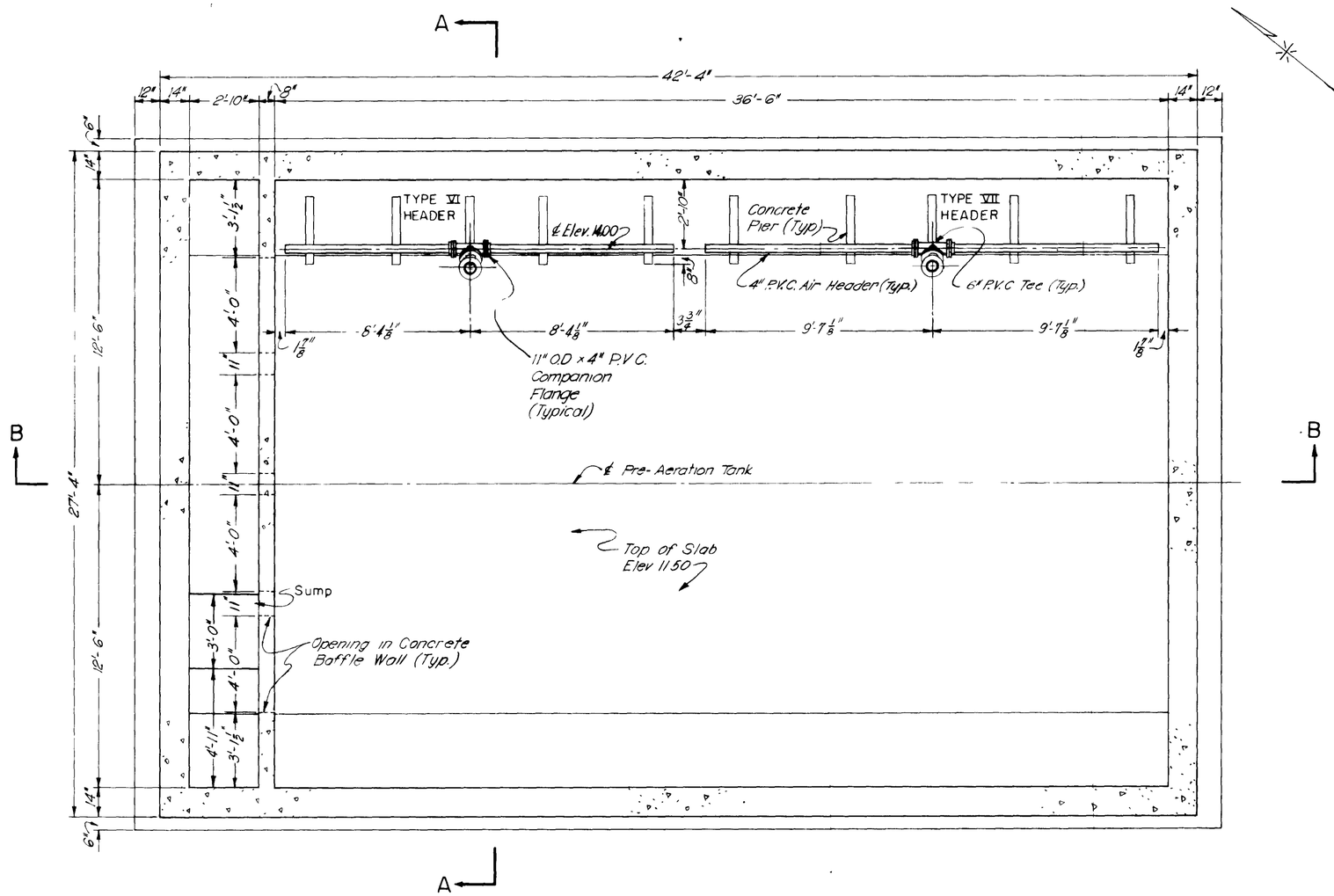
CONCRETE REINFORCING DETAILS

SECTIONS F-F THROUGH N-N, INCLUSIVE

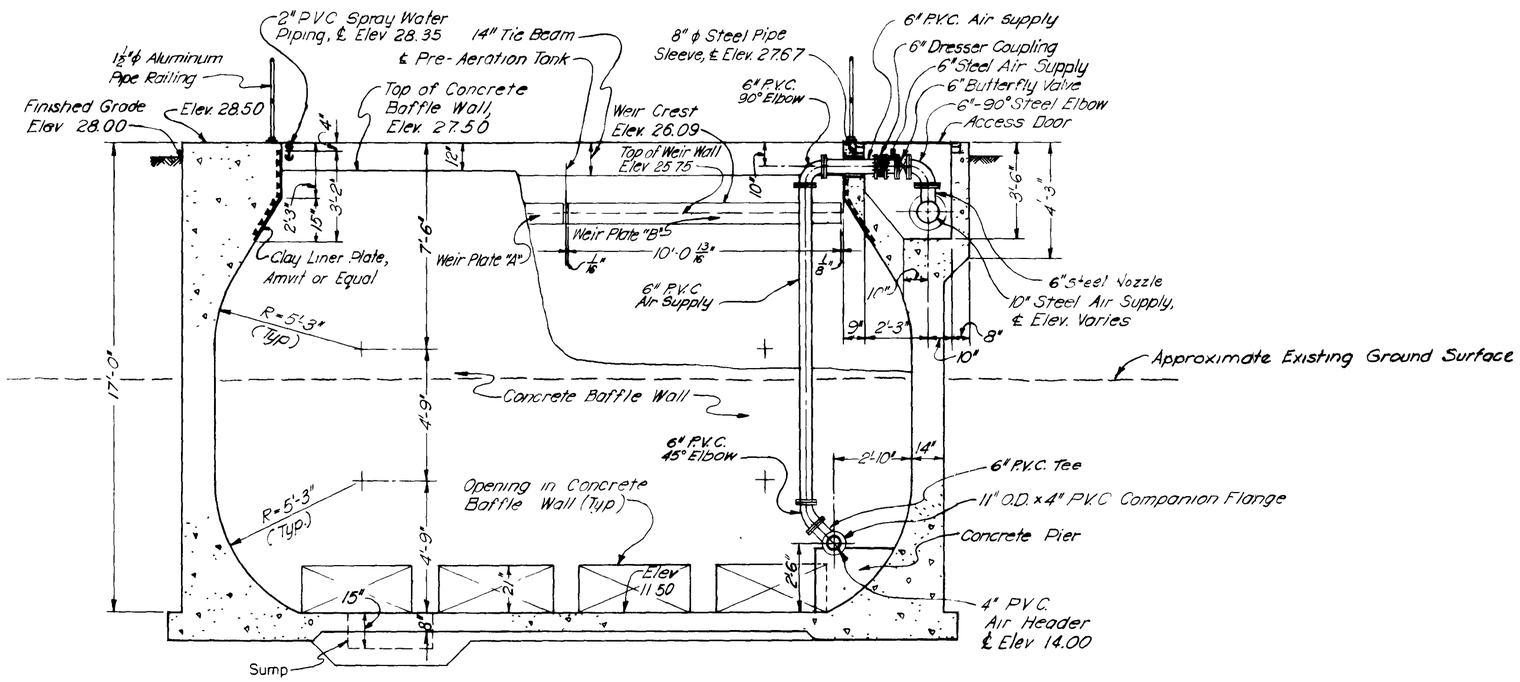
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

Drawn by: R.B.	Traced by: R.B.	Checked by: M.E. G.V.A.	Examined by: DP	Approved by:
Revisions: 4/5/67	⚠ 4/5/67 RGM			



SECTIONAL PLAN AT ELEV. 18.00



SECTION A-A

Notes:

For Plans showing location of Pre-Aeration Tank, see Dwgs. Nos. 438.22(a-1)-1 and 6
For Plan Above Elev. 28.50 and Section B-B, see Dwg. No. 438.22(a-1)-16
For Concrete Reinforcing Details, see Dwgs. Nos. 438.22(a-1)-18 and 19
For Access Door Details, see Dwg. No. 438.22(a-1)-67
For Aluminum Pipe Railing Details, see Dwg. No. 438.22(a-1)-68
For Detail of Air Header and Concrete Pier, see Dwg No 438.22(a-1)-28
For Detail of Weir Plate, see Dwg No. 438.22(a-1)-40

AS-BUILT DRAWING
Date January, 1968

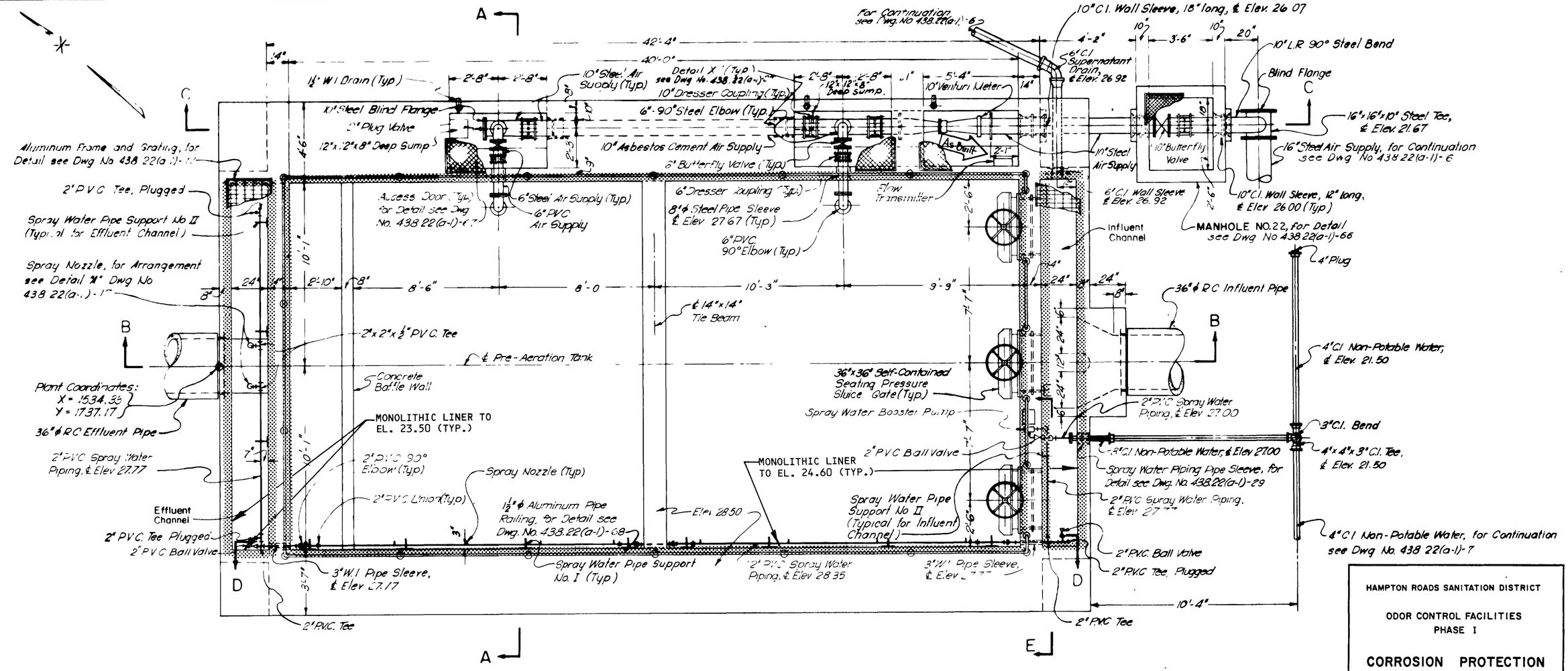
DRAWING NO. 438.22(a-1)-15

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
PRE-AERATION TANK
EQUIPMENT AND PIPING
SECTIONAL PLAN AT ELEV. 18.00 AND SECTION A-A

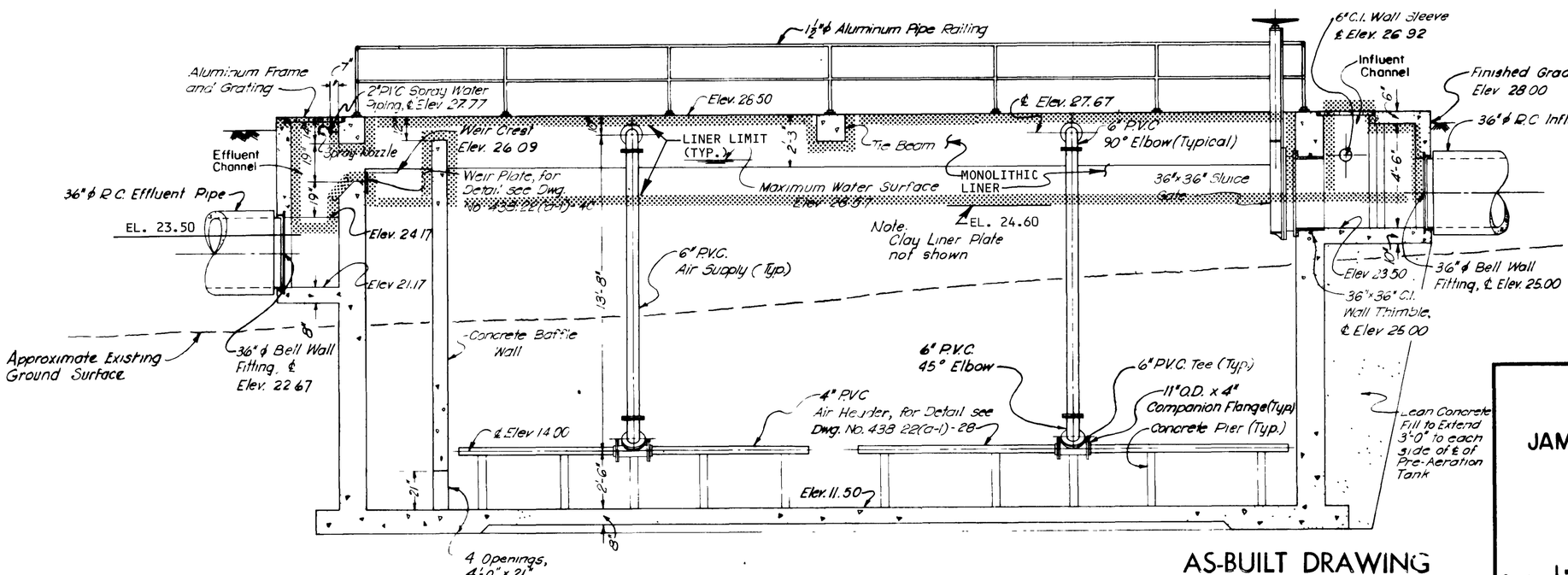
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4"=1'-0" July, 1964

Drawn by: O.M.	Traced by: O.M.	Checked by: JO G.V.A.	Examined by: DA	Approved by:
Revisions: 4/5/67				



PLAN ABOVE ELEV. 28.50



SECTION B-B

AS-BUILT DRAWING

DATE January, 1968

Notes:

For Sectional Plan at Elev. 18.00 and Section A-A, see Dwg No. 438 22(a-1)-15
For Sections C-C, D-D and E-E, see Dwg. No. 438.22(a-1)-17
For Outside Piping Plans see Dwgs. Nos. 438.22(a-1)- and 7
For Concrete Reinforcing Details, see Dwgs. Nos. 438.22(a-1)- 18 and 19
For Details of Spray Water Pipe Supports, see Dwg No 438 22(a-1)-17

HAMPTON ROADS SANITATION DISTRICT

ODOR CONTROL FACILITIES
PHASE I

CORROSION PROTECTION

MALCOLM PIRNIE

MAY 1982 SHEET NO. 4

DRAWING NO. 438.22(a-1)-16

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
PRE-AERATION TANK
EQUIPMENT AND PIPING
PLAN ABOVE ELEV. 28.50 AND SECTION B-B

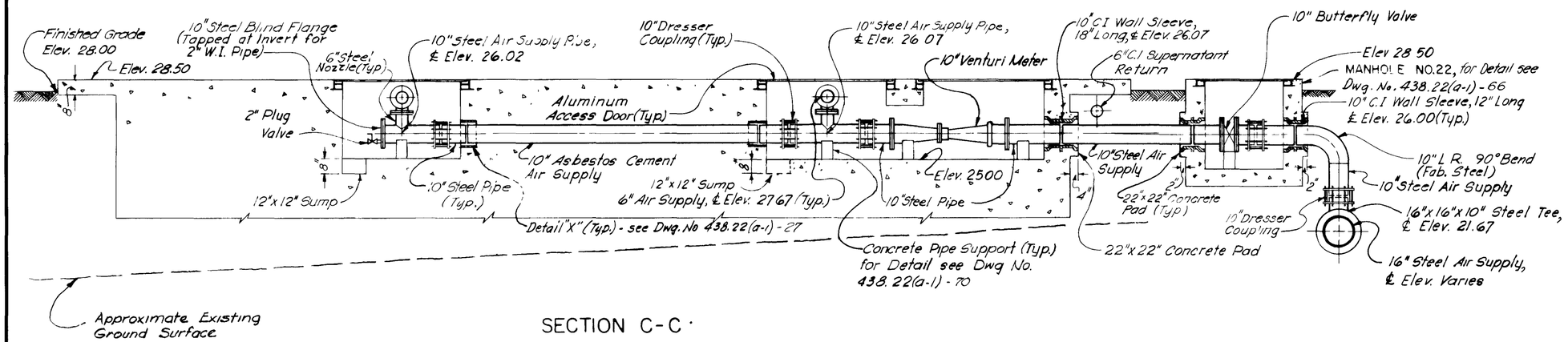
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: ¼"=1'-0" , 1964

Drawn by: O.M.	Traced by: O.M.	Checked by: GVA	Examined by: DP	Approved by:
Revisions:	As Built '68 RGM			

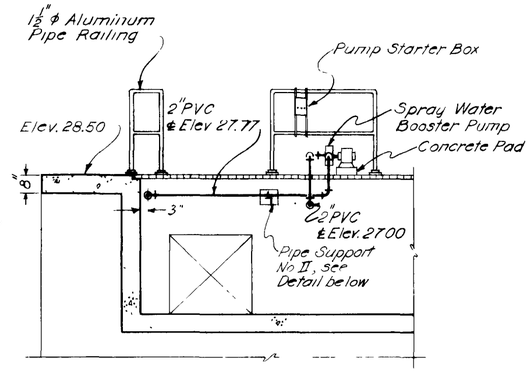
REVISED - March 5, 1964
" APRIL 21, 1964

PA2



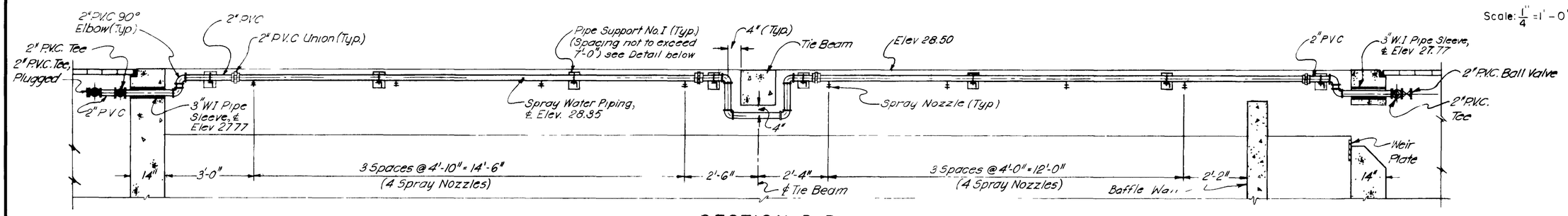
SECTION C-C

Scale: $\frac{1}{4}$" = 1'-0"



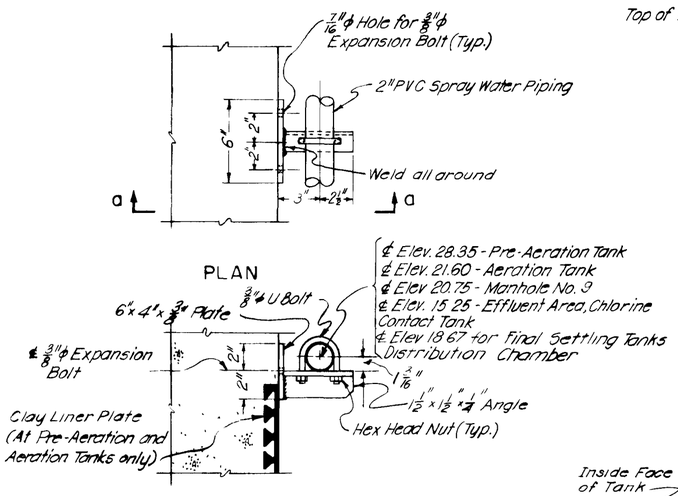
SECTION E-E

Scale: $\frac{1}{4}$" = 1'-0"



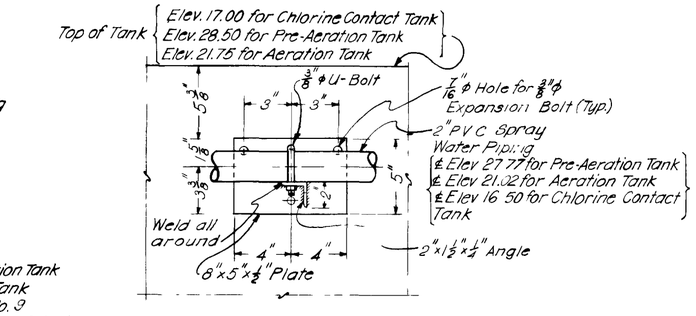
SECTION D-D

Scale $\frac{3}{8}$" = 1'-0"

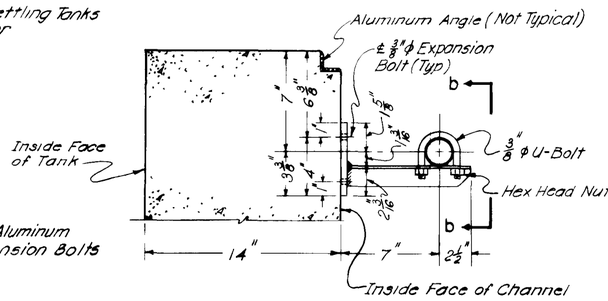


SECTION a-a

PIPE SUPPORT NO. I



ELEVATION b-b



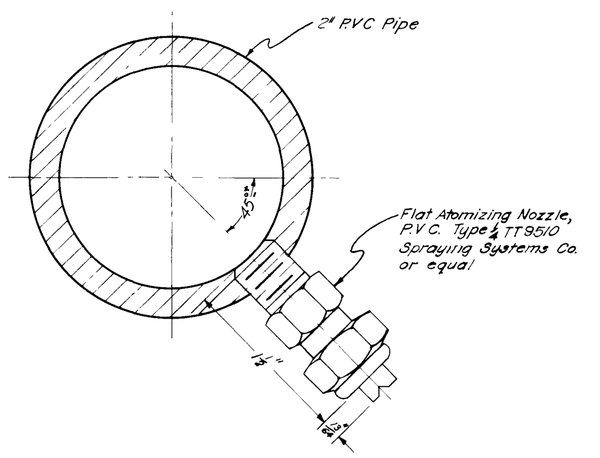
SECTION

PIPE SUPPORT NO. II

Note:
All Material Aluminum except Expansion Bolts

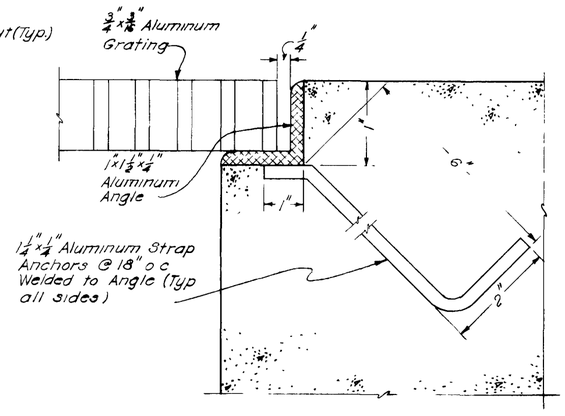
SPRAY WATER PIPE SUPPORTS

Scale: 1½ = 1'-0"



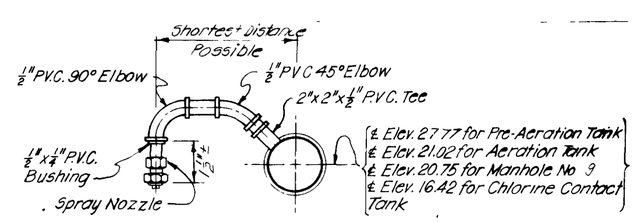
TYPICAL SPRAY NOZZLE

Scale: Full Size



ALUMINUM FRAME AND GRATING

Scale: None



DETAIL "A"

Scale: 3" = 1'-0"

Notes:
For Outside Piping Plans, see Dwgs. Nos. 438.22(a-1)-6 and 7
For Plan Above Elev. 28.50 showing locations of Sections C-C, D-D and E-E, see Dwg. No. 438.22(a-1)-16
For Access Door Details, see Dwg. No. 438.22(a-1)-67

AS-BUILT DRAWING
DATE January, 1968

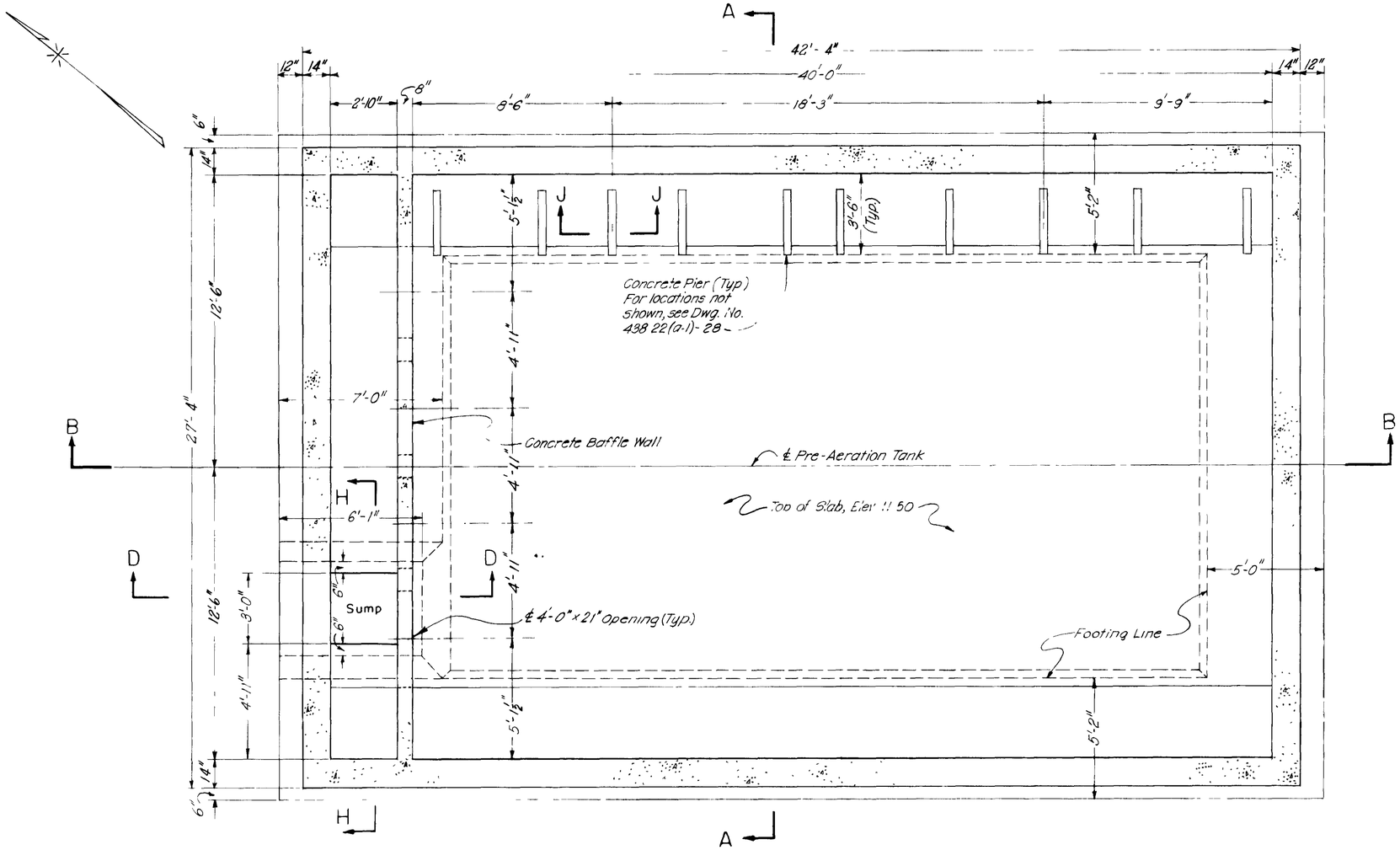
DRAWING NO. 438.22(a-1)-17

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
PRE-AERATION TANK
EQUIPMENT AND PIPING
SECTIONS C-C, D-D, E-E AND MISCELLANEOUS DETAILS

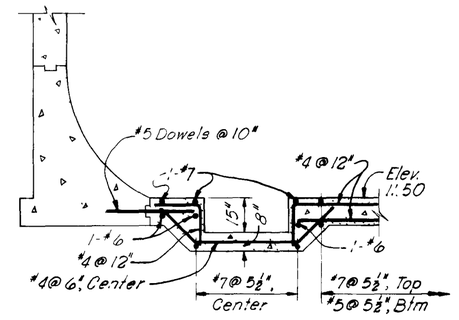
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

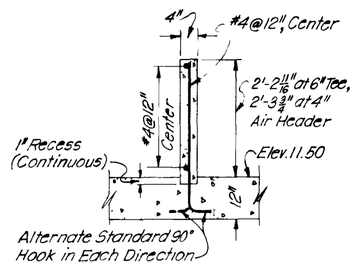
Drawn by: J.P.	Traced by: L.M.	Checked by: JG GVA	Examined by: DP	Approved by:
Revisions:				



SECTIONAL PLAN AT ELEV. 18.00

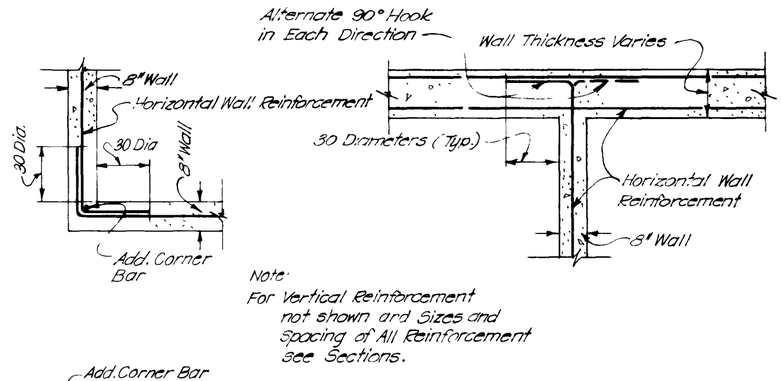


SECTION H-H

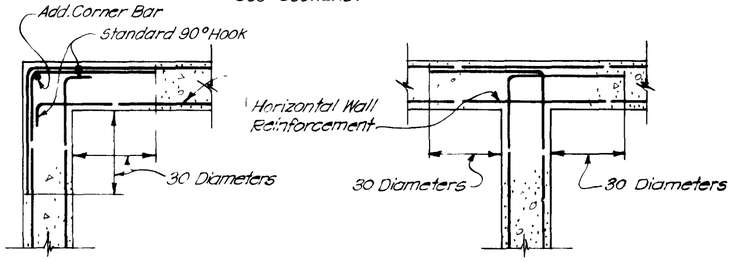


SECTION J-J

Scale: $\frac{3}{8}$"=1'-0"

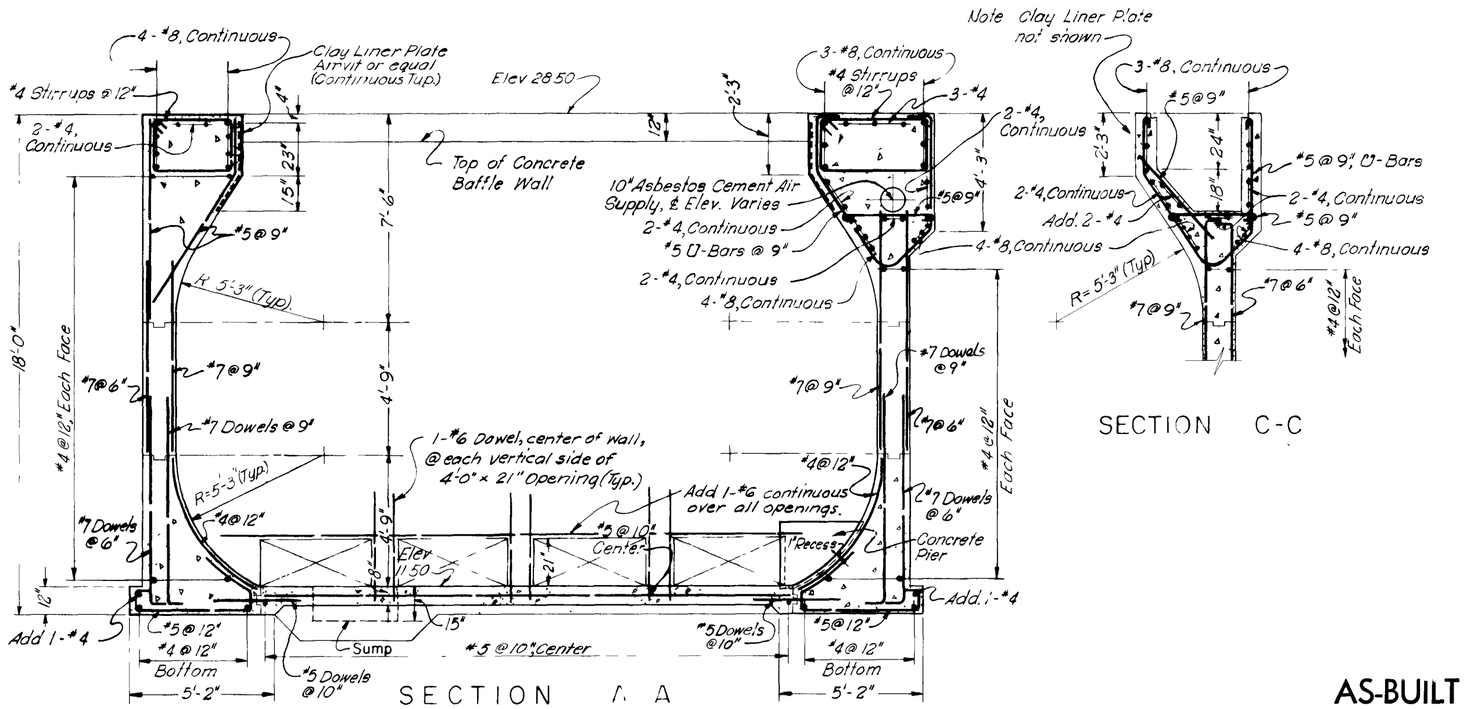


Note:
For Vertical Reinforcement not shown and Sizes and Spacing of All Reinforcement see Sections.



REINFORCEMENT AT WALL INTERSECTIONS

Scale: None



SECTION A-A

Note Clay Liner Plate
not shown

SECTION C-C

Notes
For Plans and Sections showing location of Equipment and Piping, see Dwg. No 438.22(a-1)-15, 16 and 17
For Sections B-B and D-D and Plan Above Elev 28.50 showing Location of Section C-C, see Dwg No 438.22(a-1)-19

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-18

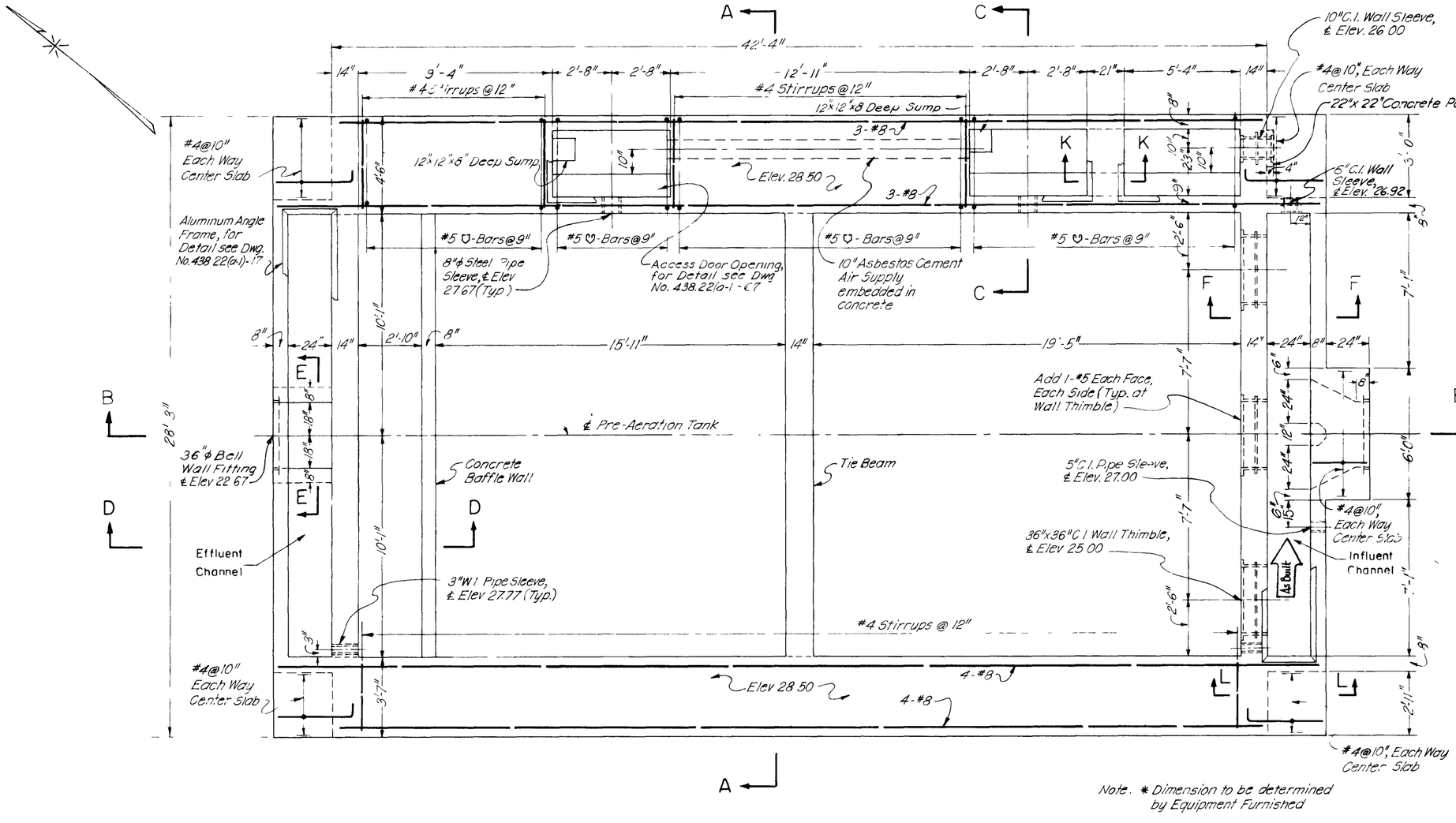
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
PRE-AERATION TANK
CONCRETE REINFORCING DETAILS
SECTIONAL PLAN AT ELEV. 18.00, SECTIONS A-A, C-C, H-H AND J-J

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: $\frac{1}{4}$"=1'-0" & As Shown

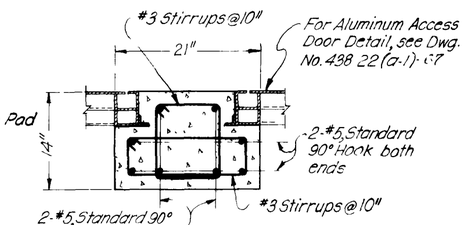
July, 1964

Drawn by: F.T.D.	Traced by: F.T.D.	Checked by: V.N. G.V.A.	Examined by: D.P.	Approved by:
Revisions:				



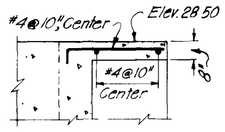
PLAN AT ELEV. 28.50

Note. * Dimension to be determined by Equipment Furnished

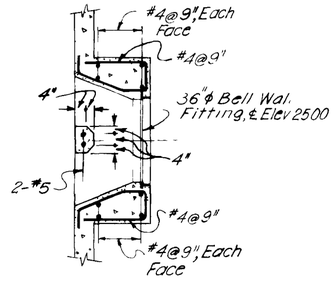


SECTION K-K

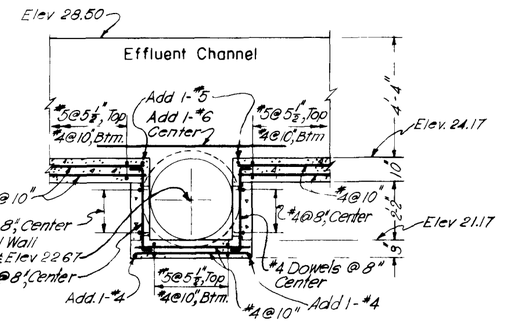
Scale $\frac{3}{4}$" = 1' 0"



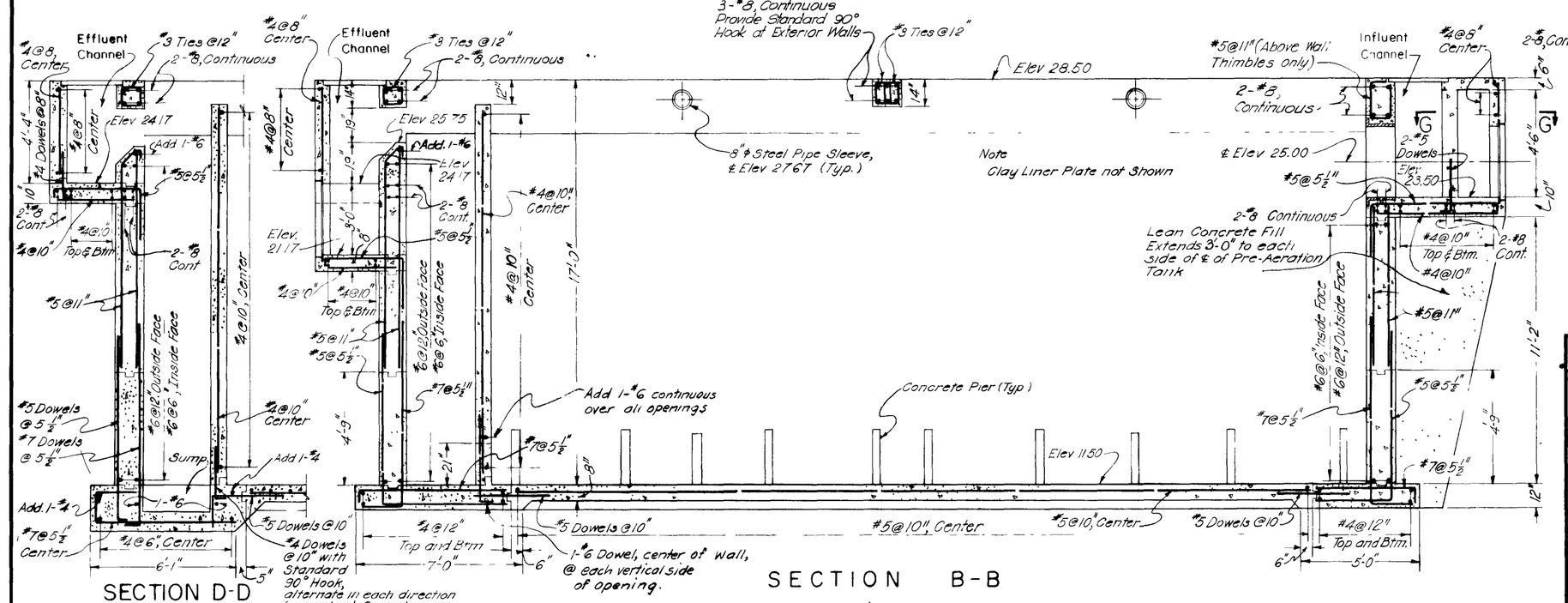
SECTION L-L



SECTION G-G



SECTION E-E



SECTION D-D

SECTION B-B

SECTION F-F

Notes.

For Sectional Plan at Elev. 18.00, Sections A-A and C-C, see Dwg No. 438.22(a-1)-17

For Plans and Sections showing location of Equipment and Piping, see Dwgs Nos 438.22(a-1)-15 16 and 17

For Weir Plate Detail, see Dwg No 438.22(a-1)-40

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-19

HAMPTON ROADS SANITATION DISTRICT

NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

PRE-AERATION TANK

CONCRETE REINFORCING DETAILS

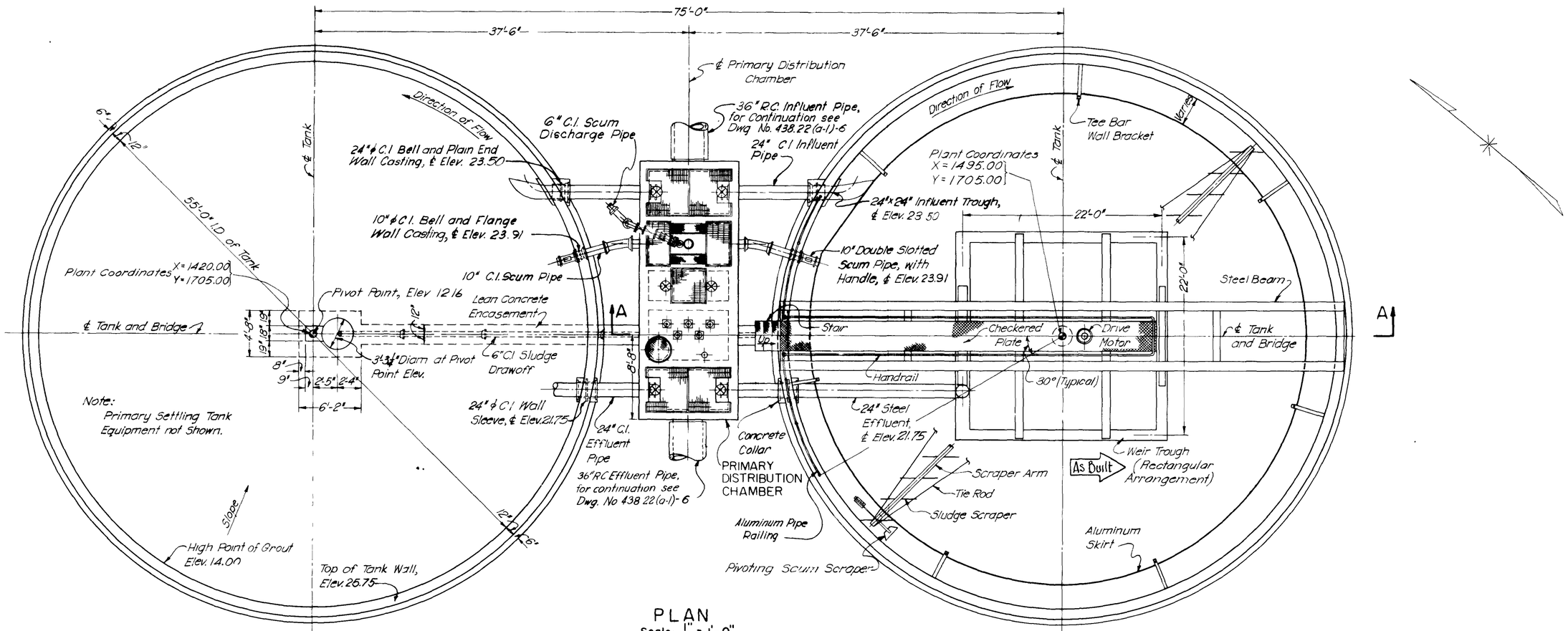
PLAN AT ELEV. 28.50, SECTIONS B-B, D-D, E-E, F-F, G-G, K-K AND L-L

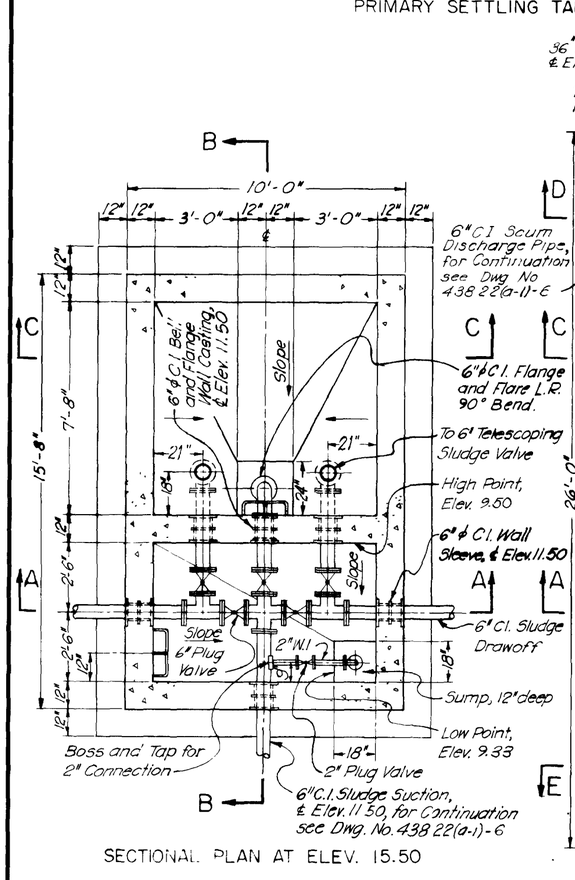
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

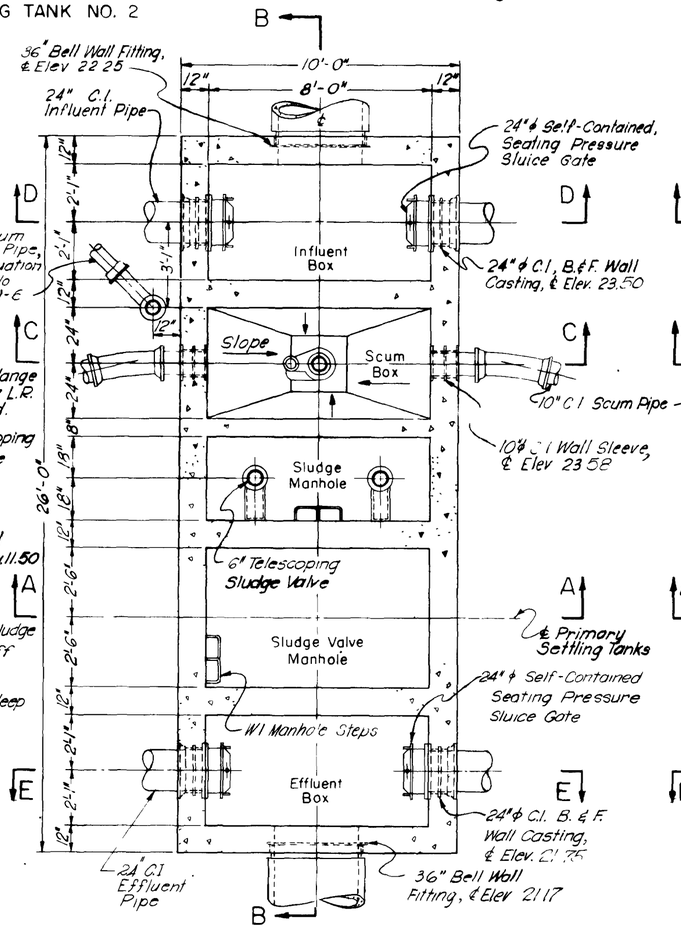
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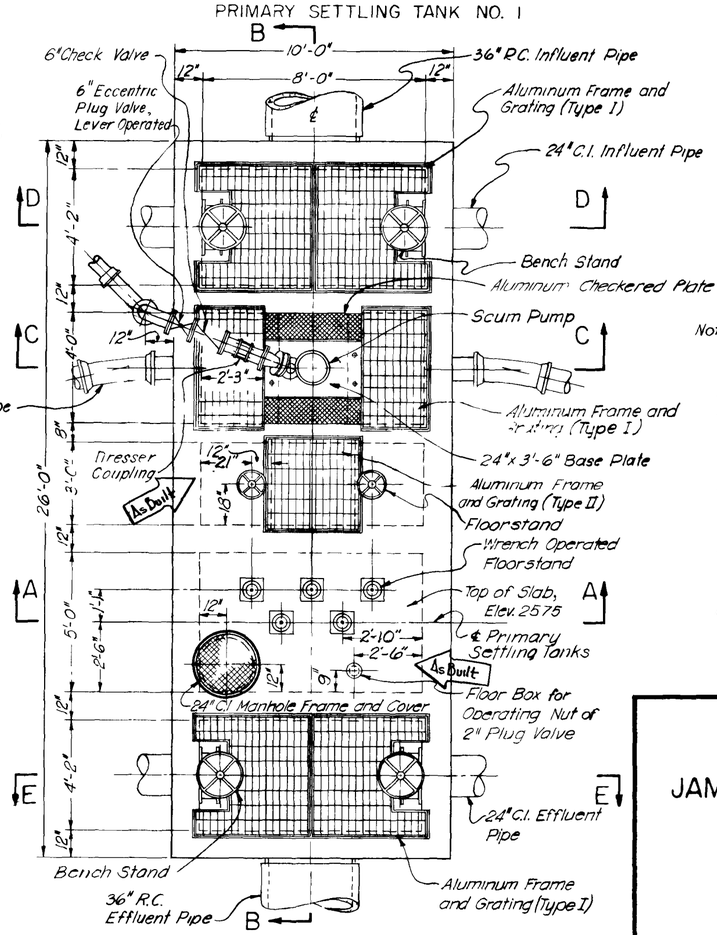
July 1964

Drawn by: S.V.	Traced by: R.B.	Checked by: V.N. G.V.A.	Examined by: DM	Approved by:
Revisions:	As Built 1/68 RGM			









Notes.

Encasement for 6" C.I. Sludge Drawoff not shown.

Notes.

For Plans showing location of Primary Settling Tanks, see Dwgs Nos 438.22(a-1)-1 and 5
For Outside Piping Plans see Dwgs. Nos. 438.22(a-1)-6 and 7
For Sections A-A, B-B, C-C, D-D and E-E, see Dwg No 438.22(a-1)-21
For Concrete Reinforcing Details, see Dwgs Nos 438.22(a-1)-22, 23 and 24
For Details of Cast Iron Wall Sleeve and Wall Casting through Settling Tank Wall and Detail of Aluminum Frame and Grating, see Dwg. No 438.22(a-1)-24
For Manhole Steps, Aluminum Pipe Railing, C.I. Wall Sleeve and C.I. Wall Casting Details, see Dwg No 438.22(a-1)-68
For Manhole Cover Detail, see Dwg No. 438.22(a-1)-66

AS-BUILT DRAWING
January, 1968
DATE

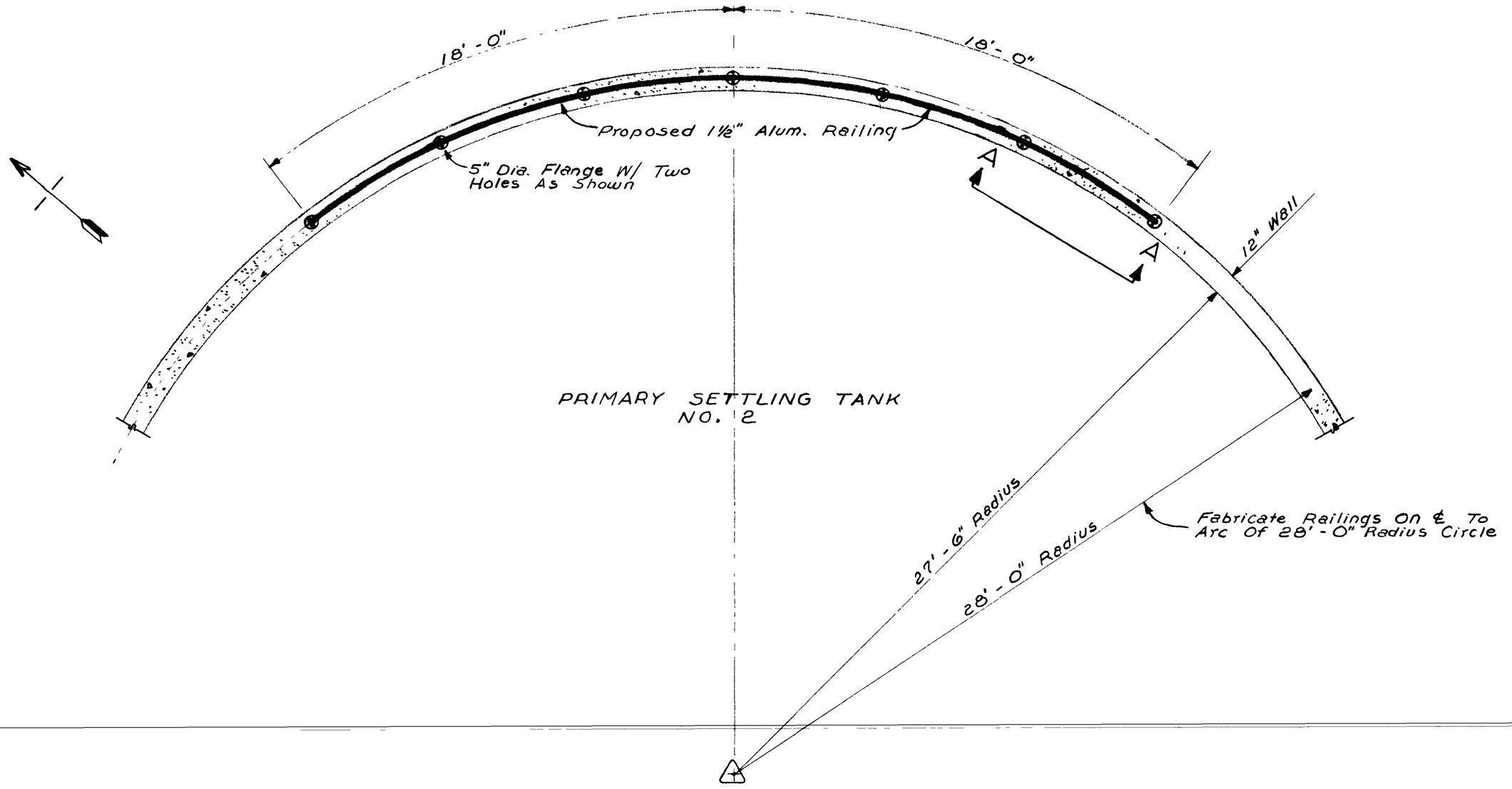
DRAWING NO. 438.22(a-1)-20

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
PRIMARY SETTLING TANKS
EQUIPMENT AND PIPING
PLANS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

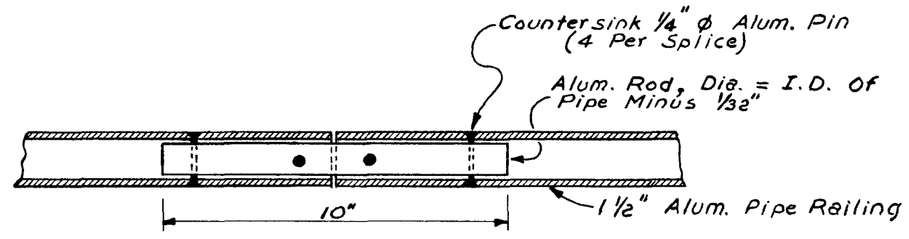
Scale: As Shown — July, 1964

Drawn by: O.M.	Traced by: O.M.	Checked by: J.O. GVA	Examined by: DP	Approved by:
Revisions: 4/5/67	As Built 1/68 RGM			



PLAN

Scale : 1/4" = 1'-0"

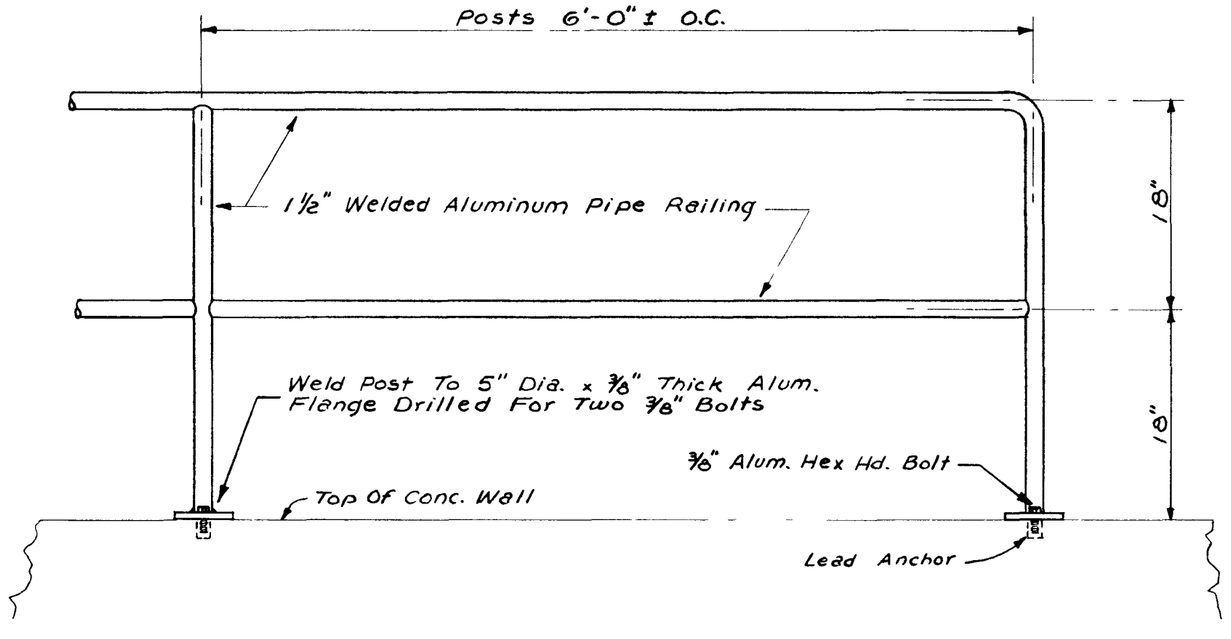


DETAIL FIELD SPLICE

Scale : 3" = 1'-0"

SPECIFICATIONS

1. Pipe Railings Shall Be Constructed Of One And One Half (1½") Inch Nominal Diameter Standard Weight Schedule 40 Anodized Aluminum Pipe In Accordance With The Details Shown On The Drawing. All Joints Shall Be Mitered, Welded, And Ground Smooth So As To Present A Smooth, Uniform And Pleasing Appearance. Bends Shall Be Neatly Made Without Deforming The Pipe.
2. The Railings Shall Be Fabricated In ① ~~Four~~ Two Sections Of Approximately ① ~~Nine~~ Eighteen Feet Each (This May Be Adjusted Slightly To Avoid Conflict With Posts).
3. Material To Be Furnished Consists Of Thirty-Six (36') L.F. Of Aluminum Pipe Railings Complete In ~~Four~~ Two① Sections, ① ~~Six~~ Twelve (~~6~~) Aluminum Splice Rods, And ~~Twenty-Four~~ ① Eight (~~24~~ 8) Aluminum Splice Pins.
4. Flange Bolts And Lead Anchors To Be Furnished By Owner.



SECTION A-A

Scale : 1" = 1'-0"

Addendum To Drawing No. 438.22(a-1)-20, "James River Sewage Treatment Plant".

438.22 (a-1) 20A

AS INSTALLED ~ MAY 1969

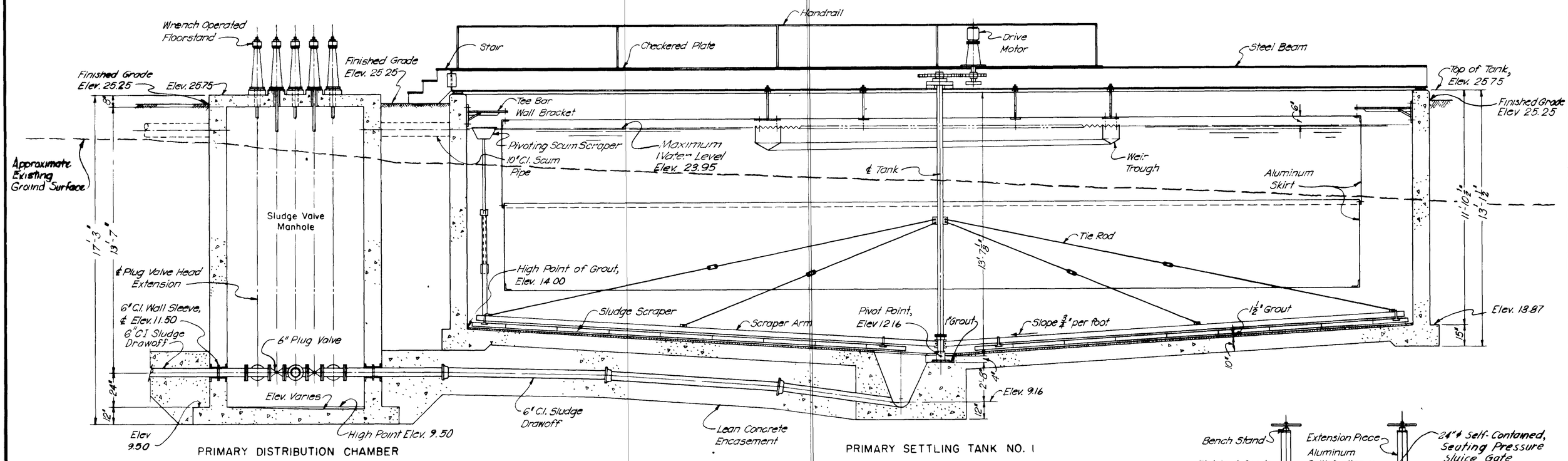
HAMPTON ROADS SANITATION DISTRICT

• JAMES RIVER PLANT •

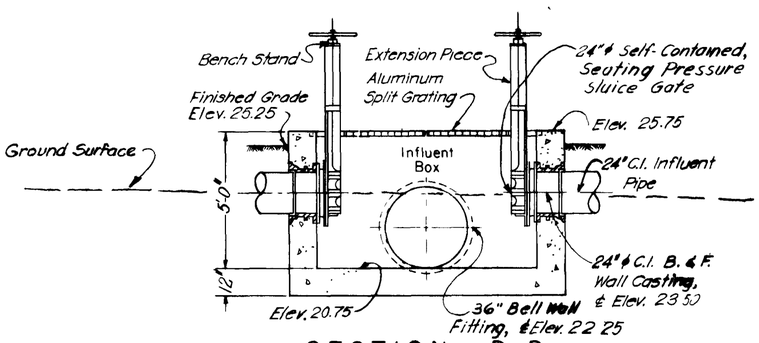
PROPOSED SAFETY RAILING FOR NO. 2 PRIMARY SETTLING TANK

① Rev. AS Built 3-16-70

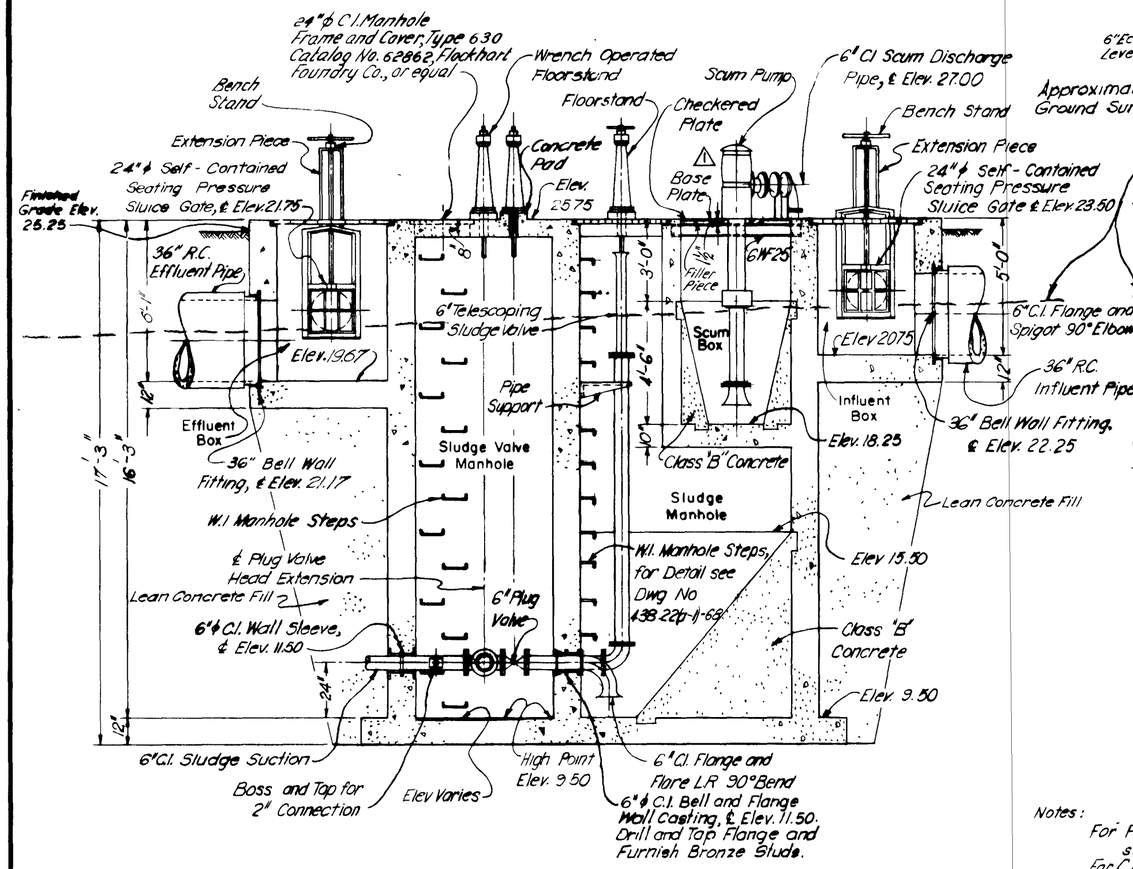
Date: 9-16-68	Drawn: EHS	Approved:	Scale: As Shown



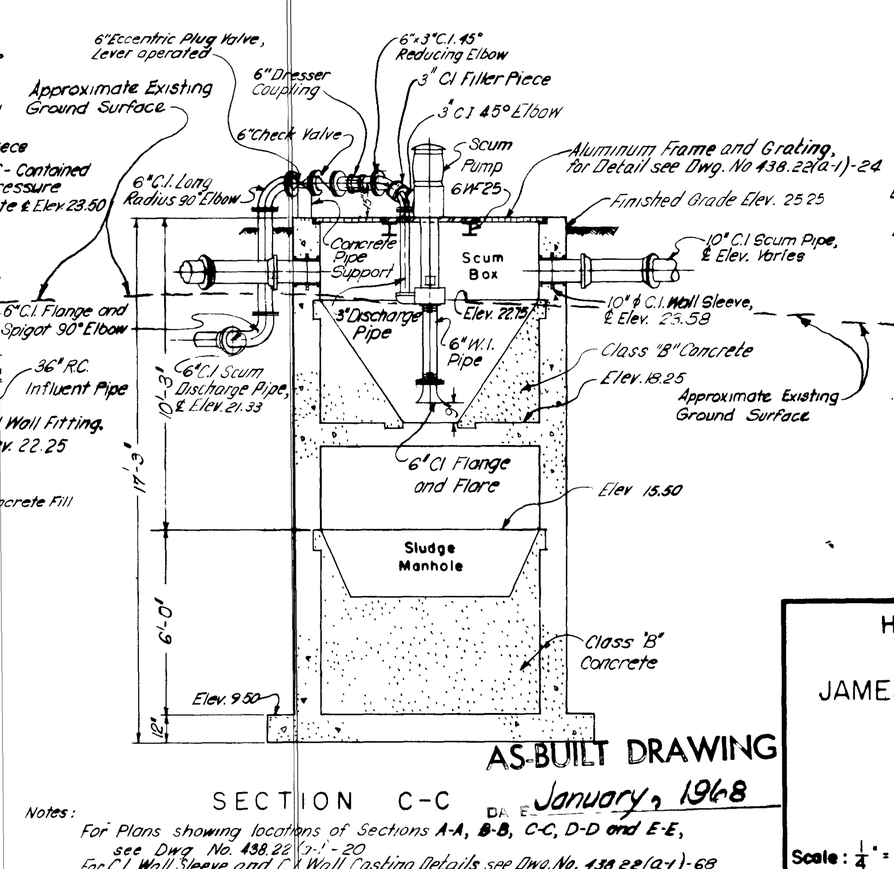
SECTION A-A



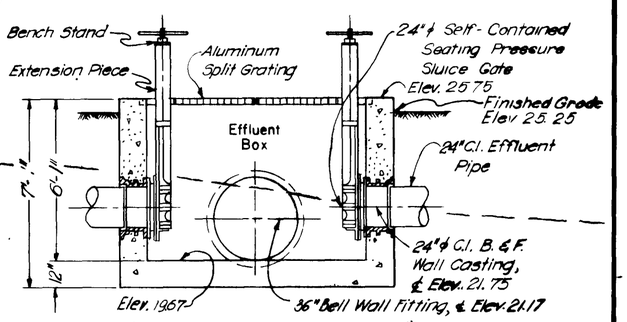
SECTION D-D



SECTION B-B



SECTION C-C



SECTION E-E

AS-BUILT DRAWING

DATE January, 1968

Notes:
For Plans showing locations of Sections A-A, B-B, C-C, D-D and E-E, see Dwg. No. 438.22 (a-1)-20
For C.I. Wall Sleeve and C.I. Wall Casting Details see Dwg. No. 438.22(a-1)-68
For Detail of Concrete Pipe Support, see Dwg. No 438.22(a-1)-70

DRAWING NO. 438.22(a-1)-21

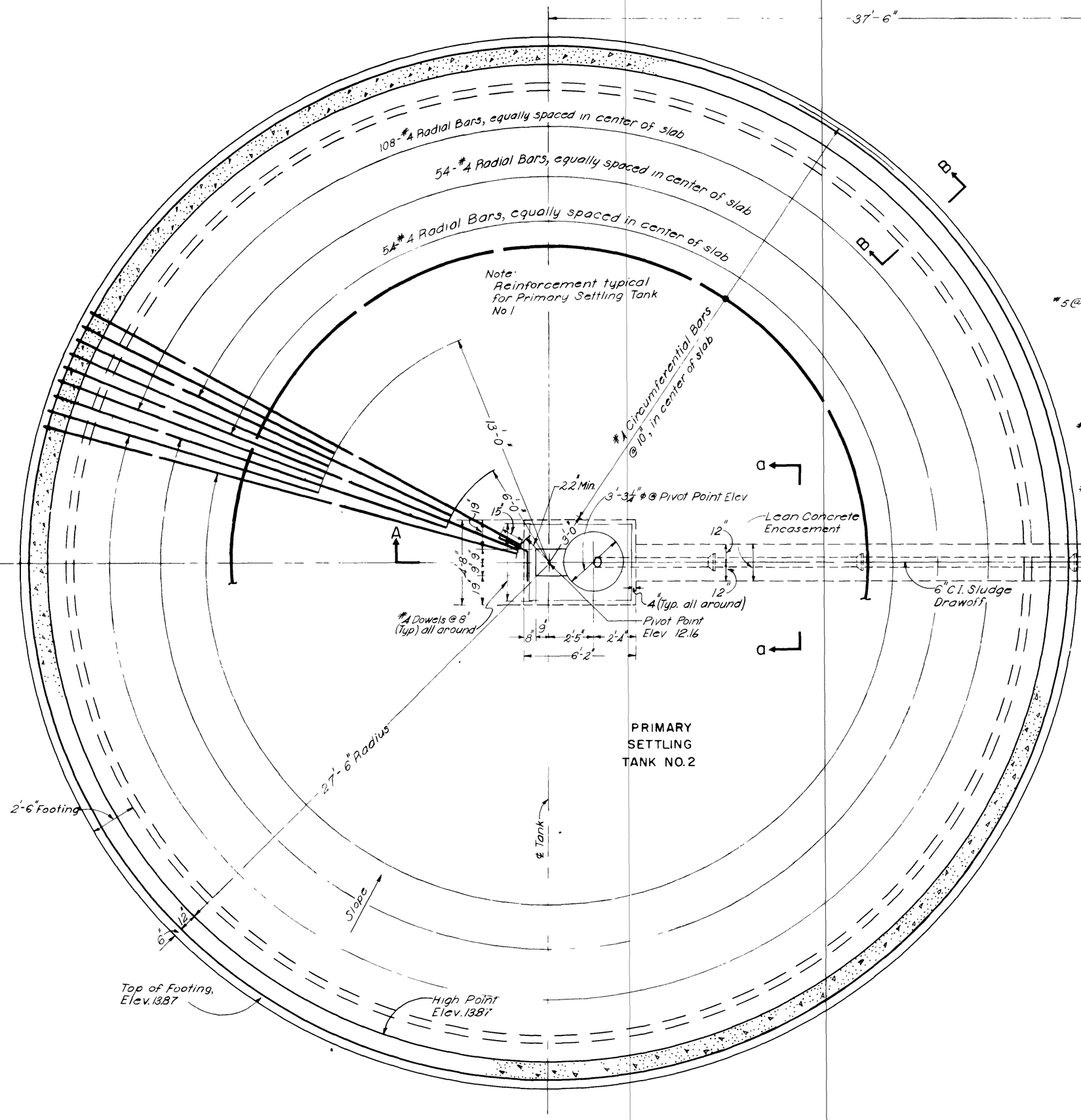
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
PRIMARY SETTLING TANKS
EQUIPMENT AND PIPING
SECTIONS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4" = 1'-0"

July, 1964

Drawn by: O.M.	Traced by: O.M.	Checked by: J.Q. G.V.A.	Examined by: DP	Approved by:
Revisions:	1 4 19 67 RGM			



Notes:

For Plans and Sections showing Equipment and Piping, see Dwgs Nos 438.22(a-1)-20 and 21
For Primary Distribution Chamber Plans, and Sections A-A, B-B and a-a, see Dwg. No. 438.22(a-1)-23
For Sections C-C and D-D, see Dwg No 438.22(a-1)-24
For C.I Wall Sleeve Detail, see Dwg No 438.22(a-1)-68
For Detail of C.I Wall Sleeve and Wall Casting through Settling Tank Wall see Dwg. No 438.22(a-1)-24

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-22

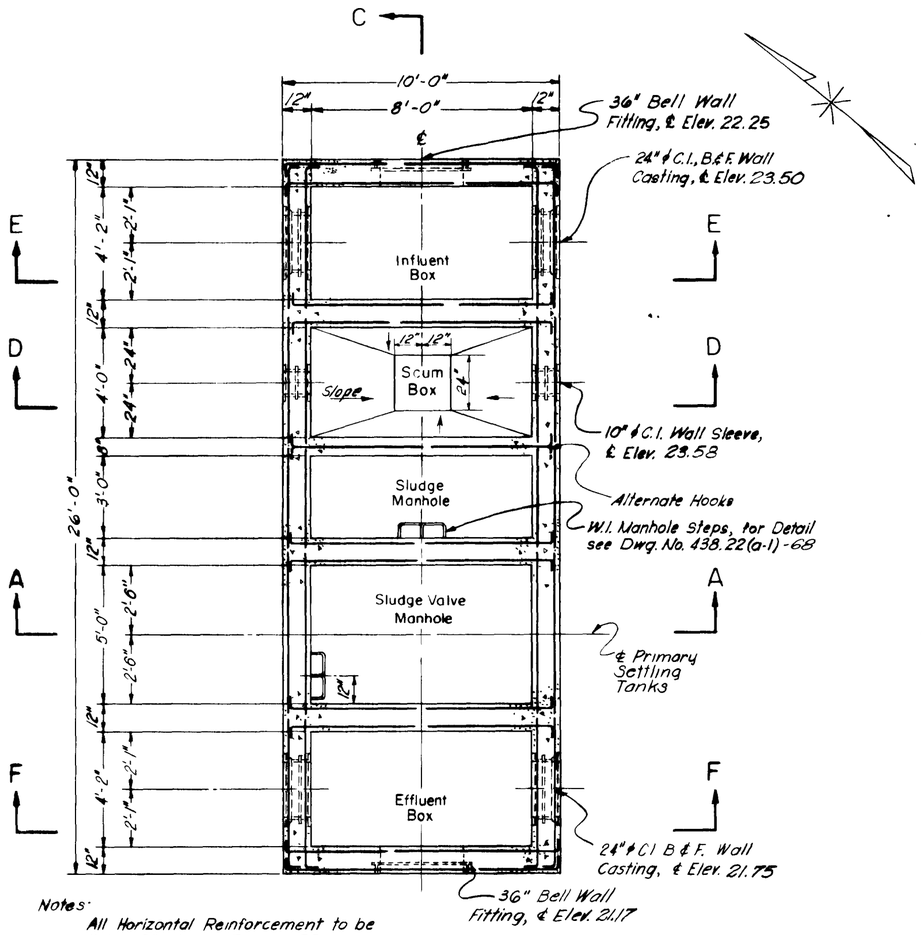
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
PRIMARY SETTLING TANKS
CONCRETE REINFORCING DETAILS
SECTIONAL PLAN AT ELEV. 15.50

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4" = 1'-0"

July, 1964

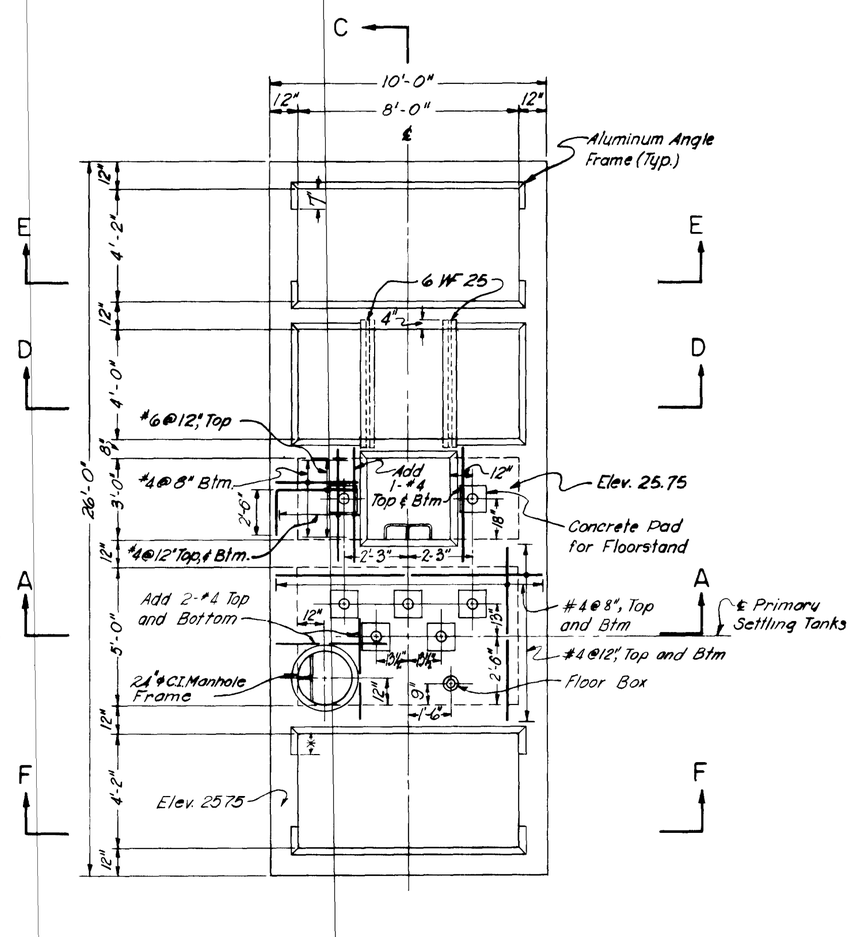
Drawn by: O.R.	Traced by: O.R.	Checked by: ME GVA	Examined by: JP	Approved by:
Revisions:				



Notes:
All Horizontal Reinforcement to be #4 @ 8" above Elev. 18.83
For Vertical Reinforcement, see Sections.

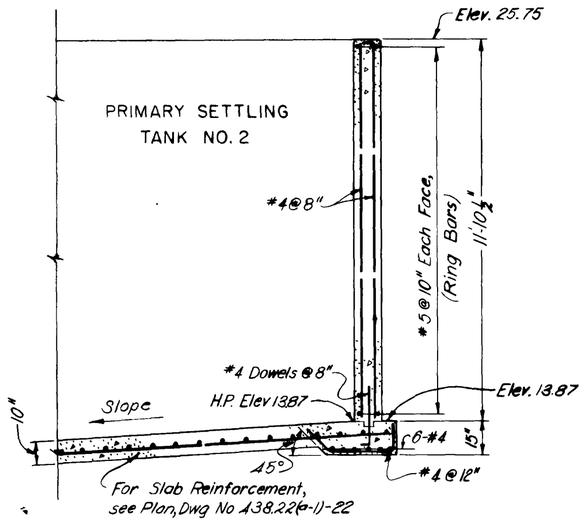
C

SECTIONAL PLAN AT ELEV. 25.08



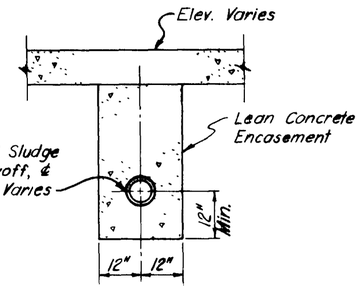
C

PLAN ABOVE ELEV. 25.75



SECTION B-B

Scale: $\frac{1}{4}$"= 1'-0"

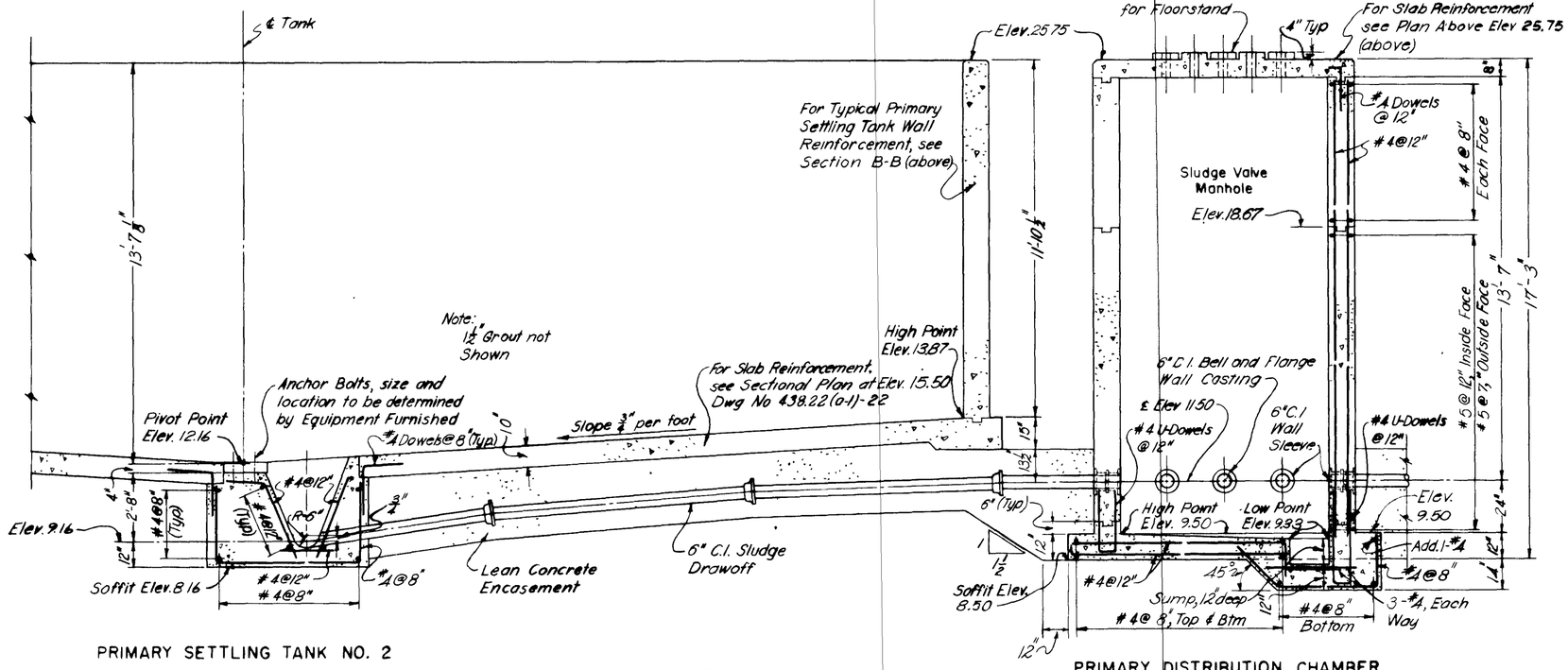


SECTION a-a

Scale: $\frac{3}{8}$"=1'-0"

PRIMARY DISTRIBUTION CHAMBER

Scale: $\frac{1}{4}$"= 1'-0"



PRIMARY SETTLING TANK NO. 2

SECTION A-A

Scale: $\frac{1}{4}$"=1'-0"

PRIMARY DISTRIBUTION CHAMBER

Notes:
For Sectional Plan At Elev. 15.50, showing location of Distribution Chamber and Sections A-A, B-B and a-a, see Dwg No. 438.22(a-1)-22
For Section C-C, D-D, E-E and F-F, see Dwg No. 438.22(a-1)-24
For Aluminum Frame and Grating Detail, see Dwg. No 438 22(a-1)-24
For Cl. Sleeve and Casting Details, see Dwg No 438.22(a-1)-68

AS-BUILT DRAWING

DATE January, 1968

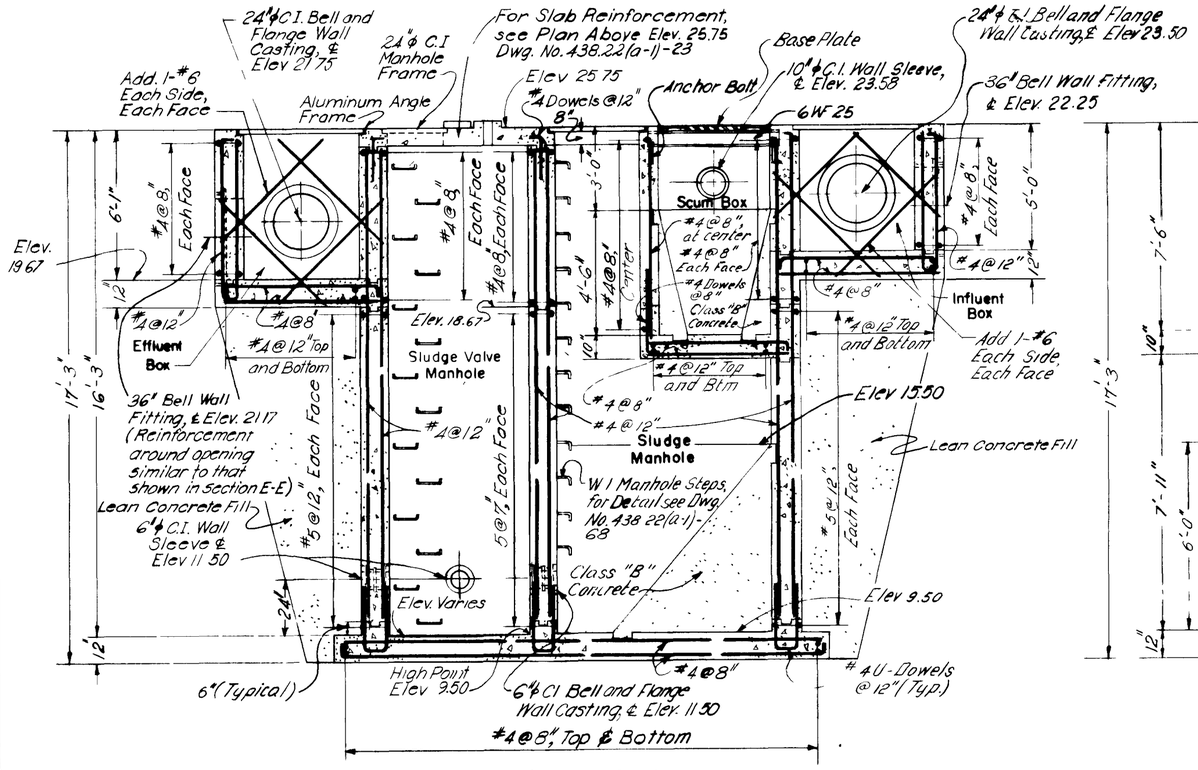
DRAWING NO. 438.22(a-1) - 23

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
PRIMARY SETTLING TANKS
CONCRETE REINFORCING DETAILS
PLANS, SECTIONS A-A AND B-B

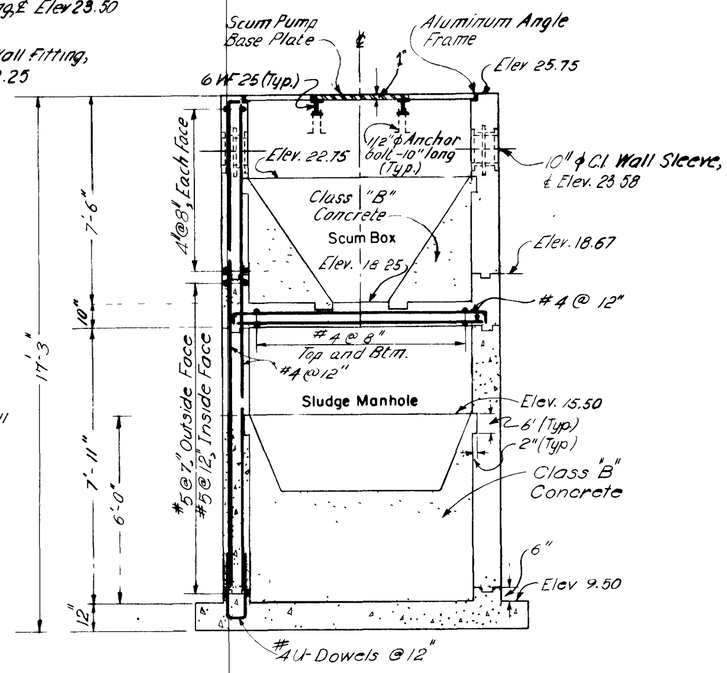
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

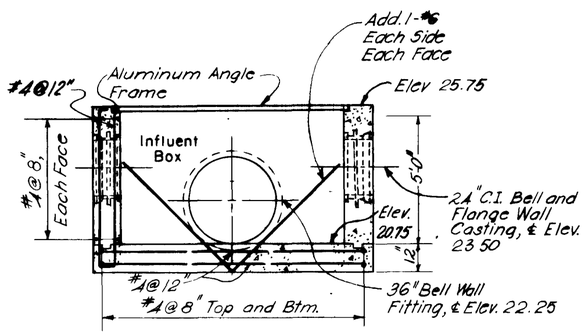
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Revisions:				



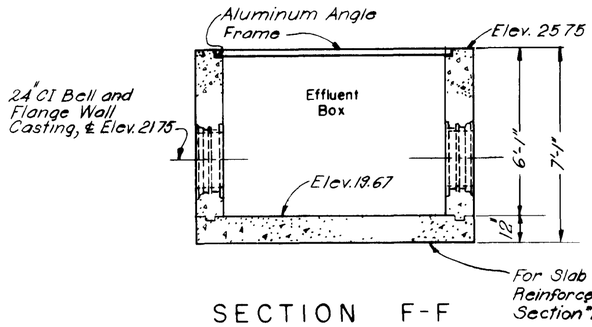
SECTION C-C



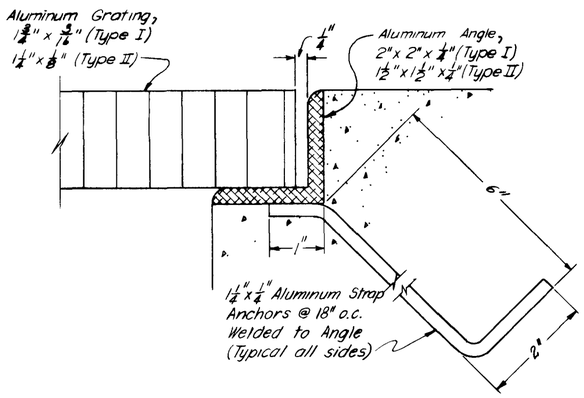
SECTION D-D



SECTION E-E

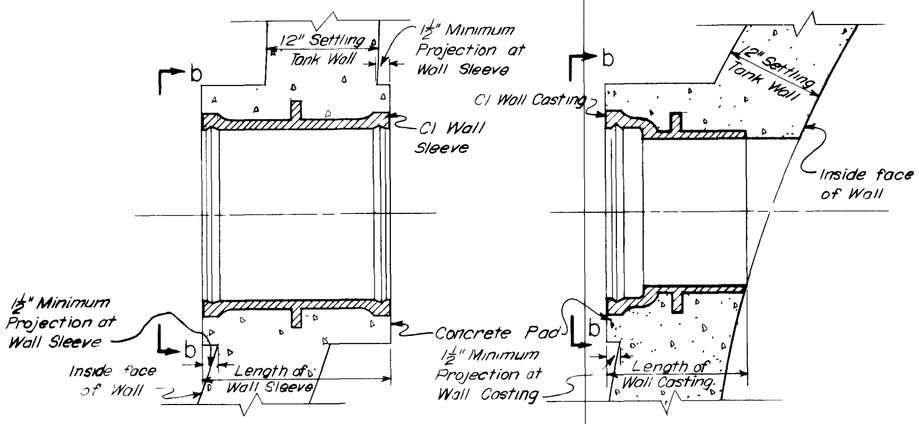


SECTION F-F



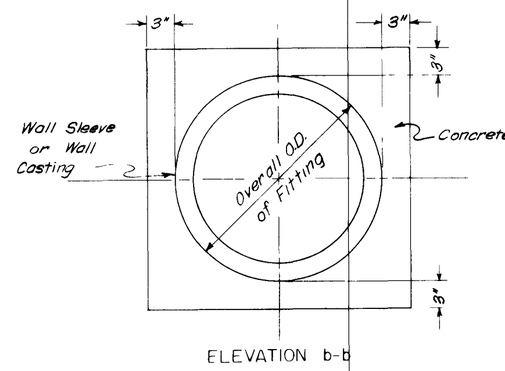
ALUMINUM FRAME AND GRATING

Scale: None



SECTIONAL PLAN CI. WALL SLEEVE

SECTIONAL PLAN CI. WALL CASTING



ELEVATION b-b

DETAIL OF CAST IRON WALL SLEEVE AND WALL CASTING THROUGH SETTLING TANK WALL

Scale: None

Notes:

For Sectional Plan at Elev. 15.50 showing location of Sections C-C and D-D, see Dwg. No. 438.22(a-1)-22

For Sectional Plan at Elev. 25.08 and Plan Above Elev. 25.75 showing location of Sections C-C, D-D, E-E and F-F, see Dwg. No. 438.22(a-1)-23

For CI Sleeve and Casting Details, see Dwg. No. 438.22(a-1)-68.

For Location of Sleeves and Castings Through Walls of Primary Settling Tanks, see Dwg No. 438.22(a-1)-20

For Location of Sleeves and Castings Through Walls of Final Settling Tanks, see Dwg No. 438.22(a-1)-34

AS-BUILT DRAWING

January, 1968

DRAWING NO. 438.22(a-1)-24

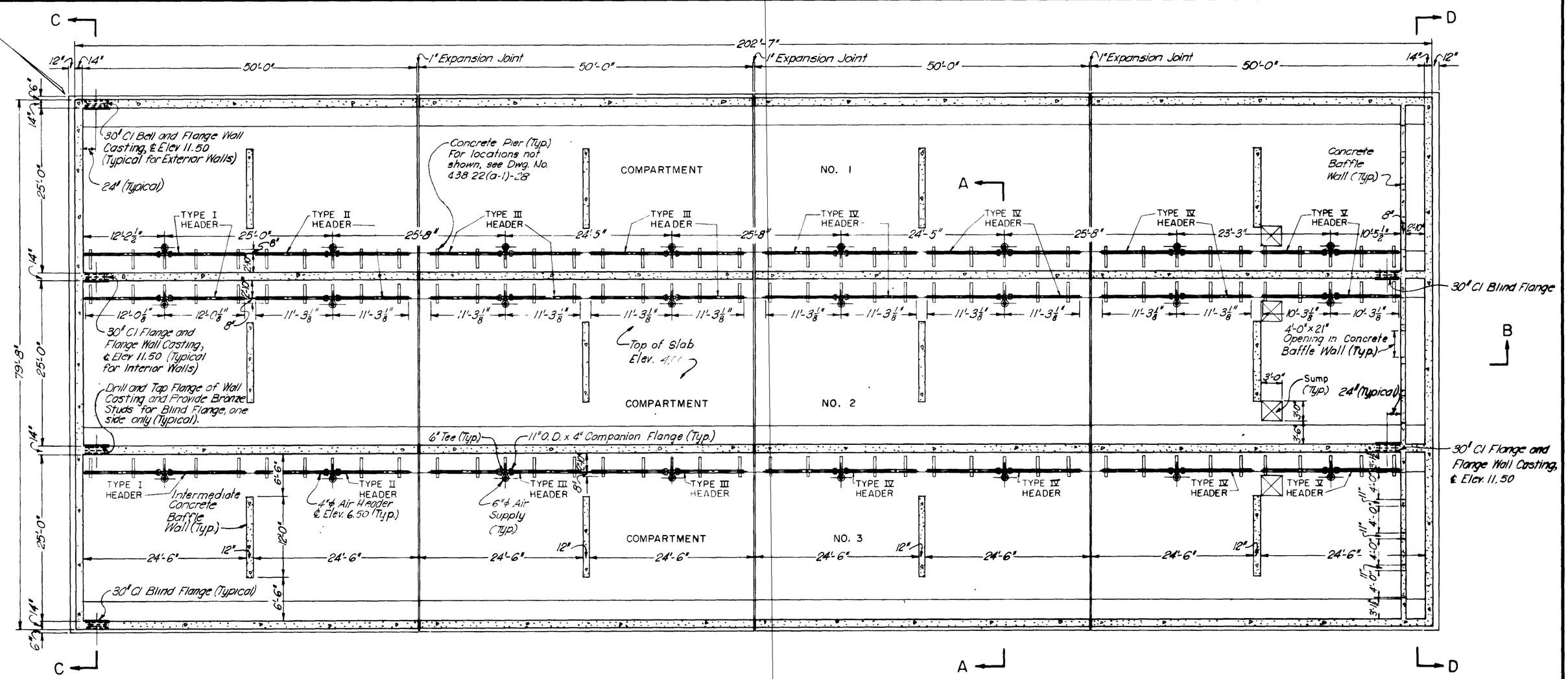
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
PRIMARY SETTLING TANKS
CONCRETE REINFORCING DETAILS
SECTIONS C-C, D-D, E-E, F-F AND MISCELLANEOUS DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4" = 1'-0"

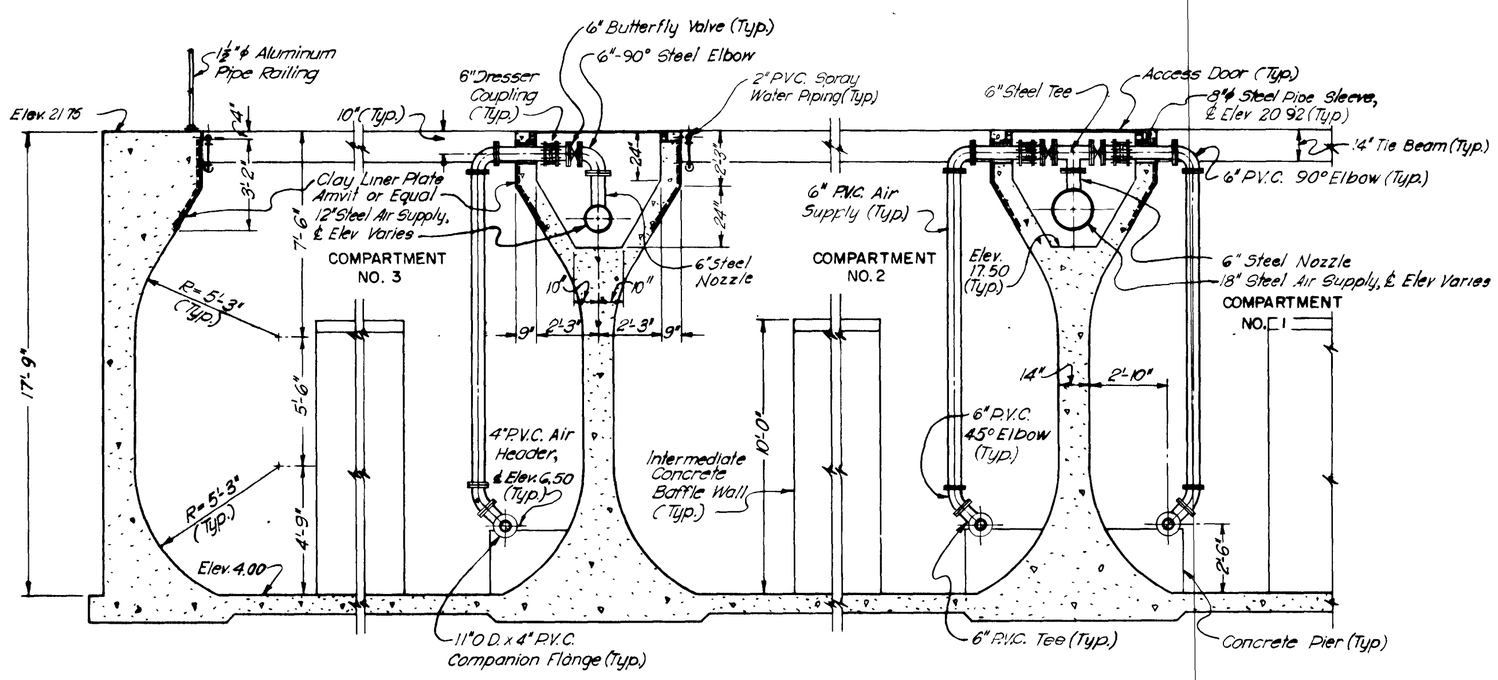
July, 1964

Drawn by: O.R.	Traced by: O.R.	Checked by: M.E. G.V.A.	Examined by:	Approved by:
Revisions:				



SECTIONAL PLAN AT ELEV. 13.00

Scale: $\frac{3}{32}$" = 1'-0"



SECTION A-A

Scale: $\frac{1}{4}$" = 1'-0"

Notes:

For Plans showing location of Aeration Tank see Dwgs. Nos. 438.22(a-1)- 1 and 5
For Plan Above Elev. 22.25, Sections B-B, C-C and D-D, see Dwg. No. 438.22(a-1)-26
For Air Piping Details, see Dwg. No. 438.22(a-1)-27
For Air Header Details, see Dwg. No. 438.22(a-1)-28
For Concrete Reinforcing Details, see Dwgs. Nos. 438.22(a-1)-30, 31, 32 and 33
For Spray Water Piping Details, see Dwg. No. 438.22(a-1)-29

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-25

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
AERATION TANK
EQUIPMENT AND PIPING
SECTIONAL PLAN AT ELEV. 13.00 AND SECTION A-A

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

Drawn by: O.M.	Traced by: O.M.	Checked by: G.M. G.V.A.	Examined by:	Approved by:
Revisions:				

PLAN ABOVE ELEV. 22.25

SECTION B-B

SECTION C-C

SECTION D-D

Notes:
- For Plans showing location of Aeration Tank, see Dwgs Nos. 438.22(a-1)-1 and 5
- For Outside Piping Plans, see Dwgs. Nos 438.22(a-1)-6 and 7
- For Sectional Plan at Elev. 14.00 and Section A-A, see Dwg No. 438.22(a-1)-25
- For Sections a-a, b-b and c-c, see Dwg No. 438.22(a-1)-29
- For Details of Parshall Flume, Distribution Channel and Manhole No. 8 see Dwg. No. 438.22(a-1)-33
- For Concrete Reinforcing Details, see Dwgs. Nos. 438.22(a-1)-30, 31 and 32.
- For Details of Manhole No. 9 see Dwg. No. 438.22(a-1)-62
- For Detail of Weir Plate, see Dwg No 438.22(a-1)-40
- For Return and Waste Sludge Control Vault, see Dwg. No. 438.22(a-1)-61

DRAWING NO. 438.22(a-1)-26

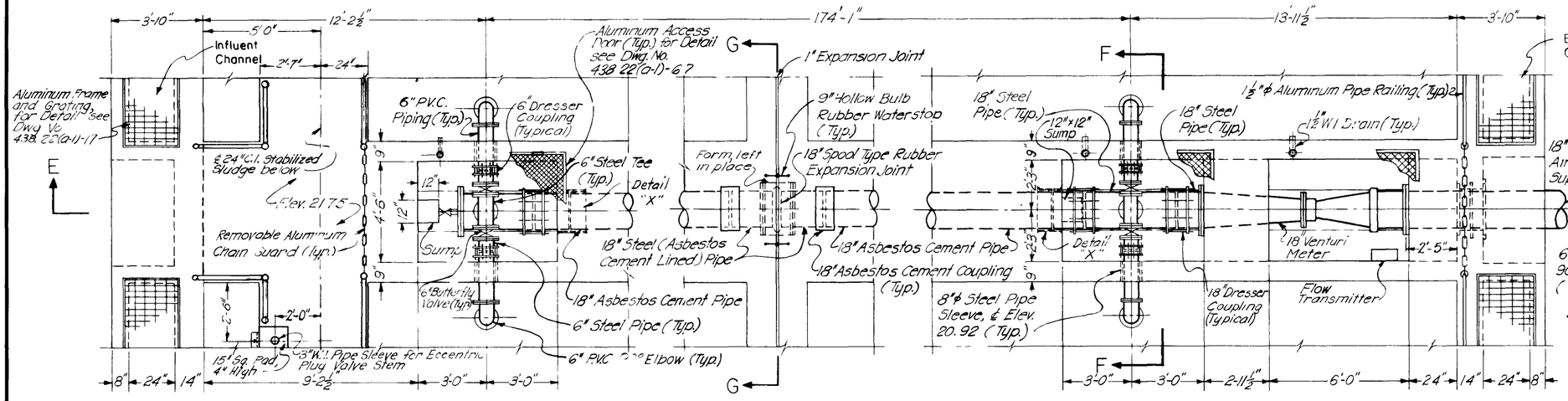
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
AERATION TANK
EQUIPMENT AND PIPING
PLAN ABOVE ELEV. 22.25, SECTIONS B-B, C-C AND D-D

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 3/32" = 1'-0" — July, 1964

Drawn by: O.M.	Traced by: O.M.	Checked by: W.V.A.	Examined by:	Approved by:
Revisions: 4|10	As Built 1/68 RGM			

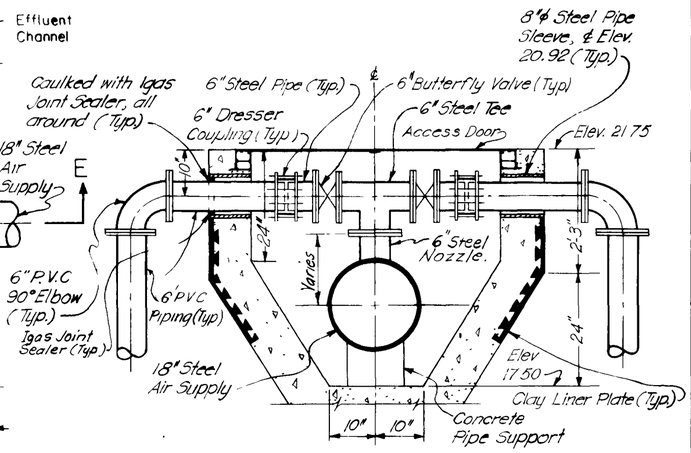
AS-BUILT DRAWING
DATE January, 1968



PLAN ABOVE ELEV. 21.75

(18" Air Supply Shown, 12" Air Supply Similar)

Scale: 1/4" = 1'-0"



SECTION F-F

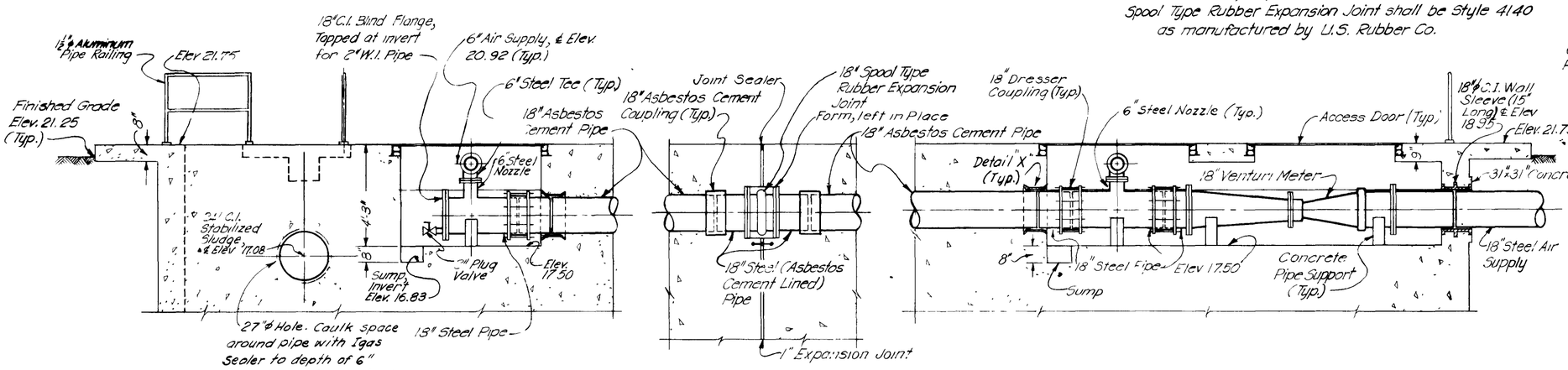
(18" Air Supply)

Scale: 1/2" = 1'-0"

Notes:

For Center Line Elevations of 18" and 12" Tees and 18" and 12" Spool Type Rubber Expansion Joints, see Plan Above Elev. 22.25, Dwg. No. 438.22(a-1)-26

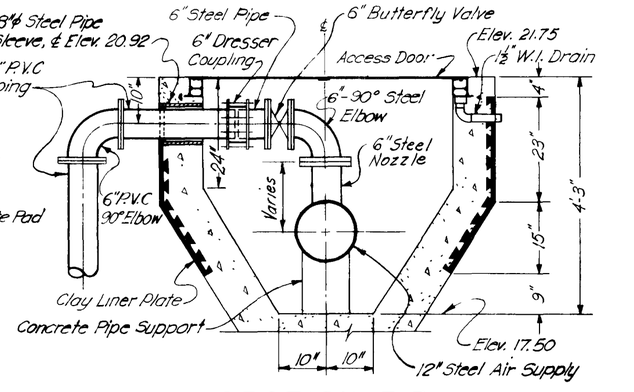
Spool Type Rubber Expansion Joint shall be Style 4140 as manufactured by U.S. Rubber Co.



SECTION E-E

(18" Air Supply)

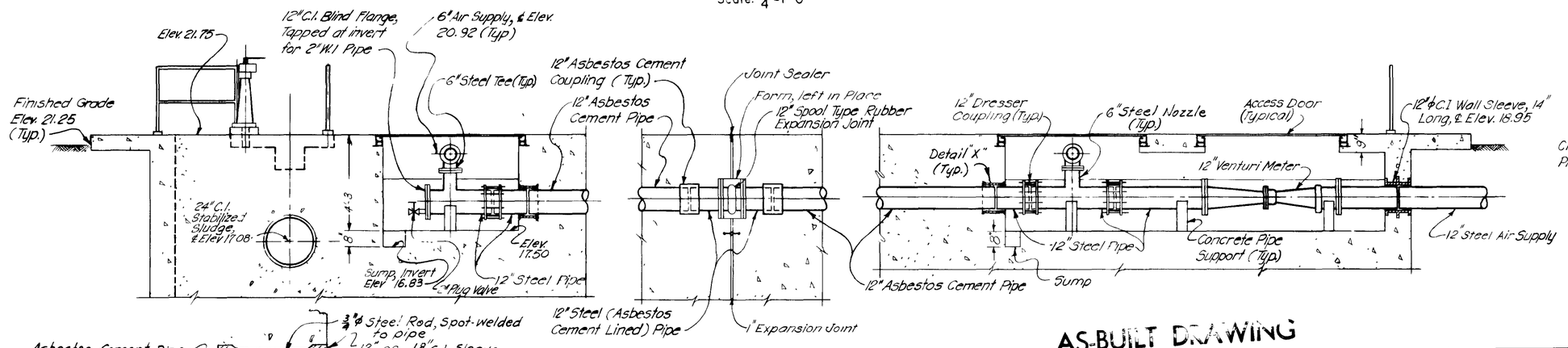
Scale: 1/4" = 1'-0"



SECTION F-F

(12" Air Supply)

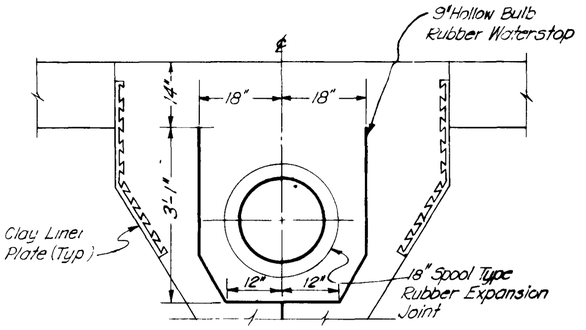
Scale: 1/2" = 1'-0"



SECTION E-E

(12" Air Supply)

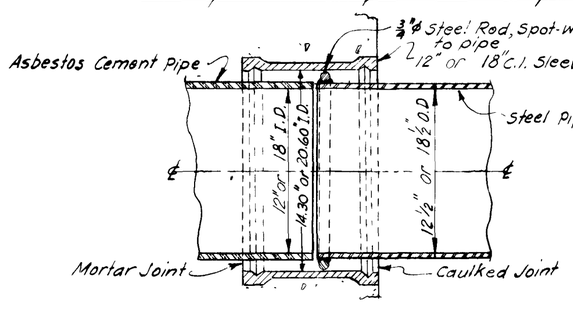
Scale: 1/4" = 1'-0"



SECTION G-G

(18" Air Supply Shown, 12" Air Supply Similar)

Scale: 1/2" = 1'-0"



Typical Asbestos-Cement And Steel Pipe Joint

DETAIL "X"

Scale: None

Notes:

For Plans and Sections showing location of Equipment and Piping, see Dwgs. Nos. 438.22(a-1)-25 and 26

For Outside Piping Plans, see Dwgs. Nos. 438.22(a-1)-6 and 7

For Typical Waterstop Pattern at Expansion Joint, see Dwg. No. 438.22(a-1)-30

For Detail of Concrete Pipe Support, see Dwg. No. 438.22(a-1)-70

For Details of C.I. Wall Sleeve and Aluminum Pipe Railing, see Dwg. No. 438.22(a-1)-68

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-27

HAMPTON ROADS SANITATION DISTRICT

NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

AERATION TANK

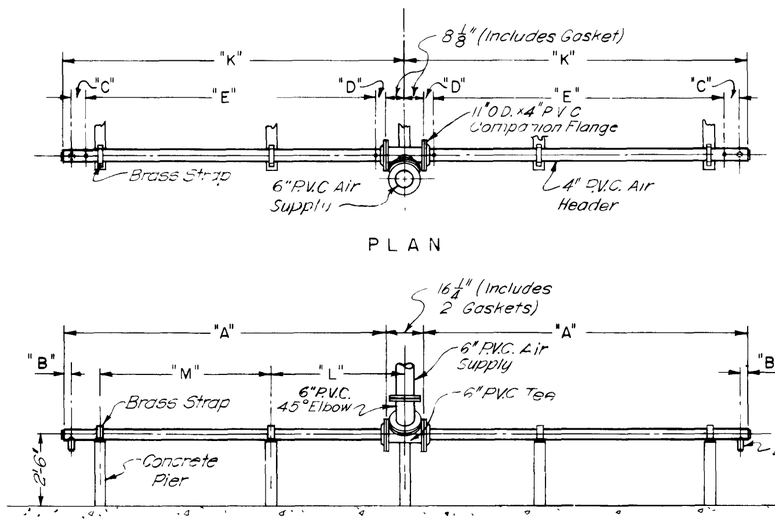
EQUIPMENT AND PIPING

AIR PIPING DETAILS

Buck; Seifert and Jost
Consulting Engineers
New York 3, N.Y.

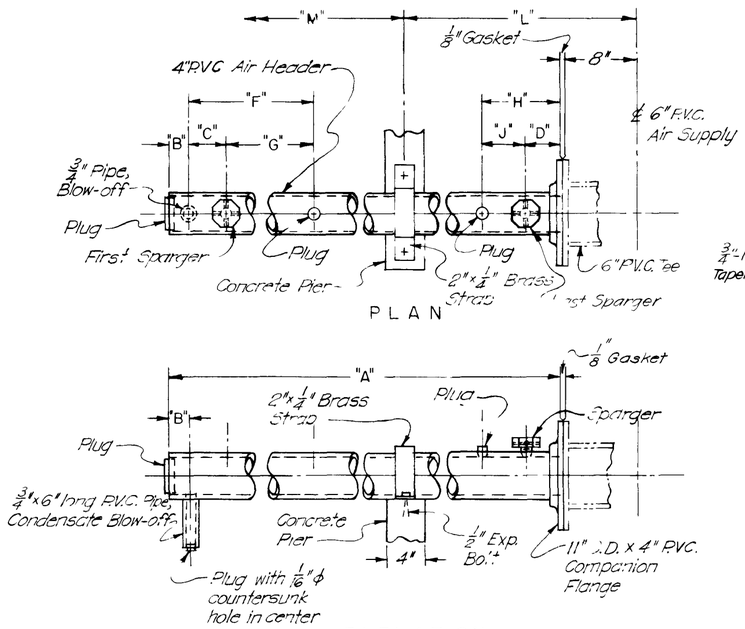
Scale: As Shown — July, 1964

Drawn by: J.P.	Traced by: S.V.	Checked by: J.O. G.V.A.	Examined by: J.P.	Approved by:
Revisions:				



TYPICAL ARRANGEMENT

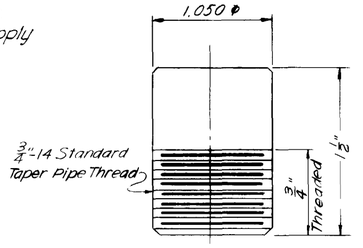
Scale. None



DETAILS

Scale: None

Note: All Spargers are Vertical and at same Elevation

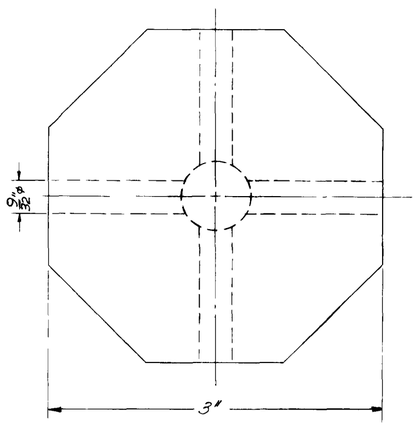


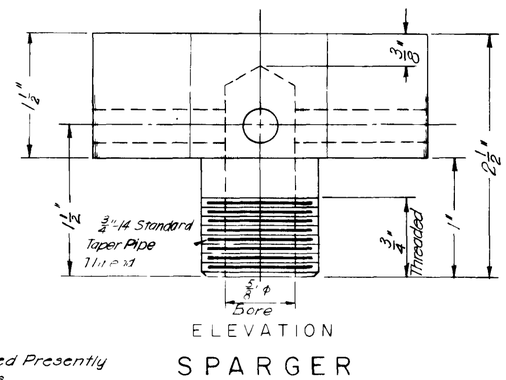
Note:
150 Required Presently
75 Spares
225 Total

PLUG

Scale Full Size

MATERIAL: ALL P.V.C.





Note
496 Required Presently
254 Spares
750 Total

SPARGER

Scale: Full Size

MATERIAL: ALL TEFLON

AIR HEADER

(26 Required)

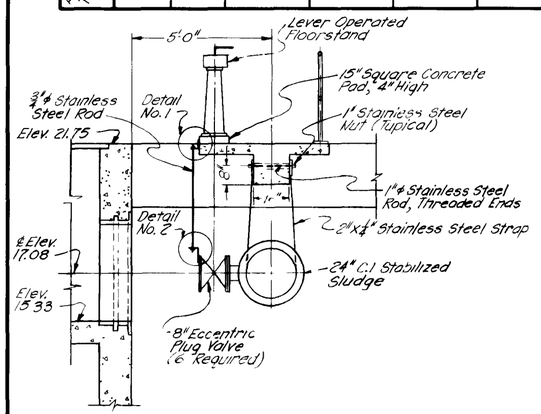
SCHEDULE OF AIR HEADERS

LOCATION	TOTAL NO. REQUIRED	HEADER TYPE	THREADED OPENINGS PER HEADER		SPARGERS PER HEADER		PLUGS PER HEADER	DIMENSIONS										REMARKS (Headers consist of two Pipes with Threaded openings and one 3/4" Blow-off each Pipe)	CONCRETE PIERS			ANCHORS	
			Total No.	distance between openings	Total No.	distance between openings		"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"		Total No. Of Piers	LOCATION "L"	LOCATION M	Total No. Of Straps	Total No. Of Exp. Bolts
AERATION TANK	3	I	56	4 3/4"	20	14 1/4"	36	136"	2"	1 7/8"	3 3/8"	128 1/4"	6 5/8"	4 3/4"	8 5/8"	4 3/4"	144 1/8"	6 pieces: 4" Pipe, 11-4" long. Ends: 1-Companion Flange and 1-Blind	15	57"	76"	12	24
	3	II	30	8 3/8"	16	16 3/4"	14	127"	2"	3 1/4"	4 1/2"	117 1/4"	11 5/8"	2 3/8"	12 7/8"	8 3/8"	135 1/8"	6 pieces: 4" Pipe, 10'-7" long. Ends: 1-Companion Flange and 1-Blind	15	50"	76"	12	24
	6	III	22	11 3/4"	22	11 3/4"	—	127"	2"	3"	4 1/2"	117 1/2"	—	—	—	—	135 1/8"	12 pieces - same as above.	30	54"	70"	24	48
	3	IV	18	14 5/8"	18	14 5/8"	—	127"	2"	4"	4"	117"	—	—	—	—	135 1/8"	18 pieces - same as above.	45	43"	73"	36	72
	3	V	16	15 1/4"	16	15 1/4"	—	115"	2"	2 1/4"	4"	106 3/4"	—	—	—	—	123 1/8"	6 pieces: 4" Pipe 9'-7" long. Ends: 1-Companion Flange and 1-Blind	15	50"	61"	12	24
PRE-AERATION TANK	1	VI	20	9"	20	9	—	92"	2"	4 1/2"	4 1/2"	81"	—	—	—	—	100 1/8"	2 pieces: 4" Pipe, 7'-8" long. Ends: 1-Companion Flange and 1-Blind	5	35"	54"	4	8
	1	VII	26	8"	26	8"	—	107"	2"	4 1/2"	4 1/2"	96"	—	—	—	—	115 1/8"	2 pieces: 4" Pipe, 8'-11" long Ends: 1-Companion Flange and 1-Blind	5	43"	56"	4	8

LEGEND

"A" — Overall length of one section of Header, Blind End to Face of Companion Flange.
"B" — Blind End to ℄ of Blow-off.
"C" — ℄ of Blow-off to nearest Sparger
"D" — Face of Companion Flange to nearest Sparger.
"E" — ℄ of First Sparger to ℄ of Last Sparger
"F" — ℄ of Blow-off to ℄ of nearest Plug
"G" — ℄ of First Sparger to ℄ of nearest Plug
"H" — Face of Companion Flange to ℄ of nearest Plug.
"J" — ℄ of Last Sparger to ℄ of nearest Plug.
"K" — Blind End to ℄ of 6" φ Air Supply Pipe
"L" — ℄ 6" φ Air Supply Pipe to ℄ nearest Pier.
"M" — ℄ to ℄ of Piers.

Notes: For location of Air Headers in Aeration Tank, see Dwg. No 438.22(a-1)-25.
For location of Air Headers in Pre-Aeration Tank, see Dwg. No 438.22(a-1)-15.
For Detail of Concrete Pier in Aeration Tank, see Section J-J Dwg. No. 438.22(a-1)-32.
For Detail of Concrete Pier in Pre-Aeration Tank, see Section J-J Dwg No 438.22(a-1)-18

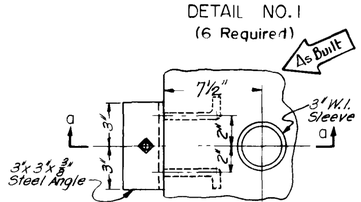


TYPICAL SECTION

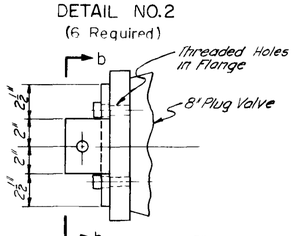
PLUG VALVE

Scale: 1/4" = 1'-0"

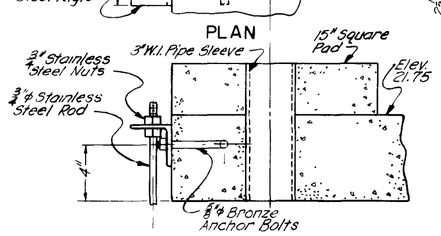
DETAIL NO. 1
(6 Required)



DETAIL NO. 2
(6 Required)



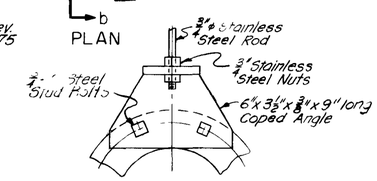
PLAN



SECTION a-a

PLUG VALVE HANGER DETAIL

Scale: 1 1/2" = 1'-0"



SECTION b-b

STABILIZED SLUDGE PIPING DETAILS

AS-BUILT DRAWING

DATE January 9, 1968

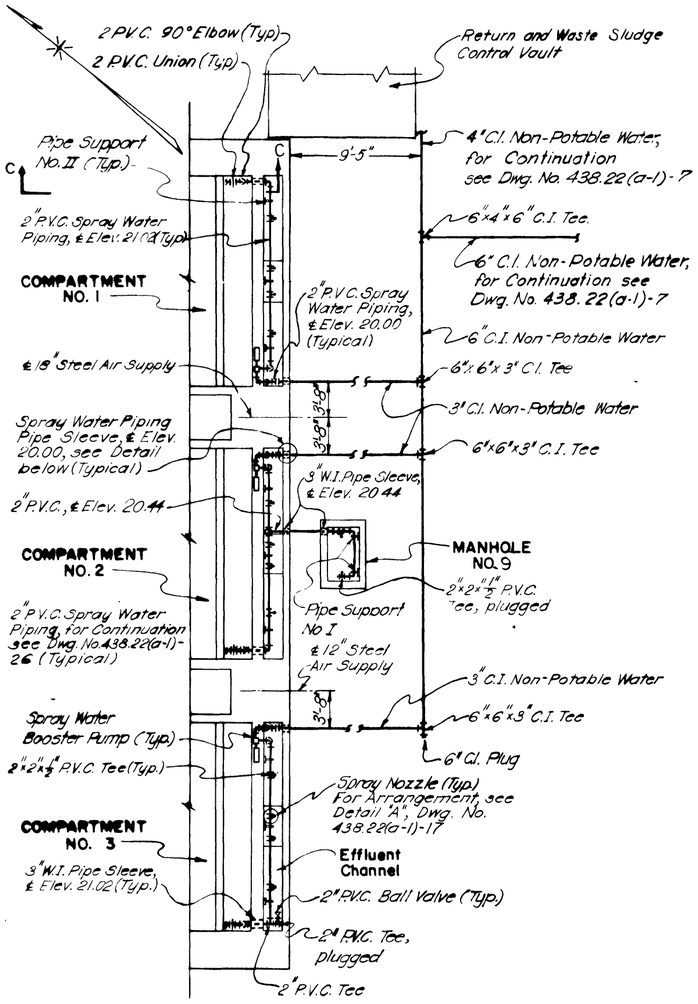
DRAWING NO. 438.22(a-1)-28

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
AERATION TANK
EQUIPMENT AND PIPING
AIR HEADER AND STABILIZED SLUDGE PIPING DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

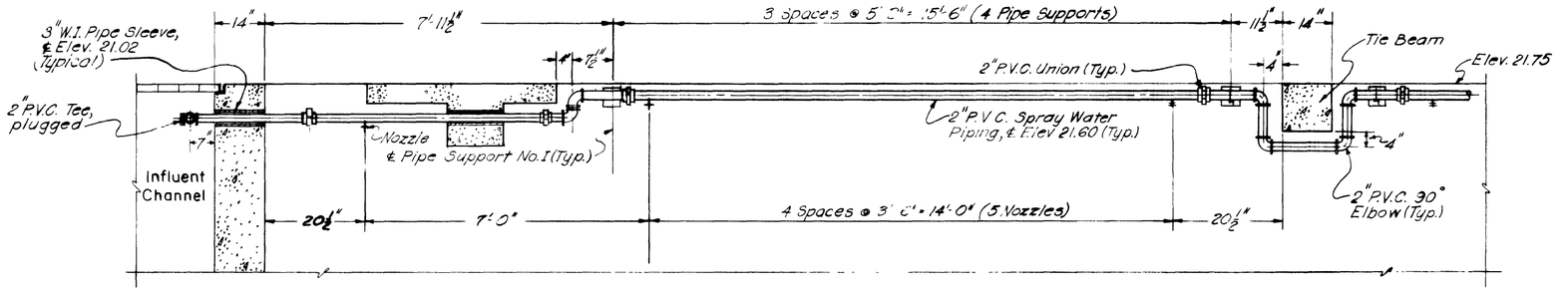
Scale: As Shown — July, 1964

Drawn by: J.P.	Traced by: O.M.	Checked by: HL GVA	Examined by: DP	Approved by:
Revisions: 4/10	As Built 1/68			



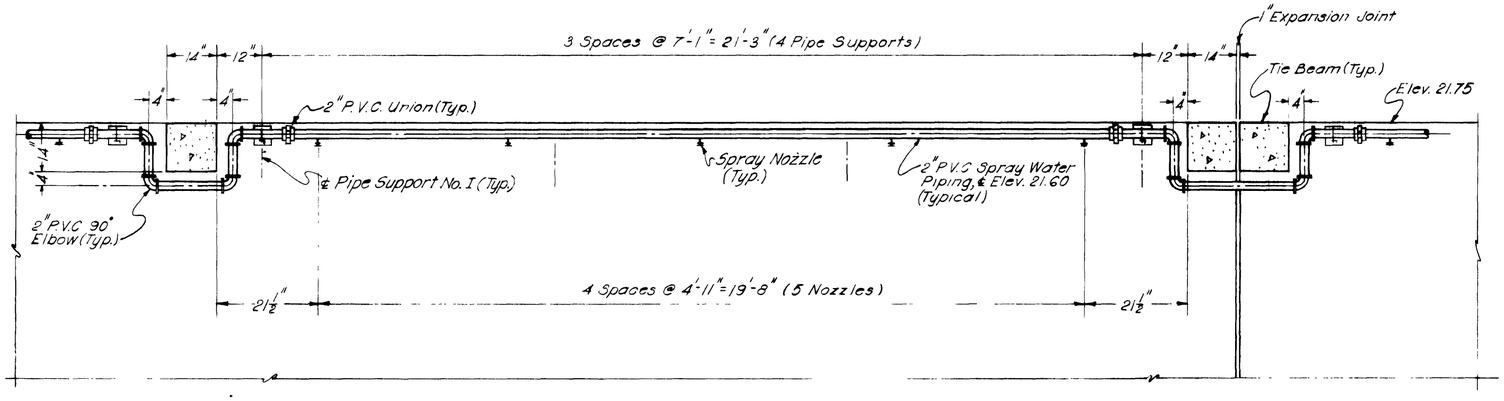
PARTIAL PLAN ABOVE ELEV. 21.75

Scale: 3/32" = 1'-0"



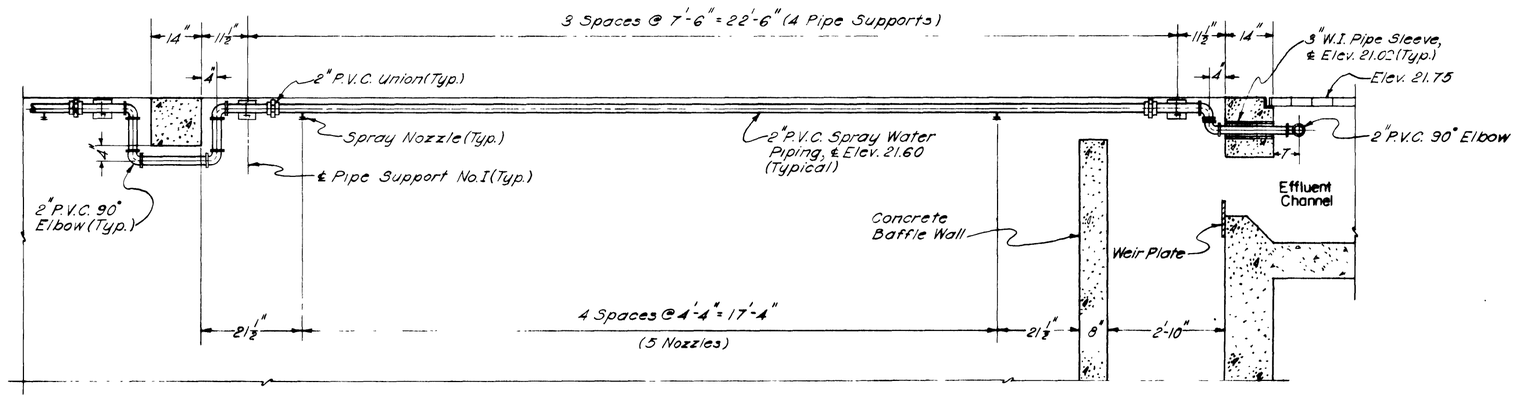
SECTION a-a

Scale: None



SECTION b-b

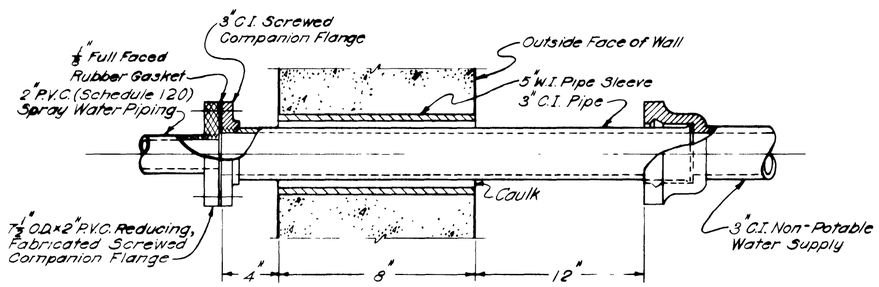
Scale: None



SECTION c-c

Scale: None

Note:
All P.V.C. Spray Water Piping and Fittings shown in Sections a-a, b-b, and c-c are Schedule 120



SPRAY WATER PIPING PIPE SLEEVE

Scale: None

Notes:
For location of Sections a-a, b-b and c-c, see Dwg. No. 438.22(a-1)-26
For Detail of Pipe Supports Nos. I and II, see Dwg. No. 438.22(a-1)-17

AS-BUILT DRAWING

DATE January 2, 1968

DRAWING NO. 438.22(a-1)-29

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
AERATION TANK
EQUIPMENT AND PIPING
SPRAY WATER PIPING DETAILS

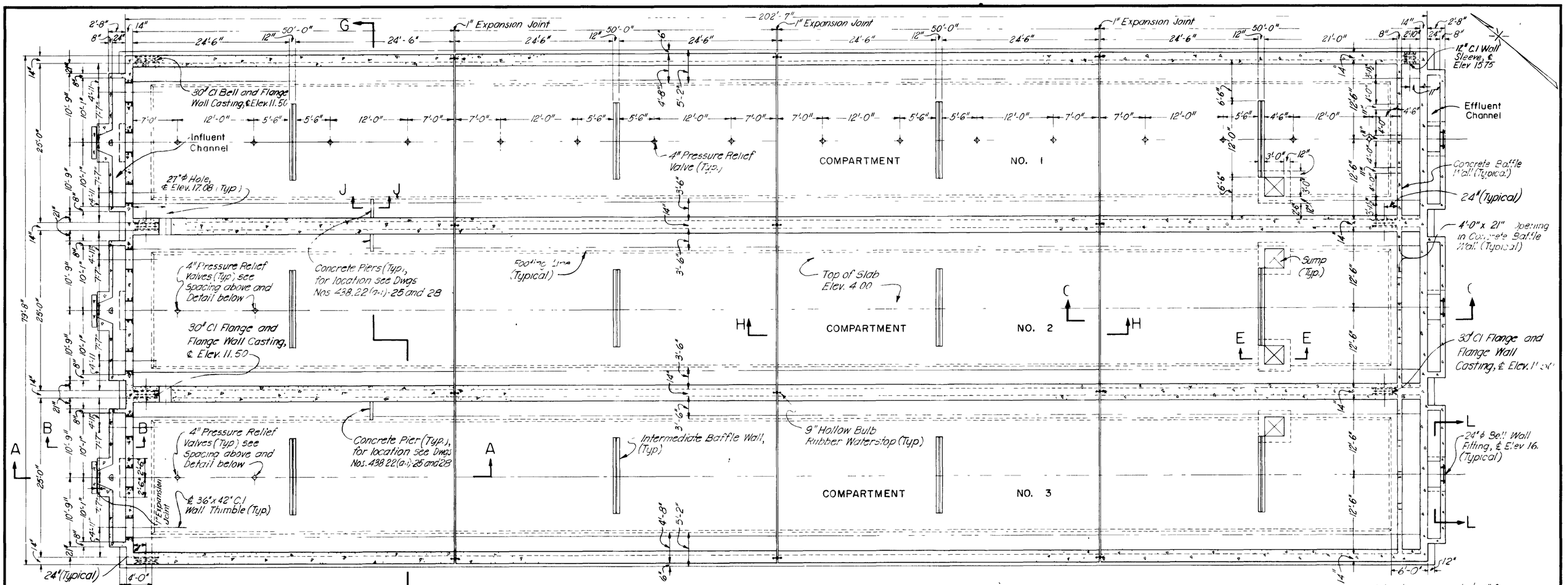
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

Drawn by: J.P.	Traced by: O.R.	Checked by:	Examined by:	Approved by:
Revisions:				

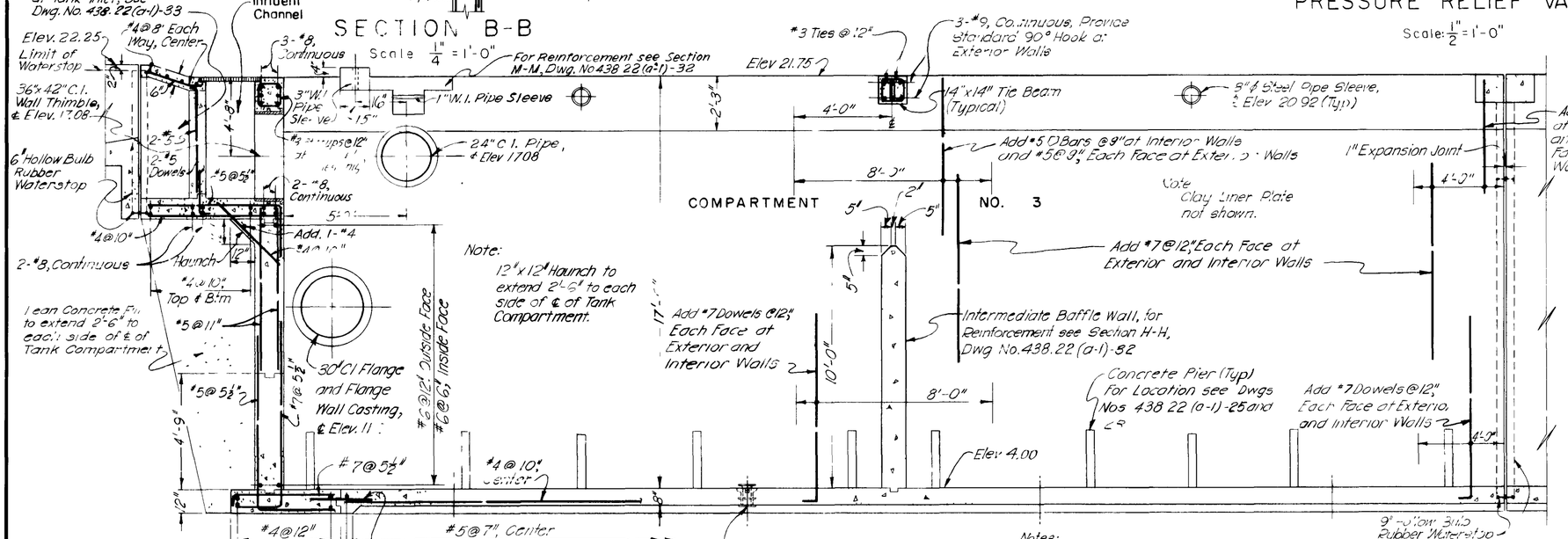
SECTIONAL PLAN AT ELEV. 17.00

Scale: $\frac{3}{32}$" = 1'-0"



SECTION B-B

Scale $\frac{1}{4}$" = 1'-0"

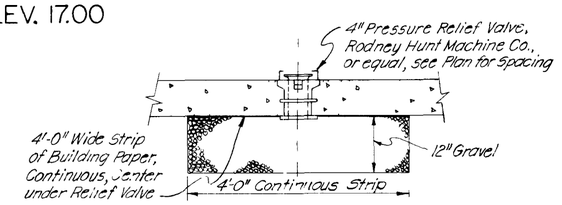


SECTION A-A

Scale: $\frac{1}{4}$" = 1'-0"

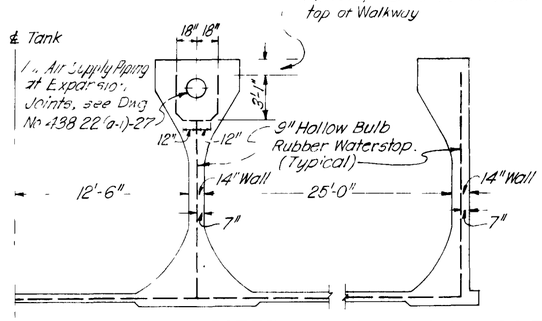
PRESSURE RELIEF VALVE

Scale: $\frac{1}{2}$" = 1'-0"



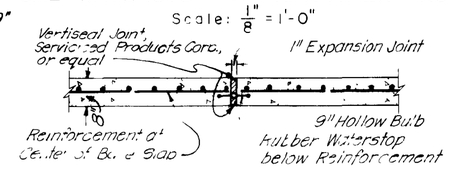
TYPICAL WATERSTOP PATTERN AT EXPANSION JOINTS

Scale: $\frac{1}{8}$" = 1'-0"



DETAIL OF WATERSTOP AT BASE SLAB

Scale $\frac{3}{8}$" = 1'-0"



AS-BUILT DRAWING
DATE January, 1968

DRAWING NO. 438.22(a-1)-30

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
AERATION TANK
CONCRETE REINFORCING DETAILS
SECTIONAL PLAN AT ELEV. 17.00, SECTIONS A-A AND B-B

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

Drawn by: R.B	Traced by: R.B.	Checked by: V.N. G.V.A	Examined by:	Approved by:
Revisions:				

Return and Waste Sludge Control Vault, for Details see Dwg. No. 438.22(a-1)-61

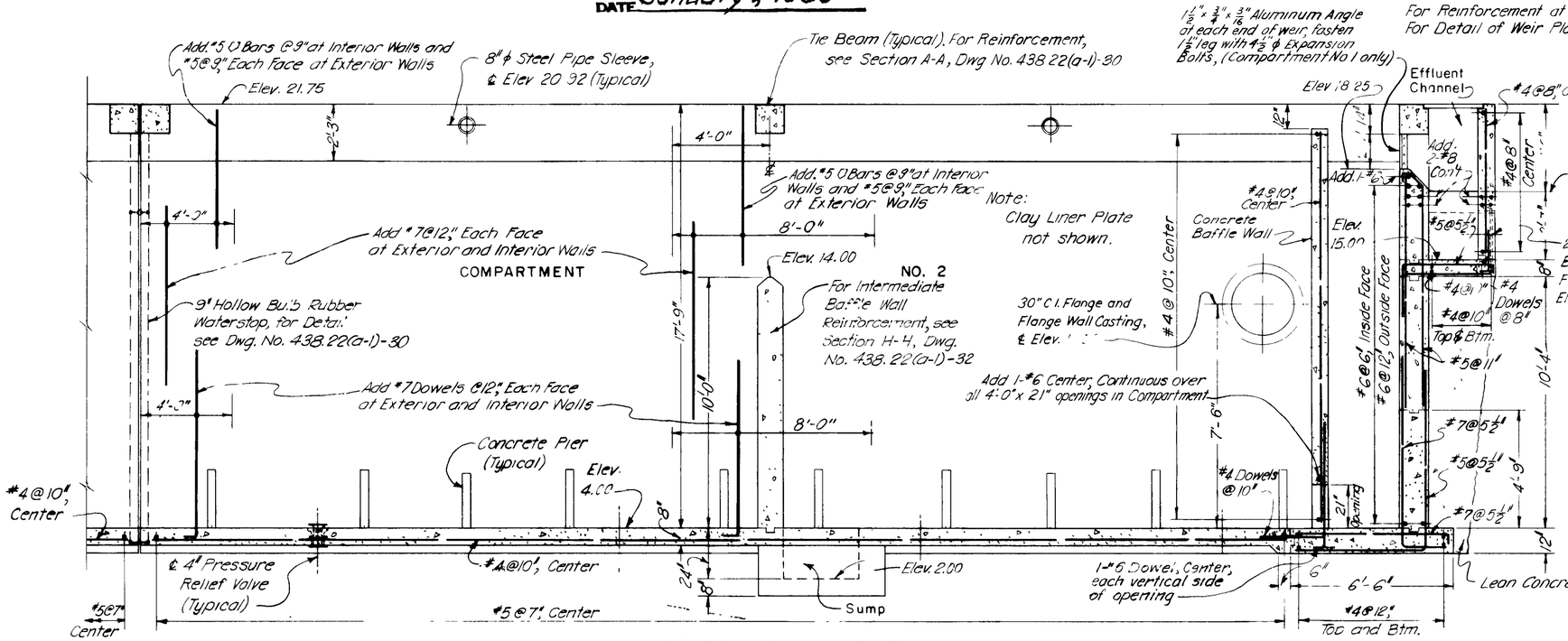
PLAN ABOVE ELEV. 22.25

Scale : $\frac{3}{32}$" = 1'-0"

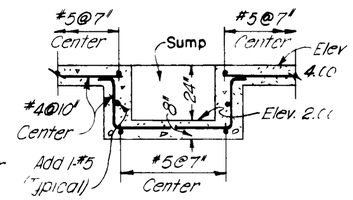
AS-BUILT DRAWING

DATE January, 1968

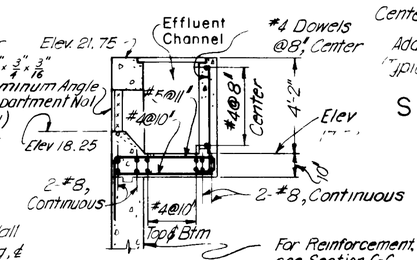
Notes:
For Sectional Plan at Elev 17.00 showing location of Sections C-C and E-E, see Dwg No 438.22(a-1)-30
For Sections A-A and B-B, see Dwg No. 438.22(a-1)-30
For Sections G-G, H-H, K-K, L-L, M-M and N-N, see Dwg No. 438.22(a-1)-32
For Plans, Sections and Details showing location of Equipment and Piping, see Dwgs Nos 438.22(a-1)-25 through 29, inclusive.
For Detail of Pressure Relief Valve, see Dwg No 438.22(a-1)-30
For location of Concrete Piers, see Dwgs. Nos 438.22(a-1)-25 and 28
For Reinforcement at Wall Intersections, see Dwg No 438.22(a-1)-18
For Detail of Weir Plate, see Dwg No 438.22(a-1)-40



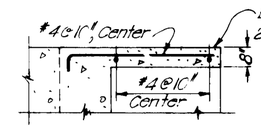
SECTION C-C



SECTION E-E



SECTION D-D



SECTION F-F

DRAWING NO. 438.22(a-1)-31

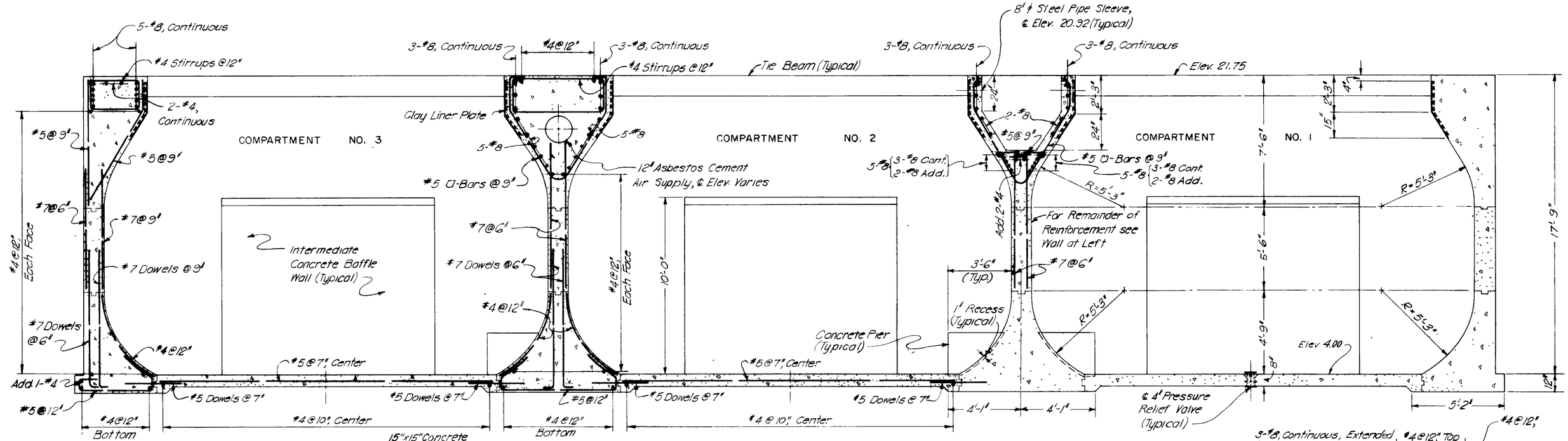
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
AERATION TANK
CONCRETE REINFORCING DETAILS
PLAN ABOVE ELEV. 22.25, SECTIONS C-C, D-D, E-E AND F-F

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

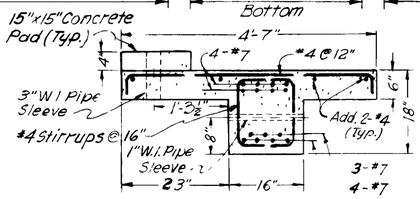
Scale : $\frac{1}{4}$" = 1'-0" & As Shown

July, 1964

Drawn by: O.M. R.B.	Traced by: O.M. R.B.	Checked by: V.N. G.V.A.	Examined by: D.P.	Approved by:
Revisions:				

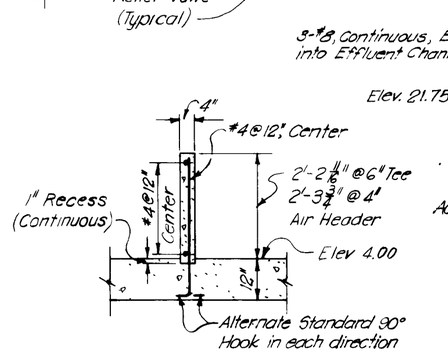


SECTION G-G



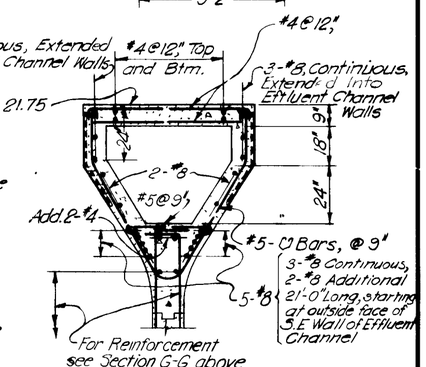
SECTION M-M

Scale $\frac{1}{2}$"=1'-0"

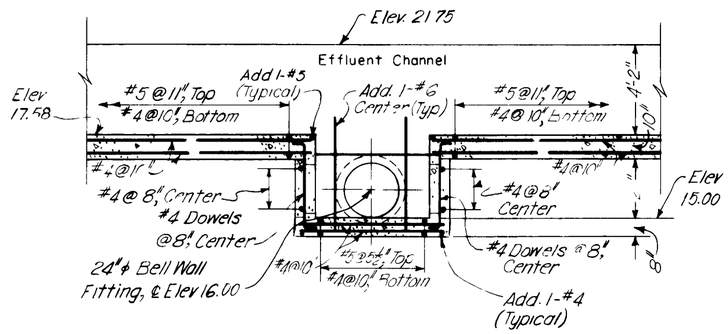


SECTION J-J

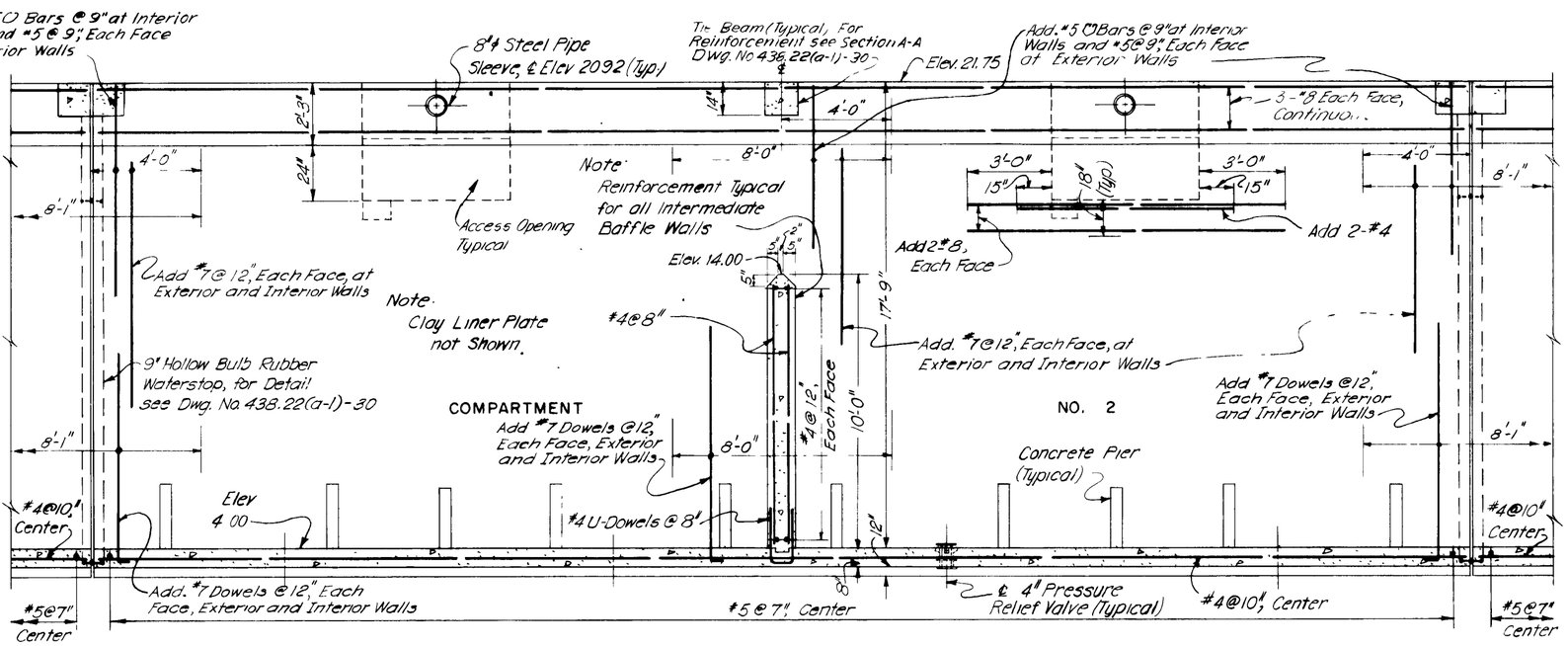
Scale: $\frac{3}{8}$"=1'-0"



SECTION K-K



SECTION L-L



SECTION H-H

AS-BUILT DRAWING
DATE January, 1968

Notes

For Sectional Plan At Elev 17.00 showing location of Sections G-G, H-H, K-K and L-L, see Dwg No. 438.22(a-1)-30

For Plan Above Elev 22.25 showing location of Sections G-G, H-H, K-K and L-L, see Dwg No. 438.22(a-1)-31

For Plans, Sections and Details showing location of Equipment and Piping, see Dwgs Nos. 438.22(a-1)-25 through 29 inclusive.

For Detail of Pressure Relief Valve, see Dwg No. 438.22(a-1)-30

For Location of Concrete Piers, see Dwgs Nos. 438.22(a-1)-25 and 28

For Reinforcement at Wall Intersections, see Dwg. No. 438.22(a-1)-18

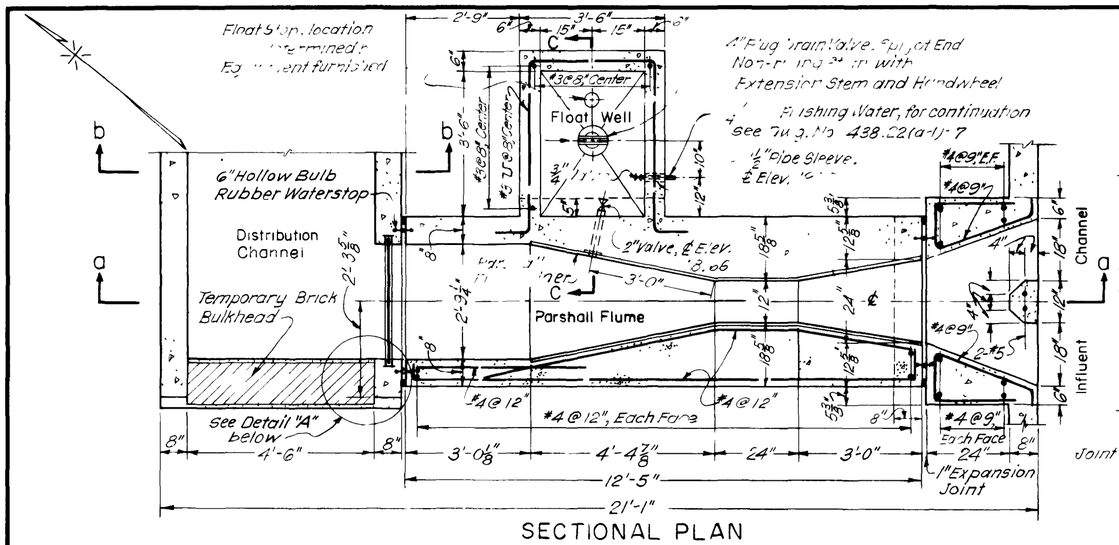
DRAWING NO. 438.22(a-1)-32

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
AERATION TANK
CONCRETE REINFORCING DETAILS
SECTIONS G-G, H-H, J-J, K-K AND L-L

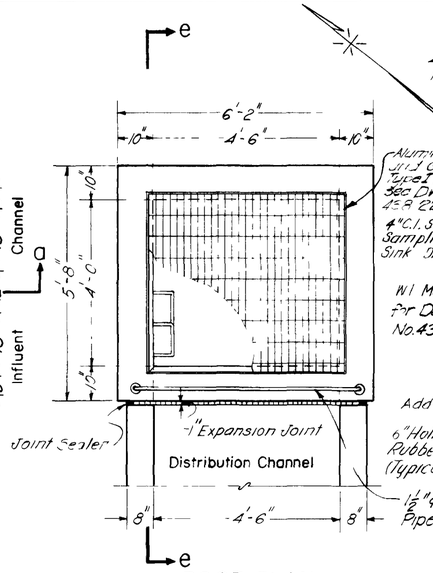
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: $\frac{1}{4}$"=1'-0" & As Shown — July, 1964

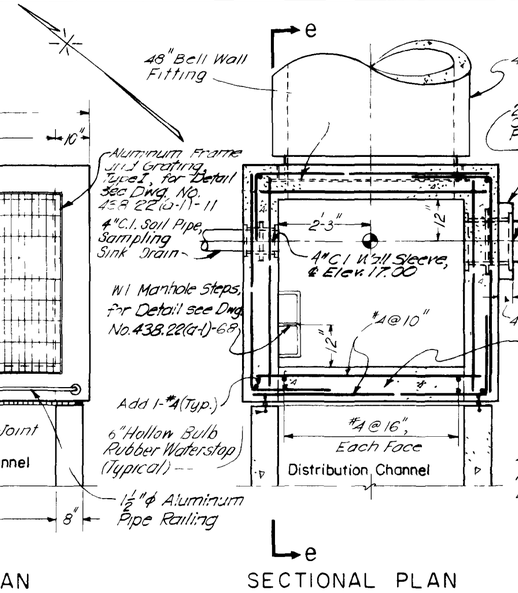
Drawn by: S.V. Q.M.	Traced by: S.V. Q.M.	Checked by: V.N. G.V.A.	Examined by:	Approved by:
Revisions:				



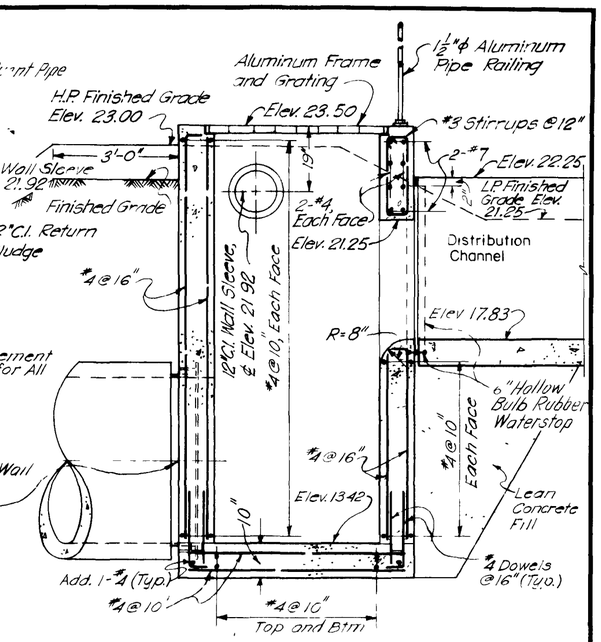
SECTIONAL PLAN



ROOF PLAN

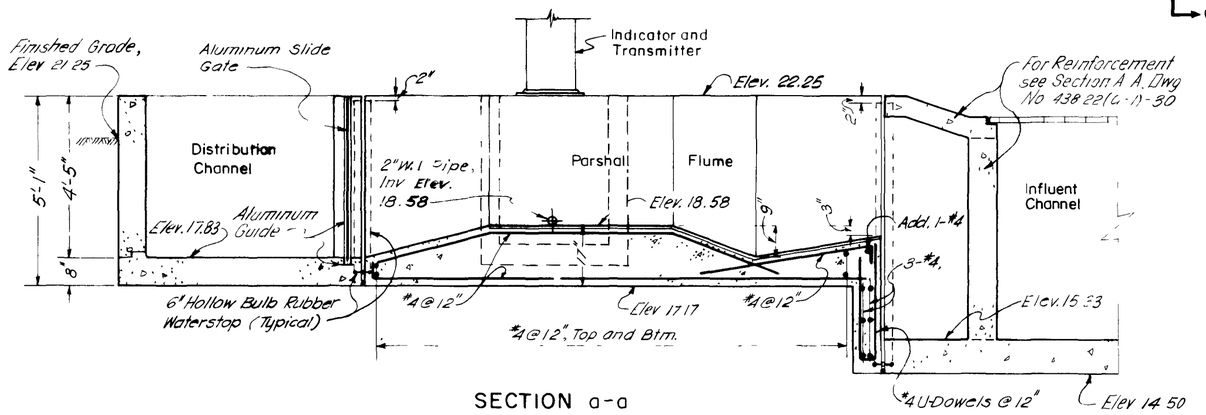


SECTIONAL PLAN



SECTION e-e

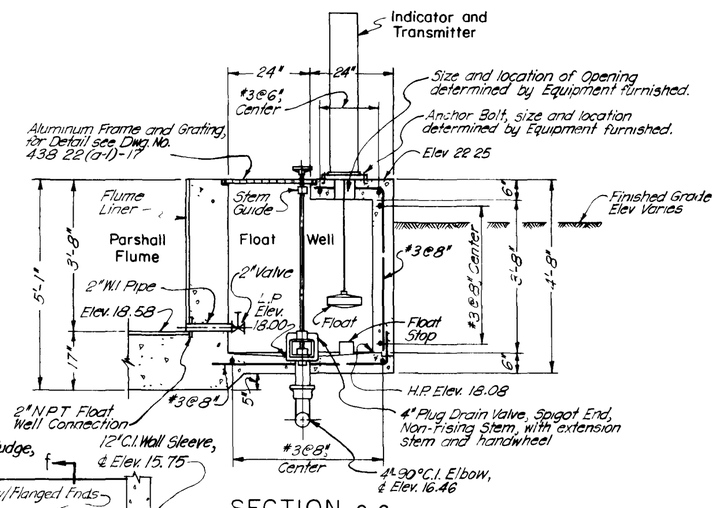
MANHOLE NO. 8



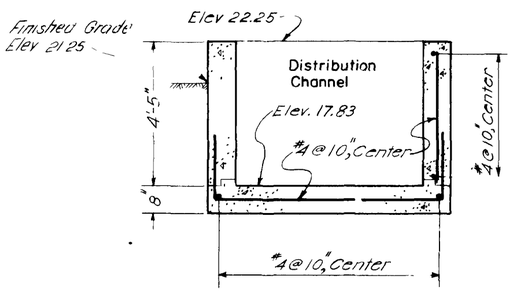
SECTION a-a

PARSHALL FLUME

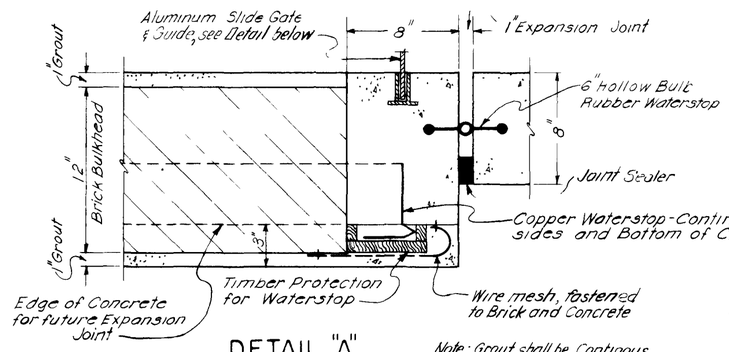
Note
All Exposed Expansion Joints to be filled with Joint Sealer



SECTION c-c

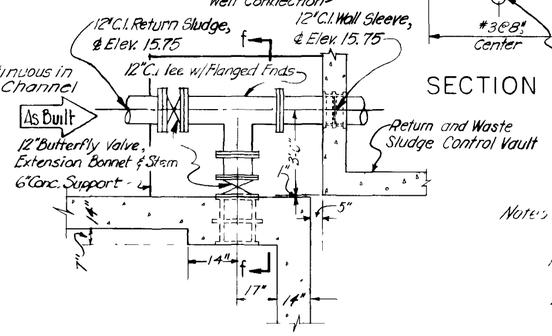


SECTION b-b



DETAIL "A"
Scale: 1 1/2" = 1'-0"

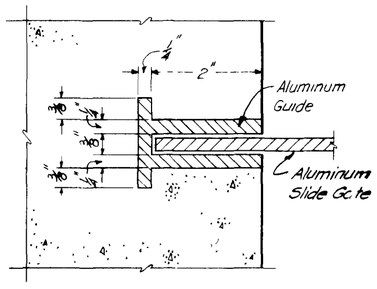
Note: Grout shall be Continous over Top of Bulkhead



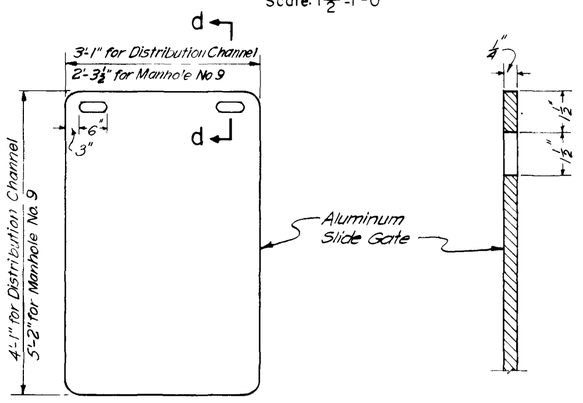
SECTIONAL PLAN

Notes

◐ Denotes Plant Coordinates
For Plan showing location of Parshall Flume and Distribution Channel, see Dwg. No. 438.22(a-1)-26
For Outside Piping Plan Showing location of Manhole No. 8, see Dwg. No. 438.22(a-1)-6



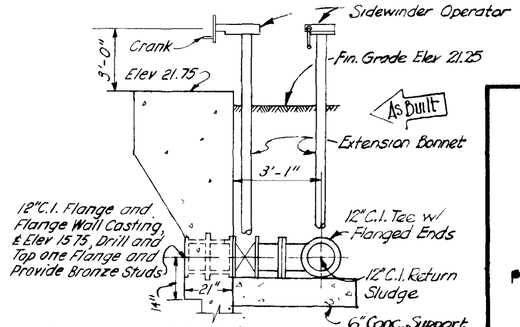
SECTIONAL PLAN



ELEVATION

SECTION d-d

ALUMINUM SLIDE GATE AND GUIDE
Scale: None



SECTION f-f
DETAIL "B"
Scale 1/4" = 1'-0"

AS-BUILT DRAWING
DATE January 2, 1968

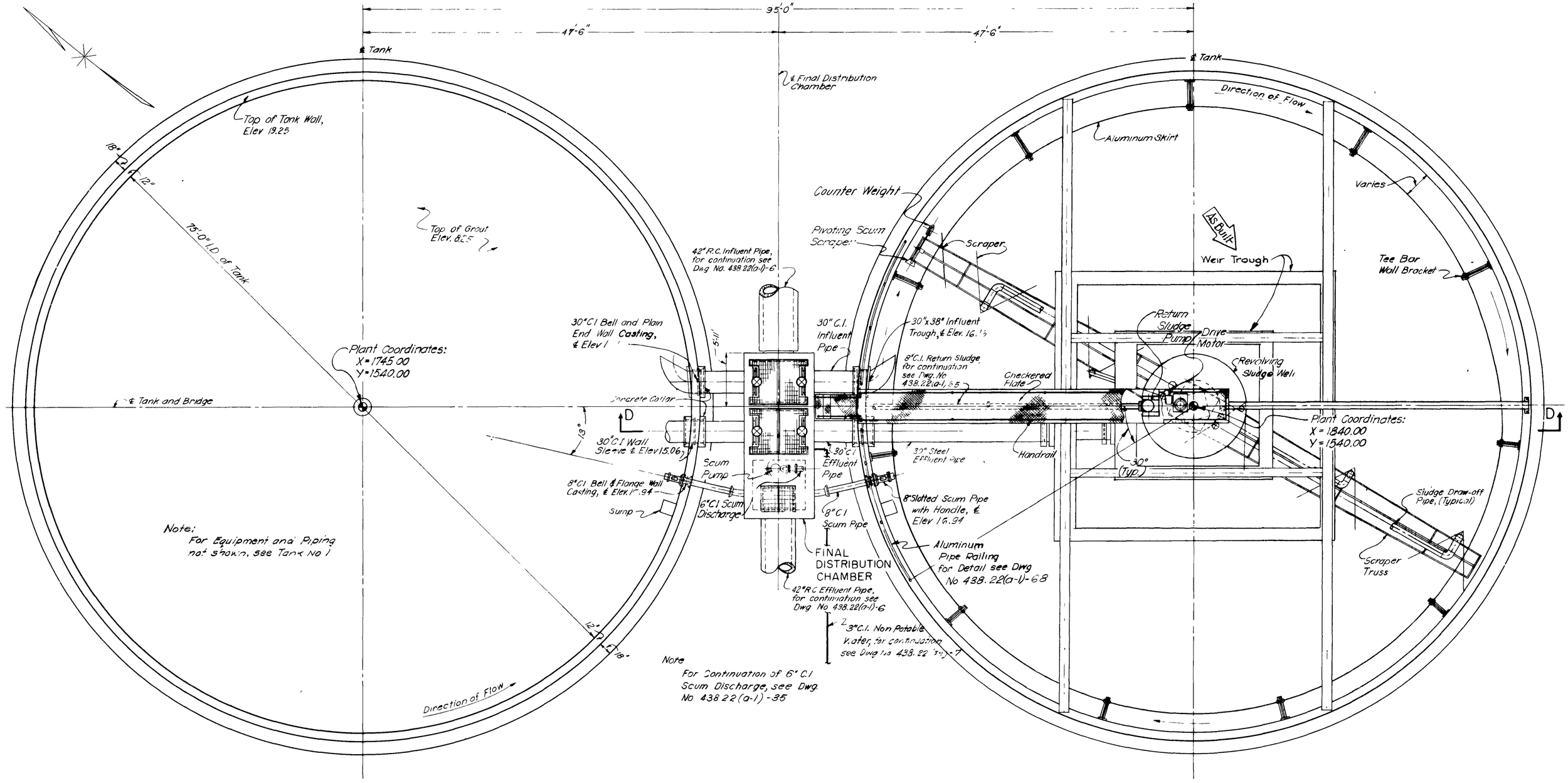
DRAWING NO. 438.22(a-1)-33

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
AERATION TANK
CONCRETE REINFORCING DETAILS
PARSHALL FLUME, MANHOLE NO. 8 AND MISCELLANEOUS DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 3/8" = 1'-0" & As Shown — July, 1964

Drawn by: M.E.	Traced by: C.R.	Checked by: M.E. G.V.A.	Examined by: D.P.	Approved by: G
Revisions:	As Built 1/68 RGM			



FINAL SETTLING TANK NO. 2

FINAL SETTLING TANK NO 1

PLAN

Notes:
For Plans showing location of Final Settling Tanks, see Dwgs. Nos. 438.22(a-1)-1 and 5
For Outside Piping Plan, see Dwgs Nos. 438.22(a-1)-2 and 7
For Plans of Final Distribution Chamber, see Dwg. No. 438.22(a-1)-35
For Section D-L, see Dwg No 438.22(a-1)-36
For Concrete Reinforcing Details, see Dwgs. Nos 438.22(a1)-37 and 38
For Details of C.I Wall Sleeve and Wall Casting Through Settling Tank Wall, see Dwg. No. 438.22(a-1)-24.

AS-BUILT DRAWING
Date January, 1968

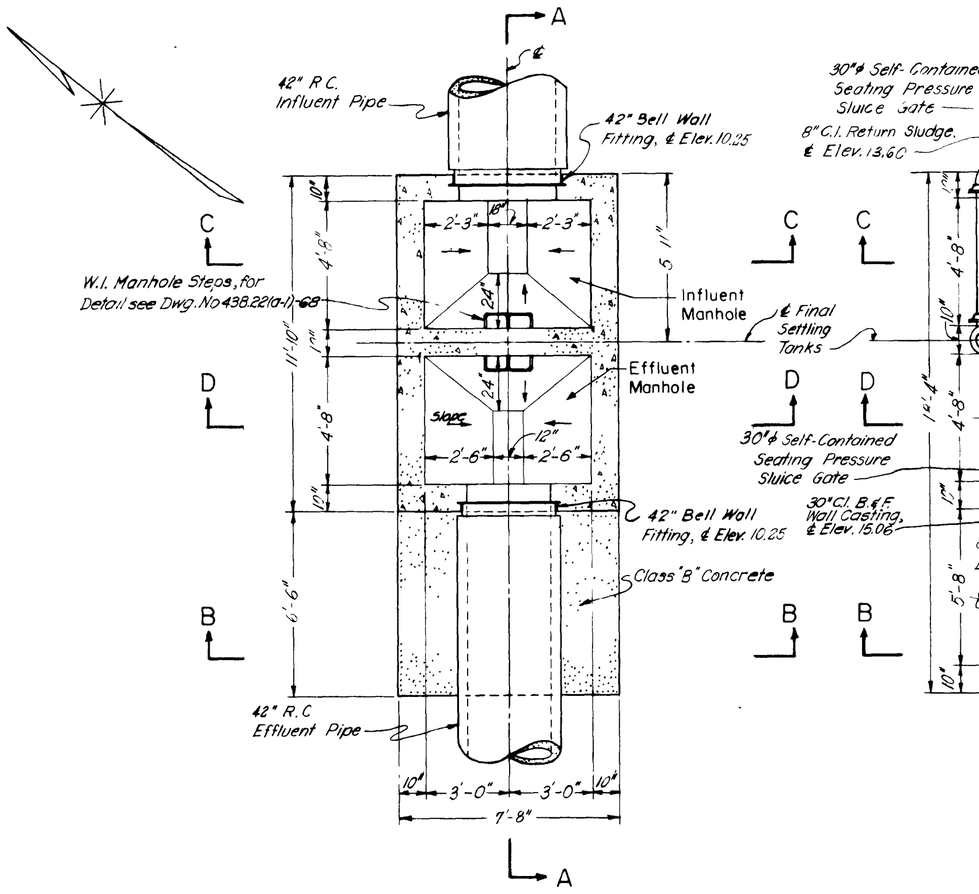
DRAWING NO. 438.22(a-1)-34

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
FINAL SETTLING TANKS
EQUIPMENT AND PIPING
PLAN

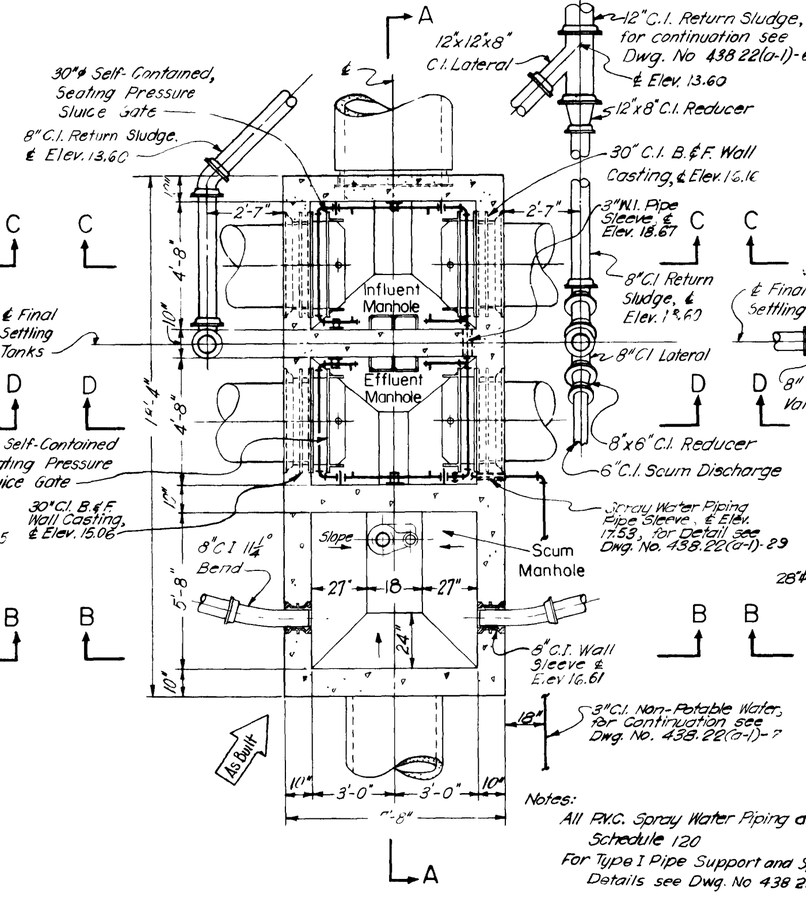
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/8"=1'-0"
July, 1964

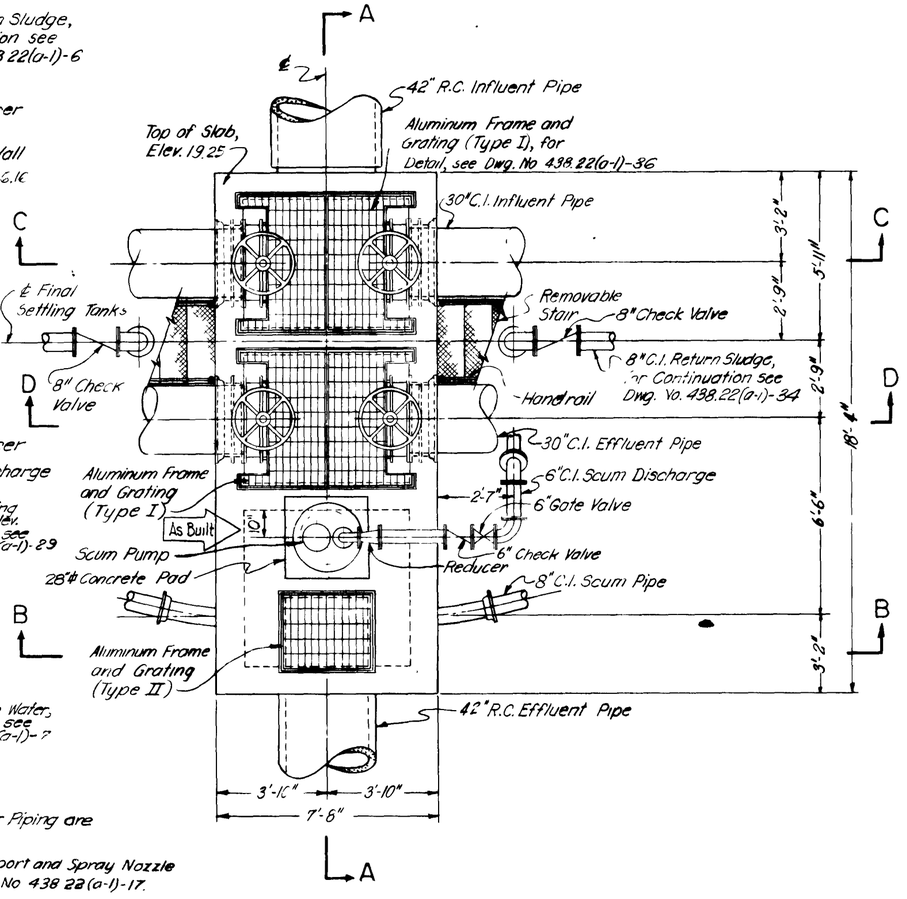
Drawn by: O.R	Traced by: O.R	Checked by: GVA	Examined by:	Approved by:
Revisions:	As Built 3/26/68 RGM			



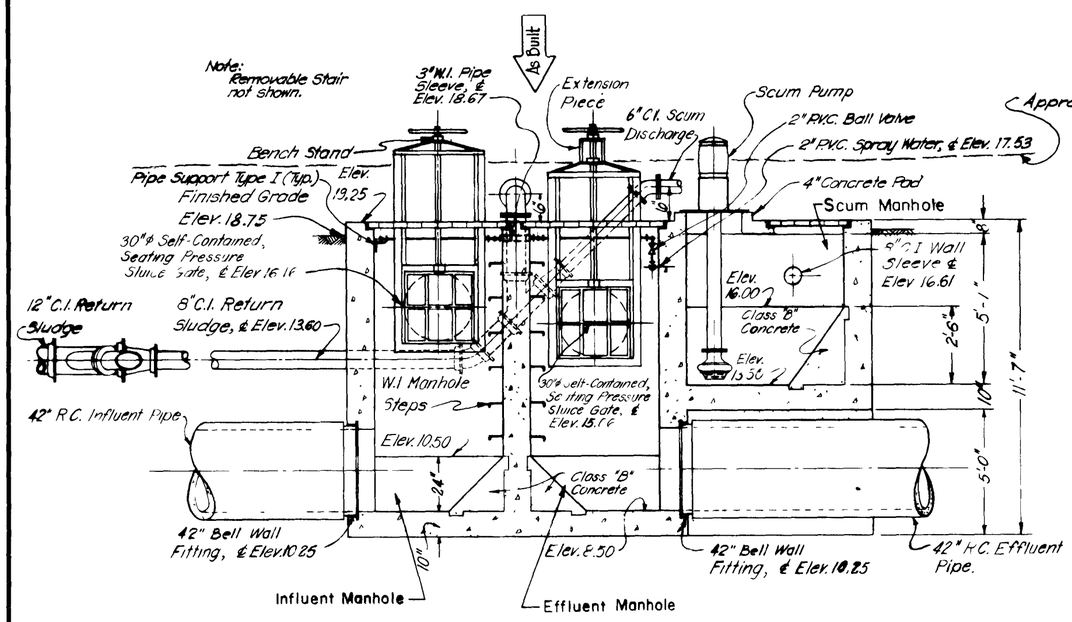
SECTIONAL PLAN AT ELEV. 10.50



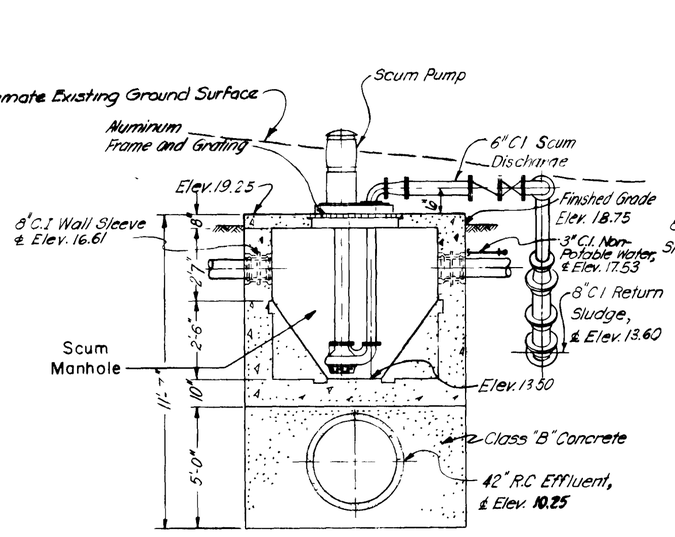
SECTIONAL PLAN AT ELEV. 16.83



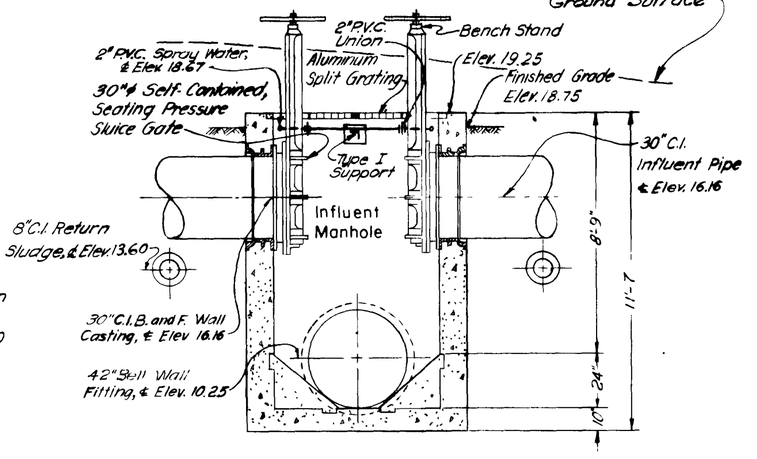
PLAN ABOVE ELEV. 19.25



SECTION A-A



SECTION B-B



SECTION C-C

FINAL DISTRIBUTION CHAMBER

AS-BUILT DRAWING

DATE January, 1968

Notes: For Plan showing location of Distribution Chamber, see Dwg. No. 438.22(a-1) 34
For Outside Piping Plan, see Dwg. No. 438.22(a-1)-6
For Section D-D, see Dwg. No. 438.22(a-1)-36
For C.I. Sleeve and Casting Details, see Dwg. No. 438.22(a-1)-68

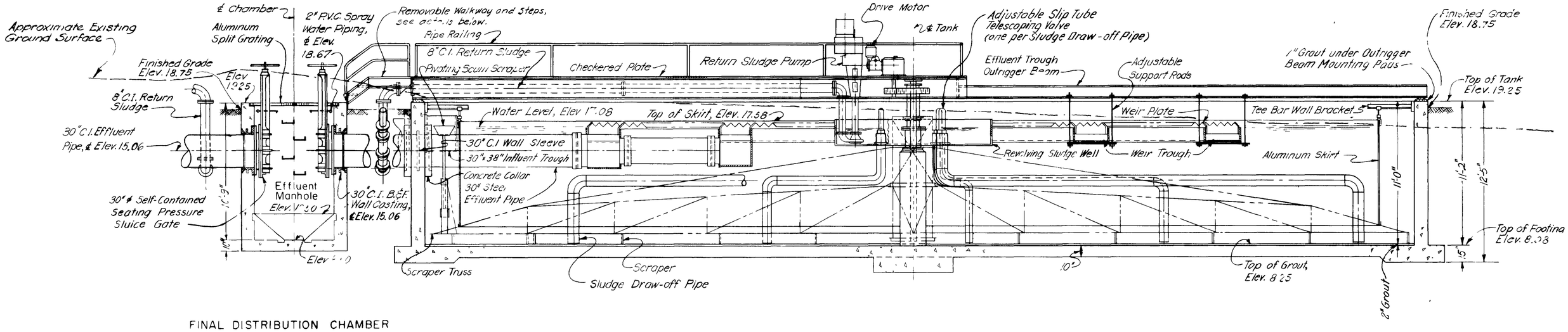
DRAWING NO. 43822 (a-1)-35

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
FINAL SETTLING TANKS
EQUIPMENT AND PIPING
PLANS, SECTIONS A-A, B-B AND C-C

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

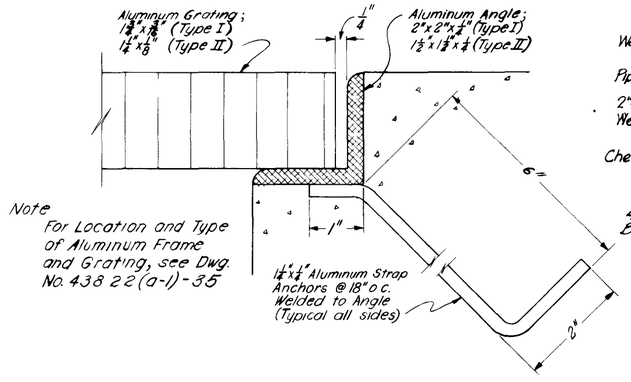
Scale: 1/4" = 1'-0" July, 1964

Drawn by: HC-OM	Traced by: S.V.	Checked by: JO GVA	Examined by: DP	Approved by:
Revisions:	As Built 3/68 RGM			



FINAL DISTRIBUTION CHAMBER

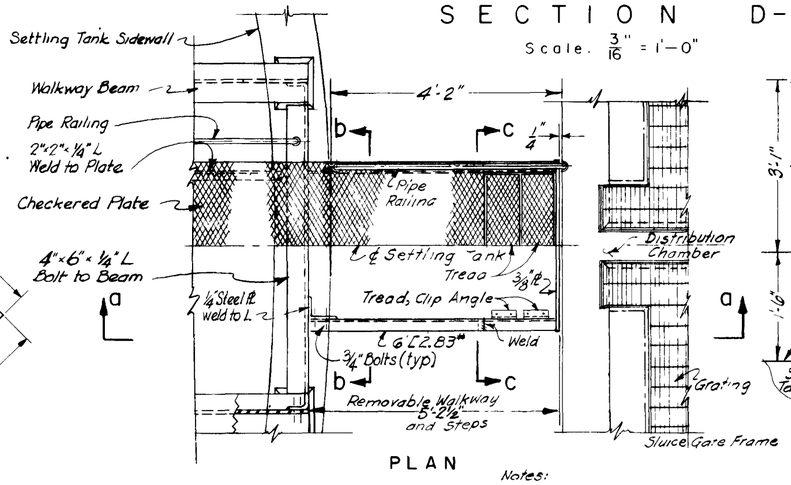
FINAL SETTLING TANK NO. 1



Note
For Location and Type of Aluminum Frame and Grating, see Dwg. No. 438.22(a-1)-35

ALUMINUM FRAME AND GRATING

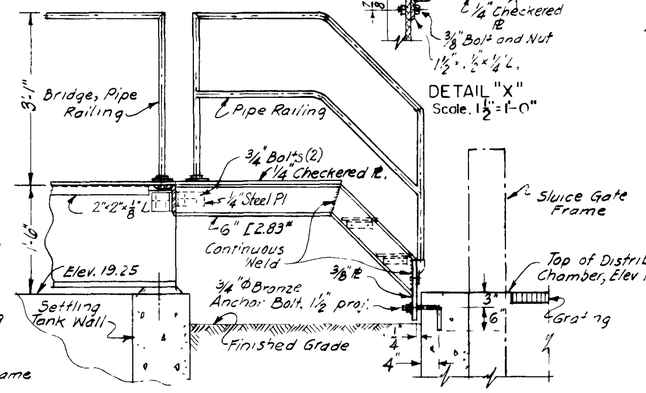
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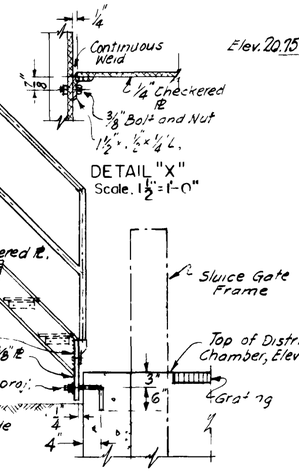
PLAN

SECTION D-D

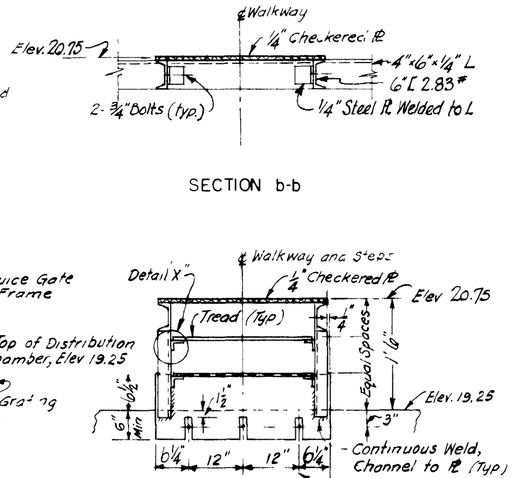
Scale. $\frac{3}{16}$" = 1'-0"



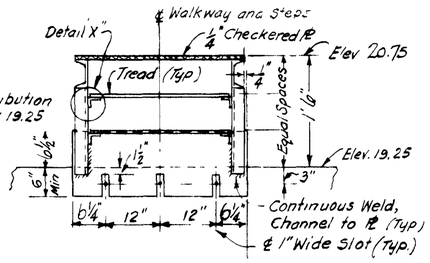
SECTION a-a



DETAIL "X"
Scale. 1½"=1'-0"



SECTION b-b



SECTION c-c

Notes:
All material Aluminum, except as noted.
Walkway width and Pipe Railing dimensions to be same as those of the Settling Tank Equipment.

As Built REMOVABLE ALUMINUM WALKWAY AND STEPS

Scale: $\frac{1}{2}$" 1'-0"

Notes:
For Plans showing locations of Section D-D, see Dwgs Nos 438.22(a-1)-34 and 35
For Details of C.I. Wall Sleeve and Wall Casting Through Settling Tank Wall, see Dwg. No 438.22(a-1)-24

AS-BUILT DRAWING
DATE January, 1968

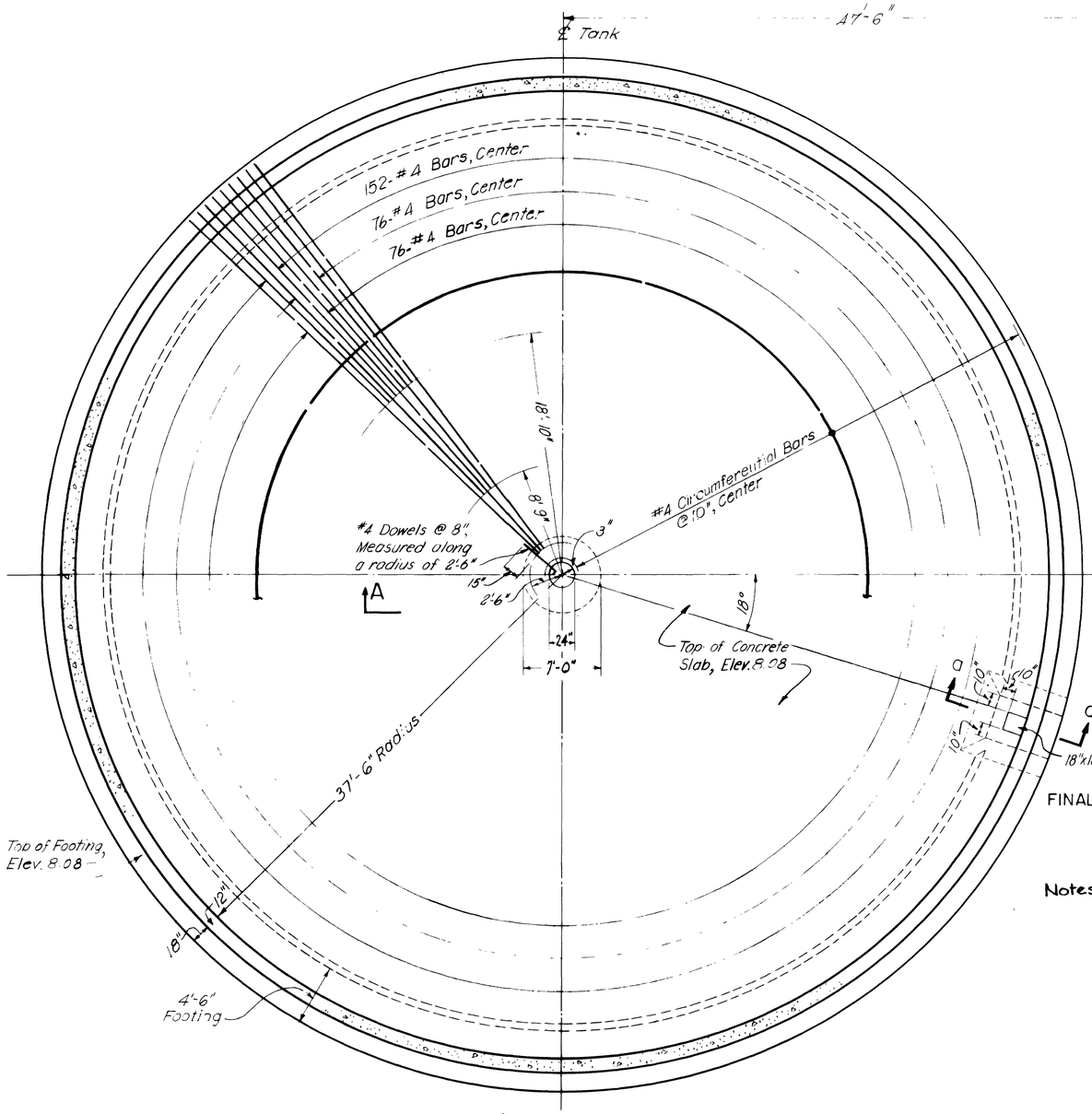
DRAWING NO. 438.22(a-1)-36

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
FINAL SETTLING TANKS
EQUIPMENT AND PIPING
SECTION D-D AND MISCELLANEOUS DETAILS

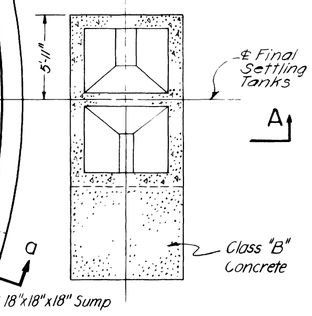
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

Drawn by: S.V.	Traced by: S.V.	Checked by: J.Q. G.V.A.	Examined by: DP	Approved by:
Revisions:	As Built 3/68 RGM			



FINAL SETTLING TANK NO. 2

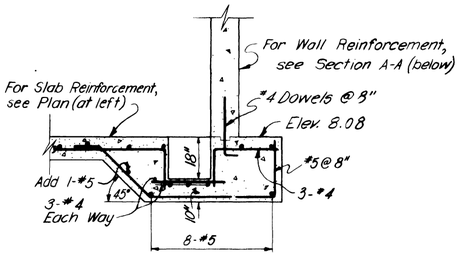


FINAL DISTRIBUTION CHAMBER

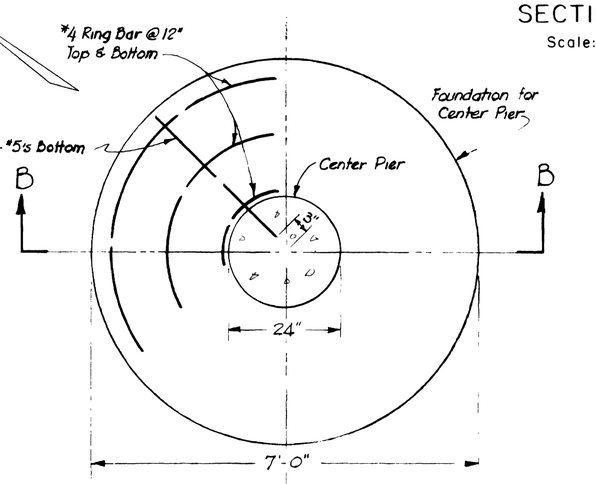
Notes:

Reinforcement Typical for Final Settling Tank #1. Influent and Effluent Pipes not Shown.
For Plans and Sections Showing Equipment and Piping, See Dwgs. No. 438-22(a-1) - 34, 35 and 36.
For Final Distribution Chamber Plans and Sections, See Dwg. No. 438-22(a-1) - 38.
For C.I. Sleeve and Casting Details, See Dwg. No. 438-22(a-1)-68.
For Details of C.I. Wall Sleeve and Wall Casting Through Settling Tank Wall, See Dwg. No. 438-22(a-1)-24.

As Built

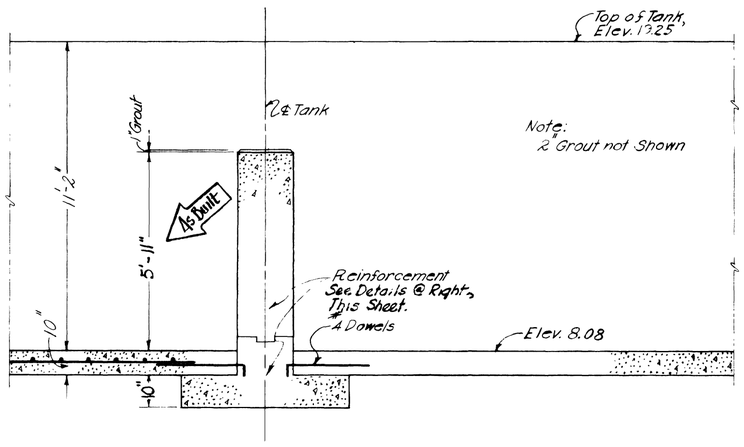


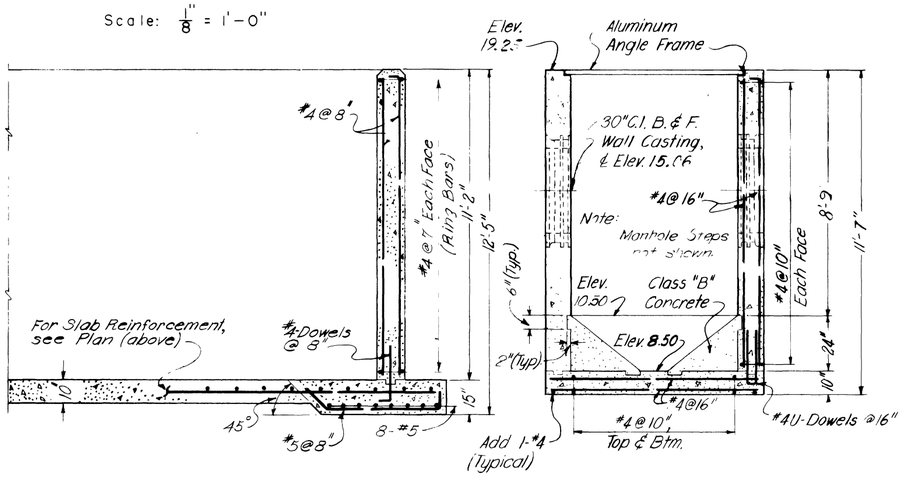
SECTION a-a
Scale: $\frac{1}{4}$" = 1'-0"



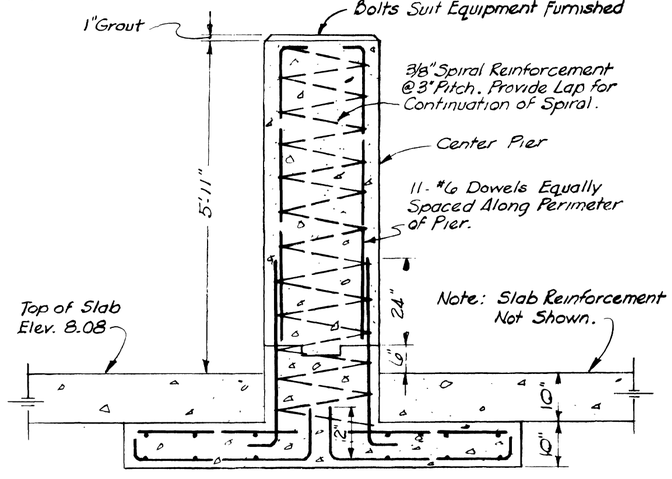
SECTIONAL PLAN AT ELEV. 7.25 As Built
Scale: $\frac{1}{2}$"=1'-0"

SECTIONAL PLAN AT ELEV. 10.50
Scale: $\frac{1}{8}$" = 1'-0"





SECTION A-A
Scale: $\frac{1}{4}$" = 1'-0"



SECTION B-B
Scale: $\frac{1}{2}$"=1'-0"

As Built CENTER PIER DETAILS
Scale as Noted

AS-BUILT DRAWING
DATE January, 1968

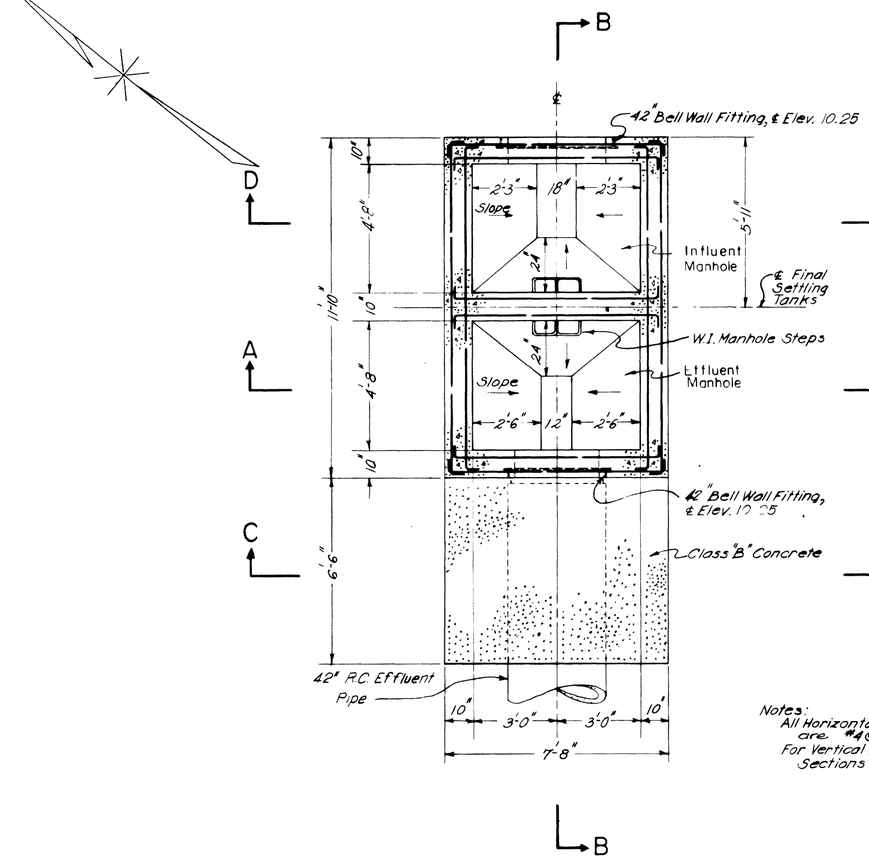
DRAWING NO. 438.22(a-1)-37

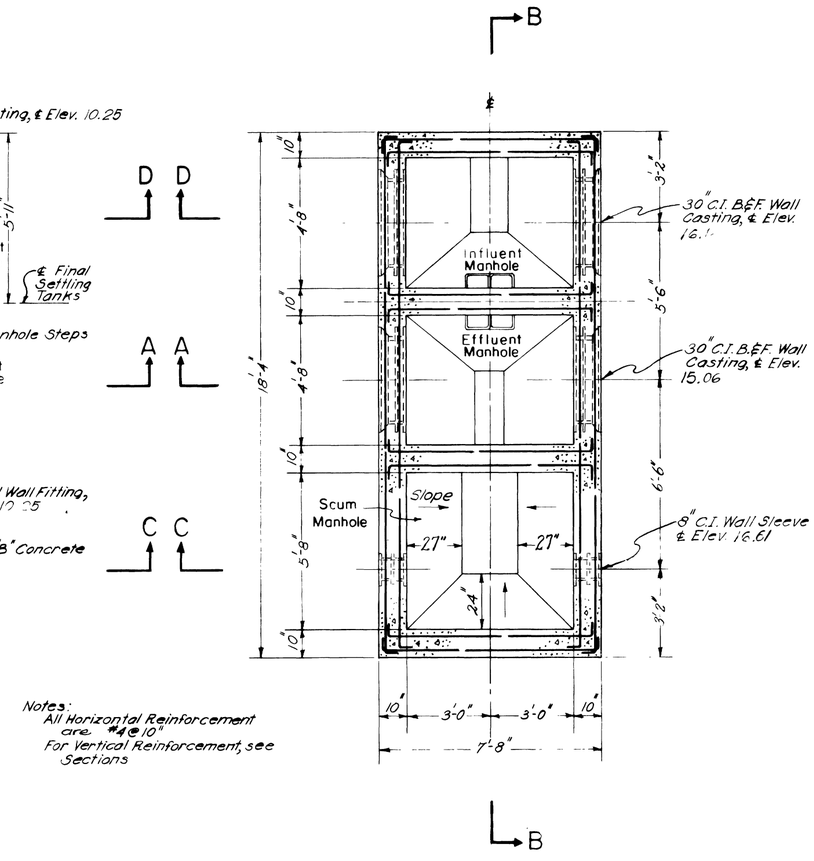
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
FINAL SETTLING TANKS
CONCRETE REINFORCING DETAILS
SECTIONAL PLAN AT ELEV. 10.50 AND SECTION A-A

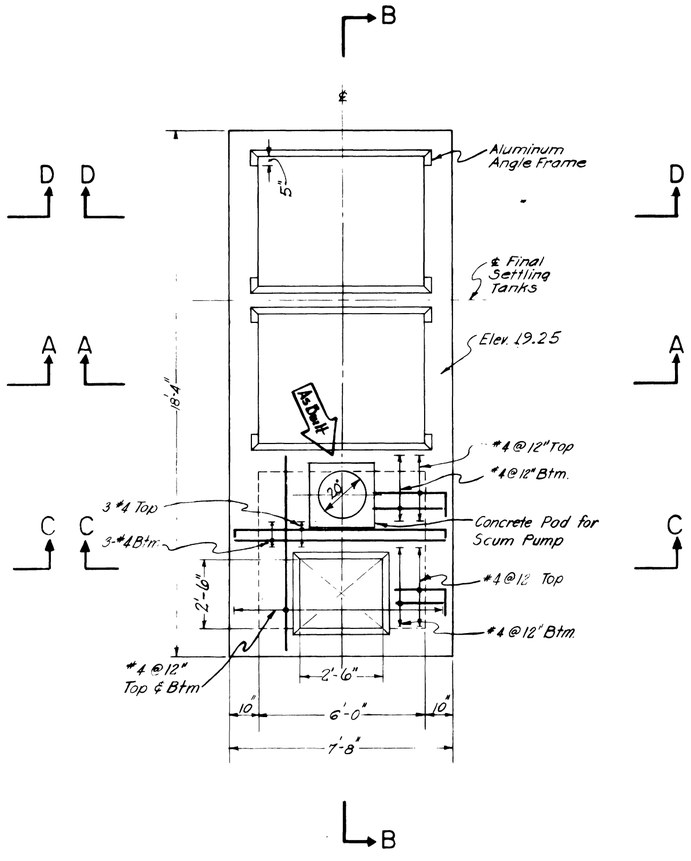
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

Drawn by: G.H.I.	Traced by: G.H.I	Checked by: M.E. G.V.A	Examined by: DP	Approved by:
Revisions:	As Built 4/18/67 RGJ			


B
42" Bell Wall Fitting, ℄ Elev. 10.25
2'-3"
18"
2'-3"
Slope
24"
Influent Manhole
℄ Final Settling Tanks
W.I. Manhole Steps
Effluent Manhole
Slope
2'-6"
12"
2'-6"
42" Bell Wall Fitting, ℄ Elev. 10.25
Class "B" Concrete
42" R.C. Effluent Pipe
10"
3'-0"
3'-0"
10"
7'-8"
11'10"
10"
4'-0"
10"
4'-8"
10"
6'-6"
5'-11"
D
A
C


B
3'-2"
30" C.I. B&F. Wall Casting, ℄ Elev. 16.61
5'-6"
30" C.I. B.&F. Wall Casting, ℄ Elev. 15.06
6'-8"
8" C.I. Wall Sleeve ℄ Elev. 16.61
3'-2"
Influent Manhole
Effluent Manhole
Scum Manhole
Slope
27"
27"
24"
10"
4'-8"
10"
4'-8"
10"
5'-8"
10"
18'-4"
10"
3'-0"
3'-0"
10"
7'-8"
D
A
C

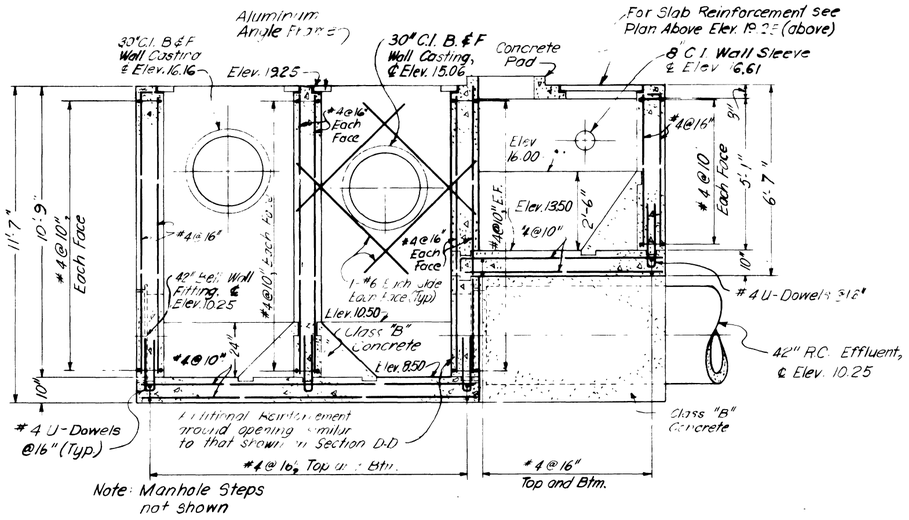


SECTIONAL PLAN AT ELEV. 12.67

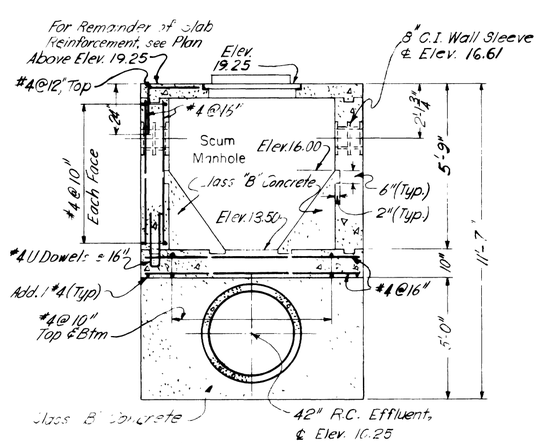
SECTIONAL PLAN AT ELEV. 18.58

PLAN ABOVE ELEV. 19.25

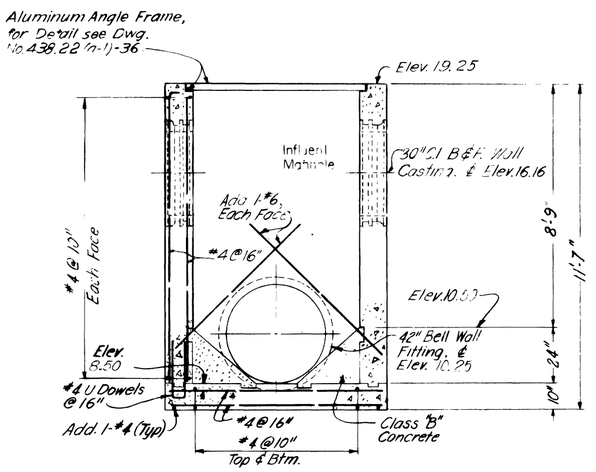
Notes:
All Horizontal Reinforcement are #4@10"
For Vertical Reinforcement, see Sections



SECTION B-B



SECTION C-C



SECTION D-D

FINAL DISTRIBUTION CHAMBER

Notes:
For Plan showing location of Distribution Chamber and Section A-A, see Dwg. No. 438.22(a-1)-37
For Detail of W.I. Manhole Steps, see Dwg. No. 438.22(a-1)-68
For C.I. Sleeve and Casting Details, see Dwg. No. 438.22(a-1)-68

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-38

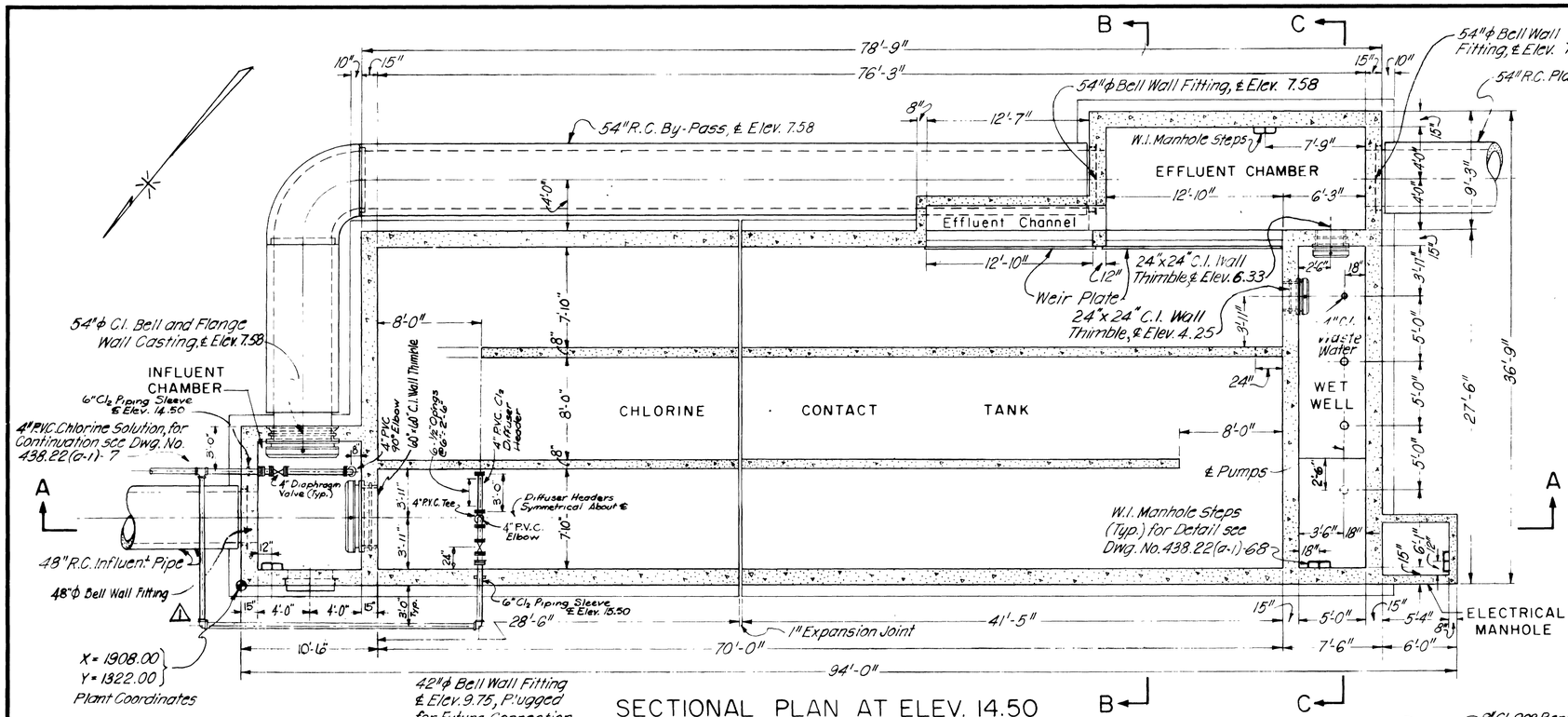
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
FINAL SETTLING TANKS
CONCRETE REINFORCING DETAILS
PLANS, SECTIONS B-B, C-C AND D-D

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

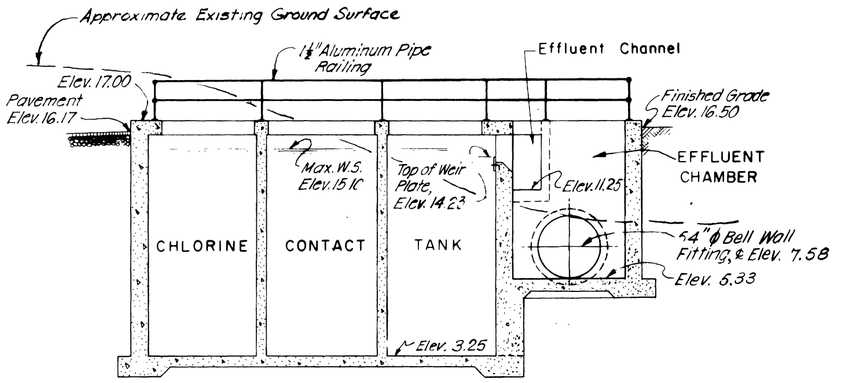
Scale: 1/4" = 1'-0"

July, 1964

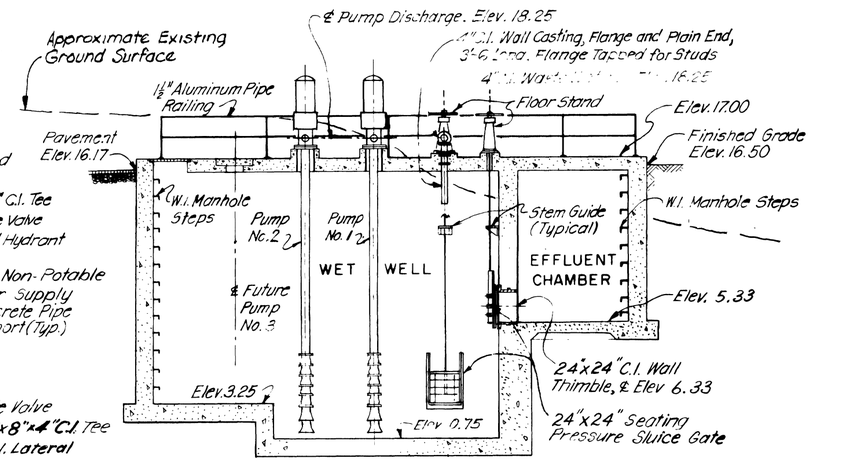
Drawn by: D.R.	Traced by: D.R. / H.C.	Checked by: M.F. G.V.A.	Examined by: D.P.	Approved by:
Revisions:	As Built 1/68 R.G.M.			



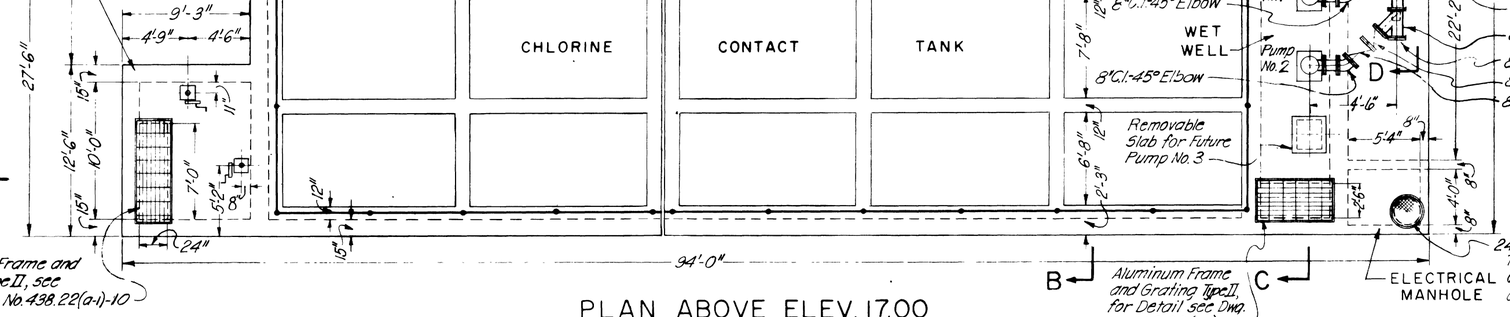
SECTIONAL PLAN AT ELEV. 14.50



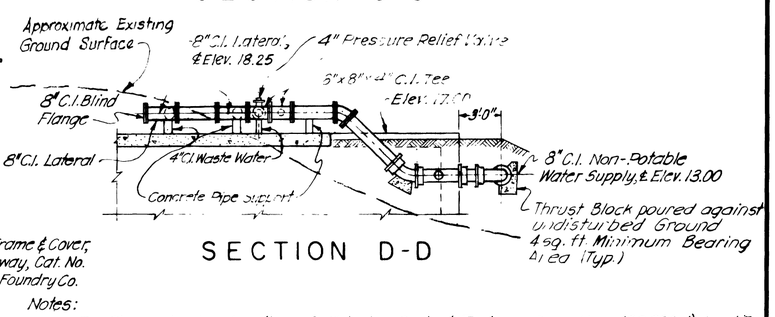
SECTION B-B



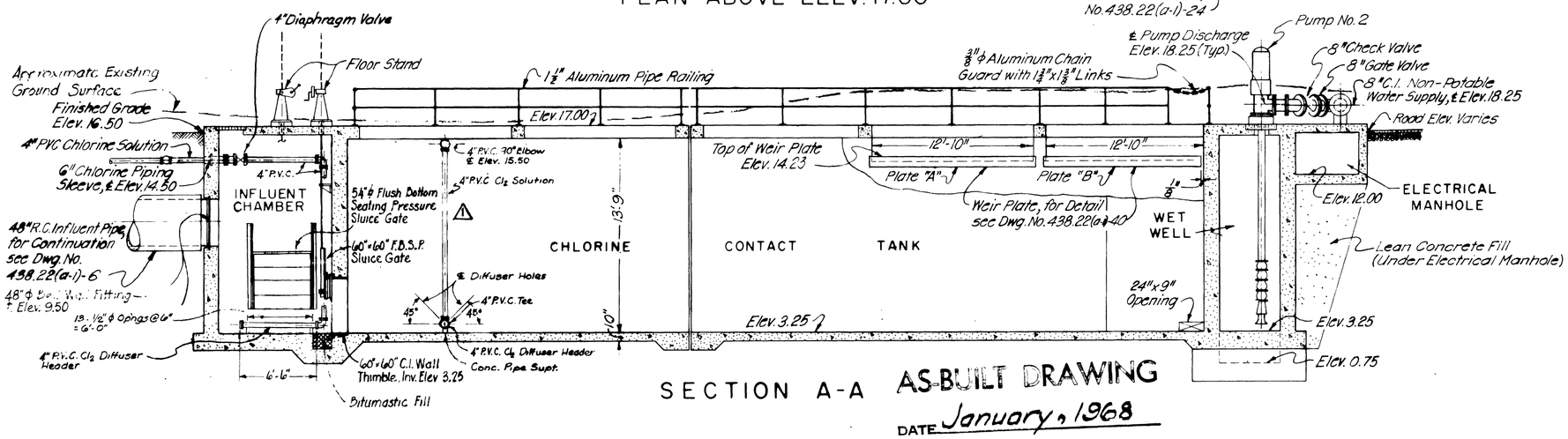
SECTION C-C



PLAN ABOVE ELEV. 17.00



SECTION D-D



SECTION A-A

AS-BUILT DRAWING
DATE January, 1968

Notes:

For Plans showing location of Chlorine Contact Tank, see Dwgs. Nos. 438.22(a-1)-1 and 5
For Outside Piping Plans, see Dwgs. Nos. 438.22(a-1)-6 and 7.
For Concrete Reinforcing Details, see Dwgs. Nos. 438.22(a-1)-41, 42 and 43.
For Aluminum Pipe Railing, Manhole Steps, C.I. Sleeve and C.I. Casting Details, see Dwg. No. 438.22(a-1)-68
For Detail of Concrete Pipe Support, see Dwg. No. 438.22(a-1)-70
For Detail of Manhole Cover, see Dwg. No. 438.22(a-1)-66.

DRAWING NO. 438.22(a-1)-39

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

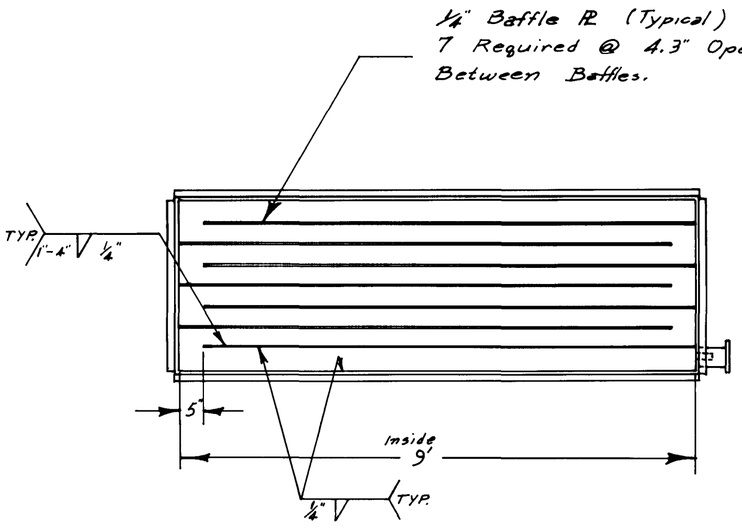
CHLORINE CONTACT TANK

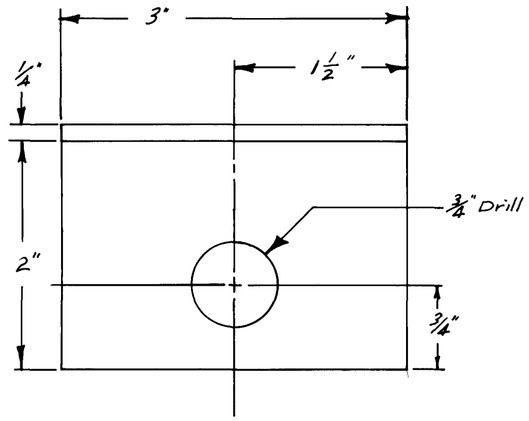
EQUIPMENT AND PIPING
PLANS AND SECTIONS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/8" = 1'-0"
July, 1964

Drawn by: J.P.	Traced by: R.B.	Checked by: G.M. G.V.A.	Examined by: D.P.	Approved by:
Revisions:	⚠ RGM 4/12/67			

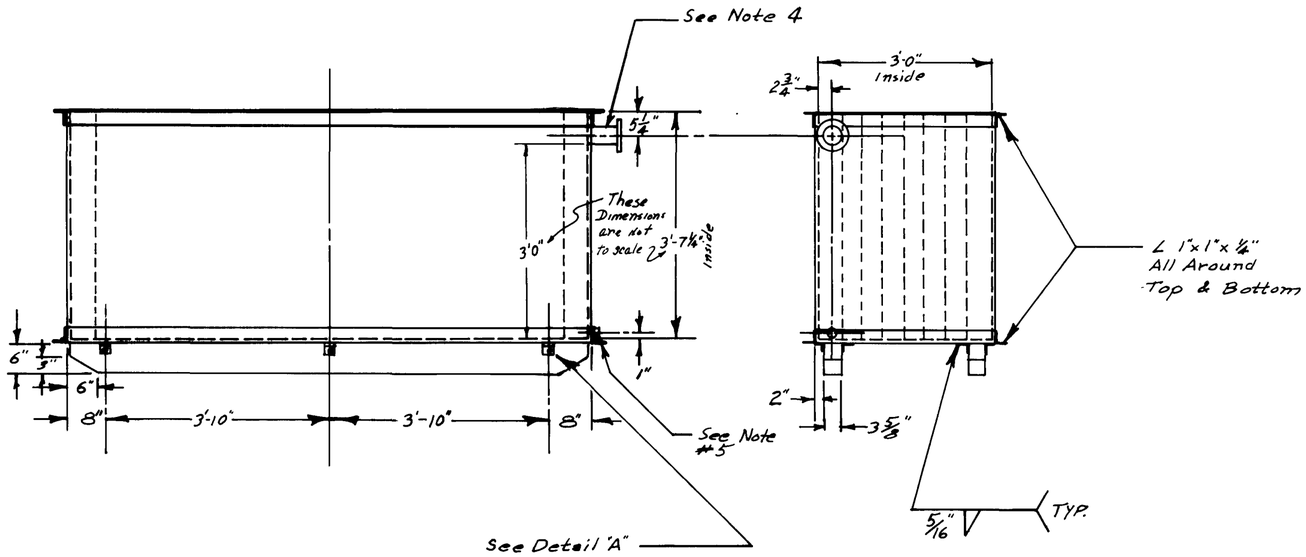




DETAIL "A"
Bracket
SCALE: FULL

NOTES:

1. ALL WELDS TO BE 1/4" FILLET
2. PLATE MATERIAL 1/4" MIN. THICKNESS
3. PAINT INTERIOR AND EXTERIOR
   - A. Near White, Blast Per Steel Structures Painting Council Surface Preparation Spec. No. 10
   - B. First Coat: MOBILE Light Buff 78-D-7 Tank Lining High Build Epoxy. 5-8 Mils Dry Film Thickness
   - C. Second Coat: Allow First Coat To Cure For 16 Hrs. Apply MOBILE White 78-W-3 Tank Lining High Build Epoxy 5-8 Mils Thickness. Use 7-T-20 Thinner If Necessary
4. 4" Flg. Outlet ANSI Rating 150
5. 1" Drain Coupling With Cap, Screwed Facing ANSI Rating 3000



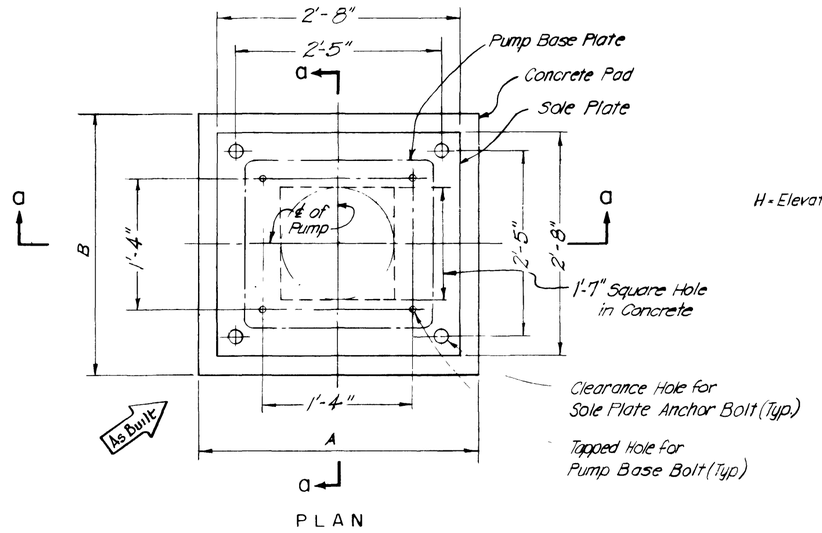
MISC. MATERIALS

NAME	DESCRIPTION	NO. REQ.
BRACKETS	L 2"x2"x 1/4"	12
SKIDS	4" x 6" x 9' Long Oak	2
BOLTS	3/4" x 8" Hex Head W/NUTS	6

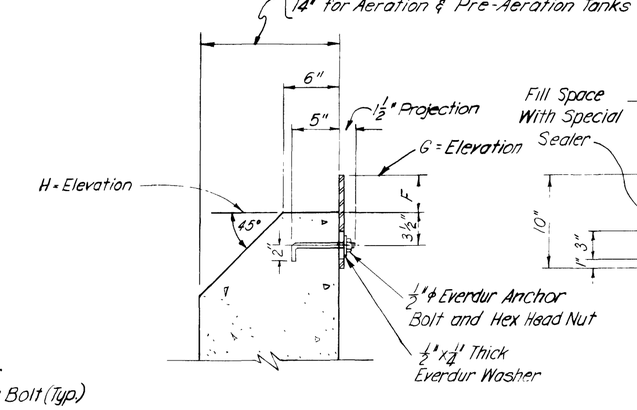
HAMPTON ROADS SANITATION DISTRICT

CONTACT TANK REVISIONS
T-1 & T-3
JAMES RIVER TREATMENT PLANT

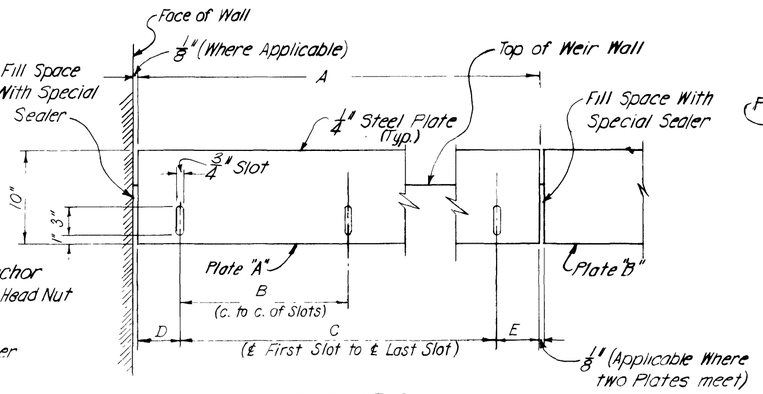
DESIGNED BY: R.M.N.	DATE: DECEMBER 1976
DRAWN BY: J.E.H.	FILE NO.
CHECKED BY:	Revised Jan 21, 1977 L.A.D
SCALE: 1/2" = 1'-0"	



PLAN

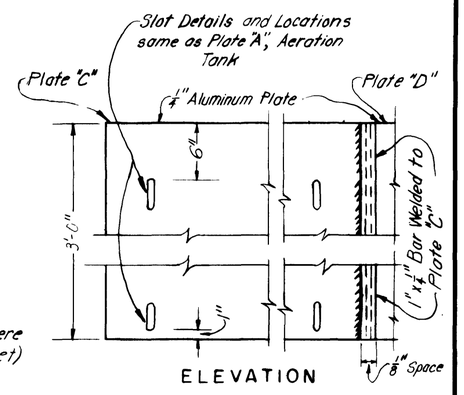


SECTION



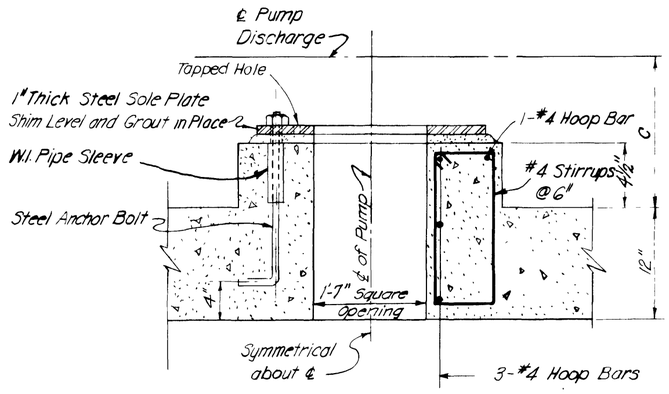
ELEVATION

PLATES "A" AND "B"



ELEVATION

PLATES "C" AND "D"



SECTION a-a

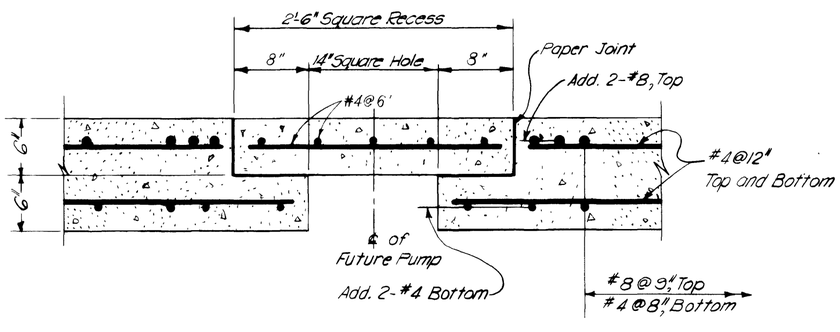
DIMENSIONS				
UNIT	A	B	C	NO. REQ'D
Pumps Nos. 1 and 2	3'-8"	3'-8"	15"	2

DETAILS OF PUMP FOUNDATIONS

(NON-POTABLE WATER PUMPS)

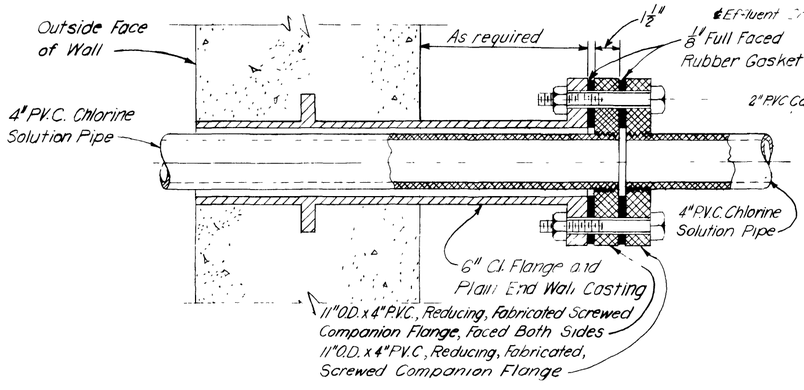
Not to Scale

DIMENSIONS										
LOCATION	No. RQ'D	A	B	C	D	E	F	G	H	REMARKS
CHLORINE CONTACT TANK (Plate "A")	1	13'-0"	18"	12'-0"	6"	6"	3¾"	14.23	13.92	
CHLORINE CONTACT TANK (Plate "B")	1	12'-11"	18"	12'-0"	5½"	5½"	3¾"	14.23	13.92	
Aeration Tank (Plate "C")	2	10'-0 13/16"	18"	9'-0"	6 3/8"	6 7/16"	4" or 30"	18.50 or 20.75	18.25	Compartment No. 1, Plate "D" Opposite Hand
Aeration Tank (Plate "A")	4	10'-0 13/16"	18"	9'-0"	6 3/8"	6 7/16"	4"	18.58	18.25	Compartments Nos. 2 and 3, Plate "B" Opposite Hand
Pre-Aeration Tank (Plate "A")	2	10'-0 13/16"	18"	9'-0"	6 3/8"	6 7/16"	4 1/8"	26.09	25.75	Plate "B" Opposite Hand



DETAIL OF REMOVABLE SLAB FOR FUTURE PUMP NO. 4

Scale: 1"=1'-0"

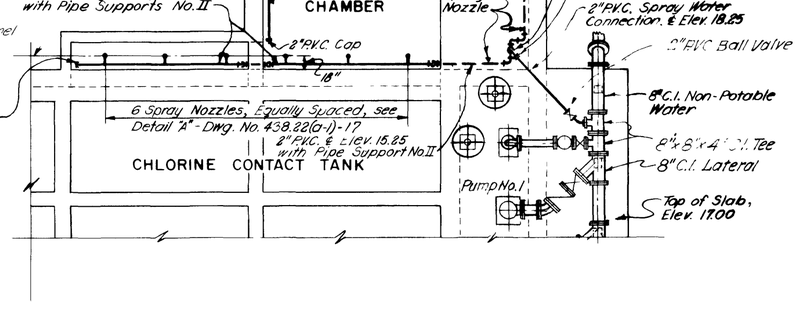


CHLORINE PIPING SLEEVE

Not to Scale

WEIR PLATE DETAILS

Not to Scale



Notes:

Maximum spacing between Nozzles not to exceed 4'-6".

Maximum spacing between supports for Spray Water Pipe not to exceed 7'-0".

For typical Spray Nozzle, Pipe Supports Nos. I and II Details, see Dwg. No. 438.22 (a-1)-17

PARTIAL PLAN ABOVE ELEV. 17.00

Scale: 1/8" = 1'-0"

DRAWING NO. 438.22(a-1)-40

HAMPTON ROADS SANITATION DISTRICT

NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

CHLORINE CONTACT TANK

EQUIPMENT AND PIPING

MISCELLANEOUS DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown

July, 1964

Drawn by: J.P.	Traced by: K.P.	Checked by: J.Q. G.V.A.	Examined by: DP	Approved by:
Revisions:	As Built 1/68 RSM			

AS-BUILT DRAWING

DATE January, 1968

SECTIONAL PLAN AT ELEV. 16.00

SECTION A-A

SECTION B-B

Notes:

For Plans and Sections showing location of Equipment and Piping, see Dwg. No. 438.22(a-1)-39

For Plan Above Elev 17.00, Sections C-C and D-D, see Dwg. No. 438.22(a-1)-42

For Sections E-E, F-F, G-G, and H-H, see Dwg No 438.22(a-1)-43

For Reinforcement at Wall Intersections, see Dwg. No. 438.22(a-1)-18

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-41

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
CHLORINE CONTACT TANK
CONCRETE REINFORCING DETAILS

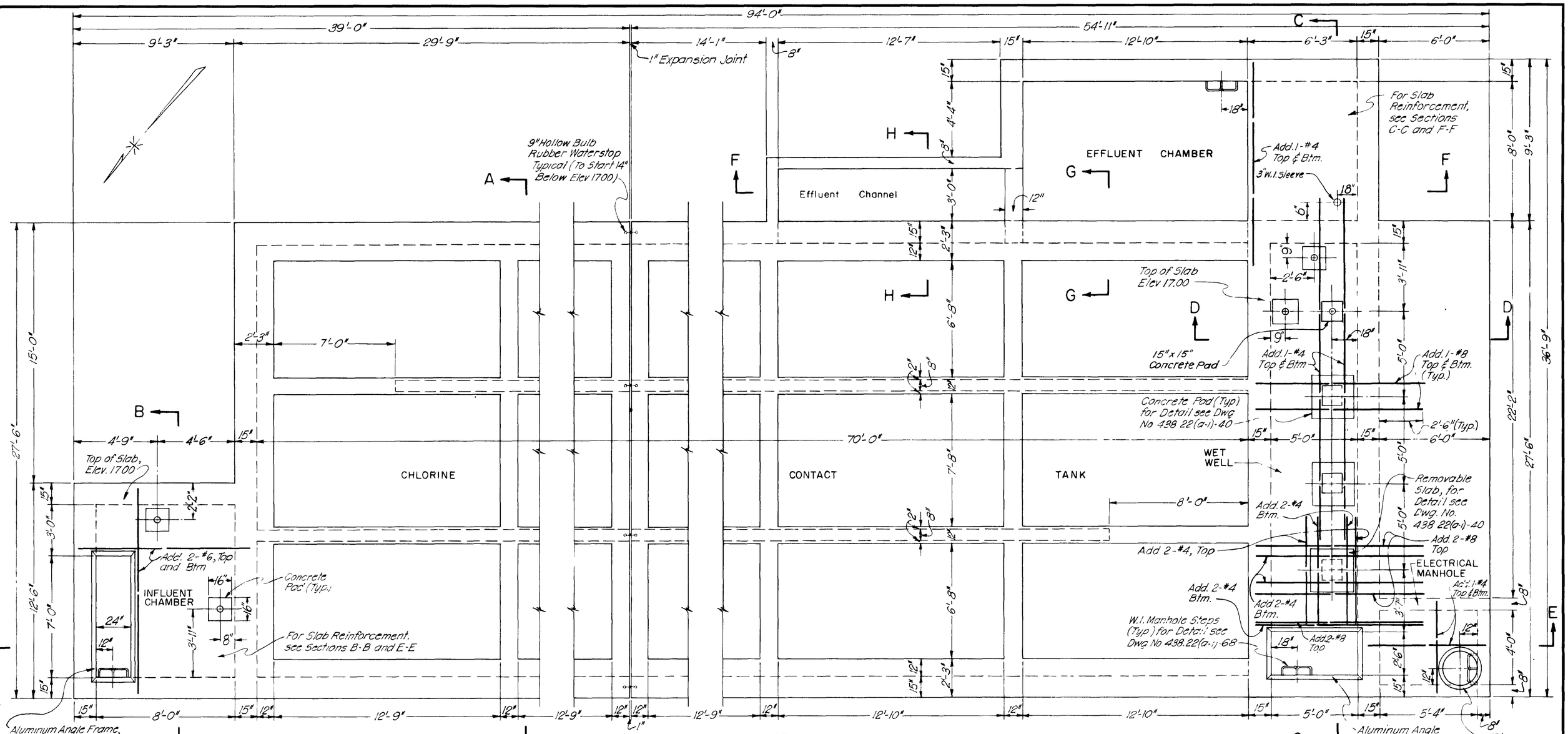
SECTIONAL PLAN AT ELEV. 16.00, SECTIONS A-A AND B-B

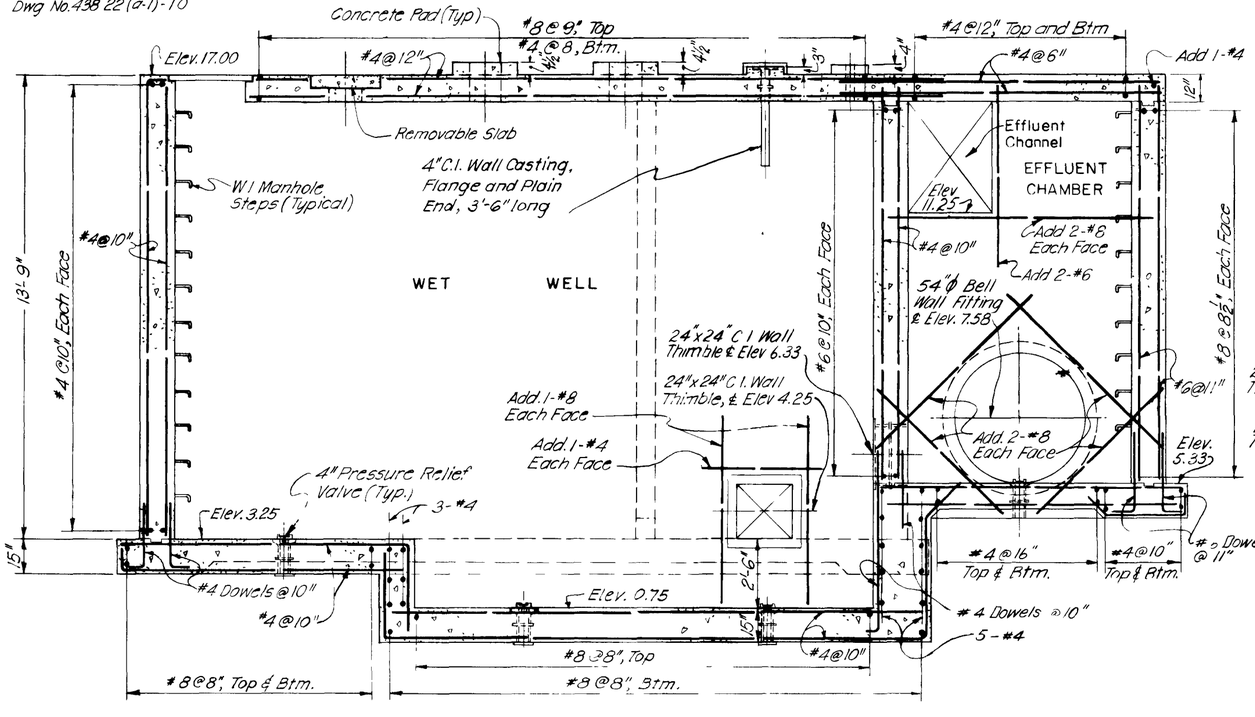
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

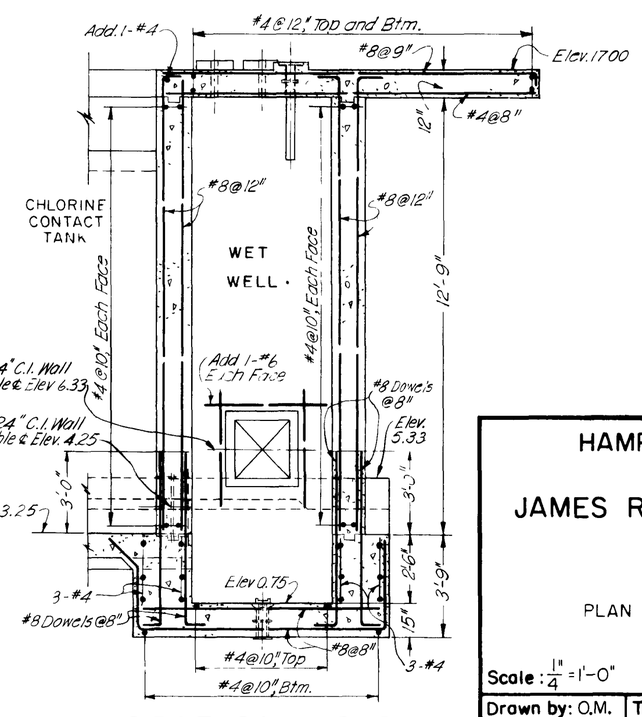
Scale: 1/4"=1'-0"

July, 1964

Drawn by: O.M.	Traced by: O.M.	Checked by: F.H. G.V.A.	Examined by: JP	Approved by: G
Revisions:	⚠ RGM 4/12/67			







Notes:

For Plans and Sections showing location of Equipment and Piping, see Dwg. No 438.22(a-1)-39
For Sectional Plan at Elev. 16.00, Sections A-A and B-B, see Dwg. No. 438.22(a-1)-41
For Sections E-E, F-F, G-G and H-H, see Dwg. No. 438 22(a-1)-48
For Reinforcement at Wall Intersections, see Dwg. No 438 22(a-1)-18

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1) – 42

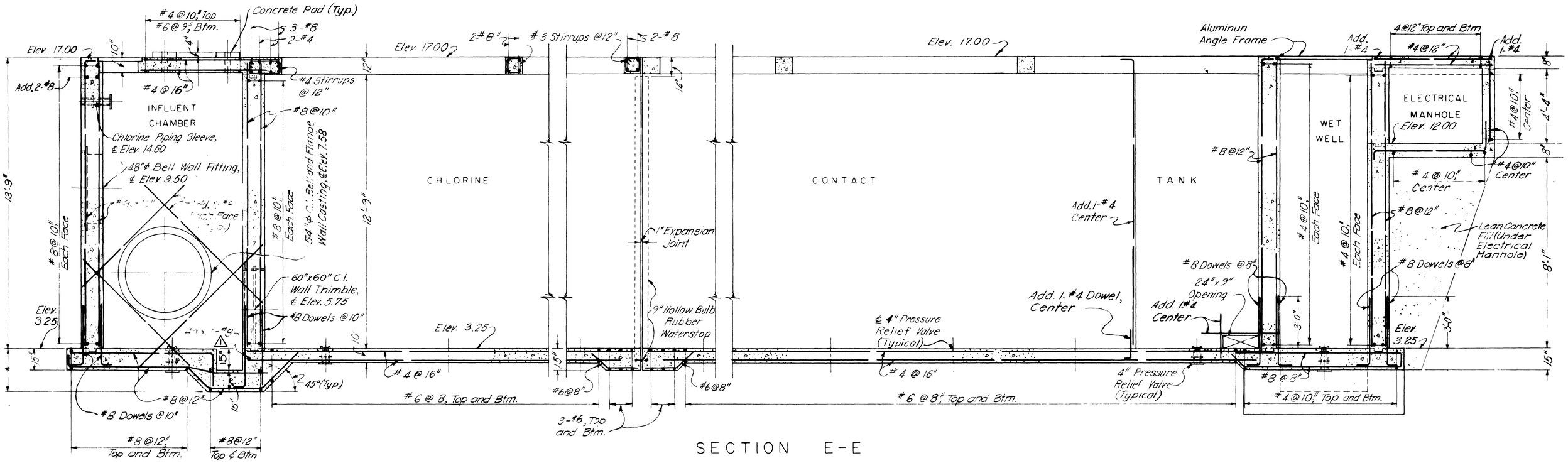
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
CHLORINE CONTACT TANK
CONCRETE REINFORCING DETAILS
PLAN ABOVE ELEV. 17.00, SECTIONS C-C AND D-D

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

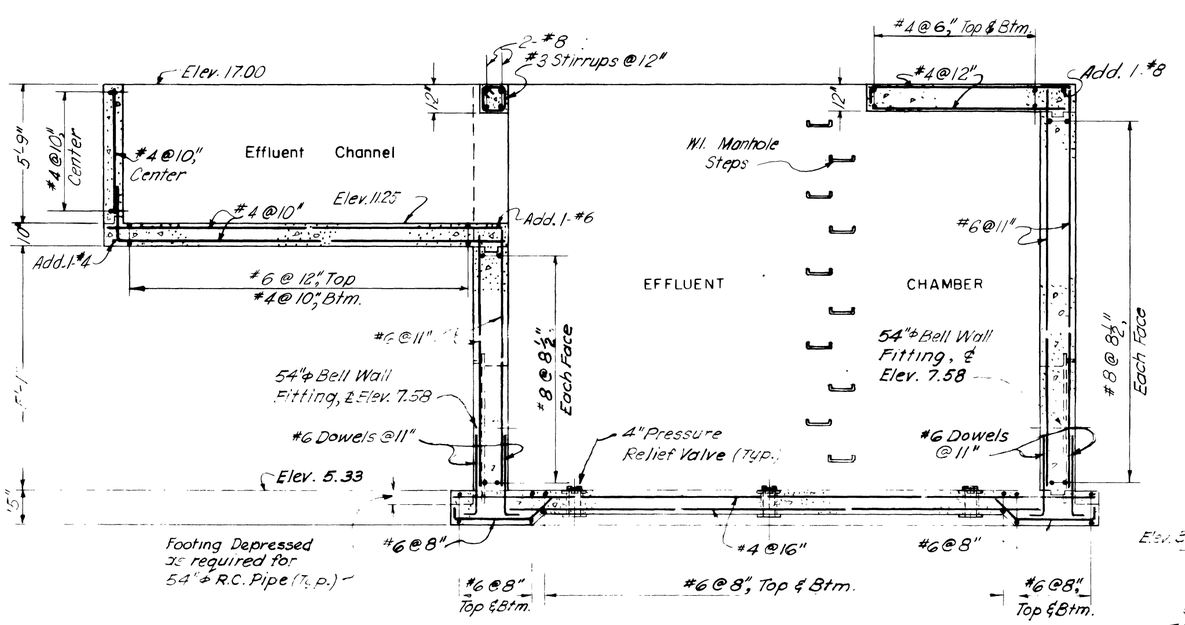
Scale: 1/4" = 1'-0"

July, 1964

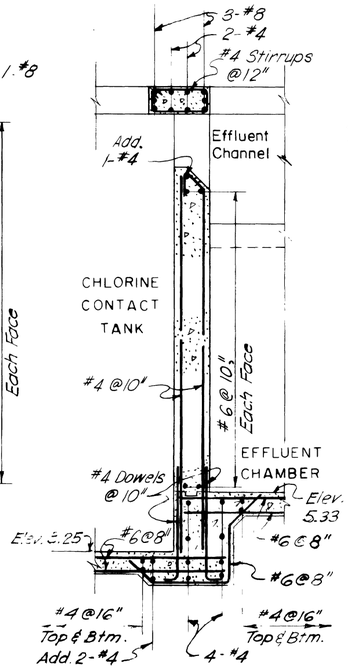
Drawn by: O.M.	Traced by: O.M.	Checked by: E.H. G.V.A.	Examined by: DP	Approved by:
Revisions:				



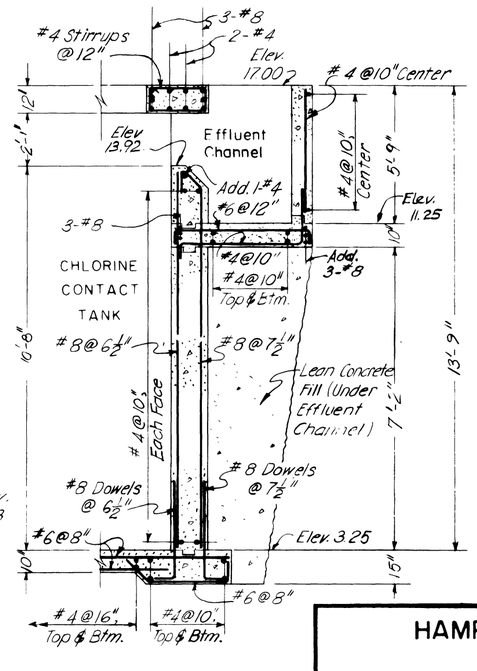
SECTION E-E



SECTION F-F



SECTION G-G



SECTION H-H

Notes:

For Plans and Sections showing location of Equipment and Piping, see Dwg. No. 438.22(a-1)-39

For Location of Sections E-E, F-F, G-G and H-H, see Dwgs. Nos. 438.22(a-1)-41 and 42

DRAWING NO. 438.22(a-1)-43

AS-BUILT DRAWING

DATE January 2, 1968

HAMPTON ROADS SANITATION DISTRICT

NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

CHLORINE CONTACT TANK

CONCRETE REINFORCING DETAILS

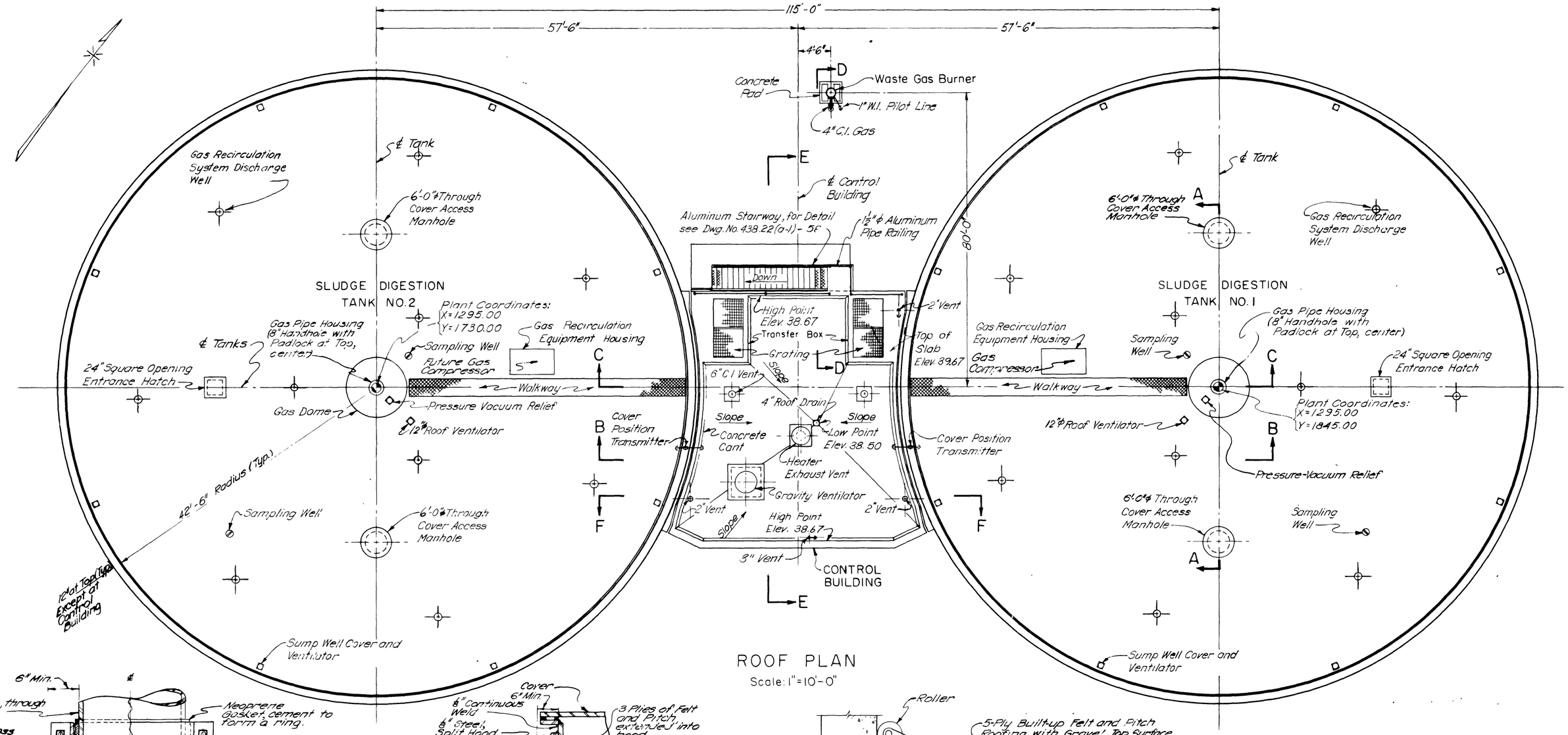
SECTIONS E-E, F-F, G-G AND H-H

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4"=1'-0"

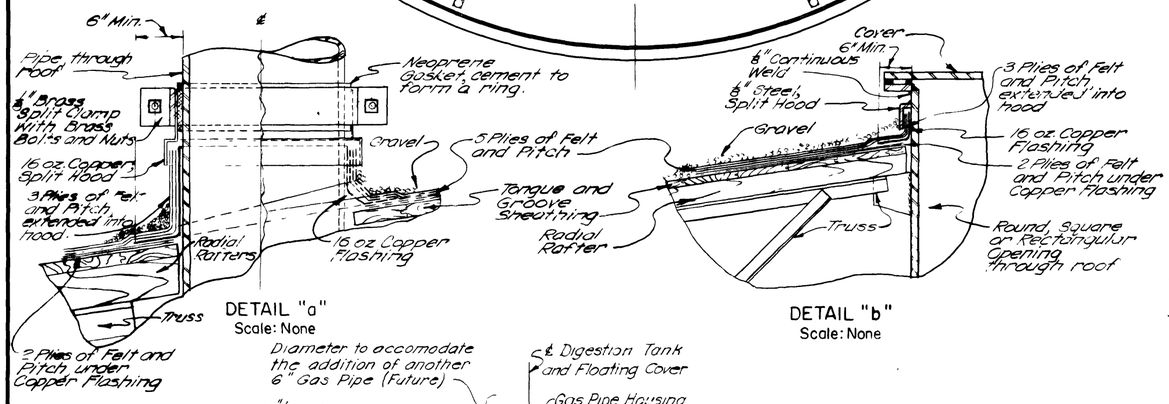
July, 1964

Drawn by: O.M.	Traced by: F.T.D.	Checked by: E.H. G.V.A.	Examined by: J.P.	Approved by:
Revisions:	⚠ RGM 4/12/67			



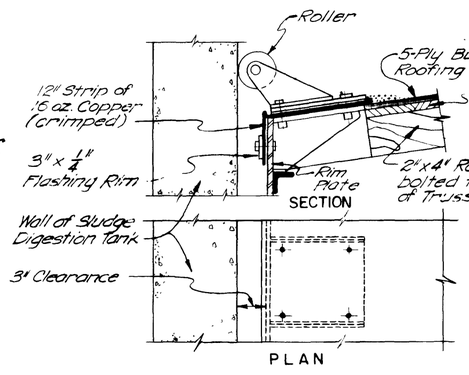
ROOF PLAN

Scale: 1" = 10'-0"

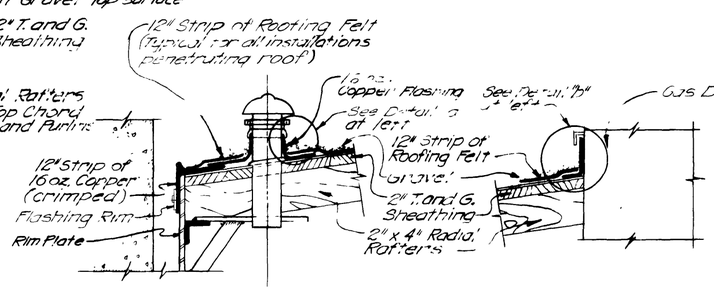


DETAIL "a"
Scale: None

DETAIL "b"
Scale: None



AT ROLLERS

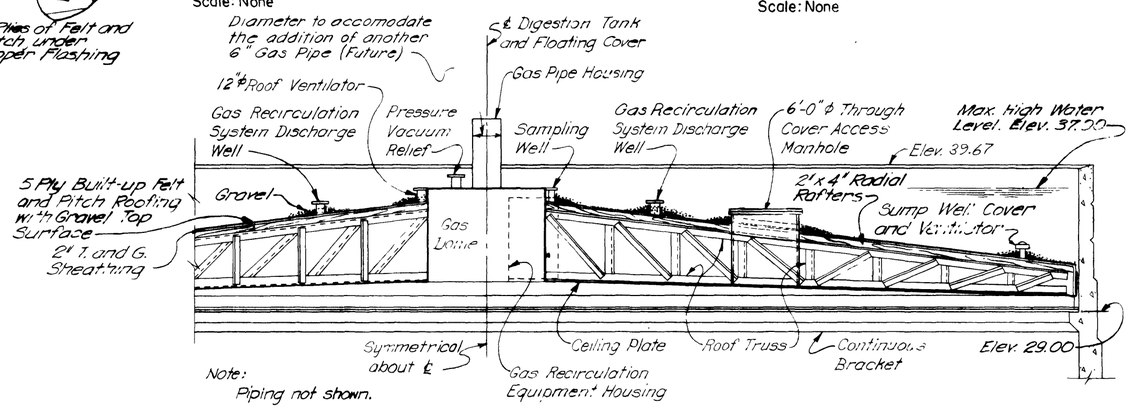


AT SUMP WELL COVER AND VENTILATOR

AT GAS DOME

TYPICAL FLASHING DETAILS

Scale: None



Note:
Piping not shown.

SECTION THROUGH FLOATING COVER

Scale: ⅛" = 1'-0"

AS-BUILT DRAWING

DATE January, 1968

Notes:

For Plans showing location of Sludge Digestion Tanks and Control Building, see Dwgs. Nos. 438.22(a-1)-1 and 6
For Outside Piping Plan, see Dwgs. Nos. 438.22(a-1)-7 and 8.
For Elevations, see Dwg. No. 438.22(a-1)-45.
For Plans showing Equipment and Piping, see Dwgs. Nos. 438.22(a-1)-46, 47, 48 and 49.
For Section A-A, see Dwg. No. 438.22(a-1)-46.
For Section B-B, see Dwg. No. 438.22(a-1)-50.
For Section C-C, see Dwg. No. 438.22(a-1)-51.
For Sections D-D, E-E and F-F, see Dwg. No. 438.22(a-1)-52.
For Plans, Sections and Details showing Concrete Reinforcement, see Dwgs. Nos. 438.22(a-1)-53, 54, 55 and 56.
For Flashing Form and Small Vent Stack Detail, see Dwg. No. 438.22(a-1)-58.
For Exhaust Vent Detail, see Dwg. No. 438.22(a-1)-59.

DRAWING NO. 438.22(a-1)-44

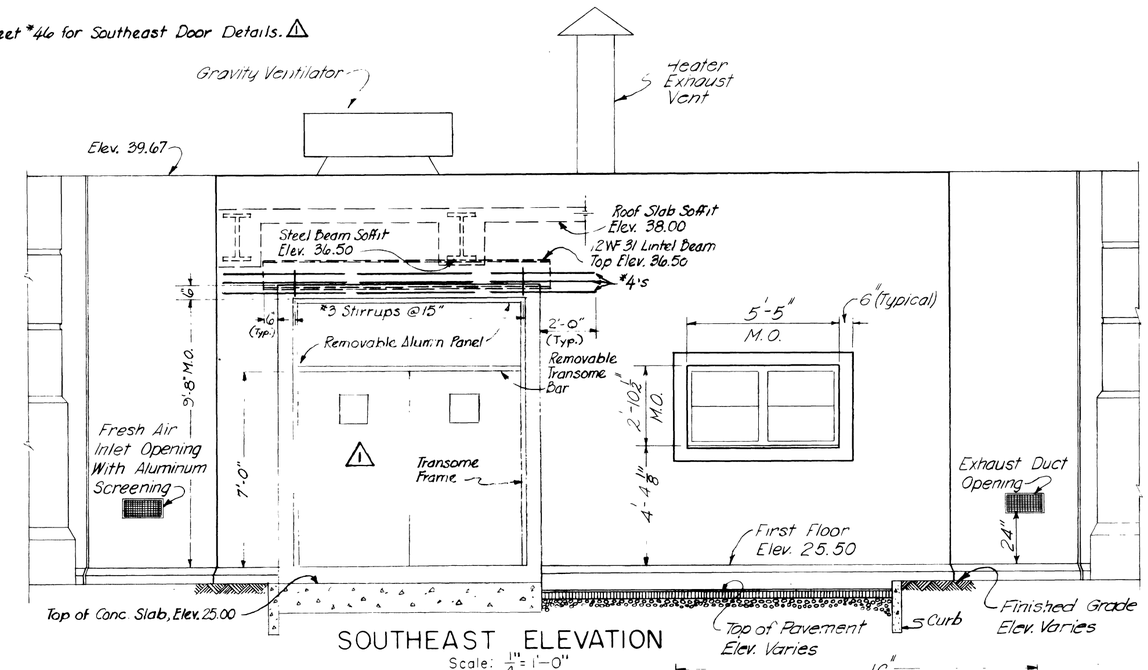
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
ROOF PLAN

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

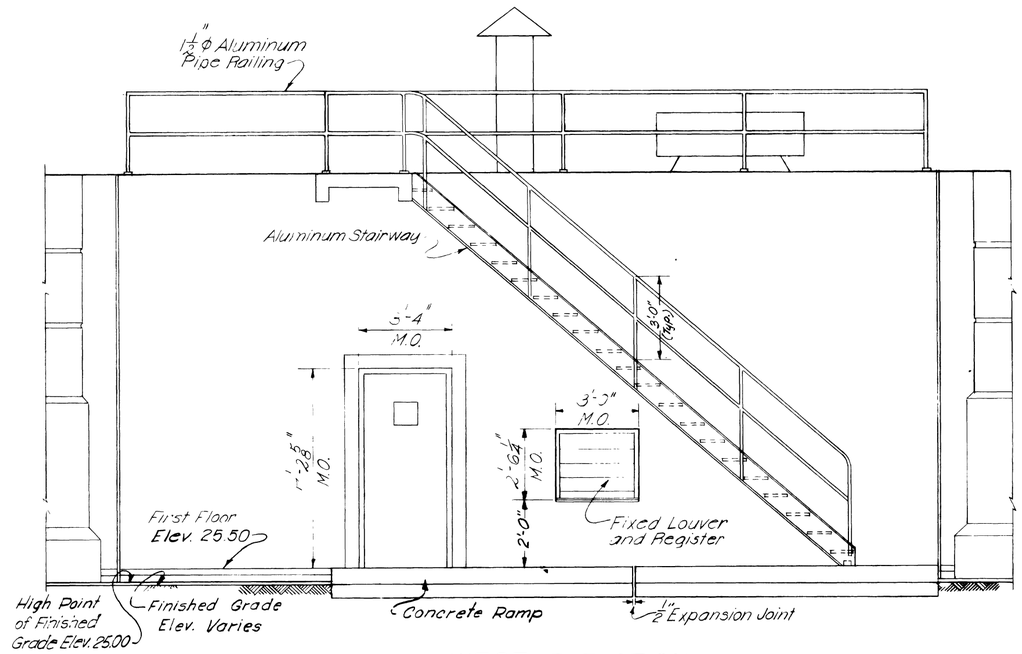
Scale: As Shown — July, 1964

Drawn by: S.V.	Traced by: S.V.	Checked by: J.B. 2B	Examined by:	Approved by:
Revisions:				

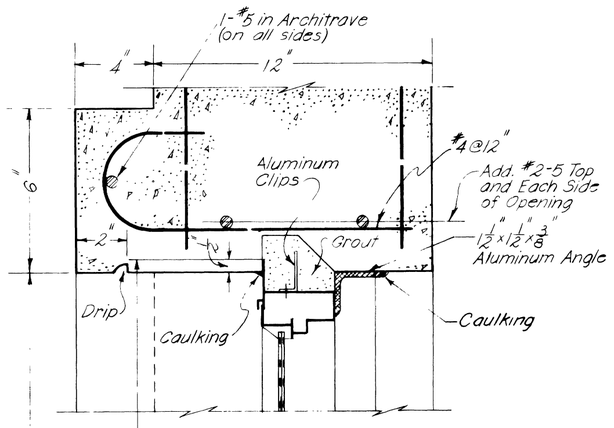
Note : See Sheet #46 for Southeast Door Details. ⚠



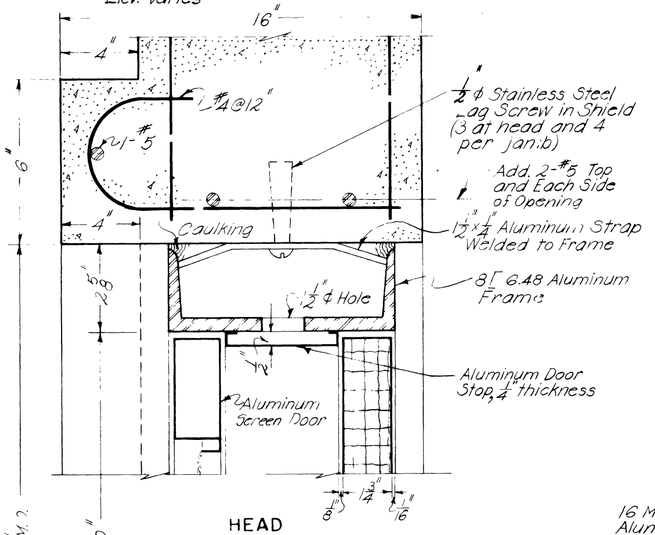
SOUTHEAST ELEVATION
Scale: 1/4" = 1'-0"



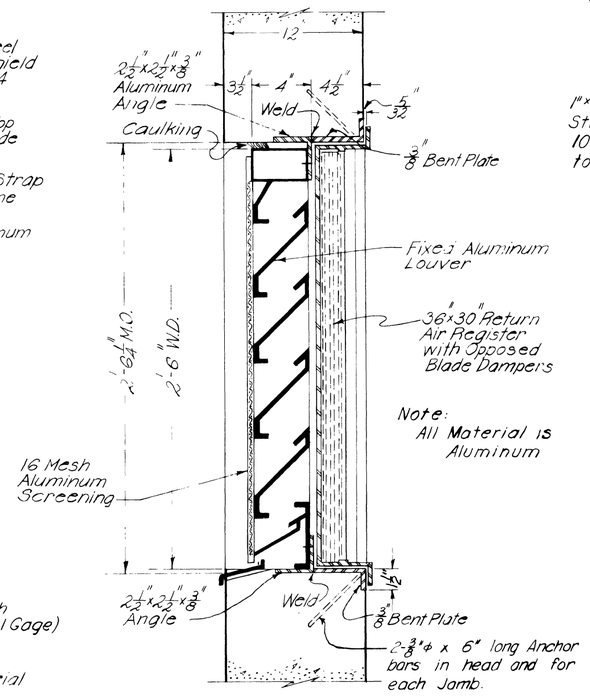
NORTHWEST ELEVATION
Scale: 1/4" = 1'-0"



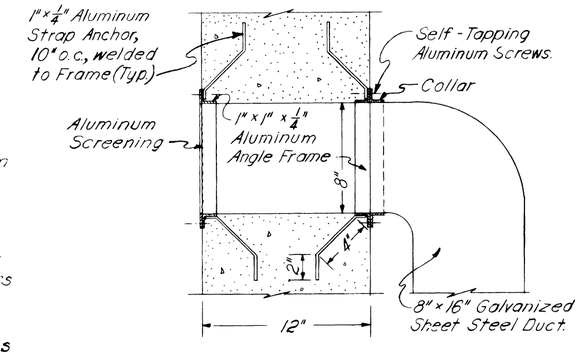
HEAD
(Jamb Similar)



HEAD
(Jamb Similar)



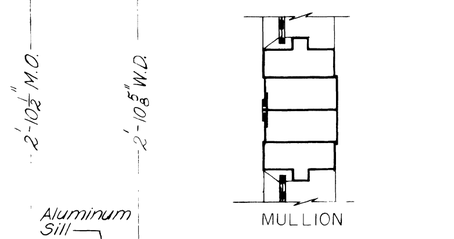
FIXED LOUVER AND REGISTER
Scale: None



SECTION

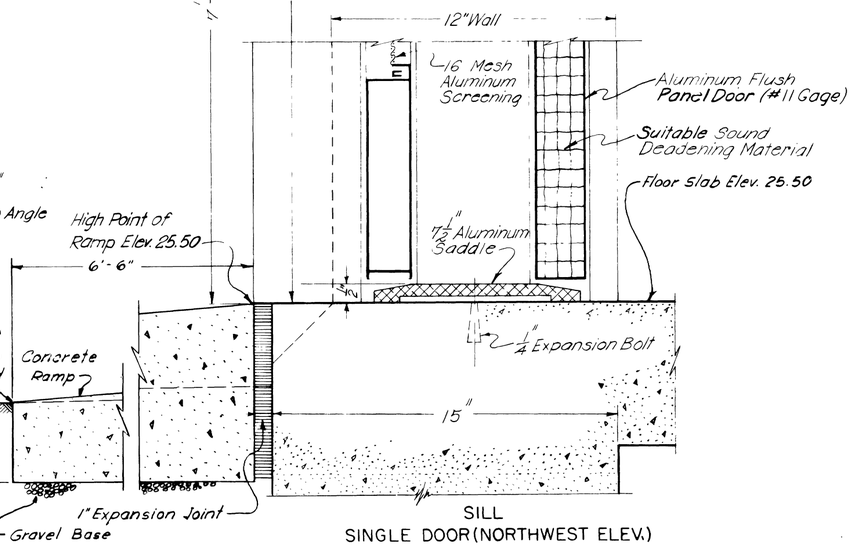
DUCT OPENING AT WALL
Scale: 1½" = 1'-0"

Notes:
For Roof Plan, see Dwg. No. 438.22(a-1)-44.
For First Floor Plan, see Dwg. No. 438.22(a-1)-49.
For Exhaust Vent Detail, see Dwg. No. 438.22(a-1)-59.



SILL

ALUMINUM WINDOW
Awning Type
Scale: None



SILL
SINGLE DOOR (NORTHWEST ELEV.)

EXTERIOR DOORS
Scale: None

AS-BUILT DRAWING
DATE January 2, 1968

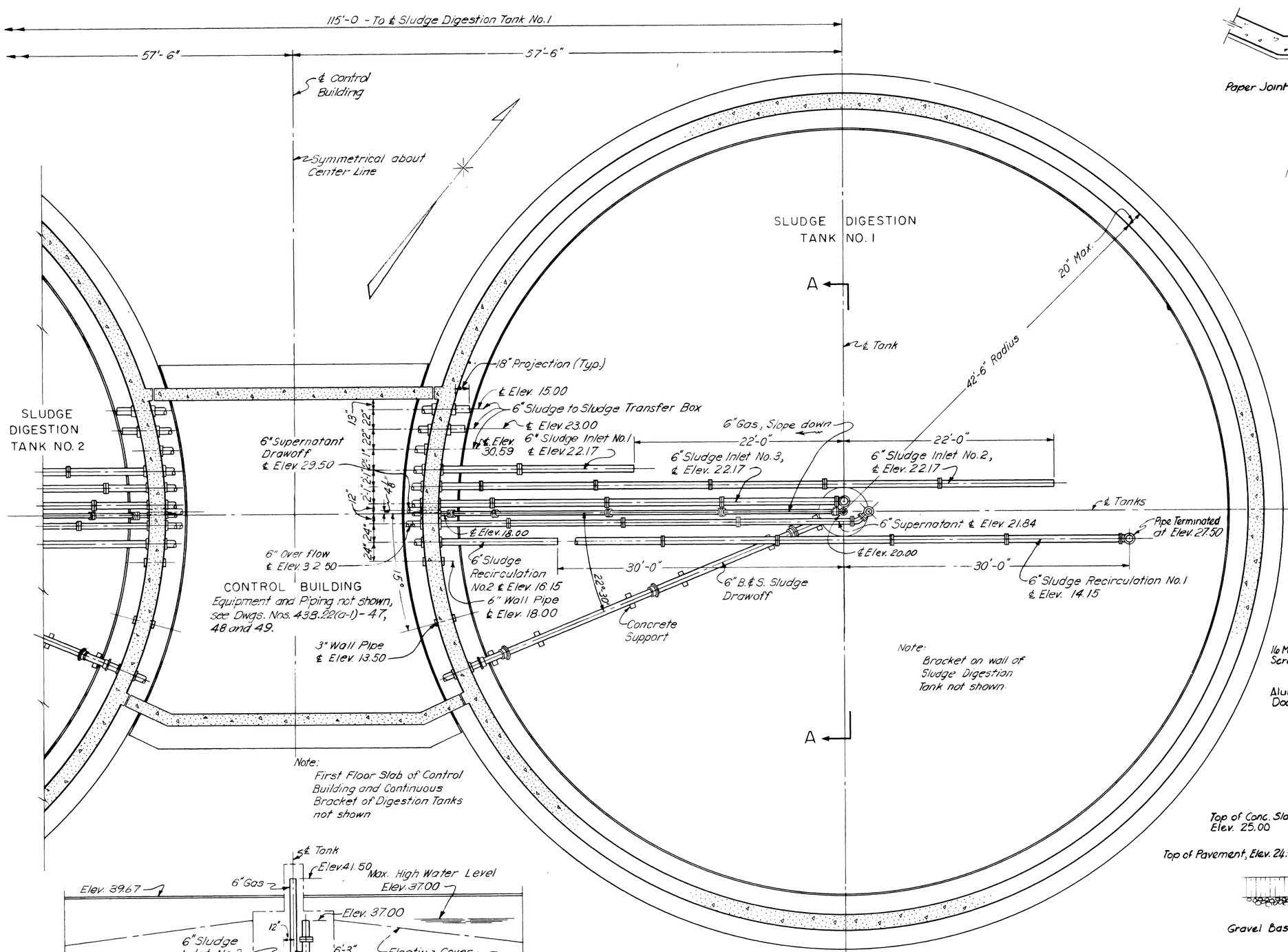
DRAWING NO. 438.22 (a-1)-45

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
ARCHITECTURAL
SLUDGE CONTROL BUILDING - ELEVATIONS AND DETAILS

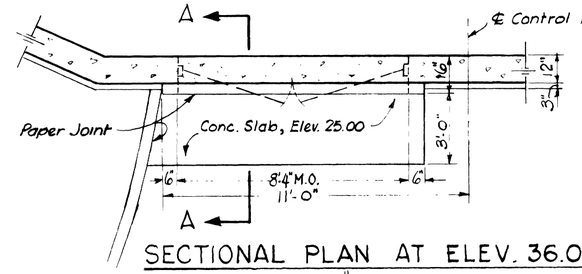
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

Drawn by: J.G.	Traced by: O.R.	Checked by: J.G. J.O.	Examined by: DH	Approved by:
Revisions:	⚠ RGM 4/19/1968			

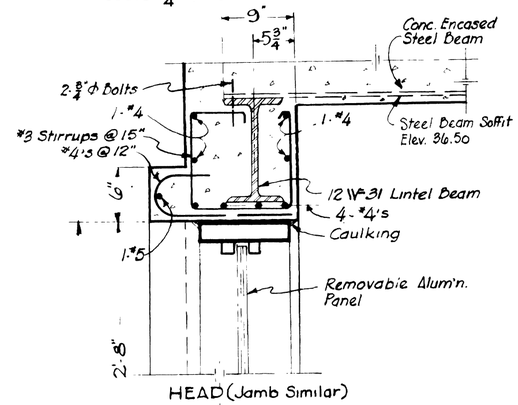


PLAN AT ELEV. 31.00

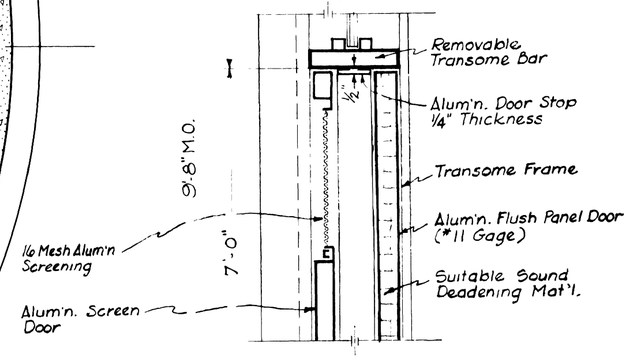


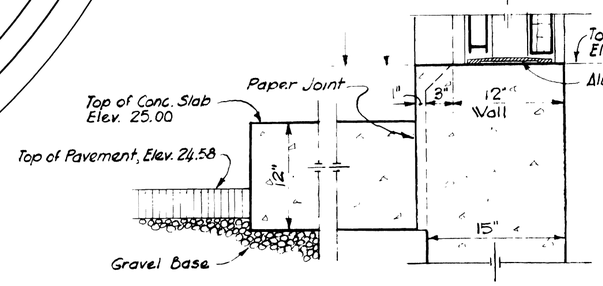
SECTIONAL PLAN AT ELEV. 36.00 ⚠

Scale: 1/4" = 1'-0"



HEAD (Jamb Similar)

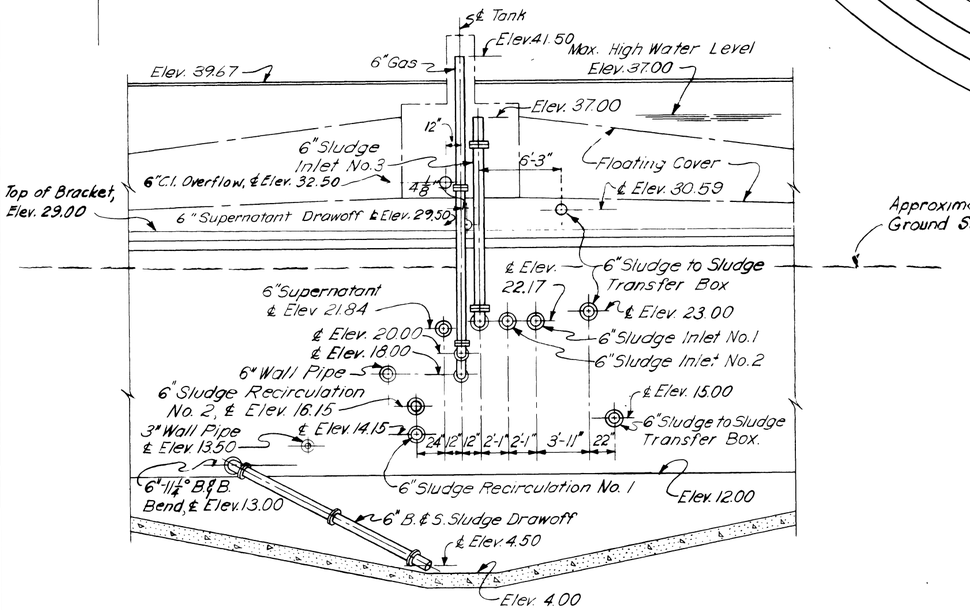




SECTION A-A

Scale: 1½" = 1'-0"

SOUTHEAST ENTRANCE DOOR DETAILS ⚠



SECTION A-A

Note: For Section Through Floating Cover, See Dwg. #438.22(a-1)-44.

DRAWING NO. 438.22(a-1)-46

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
EQUIPMENT AND PIPING
PLAN AT ELEVATION 31.00 AND SECTION A-A

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/8" = 1'-0" July, 1964

Drawn by: S.V.	Traced by: S.V.	Checked by: J.P.	Examined by: DM	Approved by:
Revisions:	⚠ RGM 4/13/67			

AS-BUILT DRAWING
DATE January, 1968

PLAN AT ELEV. 18.50

SCHEMATIC OF NON-POTABLE WATER SUPPLY

DRAWING NO. 43822(a-1)-47

LEGEND

P1 – Lubricated Plug Valve, Wrench Operated.

P2 – Eccentric Plug Valve, Wrench Operated.

AS-BUILT DRAWING

DATE January, 1968

Notes

For Outside Piping Plans, see Dwgs Nos. 438.22(a-1)-6 and 7
For Roof Plan, see Dwg No 438.22(a-1)-44
For Plan at Elev. 23.50, see Dwg. No 438.22(a-1)-48
For Plan at Elev 36.00, see Dwg No. 438.22(a-1)-49
For Sections B-B and a-a, see Dwg No. 438.22(a-1)-50
For Section C-C, see Dwg. No. 438.22(a-1)-51
For Sections D-D, E-E and F-F, see Dwg. No. 438.22(a-1)-52
For C.I. Wall Pipe or Sleeve Detail, see Dwg No. 438.22(a-1)-59
For Detail of C.I. Wall Sleeve, see Dwg. No. 438.22(a-1)-59
For Schematic of Potable Water Supply, see Dwg. No. 438.22(a-1)-48
For Potable and Non-Potable Water Supply Systems, see Dwg. No. 438.22(a-1)-93

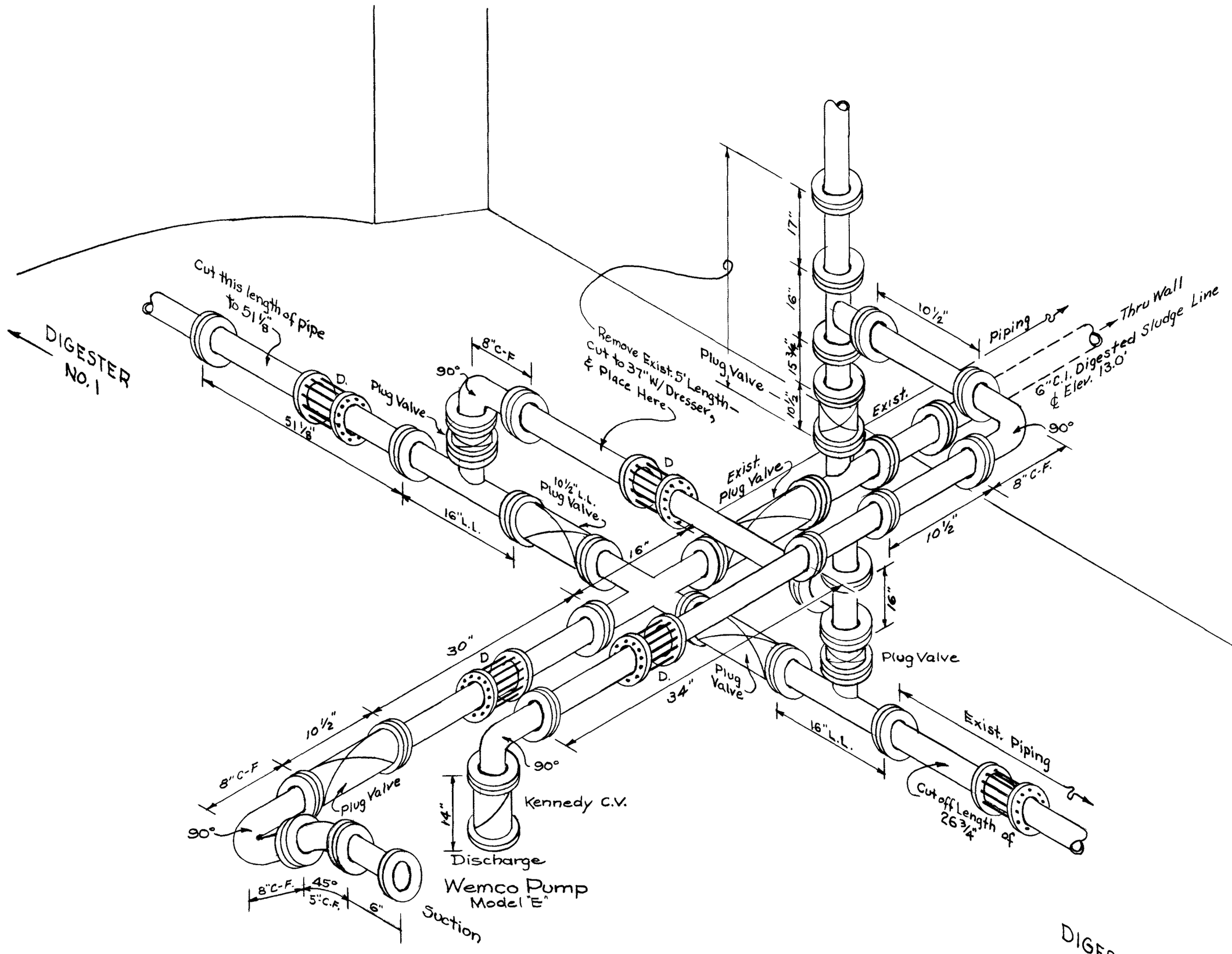
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
EQUIPMENT AND PIPING
PLAN AT ELEVATION 18.50

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4" = 1'-0"

July, 1964

Drawn by: O.M.	Traced by: OM, OR	Checked by: J.B. ZB	Examined by: DP	Approved by: C
Revisions:	As Built 3/12/68 RSM			



NOTES

1. All piping to be 6", Cl.125 Cast Iron, Flanged
2. Check Valve to be I.B.B.M. Spring Loaded, Flanged, Size 6"- Laying Length 14"- Darling # 1382 or Equal.
3. Plug Valves "Homestead" (from Stock) with Laying Length of 10½".
4. Dresser Couplings - Size 6"- Style 38 for C.I. Pipe - without pipe stops

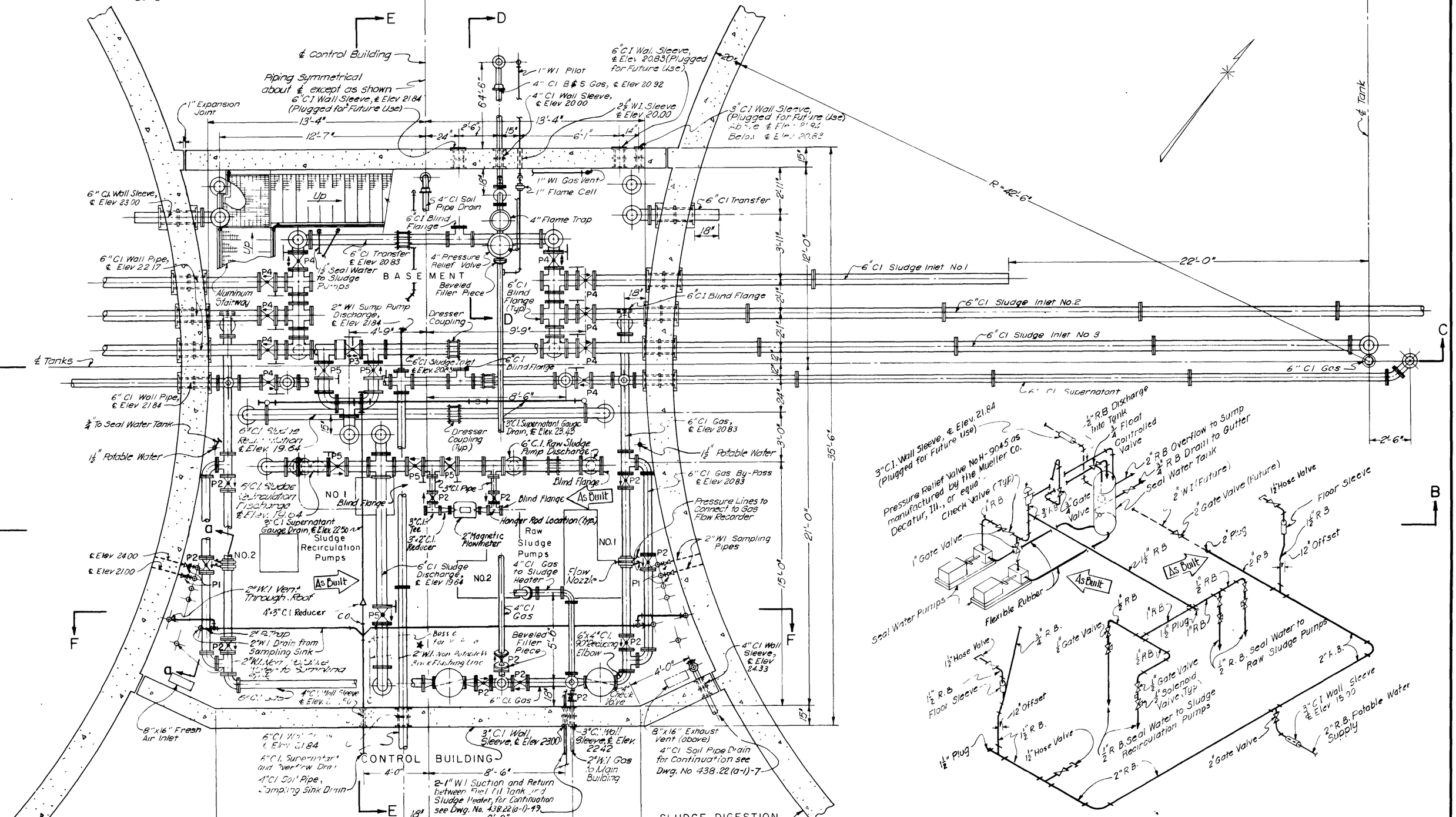
DRAWING NO. 438.22(a-1)-47A

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES

DIGESTED SLUDGE PUMP AND PIPING

Scale: None — March, 1968

Drawn by: R.	Design by: M.P.	Checked by: J.B.	Examined by: E.G.	Approved: R.T.
Revisions:				



✱ = NOT INSTALLED (4-1968)

PLAN AT ELEV. 23.50

LEGEND

P1 – Lubricated Plug Valve, Wrench Operated
P2 – Eccentric Plug Valve, Wrench Operated.
P3 – Lubricated Plug Valve, Chainwheel, Spur Gear Operated.
P4 – Lubricated Plug Valve, Chainwheel, Worm Gear Operated.
P5 – Eccentric Plug Valve, Chainwheel, Worm Gear Operated.

SCHEMATIC OF POTABLE WATER SUPPLY

Notes:
For Sections B-B and a-a, see Dwg No 438.22(a-1)-50
For Section C-C, see Dwg No. 438.22(a-1)-51
For Sections D-D, E-E and F-F, see Dwg No. 438.22(a-1)-52
For Pipe Support Details, see Dwg No 438.22(a-1)-57
For Aluminum Stairway Details, see Dwg No 438.22(a-1)-58
For Sampling Pipe Sleeve, C.I Wall Pipe or Sleeve and Floor Plate Details, see Dwg No. 438.22(a-1)-59
For Outside Piping Plans, see Dwgs Nos. 438.22(a-1)-6 and 7

AS-BUILT DRAWING
DATE January, 1968

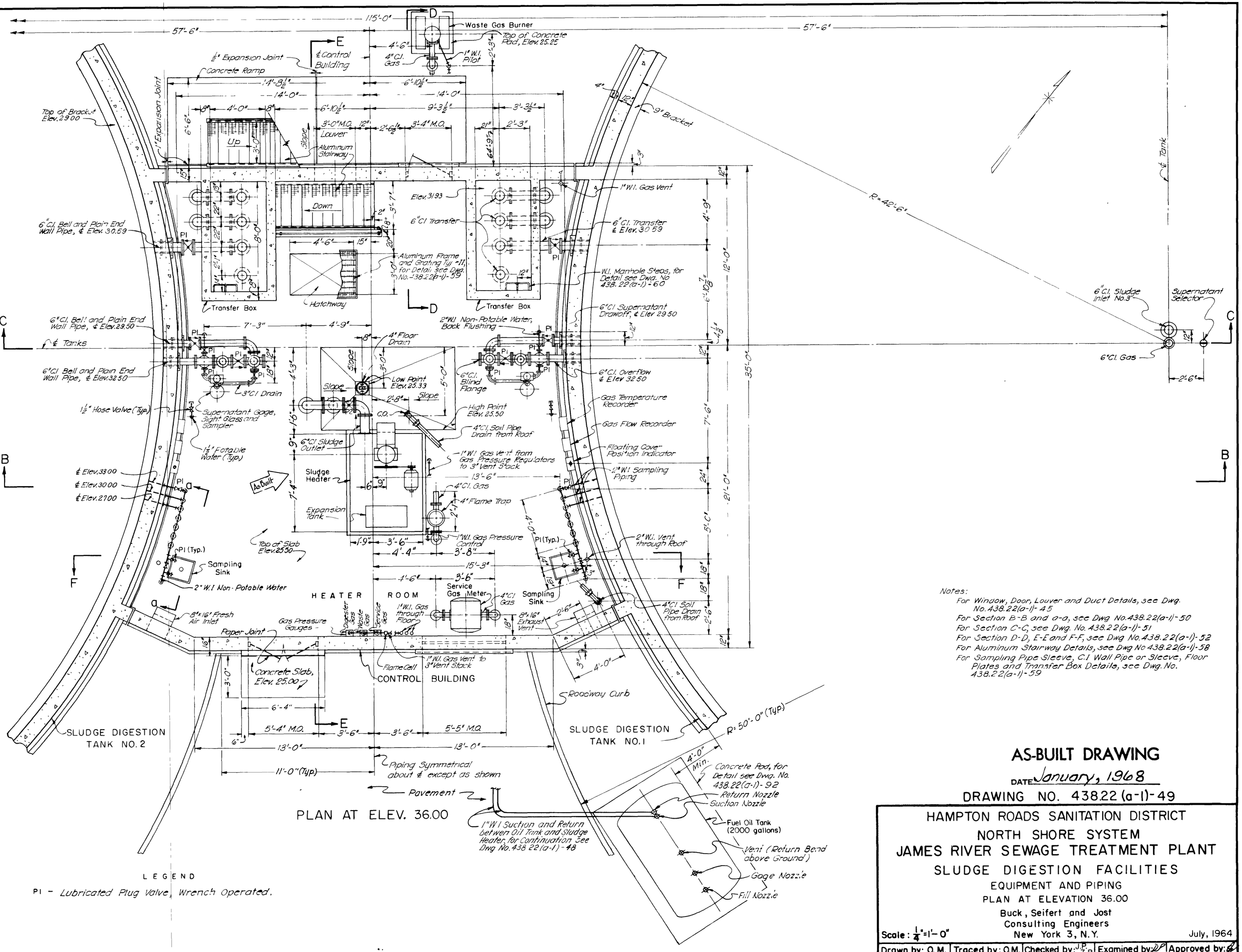
DRAWING NO. 438.22(a-1)-48

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
EQUIPMENT AND PIPING
PLAN AT ELEVATION 23.50

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: ¼"=1'-0" July, 1964

Drawn by: O.M.	Traced by: OM/FD	Checked by: J.P./R.B.	Examined by:	Approved by:
Revisions:	As Built 4/Mar/68 M			



Notes:

For Window, Door, Louver and Duct Details, see Dwg. No. 438.22(a-1)-45
For Section B-B and a-a, see Dwg No. 438.22(a-1)-50
For Section C-C, see Dwg. No. 438.22(a-1)-51
For Section D-D, E-E and F-F, see Dwg No. 438.22(a-1)-52
For Aluminum Stairway Details, see Dwg No 438.22(a-1)-58
For Sampling Pipe Sleeve, C.I. Wall Pipe or Sleeve, Floor Plates and Transfer Box Details, see Dwg. No. 438.22(a-1)-59

LEGEND

Pl - Lubricated Plug Valve, Wrench Operated.

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22 (a-1)-49

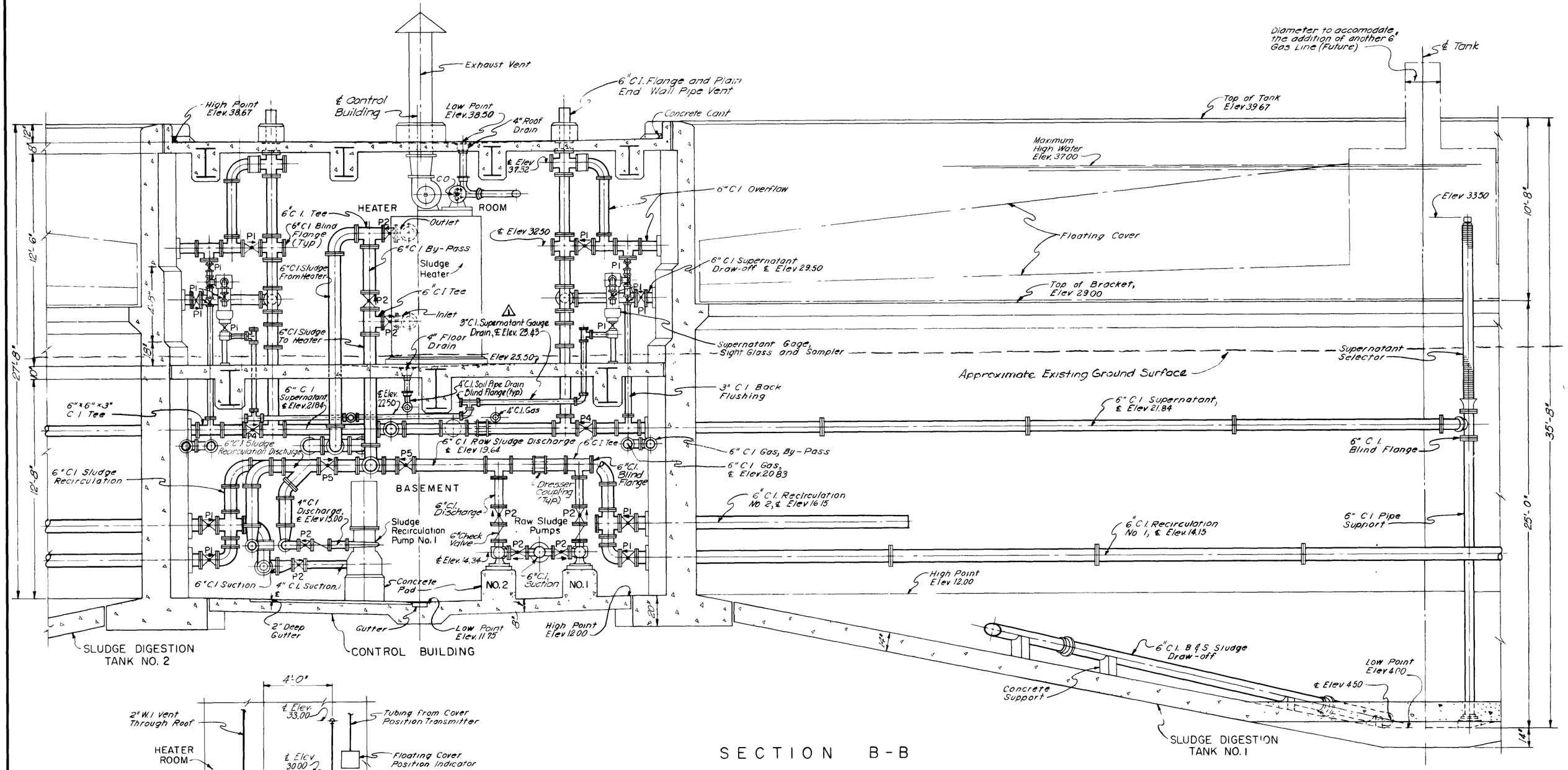
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
EQUIPMENT AND PIPING
PLAN AT ELEVATION 36.00

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

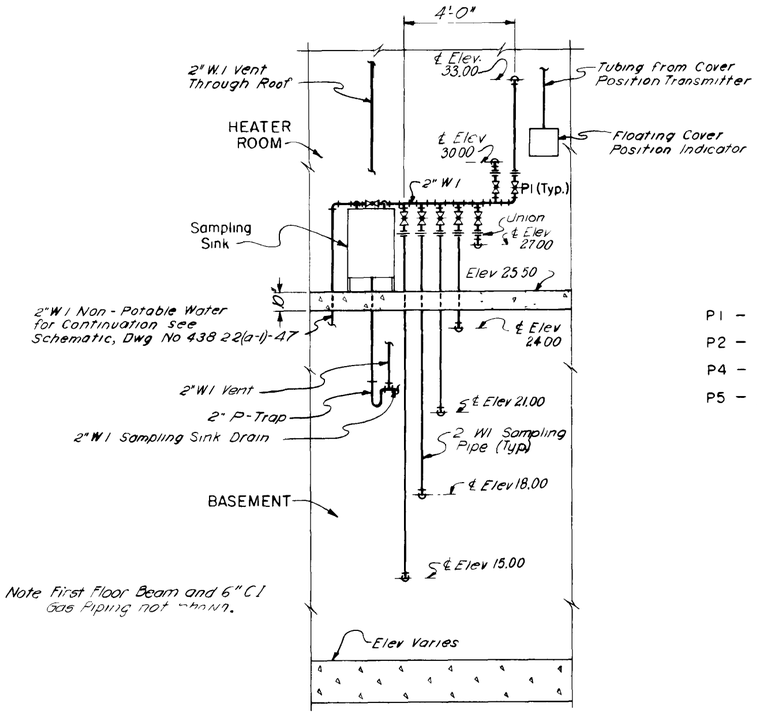
Scale: ¼"=1'-0"

July, 1964

Drawn by: O. M.	Traced by: O.M.	Checked by: J.P. Z.B.	Examined by:	Approved by:
Revisions:	As Built 1/68 RGM			



SECTION B-B



SECTION a-a

LEGEND

P1 – Lubricated Plug Valve, Wrench Operated.
P2 – Eccentric Plug Valve, Wrench Operated.
P4 – Lubricated Plug Valve, Chainwheel, Worm Gear Operated.
P5 – Eccentric Plug Valve, Chainwheel, Worm Gear Operated.

Notes:
For Plans showing location of Sections B-B and a-a, see Dwg. No. 438.22(a-1)-44, 46, 47, 48 and 49
For Pipe Support Details, see Dwg No. 438.22(a-1)-57
For Roof Flashing Detail, see Dwg. No. 438.22(a-1)-58
For Sludge Sampling Pipe through Digester Tank Wall, Exhaust Vent and Floor Plate Details, see Dwg. No. 438.22(a-1)-59

AS-BUILT DRAWING
DATE January, 1968

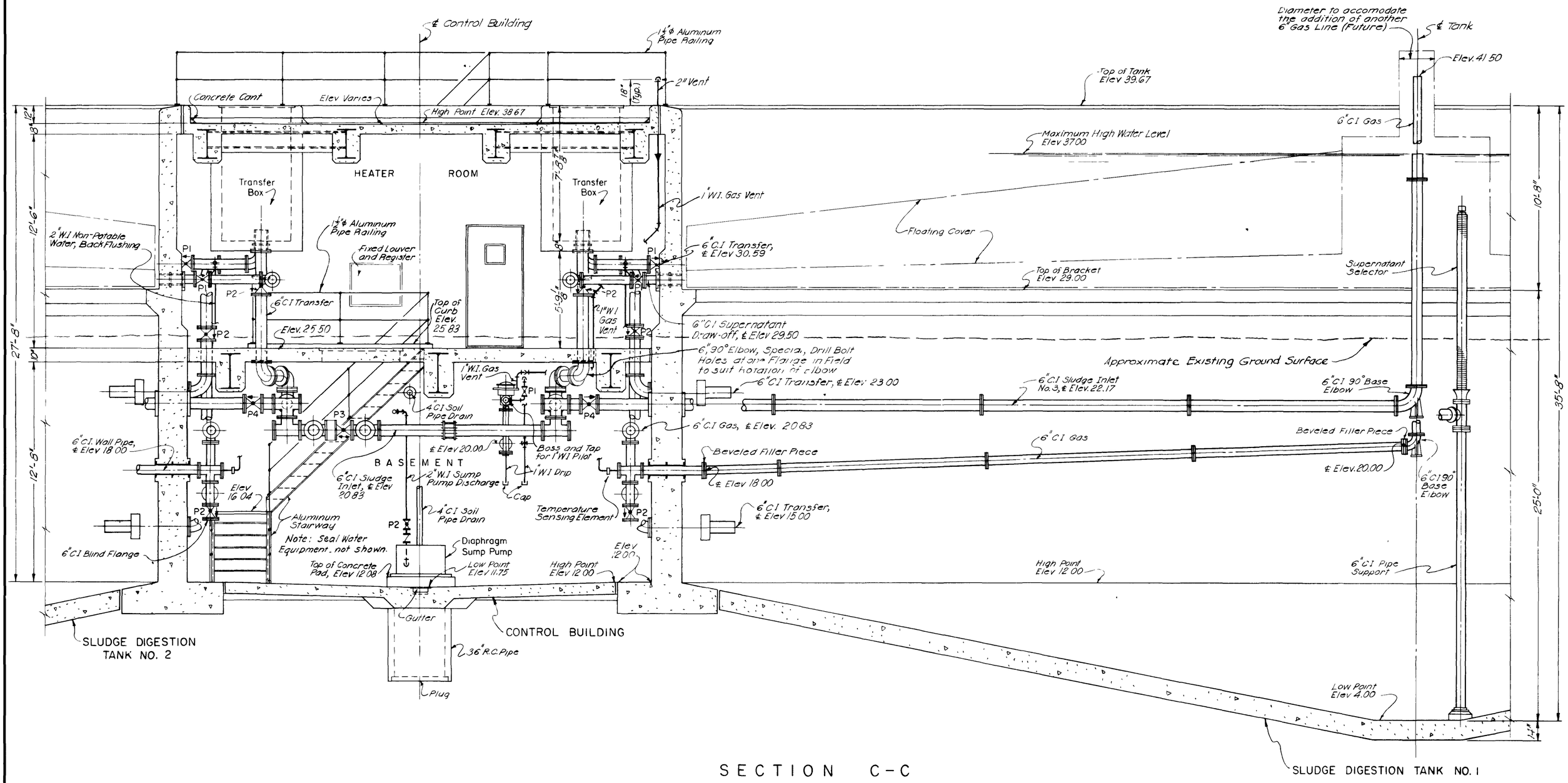
DRAWING NO. 438.22 (a-1)-50

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
EQUIPMENT AND PIPING
SECTION B-B

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4" = 1'-0"
July, 1964

Drawn by: S.V.	Traced by: O.R.	Checked by: J.B. Z.B.	Examined by:	Approved by:
Revisions:	⚠ RGM 4/14/67			



SECTION C-C

LEGEND

P1 – Lubricated Plug Valve, Wrench Operated.
P2 – Eccentric Plug Valve, Wrench Operated.
P3 – Lubricated Plug Valve, Chainwheel, Spur Gear Operated.
P4 – Lubricated Plug Valve, Chainwheel, Worm Gear Operated.

Notes.

For Plans showing location of Section C-C, see Dwg Nos. 438.22(a-1)-44, 46, 47, 48 and 49.
For Pipe Support Details, see Dwg No. 438.22(a-1)-57
For Aluminum Stairway, Roof Flashing and Vent Stack Details, see Dwg. No 438.22(a-1)-58
For Transfer Box, C.I. Wall Pipe or Sleeve and Floor Plate Details, see Dwg. No. 438.22(a-1)-59
For Aluminum Pipe Railing Details see Dwg. No. 438.22(a-1)-60

AS-BUILT DRAWING
DATE January, 1968

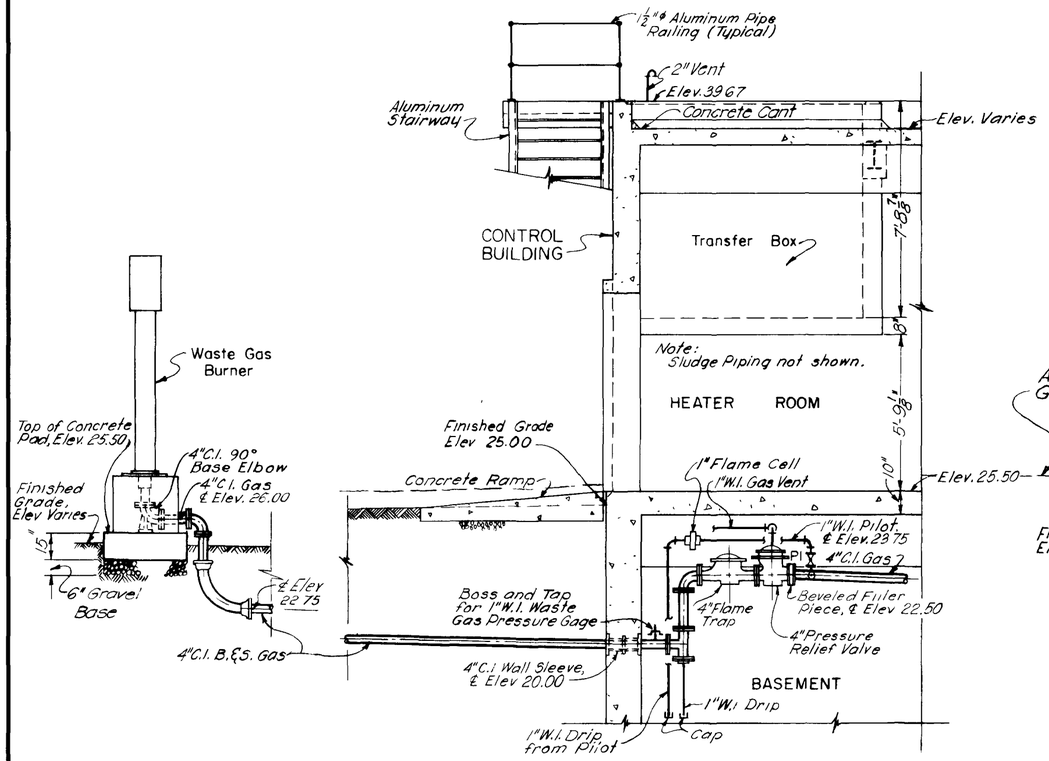
DRAWING NO. 438.22 (a-1)-51

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
EQUIPMENT AND PIPING
SECTION C-C

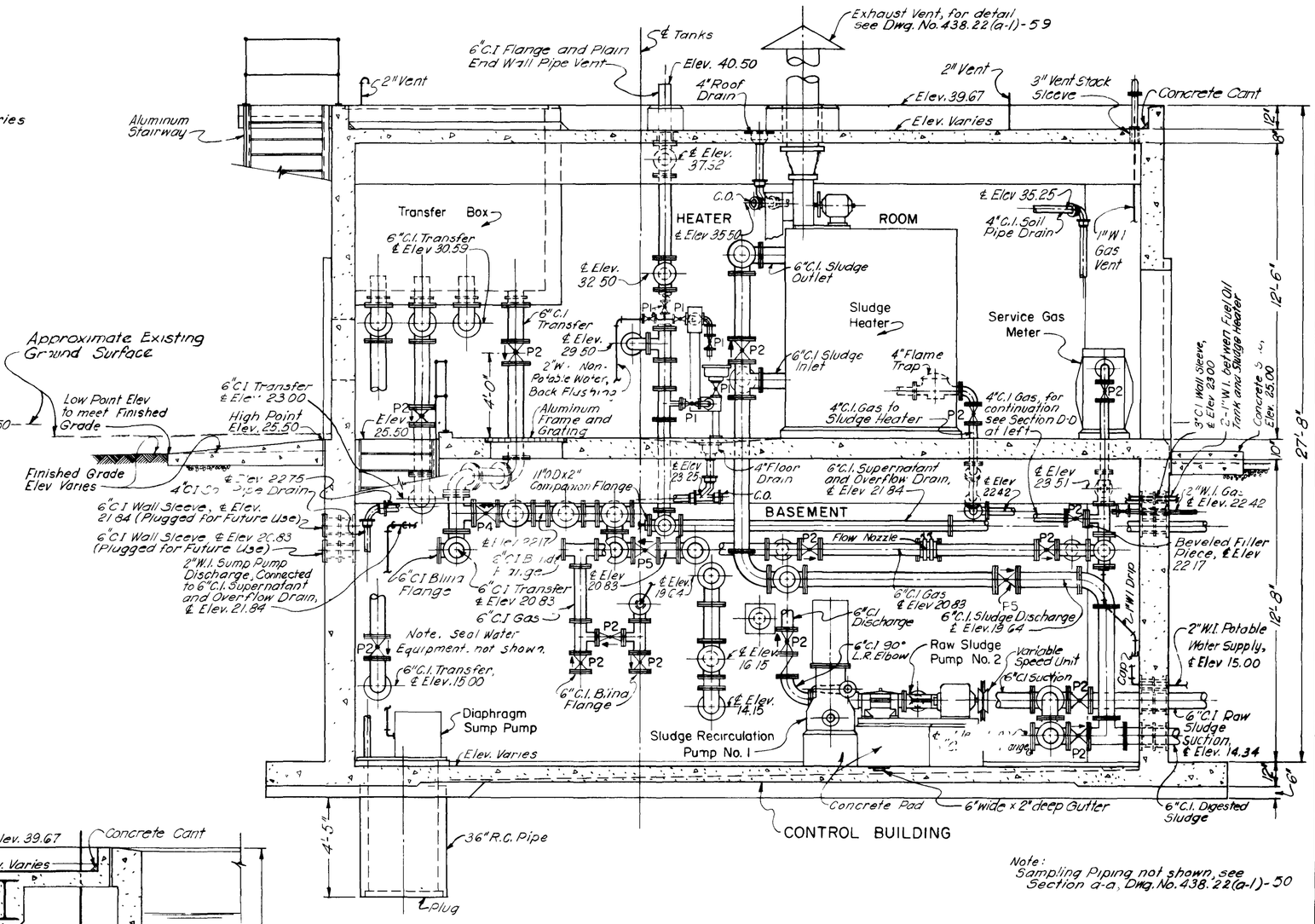
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4" = 1'-0"
July, 1964

Drawn by: O.M.	Traced by: OM/OR	Checked by: J.P. Z.B.	Examined by:	Approved by:
Revisions:				

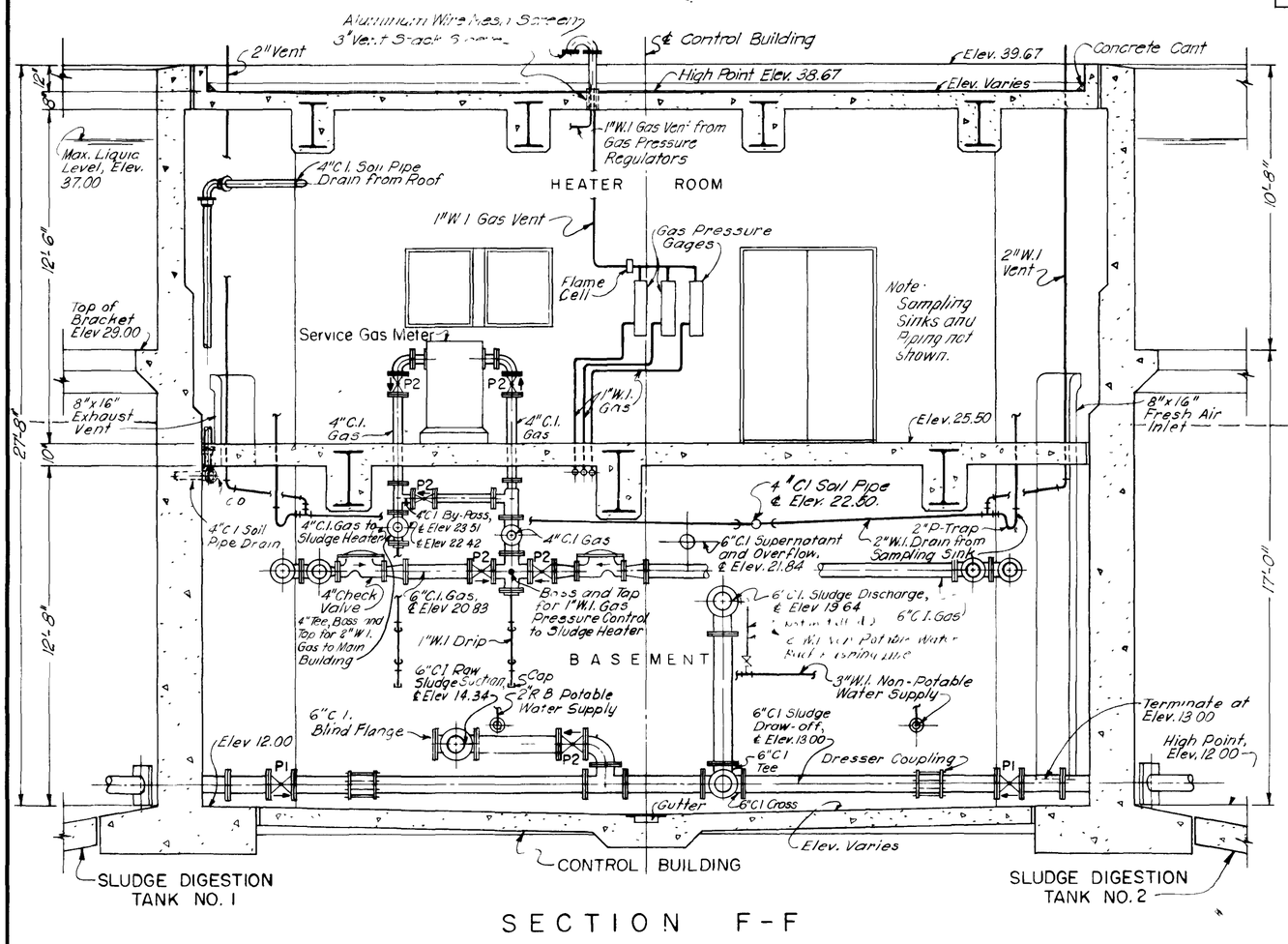


SECTION D-D



SECTION E-E

Note: Sampling Piping not shown, see Section a-a, Dwg. No. 438.22(a-1)-50



SECTION F-F

LEGEND

P1 – Lubricated Plug Valve, Wrench Operated.
P2 – Eccentric Plug Valve, Wrench Operated.
P4 – Lubricated Plug Valve, Chainwheel, Worm Gear Operated.
P5 – Eccentric Plug Valve, Chainwheel, Worm Gear Operated.

Approximate Existing Ground Surface

Notes.

For Plans showing location of Sections D-D, E-E and F-F, see Dwgs. Nos 438.22(a-1)-44, 46, 47, 48 and 49.
For Aluminum Stairway, Roof Flashing and Small Vent Stack Details, see Dwg. No. 438.22(a-1)-58
For Transfer Box, and Floor Plate Details, see Dwg. No 438.22(a-1)-59

DRAWING NO. 438.22(a-1)-52

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
EQUIPMENT AND PIPING
SECTIONS D-D, E-E AND F-F

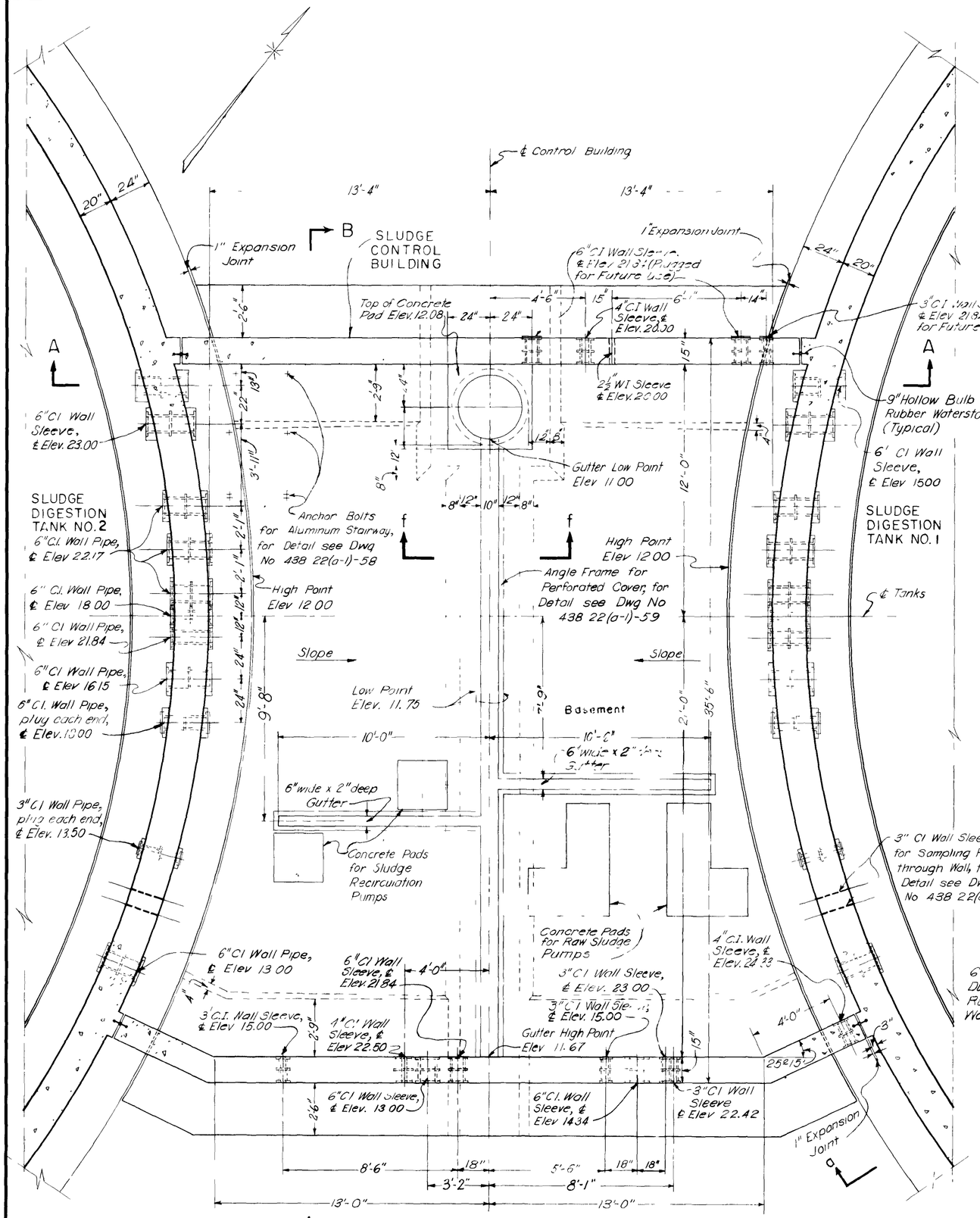
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4"=1'-0"

July, 1964

Drawn by: O.M.	Traced by: OM-JG	Checked by: JP ZB	Examined by:	Approved by:
Revisions:				

AS-BUILT DRAWING
DATE January 2, 1968

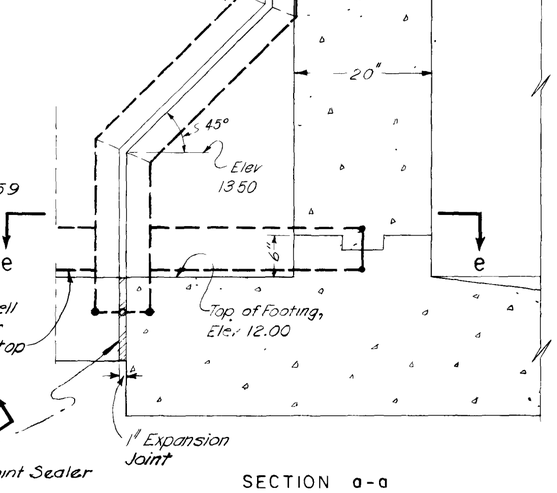


BASEMENT PLAN

Scale: $\frac{1}{4}$" = 1'-0"

Notes:

For Plans showing Equipment and Piping, see Dwgs. Nos. 438 22(a-1)-47 and 48.
For Sections A-A and B-B, see Dwg. No. 438 22(a-1)-55
For Tank Wall Reinforcement Details, see Dwg. No. 438.22(a-1)-56
For C.I. Wall Pipe or Sleeve through Digestion Tank Wall, see Dwg. 438.22(a-1)-59
For C.I. Wall Sleeve Detail, see Dwg. No. 438.22(a-1)-59

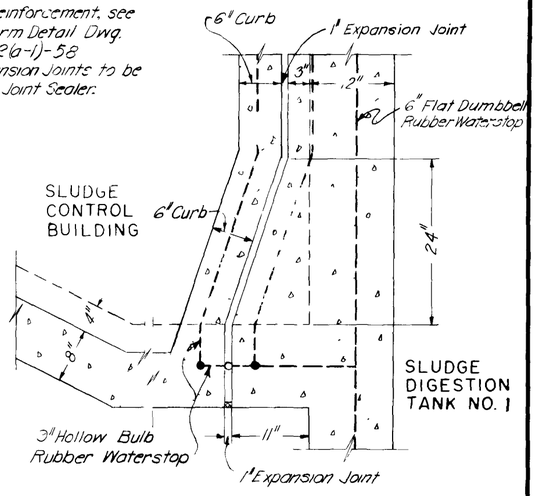


SECTION a-a

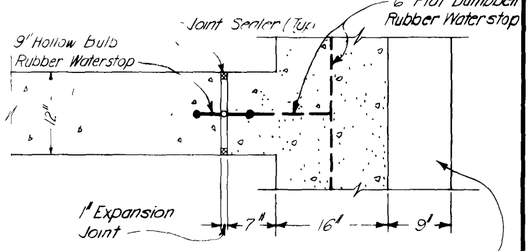
Notes

For 6" Curb Reinforcement, see Flashing Form Detail Dwg. No 438 22(a-1)-58

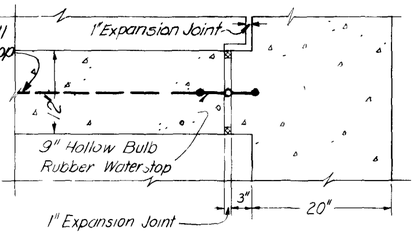
Exposed Expansion Joints to be Filled with Joint Sealer.



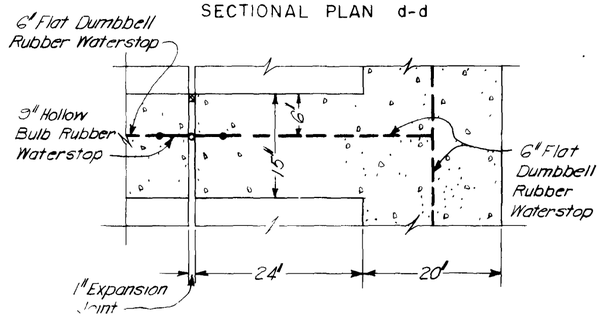
SECTIONAL PLAN b-b



SECTIONAL PLAN c-c



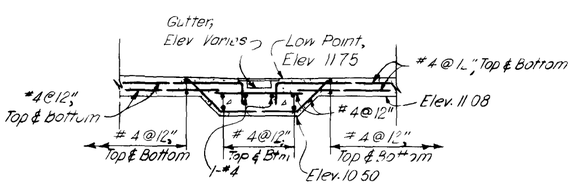
SECTIONAL PLAN d-d



SECTIONAL PLAN e-e

EXPANSION JOINT DETAILS

Scale: $\frac{3}{4}$" = 1'-0"



SECTION f-f

Scale: $\frac{1}{4}$" = 1'-0"

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-53

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
CONCRETE REINFORCING DETAILS
SLUDGE CONTROL BUILDING-BASEMENT PLAN AND MISC. DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown | July, 1964

Drawn by: H.C.	Traced by: H.C.	Checked by: J.P. Z.B.	Examined by: JP	Approved by:
Revisions:				

FIRST FLOOR PLAN

ROOF PLAN

Notes:

For Plans showing Equipment and Piping, see Dwgs. Nos. 438.22(a-1)-44 and 49.
For Basement Plan, see Dwg. No. 438.22(a-1)-53
For Sections A-A and B-B, Transfer Box, Steel Beam Enrasement and Support Details, see Dwg. No. 438.22(a-1)-55
For Tank Reinforcement Details, see Dwg. No. 438.22(a-1)-56
For Aluminum Stairway, Roof Flashing and Small Vent Stack Details, see Dwg. No. 438.22(a-1)-58
For Floor Plate, Exhaust Vent, Cast Iron Wall Pipe or Sleeve, Perforated Aluminum Cover and Ventilator Base Details, see Dwg. No. 438.22(a-1)-59

AS-BUILT DRAWING
DATE January, 1968

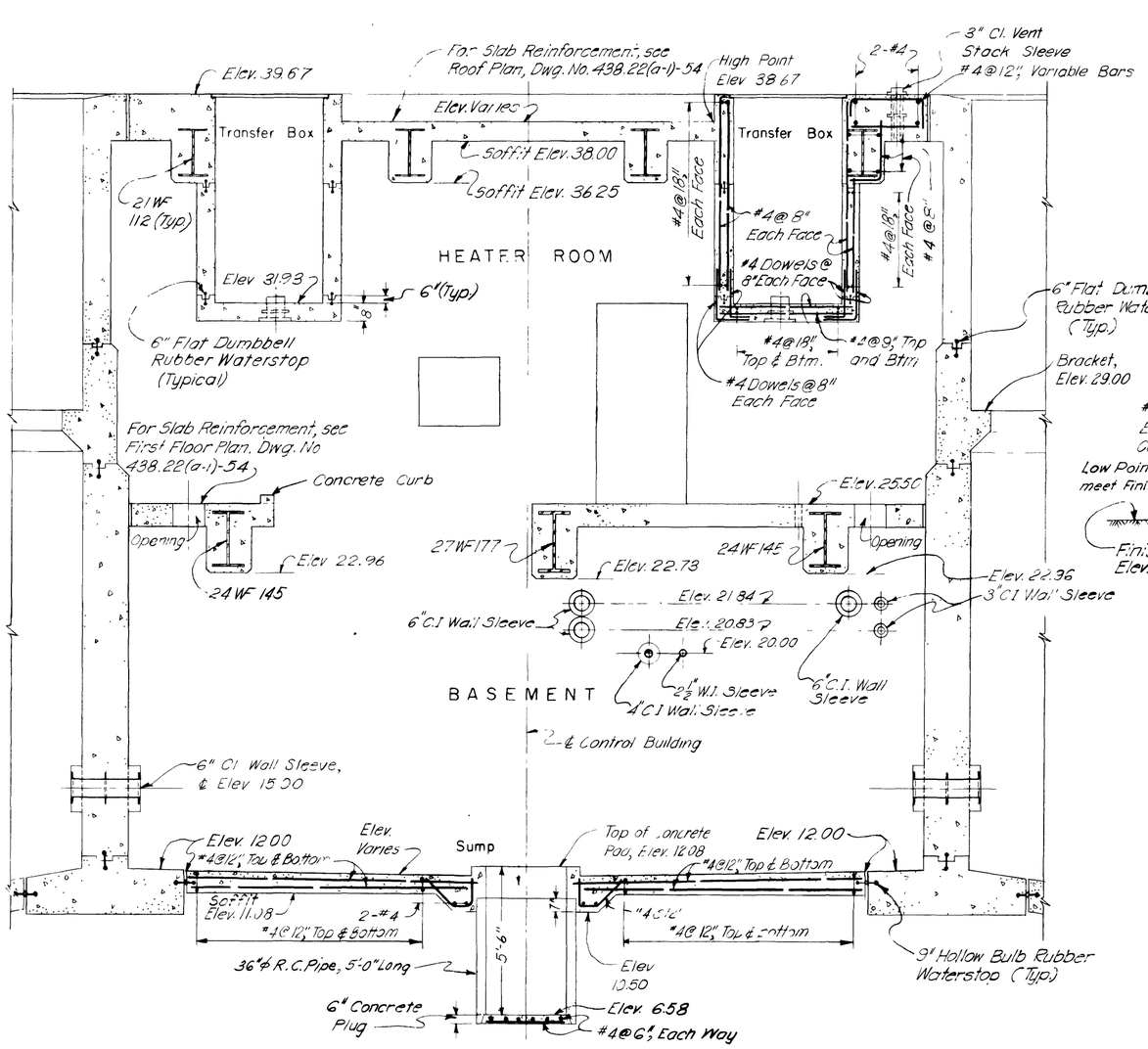
DRAWING NO. 438.22(a-1)-54

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
CONCRETE REINFORCING DETAILS
SLUDGE CONTROL BUILDING–FIRST FLOOR AND ROOF PLANS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

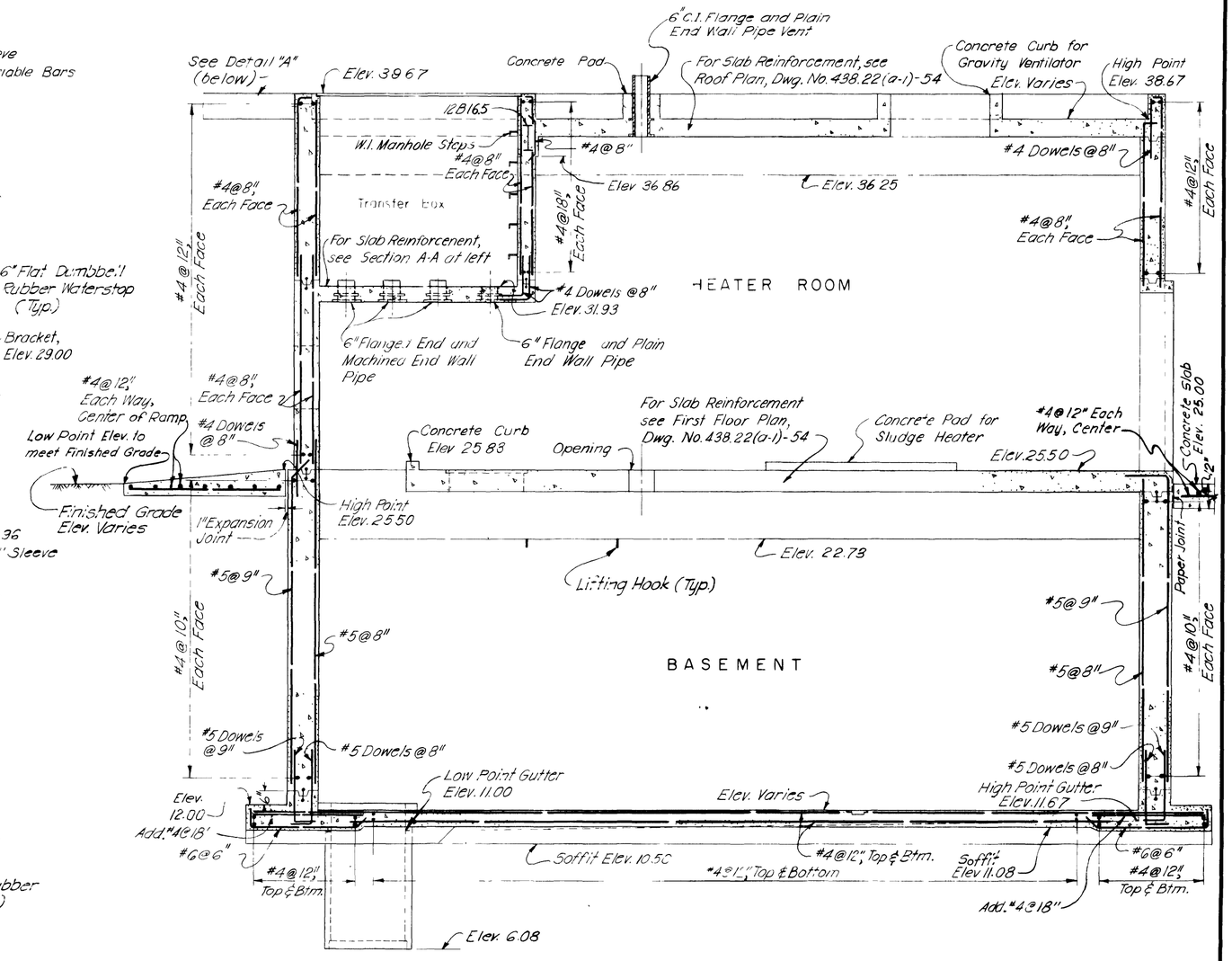
Scale: 1/4" = 1'-0" July, 1964

Drawn by: H.C.	Traced by: H.C.	Checked by: J.P. Z.B.	Examined by:	Approved by:
Revisions:				



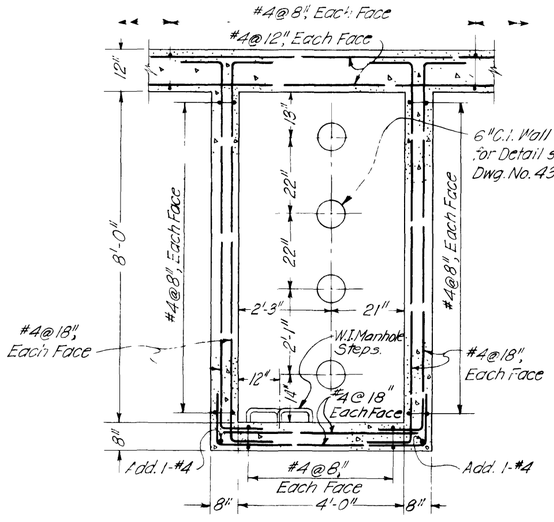
SECTION A-A

Scale $\frac{1}{4}$" = 1'-0"



SECTION B-B

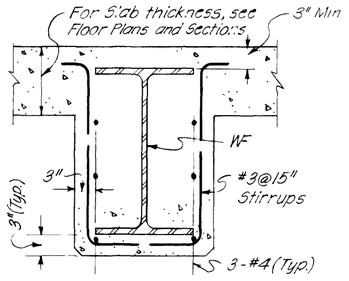
Scale. $\frac{1}{4}$" = 1'-0"



SECTIONAL PLAN

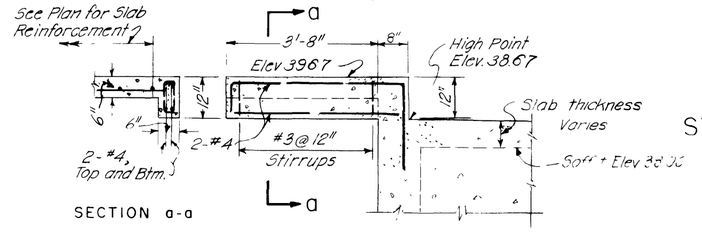
TRANSFER BOX

Scale: $\frac{3}{8}$" = 1'-0"



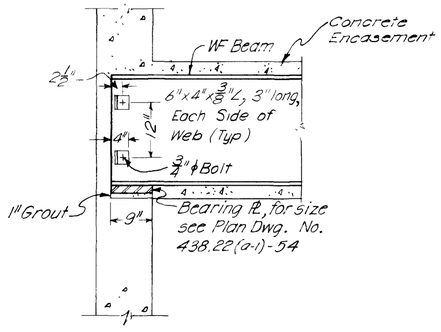
TYPICAL STEEL BEAM ENCASEMENT

(Except as shown at Sludge Transfer Boxes)



DETAIL "A"

Scale. $\frac{3}{8}$" = 1'-0"



STEEL BEAM SUPPORT

Scale: None

Notes:

For Plans showing Locations of Sections A-A and B-B, see Dwgs. Nos. 438.22(a-1)-53 and 54
For Tank Wall Reinforcement, see Dwg. No. 438.22(a-1)-56
For Small Vent Stack and Roof Flashing Details, see Dwg. No. 438.22(a-1)-58
For C.I. Wall Pipe or Sleeve and Floor Plate Details, see Dwg. No. 438.22(a-1)-59

DRAWING NO. 438.22 (a-1)-55

HAMPTON ROADS SANITATION DISTRICT

NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

SLUDGE DIGESTION FACILITIES

CONCRETE REINFORCING DETAILS

SLUDGE CONTROL BUILDING-SECTIONS A-A AND B-B

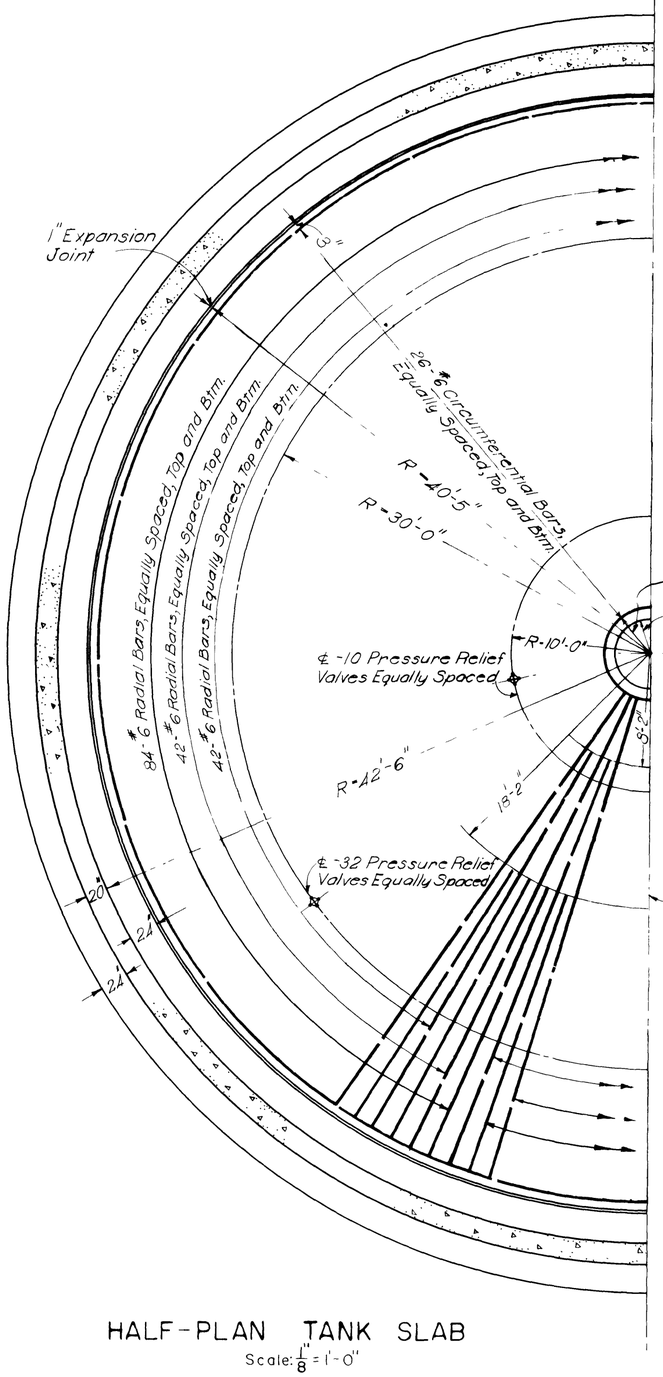
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As shown — July, 1964

Drawn by: J.E.G.	Traced by: J.E.G. R.B.	Checked by: J.B. Z.B.	Examined by:	Approved by:
Revisions:				

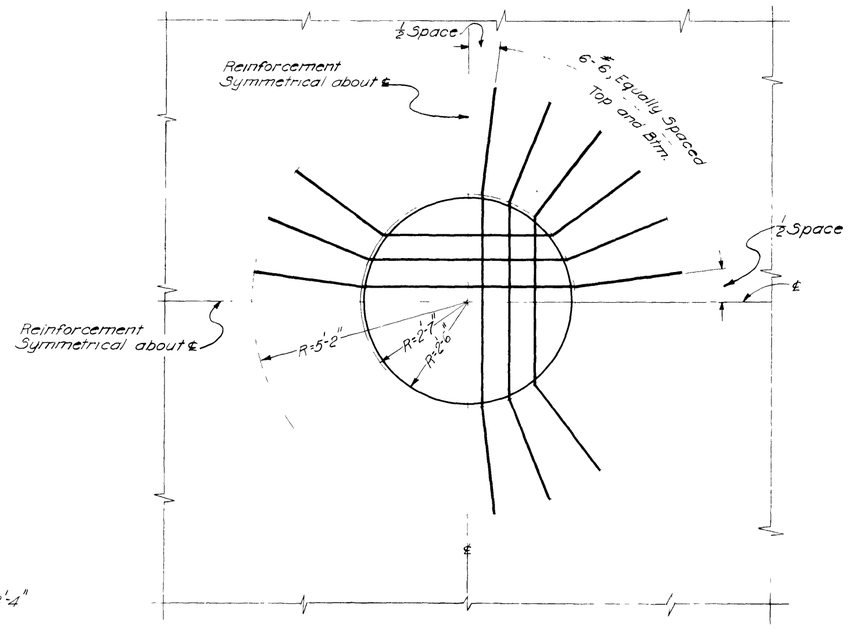
AS-BUILT DRAWING

DATE January, 1968



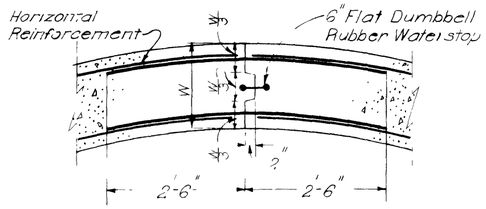
HALF-PLAN TANK SLAB

Scale: $\frac{1}{8}$" = 1'-0"

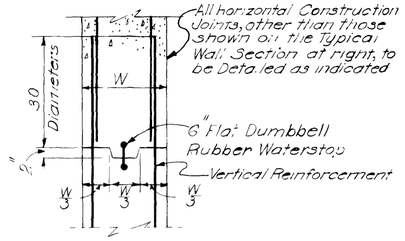


CENTER GRID PLAN

Scale: $\frac{3}{8}$" - 1'-0"



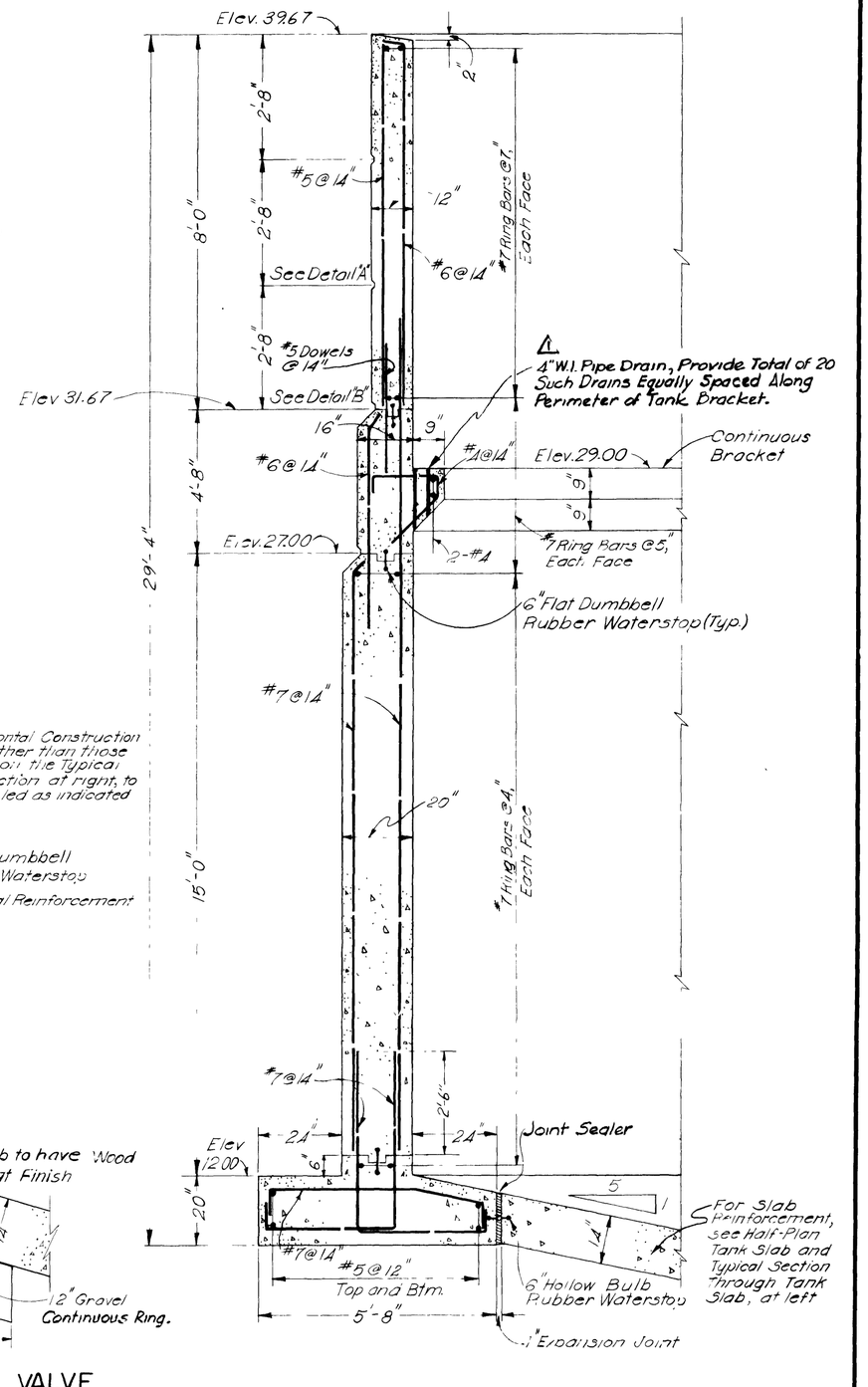
VERTICAL JOINT



HORIZONTAL JOINT

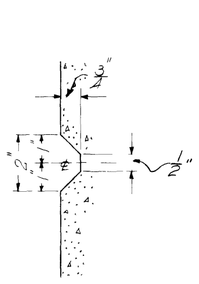
CONSTRUCTION JOINTS

Scale: None



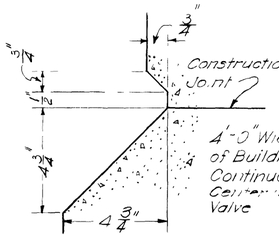
TYPICAL WALL SECTION

Scale: $\frac{3}{8}$" = 1'-0"



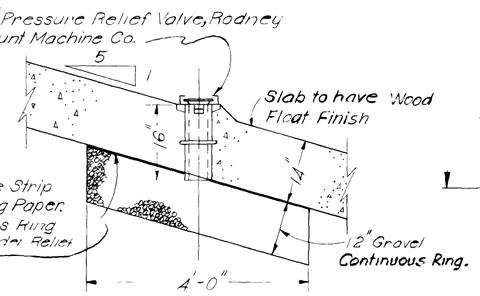
DETAIL "A"

Scale: 3"=1'-0"



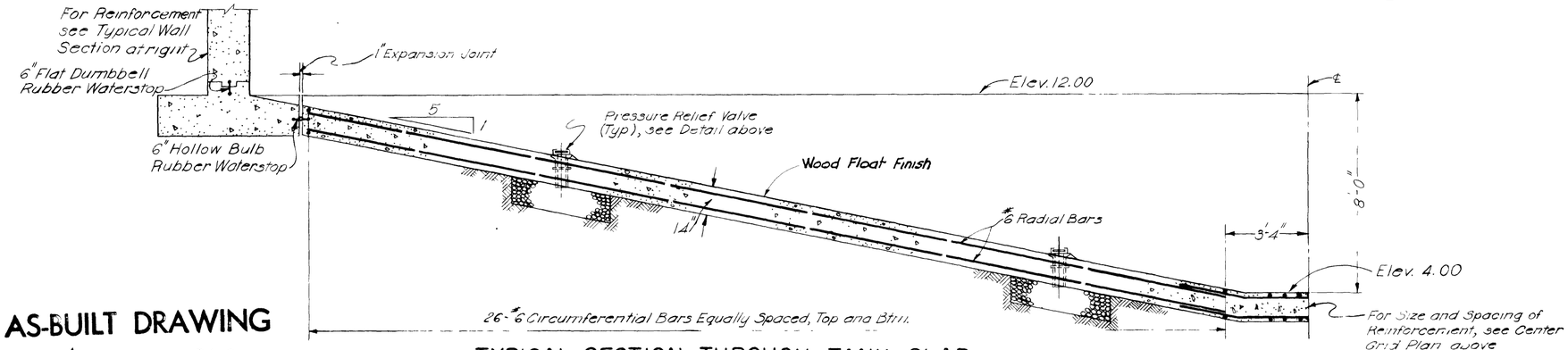
DETAIL "B"

Scale: 3"=1'-0"



PRESSURE RELIEF VALVE

Scale: $\frac{1}{2}$" = 1'-0"



TYPICAL SECTION THROUGH TANK SLAB

Scale: $\frac{1}{4}$" = 1'-0"

Note.
For Plans and Sections showing location of Equipment and Piping, see Dwgs Nos 438.22(a-1)-44 and 46 thru 52, inclusive.

DRAWING NO. 438.22(a-1)-56

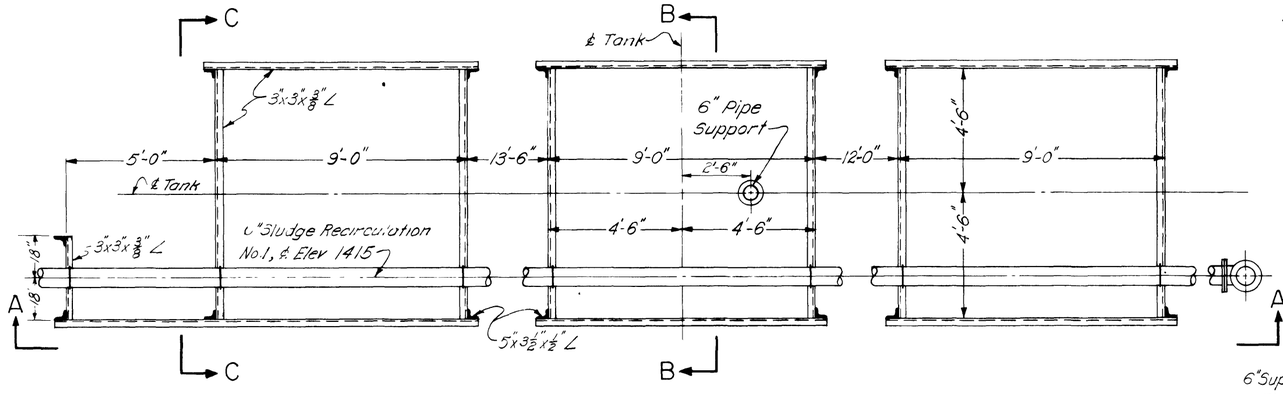
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
CONCRETE REINFORCING DETAILS
SLUDGE DIGESTION TANKS-PLANS, SECTIONS AND DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

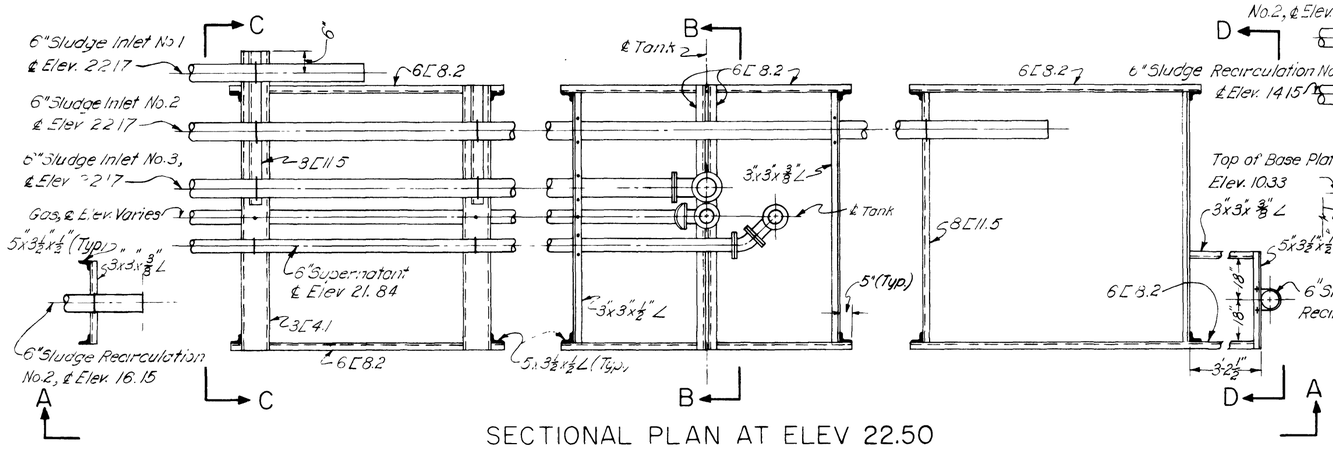
Scale: As Shown — July, 1964

Drawn by: R.B.	Traced by: O.R.	Checked by: ME GVA	Examined by:	Approved by:
Revisions:	⚠ RGM 4/19/68			

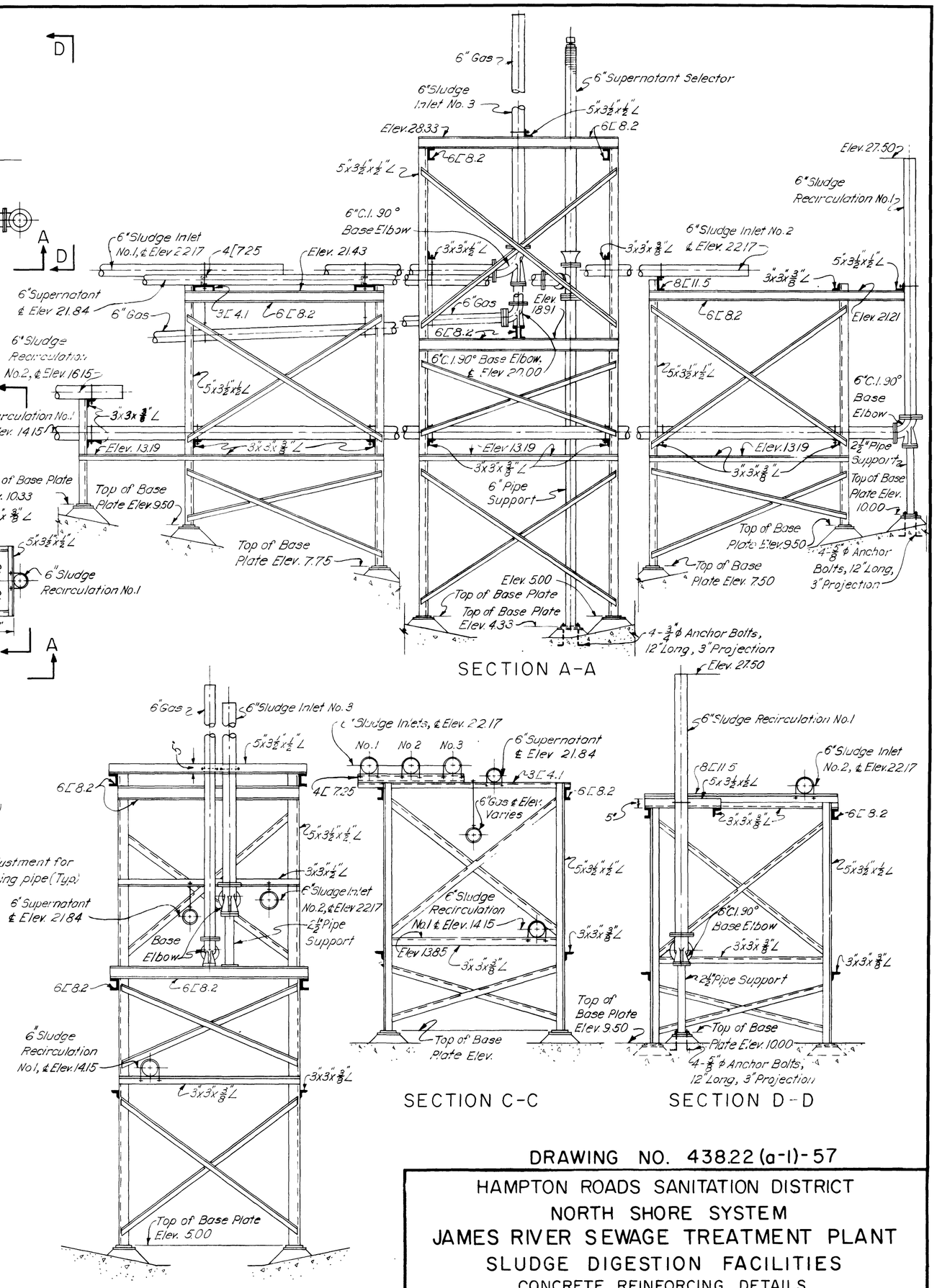
AS-BUILT DRAWING
DATE January, 1968



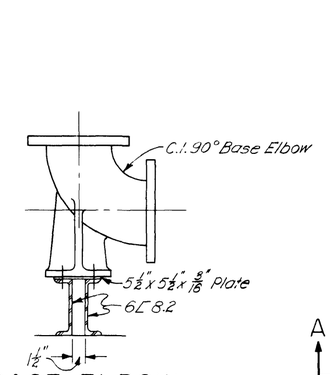
SECTIONAL PLAN AT ELEV. 15.00



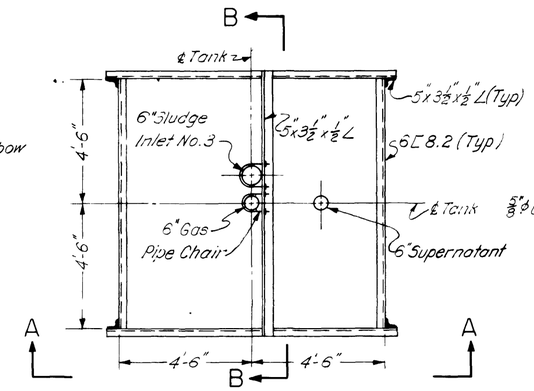
SECTIONAL PLAN AT ELEV 22.50



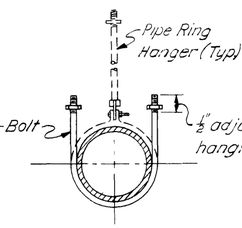
SECTION A-A



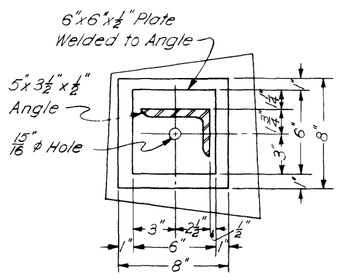
BASE ELBOW SUPPORT
Not to Scale



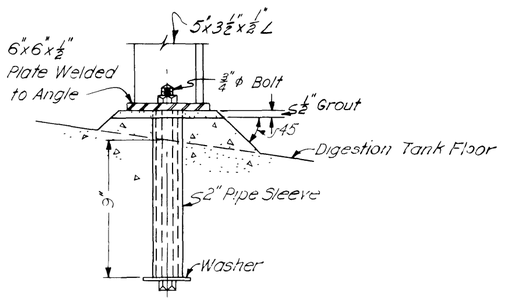
SECTIONAL PLAN AT ELEV. 29.00



TYPICAL PIPE HANGERS
Not to Scale



PLAN



SECTION

TYPICAL BASE DETAILS
Scale : 1½" = 1'-0"

SECTION B-B

SECTION C-C

SECTION D-D

Notes: For Pipe Support in Sludge Digestion Tank No.1 Use this Drawing - Opposite Hand
All Cross Bracing Angles to be 3"x3"x⅜"
For Plans and Sections showing location of Piping, see Dwgs. Nos. 438.22(a-1)-46 through 51, inclusive

AS-BUILT DRAWING
DATE January, 1968

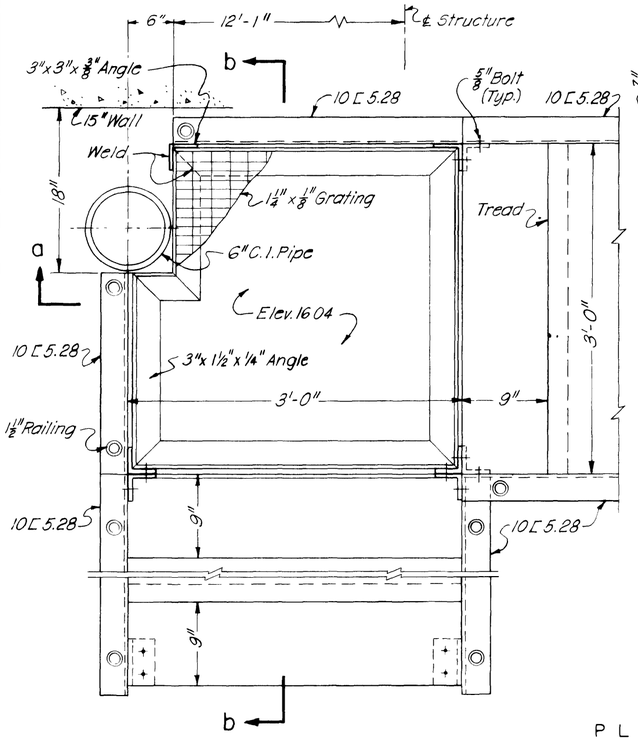
DRAWING NO. 438.22 (a-1)-57

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
CONCRETE REINFORCING DETAILS
SLUDGE DIGESTION TANKS - PIPE SUPPORT DETAILS

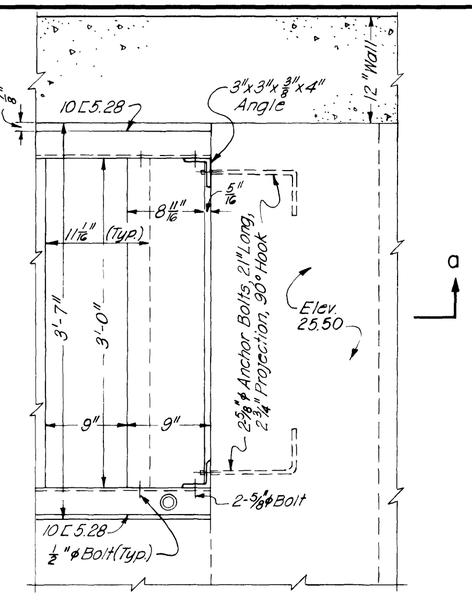
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale : ¼" = 1'-0"
July, 1964

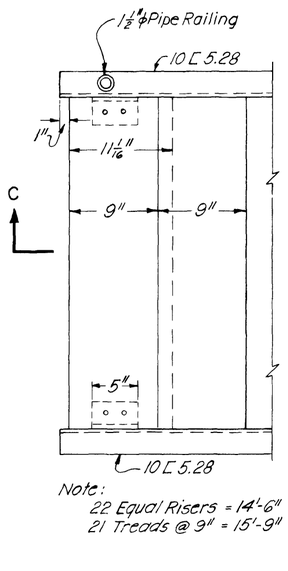
Drawn by: M.E.	Traced by: S.V.	Checked by: J.P. Z.B.	Examined by:	Approved by:
Revisions:				



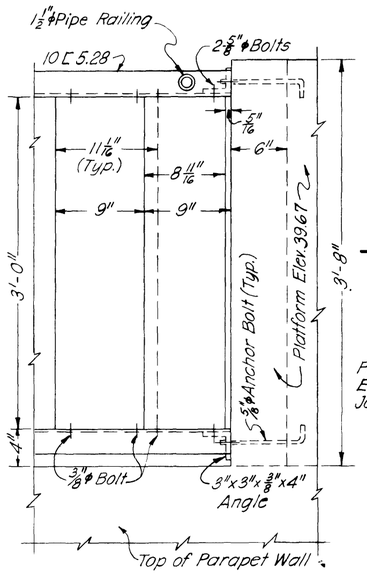
PLAN



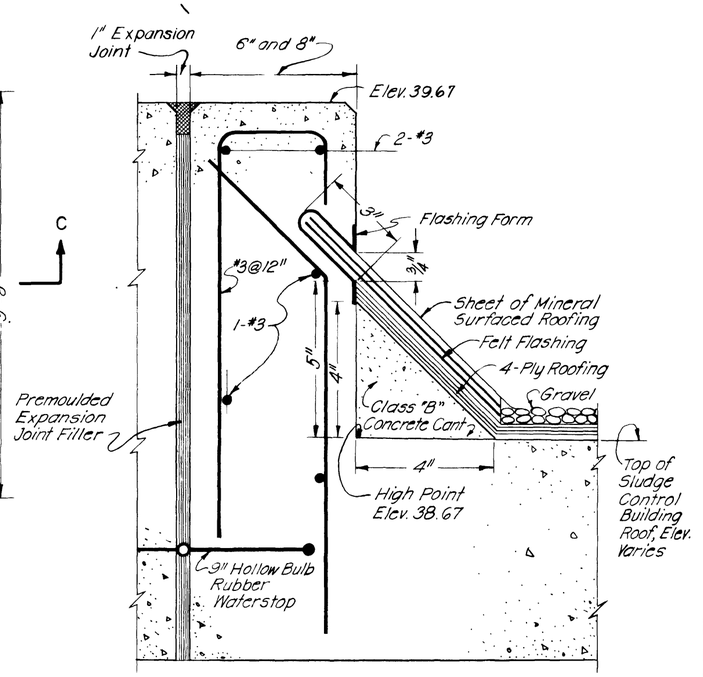
Note:
From Elev. 25.50 to Elev. 16.04 { 14 Risers Eq. Sp. = 9'-5⅞" / 13 Treads @ 9" = 9'-9"
From Elev. 16.04 to Elev. 12.00 { 6 Risers Eq. Sp. = 4'-0⅛" / 5 Treads @ 9" = 3'-9".



Note:
22 Equal Risers = 14'-6"
21 Treads @ 9" = 15'-9"

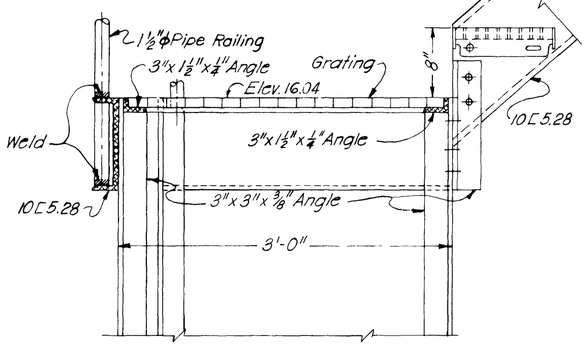


PLAN

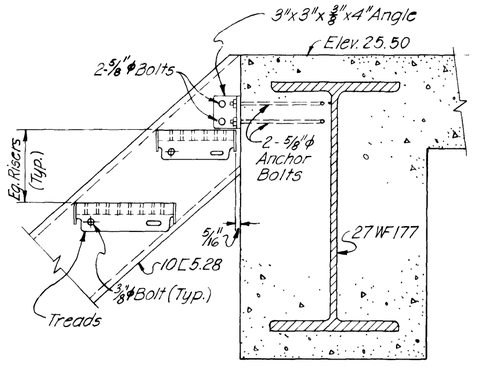


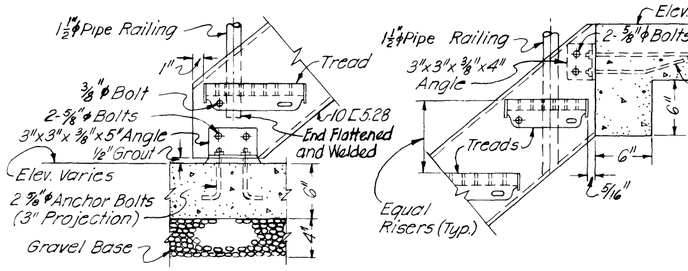
FLASHING FORM

Scale: None



SECTION a-a





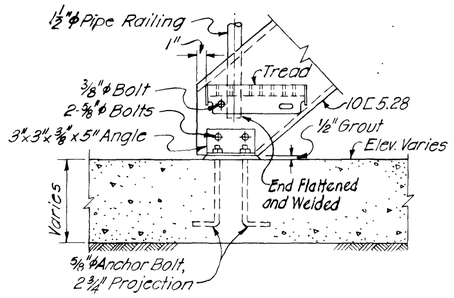
SECTION c-c

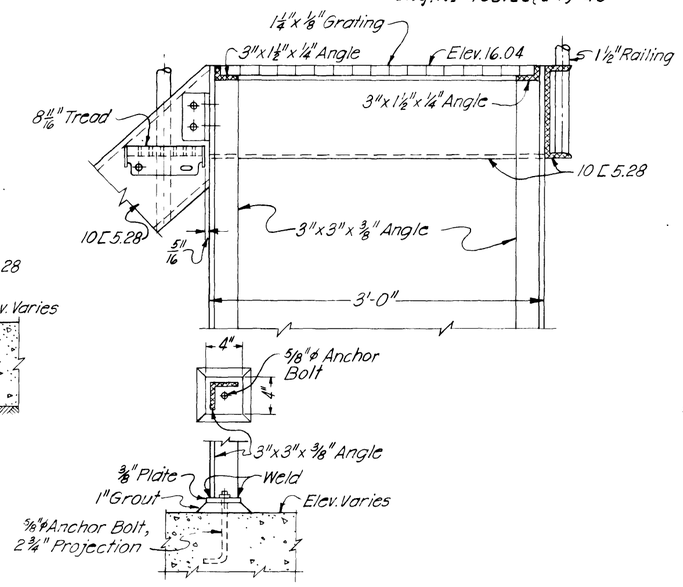
EXTERIOR STAIRWAY

Scale: 1" = 1'-0"

Note: All Material is Aluminum, Except for Stainless Steel nuts and bolts

Note:
3'-0" Height of Railing for Aluminum Stairways as shown on North Elevation - Dwg. No 438.22(a-1)-45



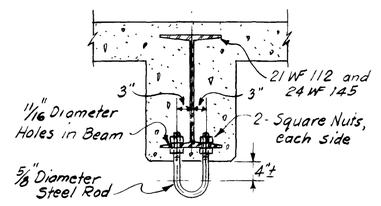


Note:
All Material is Aluminum, Except for Stainless Steel nuts and bolts.

SECTION b-b

INTERIOR STAIRWAY

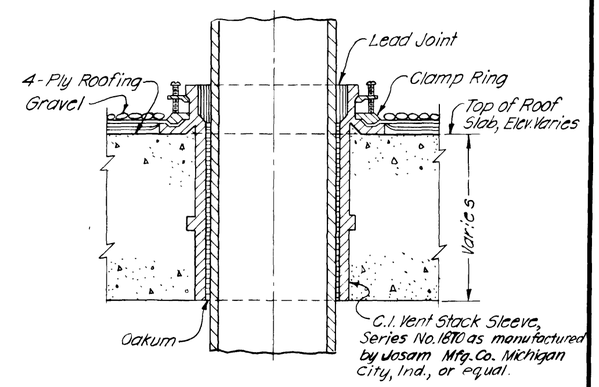
Scale: 1" = 1'-0"



LIFTING HOOK

Scale: 1" = 1'-0"

Notes
For Plan showing location of Small Vent Stacks, see Dwg. No 438.22(a-1)-44
For Plans showing location of Interior Aluminum Stairway, see Dwgs Nos 438.22(a-1)-47, 48 and 49
For Plans showing location of Exterior Aluminum Stairway, see Dwg No 438.22(a-1)-44 and 49
For Plans showing location of Lifting Hooks see Dwg. No. 438.22(a-1)-54



C.I. VENT STACK SLEEVE

Scale: None

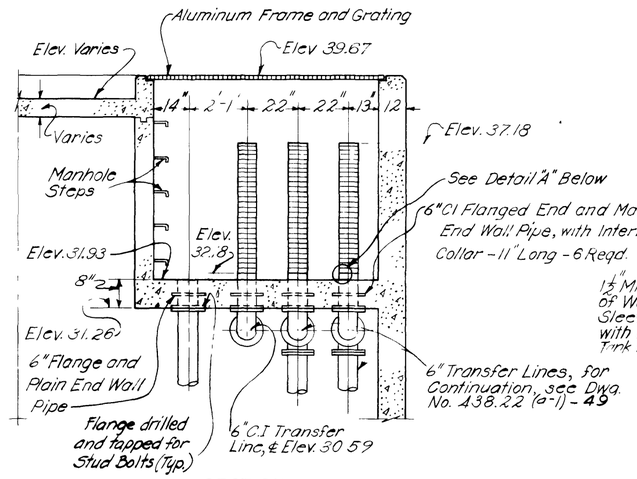
AS BUILT DRAWING
DATE January, 1968

DRAWING NO. 438.22(a-1)-58

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
CONCRETE REINFORCING DETAILS
MISCELLANEOUS DETAILS
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

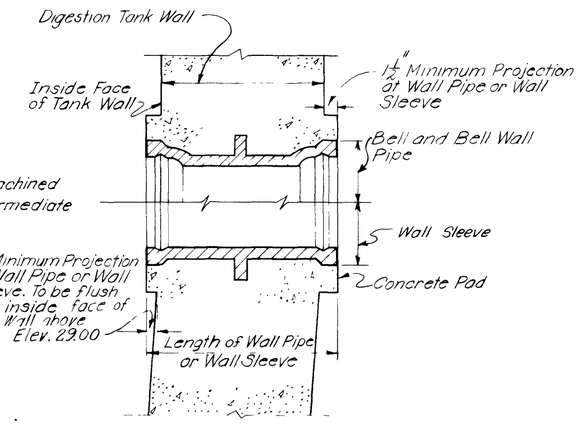
Scale: As shown — July, 1964

Drawn by: R.B.	Traced by: R.B.	Checked by: J.P. Z.B	Examined by:	Approved by:
Revisions:				

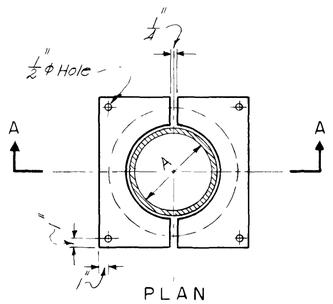


SECTION

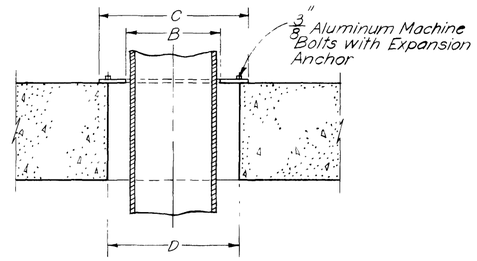
Scale: $\frac{1}{4}$" = 1'-0"



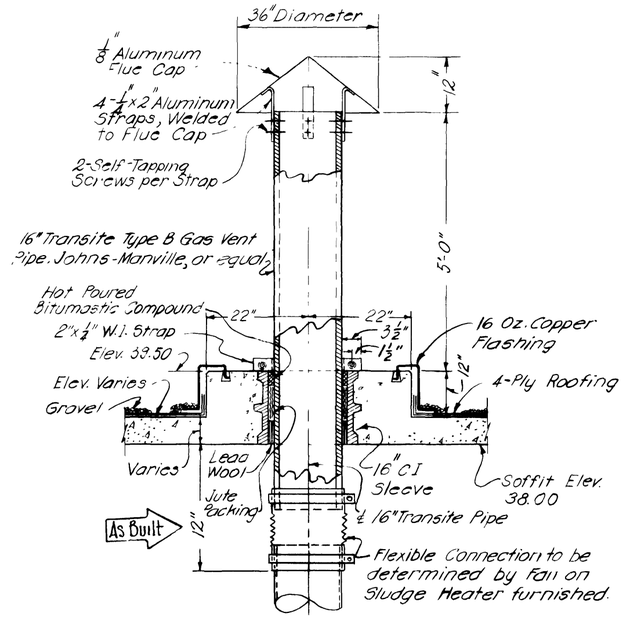
PLAN



PLAN

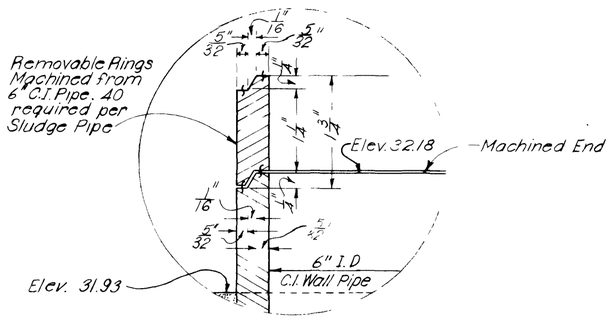


SECTION A-A



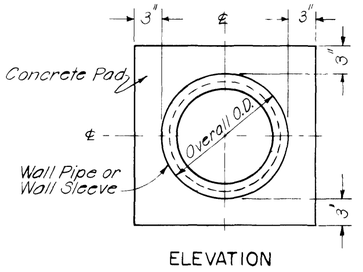
EXHAUST VENT

Scale: None



DETAIL "A"

Half Full Size

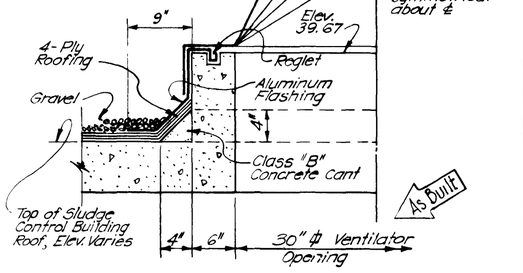


ELEVATION

FLOOR PLATE DIMENSIONS				
A	B (Diam.)	C (Sq.)	D (Diam.)	REMARKS
6"	7"	13½"	11½"	¼" Aluminum Split Plate and Bolts
4"	5"	11½"	9½"	¼" Aluminum Split Plate and Bolts.
3"	—	—	4"	Crane Co. No. 10 B.C., or equal.
2"	—	—	3"	Crane Co. No. 10 B.C., or equal.

FLOOR PLATES

Scale: None



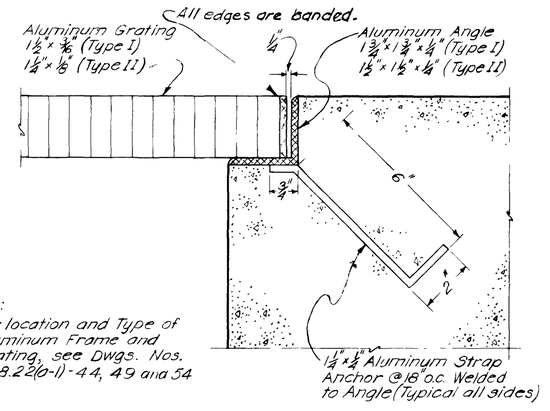
VENTILATOR BASE

Scale: None

Notes:

For Plan showing location of Exhaust Vent, see Dwg. No. 438.22(a-1)-44

For Plans showing location of C.I. Wall Pipe or Sleeve, Transfer Box, Sludge Sampling Pipes, Perforated Cover, and Floor Plates, see Dwgs. Nos. 438.22(a-1)-46, 47, 48 and 49.



Note:

For location and Type of Aluminum Frame and Grating, see Dwgs. Nos. 438.22(a-1)-44, 49 and 54

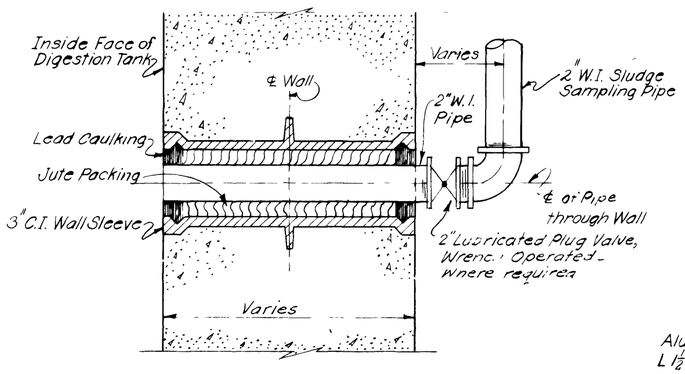
ALUMINUM FRAME AND GRATING

Scale: None

CAST IRON WALL PIPE OR SLEEVE
THROUGH DIGESTION TANK WALL

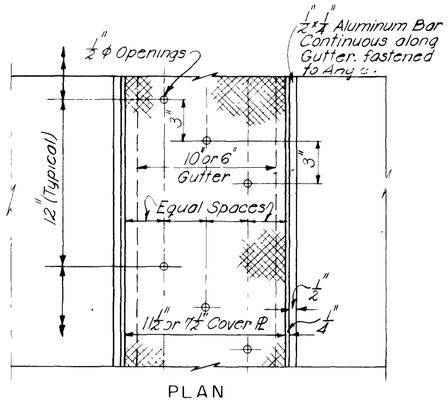
Scale: 1" = 1'-0"

TRANSFER BOX

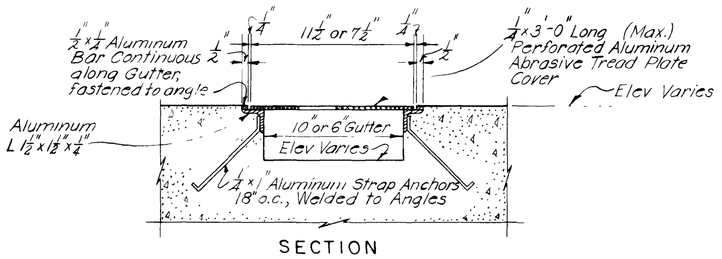


SLUDGE SAMPLING PIPE
THROUGH DIGESTION TANK WALL

Scale: 1½" = 1'-0"



PLAN



SECTION

PERFORATED COVER

Scale: 1½" = 1'-0"

AS BUILT DRAWING

DATE January, 1968

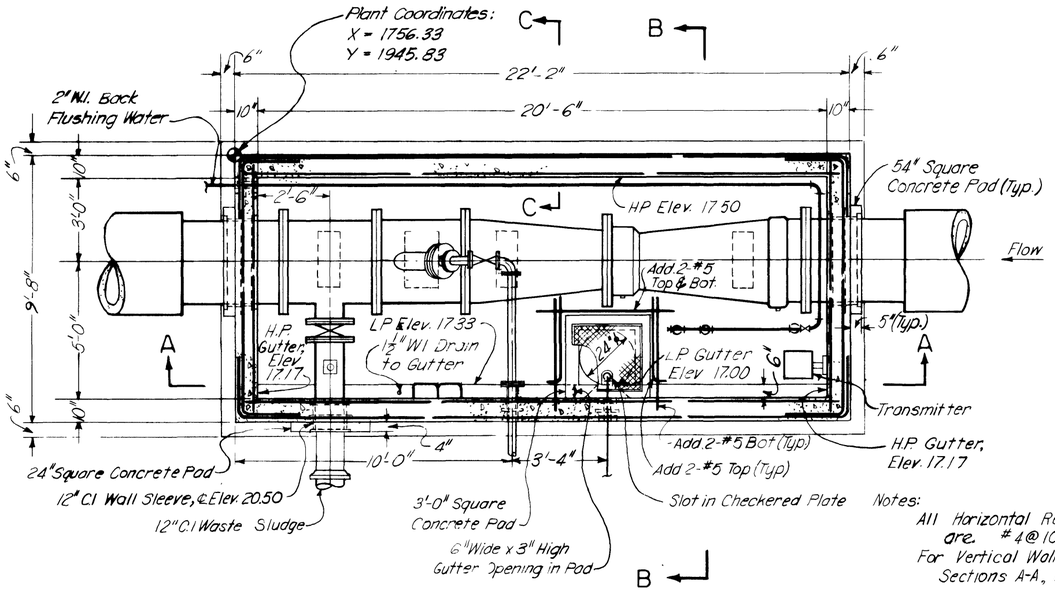
DRAWING NO. 438.22(a-1)-59

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
SLUDGE DIGESTION FACILITIES
CONCRETE REINFORCING DETAILS
MISCELLANEOUS DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

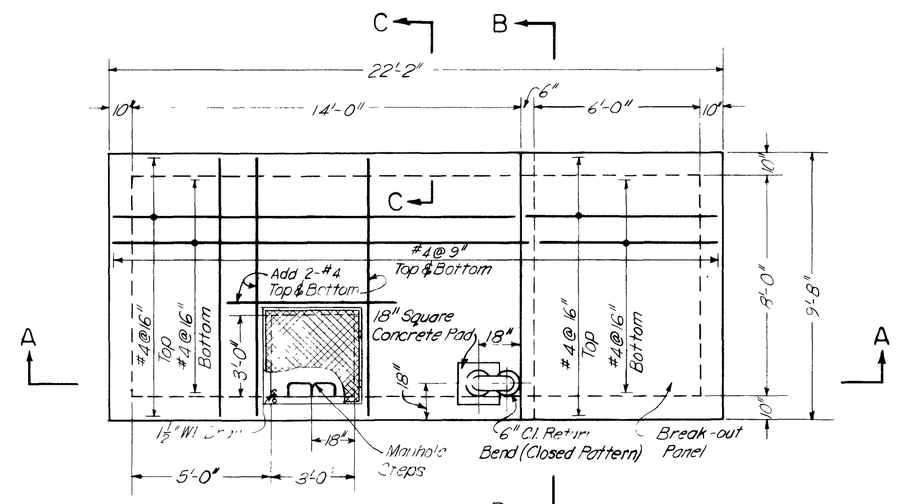
Scale: As shown — July, 1964

Drawn by: H.C.	Traced by: O.R.	Checked by: JP, ZB	Examined by:	Approved by:
Revisions:	As Built 3/68 RSM			

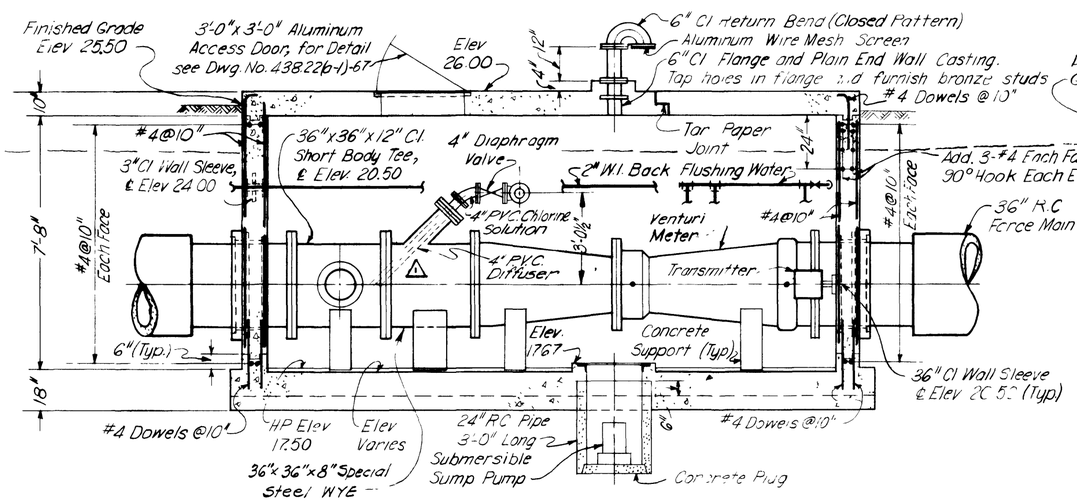


SECTIONAL PLAN AT ELEV. 24.50

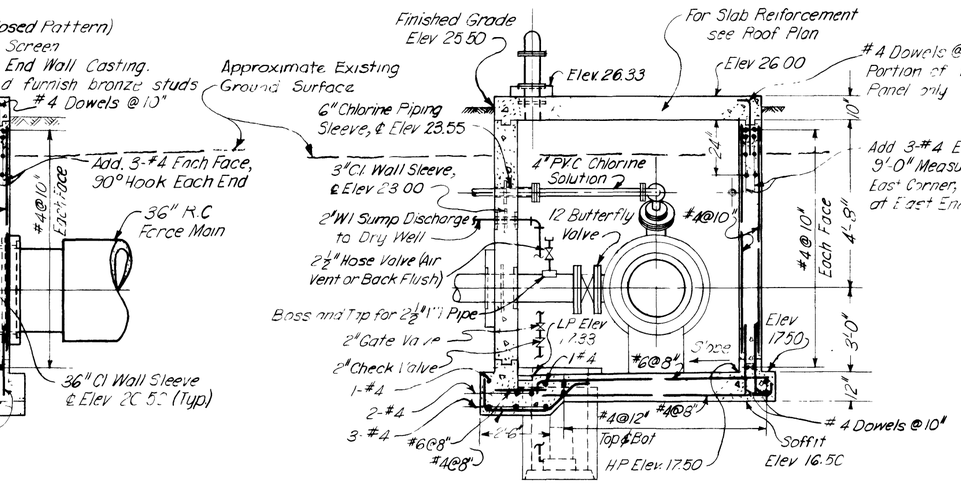
Notes:
All Horizontal Reinforcement in Walls are #4@10"
For Vertical Wall Reinforcement, see Sections A-A, B-B and C-C.



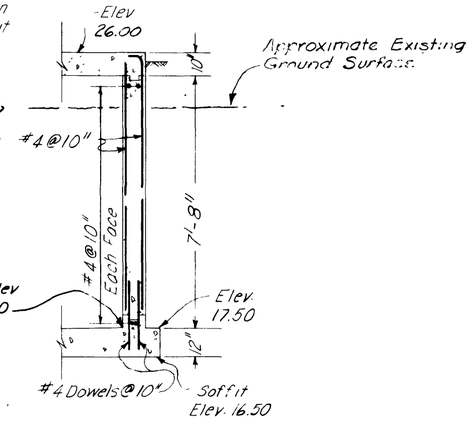
ROOF PLAN



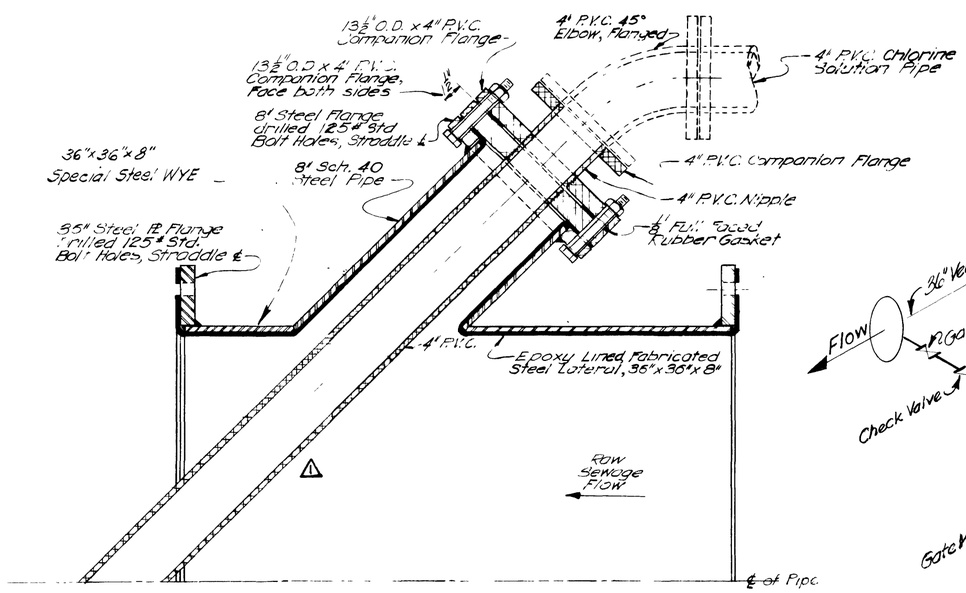
SECTION A-A



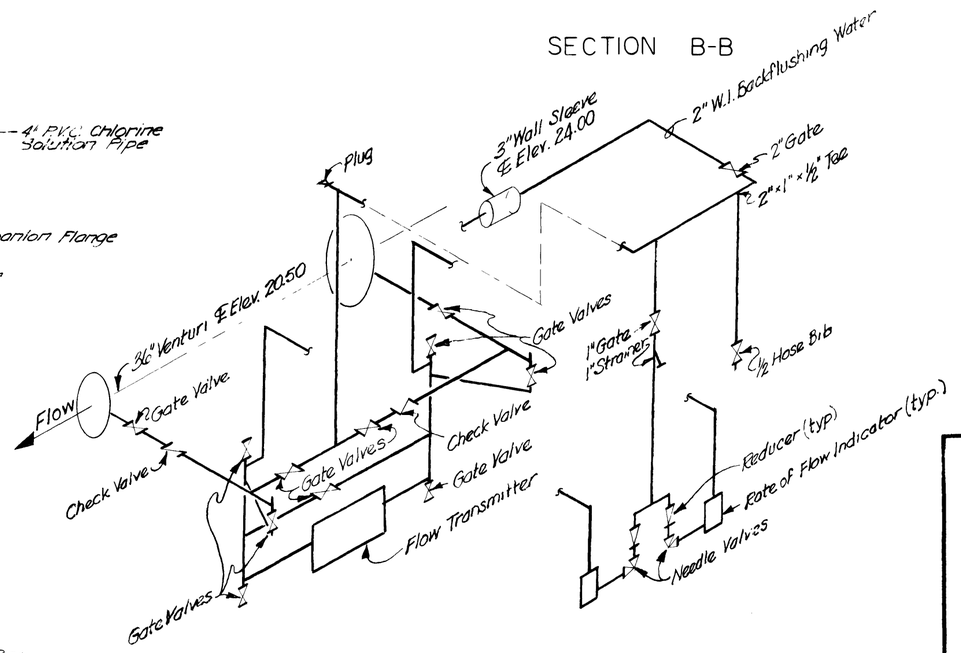
SECTION B-B



SECTION C-C



P.V.C. DIFFUSOR DETAIL
Scale 1½" = 1'-0"



⚠ VENTURI METER FLUSH CHECK SYSTEM ISOMETRIC
Scale: None

Notes:
For Location of Venturi Meter Vault, see Dwgs Nos. 438.22(a-1)-1 and 5
For Outside Piping Plans, see Dwgs. Nos. 438.22(a-1)-6 and 7
For Detail of Chlorine Piping Sleeve, see Dwg. No. 438.22(a-1)-40
For Detail of Checkered Plate Cover and Frame, see Dwg No. 438.22(a-1)-61
For Detail of Manhole Steps, see Dwg No. 438.22(a-1)-76
For Detail of Concrete Pipe Support, see Dwg No. 438.22(a-1)-70

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 43822 (a-1)-60

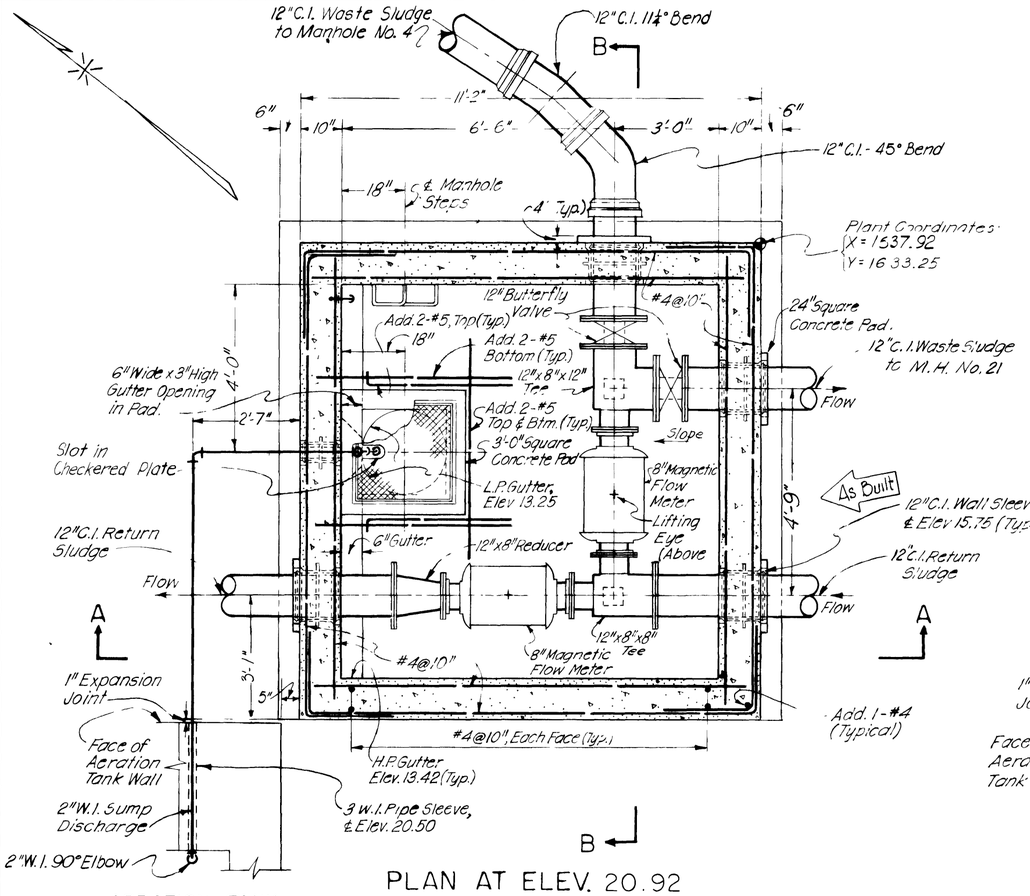
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

VENTURI METER VAULT

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

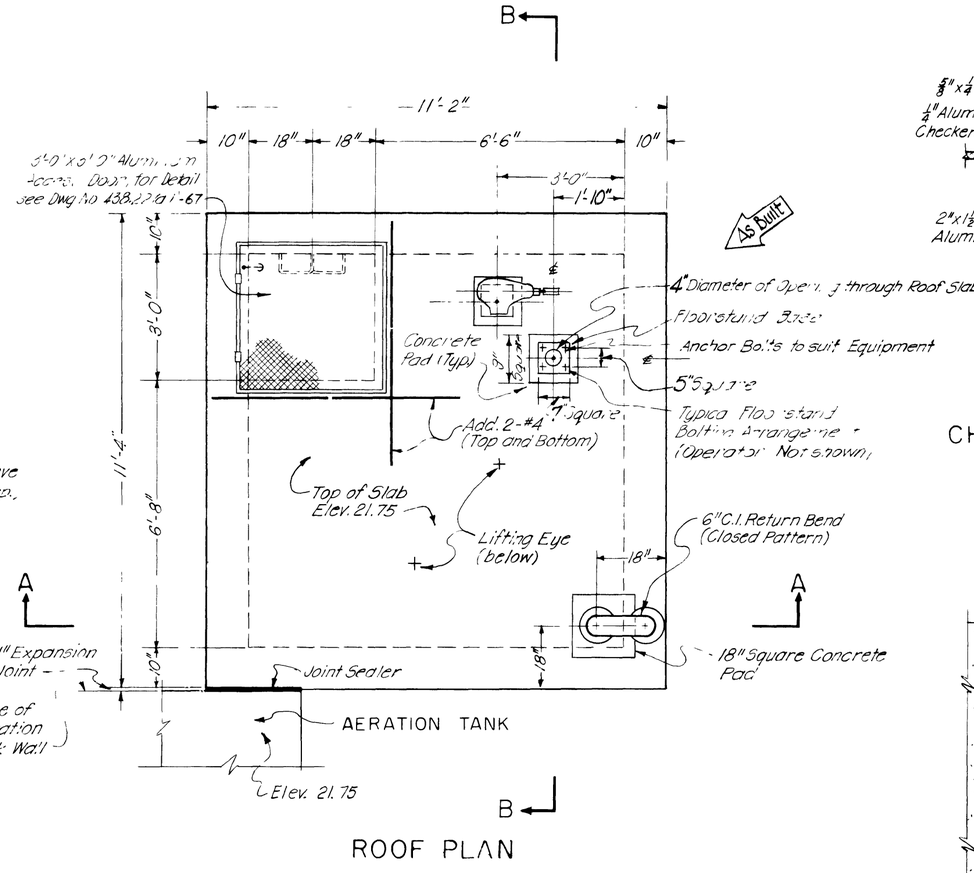
Scale: 1" = 1'-0" & As Shown — July, 1964

Drawn by: J.P.	Traced by: F.T.D.	Checked by: J.O. G.V.A.	Examined by:	Approved by:
Revisions:	⚠ RGM 4/18/67			

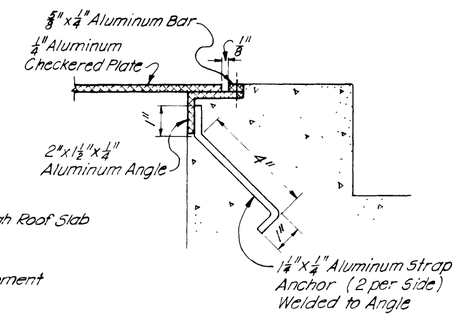


AERATION TANK
(Compartment No. 1)

PLAN AT ELEV. 20.92

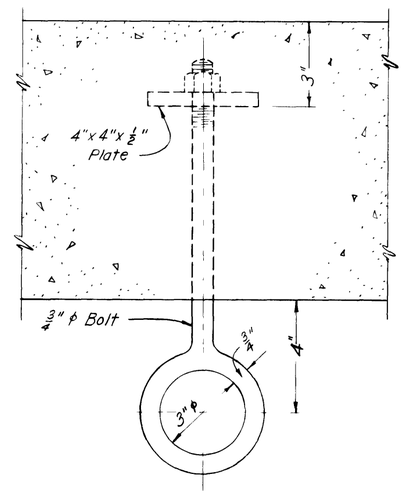


ROOF PLAN



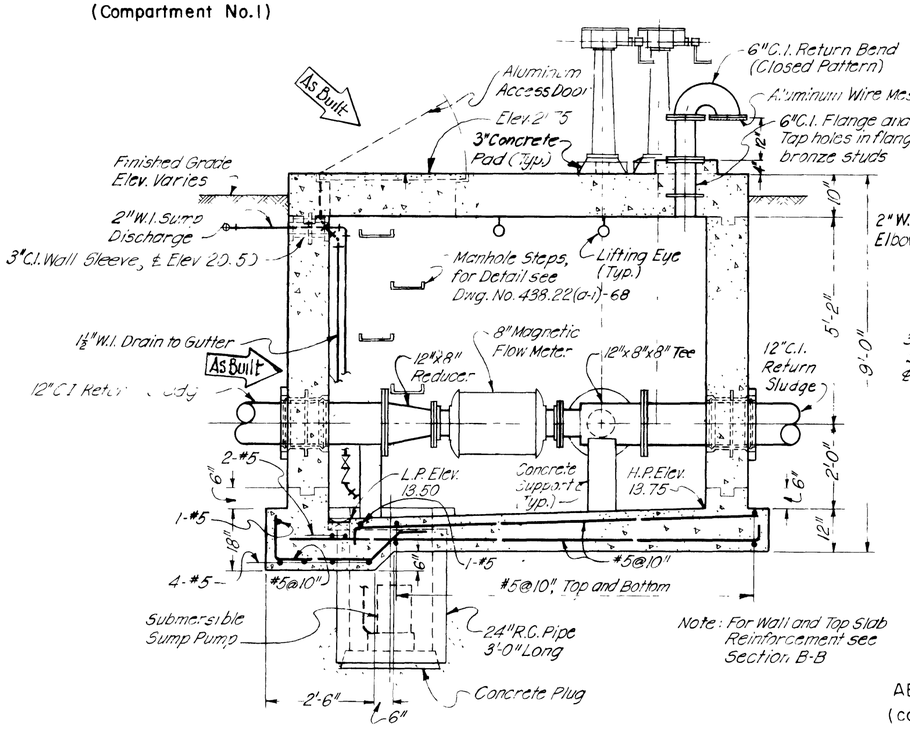
CHECKERED PLATE COVER AND FRAME DETAIL

Scale : 3" = 1'-0"

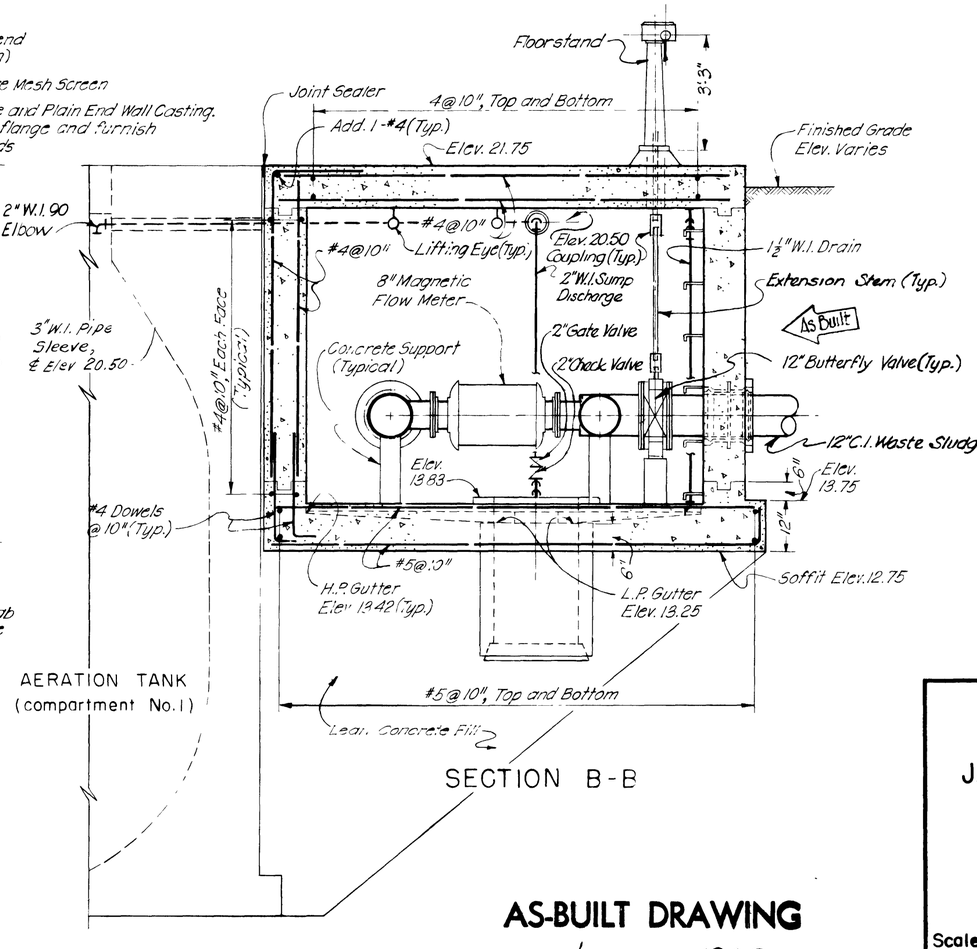


LIFTING EYE

Scale: 3" = 1'-0"



SECTION A-A



SECTION B-B

Notes:

For Location of Return and Waste Sludge Control Vault, see Dwgs. Nos. 438.22(a-1)-1 and 5

For Outside Piping Plan, Part I, see Dwg. No. 438.22(a-1)-6

For Detail of Concrete Pipe Support, see Dwg. No. 438.22(a-1)-70

For Location of 2" W.I. Sump Discharge in Aeration Tank, see Dwg. No. 438.22(a-1)-26

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-61

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

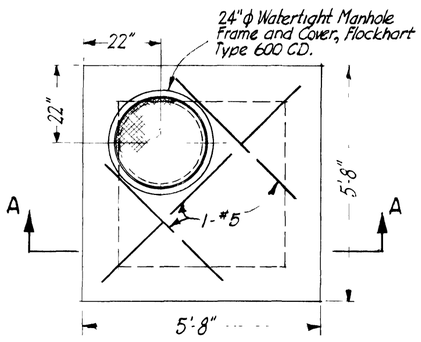
RETURN AND WASTE SLUDGE CONTROL VAULT

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

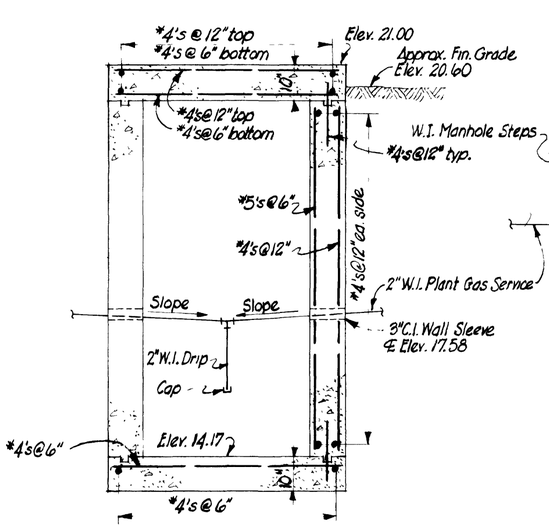
Scale : 3/8" = 1'-0" & As Shown

July, 1964

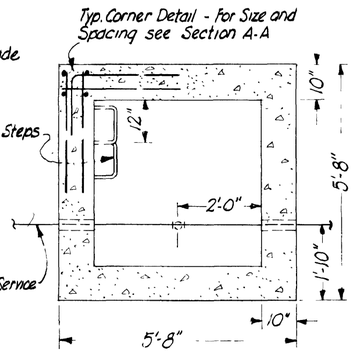
Drawn by: J.P.	Traced by: QR RB	Checked by: VN GVA	Examined by:	Approved by:
Revisions:	As Built 3/8/68 RGM			



PLAN

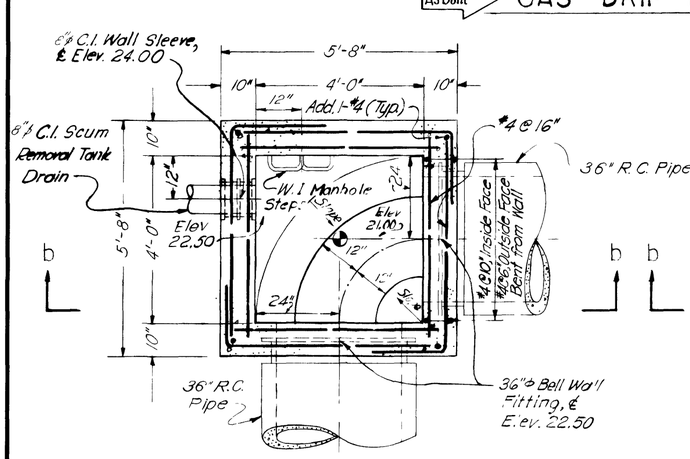


SECTION A-A

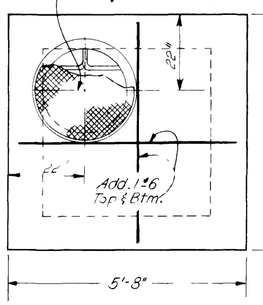


SECTIONAL PLAN

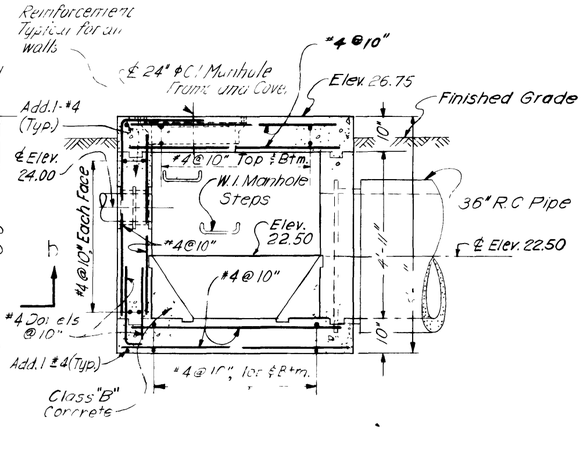
As Built GAS DRIP TRAP MANHOLE



SECTIONAL PLAN

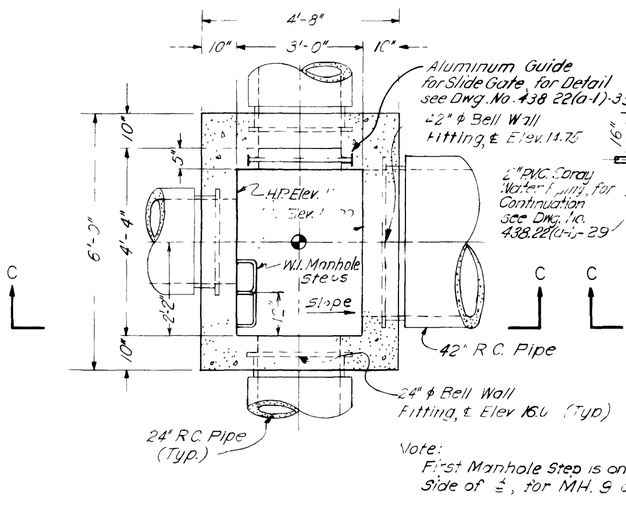


ROOF PLAN



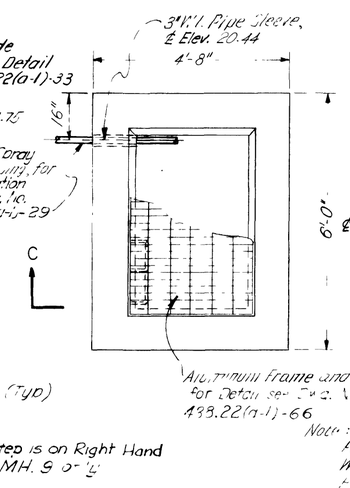
SECTION b-b

MANHOLE NO. 2

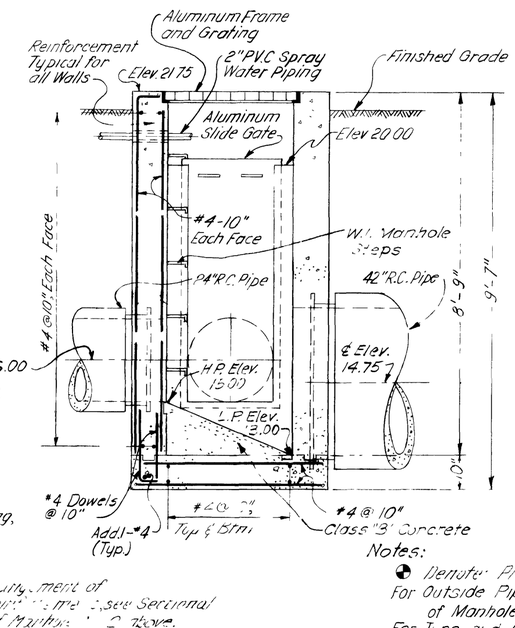


SECTIONAL PLAN

Note:
First Manhole Step is on Right Hand Side of ℄, for MH. 9 only.



TOP PLAN

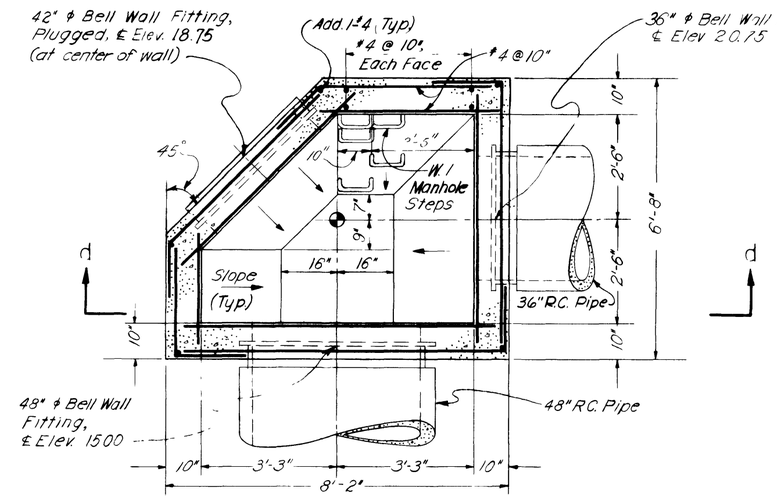


SECTION c-c

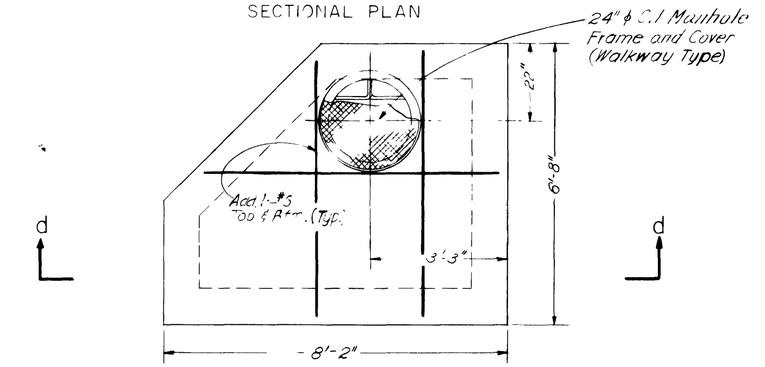
Note:
For Arrangement of Wall Reinforcement, see Sectional Plan of Manhole shown above.

MANHOLE NO. 9

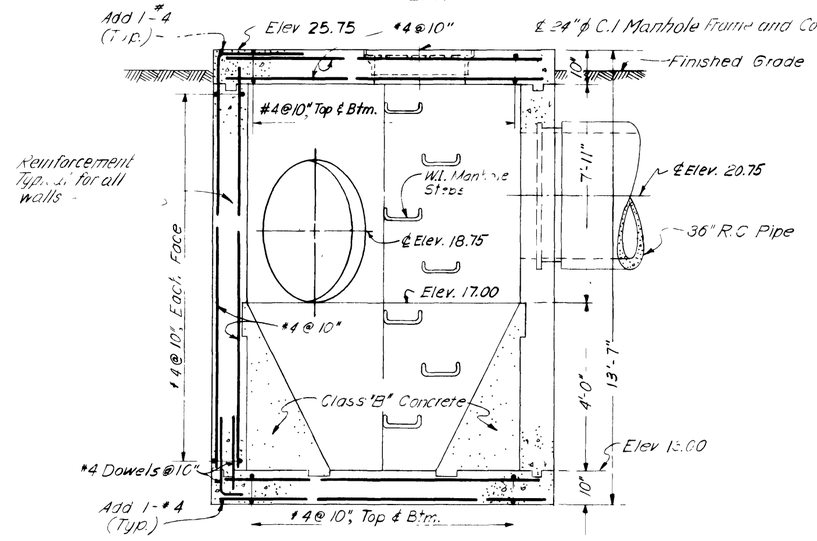
AS-BUILT DRAWING
DATE January, 1968



SECTIONAL PLAN



ROOF PLAN



SECTION d-d

MANHOLE NO. 7

Notes:
- Denote: Plant Coordinates.
- For Outside Piping Plan, Part I, and Location of Manholes, see Dwg. No. 438.22(a1)-F
- For Type and Catalog Nos. of Frames and Covers for Outside Piping Manholes, see Dwg. No. 438.22(a-1)-66
- For Manhole Cover detail, see Dwg. No. 438.22 (a-1)-66
- For Details of W.I. Manhole Steps, see Dwg. No. 438.22(a-1)-63

DRAWING NO. 438.22(a-1)-62

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

MANHOLE DETAILS

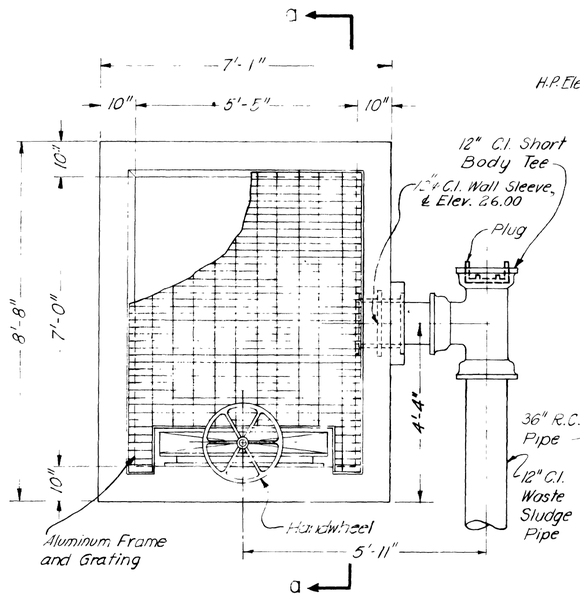
MANHOLES NOS. 2, 7 AND 9

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

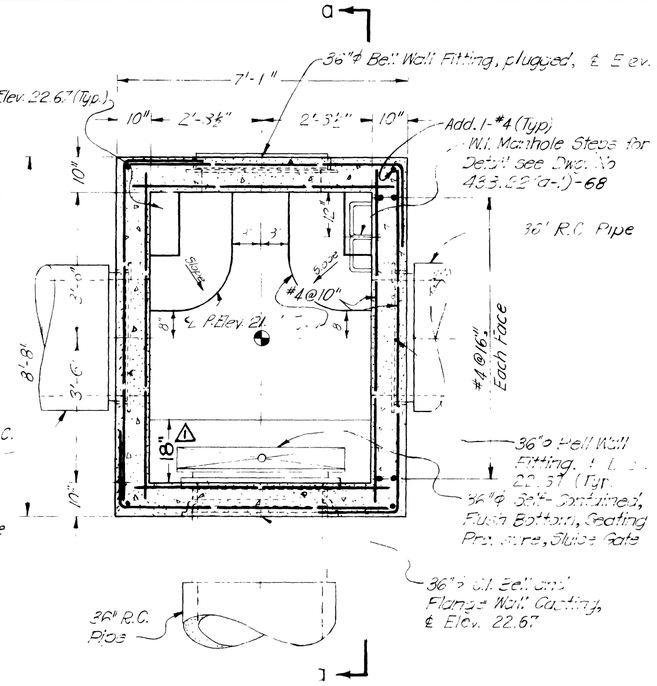
Scale: 3/8" = 1'-0"

July, 1964

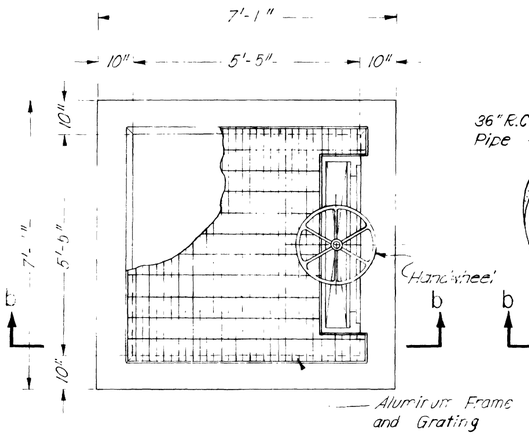
Drawn by: A.C.	Traced by: A.C.	Checked by: M.E. GVA	Examined by: DP	Approved by:
Revisions:	As Built 1/68 RGM			



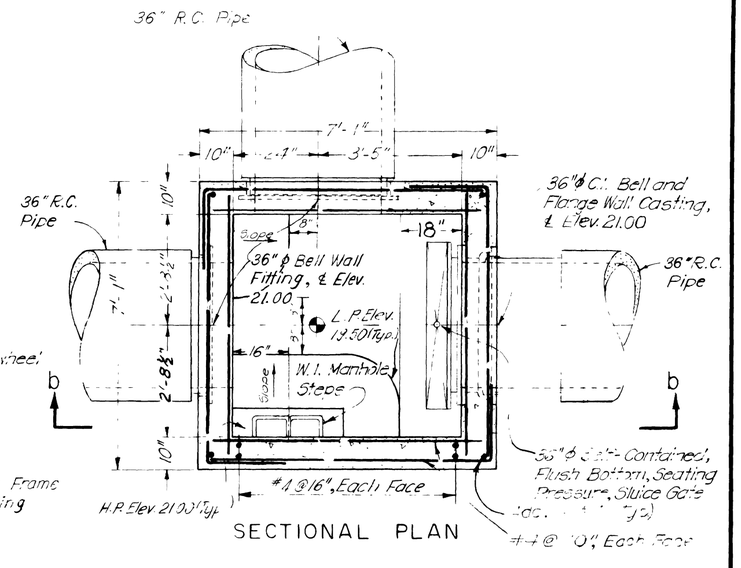
TOP PLAN



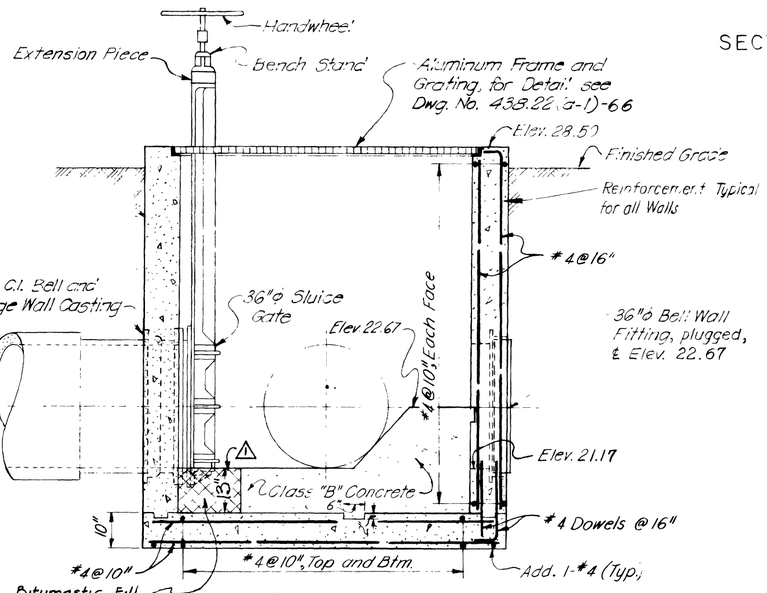
SECTIONAL PLAN



TOP PLAN

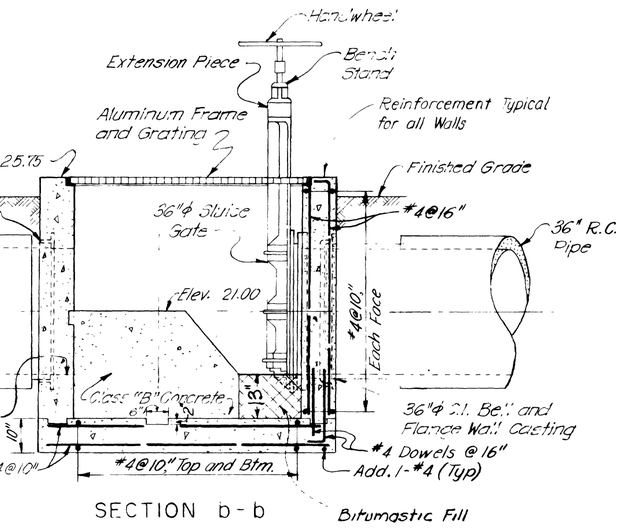


SECTIONAL PLAN



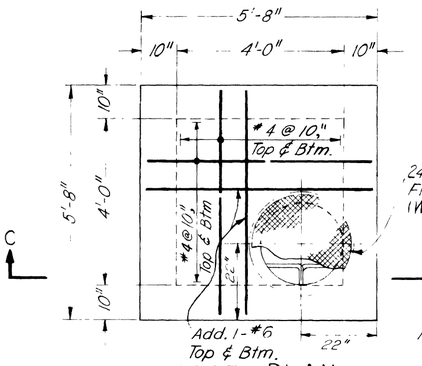
SECTION a-a

MANHOLE NO. 1

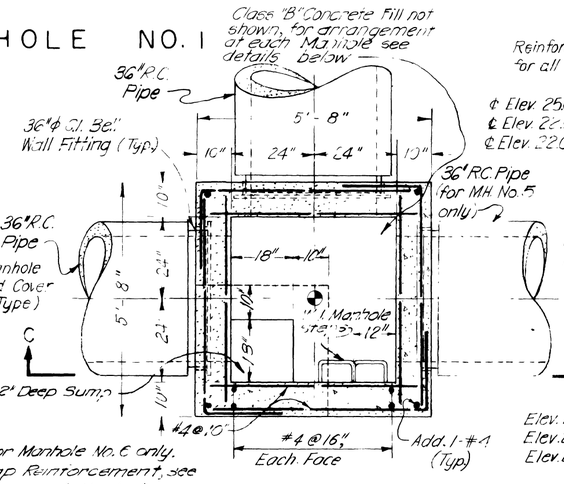


SECTION b-b

MANHOLE NO. 3

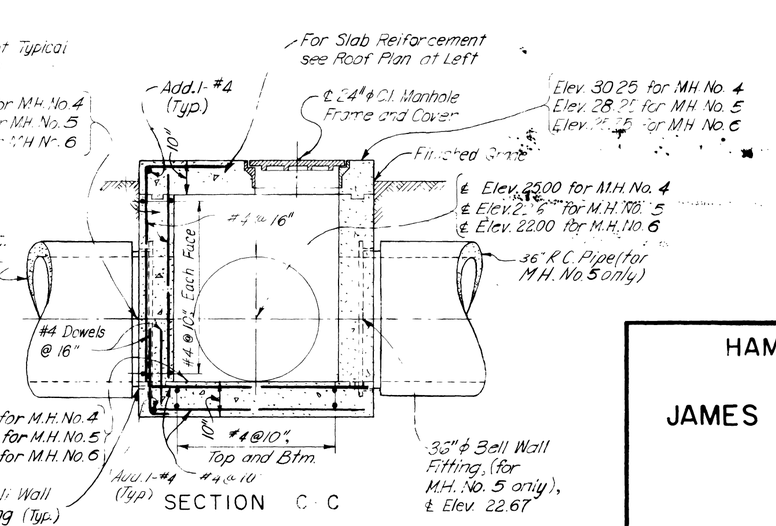


ROOF PLAN



SECTIONAL PLAN

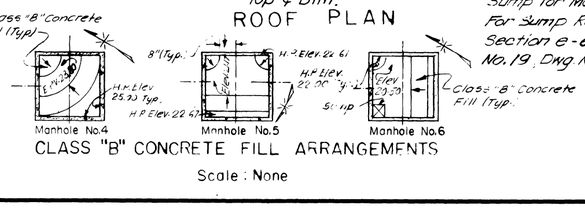
Notes:
Sump for Manhole No. 6 only.
For Sump Reinforcement, see Section e-e of Manhole No. 19, Dwg. No. 438.22(a-1)-65



SECTION c-c

Notes:

◒ Denotes Plant Coordinates
For Outside Piping Plan, Part I, and Location of Manholes, see Dwg No. 438.22(a-1)-6
For Type and Catalog Nos of Frames and Covers for Outside Piping Manholes, see Dwg No. 438.22(a-1)-66
For Manhole Cover detail, see Dwg. No. 438.22(a-1)-66



CLASS "B" CONCRETE FILL ARRANGEMENTS

Scale: None

MANHOLES NOS. 4, 5 AND 6

DRAWING NO. 438.22(a-1)-63

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

MANHOLE DETAILS
MANHOLES NOS. 1, 3, 4, 5 AND 6

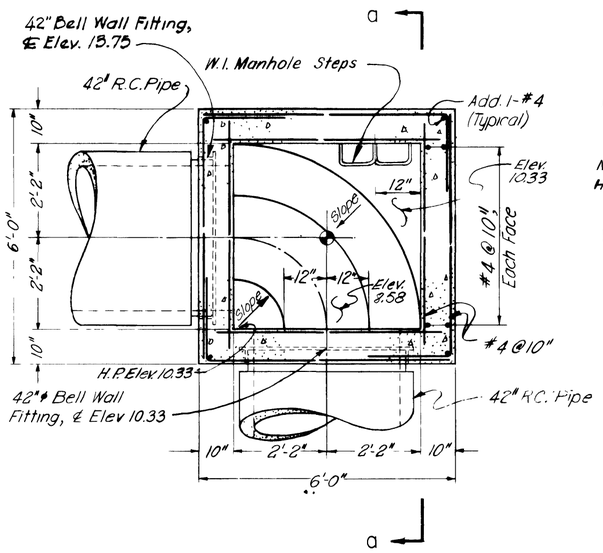
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 3/8" = 1'-0"

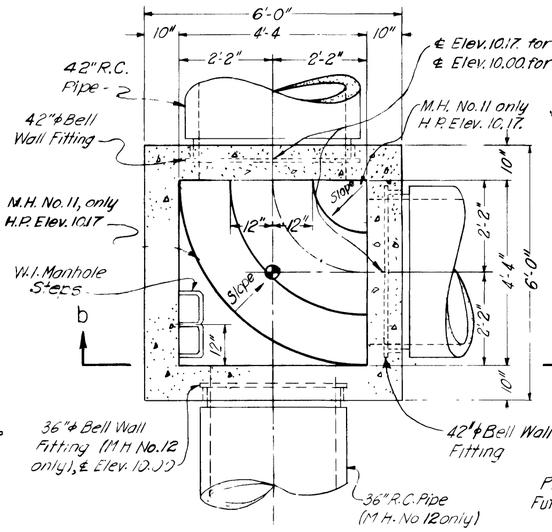
July, 1964

Drawn by: R.B.	Traced by: RB-OM	Checked by: M.E. G.V.A.	Examined by: DP	Approved by:
Revisions:	⚠ REM 4/19/68			

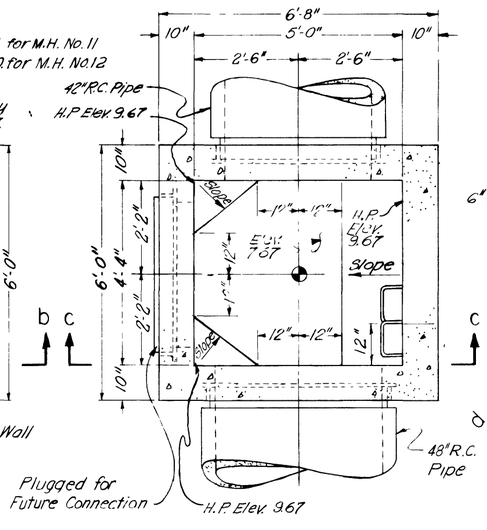
AS-BUILT DRAWING
DATE January 9, 1968



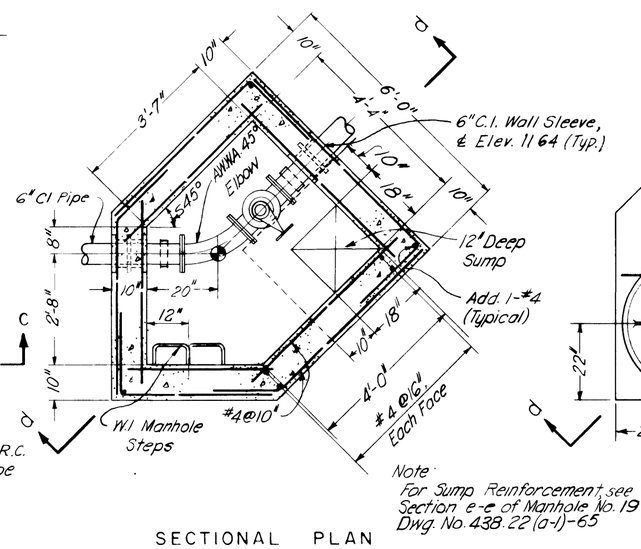
SECTIONAL PLAN



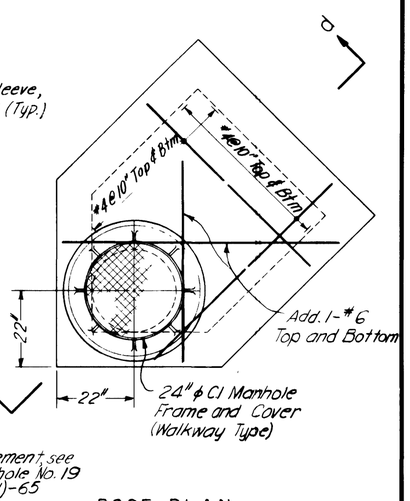
SECTIONAL PLAN



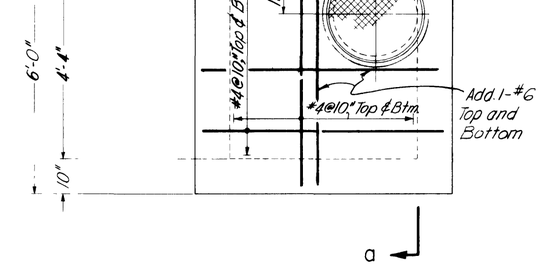
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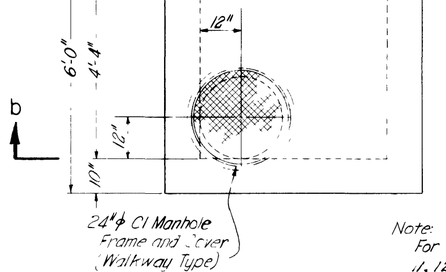
SECTIONAL PLAN



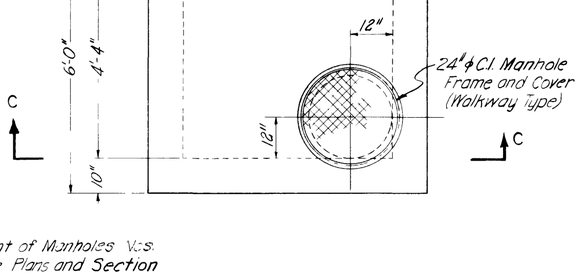
ROOF PLAN



ROOF PLAN

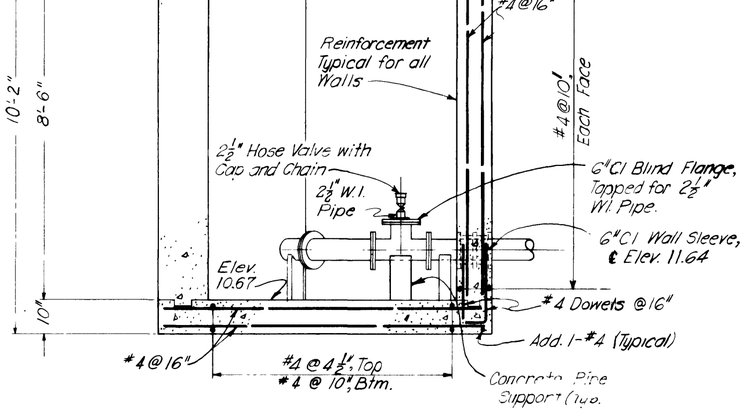


ROOF PLAN

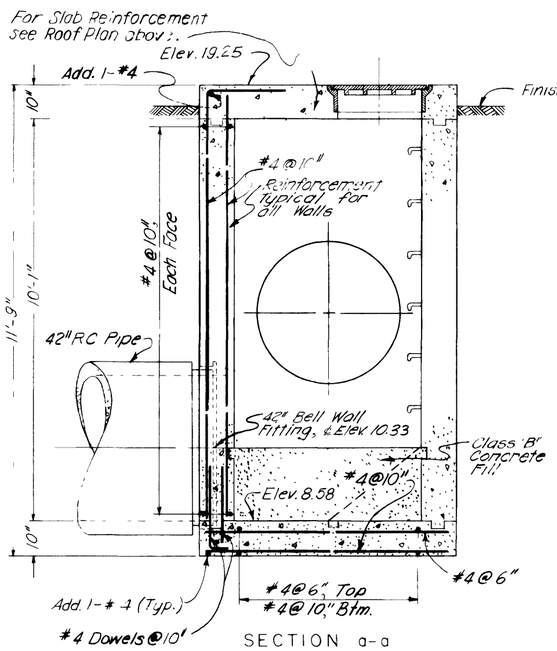


ROOF PLAN

Note:
For Reinforcement of Manholes Nos. 11, 12 and 13, see Plans and Section of Manhole No. 10, at Left.

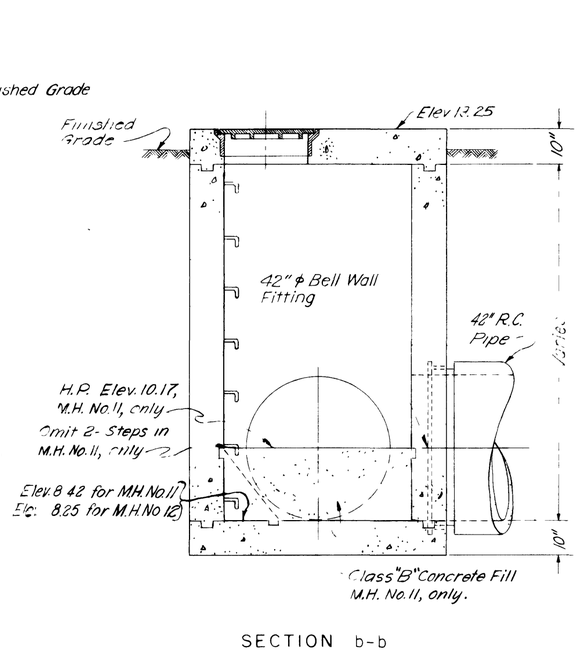


SECTION d-d



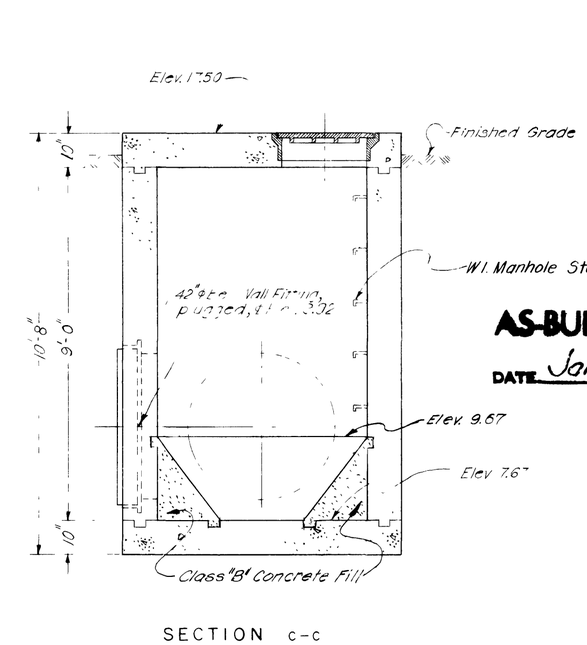
SECTION a-a

MANHOLE NO. 10



SECTION b-b

MANHOLES NOS. 11 AND 12



SECTION c-c

MANHOLE NO. 13

AS-BUILT DRAWING

DATE January, 1968

MANHOLE NO. 14

Notes:
- ◔ Denotes Plant Coordinates
- For Outside Piping Plan, Part I, and Location of Manholes, see Dwg. No. 438.22(a-1)-6
- For Type and Catalog Nos. of Frames and Covers for Outside Piping Manholes, see Dwg. No. 438.22(a-1)-66
- For Manhole Cover detail see Dwg. No. 438.22(a-1)-66
- For Details of W.I. Manhole Steps, see Dwg. No. 438.22(a-1)-68
- For Concrete Pipe Support Detail, see Dwg. No. 438.22(a-1)-70

DRAWING NO. 438.22 (a-1)-64

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

MANHOLE DETAILS

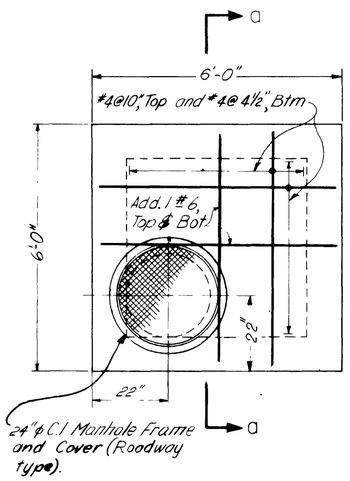
MANHOLES NOS. 10, 11, 12, 13 AND 14

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

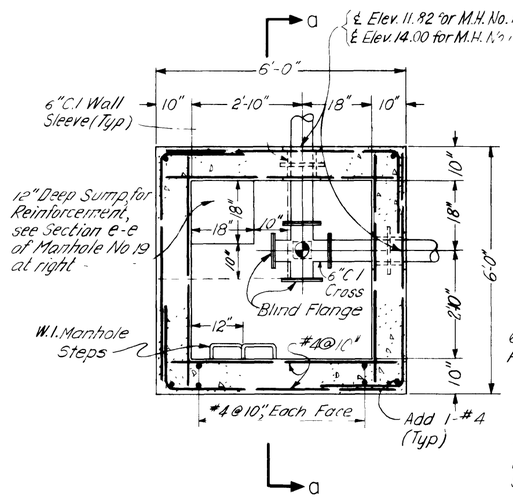
Scale: 3/8" = 1'-0"

July, 1964

Drawn by: H.C.	Traced by: H.C.	Checked by: M.E. G.V.A.	Examined by:	Approved by:
Revisions:				

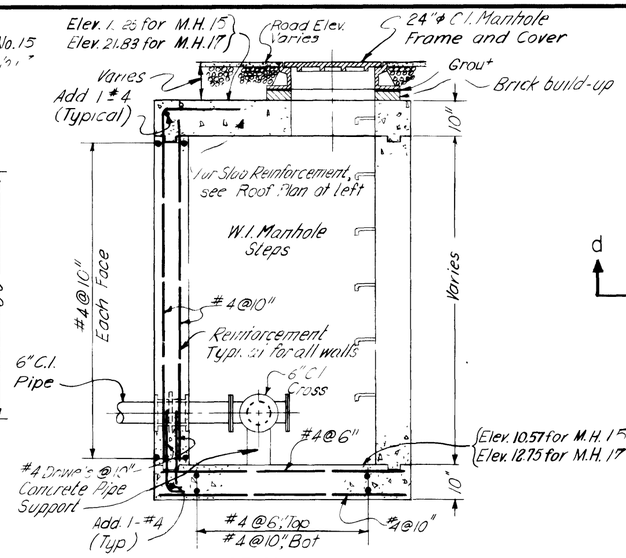


ROOF PLAN

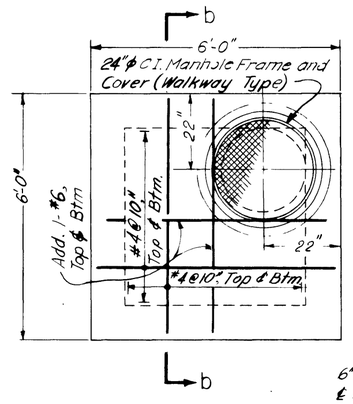


SECTIONAL PLAN

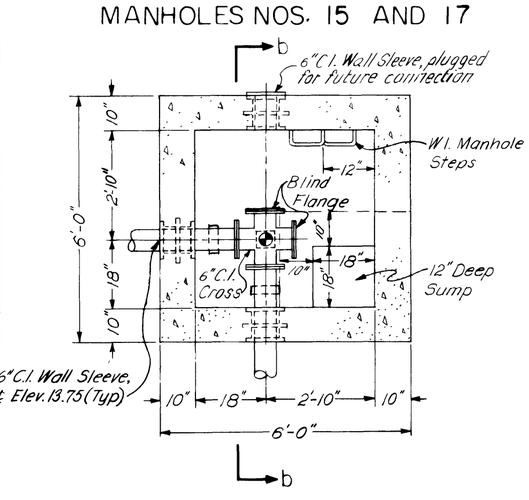
MANHOLES NOS. 15 AND 17



SECTION a-a

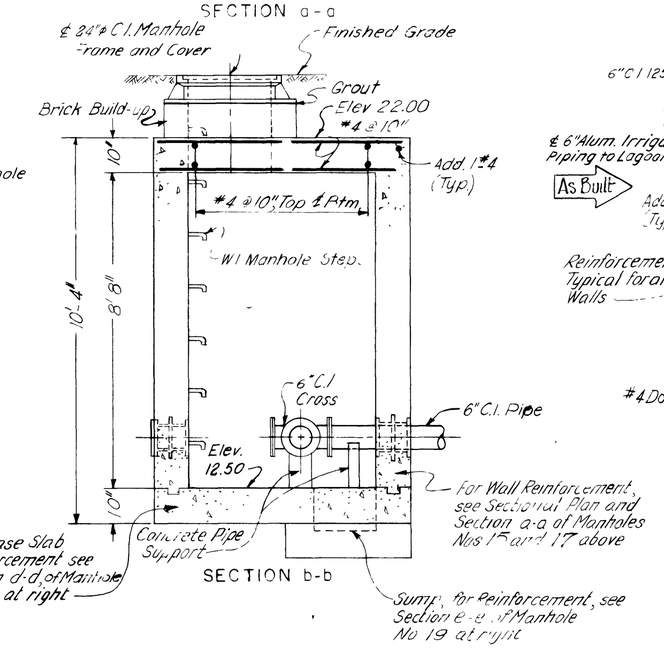


ROOF PLAN

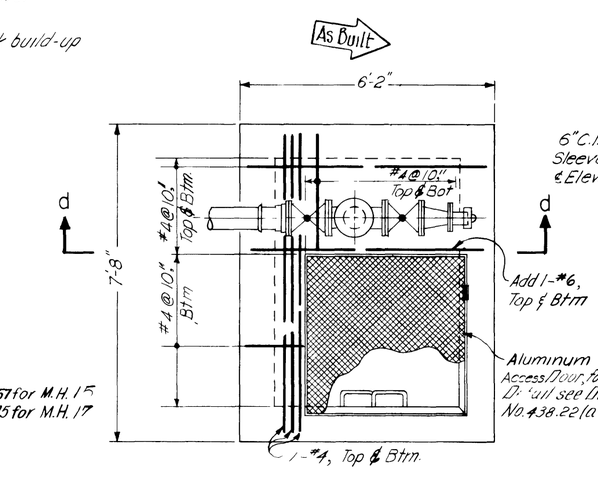


SECTIONAL PLAN

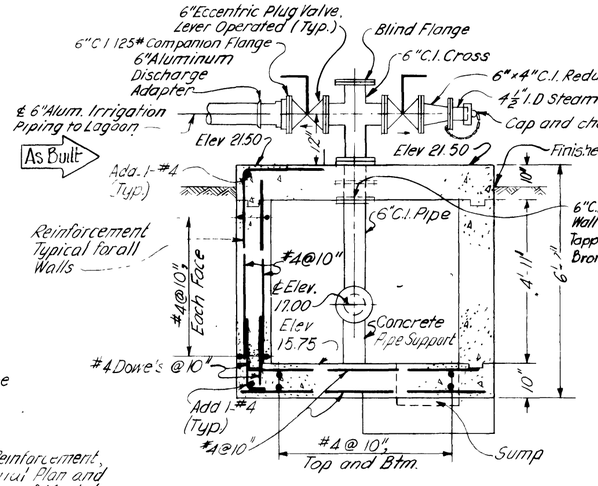
MANHOLE NO 16



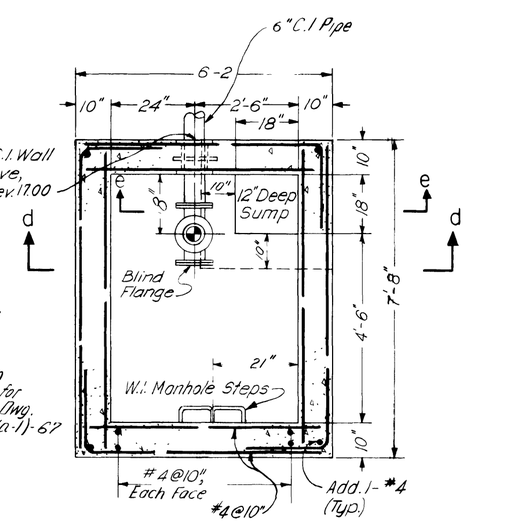
SECTION b-b



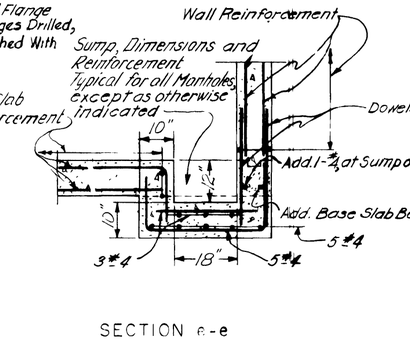
ROOF PLAN



SECTION d-d

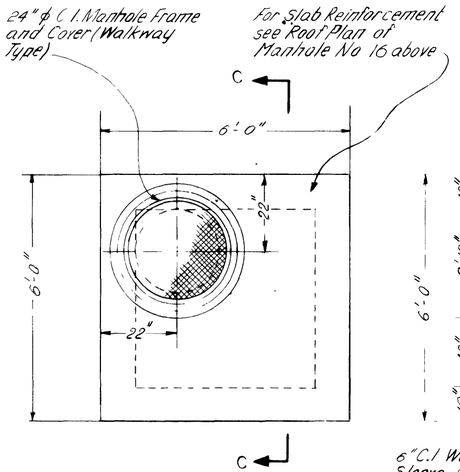


SECTIONAL PLAN

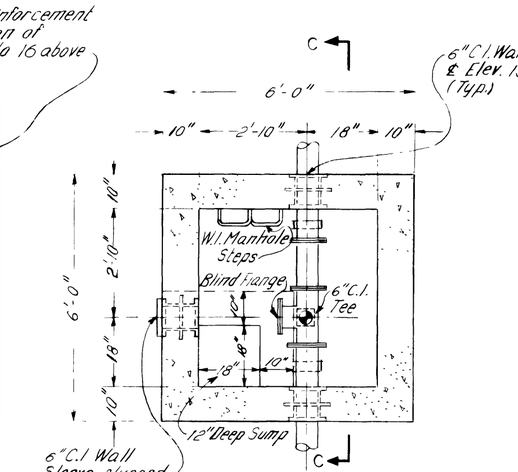


SECTION e-e

MANHOLE NO. 19

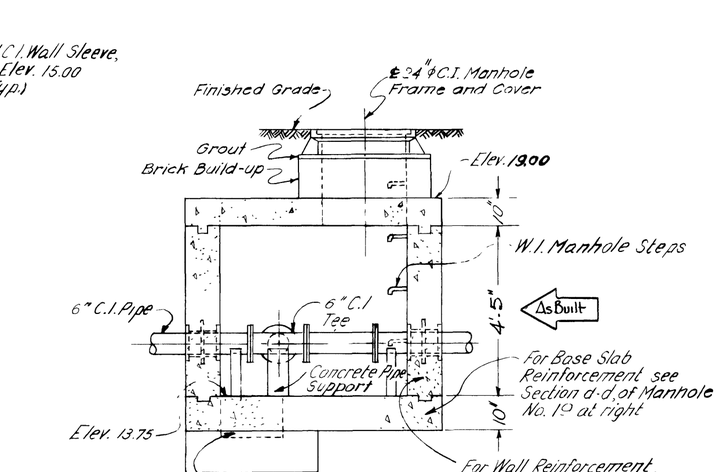


ROOF PLAN



SECTIONAL PLAN

MANHOLE NO. 18



SECTION c-c

Notes:

- ◔ Denotes Plant Coordinates.
- For Outside Piping Plan, Part I, and Location of Manholes, see Dwg. No. 438.22 (a-1)-6
- For Type and Catalog Nos. of Frames and Covers for Outside Piping Manholes, see Dwg. No. 438.22 (a-1)-66
- For Manhole Cover detail, see Dwg. No. 438.22 (a-1)-66
- For Concrete Pipe Support Detail, see Dwg No 438.22 (a-1)-70
- For Details of W.I. Manhole Steps, see Dwg No 438.22 (a-1)-68

DRAWING NO. 438.22(a-1)-65

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

MANHOLE DETAILS

MANHOLES NOS. 15, 16, 17, 18 AND 19

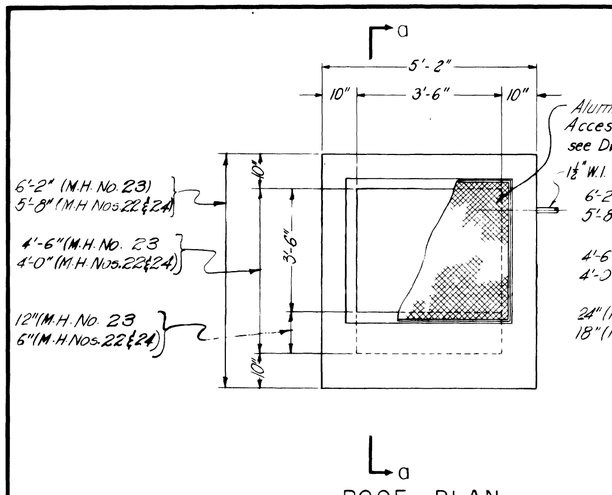
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

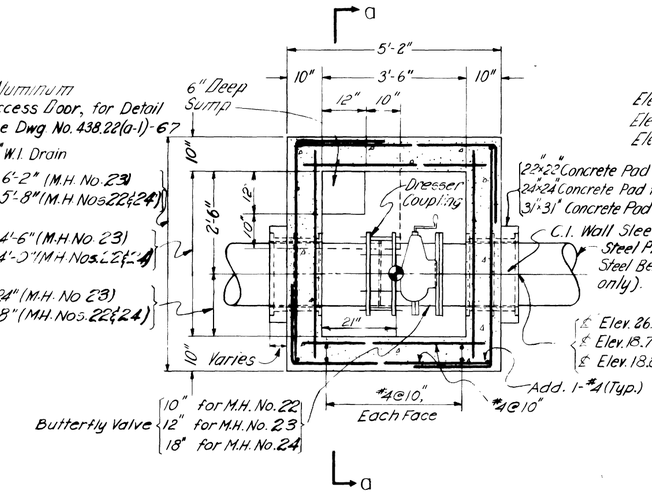
Scale: 3/8" = 1'-0" — July, 1964

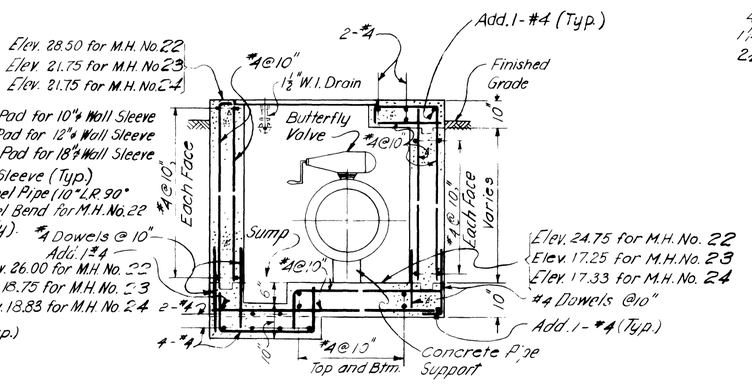
Drawn by: S.V.	Traced by: S.V.	Checked by: M.E. G.V.A.	Examined by:	Approved by:
Revisions:	As Built 4/19/67			

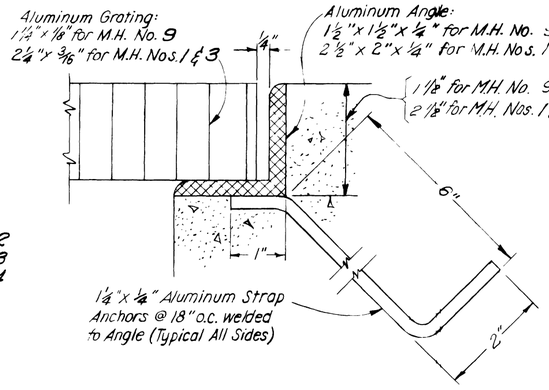
AS-BUILT DRAWING

DATE: January, 1968



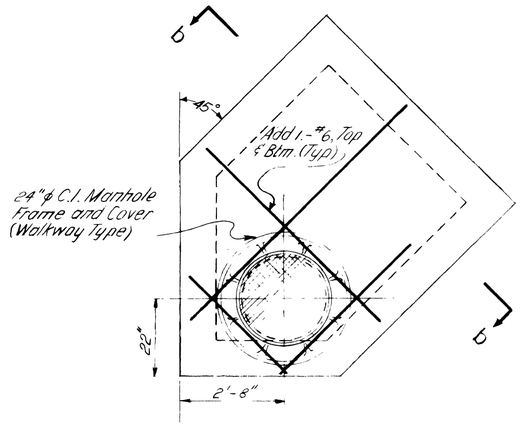


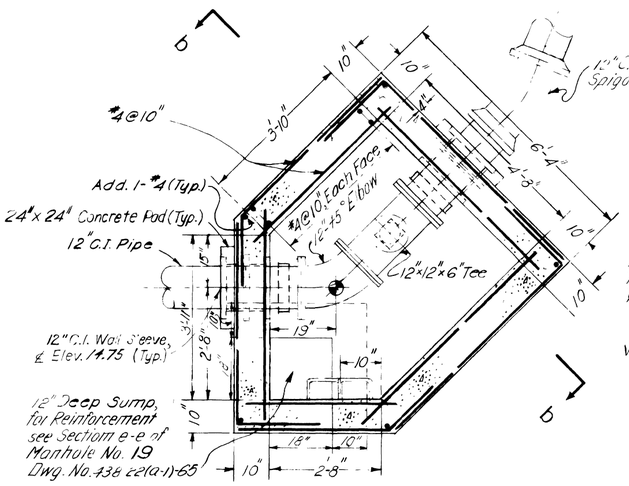


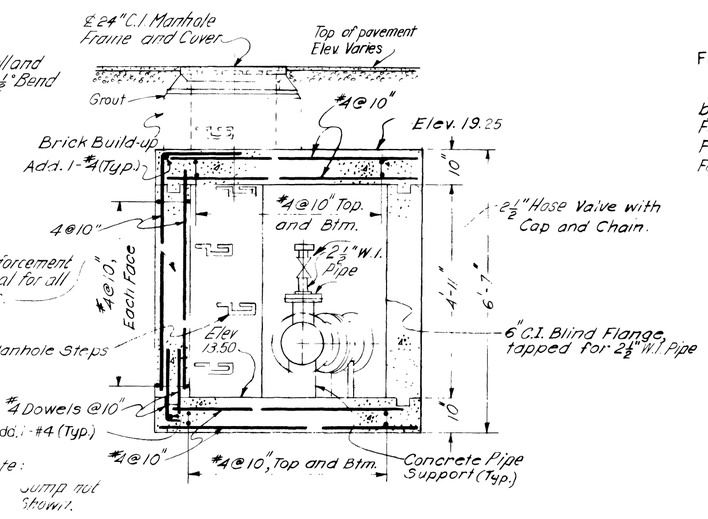


ALUMINUM FRAME AND GRATING

Scale: None

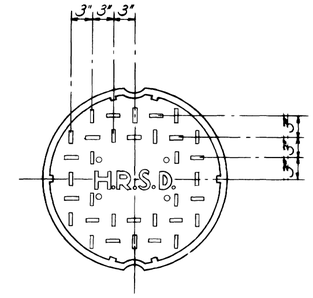






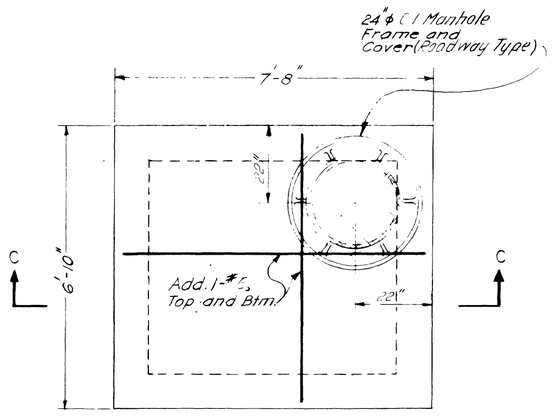
TYPE AND CATALOG NUMBERS OF FRAMES AND COVERS FOR OUTSIDE PIPING MANHOLES

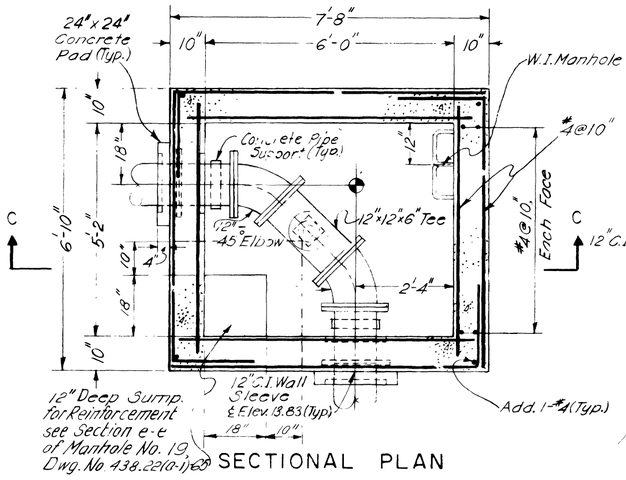
All Manhole Frames and Covers are manufactured by Flockhart Foundry Co.
For Roadway, Pit Construction, Type 684, Catalog No. 63330
For Walkway, Pit Construction, Type 618, Catalog No. 61130
For Walkway, Slab Construction, Type 630, Catalog No. 62863

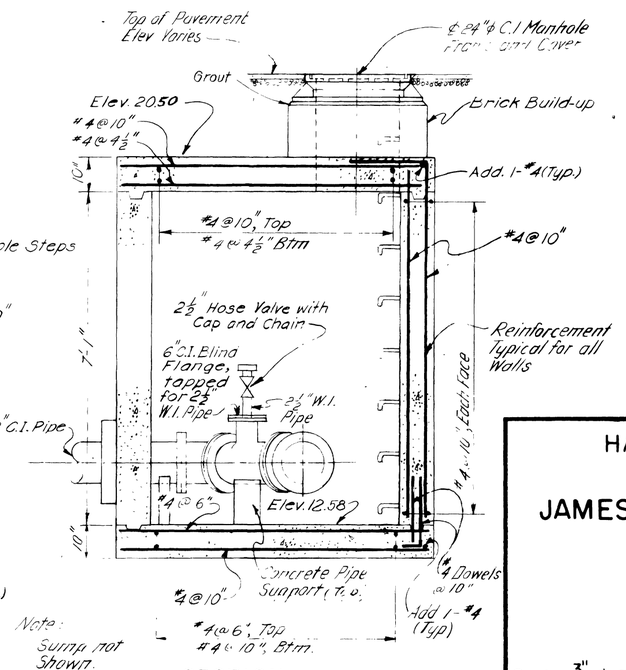


MANHOLE COVER

Scale: None







AS-BUILT DRAWING

Notes: DATE January, 1968

⊕ Denotes Plant Coordinates.
For Outside Piping Plan, Part I, and Location of Manholes, see Dwg. No. 438.22(a-1)-6
For Details of W.I. Manhole Steps, see Dwg. No. 438.22(a-1)-68

DRAWING NO. 438.22(a-1)-66

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

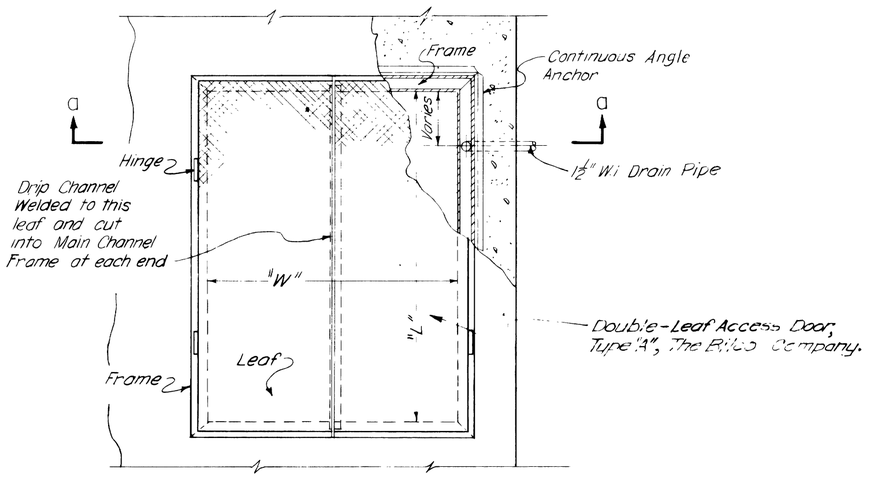
MANHOLE DETAILS

MANHOLES NOS. 20, 21, 22, 23 AND 24

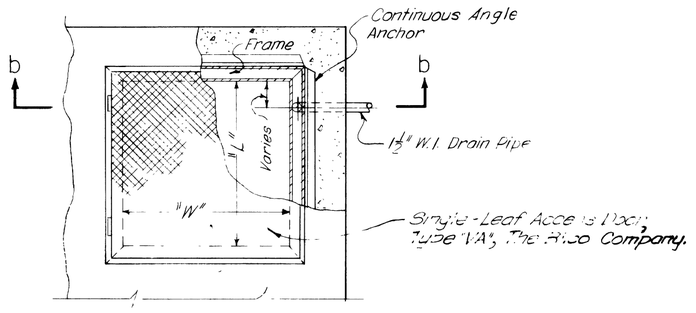
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 3/8" = 1'-0" July, 1964

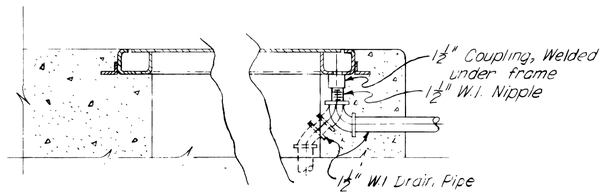
Drawn by: H.C.	Traced by: H.C.	Checked by: MF, GVA	Examined by:	Approved by:
Revisions:				



PLAN



PLAN



SECTION b-b

SINGLE-LEAF DOORS

SECTION a-a

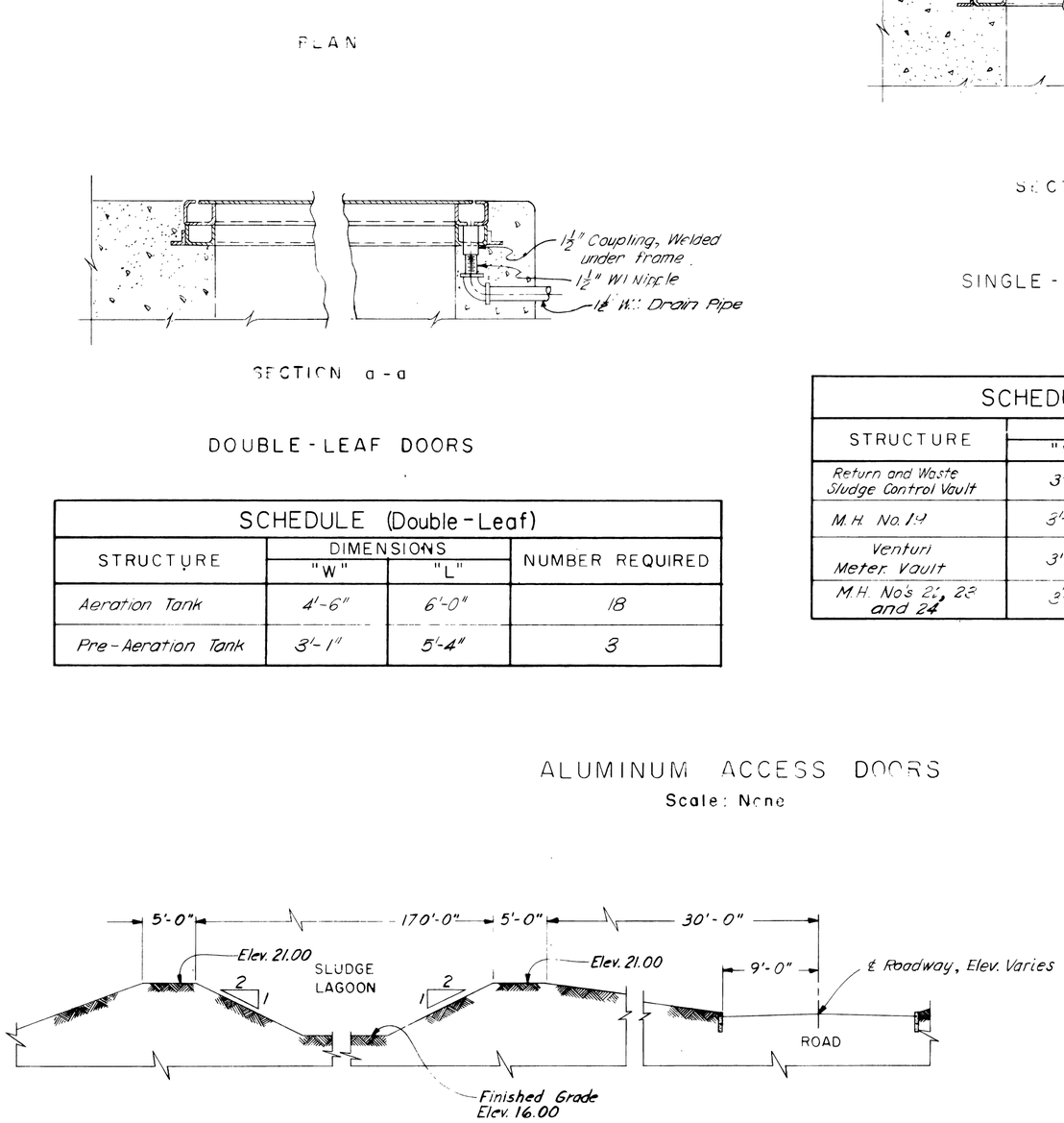
DOUBLE-LEAF DOORS

SCHEDULE (Double-Leaf)			
STRUCTURE	DIMENSIONS "W"	DIMENSIONS "L"	NUMBER REQUIRED
Aeration Tank	4'-6"	6'-0"	18
Pre-Aeration Tank	3'-1"	5'-4"	3

SCHEDULE (Single-Leaf)			
STRUCTURE	DIMENSIONS "W"	DIMENSIONS "L"	NUMBER REQUIRED
Return and Waste Sludge Control Vault	3'-0"	3'-0"	1
M.H. No. 19	3'-6"	3'-6"	1
Venturi Meter Vault	3'-0"	3'-0"	1
M.H. No's 21, 22 and 24	3'-6"	3'-6"	1 per M.H.

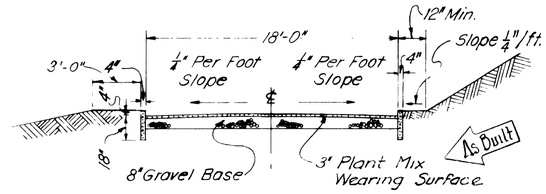
ALUMINUM ACCESS DOORS

Scale: None



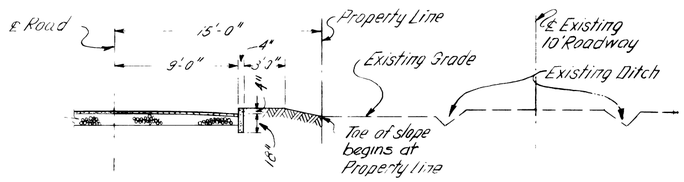
TYPICAL SLUDGE LAGOON CROSS SECTION

Scale: 1" = 10'-0"



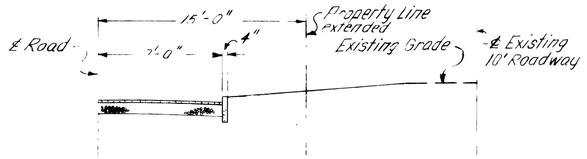
TYPICAL ROADWAY SECTION

Scale: None



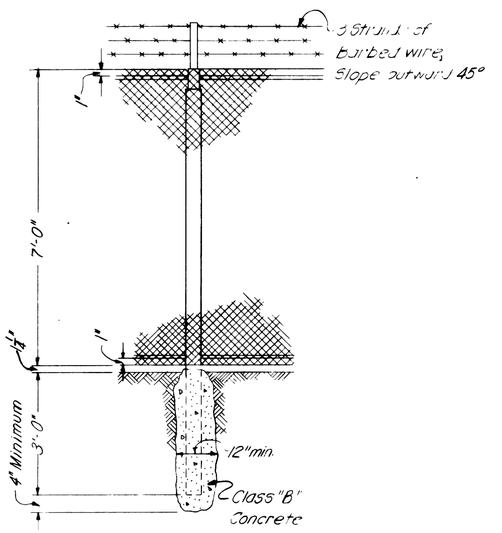
SECTION 1-1

Scale: None



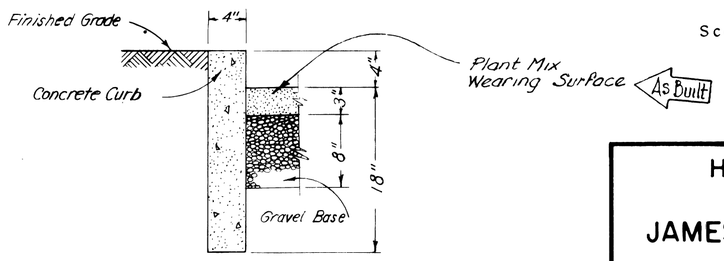
SECTION 2-2

Scale: None



FENCE

Scale: None



CONCRETE CURB AND PAVEMENT AT AREAS OTHER THAN ROADWAY

Scale: 1" = 1'-0"

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-67

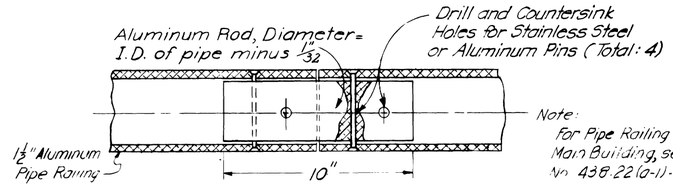
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

MISCELLANEOUS DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

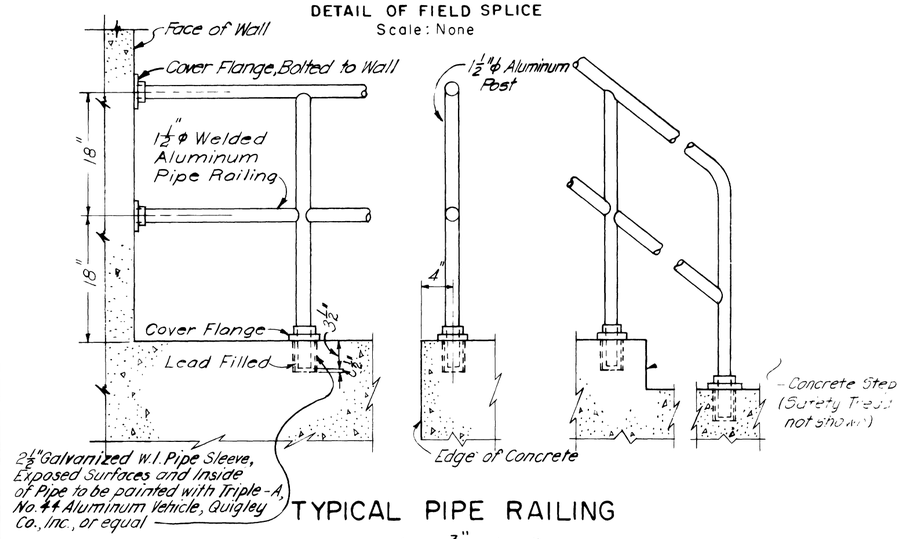
Scale: As Shown — July, 1964

Drawn by: O.R. A.C.	Traced by: O.R.	Checked by: J.J. G.V.A.	Examined by: J.J.	Approved by:
Revisions:	As Built: 5/68 KGM			



DETAIL OF FIELD SPLICE

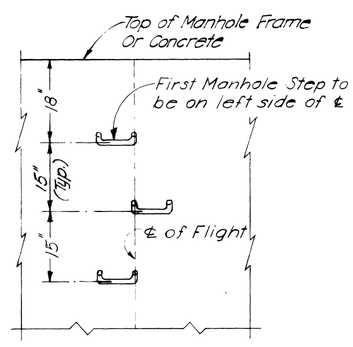
Scale: None



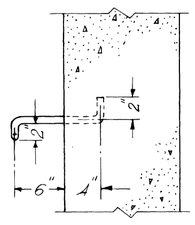
TYPICAL PIPE RAILING

Scale: $\frac{3}{4}$" = 1'-0"

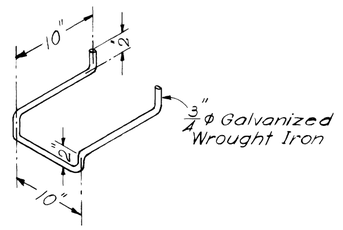
Note: Spacing of Posts not to exceed 8'-0"



FRONT VIEW



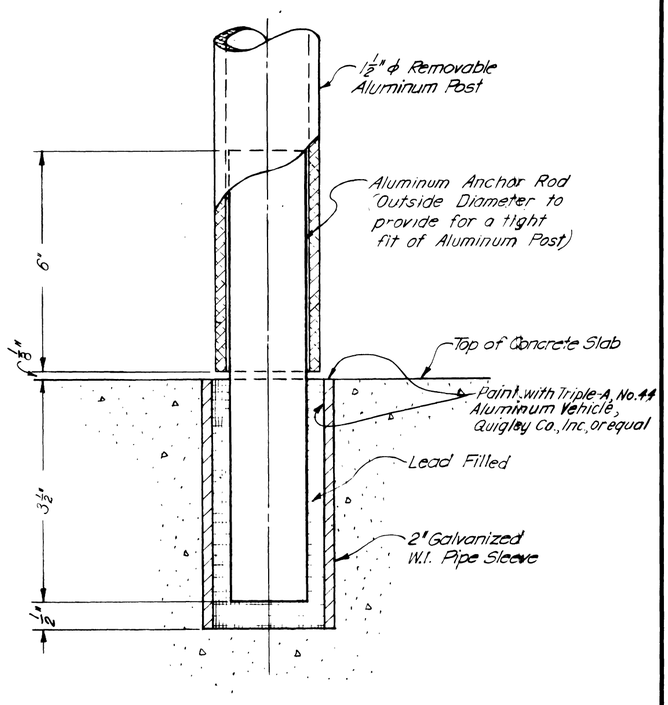
SIDE VIEW



ISOMETRIC

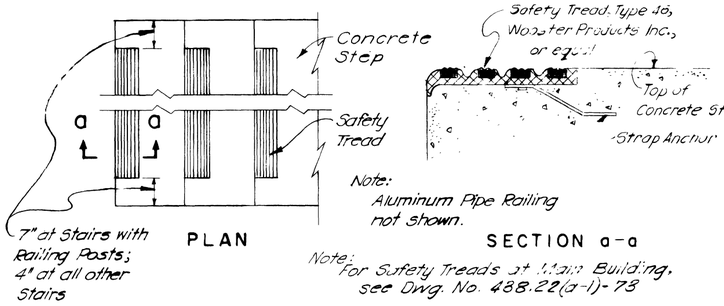
MANHOLE STEPS

Scale: $\frac{1}{2}$" = 1'-0"



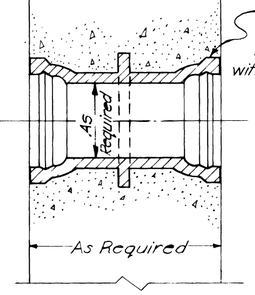
REMOVABLE ALUMINUM POST

Scale: Half Full Size



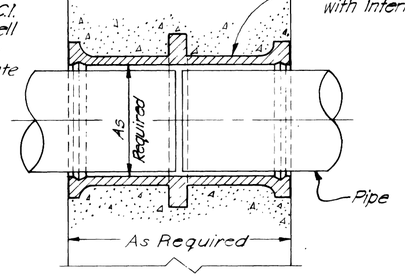
SAFETY TREAD

Scale: None



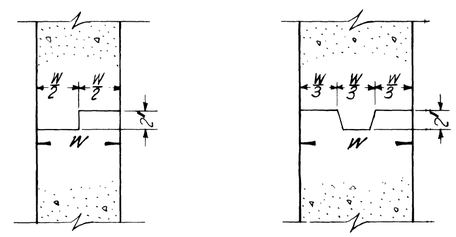
C.I. WALL PIPE (WALL CASTING)

Scale: None



C.I. WALL SLEEVE

Scale: None



TYPICAL CONSTRUCTION JOINTS

Scale: None

Note: For Manhole No. 25 Details and Piping Plan for Emergency Outfall, See Drawing No. 438·22(b-1)-506. ⚠

For Manhole Cover Detail, See Drawing No. 438·22(a-1)-66.

DRAWING NO. 438.22(a-1)-68

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

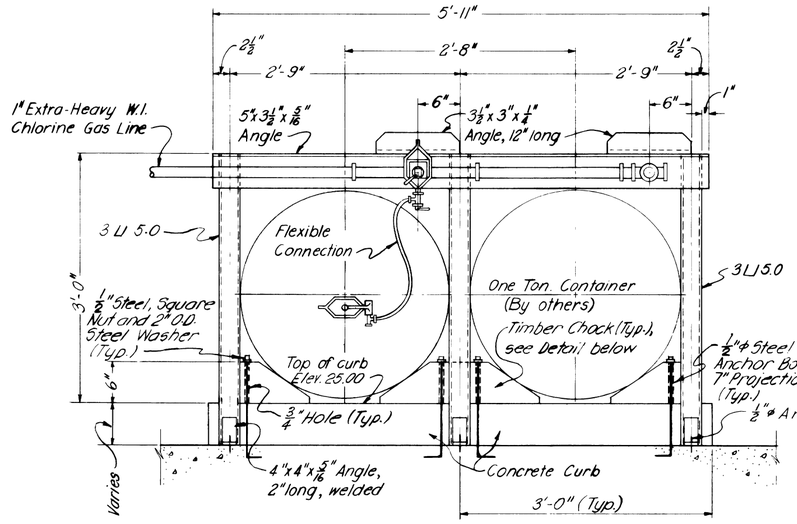
MISCELLANEOUS DETAILS

AS-BUILT DRAWING
DATE January, 1968

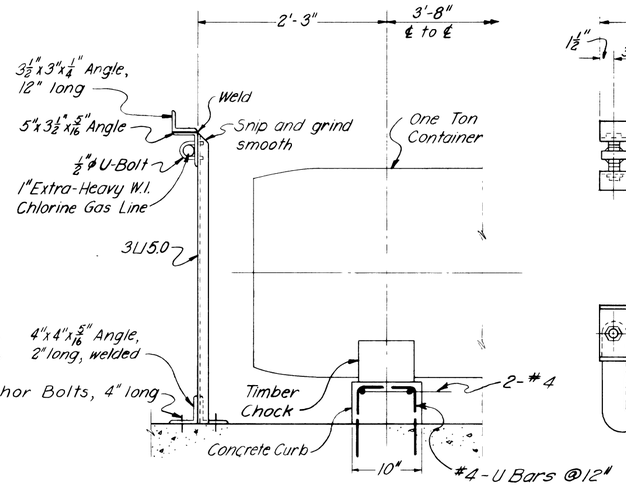
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

Drawn by: L.M.	Traced by: L.M.	Checked by: J.C.G. V.A.	Examined by: DH	Approved by: G
Revisions:	⚠ RGM 4/20/67			



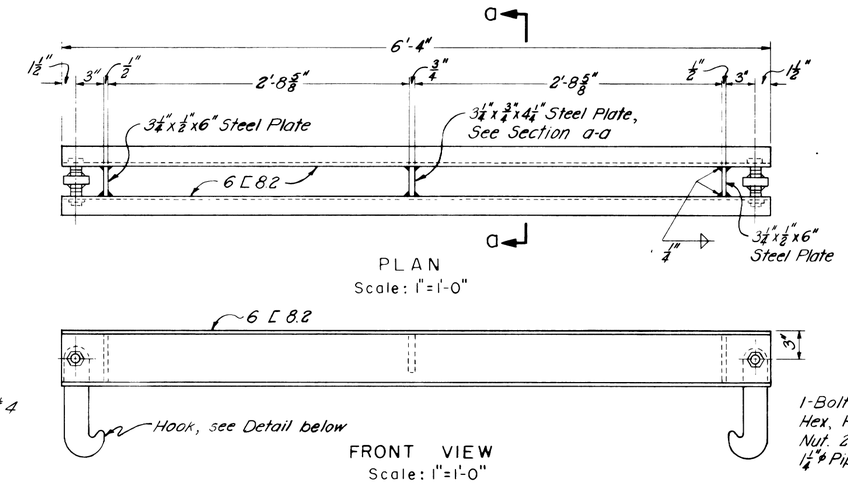
FRONT VIEW



SIDE VIEW

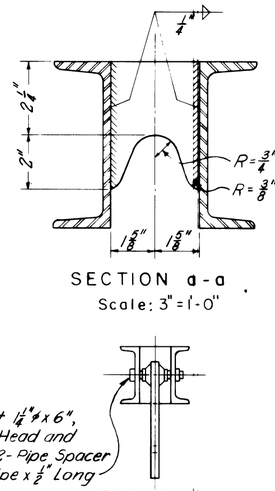
CHLORINE HEADER GUARD

Scale: ¾" = 1'-0"



PLAN
Scale: 1"=1'-0"

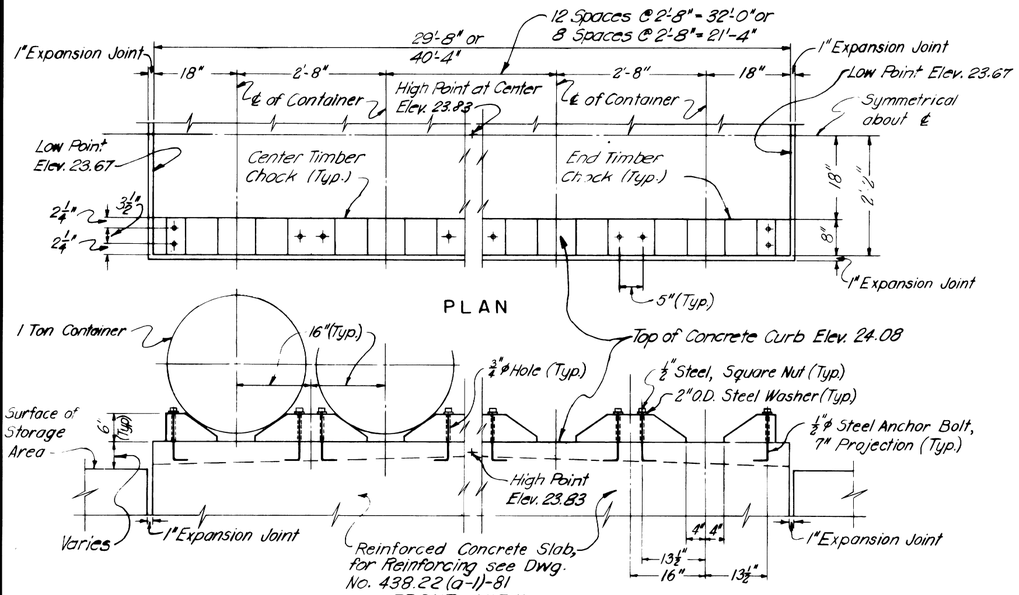
FRONT VIEW
Scale: 1"=1'-0"



SECTION a-a
Scale: 3"=1'-0"

END VIEW
Scale: 1"=1'-0"

LIFTING BEAM FOR CHLORINE CONTAINERS



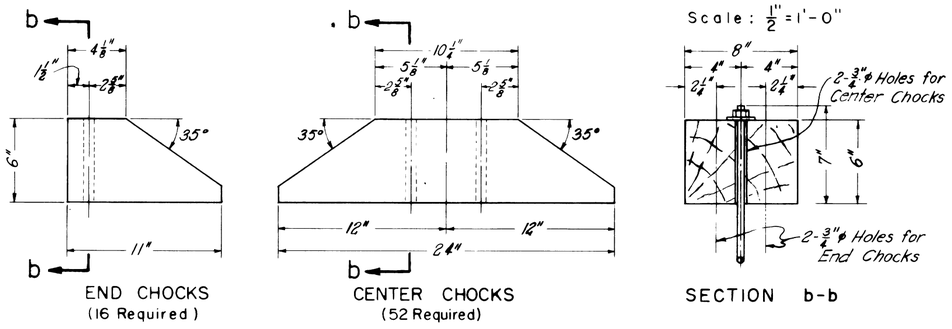
PLAN

FRONT VIEW

TIMBER CHOCKS

CHLORINE CYLINDER SUPPORT ARRANGEMENT

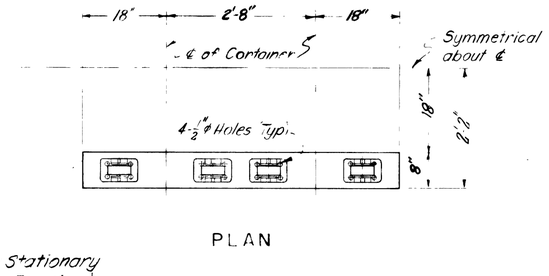
Scale: ½" = 1'-0"



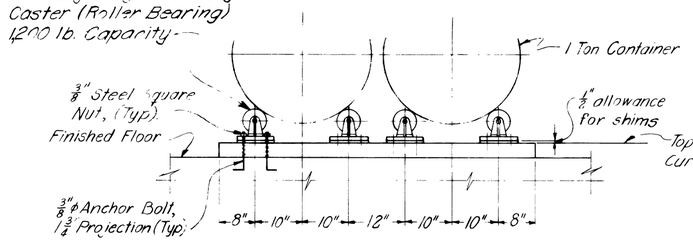
TIMBER CHOCKS

(Make from 6"x8" Oak)

Scale: 1½" = 1'-0"

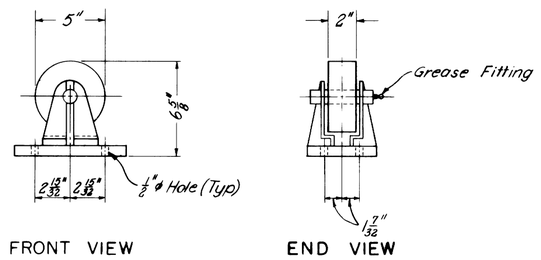


PLAN



FRONT VIEW

STEEL CASTERS



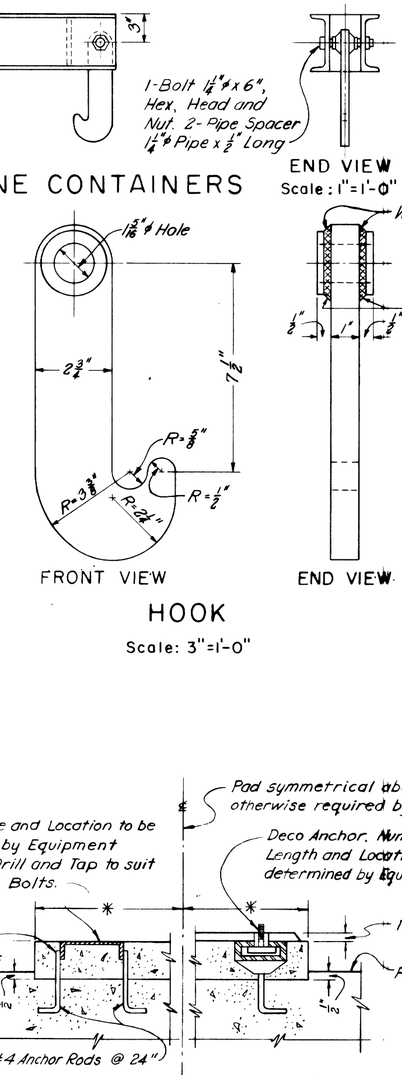
FRONT VIEW

END VIEW

(16 Required)

STEEL CASTERS

Scale: 1½" = 1'-0"

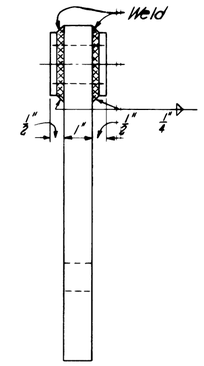


ELECTRICAL POWER CENTER ALL OTHER EQUIPMENT

EQUIPMENT PAD

Scale: None

FRONT VIEW



END VIEW

HOOK

Scale: 3"=1'-0"

DRAWING NO. 438.22(a-1)-69

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

MISCELLANEOUS DETAILS

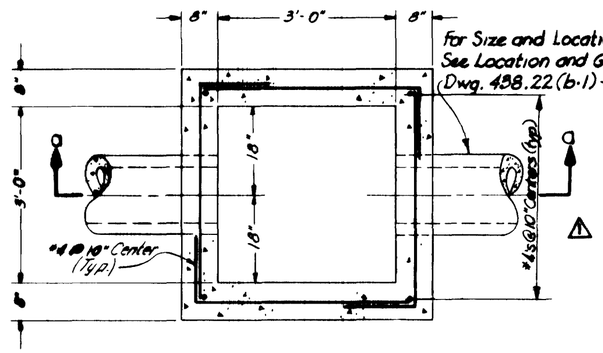
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

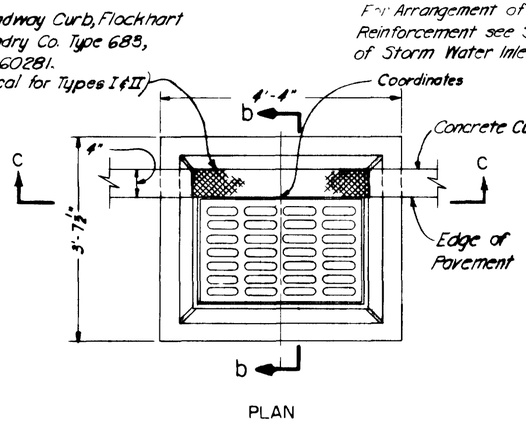
Scale: As Shown

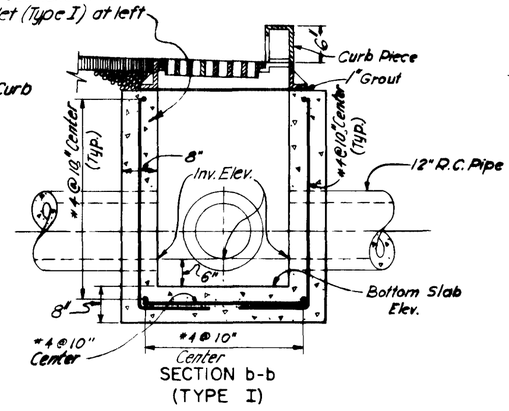
July, 1964

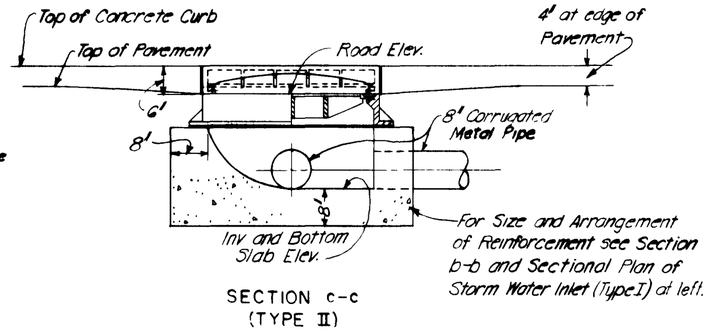
Drawn by: H.C.	Traced by: H.C.	Checked by: J.P.G.V.A.	Examined by:	Approved by:
Revisions:				

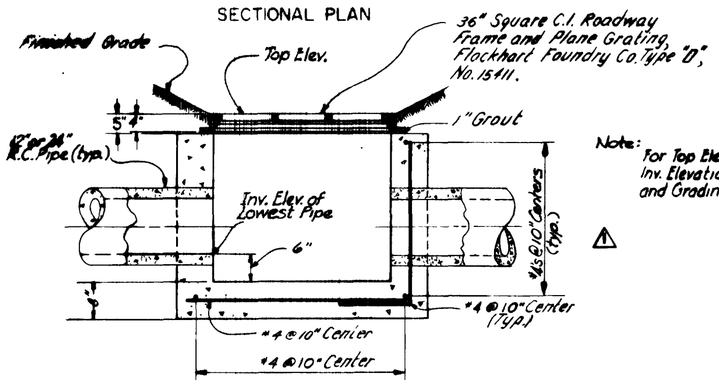
AS-BUILT DRAWING
DATE January, 1968











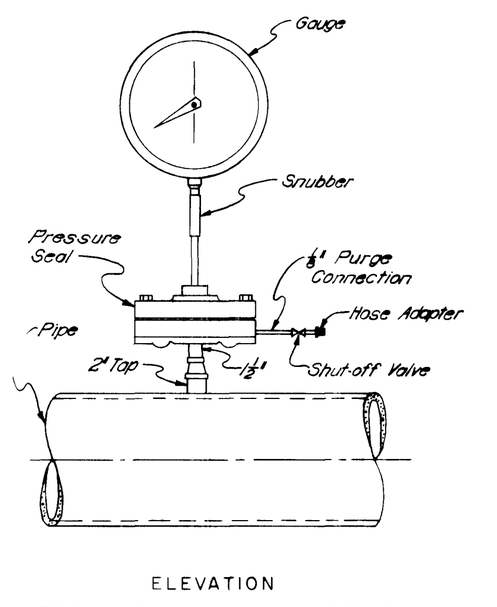
Note: For Top Elevation of Grating and Inv. Elevation of Pipes, See Location and Grading Plan, Dwg. No. 438.22(b-1)-5. ⚠

STORM WATER INLET (TYPE I)

Scale: $\frac{1}{2}$" = 1'-0"

Inlet	Type	X-Coordinate	Y-Coordinate	Road Elev.	Inv. Elev. Incoming Pipe	Inv. Elev. Outgoing Pipe	Bottom Slab Elev.
"A"	I	South Corner of Parking Area		23.50	———	20.50	20.00
"B"	I	1388.98	1673.98	19.43	16.50	16.50	16.00
"C"	I	1652.25	1690.33	20.43	———	17.00	16.50
"D"	I	1721.25	1600.89	19.33	16.50	16.50	16.00
"E"	I	1704.98	1242.65	13.43	———	10.50	10.00
"F"	I	1692.25	1229.92	13.43	10.25	10.25	9.75
"G"	I	1365.33	1360.00	14.83	———	11.50	11.00
"H"	II	2000.00	1994.00	25.15	23.25	23.25	23.25

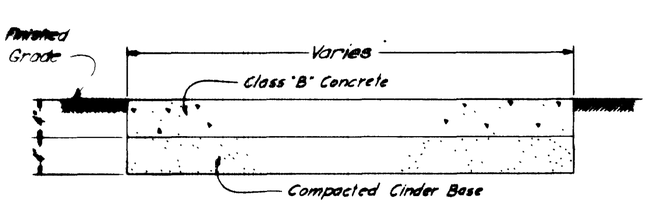
CURB INLETS



ELEVATION

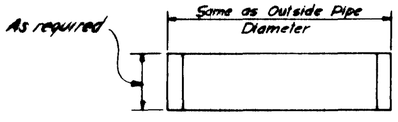
PRESSURE GAUGE CONNECTION

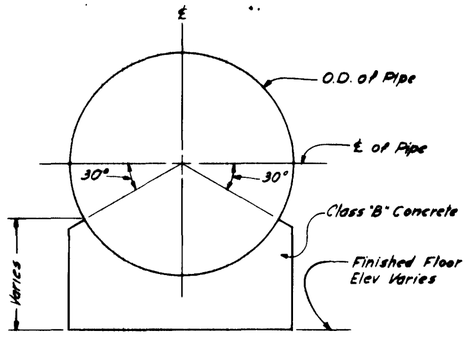
Scale: None



CONCRETE WALKWAY

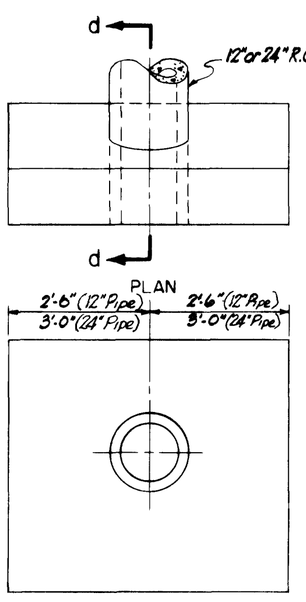
Scale: 1" = 1'-0"

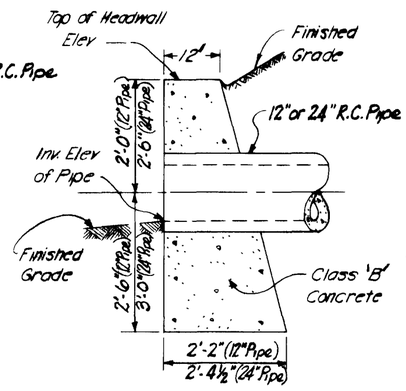




PIPE SUPPORT

Scale: None

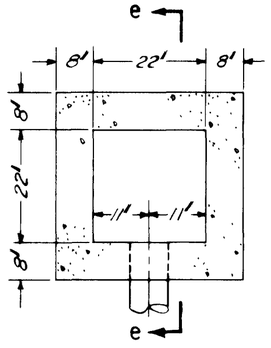


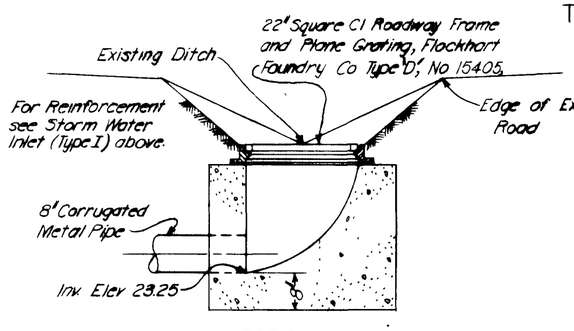


HEADWALLS ⚠		
No.	Inv. Elev. of Pipe	Top of Headwall Elev
H1	15.50	18.00
H2	14.00	17.50
H3	19.00	22.50
H4	8.00	10.50
H5	10.00	12.50

HEADWALLS ⚠

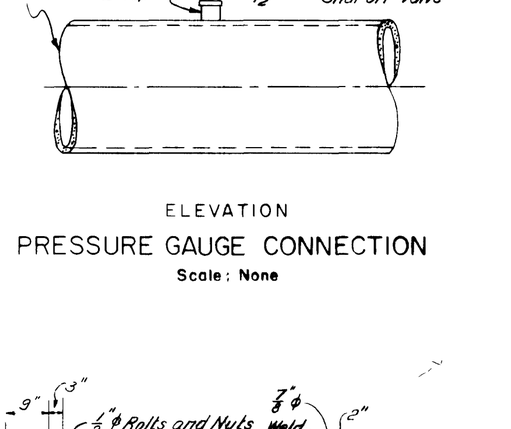
Scale $\frac{1}{2}$" = 1'-0"



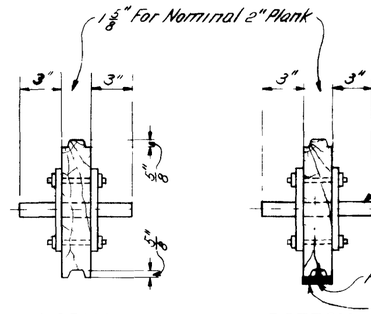


STORM WATER INLET (TYPE II)

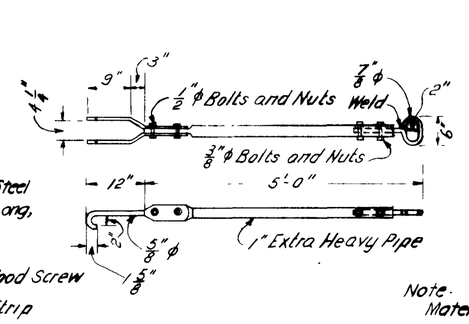
Scale: $\frac{1}{2}$" = 1'-0"



Scale: 1" = 1'-0"



TIMBER STOP PLANKS



STOP PLANK LIFTER
(2 Required)
Scale: 1" = 1'-0"

DRAWING NO. 438.22(a-1)-70

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

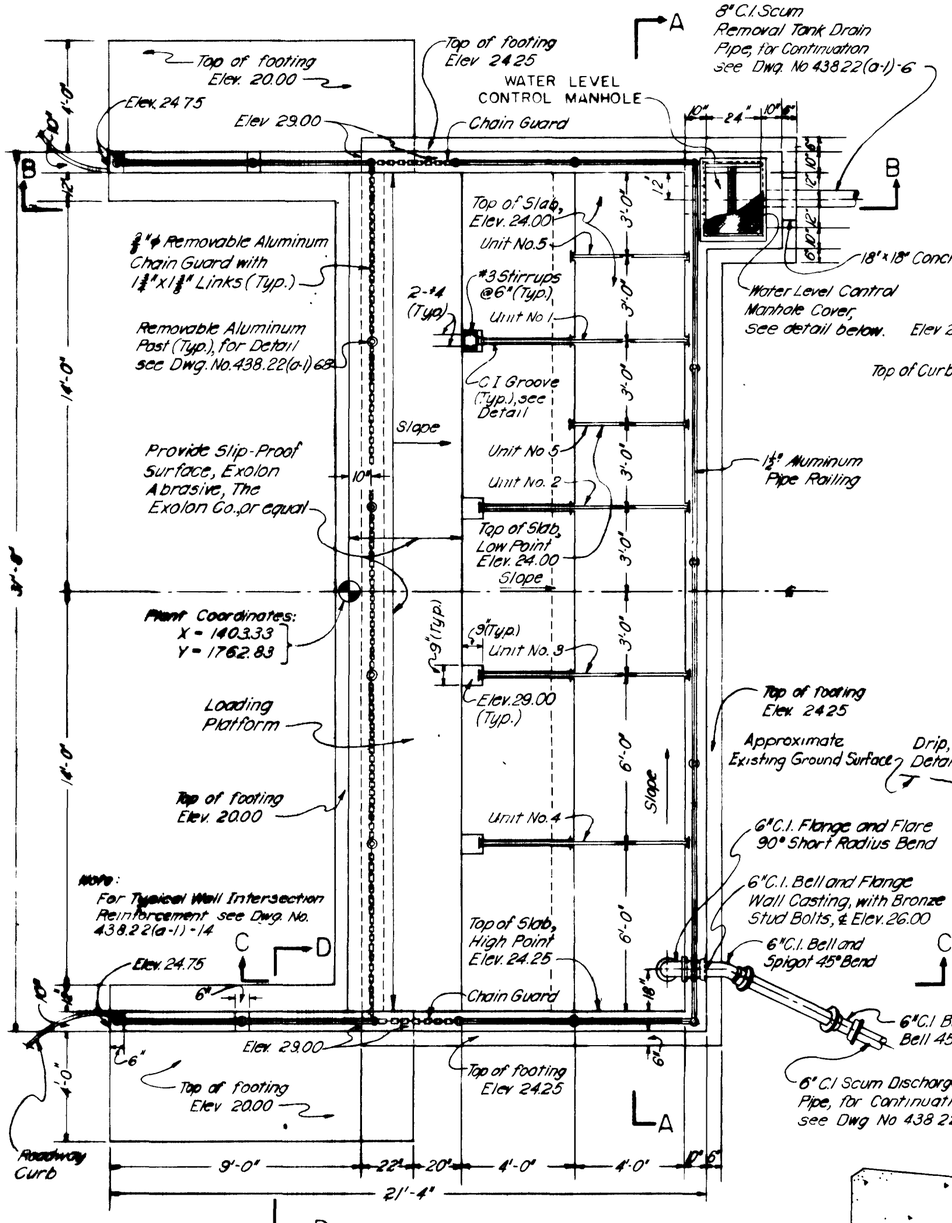
MISCELLANEOUS DETAILS

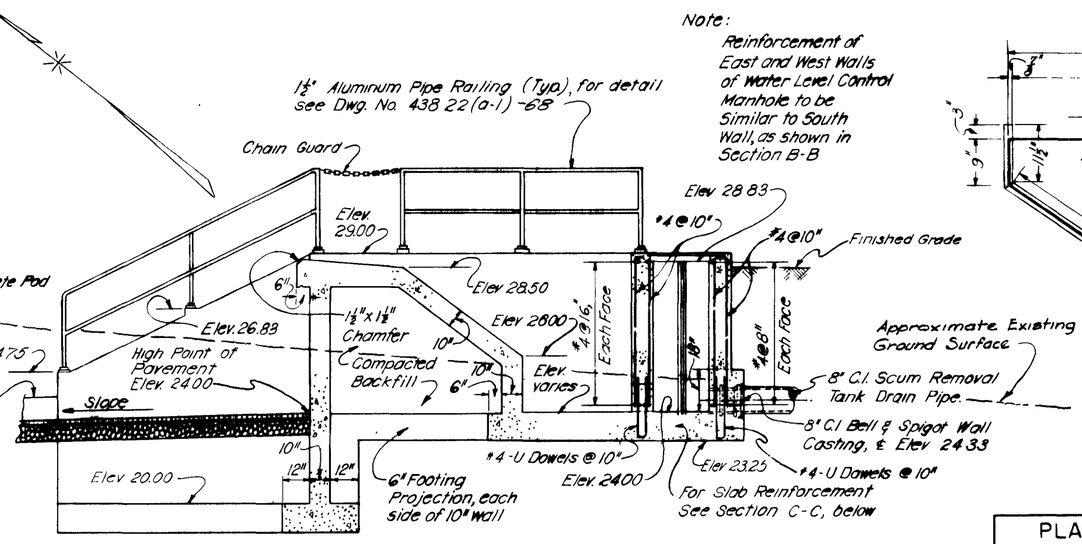
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

Drawn by: J. Q.	Traced by: L.M.	Checked by: O.M. G.V.A.	Examined by:	Approved by:
Revisions:	⚠ AGM 4/19/67			

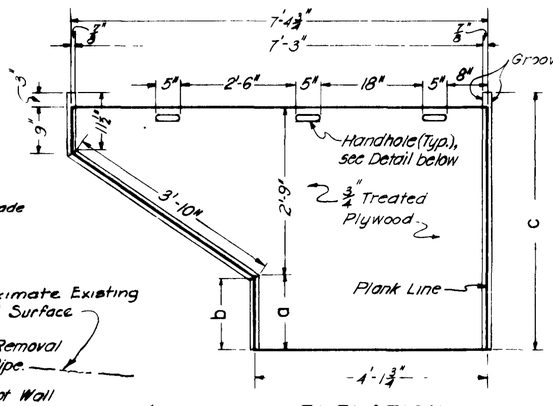
AS-BUILT DRAWING
DATE January, 1968





SECTION B-B

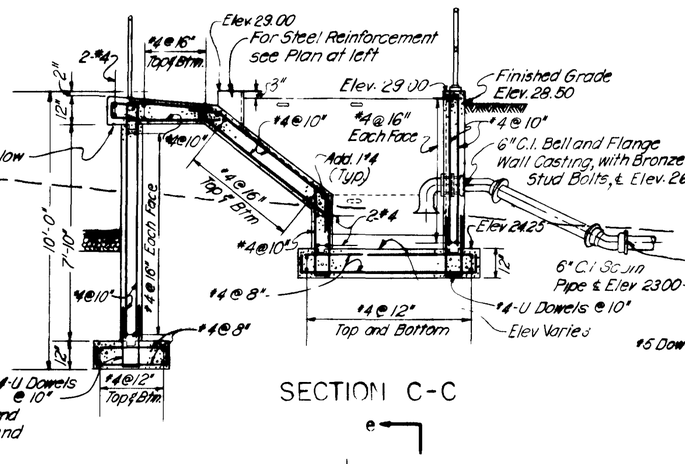
Note:
Reinforcement of East and West Walls of Water Level Control Manhole to be Similar to South Wall, as shown in Section B-B



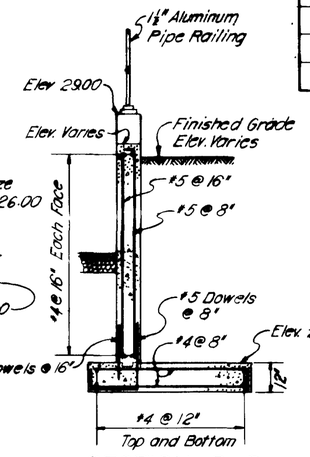
ELEVATION
(Units 1 through 4)

PLANK AND GROOVE DIMENSIONS			
UNIT No.	a Groove	b Plank	c Groove Lenght
1	18"	17 1/2"	4'-6"
2	17"	16 1/2"	4'-5"
3	16"	15 1/2"	4'-4"
4	15"	14 1/2"	4'-3"

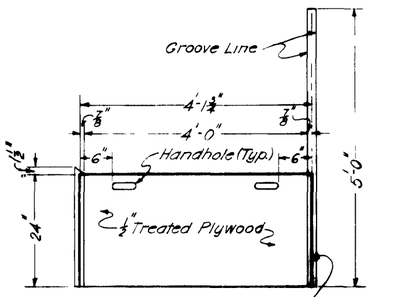
Note:
Grooves for Units No's 1, 2, 3 and 4 are as Manufactured by Neenah Foundry Co, Catalog No. R-7501-F.V.



SECTION C-C

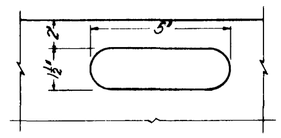


SECTION D-D



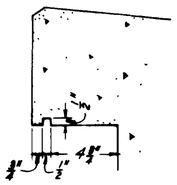
ELEVATION
(Unit No 5, 2 Required)

Note:
Grooves for Units No 5 are as Manufactured by Neenah Foundry Co, Catalog No. R-7501-D.V.

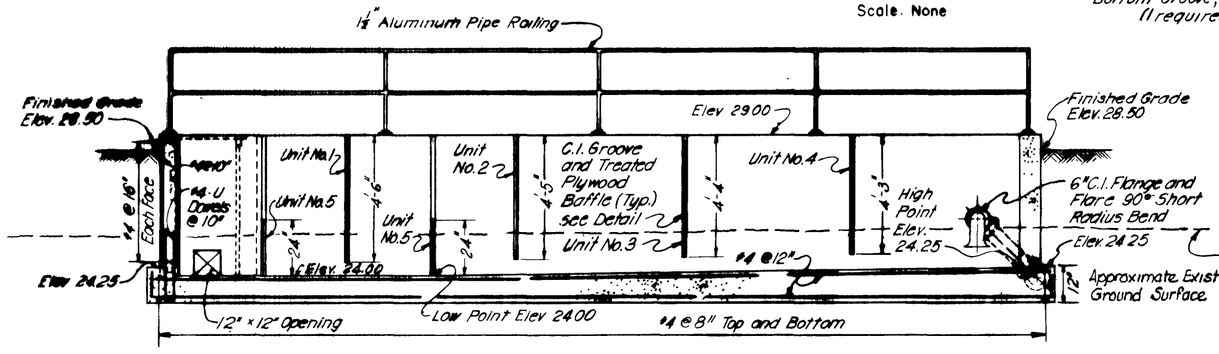


HANDHOLE

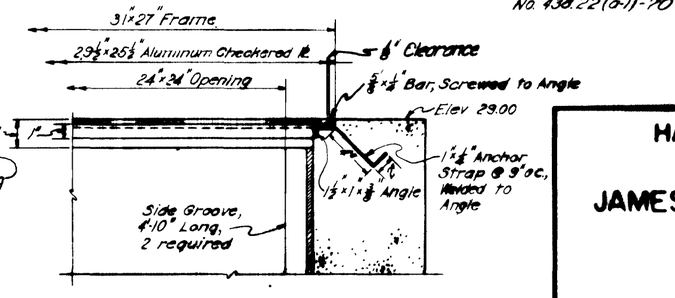
BAFFLE DETAILS
Scale 1/2 = 1'-0"



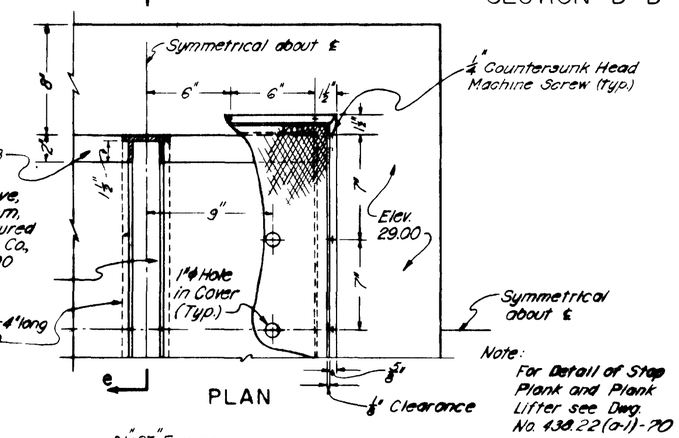
DRIP DETAIL
Scale. None



SECTION A-A



SECTION e-e
MANHOLE COVER AND GROOVE DETAIL
Scale: 1 1/2" = 1'-0"



PLAN

Note:
For Detail of Stop Plank and Plank Lifter see Dwg. No. 438.22(a-1)-70

Notes:
For Plans showing location of Scum Removal Tank, see Dwgs. Nos. 438.22(a-1)-1 and 5
For Outside Piping Plan, see Dwg. No. 438.22(a-1)-6

DRAWING NO. 438.22(a-1)-71

AS-BUILT DRAWING
DATE January, 1968

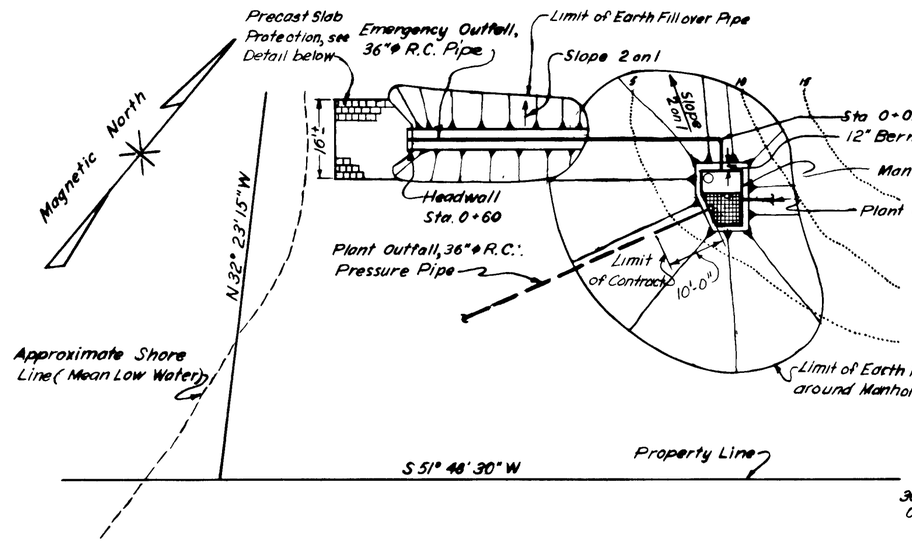
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT

SCUM REMOVAL TANK

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

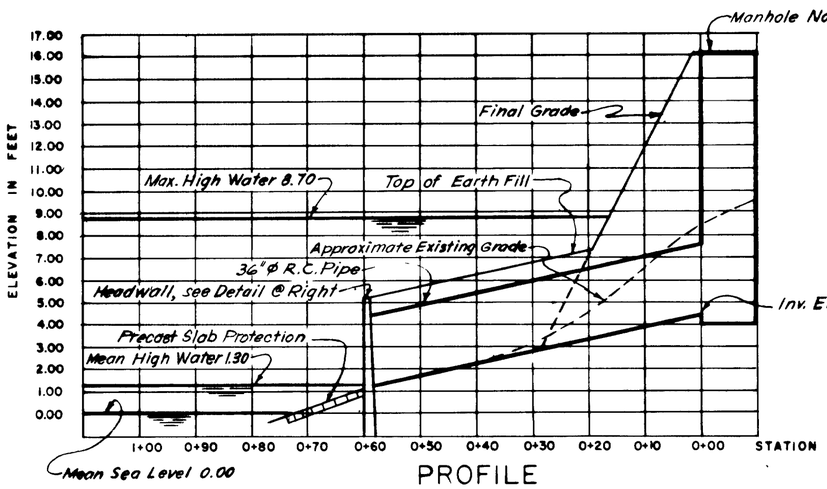
Scale: 1/4" = 1'-0" & As Shown
July, 1964

Drawn by: A.V.	Traced by: O.R. A.C.	Checked by: M.E. G.V.A.	Examined by:	Approved by:
Revisions:				

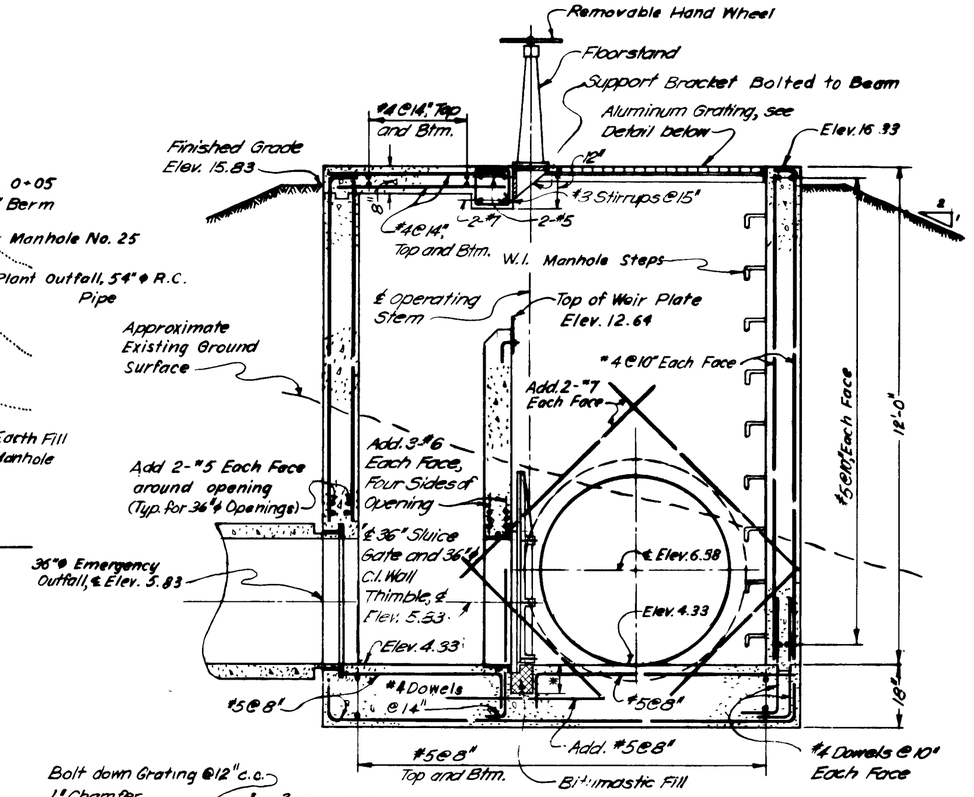


LOCALITY PLAN

Scale: 1" = 20'-0"

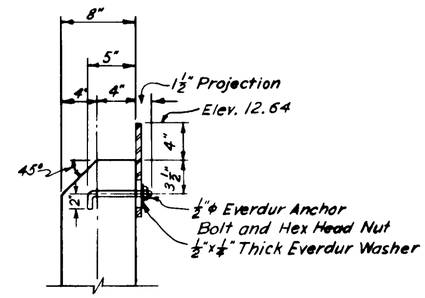


PROFILE

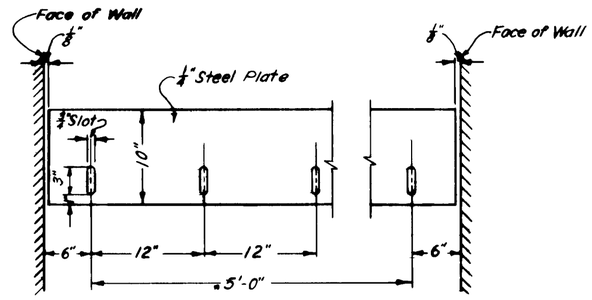


SECTION A-A

Scale: ⅜" = 1'-0"



SECTION

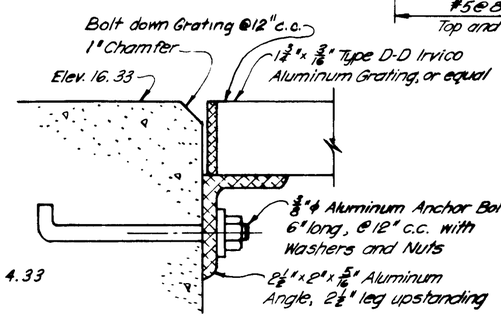


ELEVATION

WEIR PLATE DETAILS

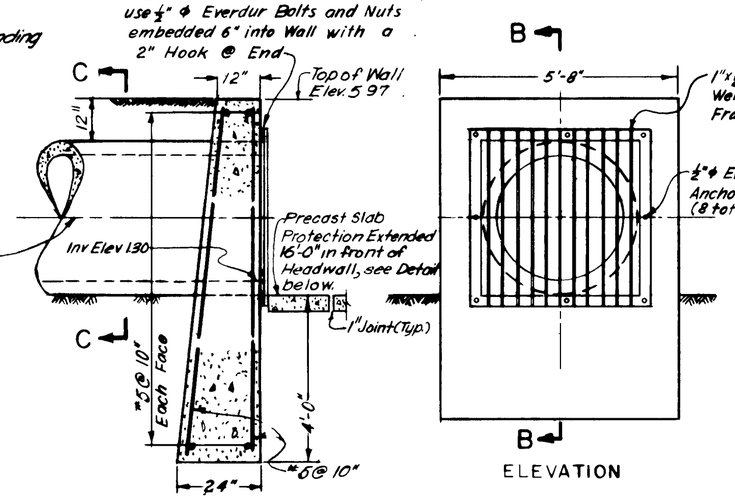
Scale: None

Note:
*Dimensions to be determined by Equipment Furnished.



GRATING DETAIL

Scale: None



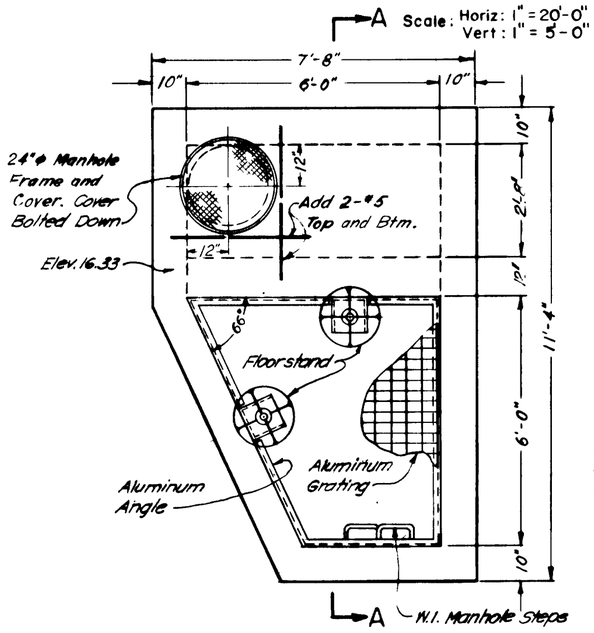
SECTION B-B

ELEVATION

SECTION C-C

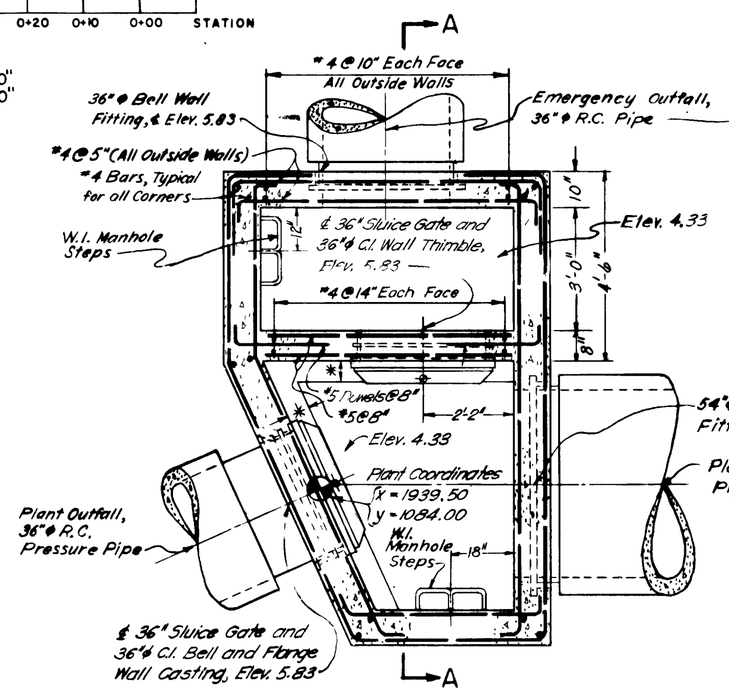
HEADWALL

Scale: ⅜"=1'-0"



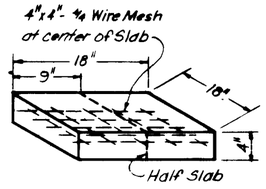
ROOF PLAN

Scale: ⅜" = 1'-0"



SECTIONAL PLAN

Scale: ⅜"= 1'-0"



PRECAST SLAB DETAIL

Scale: None

DRAWING NO. 438.22(b-1)-~~SEE~~ 71-A

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

EMERGENCY OUTFALL SEWER AND
REVISIONS TO MANHOLE NO. 25

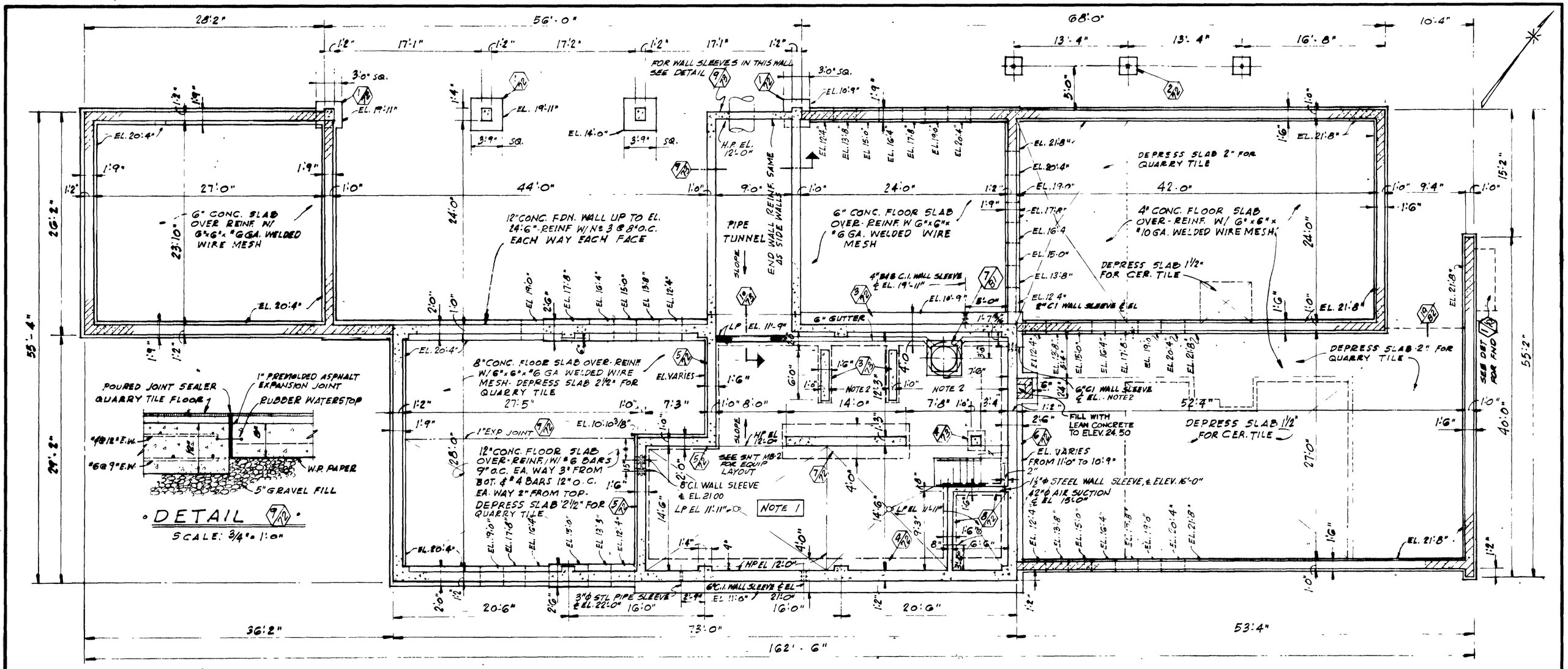
Buck, Seifert and Jost
Consulting Engineers
Englewood Cliffs, N.J.

Scale: As Shown

August, 1965

FOUNDATION PLAN

Scale: 1/8" = 1'-0"



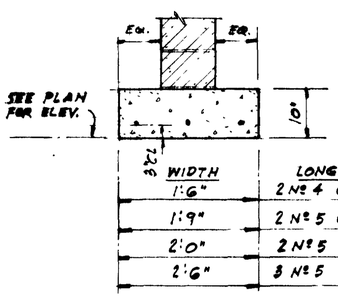
• DETAIL 9/A1 •

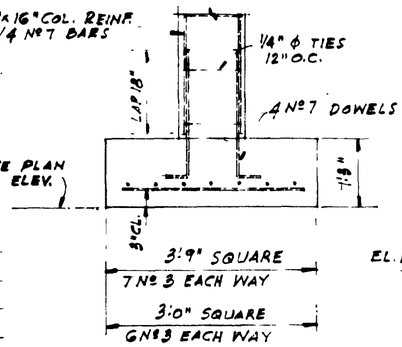
SCALE: 3/4" = 1'0"

• FOOTING DETAIL FOR MASONRY WALLS •

NO SCALE

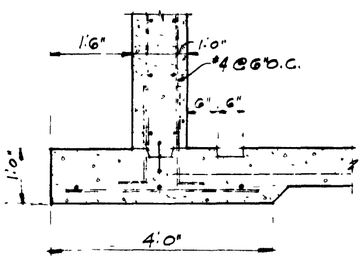
WIDTH	LONGL REINF
1'6"	2 Nº 4 CONT.
1'9"	2 Nº 5 CONT.
2'0"	2 Nº 5 CONT.
2'6"	3 Nº 5 CONT.





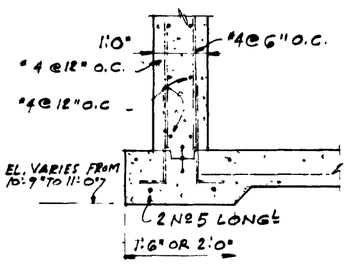
• DETAIL 1/A2 •

SCALE: 1/2" = 1'0"



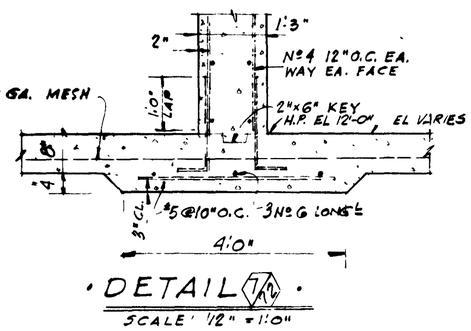
• DETAIL 3/A2 •

FOR INFORMATION NOT SHOWN SEE 4/A2



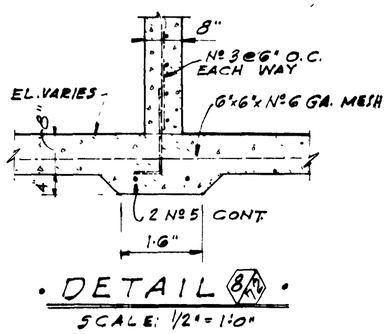
• DETAIL 5/A2 •

FOR INFORMATION NOT SHOWN SEE 4/A2



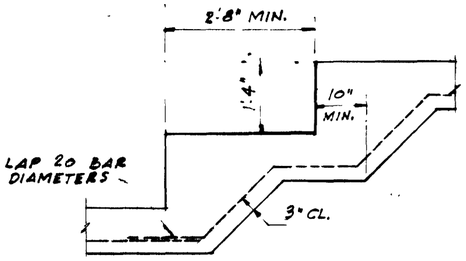
• DETAIL 7/A2 •

SCALE: 1/2" = 1'0"



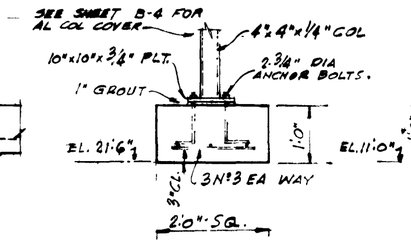
• DETAIL 8/A2 •

SCALE: 1/2" = 1'0"



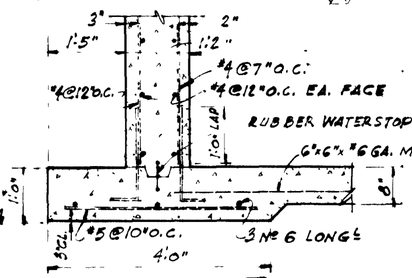
• STEPPED FOOTING DETAIL •

SCALE: 1/2" = 1'0"



• DETAIL 2/A2 •

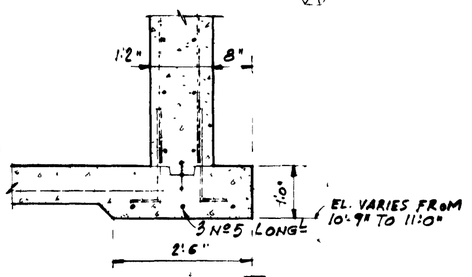
SCALE: 1/2" = 1'0"



• DETAIL 4/A2 •

SCALE: 1/2" = 1'0"

FOR INFORMATION NOT SHOWN SEE 4/A2



• DETAIL 6/A2 •

• FOR INFORMATION NOT SHOWN SEE 4/A2

NOTES –

1- BASEMENT FLOOR SLAB - 8" CONC SLAB REINF W/ 6"x 6"x #6 GA WELDED WIRE MESH - FINISH FLOOR EL. VARIES.
2- DIMENSION TO BE DETERMINED BY EQUIPMENT FURNISHED.

AS-BUILT DRAWING

DATE January, 1968

FORREST COILE AND ASSOCIATES

ARCHITECTS

3418 WARWICK BOULEVARD NEWPORT NEWS, VIRGINIA

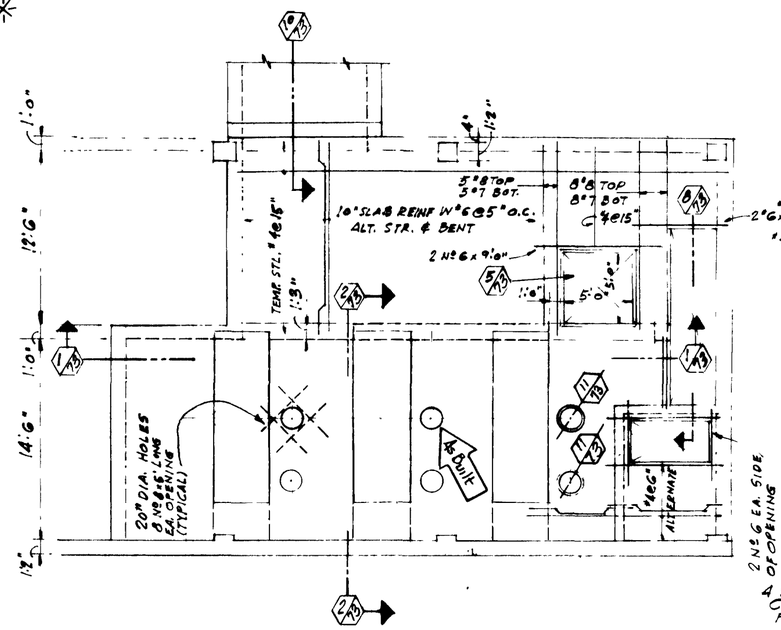
DRAWING NO. 438.22(a-1)-72

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
FOUNDATION-BASEMENT PLAN
AND DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

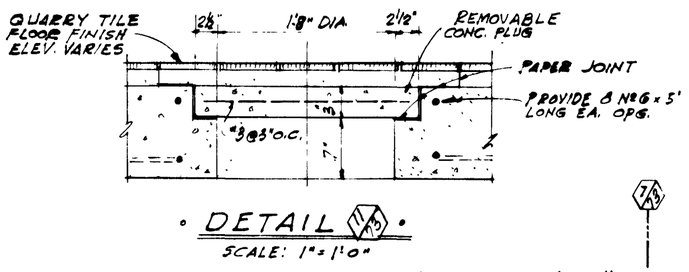
Scale: AS NOTED July, 1964

Drawn by: E.A.G.	Traced by: E.A.G.	Checked by: F.W.C.	Examined by:	Approved by:
Revisions:				



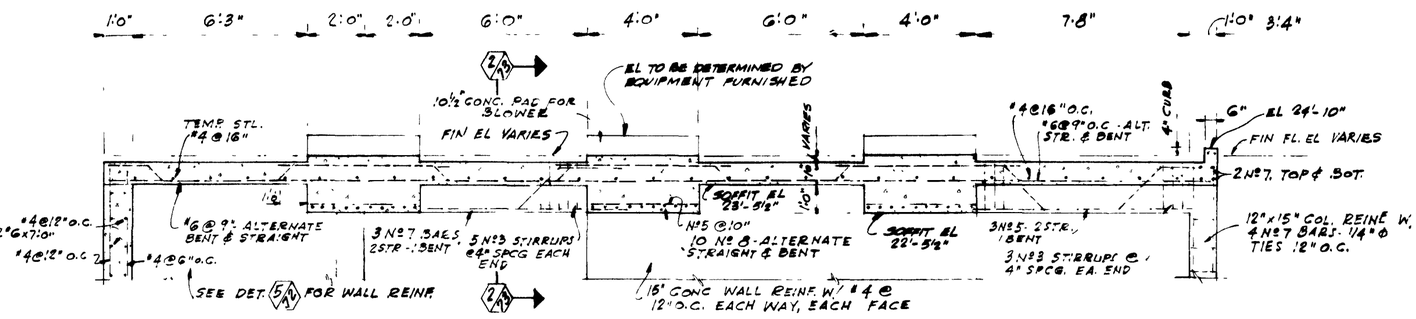
FIRST FLOOR FRAMING PLAN

Scale: 1/8" = 1'-0"



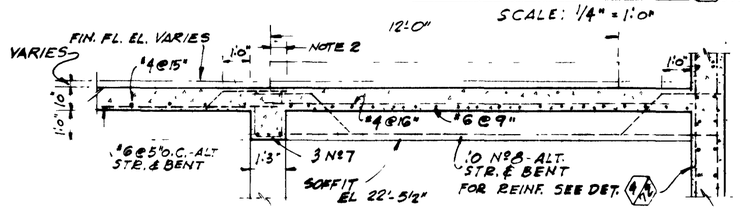
• DETAIL (11/A3) •

SCALE: 1" = 1'0"



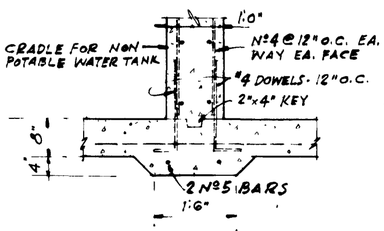
• SECTION (1/A3) •

SCALE: 1/4" = 1'0"



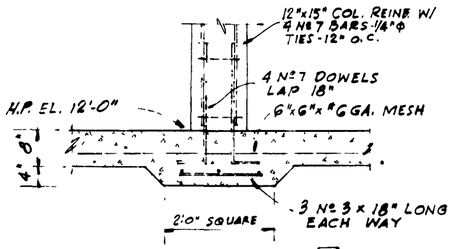
• SECTION (2/A3) •

SCALE: 1/4" = 1'0"



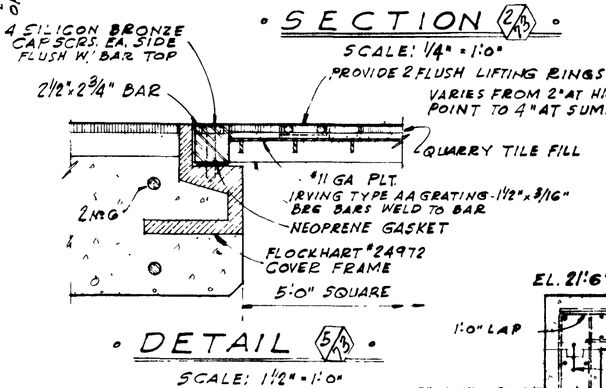
• DETAIL (3/A3) •

SCALE: 1/2" = 1'0"



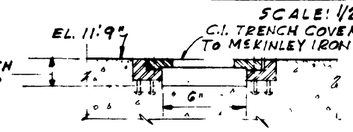
• DETAIL (4/A3) •

SCALE: 1½" = 1'0"



• DETAIL (5/A3) •

SCALE: 1½" = 1'0"

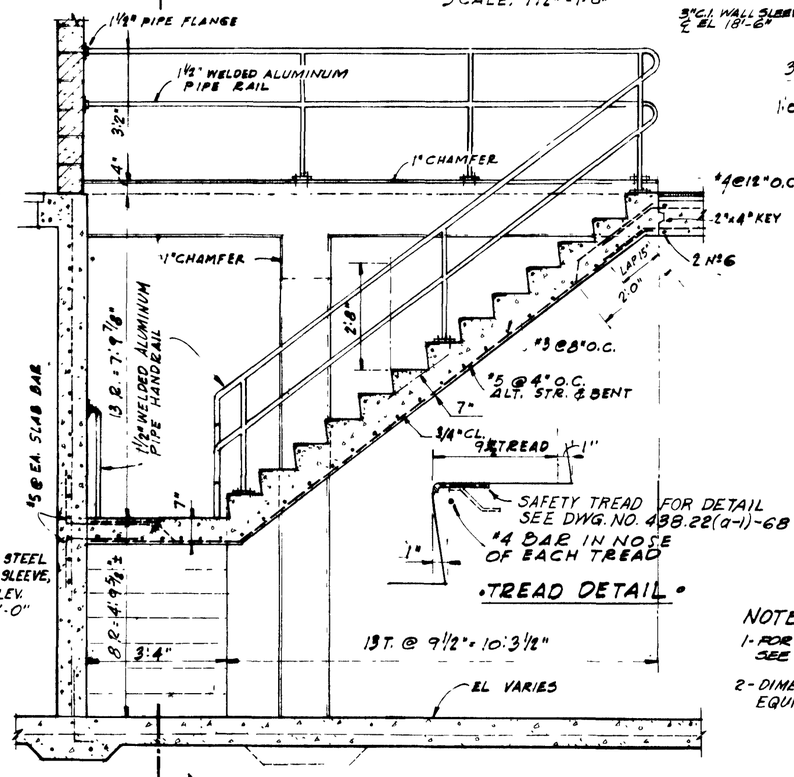


• DETAIL (6/A3) •

SCALE: 1½" = 1'0"

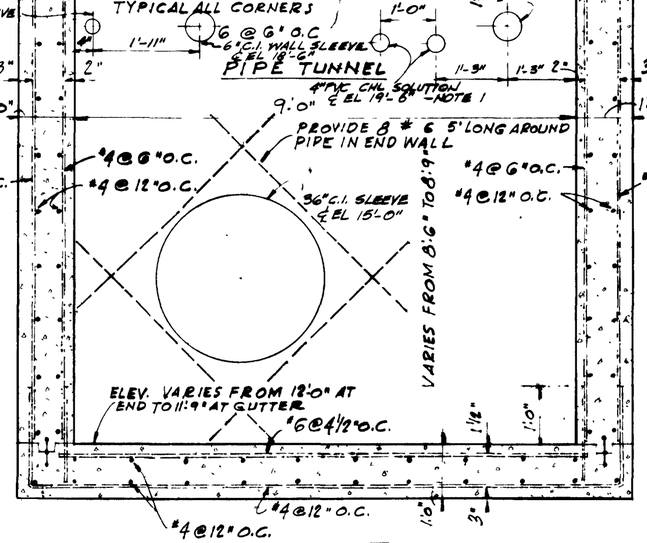
• SECTION (7/A3) •

SCALE: 3/8" = 1'0"



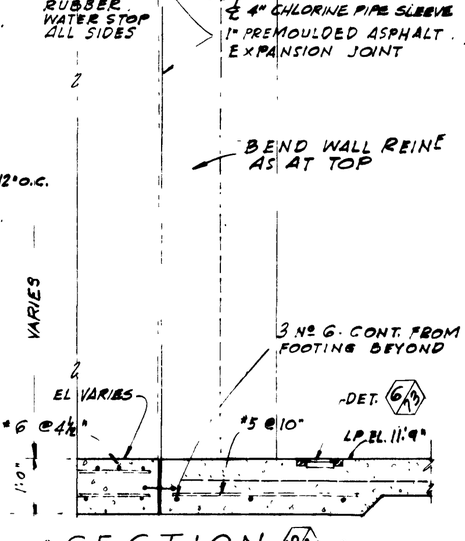
• SECTION (8/A3) •

SCALE: 3/8" = 1'0"



• SECTION (9/A3) •

SCALE: 1/2" = 1'0"



• SECTION (10/A3) •

SCALE: 1/2" = 1'0"

NOTES –

1 - FOR CHLORINE SOLUTION PIPE SLEEVE DETAIL SEE DWG NO. 438.22 (a-1)-40

2 - DIMENSION TO BE DETERMINED BY EQUIPMENT FURNISHED

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22 (a-1)-73

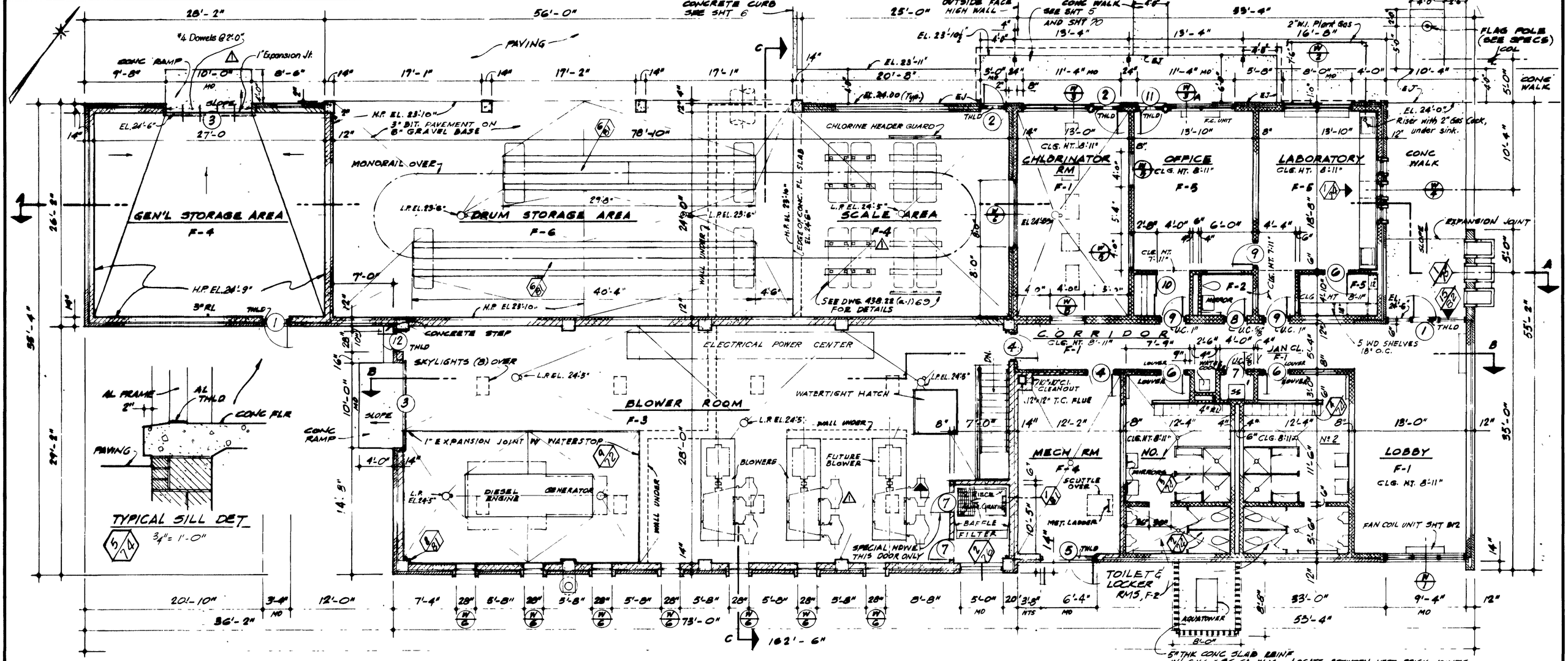
FORREST COILE AND ASSOCIATES
ARCHITECTS
3415 WARWICK BOULEVARD NEWPORT NEWS, VIRGINIA

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
GROUND FLOOR FRAMING PLAN AND DETAILS
PIPE TUNNEL AND STAIR DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

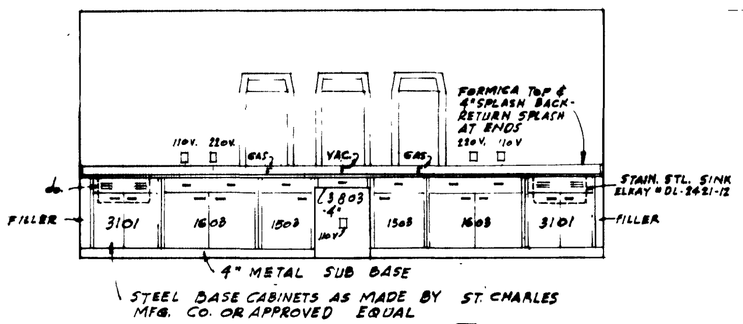
Scale: AS NOTED — July, 1964

Drawn by: E.A.G.	Traced by: E.A.G.	Checked by: F.W.C.	Examined by:	Approved by:
Revisions:	As Built 4/19/67 RGM			



GROUND FLOOR PLAN

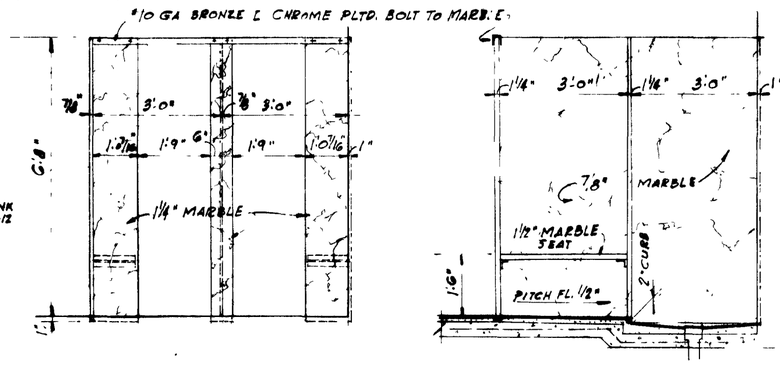
Scale : 1/8" = 1'-0"



STEEL BASE CABINETS AS MADE BY ST. CHARLES MFG. CO. OR APPROVED EQUAL

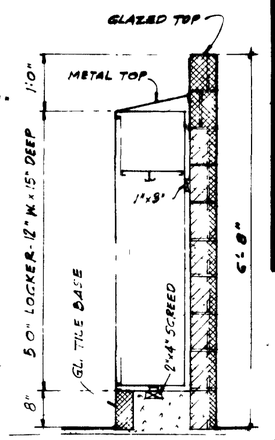
ELEVATION (1/4)

SCALE: 1/4" = 1'-0"



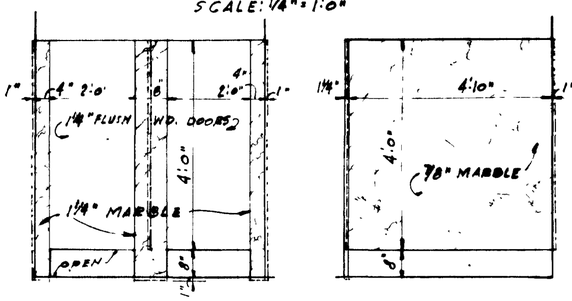
SHOWER STALL DETAILS

SCALE: 3/8" = 1'-0"



LOCKER DETAIL

SCALE: 1/2" = 1'-0"



TOILET STALL DETAIL

SCALE: 3/8" = 1'-0"

TYPICAL SILL DET.

3/4" = 1'-0"

LEGEND

- LIGHT WEIGHT CONC. BLOCK
- BRICK
- CONCRETE
- GLAZED STRUCTURAL TILE

FINISH SCHEDULE

FIN NOS	FLOOR MATL	FLOOR FIN	WALL MATL	WALL FIN	CEILING MATL	CEILING FIN	REMARKS
F-1	Q. TILE	—	S. TILE	—	HD. PLAS.	PAINT	1
F-2	C. TILE	—	S. TILE	—	HD. PLAS.	PAINT	1
F-3	Q. TILE	—	M. BLK	PAINT	EXPOSE.	—	1
F-4	CONC	SEAL	M. BLK	PAINT	EXPOSE.	—	1
F-5	VAT	—	S. TILE	—	HD PLAS	PAINT	1, NOTE 2
F-6	BIT PAV.	—	BRICK	—	EXPOSE	—	1

1-ABBREVIATIONS —

NTS: NOT TO SCALE
U.C.: UNDERCUT
E.J.: SIDEWALK EXPANSION JOINT ½"

BIT. PAV.: BITUMINOUS PAVEMENT
Q. TILE: QUARRY TILE
S. TILE: STRUCTURAL CLAY FACING TILE
HD PLAS.: HARD PLASTER
C. TILE: CERAMIC FLOOR TILE
M. BLK: MASONRY BLOCK
EXPOSE: EXPOSED CONSTRUCTION
CONC: CONCRETE
VAT: VINYL ASBESTOS TILE

2 - WALL BASE: 4" RESILIENT BASE
3 - MARBLE THLD FOR INTERIOR DRS WHERE FLOOR MATERIALS CHANGE

DRAWING NO. 438.22(a-1)-74

AS-BUILT DRAWING

DATE January, 1968

FORREST COILE AND ASSOCIATES
ARCHITECTS
3415 WARWICK BOULEVARD NEWPORT NEWS, VIRGINIA

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

MAIN BUILDING

GROUND FLOOR PLAN AND FINISH SCHEDULE
COMPARTMENT AND CABINET DETAILS

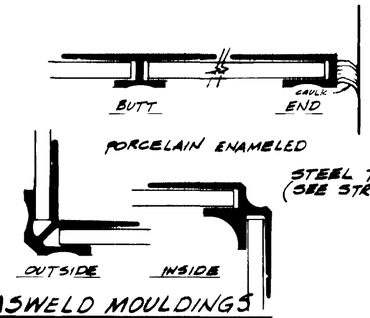
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As noted — July, 1964

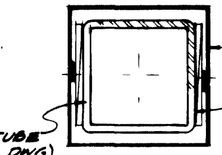
Drawn by: E.A.S. J.L.M.	Traced by: J.L.M. E.A.S.	Checked by: E.A.S.	Examined by:	Approved by:
Revisions:	⚠ R&M 4/19/67			

NOTES –

1- CONC MASONRY UNITS ABOVE 1ST JOINT ABOVE CEILING.
2- 4" BLOCK WITH 6" STRUCT TILE FOR TWO COURSES AS SHOWN FOR 8'-11" CEIL'G.
3- TERMINATE AL COVER AT CONCRETE AND CAULK.
4- CARNES CORP ANODIZED ALUMINUM LOUVER MODEL # L-32 SET IN WINDOW FRAME BY WINDOW MFGR.
5- REFER TO SITE PLAN FOR EL'S OF PAVING/FIN GRADE

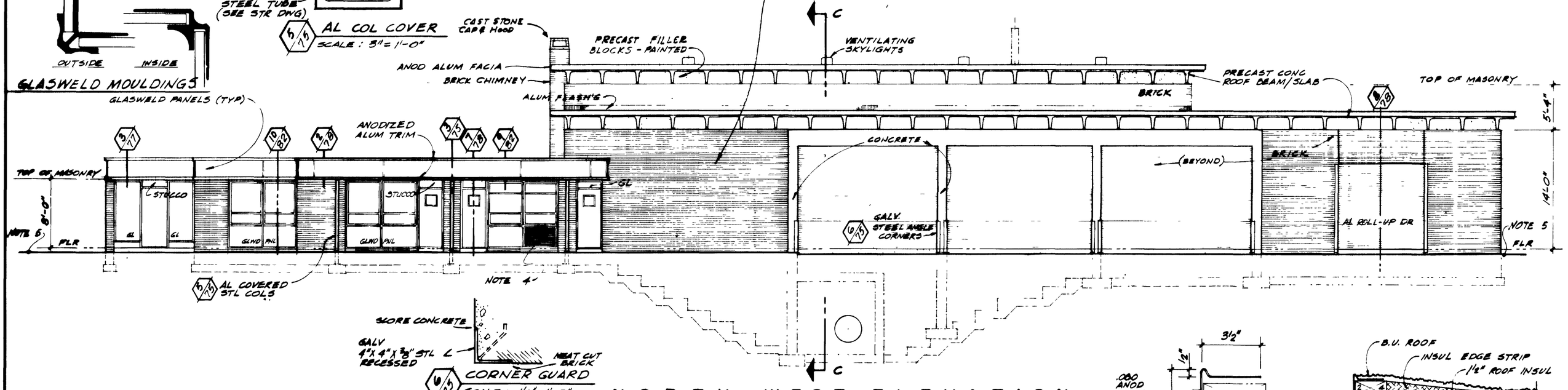


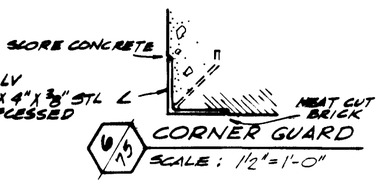
GLASWELD MOULDINGS



5/15 AL COL COVER
SCALE : 3" = 1'-0"

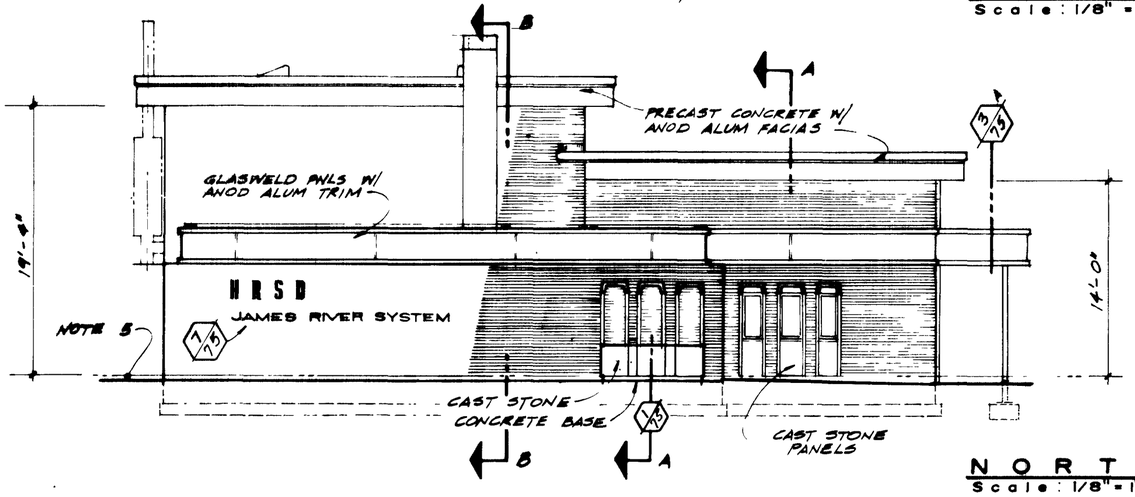
Face Brick: # 3-11-116 (formerly # 3-152-08) Full Range, Standard size, "Charleston," face brick as manufactured by General Shale Products, Corp. of Richmond, Va.

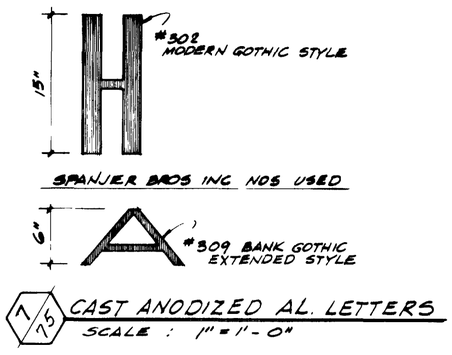




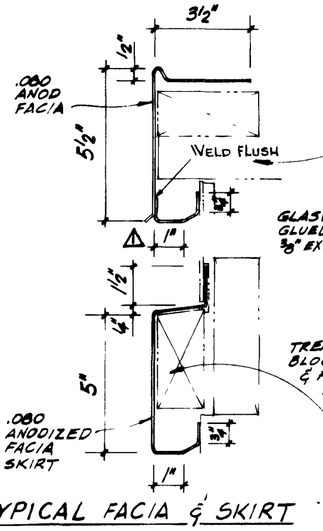
6/15 CORNER GUARD
SCALE : 1½" = 1'-0"

NORTH WEST ELEVATION
Scale : 1/8" = 1'-0"

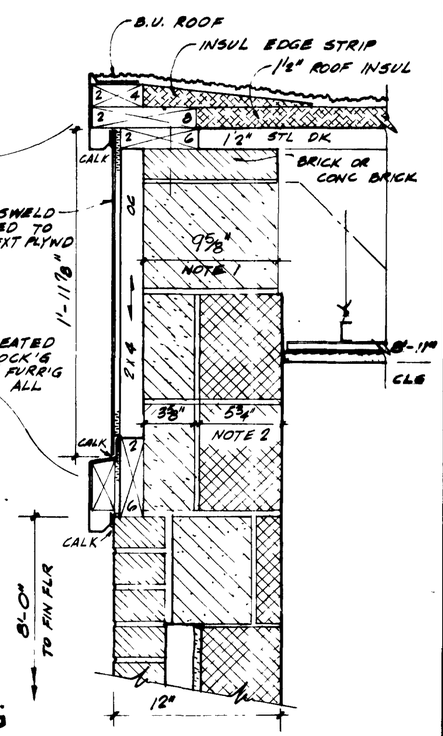




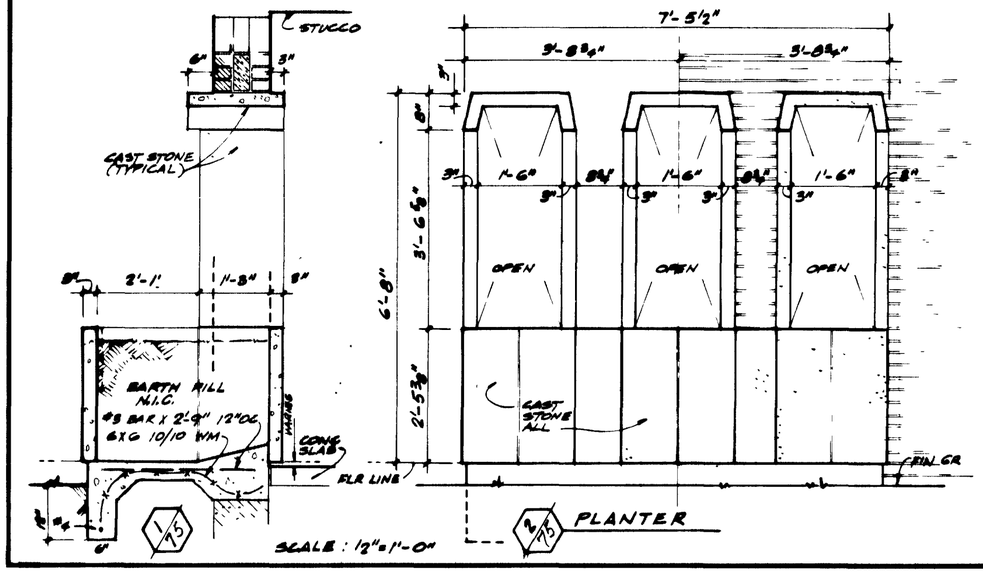
7/15 CAST ANODIZED AL. LETTERS
SCALE : 1" = 1'-0"



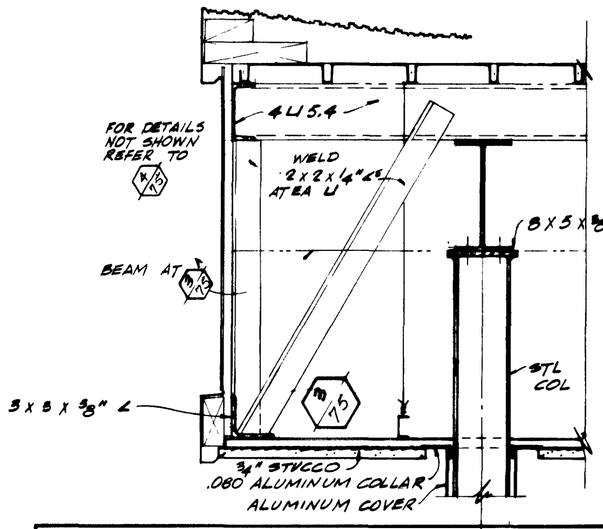
TYPICAL FACIA & SKIRT
SCALE : 3" = 1'-0"



NORTH EAST ELEVATION
Scale : 1/8" = 1'-0"



1/15
SCALE : 1/2" = 1'-0"



AS-BUILT DRAWING
DATE January, 1968

TYPICAL GLASWELD FACIA
SCALE : 1½" = 1'-0"

DRAWING NO. 438.22 (a-1)-75

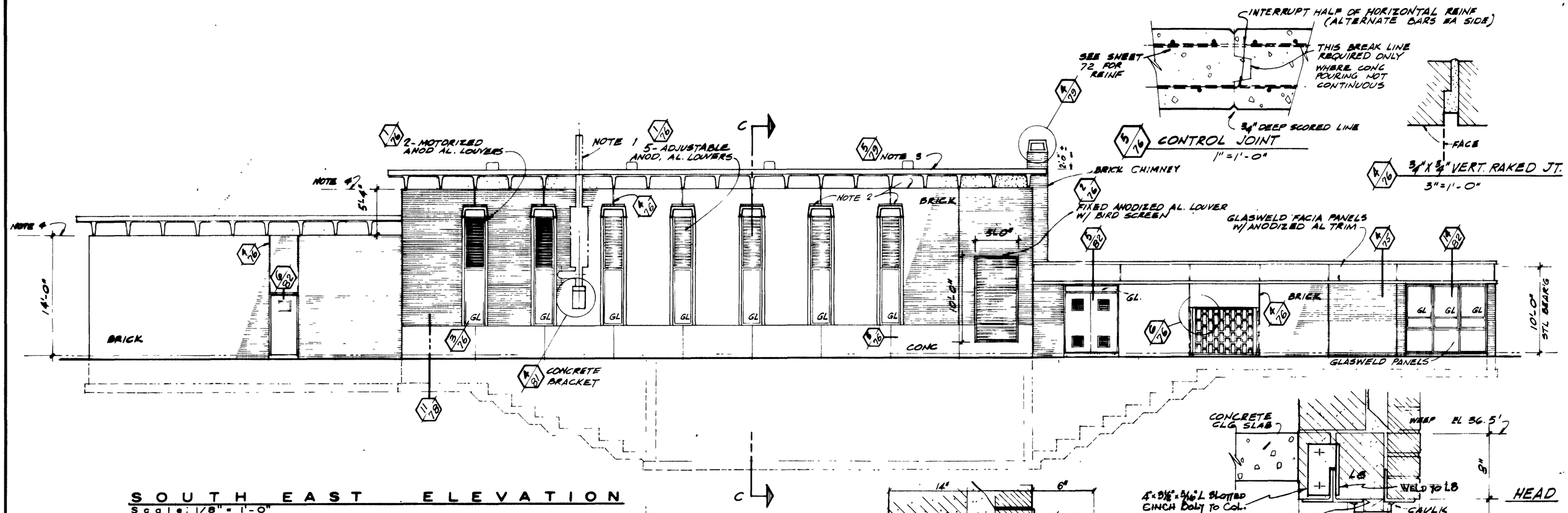
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
NORTHWEST BUILDING ELEVATION
NORTHEAST BUILDING ELEVATION
AND DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As noted — July, 1964

FORREST COILE AND ASSOCIATES
ARCHITECTS
3415 WARWICK BOULEVARD NEWPORT NEWS, VIRGINIA

Drawn by: J.L.M.	Traced by: J.L.M.	Checked by: E.A.G.	Examined by:	Approved by:
Revisions:	⚠ RGM 4/19/67			



NOTES –

1. EQUIPMENT SHOWN NOT TO SCALE. REFER TO MECHANICAL DRAWINGS.
2. ANODIZED ALUMINUM FLASHING.
3. ANODIZED ALUMINUM FACIA.
4. TOP OF MASONRY AT CONCRETE BEARING
5. CARNES CORP AL LOUVERS WITH BIRD SCREEN. MODEL L-38
6. DO MODEL L-35

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22 (a-1)-76

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
SOUTHEAST BUILDING ELEVATION
SOUTHWEST BUILDING ELEVATION
AND DETAILS

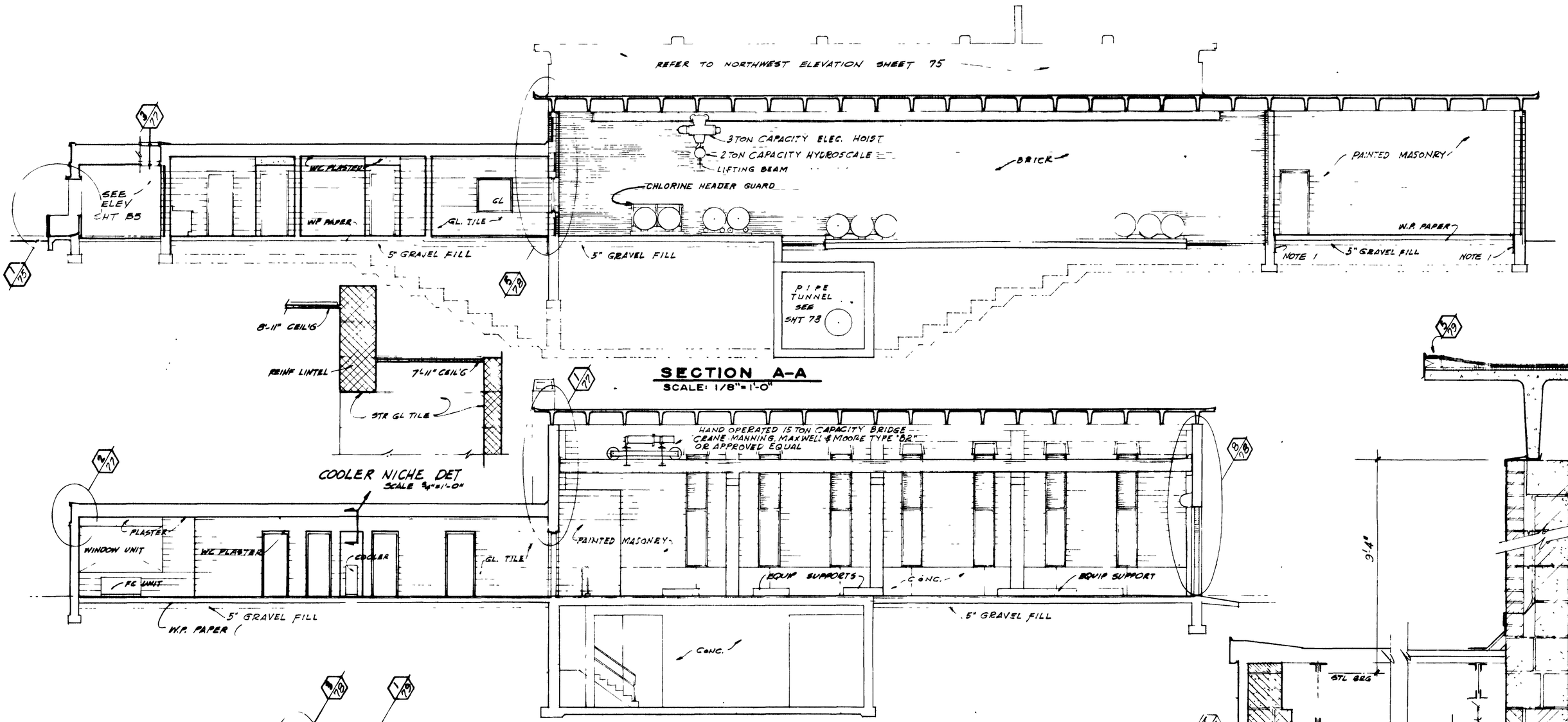
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As noted — July, 1964

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Revisions:	⚠ RGM 4/19/67			

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3415 WARWICK BOULEVARD NEWPORT NEWS, VIRGINIA

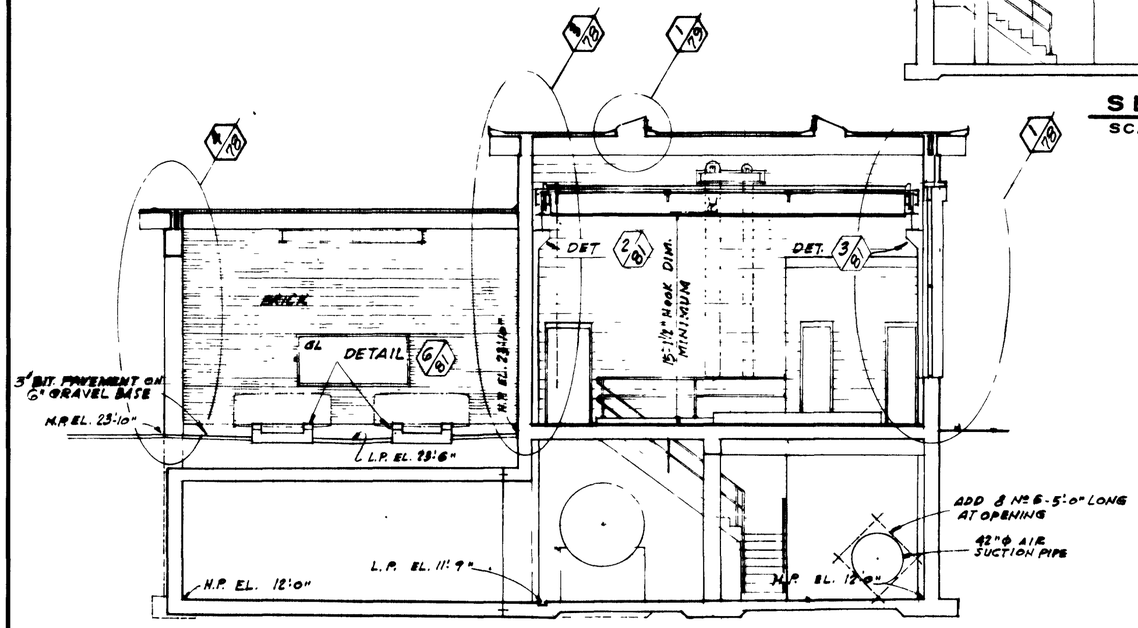
NOTES -
1- 1" THICK RIGID FOAMED POLYSTYRENE INSULATION FROM FIN SLAB LINE DOWN TO FOOTING OR 2' DOWN, WHICHEVER THE GREATER - TYPICAL ALL HEATED SPACES.



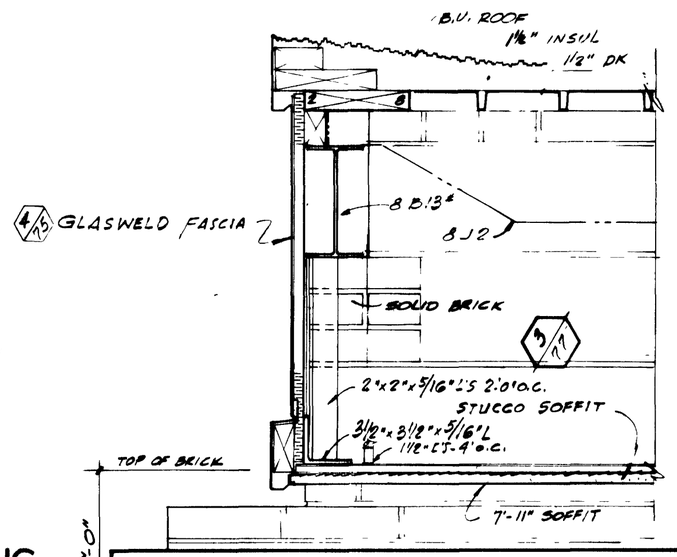
SECTION A-A
SCALE: 1/8"=1'-0"

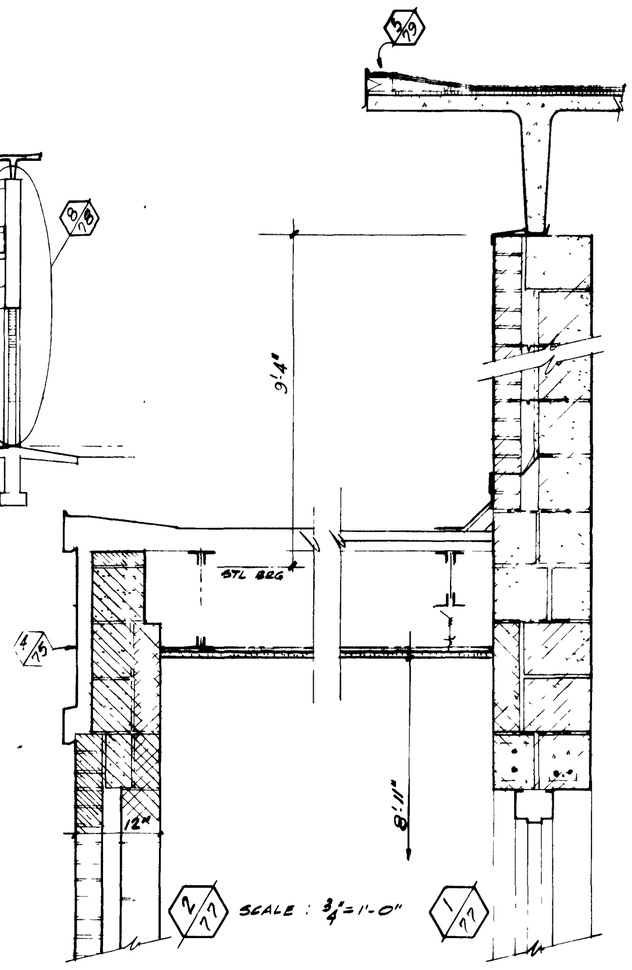
COOLER NICHE DET
SCALE 3/4"=1'-0"

SECTION B-B
SCALE: 1/8"=1'-0"



SECTION C-C
SCALE: 1/8"=1'-0"





AS-BUILT DRAWING
DATE January, 1968

DRAWING NO. 438.22(a-1)-77

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
BUILDING SECTIONS A-A, B-B, AND C-C
AND DETAILS

FORREST COILE AND ASSOCIATES
ARCHITECTS
3415 WARWICK BOULEVARD NEWPORT NEWS, VIRGINIA

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: AS NOTED July, 1964

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Revisions:				

AS-BUILT DRAWING
DATE January, 1968

9/78 ROLL UP DOOR OPNG JAMB SECTION
SCALE: 3/4" = 1'-0"

10/78 .032 ALUMINUM SHELF FLASH'G

11/78 SECTION
SCALE: 3/4" = 1:0"

3A/5 SECTION THRU WEB

SEE SHEET 80 FOR CONC BEAM DETAILS

SEE SHEET B1

DRAWING NO. 438.22 (a-1)-78

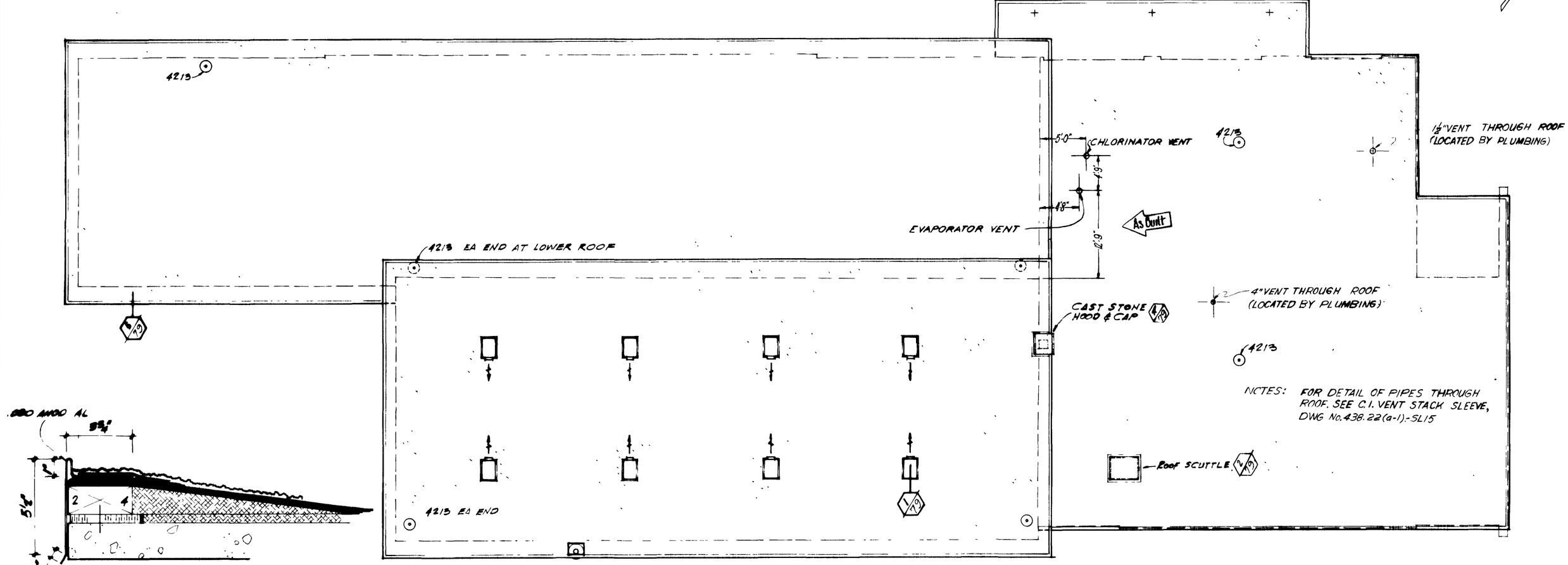
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
WALL SECTIONS AND DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As noted
July, 1964

Drawn by: J.L.M.	Traced by: J.L.M.	Checked by: E.A.G.	Examined by:	Approved by:
Revisions:				

FORREST COILE AND ASSOCIATES
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3415 WARWICK BOULEVARD NEWPORT NEWS, VIRGINIA



AS-BUILT DRAWING
DATE January 2, 1968

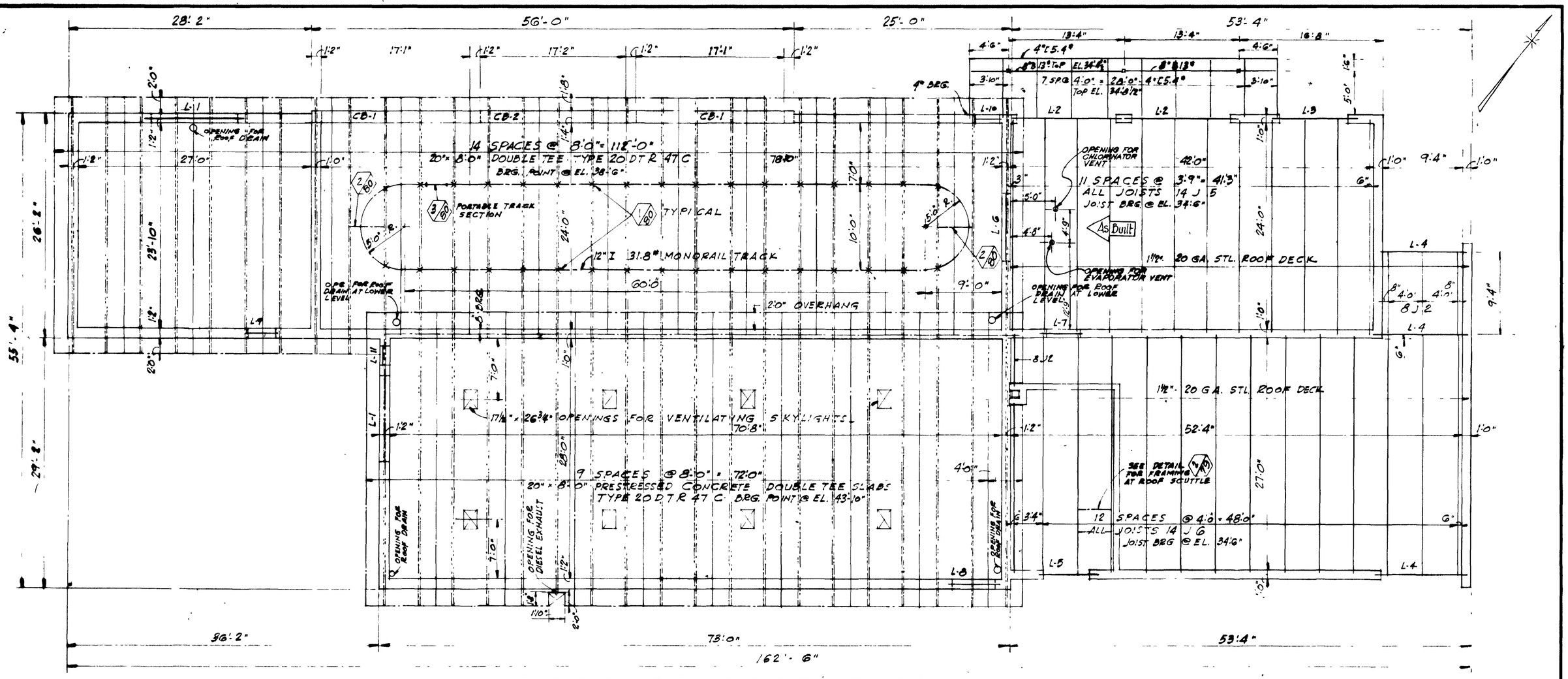
DRAWING NO. 438.22 (a-1)-79

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
ROOF PLAN
AND DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

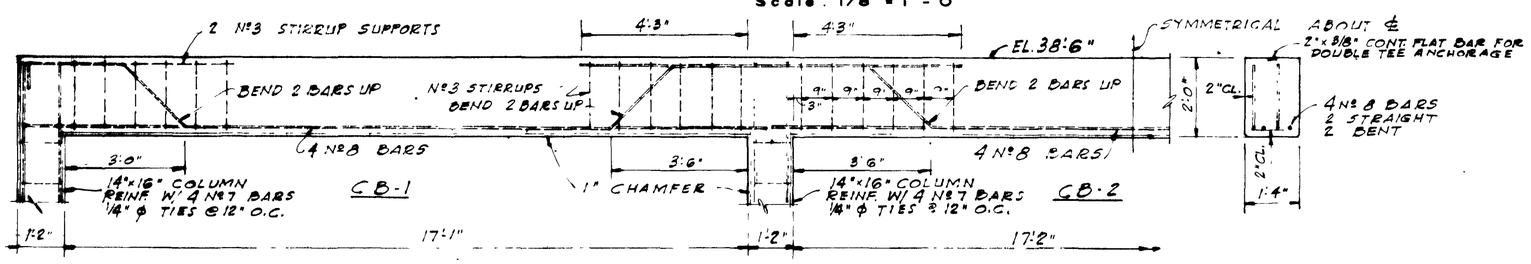
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Revisions:	As Built 3-25-68 RM			



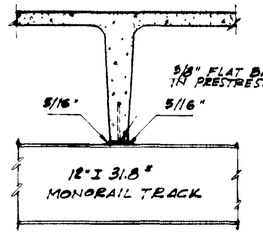
ROOF FRAMING PLAN

Scale: 1/8" = 1'-0"



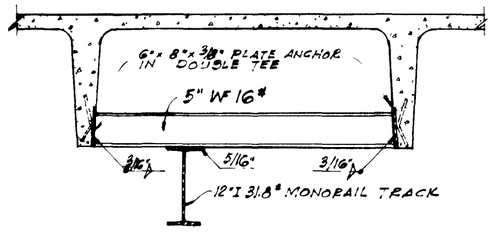
DETAIL OF CB-1 & CB-2

SCALE: 3/8" = 1'-0"



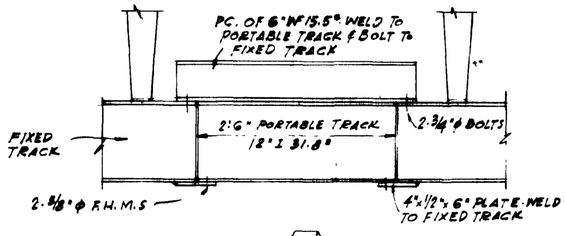
DETAIL

SCALE: 3/4" = 1'-0"



DETAIL

SCALE: 3/4" = 1'-0"



DETAIL

SCALE: 3/4" = 1'-0"

LINTEL SCHEDULE

MARK	DESCRIPTION	MASONRY OPENING	BEARING EA END
L-1	8" WF 17# W/ 13"x⅜" PLATE ⊥	10'0"	12"
L-2	8" B 13#	11'4"	12"
L-3	8" B 18#.	8'0"	8"
L-4	8" B 13#	9'-4"	8"
L-5	8" B 13# W/ 11"x⅜" PLATE ⊥	5'-4"	6"
L-6	8" WF 17# W/ 13"x⅜" PLATE ⊥	8'0"	8"
L-7	2 L's 5"x3½"x5/16" ⊥	4'0"	4"
L-8	3 L's 4"x3½"x5/16"	5'0"	6"
L-9	1 L 4"x3½"x5/16" W/ BOND BEAM	3'4"	4"
L-10	3 L's 3½"x3½"x5/16"	3'0"	4"
L-11	do.	2'4"	4"

NOTE: WHERE LINTELS ARE NOT OTHERWISE CALLED FOR PROVIDE REINFORCED TILE LINTEL OR BOND BEAM BLOCK LINTEL AS APPLICABLE. REINFORCE W/ 2 - # 4 BARS

DRAWING NO. 438.22 (a-1)-80

AS-BUILT DRAWING

DATE January, 1968

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HAMPTON ROADS SANITATION DISTRICT

NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

MAIN BUILDING

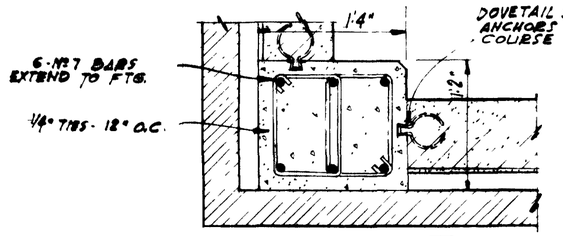
ROOF FRAMING PLAN AND DETAILS

LINTEL SCHEDULE

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Consulting Engineers
New York 3, N.Y.

Scale: As noted — July, 1964

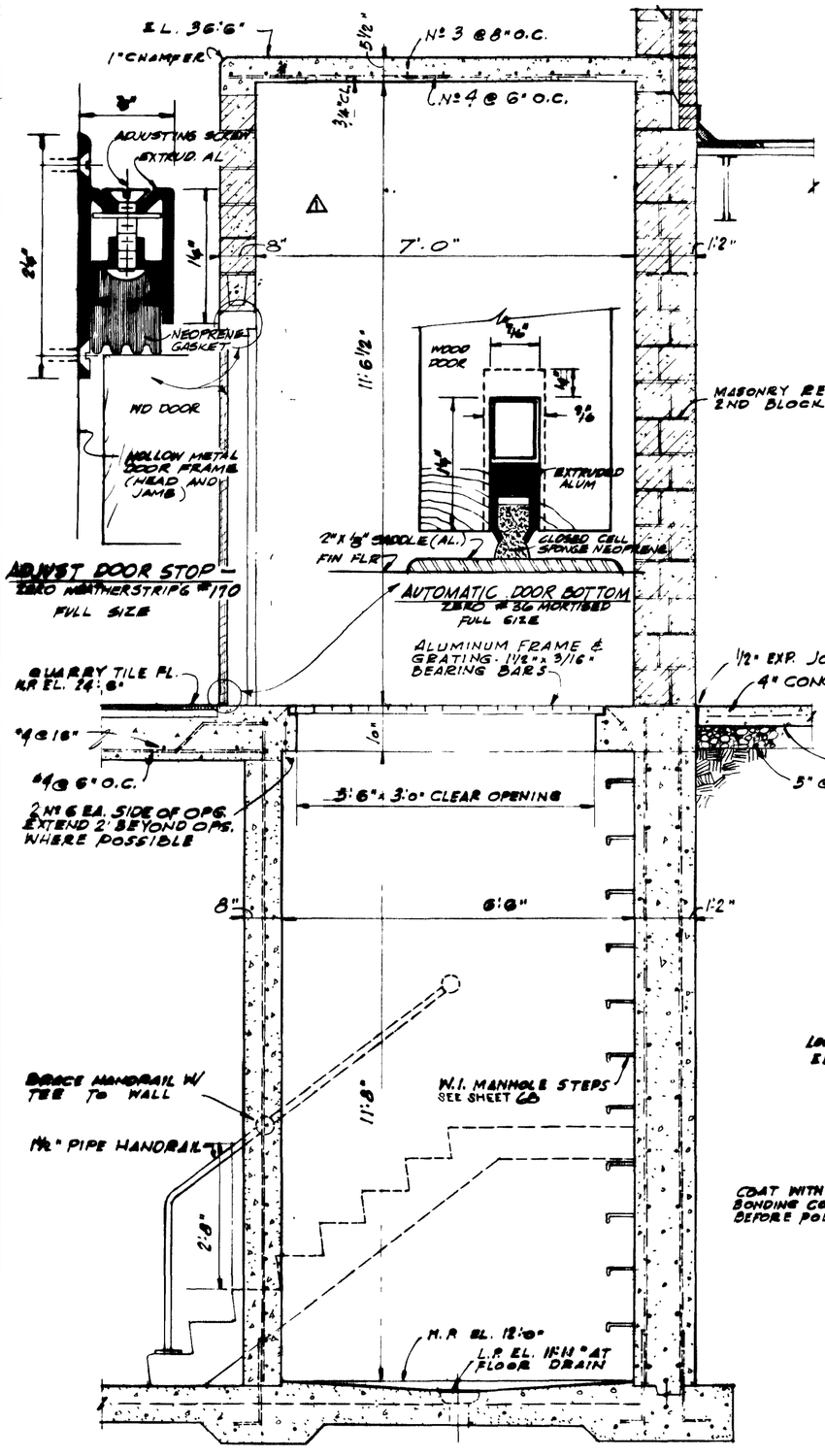
Drawn by: E.A.L.	Traced by: E.A.G.	Checked by: F.W.C.	Examined by:	Approved by:
Revisions:	As Built 3/25/68 RGM			



DOVETAIL SLOTS W/ MASONRY ANCHORS EA. 2ND BLOCK COURSE

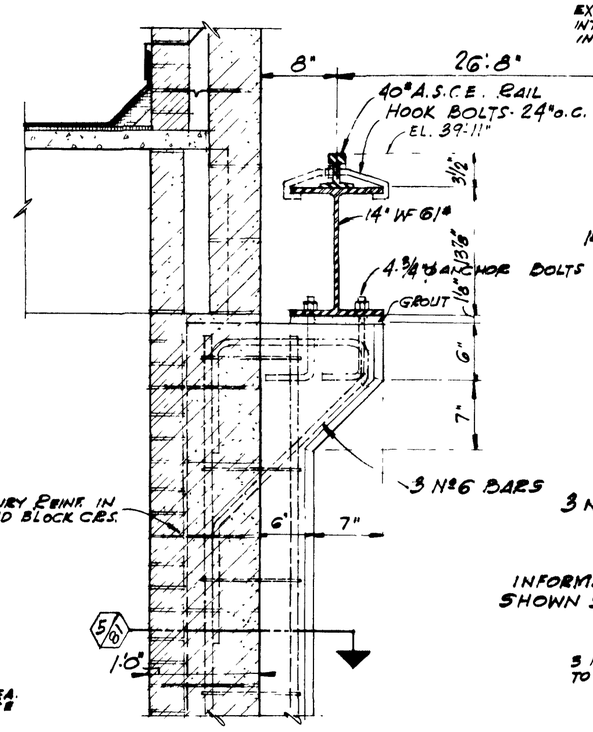
DETAIL 6/10

SCALE: 1"=1'-0"



SECTION 1/10

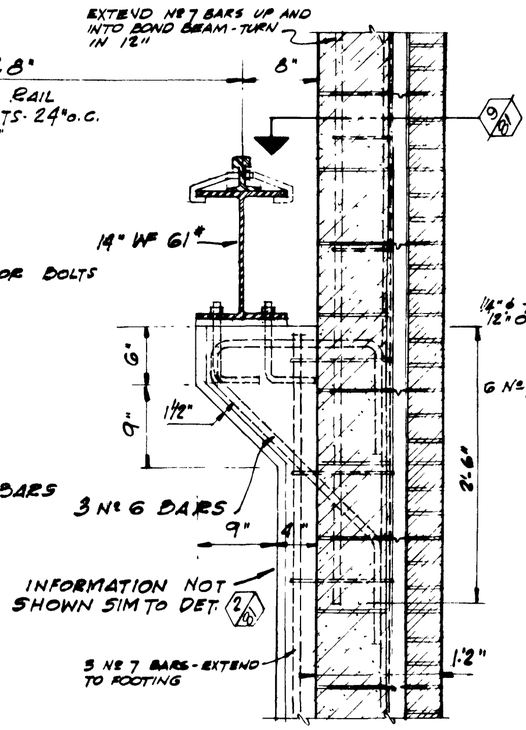
SCALE: 1/2"=1'-0"



5/10

DETAIL 2/10

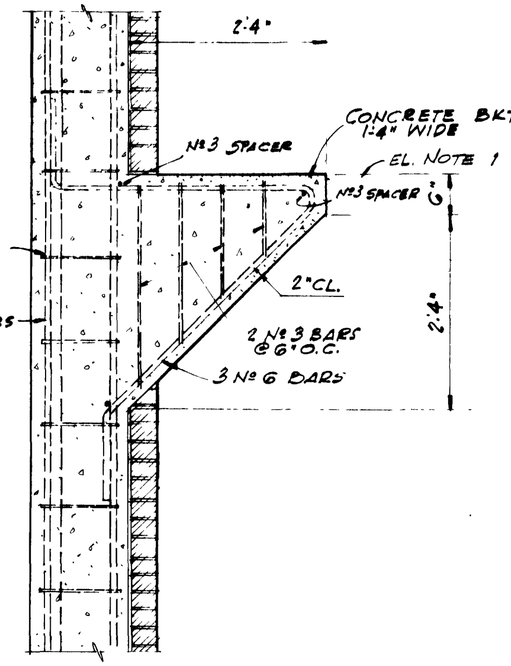
SCALE: 1"=1'-0"



2/10

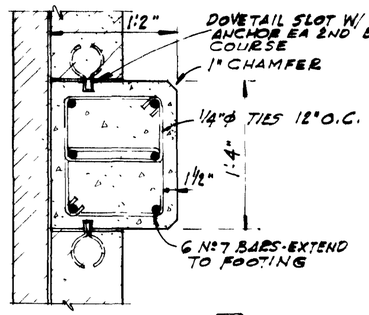
DETAIL 3/10

SCALE: 1"=1'-0"



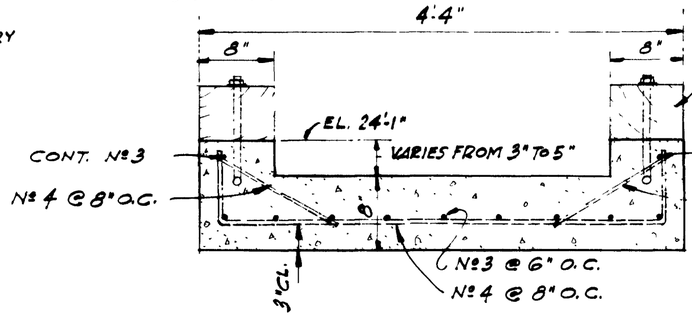
DETAIL 4/10

SCALE: ¾"=1'-0"



SECTION 5/10

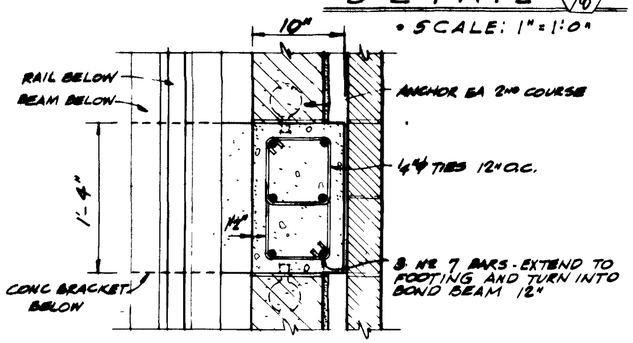
SCALE: 1"=1'-0"



FOR DETAIL OF TIMBER CHOCKS & ANCHORS SEE DWG. № 438.22 (a-1)-69

DETAIL 6/10

SCALE: 1"=1'-0"



DETAIL 7/10

SCALE: 3/8"=1'-0"

SECTION 9/10

NOTES-

1- ELEVATION TO BE DETERMINED BY EQUIPMENT FURNISHED.

DRAWING NO. 438.22 (a-1)-81

AS-BUILT DRAWING

DATE January, 1968

FORREST COILE AND ASSOCIATES

ARCHITECTS

3418 WARWICK BOULEVARD NEWPORT NEWS, VIRGINIA

HAMPTON ROADS SANITATION DISTRICT

NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

MAIN BUILDING

FILTER ROOM SECTION

MISCELLANEOUS DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As noted — July, 1964

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Revisions:	⚠ RGM 4/26/67			

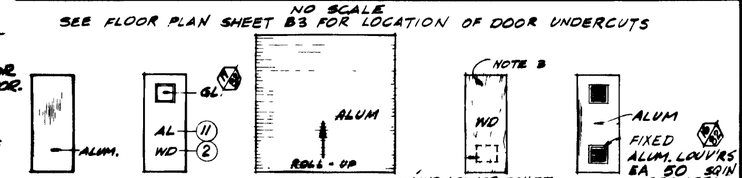
DOOR SCHEDULE

MARK	SIZE	TYPE	FRAME	FIN	REMARKS
1	3°0" X 7°0" X 1¾"	A	19/82 6/82	ALUM.	SEE STOREFRONT SPECS
2	2°8" X 7°0" X 1¾"	B	4/82 14/82	PLASTIC COAT	STAY STRAIT OR EQUAL
3	10" X 10" OPENING	C	16/82	ALUM.	ANODIZED FINISH
4	3°0" X 7°0" X 1¾"	D	14/82 1/82	PLASTIC COAT	STAY-STRATE OR EQUAL NOTE 3
5	2-3°0" X 7°0" X 1¾"	E	14/82	ALUM.	SEE STOREFRONT SPECS
6	2°6" X 7°0" X 1¾"	D	4/82 3/82	PLASTIC COAT	STAY-STRATE OR EQUAL
7	2°0" X 7°0" X 1¾"	D	14/82 6/82	DO	DO NOTE 5 FOR ONE DR ONLY-PLAN
8	2°4" X 7°0" X 1¾"	D	14/82	DO	DO
9	2°8" X 7°0" X 1¾"	D	14/82 3/82	DO	DO
10	2-2°6" X 7°0" X 1¾"	D	4/82	DO	DO
11	2°8" X 7°0" X 1¾"	B	W 3 A	ALUM	SEE STOREFRONT SPECS
12	2°0" X 7°0" X 1¾"	A	4/82	DO	DO

DOOR TYPES :

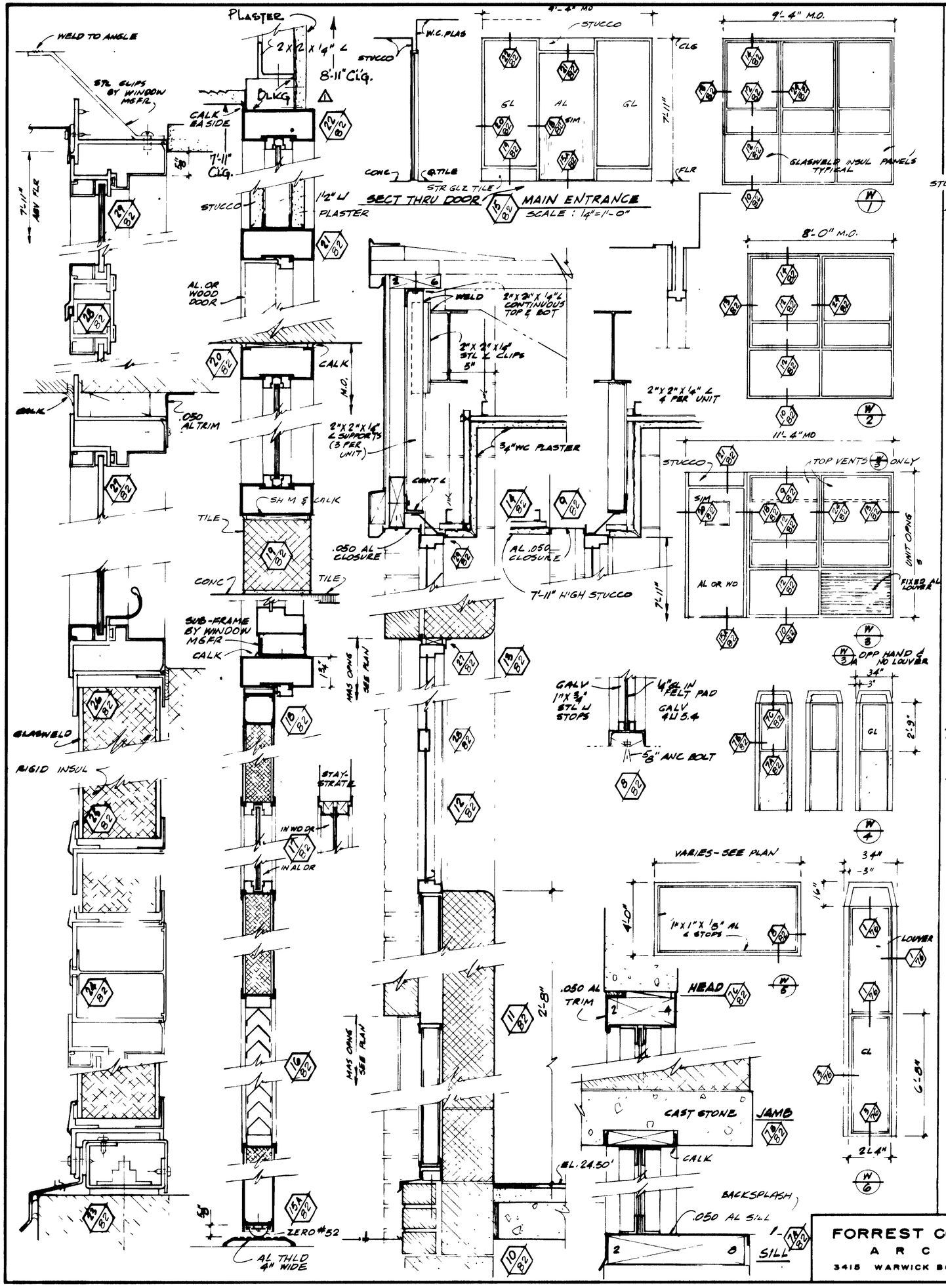
NO SCALE

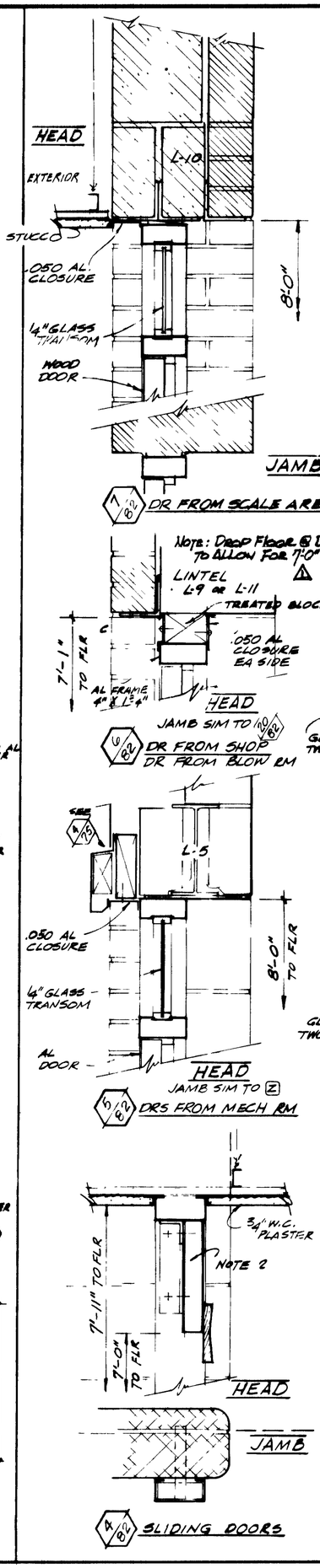
SEE FLOOR PLAN SHEET B3 FOR LOCATION OF DOOR UNDERCUTS

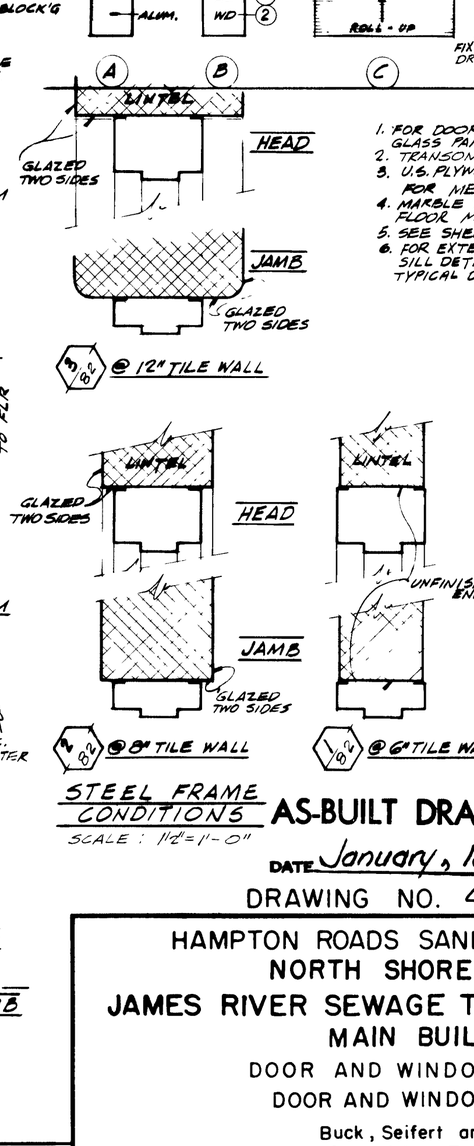


NOTES

1. FOR DOOR NO 2, GLASS PANEL TO MATCH GLASS PANEL IN AL DOOR NO 11
2. TRANSOM TO MATCH DOOR.
3. U.S. PLYWOOD WELDWOOD FIRE DOOR CLASS "B" FOR MECHANICAL ROOM
4. MARBLE THLDS FOR INTERIOR DOORS WHERE FLOOR MAT'LS CHANGE.
5. SEE SHEET B1 FOR SPECIAL HARDWARE.
6. FOR EXTERIOR DOOR SILL DETAIL, SEE TYPICAL DET SHT 74







DATE January, 1968

DRAWING NO. 438.22 (a-1)-82

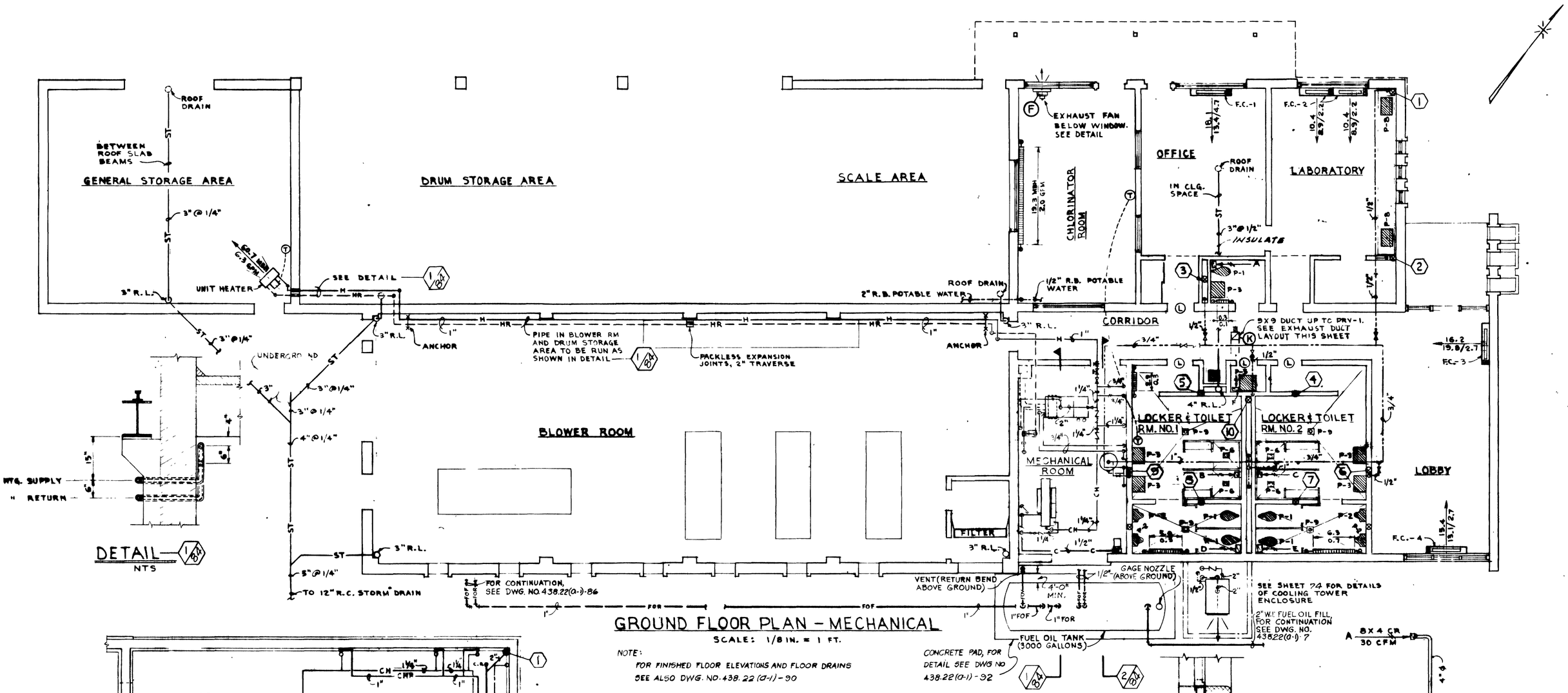
FORREST COILE AND ASSOCIATES
ARCHITECTS
3415 WARWICK BOULEVARD NEWPORT NEWS, VIRGINIA

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
DOOR AND WINDOW SCHEDULE
DOOR AND WINDOW DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As noted — July, 1964

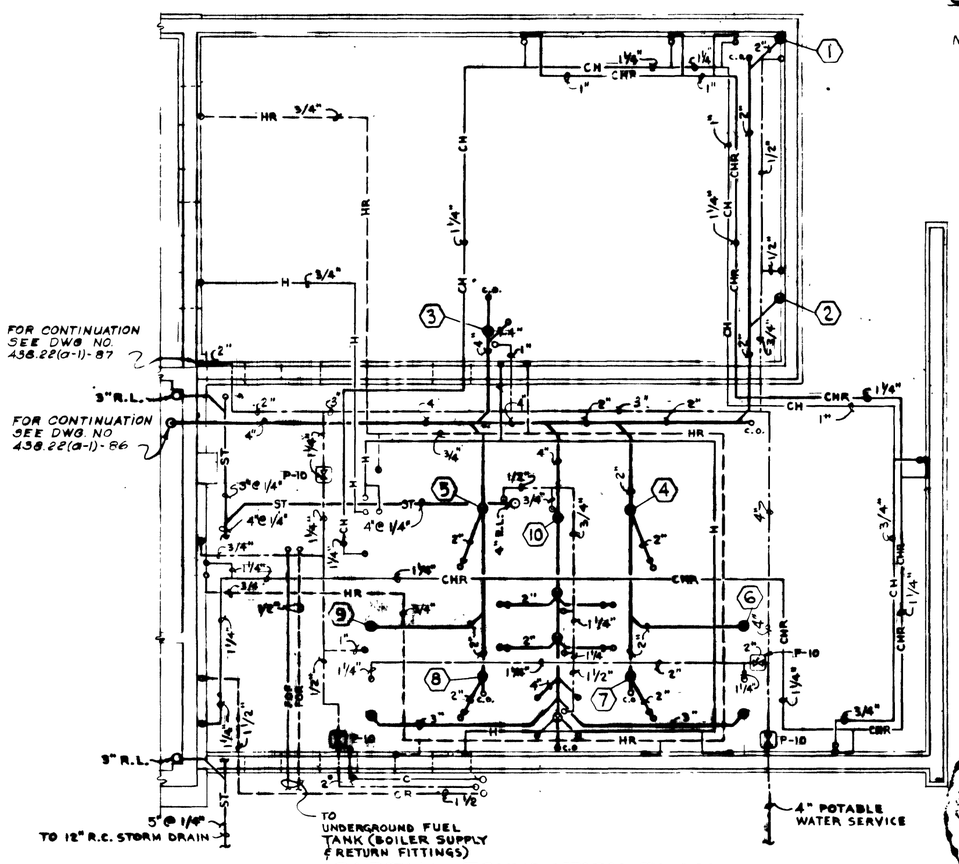
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Revisions:	1 RGM 4/19/67			



DETAIL
NTS

GROUND FLOOR PLAN – MECHANICAL
SCALE: 1/8 IN. = 1 FT.

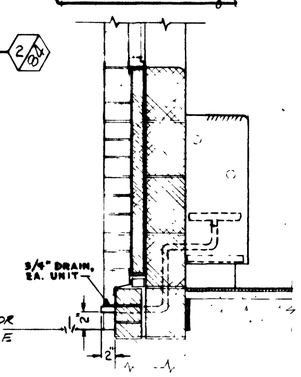
NOTE:
FOR FINISHED FLOOR ELEVATIONS AND FLOOR DRAINS SEE ALSO DWG. NO. 438.22 (a-1)-90



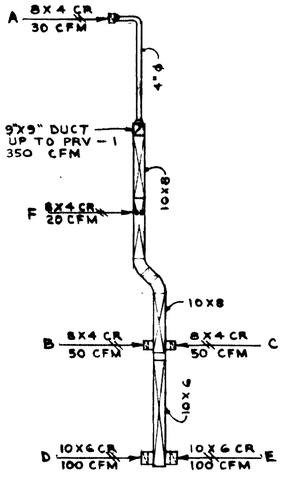
PARTIAL FOUNDATION PLAN
SCALE: 1/8 IN. = 1 FT.

LEGEND – SYMBOLS

- SOIL AND WASTE
- VENT
- COLD WATER
- HOT WATER
- RECIRCULATING
- D — COND. DRAIN
- H — HEATING SUPPLY
- HR — HEATING RETURN
- CH — CHILLED OR HTG. SUPPLY
- CHR — CHILLED OR HTG. RETURN
- C — CONDENSER SUPPLY
- CR — CONDENSER RETURN
- FOF — FUEL OIL SUPPLY
- FOR — FUEL OIL RETURN
- FOV — FUEL OIL VENT
- GATE VALVE AND ACCESS BOX
- ST — STORM DRAIN
- MOTORIZED VALVE
- GATE VALVE
- GLOBE VALVE
- CHECK VALVE
- PRESSURE RED. VALVE
- PRESSURE REL. VALVE
- PLUG COCK
- Ⓥ VENT
- Ⓛ LOUVERED DOOR (SEE DOOR SCHEDULE)
- Ⓣ THERMOSTAT
- CONVECTOR
- X — HEAT SUPPLY, MBH
- Y — HTG. WATER FLOW, GPM
- FAN COIL UNIT
- W — TOTAL COOLING LOAD, MBH
- X — HEAT SUPPLY, MBH
- Y — CHILLED OR HTG. WATER FLOW, GPM
- UNIT HEATER
- X — HEAT SUPPLY, MBH
- Y — HTG. WATER FLOW, GPM
- FLOOR DRAIN
- ⊕, ⊗ WASTE, VENT
- PLUMBING RISER



FAN COIL UNIT
SCALE: 3/4" = 1'-0"



EXHAUST DUCT LAYOUT
SCALE: 1/8 IN = 1 FT

AS-BUILT DRAWING
DATE January, 1968

COMMONWEALTH OF VIRGINIA
W. BOYCE BLANCHARD
PROFESSIONAL ENGINEER
CERTIFICATE No. 164
CERTIFIED PROFESSIONAL ENGINEER

DRAWING NO. 438.22 (a-1)-83

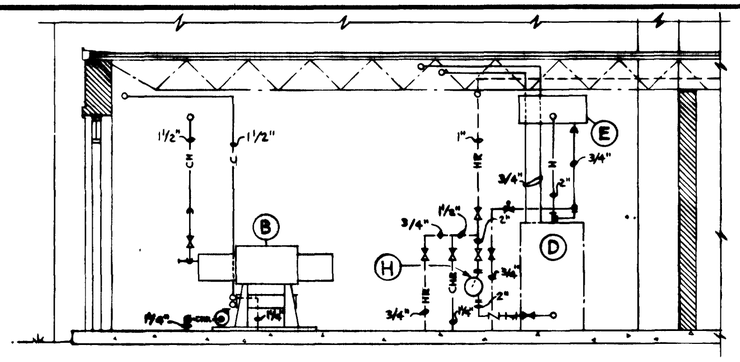
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ARCHITECTS
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W. BOYCE BLANCHARD
MECHANICAL-ELECTRICAL ENGINEERS
3415 WARWICK BOULEVARD NEWPORT NEWS, VIRGINIA

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
MECHANICAL FLOOR PLANS AND DETAILS
Buck, Seifert and Jost
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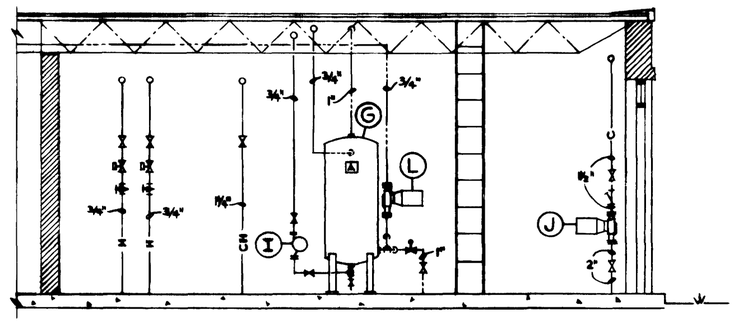
Scale: As noted — July, 1964

Drawn by: L.H.T.	Traced by: L.H.T.	Checked by: W.B.B.	Examined by:	Approved by:
Revisions:				



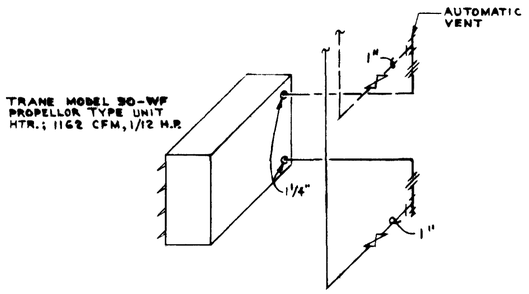
SECTION 1/A6

SCALE: 1/4 IN = 1 FT. - 0 IN.



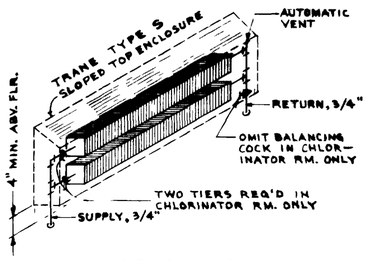
SECTION 2/A6

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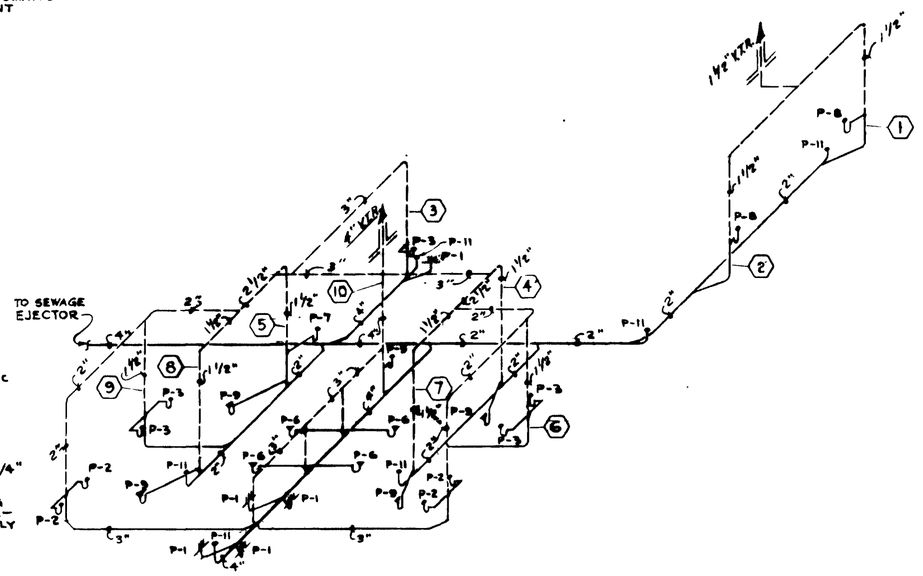
UNIT HEATER PIPING

NTS



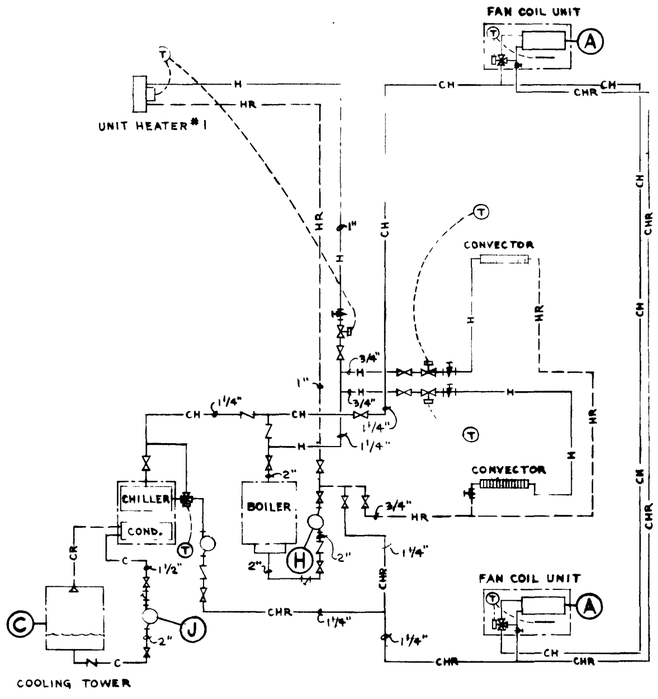
FIN TUBE PIPING

NTS



PLUMBING ISOMETRIC

NTS



SCHEMATIC PIPING DIAGRAM

MECHANICAL EQUIPMENT SPECIFICATIONS

(A) **FAN-COIL A.C. UNITS:** CARRIER MODEL 42A VERTICAL TYPE WITH CABINET FOR TOP DISCHARGE EXPOSED INSTALLATION. COOLING CONDITIONS: 40° ENT. WATER TEMP; ENT. AIR TEMP. 78° DB, 65° WB; HEATING CONDITIONS: 180° ENT. WATER TEMP, 70° ENT. AIR TEMP.

(B) **CHILLER:** CARRIER MODEL 30E8 HERMETIC RECIPROCATING LIQUID CHILLING PACKAGE COMPLETE WITH WATER COOLED CONDENSER AND CHILLED WATER CIRCULATING PUMP. 14.5 GPM CHILLED WATER FLOW AT 40° LVG. TEMP.; 21 GPM CONDENSER WATER FLOW AT 85° ENT. TEMP., 95° LVG. TEMP.; COMPRESSOR INPUT 6.5 KW; CAPACITY 6.9 TONS; CHILLED WATER PUMP CAP'Y 14.5 GPM AT 33 FT HEAD.

(C) **COOLING TOWER:** MARLEY AQUATOWER MODEL 4417; 8.6 TONS REQ'D TOTAL HEAT REJECTION CAP'Y; ENT. WATER TEMP. 95°, LVG. WATER TEMP. 85°, 78° AMBIENT WET BULB TEMP; 25 GPM WATERFLOW RATE; 1/3 H.P., 1725 RPM MOTOR

(D) **BOILER-BURNER UNIT:** SPENCER FORCED DRAFT PACKAGED UNIT FOR LIGHT DIESEL FUEL, SIZE FC2-90, 324 MBh GROSS OUTPUT, 243 MBh NET RATING; FURNACE VOLUME 8.2 CU.FT., HEATING SURFACE 53 SQ.FT.; WATER TRIM; PRESSURE-ATOMIZING BURNER, COMPLETE WITH FAN, MOTOR, FUEL PUMP AND CONTROLS. SERVICE WATER STORAGE (TANK) TYPE HEATING COIL, SPENCER NO. TK-150, HEATING SURFACE 4.9 SQ.FT., 3 HR. CAP'Y - 147 GAL. FROM 40° TO 140° WITH 180° BOILER WATER

(E) **EXPANSION TANK:** BELL & GOSSETT STANDARD COMPRESSION TANK 30 PSIG WORKING PRESSURE, 15 GAL. CAP'Y, 13⅛" DIA., 30" LONG.

(F) **CHLORINATOR ROOM EXHAUST FAN:** ILG EXPLOSION PROOF TYPE PDX PROPELLOR FAN, SIZE PDX-123, WITH MOTOR SIDE FAN GUARD, 1130 CFM AT 0" S.P., 1/12 HP, 1725 RPM, 1Ø, 115 V.

(G) **HOT WATER STORAGE TANK:** RICHMOND ENGINEERING CO., RECO TYPE RV VERTICAL STORAGE TANK, 100 GAL. STORAGE CAPACITY, WITH VERTICAL ANGLE LEGS.

(H) **HEATING PUMP:** BELL & GOSSETT SERIES 60 IN-LINE PUMP, SIZE NO. 60-4, 3/4 H.P., 1750 RPM; FLOW 25 GPM AT 28 FT. TOTAL HEAD

(I) **HOT WATER PUMP:** BELL & GOSSETT SIZE "75" BOOSTER; 1/12 H.P., 1750 RPM; 4.0 GPM AT 7.5 FT. TOTAL HEAD

(J) **CONDENSER PUMP:** BELL & GOSSETT SERIES 60 IN-LINE, SIZE NO. 60-6, 3/4 H.P., 1750 RPM; FLOW 25 GPM AT 40 FT. TOTAL HEAD

(K) **PRV-1:** ILG PROPELLOR FAN POWER ROOF VENTILATOR SIZE L-LSQ-103, 342 CFM AT 1/8" S.P., 1/40 H.P., 1550 RPM, 1Ø, 115 V. WITH BIRD SCREEN AND TYPE L-LSQ GRAVITY OPERATED EXHAUST SHUTTER

(L) **HOT WATER RE-CIRC. PUMP:** BELL & GOSSETT SIZE "75" BOOSTER; 1/12 H.P., 1750 RPM; 4.0 GPM AT 7.5 FT. TOTAL HEAD

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE	PIPE SIZE H.W.	PIPE SIZE C.W.	PIPE SIZE W.	PIPE SIZE V.	MFR. & NO.	REMARKS
P-1	WATER CLOSET	–	1"	4"	3"	AMER. STD. F-2223-8	CHURCH SEAT NO. 9500
P-2	URINAL	–	1"	2"	2"	" " F-6271-1	
P-3	LAVATORY	½"	½"	1½	1½	" " P-4867-40	SIZE 20×18; R 2604-1; R 7003-44
P-4	SHOWER	½	½	2"	1½	LOGAN: HEAD – 260 VALVE ASS'Y-19260	
P-5	SERVICE SINK	¾	¾	3"	2"	AMER. STD. P-7700-1	3/4" STOP VALVES
P-6	SHOWER DRAIN	–	–	2"	1½	ZURN Z-215-C-B	
P-7	WATER COOLER	–	⅛	1½	1½	OASIS OCP-3	3/8" STOP VALVE
P-8	SINK	½	½	2"	1½	ELKAY DL-2421-12	LK-230 & LK-99; ½" STOP VALVES
P-9	FLOOR DRAIN	–	–	2	1½	ZURN Z-215-B	
P-10	FLOOR VALVE ACCESS	–	–	–	–	ZURN ZANB-1385	FRAME SIZE 12×12
P-11	CLEANOUT	–	–	–	–	ZURN Z-1323	–2 (C. OR Q TILE); –6 (V. ASB. TILE)

FAN COIL UNIT SCHEDULE

UNIT NUMBER	UNIT SIZE	COOLING (EACH UNIT) SENSIBLE	COOLING (EACH UNIT) TOTAL	C.F.M. (HIGH SPEED)	H'T'G CAP. EACH UNIT	G.P.M. EACH	RUNOUT SIZE
FC-1	06	14,600	18,100	600	13,400	4.7	1"
FC-2	04	8700	10,400	430	8,900	2.2	3/4"
FC-3	06	13,000	16,200	600	19,800	2.7	3/4"
FC-4	06	13,200	15,400	600	13,100	2.7	3/4"

AS-BUILT DRAWING

DATE January, 1968

COMMONWEALTH OF VIRGINIA
W. BOYCE BLANCHARD
PROFESSIONAL ENGINEER
CERTIFICATE No. 164
REGISTERED PROFESSIONAL ENGINEER

FORREST COILE AND ASSOCIATES
ARCHITECTS
3415 WARWICK BOULEVARD NEWPORT NEWS, VIRGINIA

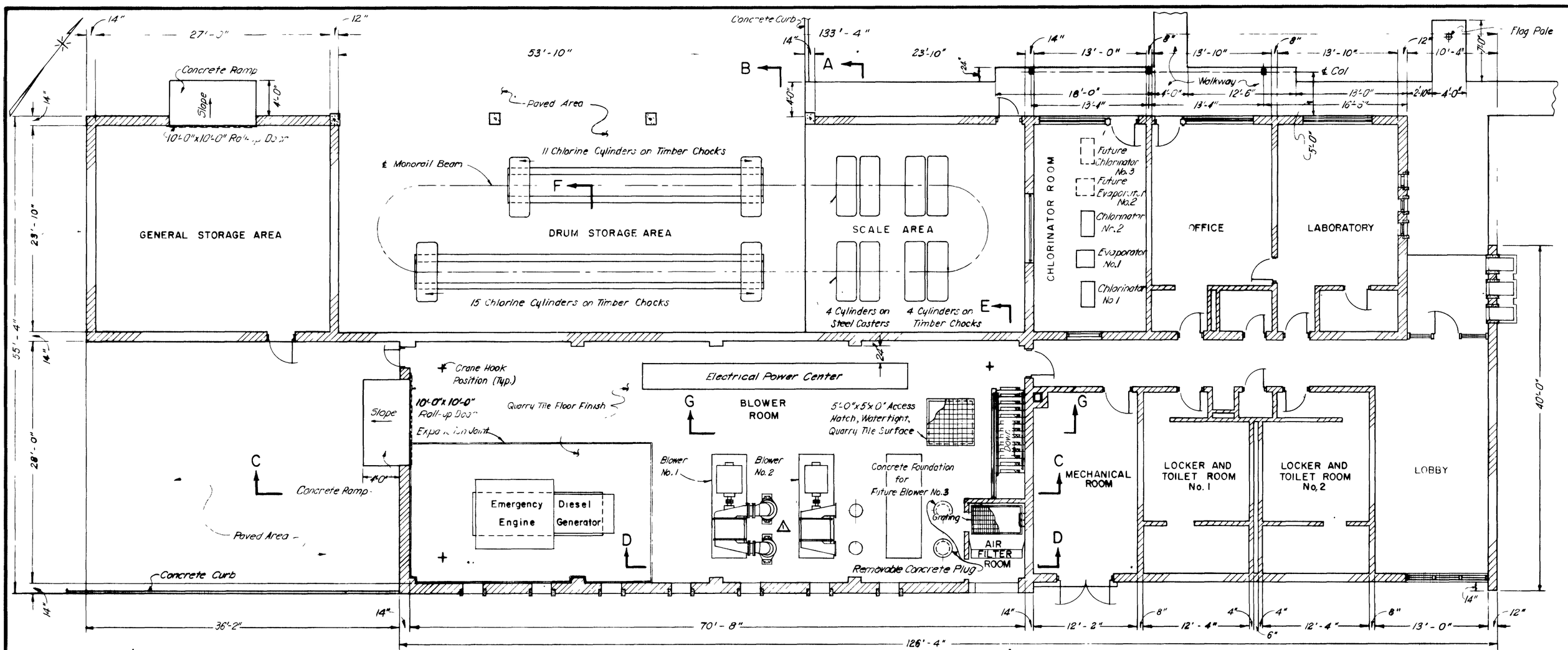
W. BOYCE BLANCHARD
MECHANICAL-ELECTRICAL ENGINEERS
3415 WARWICK BOULEVARD NEWPORT NEWS, VIRGINIA

DRAWING NO. 438.22 (a-1)-84

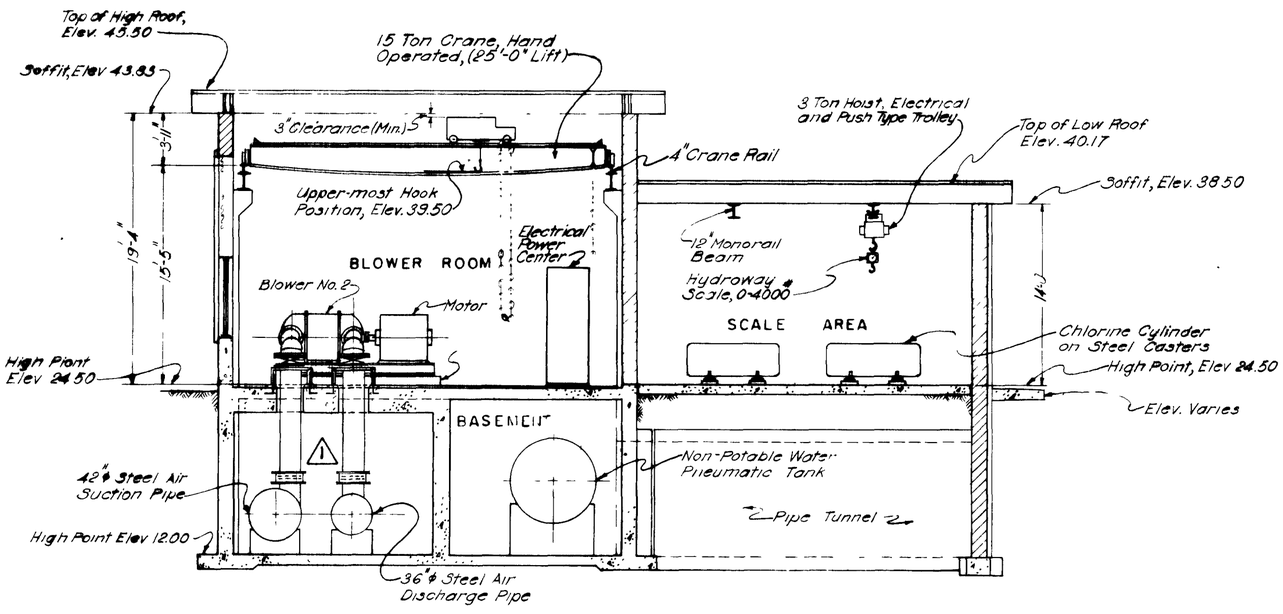
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
MECHANICAL SCHEDULES AND DIAGRAMS
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As noted July, 1964

Drawn by: A.C.A.	Traced by: A.C.A.	Checked by: W.B.B.	Examined by:	Approved by:
Revisions:				



GROUND FLOOR PLAN



SECTION A-A

AS-BUILT DRAWING

DATE January 2, 1968

DRAWING NO. 438.22(a-1)-85

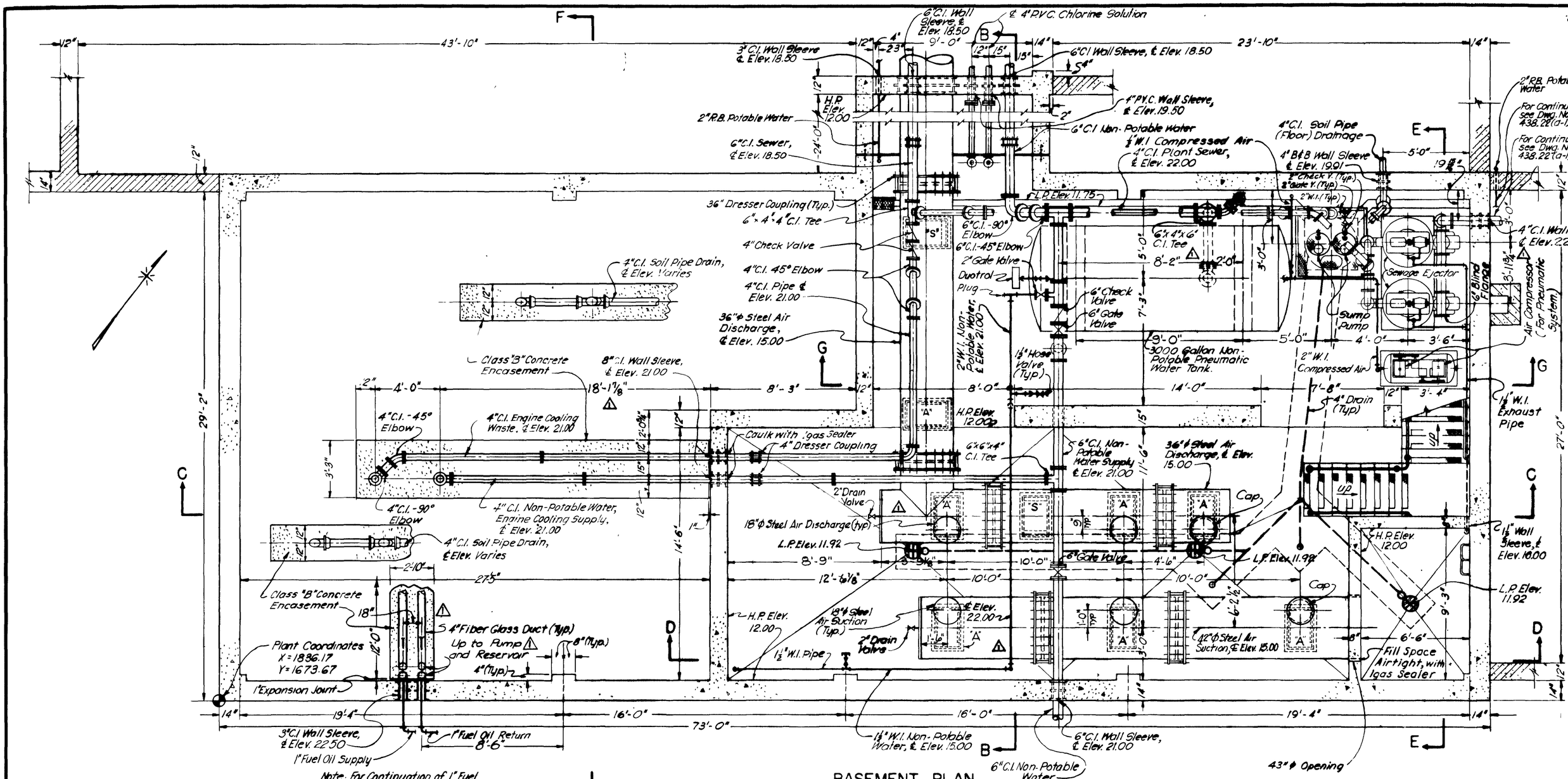
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
EQUIPMENT AND PIPING
GROUND FLOOR PLAN AND SECTION A-A

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/8"=1'-0"

July, 1964

Drawn by: J.P.	Traced by: F.T.D.	Checked by: G.V.A.	Examined by:	Approved by:
Revisions:	⚠ RGM 4/24/67			



Notes:
For Continuation of Outside Piping, see Dwg. Nos. 438.22(a-1)- 6 and 7.
For Detail of Chlorine Piping Sleeve, see Dwg. No. 438.22(a-1)- 40

LEGEND:
"A" Designates Anchor Type Support
"S" Designates Slip Type Support
For Details of Supports for 42" I.D. and 36" I.D. Steel Pipe, see Dwg. No. 438.22 (a-1)- 91

AS-BUILT DRAWING
DATE January, 1968

DRAWING NO. 43822(a-1)-86

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
EQUIPMENT AND PIPING
BASEMENT PLAN AND SECTION B-B

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4" = 1'-0"
July, 1964

Drawn by: O.M.	Traced by: H.C	Checked by: G.V.A	Examined by:	Approved by:
Revisions:	RGM 4/28/67			

DRUM STORAGE AREA
(H.P. Blacktop, Elev. 23.83)

11 Chlorine Cylinders on Timber Chocks

15 Chlorine Cylinders on Timber Chocks

Cylinder Support, for Detail see Dwg. No. 438.22(a-1)-69

Concrete Curb, for Detail see Dwg. No. 438.22(a-1)-69

Cylinder on Steel Casters

Cylinder on Timber Chocks

H.P. Floor, Elev. 24.50

Elev. 24.50

5'-0" Rad.

SCALE AREA

CHLORINATOR ROOM

Future Chlorinator No. 3

Future Evaporator No. 2

Chlorinator No. 2

Evaporator No. 1

Chlorinator No. 1

OFFICE

CORRIDOR

Vacuum Transmitter

Vacuum Pump

1" W.I. Liquid Chlorine Valve (Typ.)

1" W.I. Liquid Chlorine ℄ Elev. 31.13

4" C.I. Non-Potable Water, ℄ Elev. 27.50

3" C.I. Non-Potable Water

2" R.B. Potable Water

3" PVC Injector and Hose Connection for Chlorine Gas

1" W.I. Vent (Typ.)

Pressure Reg. Valve

½" Hose Valve (Typ.)

½" P.V.C. Injector Suction (Typ.)

2" W.I. Chlorine Gas (Typ.)

1" W.I. Compressed Air

4" P.V.C. Chlorine Solution

4" C.I. Wall Pipe ℄ Elev. 27.50

4" Pressure Reducing Valve

½" R.B. Potable Water

4" x 3" C.I. 90° Reducing Elbow

4" x 3" C.I. Tee

3" x 3" x 1½" Tee (Typ.)

1½" Hose Valve, ℄ Elev. 28.50 (Typ.)

3" Plug

℄ Elev. 26.50

℄ Elev. 26.50

36" Steel Air Supply Elev. 15.00

Electrical Power Center

BLOWER ROOM
(H.P. Floor, Elev. 24.50)

Blower No. 1

Blower No. 2

Foundation for Future Blower No. 3

5'-0" x 5'-0" Access Hatch Watertight Quarry Tile Surface

Down

Removable Concrete Plug, for Detail see Dwg. No. 438.22(a-1)-73

MECH. ROOM

LOCKER AND TOILET ROOM No. 1

AIR FILTER ROOM

Air Filter

Baffle

(6'-0" wide x 10'-0" High)

10'-0" Rollup Door

1" Expansion Joint

Slope

4" Motor Operated Gate Valve

4" Strainer

4" C.I. Engine Cooling Waste

4" C.I. Non-Potable Water, Engine Cooling Supply

4" Butterfly Valve

Emergency Diesel Engine Generator

Connection to Heat Exchanger to suit Engine furnished

1½" Hose Valve (Typ.)

2 Plug

GROUND FLOOR PLAN

AS-BUILT DRAWING
DATE January, 1968

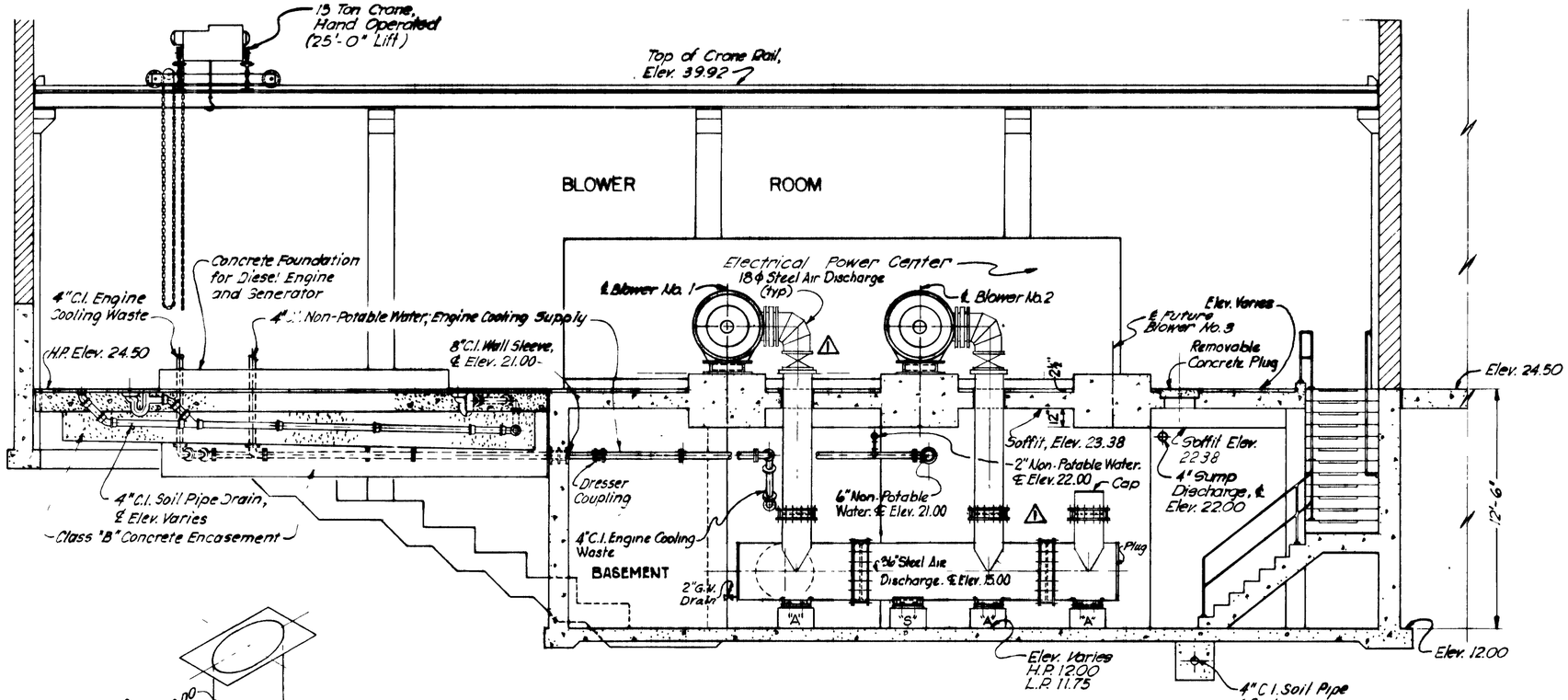
DRAWING NO. 438.22(a-1)-87

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
EQUIPMENT AND PIPING
BLOWER ROOM AND CHLORINE FACILITIES

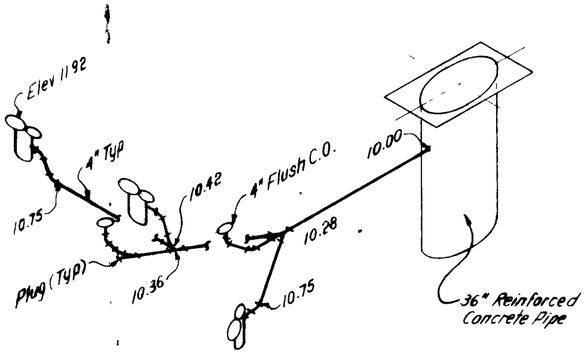
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 3/8" = 1'-0" July, 1966

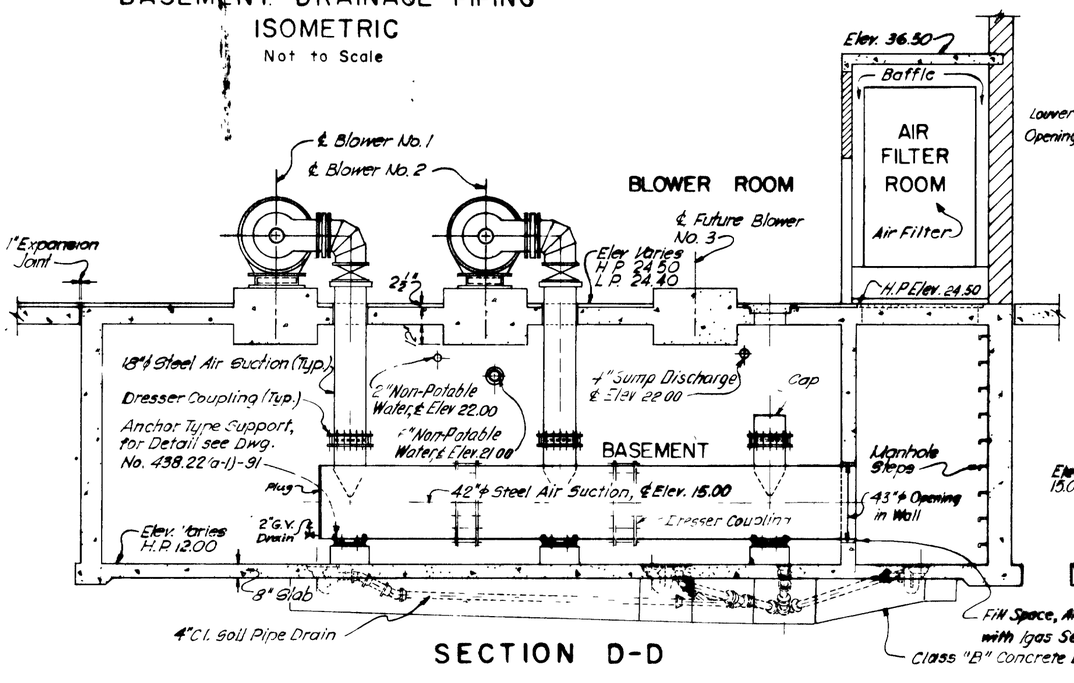
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Revisions:	1 REM 4/21/67			



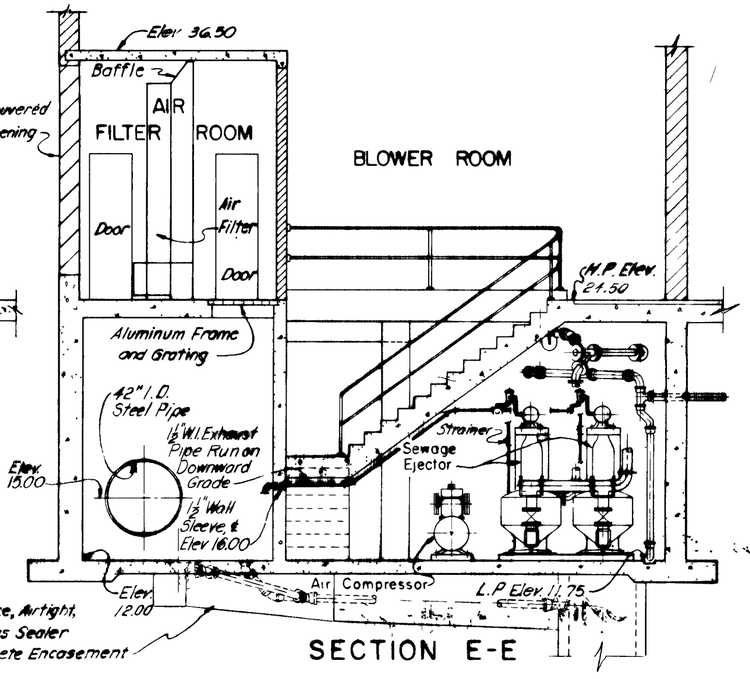
SECTION C-C



BASEMENT DRAINAGE PIPING
ISOMETRIC
Not to Scale



SECTION D-D



SECTION E-E

Notes:
For Continuation of Outside Piping, see Dwgs. Nos. 438.22(a-1)-6 and 7.
For Detail of Chlorine Piping Sleeve, see Dwg. No. 438.22(a-1)-91

LEGEND:
"A" Designates Anchor Type Support.
"S" Designates Slip Type Support.
For Details of Supports for 42" I.D. and 36" I.D. Steel Pipe, see Dwg. No. 438.22(a-1)-91

AS-BUILT DRAWING
DATE January, 1968

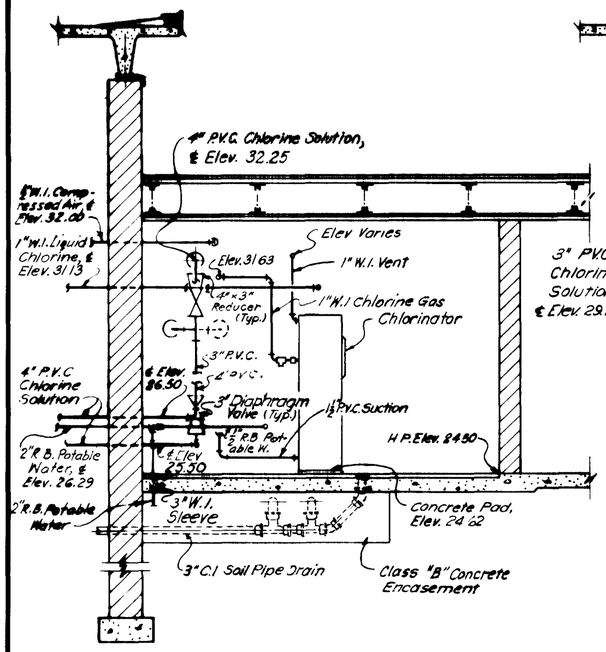
DRAWING NO. 438.22(a-1)-88

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
EQUIPMENT AND PIPING
SECTIONS C-C, D-D AND E-E

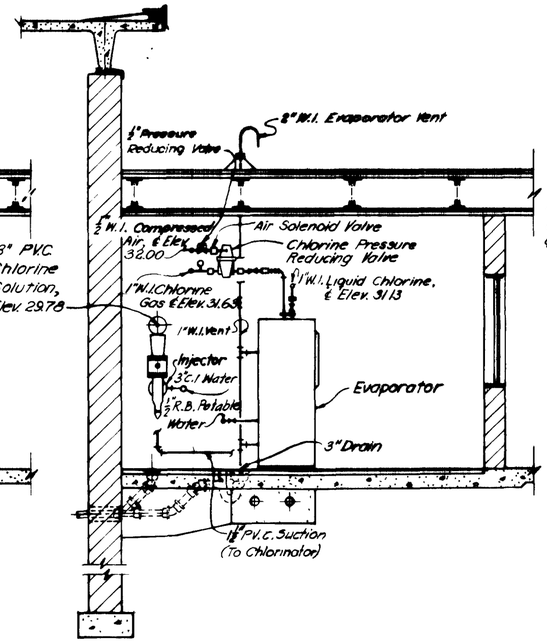
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 3/16"=1'-0"
July, 1964

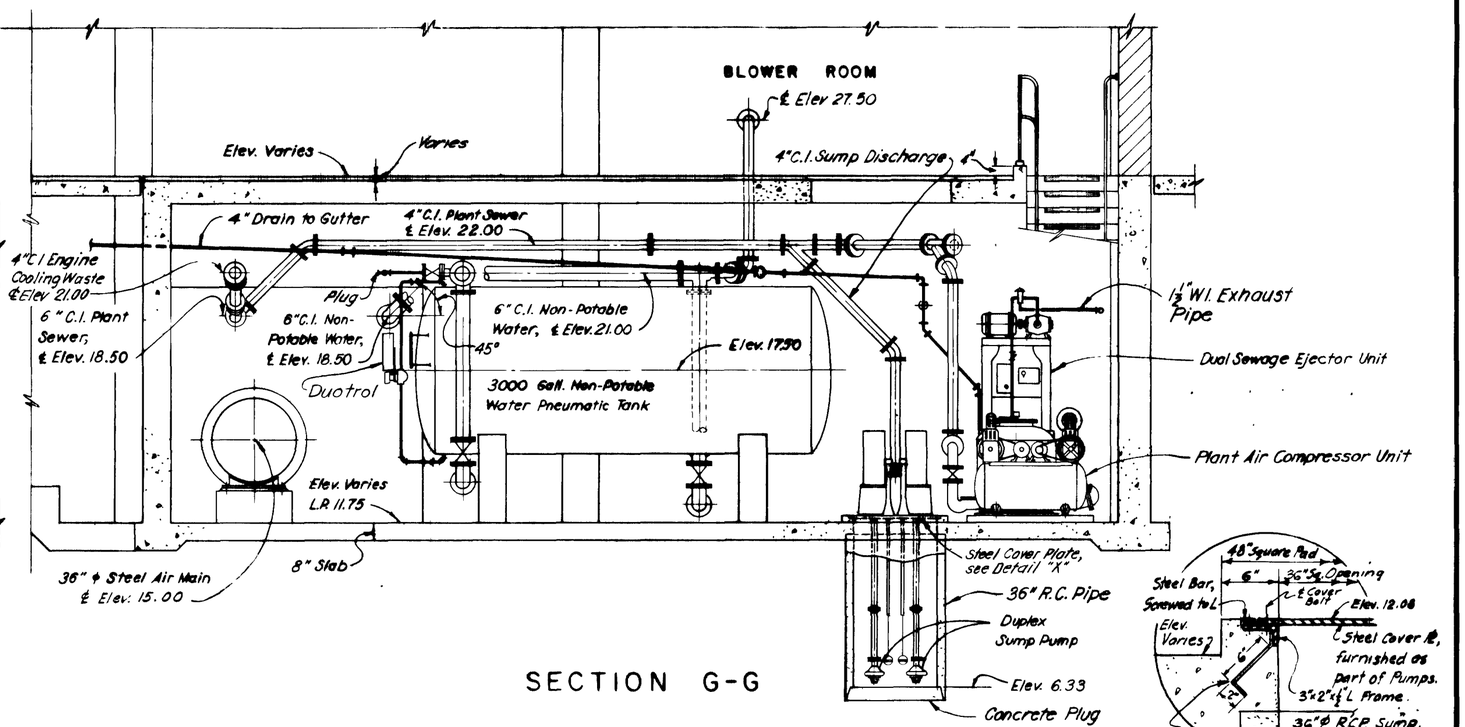
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Revisions:	1 RGM 5/1/67			



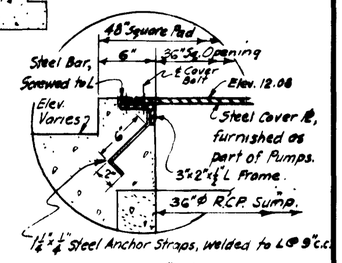
SECTION H-H



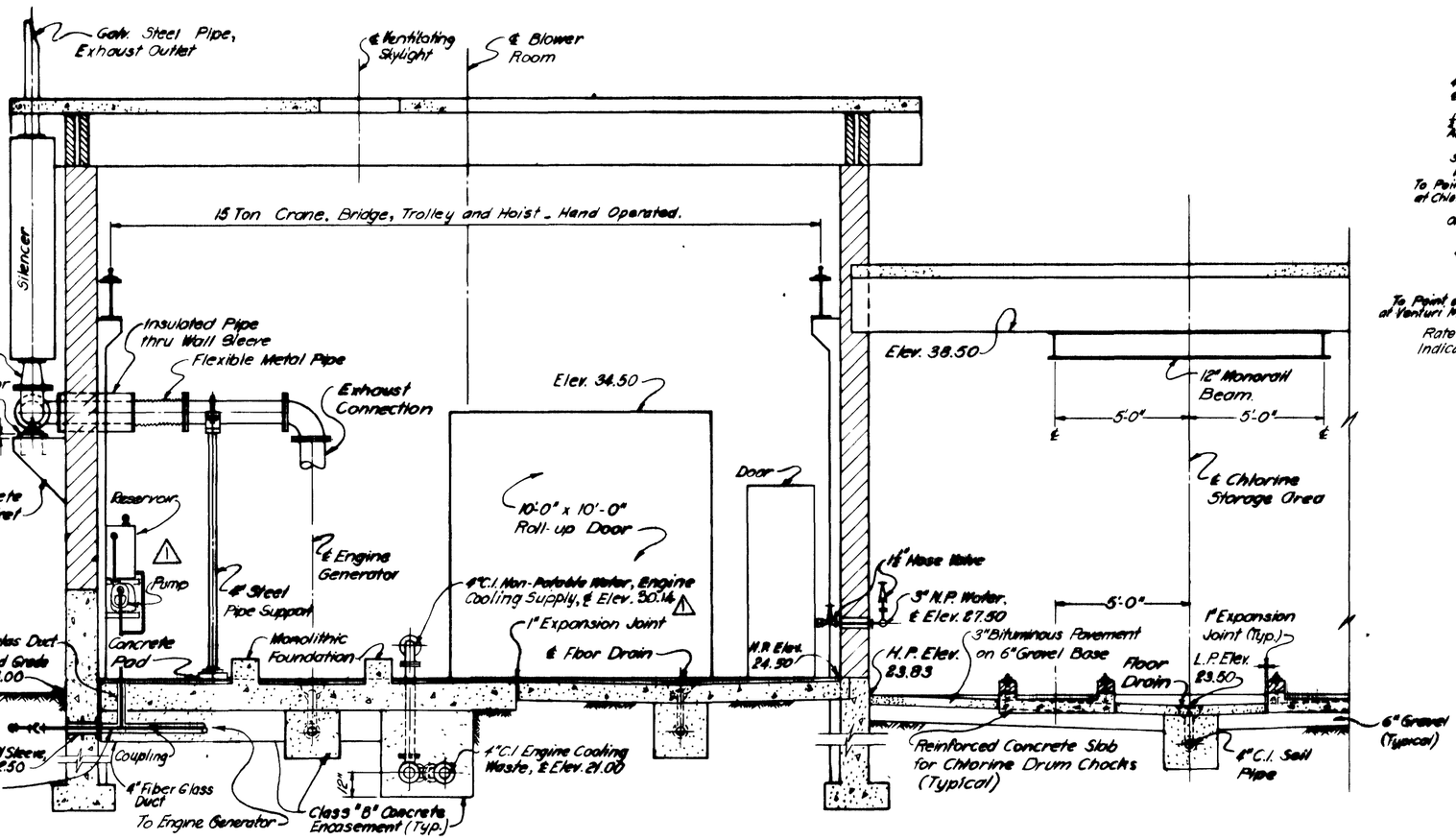
SECTION J-J



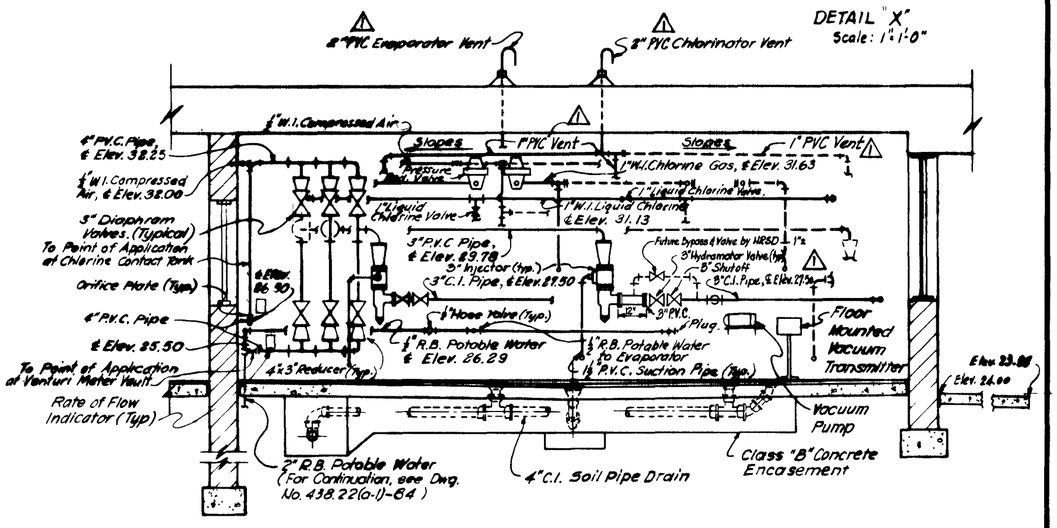
SECTION G-G



DETAIL "X"
Scale: 1" = 1'-0"



SECTION F-F



SECTION K-K

DRAWING NO. 438.22(a-1)-89

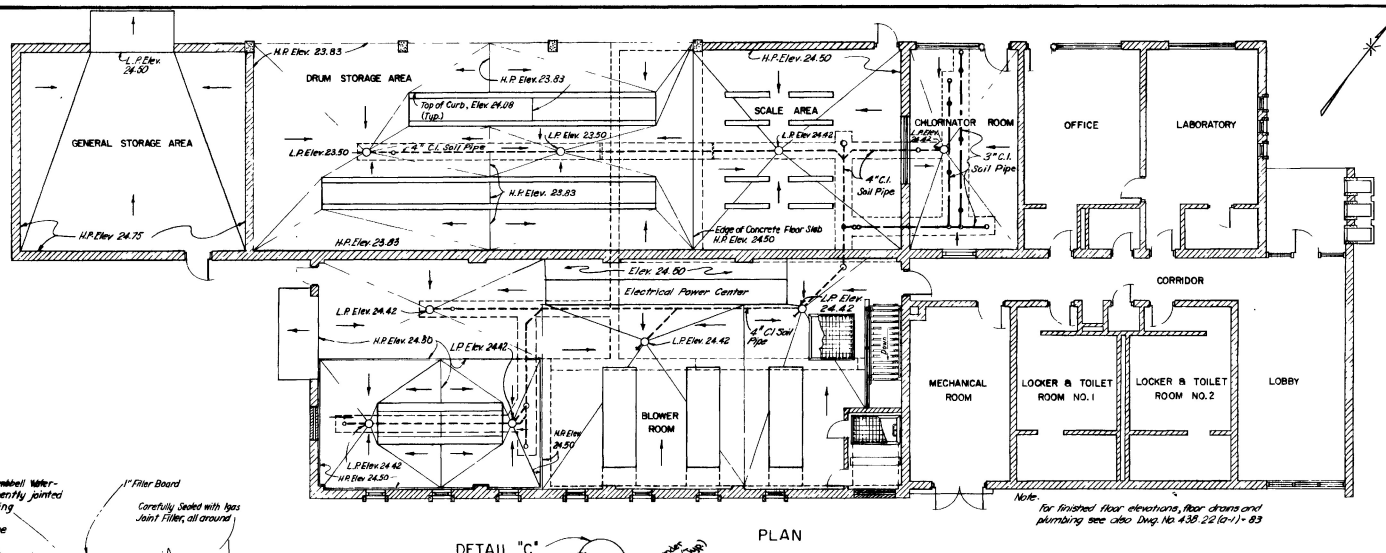
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
EQUIPMENT AND PIPING
SECTIONS F-F, G-G, H-H, J-J AND K-K

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

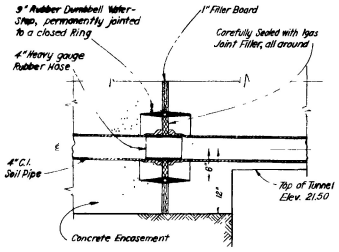
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Revisions:	1 RGM 4/21/67			

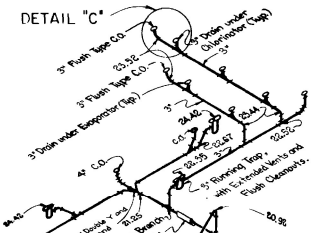
AS-BUILT DRAWING
DATE January, 1968



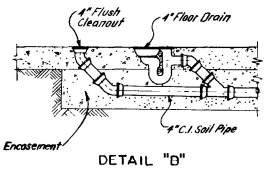
PLAN



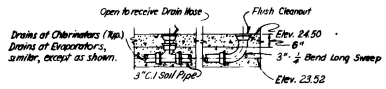
DETAIL "A"



DETAIL "C"

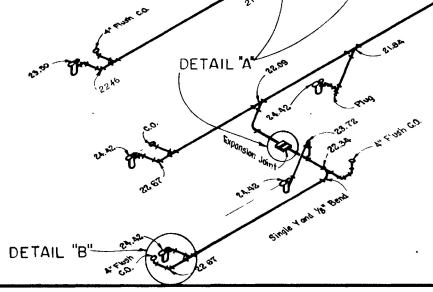


DETAIL "B"



OPEN PIPES
for
CHLORINATOR AND EVAPORATOR
DRAIN HOSES AND CLEANOUTS

DETAIL "C"



ISOMETRIC
Scale: None

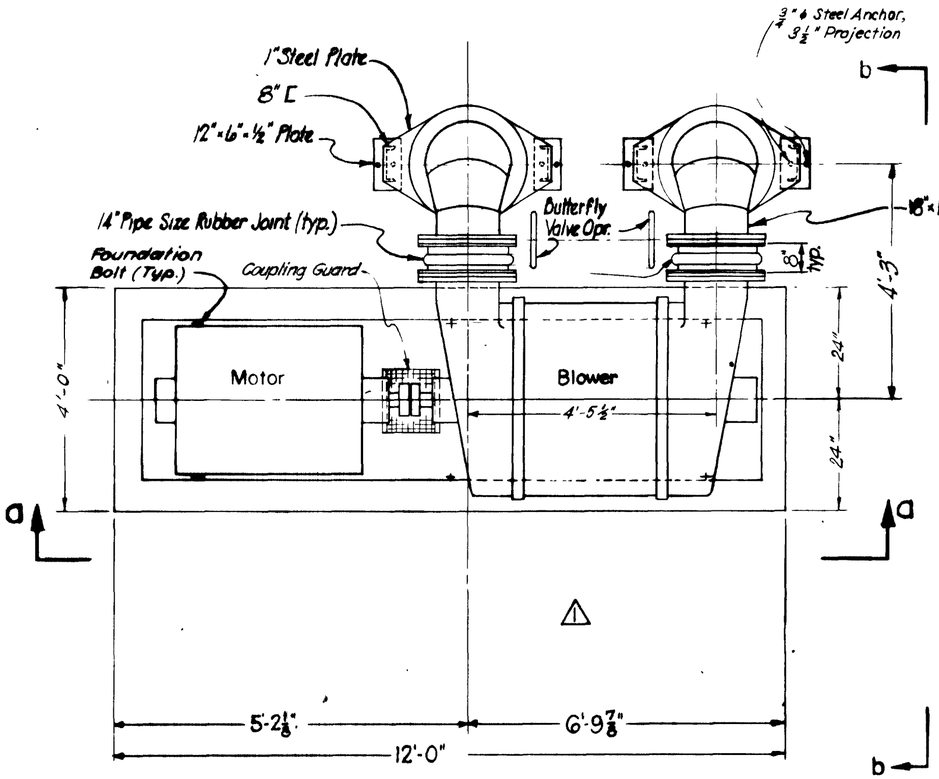
AS-BUILT DRAWING
DATE January 9, 1968

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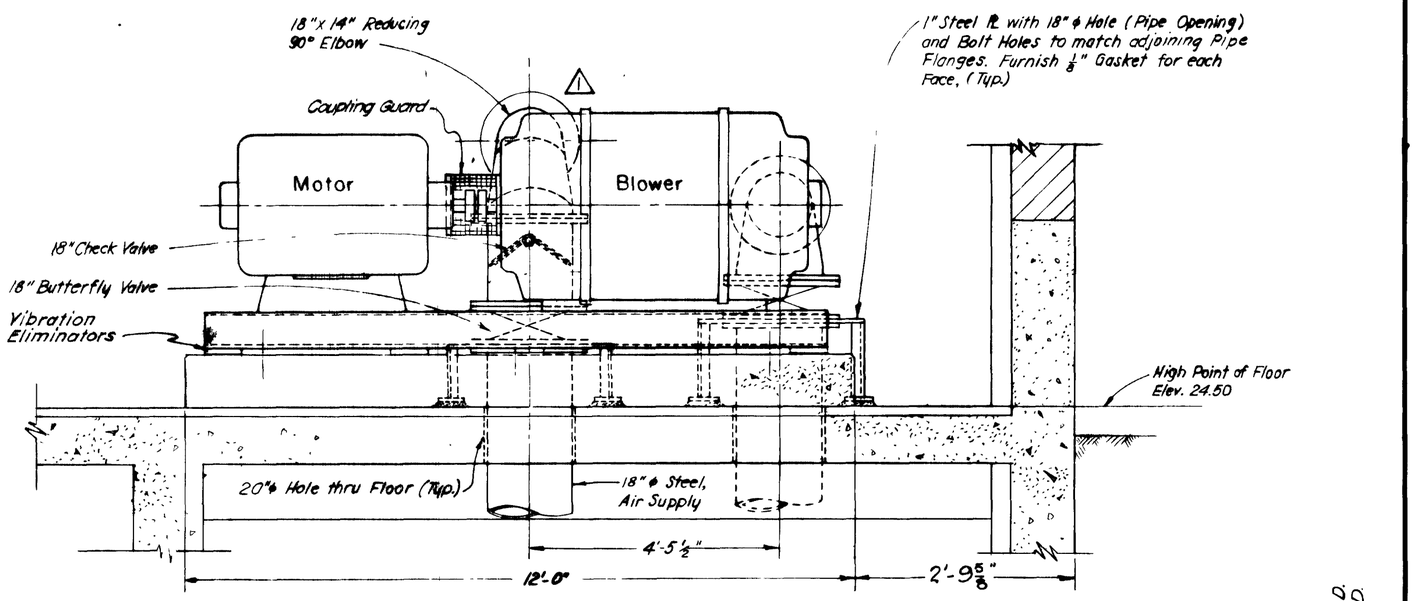
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
EQUIPMENT AND PIPING
GROUND FLOOR DRAINAGE
PLAN AND ISOMETRIC
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/8" = 1'-0" July, 1964

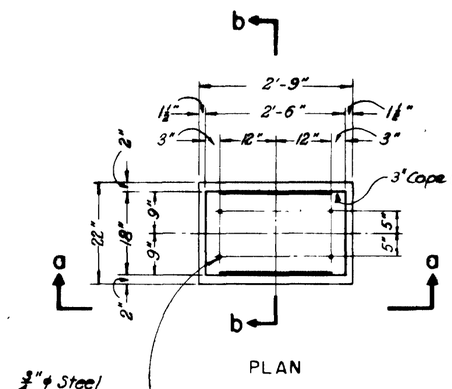
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Revisions:				



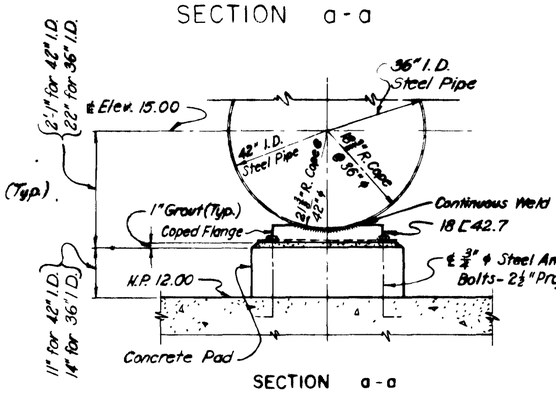
PLAN



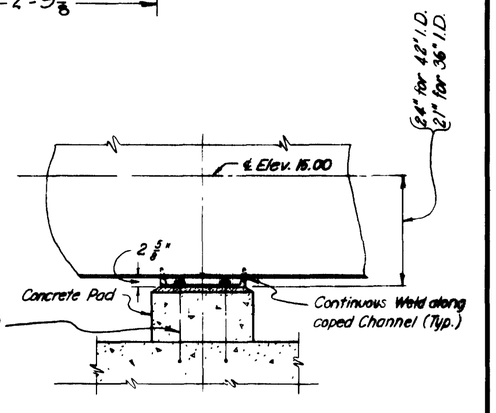
SECTION a-a



PLAN

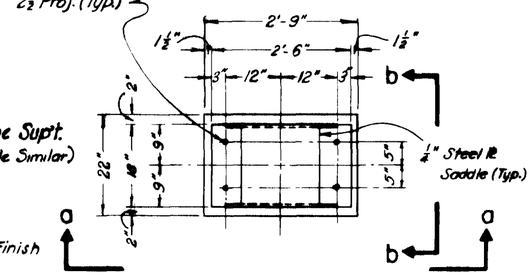


SECTION a-a

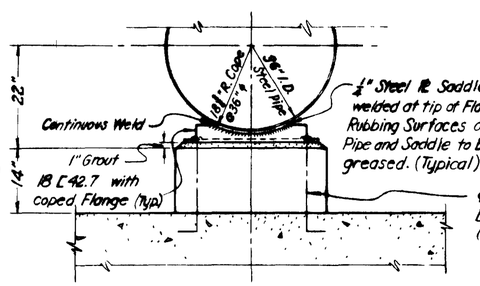


SECTION b-b

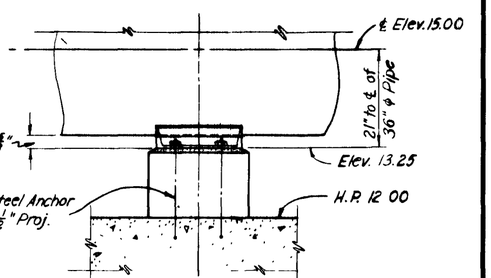
ANCHOR TYPE



PLAN

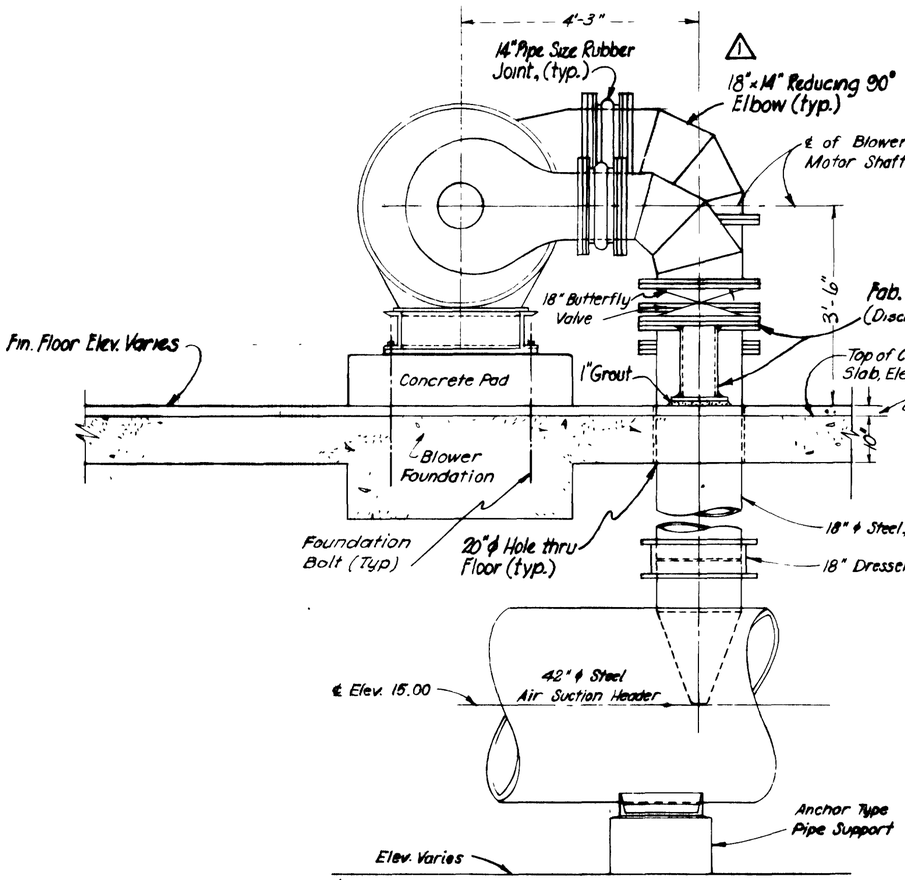


SECTION a-a



SECTION b-b

SLIP TYPE



SECTION b-b

Note: * Dimension to be determined by Equipment furnished

DETAILS OF SUPPORTS FOR 42" I.D. AND 36" I.D. STEEL PIPE

DRAWING NO. 438.22(a-1)-91

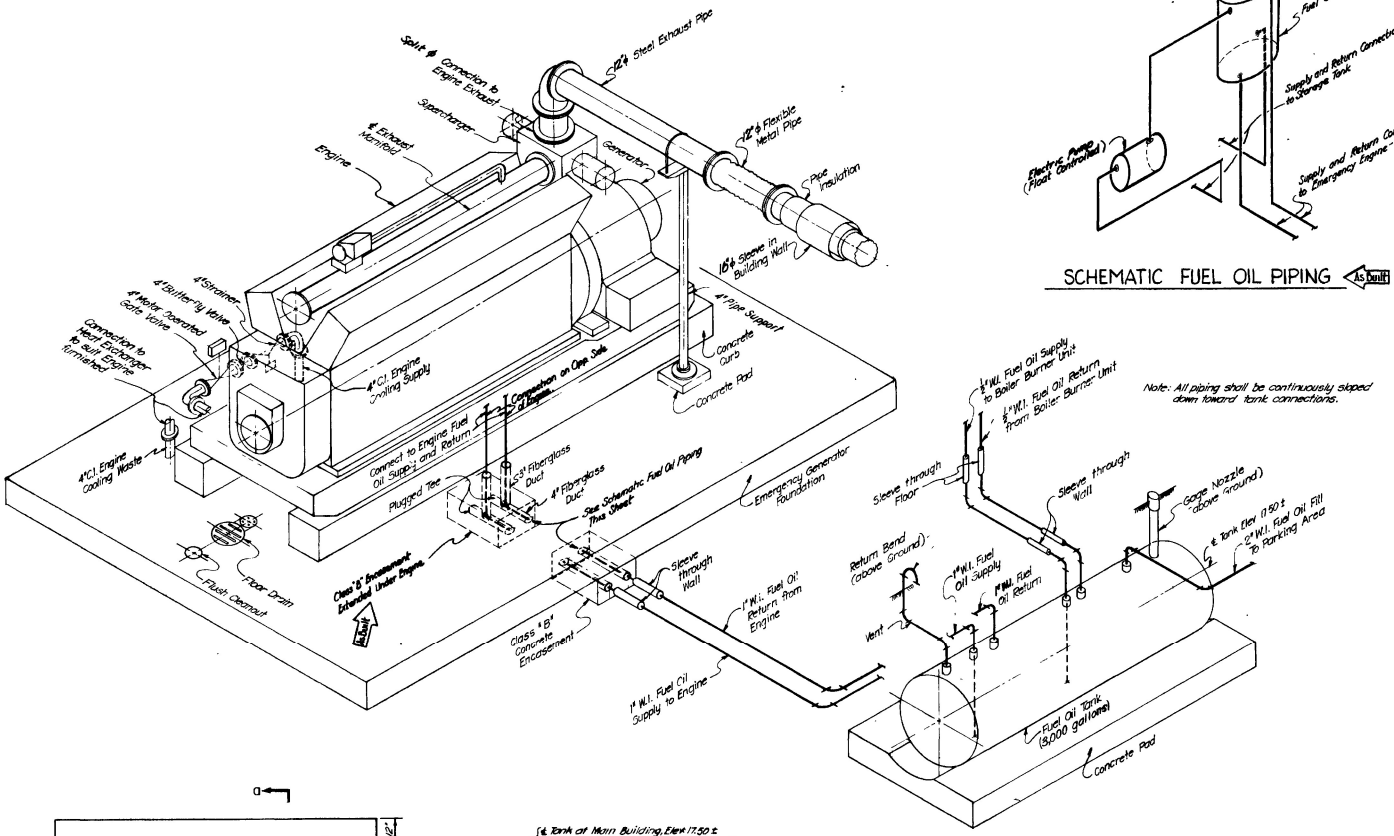
AS-BUILT DRAWING
DATE January, 1968

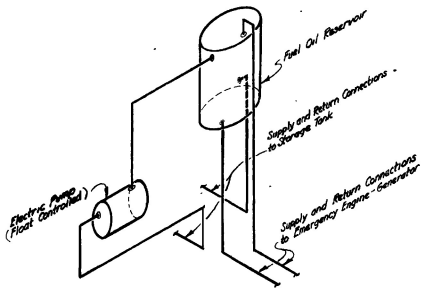
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
EQUIPMENT AND PIPING
BLOWER AND PIPING DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

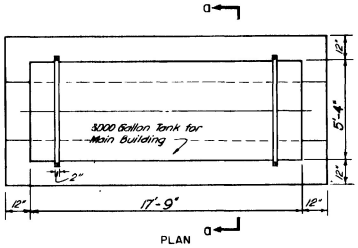
Scale: ½" = 1'-0" July, 1964

Drawn by: J.P.	Traced by: K.P.	Checked by: GVA	Examined by: JP	Approved by:
Revisions:	⚠ RGM 5/2/67			

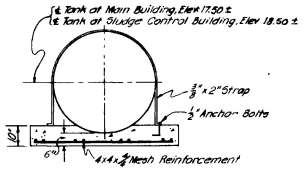




SCHEMATIC FUEL OIL PIPING As Built



PLAN



SECTION a-a

FUEL OIL TANK PAD DETAIL

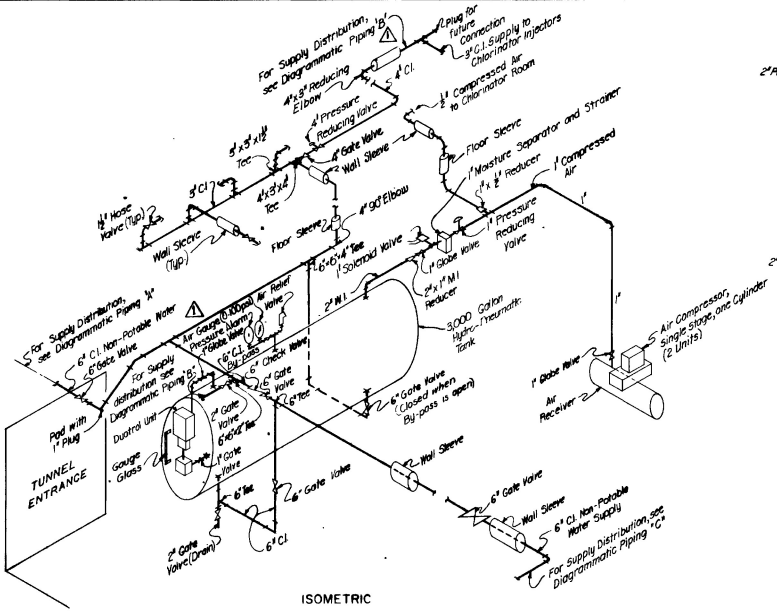
AS-BUILT DRAWING
DATE January 4, 1968

DRAWING NO. 438.22(a-1)-92

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
EQUIPMENT AND PIPING
EMERGENCY ENGINE-GENERATOR
ISOMETRIC
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: None — July, 1964

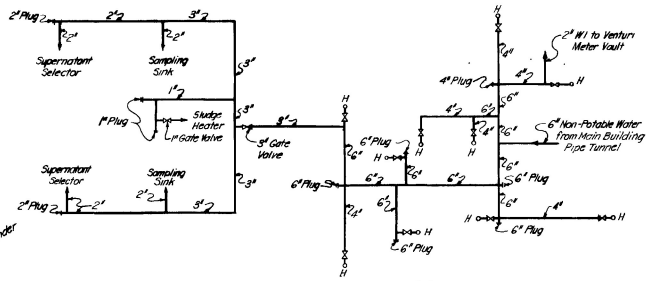
Drawn by: J.P.	Traced by: O.M.	Checked by: G.W.	Examined by: J.P.	Approved by:
Revisions:	As Built 1/68			



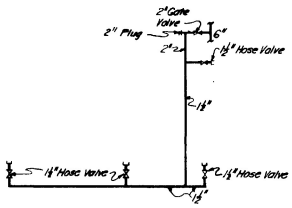
ISOMETRIC

NON-POTABLE WATER SUPPLY SYSTEM

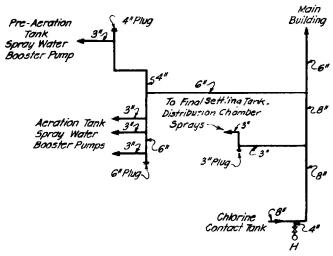
H ⊖ Hydrant (1-2½" Hose Connection) & 2½" Gate Valve with Extension Valve Box and Cover



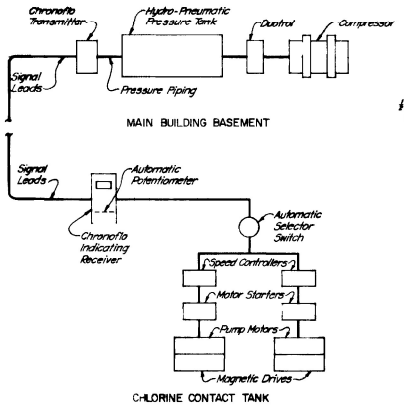
DIAGRAMMATIC PIPING "A"



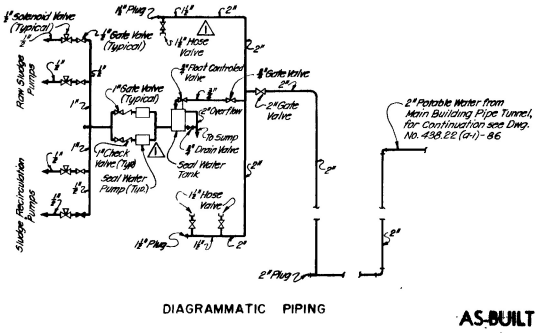
DIAGRAMMATIC PIPING "B"



DIAGRAMMATIC PIPING "C"



NON-POTABLE WATER SUPPLY SYSTEM CONTROL DIAGRAM



DIAGRAMMATIC PIPING

POTABLE WATER SUPPLY SYSTEM

AS-BUILT DRAWING

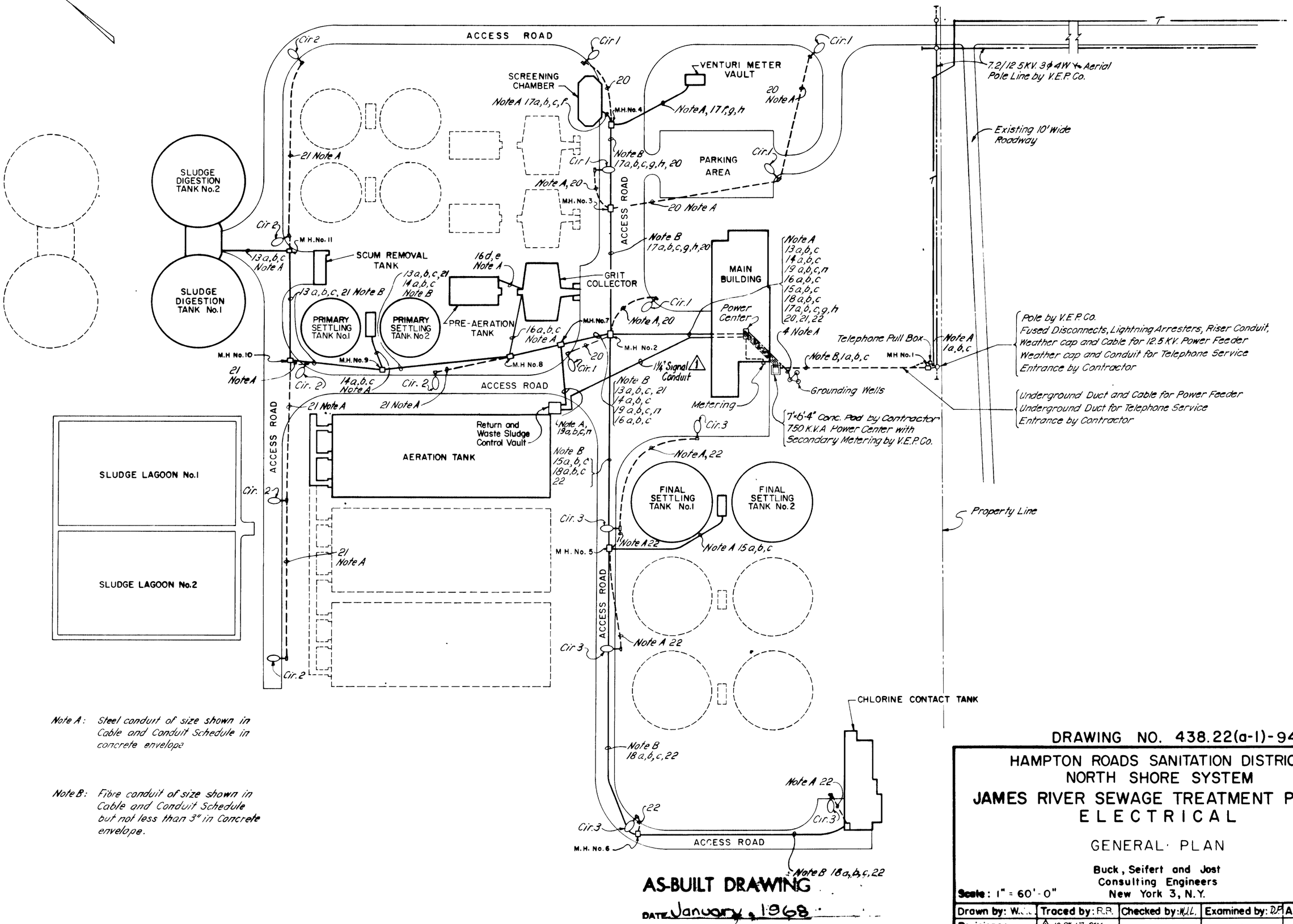
DATE January, 1968

DRAWING NO. 438.22(a-1)-93

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
MAIN BUILDING
EQUIPMENT AND PIPING
NON-POTABLE AND POTABLE WATER SUPPLY SYSTEMS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: None			July, 1964
Drawn by: J.P.	Traced by: F.T.D.	Checked by: GVA	Examined by:	Approved by:
Revisions:	10-25-67 TCM			



Note A: Steel conduit of size shown in Cable and Conduit Schedule in concrete envelope

Note B: Fibre conduit of size shown in Cable and Conduit Schedule but not less than 3" in Concrete envelope.

AS-BUILT DRAWING

DATE January 2, 1968

DRAWING NO. 438.22(a-1)-94

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL

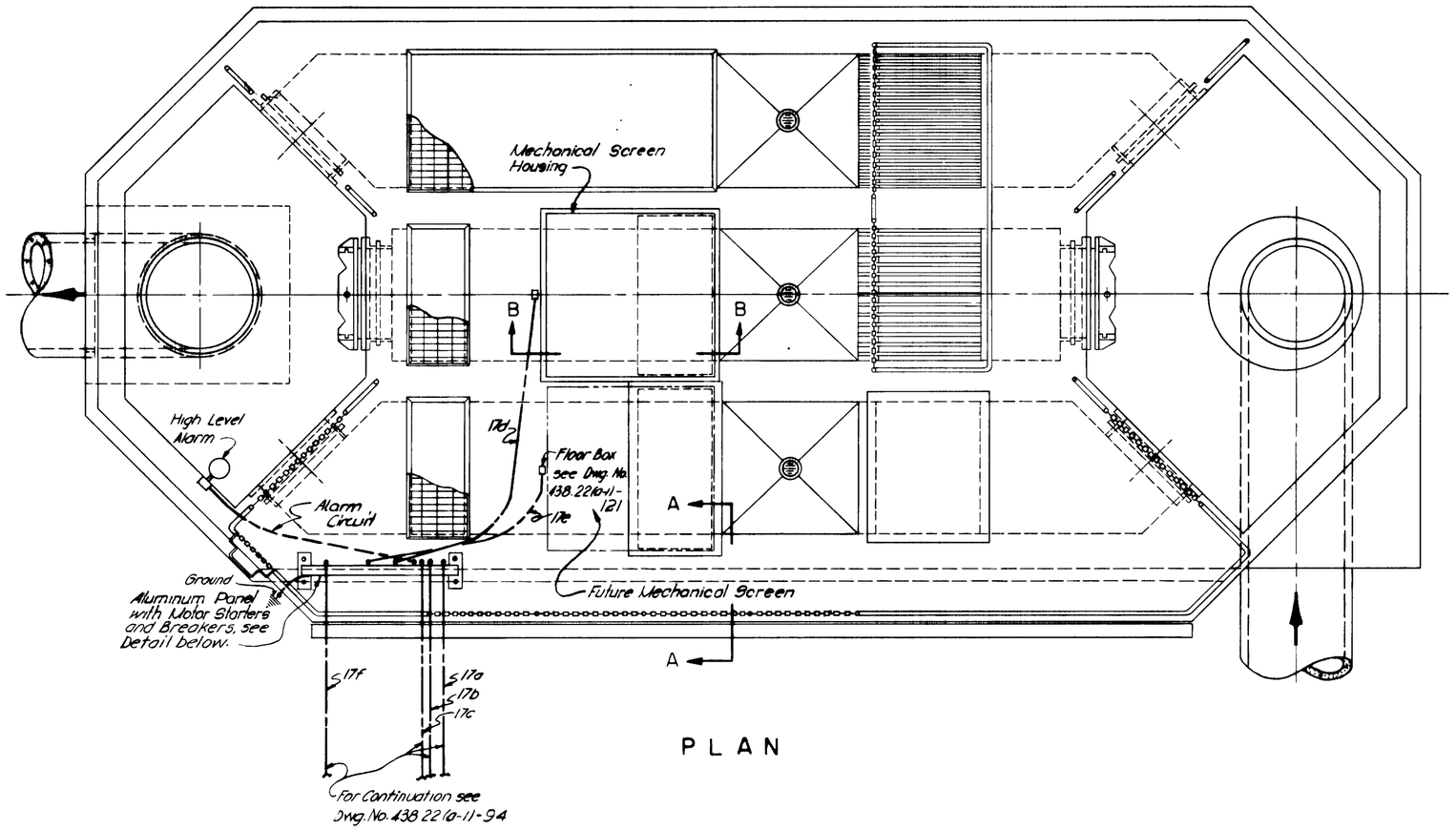
GENERAL PLAN

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

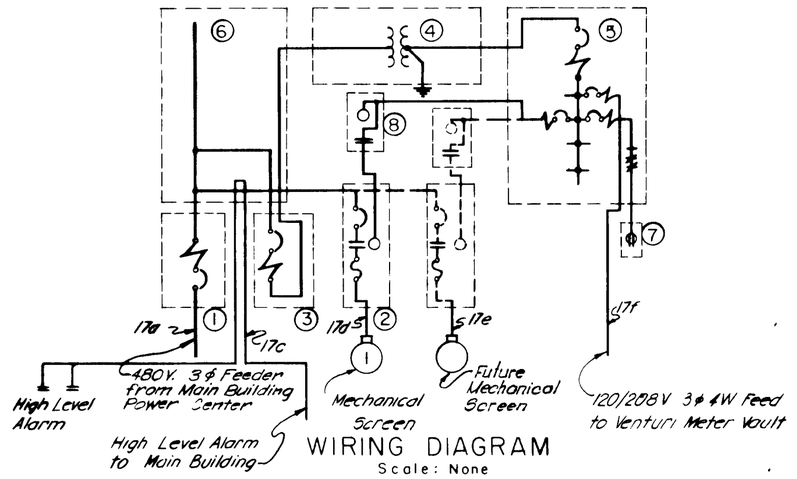
Scale: 1" = 60'-0"

July, 1964

Drawn by: W.	Traced by: R.R.	Checked by: W.L.	Examined by: D.P.	Approved by:
Revisions:	1 10 25 67 RGM			

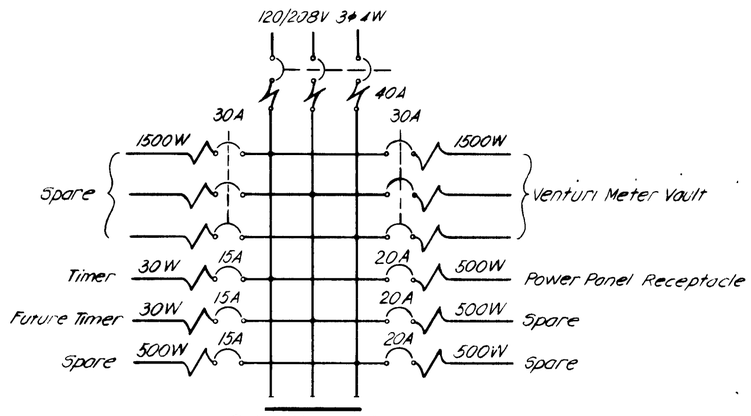


PLAN



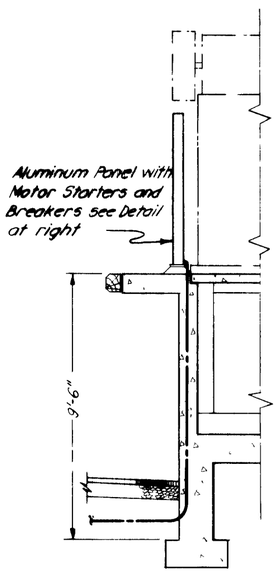
WIRING DIAGRAM

Scale: None

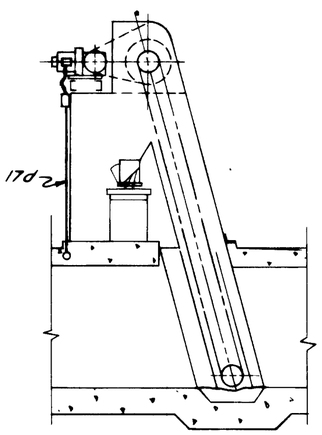


POWER PANEL (5)

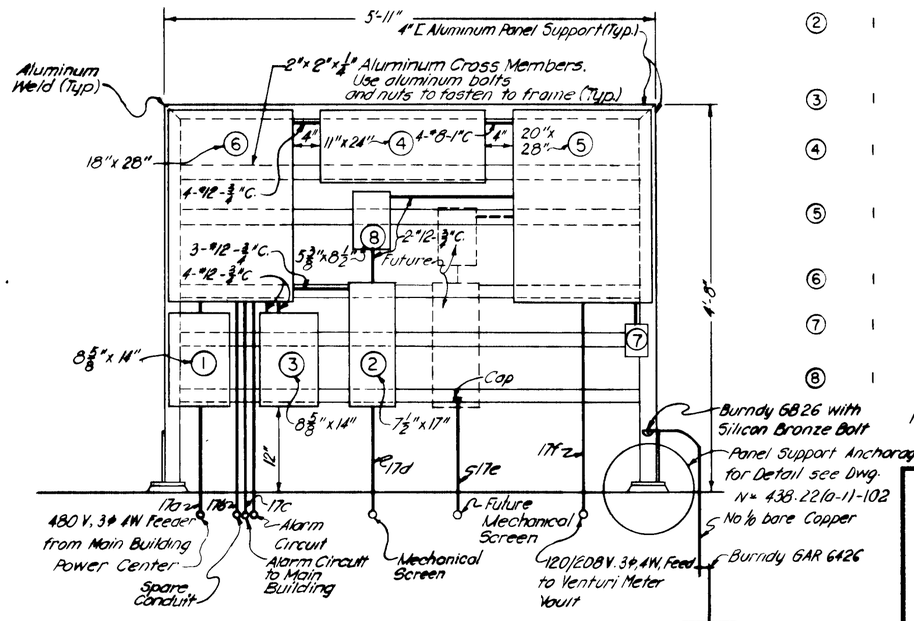
Scale: None



SECTION A-A



SECTION B-B



MOTOR STARTERS AND BREAKERS

Scale: None

LEGEND

UNIT NO.	NO REQUIRED	DESCRIPTION
(1)	1	Circuit Breaker-Molded case Type AB, 100 Amp. F. Frame, 3 Pole 480 V, 15,000 Amp interrupting Rating, Non-Automatic in NEMA IV enclosure Westinghouse Cat. No. W-F 3100 N, I-T-E or Approved equal
(2)	1	Combination Magnetic Starter with circuit Breaker in NEMA IV enclosure, 480 V, 3φ 60~ Size 0 Hand-Off-Automatic Switch, and O.L Reset in Cover, Pilot Lights, 3 Pole Overload Protection one each N.O. and N.C. Auxiliary Contacts in addition to Sealing contacts. Allen Bradley Bulletin 713 or approved equal
(3)	1	Circuit Breaker Molded case Type A B 100 Amp. F Frame, 3 Pole, 480 V. 20, 30 Amp. Interrupting Rating, 15 Amp Trip in NEMA IV enclosure Westinghouse Cat. No. W-F 3015
(4)	1	Transformer-Outdoor Type, for Wall Mounting, 3φ, 60 ~ 9 KVA, 480 V Primary 120/208 V. WYE. Secondary with two 5% FCBN Taps Westinghouse Type EPT or approved equal.
(5)	1	Power Panel E Frame AB Circuit Breaker Type with 2-30A-3P, 3-20 Amp. 1P, 3-15 Amp. 1P, Circuit Breakers as shown and a 40 Amp. 3 Pole Main Breaker, Weatherproof Cabinet Stainless Steel W/door Behind door construction
(6)	1	Pull Box, Stainless Steel Weatherproof construction, screwed on cover with rust proof screws and watertight Gasket size 18"x28"x12".
(7)	1	Receptacle Weatherproof 20 Amp, 3 Pole, 2 Wire with polarized grounded neutral. Crouse-Hinds Cat. No. D. S.-135 in FD series alum. conduilet or approved equal
(8)	1	Minute increments, Synchronous 120 V. Motor Timer, and SPST contact, for remote circuit operation at 120 V. Tork Timer Model 60 M 8001 in weatherproof NEMA IV enclosure, or approved equal

Note: All NEMA IV enclosures shall be Stainless Steel

DRAWING NO. 438.22(a-1)-95

AS-BUILT DRAWING

DATE January, 1968

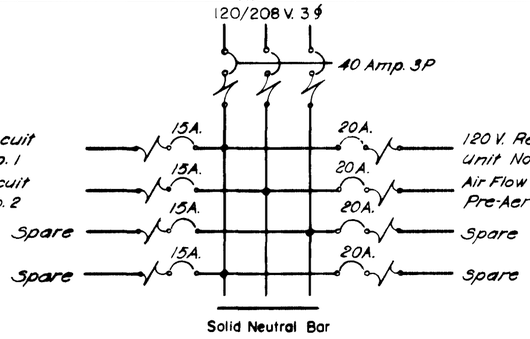
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
SCREENING CHAMBER

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4" = 1'-0" and As Shown

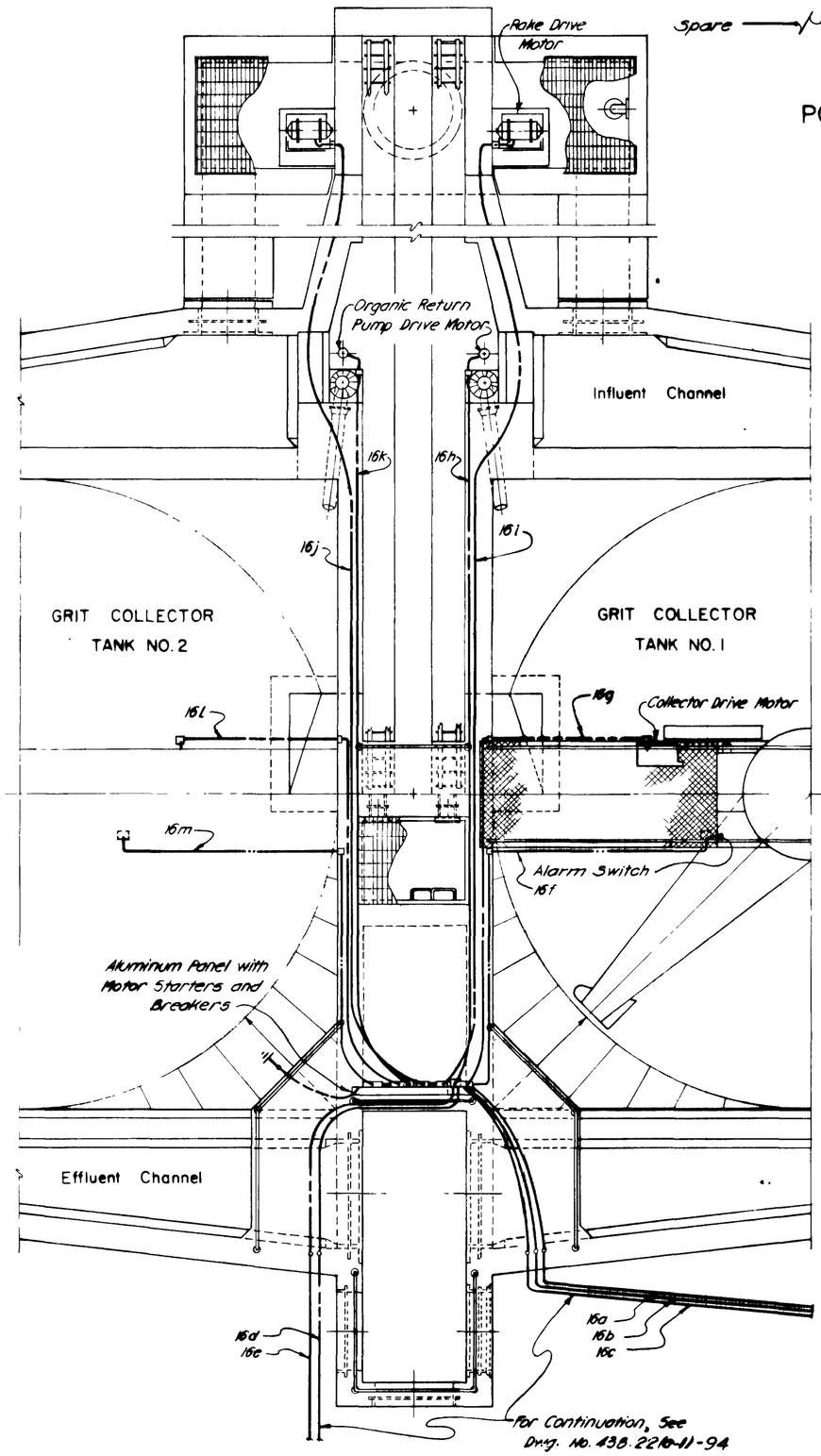
July, 1964

Drawn by: W.J.L.	Traced by: I. S.	Checked by: M.J.L	Examined by: D.P	Approved by:
Revisions:				



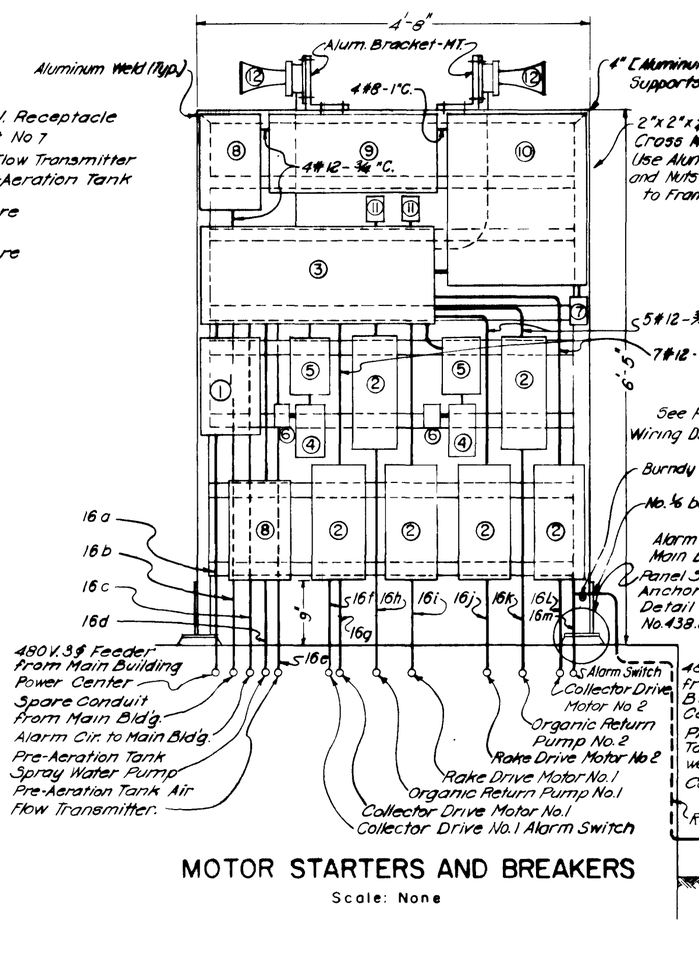
POWER PANEL (10)

Scale: None



PLAN

Scale: $\frac{1}{4}$"=1'-0"

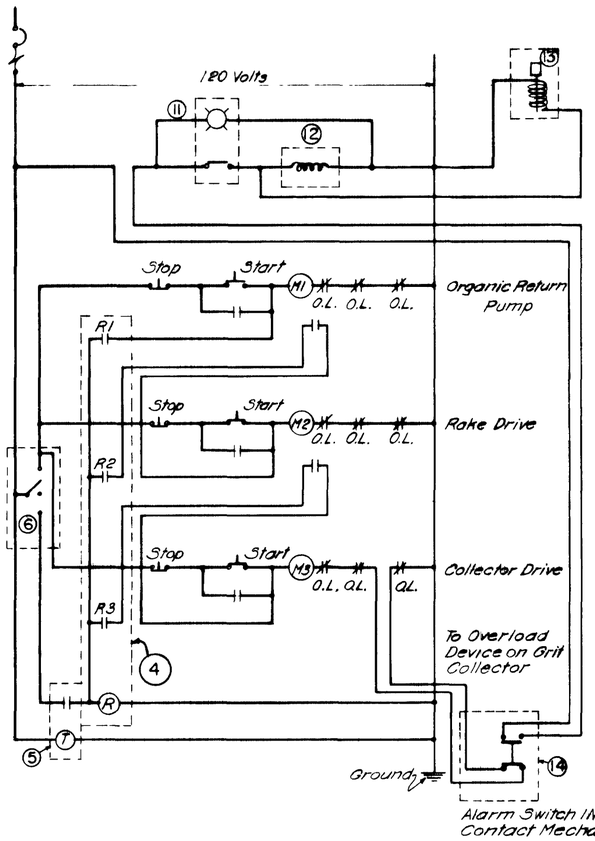


MOTOR STARTERS AND BREAKERS

Scale: None

WIRING DIAGRAM

Scale: None



PARTIAL WIRING DIAGRAM

Scale: None

LEGEND

Unit NO.	NO. Required	Description
①	1	Circuit Breaker - Molded Case Type AB 100 Amp. F Frame. 3 Pole, 480 V. 15,000 Amp. Interrupting Rating. Non-Automatic, in N.E.M.A. IV Enclosure, Westinghouse Cat. No. W-F 3100 I-TE, or appr. equal.
②	6	Combination Magnetic Starter with Circuit Breaker, in N.E.M.A. IV Enclosure, 480 V. 3 ϕ, 60~ Size 0 Hand-Off-Automatic Switch, and O.L. Reset, in Cover. Pilot Light. 3 Pole Overload Protection. One each N.O. and N.C. Auxiliary Contacts, in Addition to Sealing Contacts. Allen-Bradley Bulletin 713 or appr. equal.
③	1	Pull Box, Stainless Steel Weatherproof Construction. Screwed on Cover with Rust Proof Screws, and Weather Tight Gasket. Size 24"x14"x12"
④	2	Control Relay 120 V. A.C. 60~ Coil, 3 N.O. Contacts, in N.E.M.A. IV Stainless Steel Weatherproof Enclosure. Allen-Bradley, Bulletin 700 or approved equal.
⑤	2	Program Timer with 24 Hour Dial Adjustable in 15 Minute Settings, for Operation at 120 V. 60~ Tork Timer Cat. No. 8001 in N.E.M.A. IV Stainless Steel Weatherproof Enclosure.
⑥	2	Selector Switch, 3-Position Hand-Off-Automatic, Single Pole, 10 Amp. 250 Volt, in N.E.M.A. IV Cast Aluminum Fitting. Allen-Bradley Bulletin 800, R3HAA or approved equal.
⑦	1	Receptacle, Weatherproof, 20 Amp. 3 Pole, 2 Wire with Polarized Grounded Neutral. Crouse-Hinds Cat. No. DS135 in FD Series Aluminum Conduilet or approved equal.
⑧	2	Circuit Breaker, Molded Case Type AB, 100 Amp. F Frame, 3-Pole, 480 V. 20,000 Amp. Interrupting Rating, 15 Amp. Trip in N.E.M.A. IV Enclosure Westinghouse Cat. No. W-F 3015.
⑨	1	Transformer - Outdoor Type, For Wall Mounting, 3 ϕ, 60~, 9 Kva. 480 V. Primary 120/208 V. Wye. Secondary with Two 5% F.C.B.N. Taps. Westinghouse Type E P T or approved equal.
⑩	1	Power Panel E Frame, AB Circuit Breaker Type with 8 Branch Circuit Breakers as Shown and A 40 Amp. 3 Pole Main Breaker, Weatherproof Cab Stainless Steel W/Door behind Door Constr.
⑪	2	Indicating Pilot Light and Alarm Silencer Switch, Marked On Off Russell and Stoll Cat. No. 3801R-3705 in Two Gang Type FD Cast-Aluminum Fitting, or approved equal.
⑫	2	Motor Driven Weatherproof Howler, with Single Bell Projection, 10 GA. Steel Housing and Rubber Gaskets, High Torque Series Wound Motor Output 100 DB at 10 Feet. Benjamin Cat. No. 8170-115 V. or approved equal.
⑬	1	SCAN Annunciator in Main Building.
⑭	2	Alarm Switch 1 N.O. and 1 N.C. Contacts, Mechanically Interlocked, with Trip Lever, Furnished by Grit Collector Manufacturer.

Note: All N.E.M.A. IV Enclosures Shall Be Stainless Steel.

DRAWING NO. 438.22(a-1)-96

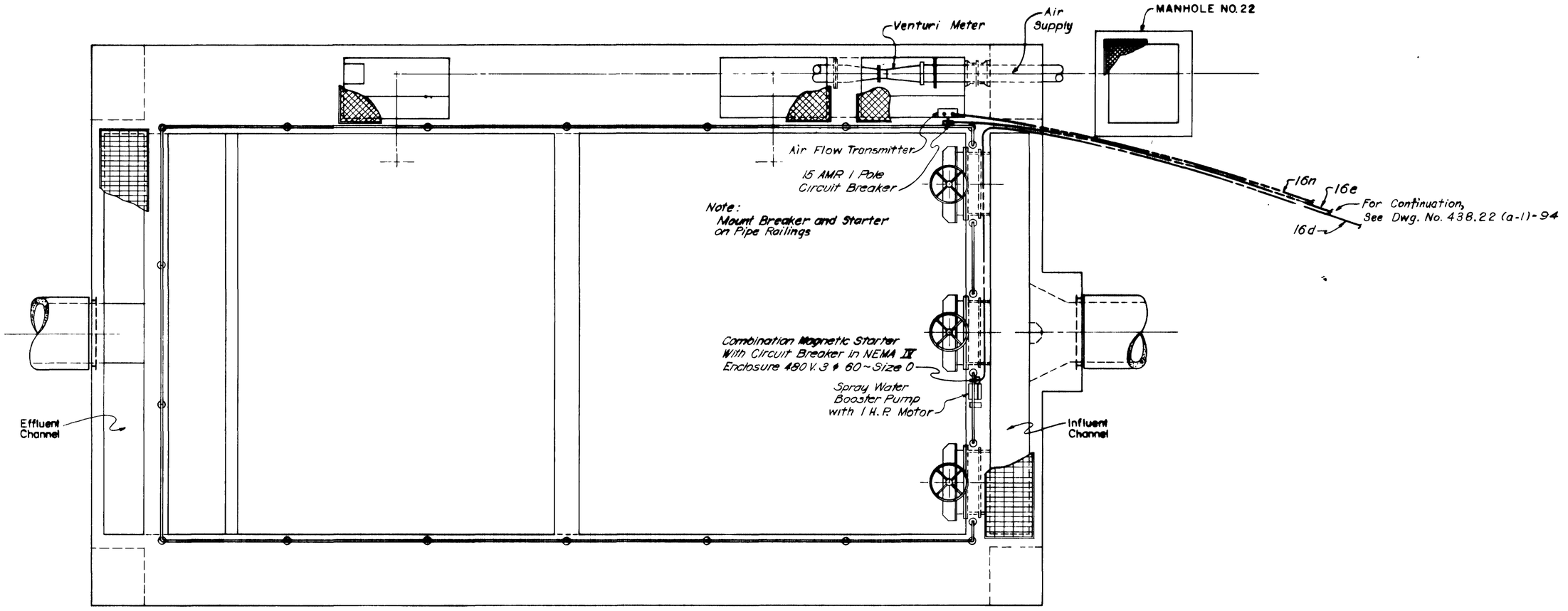
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
GRIT COLLECTOR

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

Drawn by: W.J.L	Traced by: O.R	Checked by: W.J.L.	Examined by: D.P.	Approved by:
Revisions:				

AS-BUILT DRAWING
DATE January 9 1968.



PLAN ABOVE ELEV. 28.50

AS-BUILT DRAWING
DATE January, 1968

DRAWING NO. 438.22(a-1)-97

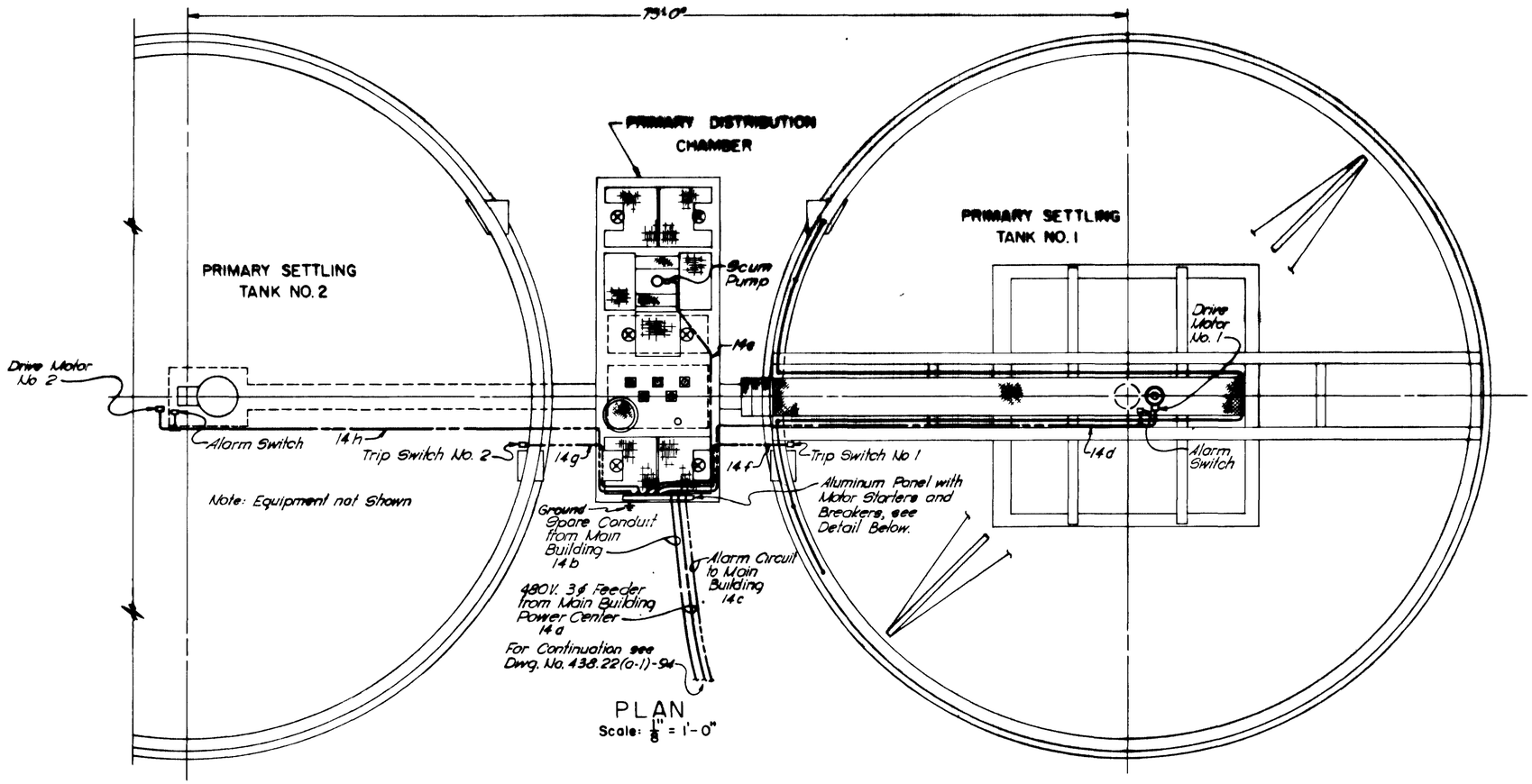
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
PRE-AERATION TANK

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1" = 1'-0"

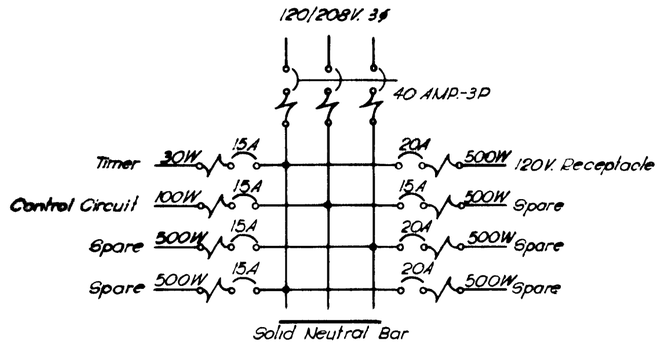
July, 1964

Drawn by: W.J.L.	Traced by: A.C.	Checked by: W.J.L.	Examined by: D.P.	Approved by:
Revisions:				



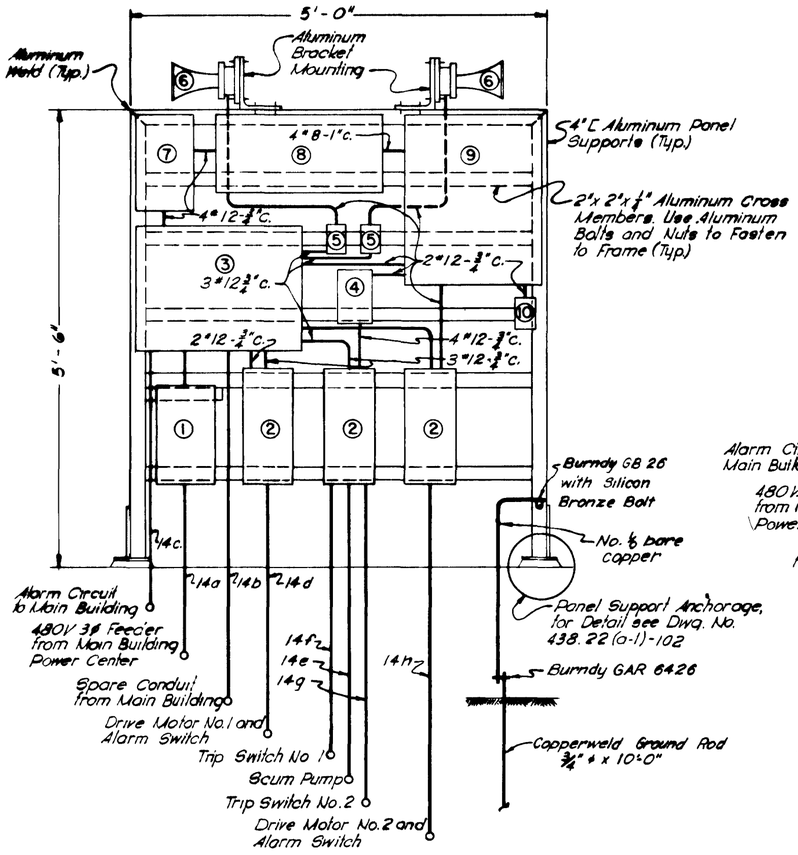
PLAN

Scale: $\frac{1}{8}$" = 1'-0"



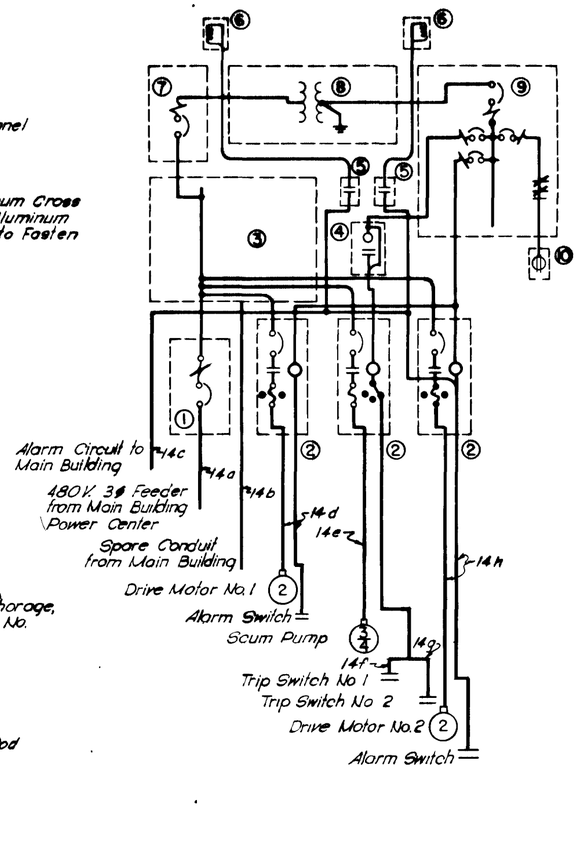
POWER PANEL ⑨

Scale: None



MOTOR STARTERS AND BREAKERS

Scale: None



WIRING DIAGRAM

Scale: None

LEGEND

UNIT NO.	NO. REQ.	DESCRIPTION
①	1	Circuit Breaker, Molded Case Type AB 100 A F Frame, 3 Pole, 480V. 15,000 Amp. Interrupting Rating. Non-Automatic, in NEMA IV Enclosure, Westinghouse Cat. No. W-F3100 I.T.E or Approved Equal.
②	3	Combination Magnetic Starter with Circuit Breaker, in NEMA IV Enclosure, 480V. 3ϕ 60~ size 0 Hand-Off-Automatic Switch and O.L Reset, in Cover. Pilot Lights, 3 Pole Overload Protection. One each N.O. and N.C. Auxiliary Contacts, in addition to Sealing Contacts. Allen Bradley Bulletin 713 or Approved Equal.
③	1	Pull Box Stainless Steel Weatherproof Construction. Screwed on Cover with Rust Proof Screws, and Weathertight Gasket Size 18"x 24"x 12".
④	1	Synchronous Motor Driven Reset Timer, Timing Range 2 Min. to 60 Min., D.P.D.T. Similar to Cutler-Hammer 10336-H35-60 Except in NEMA IV Stainless Steel Enclosure.
⑤	2	Indicating Pilot Light and Alarm Silencer Switch, Marked On-Off, Russell and Stoll Cat. No. 38012-3705 in Two Gang Type FD Cast Aluminum Fitting, or Approved Equal.
⑥	2	Motor Driven Weatherproof Howler, with Single Bell Projection, 10 Ga. Steel Housing and Rubber Gaskets, High Torque Series Wound Motor. Output 100 DB. at 10 feet Benjamin Cat. No. 8170-115V. or Approved Equal.
⑦	1	Circuit Breaker Molded Case Type AB, 100 Amp. F Frame, 3 Pole, 480 V. 20,000 Amp. Interrupting Rating, 15 Amp. Trip in NEMA IV Enclosure. Westinghouse Cat. No. W-F 3015
⑧	1	Transformer-Outdoor Type for Wall Mounting, 3ϕ, 60~ 9 KVA, 480V. Primary 120/208 V. WYE. Secondary with Two 5% FCBN Taps. Westinghouse Type EPT or Approved Equal.
⑨	1	Power Panel E Frame, AB Circuit Breaker Type with 8 Branch Circuit Breakers as shown and a 40 Amp. 3 Pole Main Breaker, Weatherproof Cab. Stainless Steel W/Door Behind Door Constr.
⑩	1	Receptacle, Waterproof, 20 Amp. 3 Pole with Polarized Grounded Neutral, Crouse-Hind's Cat. No. DS135 in FD Series Aluminum Condulet or Approved Equal.

Note: All NEMA IV Enclosures shall be Stainless Steel.

DRAWING NO. 438.22(a-1)-98

AS-BUILT DRAWING

DATE January, 1968

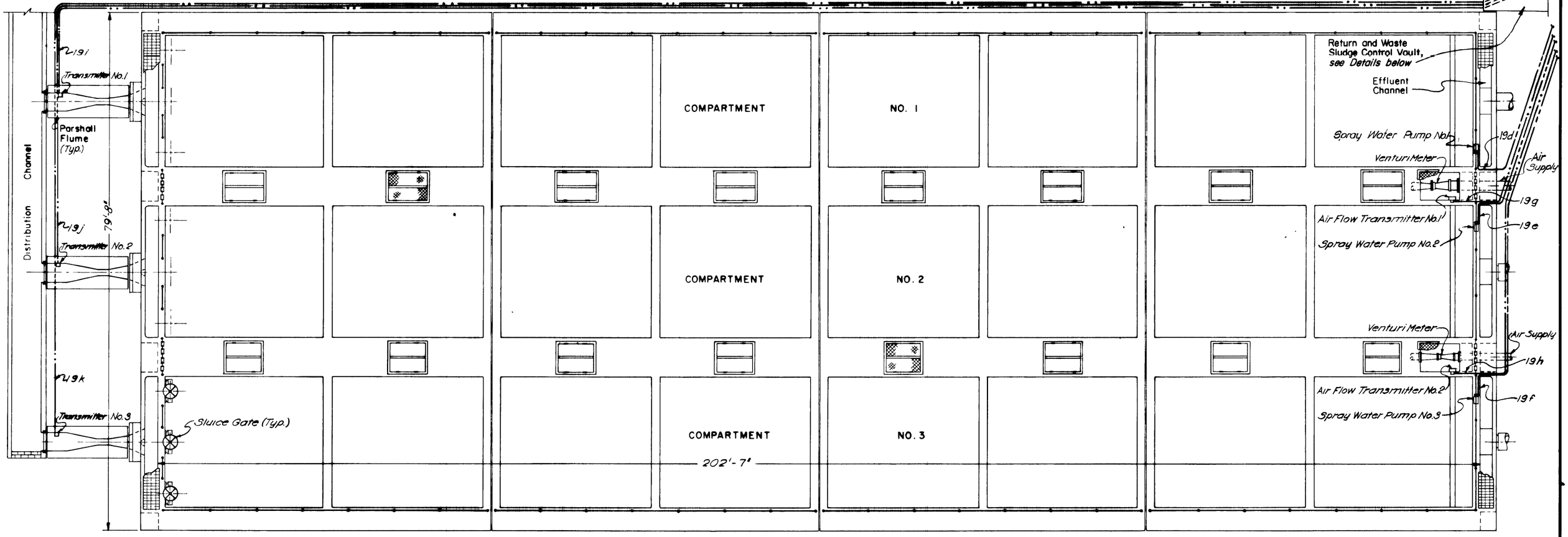
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
. ELECTRICAL

PRIMARY SETTLING TANKS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

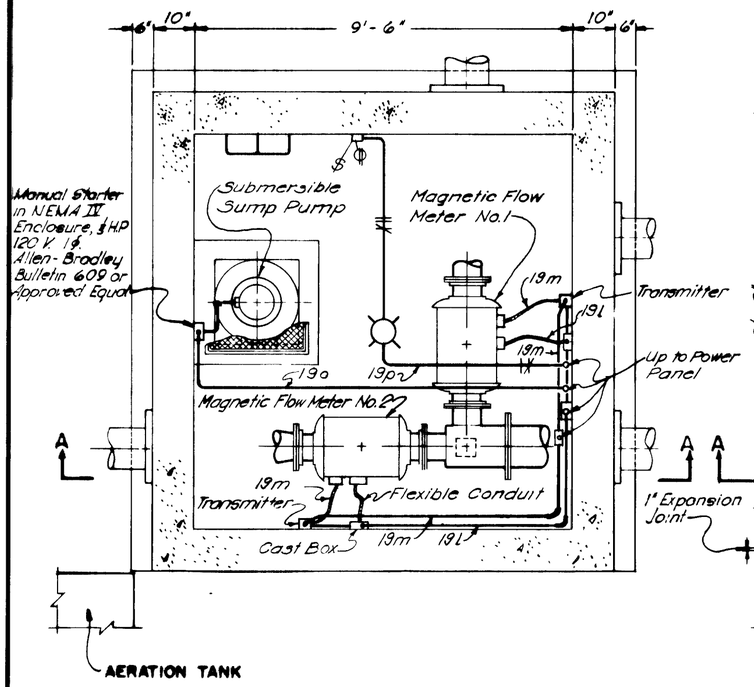
Drawn by: W.J.L.	Traced by: L.M.	Checked by: W.J.L.	Examined by: D.P.	Approved by:
Revisions:				



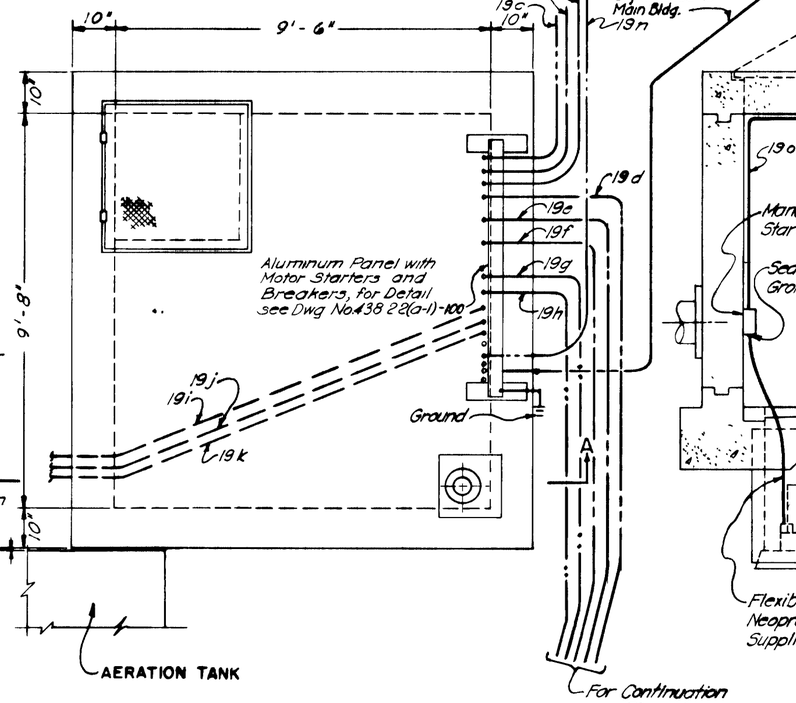
PLAN ABOVE ELEV. 22.25

AERATION TANK

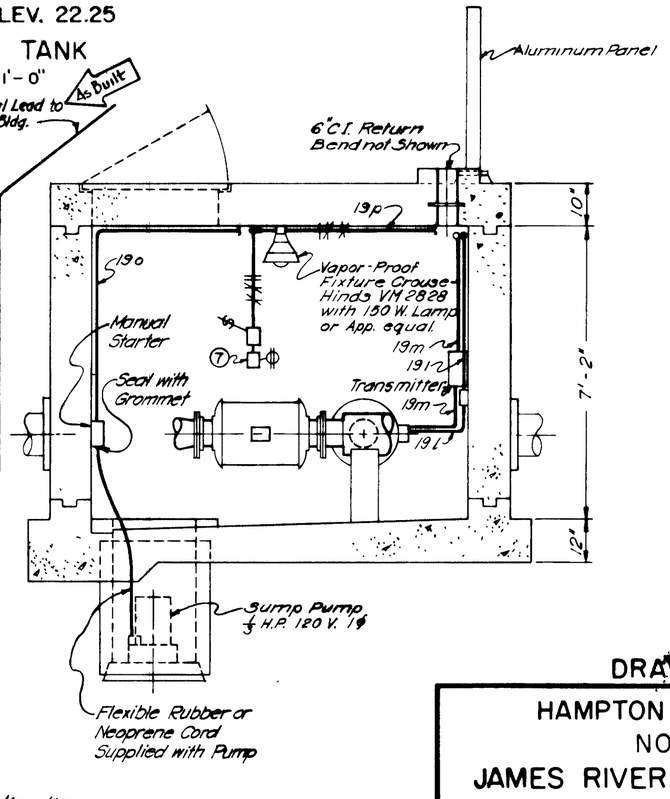
Scale: $\frac{3}{32}$" = 1'-0"



PLAN AT ELEV. 20.92



PLAN ABOVE ELEV. 22.25



SECTION A-A

RETURN AND WASTE SLUDGE CONTROL VAULT

Scale: $\frac{3}{8}$" = 1'-0"

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-99

HAMPTON ROADS SANITATION DISTRICT

NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

ELECTRICAL

AERATION TANK AND RETURN AND WASTE SLUDGE CONTROL VAULT

PLANS AND SECTION

Buck, Seifert and Jost

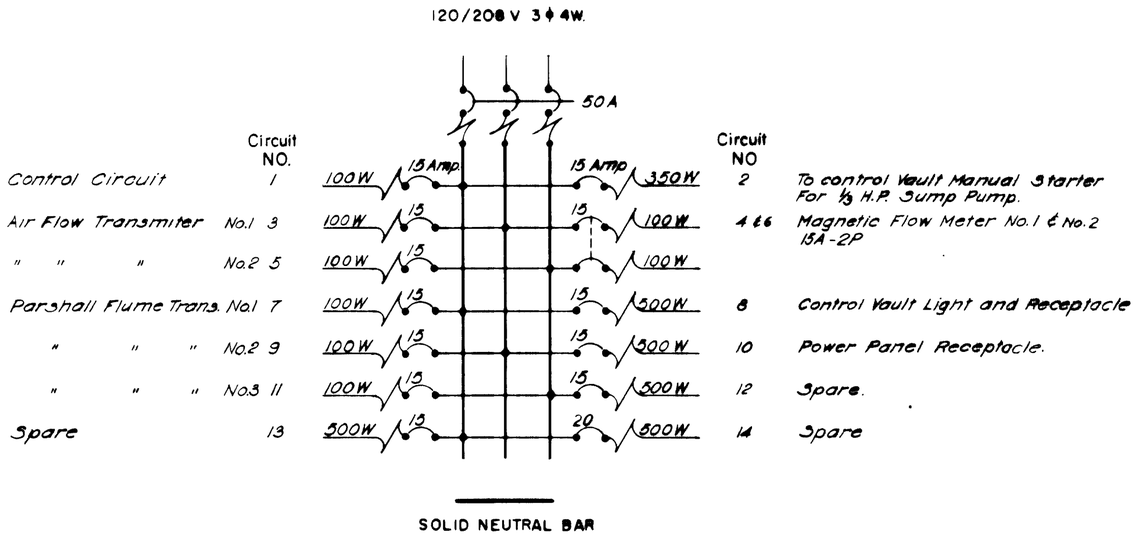
Consulting Engineers

New York 3, N.Y.

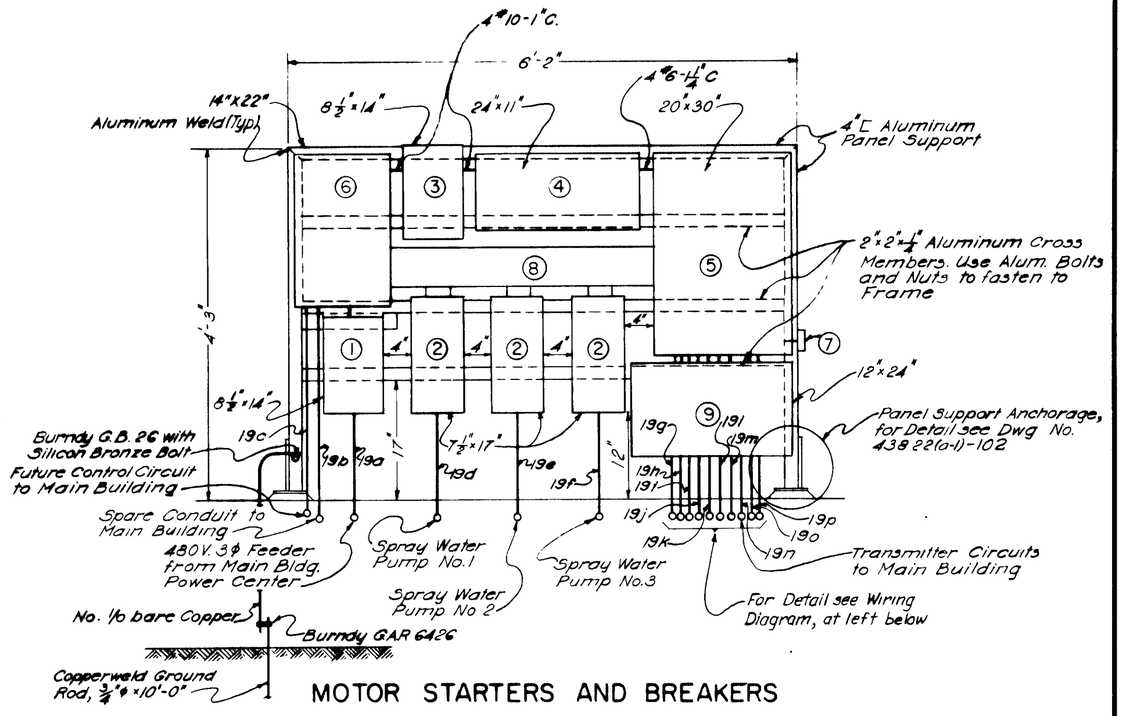
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July, 1964

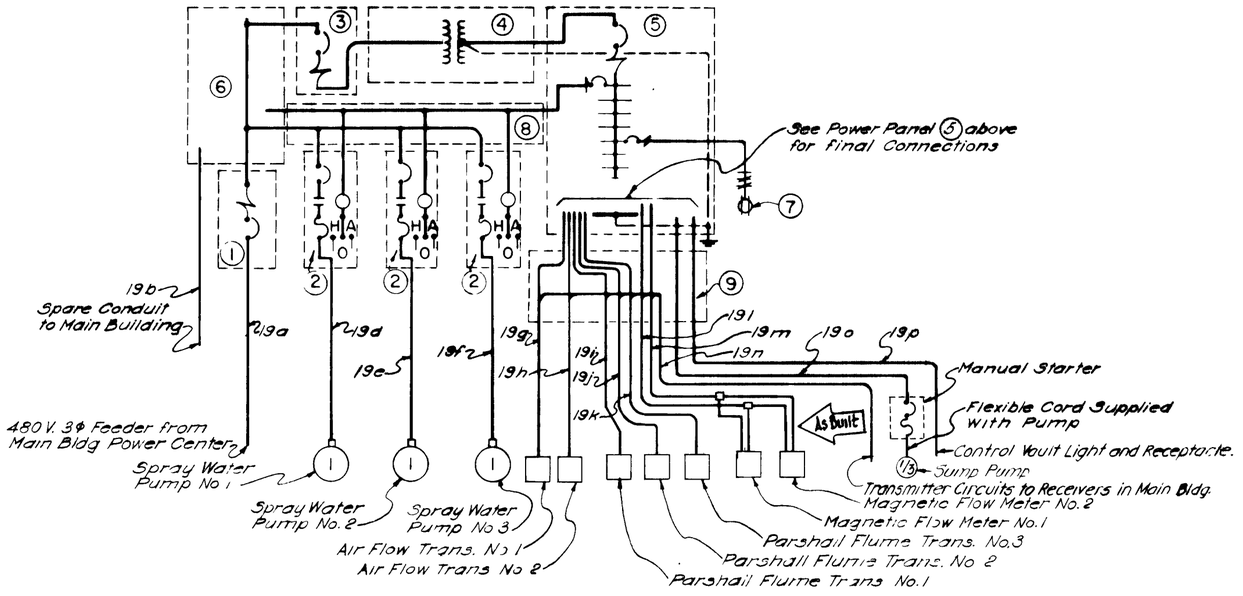
Drawn by: W.J.L.	Traced by: L.M.	Checked by: W.J.L.	Examined by: D.P.	Approved by:
Revisions:	As Built 1/68			



POWER PANEL (5)



MOTOR STARTERS AND BREAKERS

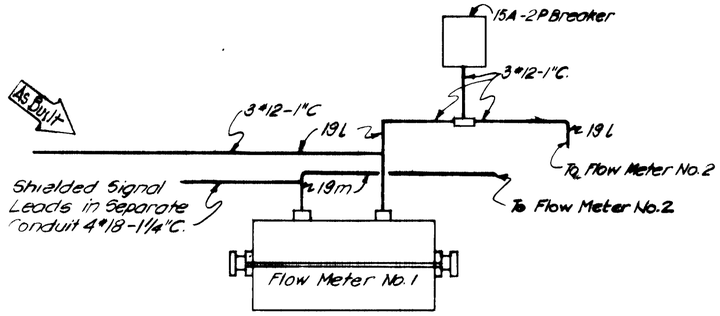


WIRING DIAGRAM

LEGEND

UNIT NO.	NO. REQUIRED	DESCRIPTION
①	1	Circuit Breaker - Molded Case Type AB, 100 Amp. F Frame. 3 Pole, 480 V. 15,000 Amp. Interrupting Rating. Non-Automatic, in N.E.M.A. IV Enclosure, Westinghouse Cat. No. W-F 3100N, I-T-E or equal
②	3	Combination Magnetic Starter with Circuit Breaker in N.E.M.A. IV Enclosure, 480 V. 3ϕ, 60~, Size 0 Hand-Off-Automatic Switch, and O.L. Reset in Cover. Pilot Lights, 3 Pole overload protection. One each N.O. and N.C. Auxiliary Contacts in Addition to Sealing Contacts. Allen Bradley Bulletin 713 or approved equal
③	1	Circuit Breaker - Molded Case Type AB, 100 Amp. F Frame. 3 Pole, 480 V. 20,000 Amp. Interrupting Rating, 20 Amp. Trip in N.E.M.A. IV Enclosure, Westinghouse Cat. No. W-F 3020
④	1	Transformer - Outdoor Type. For Wall Mounting, 3ϕ, 60 Cycle, 15 Kva. 480 V. Primary 120-208 V. Wye Secondary with Two 5% FCBN Taps, Westinghouse Type E.P.T. or approved equal.
⑤	1	Power Panel E Frame, AB Circuit Breaker Type with 14 Branch Circuit Breakers as Shown and A 50 Amp 3 Pole Main Breaker, Weatherproof Cab. Stainless Steel W/Door behind Door Constr.
⑥	1	Pull Box, Stainless Steel Weatherproof Construction Screwed on Cover with Rust Proof Screws and Water Tight Gasket Size - 14"x22"x12"
⑦	1	Receptacle, Weatherproof, 20 Amp 3 Pole 2-Wire with Polarized Grounded Neutral. Crouse-Hinds Cat. No. DS135 in FD Series Aluminum Conduilet or approved equal
⑧	1	Wireway 6"x6"x3'-2", Stainless Steel Weatherproof Construction, Screwed on Cover with Rust Proof Screws and Weather Tight Gaskets
⑨	1	Pull Box Same as 6 Except 12"x24"x12."

Note: All NEMA IV Enclosures shall be Stainless Steel.



WIRING DIAGRAM
MAGNETIC FLOW METER
2 Required

AS BUILT DRAWING
DATE January, 1968

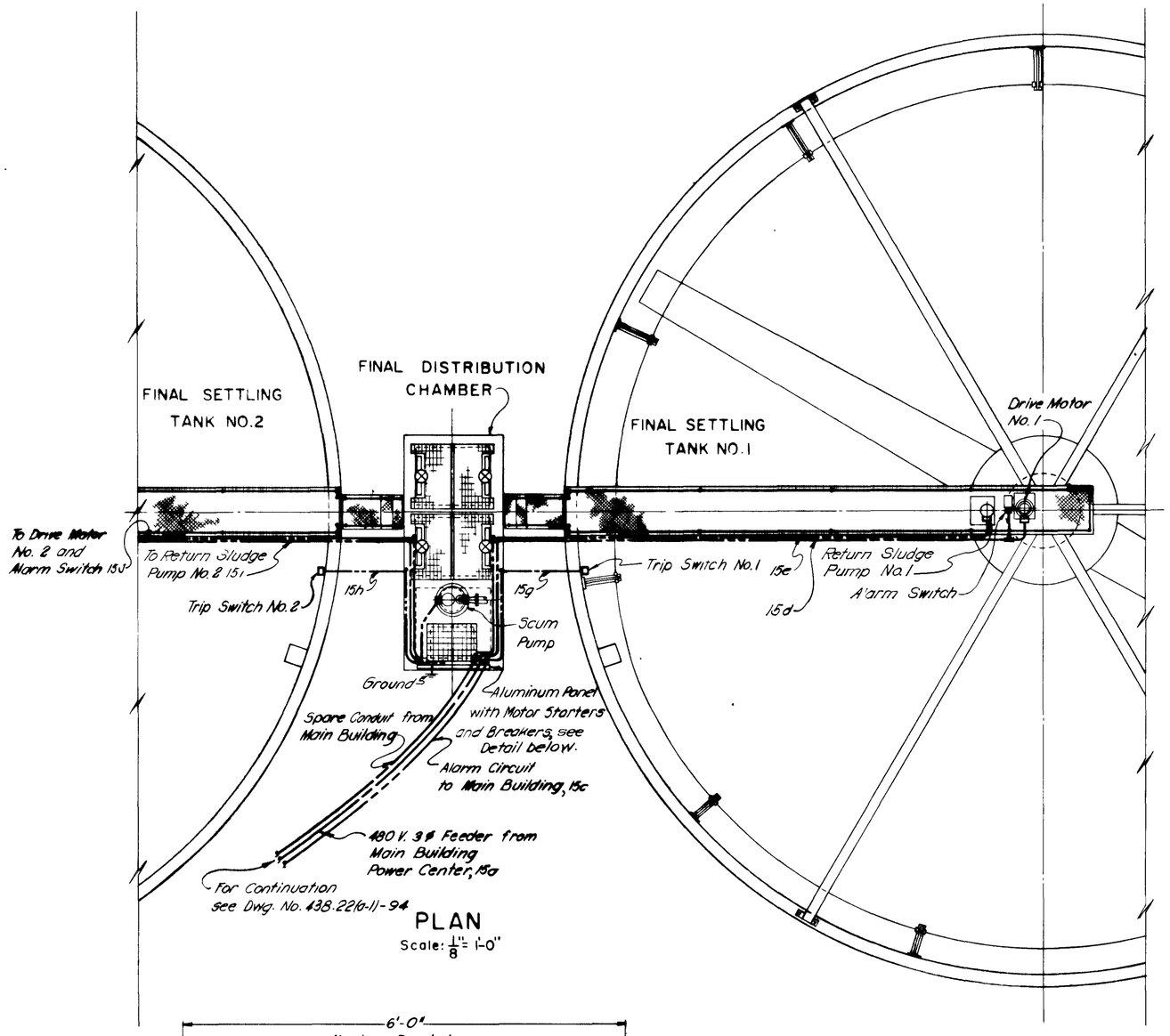
DRAWING NO. 438.22(a-1)-100

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
AERATION TANK AND RETURN AND WASTE SLUDGE CONTROL VAULT
DIAGRAMS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

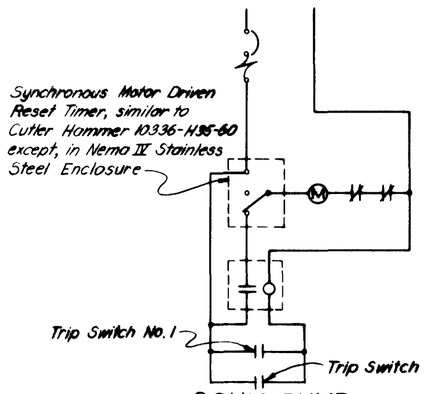
Scale: None — July, 1964

Drawn by: W.J.L.	Traced by: O.R.	Checked by: W.J.L.	Examined by: D.P.	Approved by:
Revisions:	As Built 3/12/68 RSM			



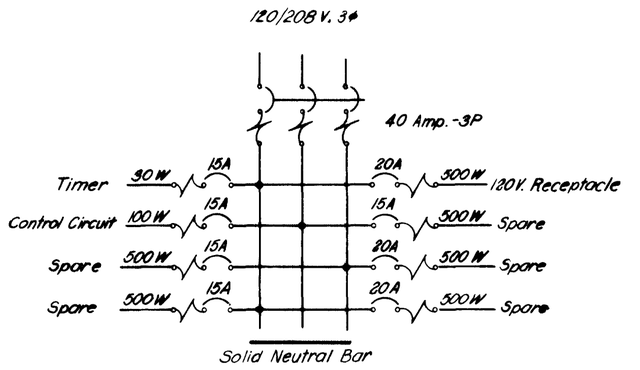
PLAN

Scale: $\frac{1}{8}$" = 1'-0"



SCUM PUMP WIRING DIAGRAM

Scale: None



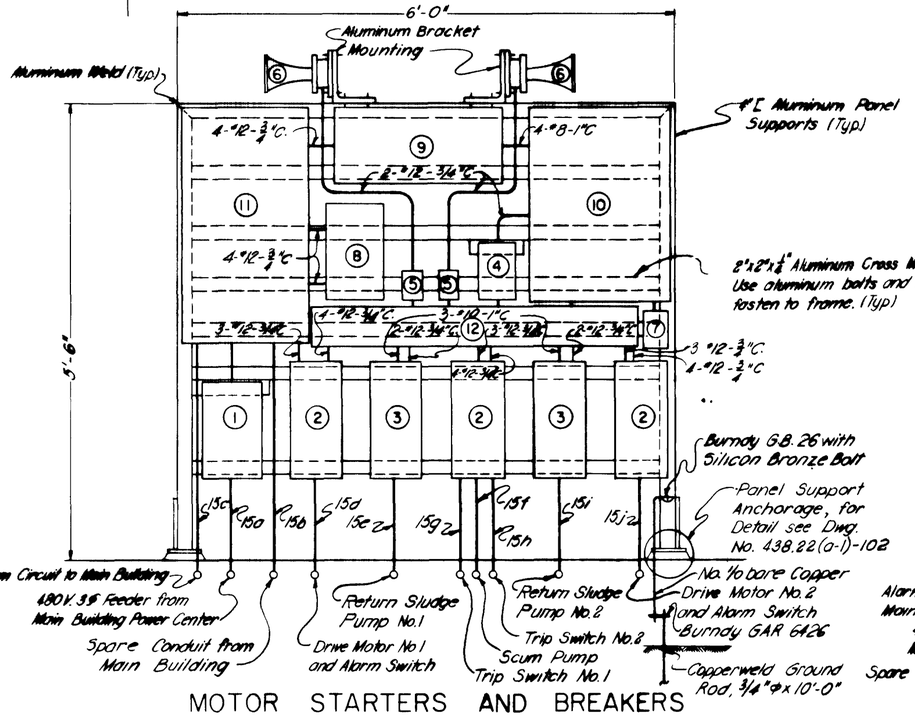
POWER PANEL ⑩

Scale: None

LEGEND

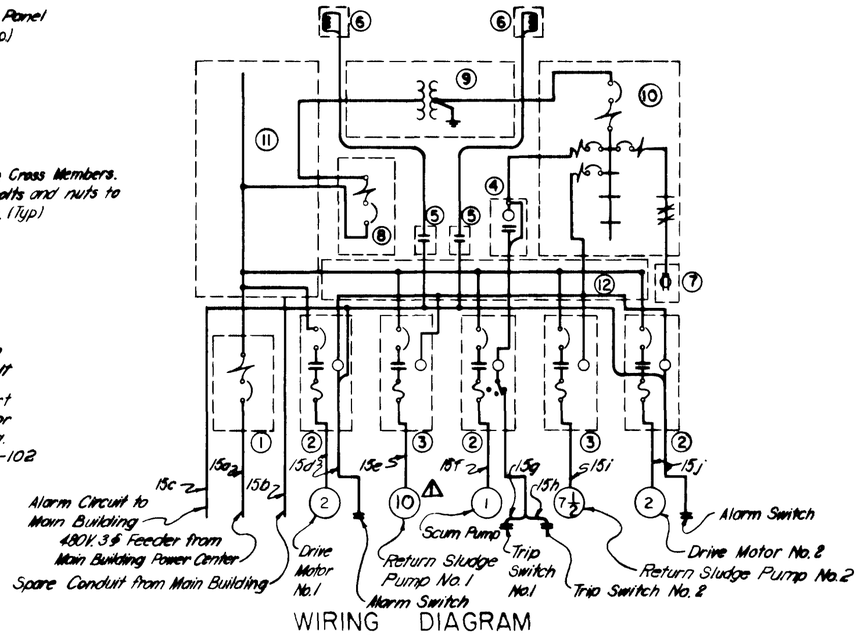
UNIT NO.	NO. REQ.	DESCRIPTION
①	1	Circuit Breaker Molded Case Type AB 100A. F Frame. 3 Pole, 408V. 15,000 Amp. Interrupting Rating. Non-Automatic, in NEMA IV Enclosure. Westinghouse Cat. No. W-F 3100 I.T.E. or approved equal
②	3	Combination Magnetic Starter with Circuit Breaker, in NEMA IV Enclosure, 480V. 3ϕ 60~ Size 0 Hand-Off-Automatic Switch O.L. Reset, in cover. Pilot Lights, 3 Pole overload protection. One each N.O. and N.C. auxiliary contacts, in addition to sealing contacts. Allen Bradley Bulletin 713 or approved equal.
③	2	Same as Unit No 2 except Size 2 instead of Size 0. (For 20 hp.) ⚠1
④	1	Synchronous Motor Driven Reset Timer, Timing Range 2 Min. to 60 Min., D.P.D.T., similar to Cutler-Hammer 10336-H35-60 except in NEMA IV Stainless Steel Enclosure.
⑤	2	Indicating Pilot Light and Alarm Silencer Switch marked On-Off Russell and Stoll Cat. No. 3801R-3705 in two Gang Type FD Cast Aluminum Fitting, or approved equal.
⑥	2	Motor Driven Weatherproof Howler, with single Bell Projection, 10 GA. Steel Housing and Rubber Gaskets, High Torque Series Wound Motor. Output 100DB at 10 Feet. Benjamin Cat. No. 8170-115V. or approved equal.
⑦	1	Receptacle, Weatherproof, 20 Amp. 3 Pole with Polarized Grounded Neutral. Crouse-Hinds Cat. No. DS195 in FD Series Aluminum Conduilet or approved equal.
⑧	1	Circuit Breaker Molded Case Type AB, 100 Amp. F Frame, 3 Pole, 480V. 20,000A. Interrupting Rating, 15 Amp. Trip in NEMA IV Enclosure. Westinghouse Cat. No. W-F 3015
⑨	1	Transformer-Outdoor Type for Wall Mounting, 3ϕ, 60~ 9KVA, 480V. Primary 120/208V. Wye. Secondary with Two 5% FCBN Taps. Westinghouse Type EPT, or approved equal.
⑩	1	Power Panel E Frame, AB Circuit Breaker Type with 8 Branch Circuit Breakers as shown and a 40 Amp. 3 Pole Main Breaker, Weatherproof Cab. Stainless Steel w/Door Behind Construction.
⑪	1	Pull Box Stainless Steel Weatherproof Construction, Screwed on Cover with Rust Proof Screws, and Weathertight Gasket Size 18"x 34"x 12"
⑫	1	Wireway 6"x6"x 4'-0" Stainless Steel Weatherproof Construction, screwed on Cover with Rust Proof Screws and weathertight Gaskets.

Note:
All NEMA IV Enclosures shall be Stainless Steel.



MOTOR STARTERS AND BREAKERS

Scale: None



WIRING DIAGRAM

Scale: None

AS BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-101

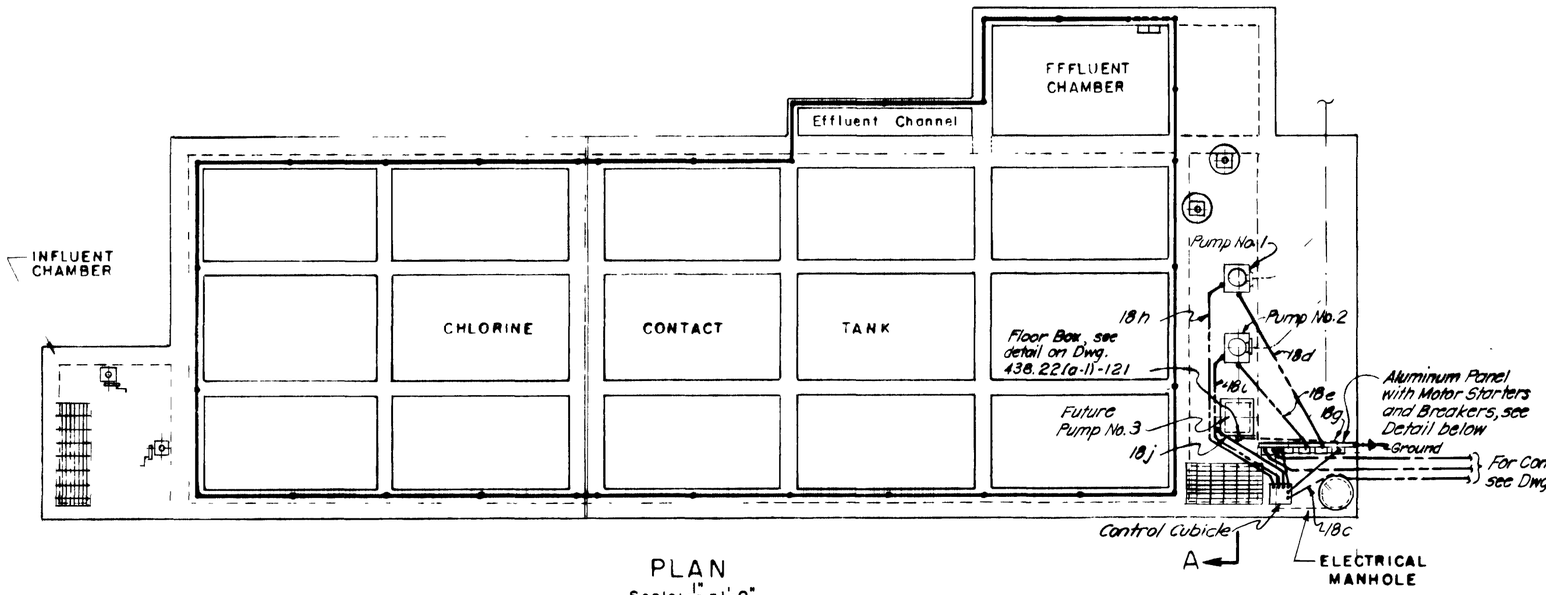
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL

FINAL SETTLING TANKS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

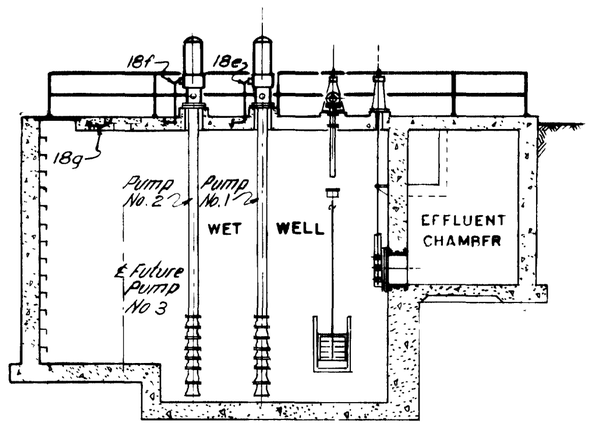
Scale: As Shown

Drawn by: W.J.L.	Traced by: H.C.	Checked by: W.J.L.	Examined by: D.P.	Approved by:
Revisions:	⚠ 4/68			



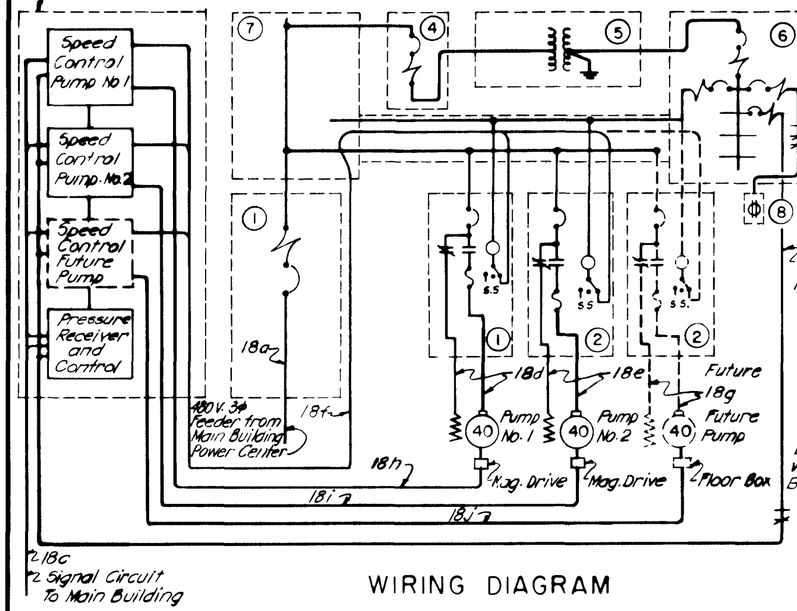
PLAN

Scale: $\frac{1}{8}$" = 1'-0"



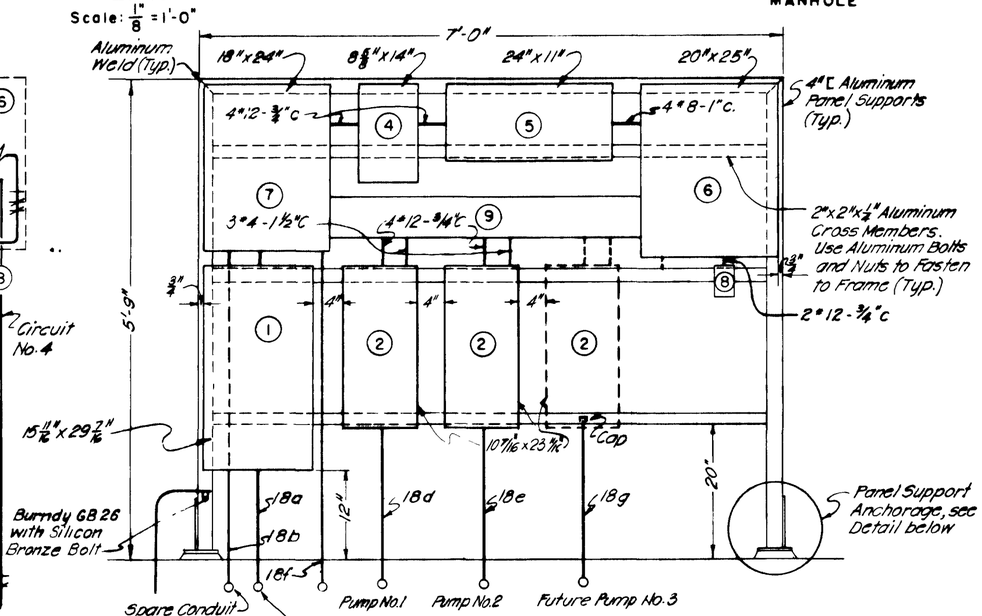
SECTION A-A

Scale $\frac{1}{8}$" = 1'-0"



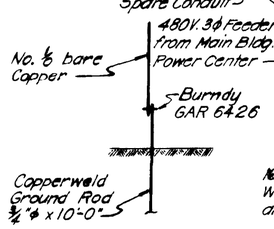
WIRING DIAGRAM

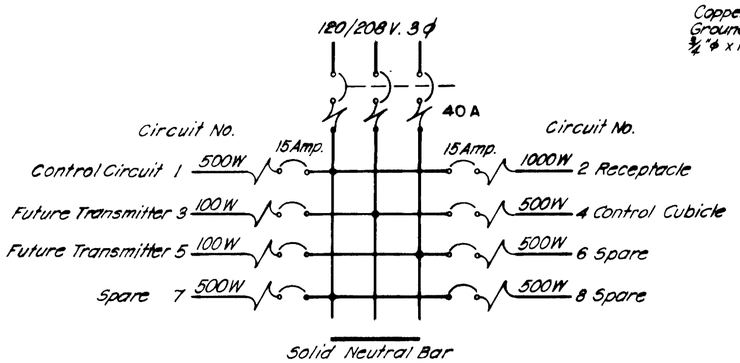
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MOTOR STARTERS AND BREAKERS

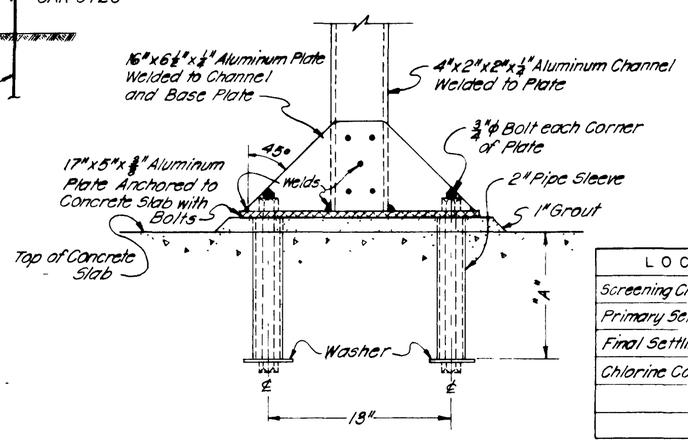
Scale: None





POWER PANEL (6)

Scale: None



LOCATION	"A"
Screening Chamber	6"
Primary Settling Tank	12"
Final Settling Tank	12"
Chlorine Contact Tank	12"

PANEL SUPPORT ANCHORAGE DETAIL

Scale: 1 $\frac{1}{2}$" = 1'-0"

LEGEND

UNIT NO.	NO. REQUIRED	DESCRIPTION
(1)	1	Circuit Breaker, Molded Case Type AB, 400 Amp. LA Frame, 3-Pole 480 Volt, 35,000 Amps. Interrupting Rating, Non-Automatic in Nema IV Enclosure, Westinghouse Cat. No. W-LA 3400N I-T-E or Approved equal.
(2)	2	Combination Magnetic Starter with Circuit Breaker in Nema IV Enclosure 480V., 3φ, 60~ Size 3, Selector Switch with hand, Off, Auto and O.L. Reset Button in Cover, one each N.O. and N.C. auxiliary contacts in addition to Sealing contacts, Pilot Lights, 3 Pole overload Protection, Allen-Bradley Bulletin No. 713 or Approved equal
(3)	1	Control Cubicle with Magnetic Drive Speed Controllers and Liquid Level Control Cubicle to be Free Standing, Weatherproof, with Gasketed Doors
(4)	1	Circuit Breaker Molded Case Type AB, 100 AMP. F Frame, 3 Pole 480 V. 20,000 AMP. Interrupting Rating, 15 AMP. Trip in Nema IV Enclosure, Westinghouse Cat. No. W-F 3015
(5)	1	Transformer - out door Type, for Wall Mounting, 3φ, 60 ~ 9 KVA 480 V Primary 120/280 V Wye. Secondary with Two 5% FCBN Taps Westinghouse Type EPT or Approved equal
(6)	1	Power Panel, E Frame AB Circuit Breaker Type with 8 Branch Circuit Breakers as shown and a 40 AMP. 3-Pole Main Breaker, Weatherproof Cabinet Stainless Steel w/Door behind door Construction
(7)	1	Pull Box, Stainless Steel Construction, screwed-on cover with Rust Proof screws and watertight Gasket. Size 18"x24"x12"
(8)	1	Receptacle, weatherproof, 20 AMP. 3-Pole, 2 Wire with Polarized Grounded neutral. Crouse-Hinds Cat No DS135 in FD Series Condulet or Approved equal
(9)	1	Wireway 6"x6"x3'-8" Stainless Steel Weatherproof Construction, screwed-on cover with Rust Proof screws and weathertight Gaskets.

Note: All Nema IV Enclosures shall be Stainless Steel.

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-102

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL

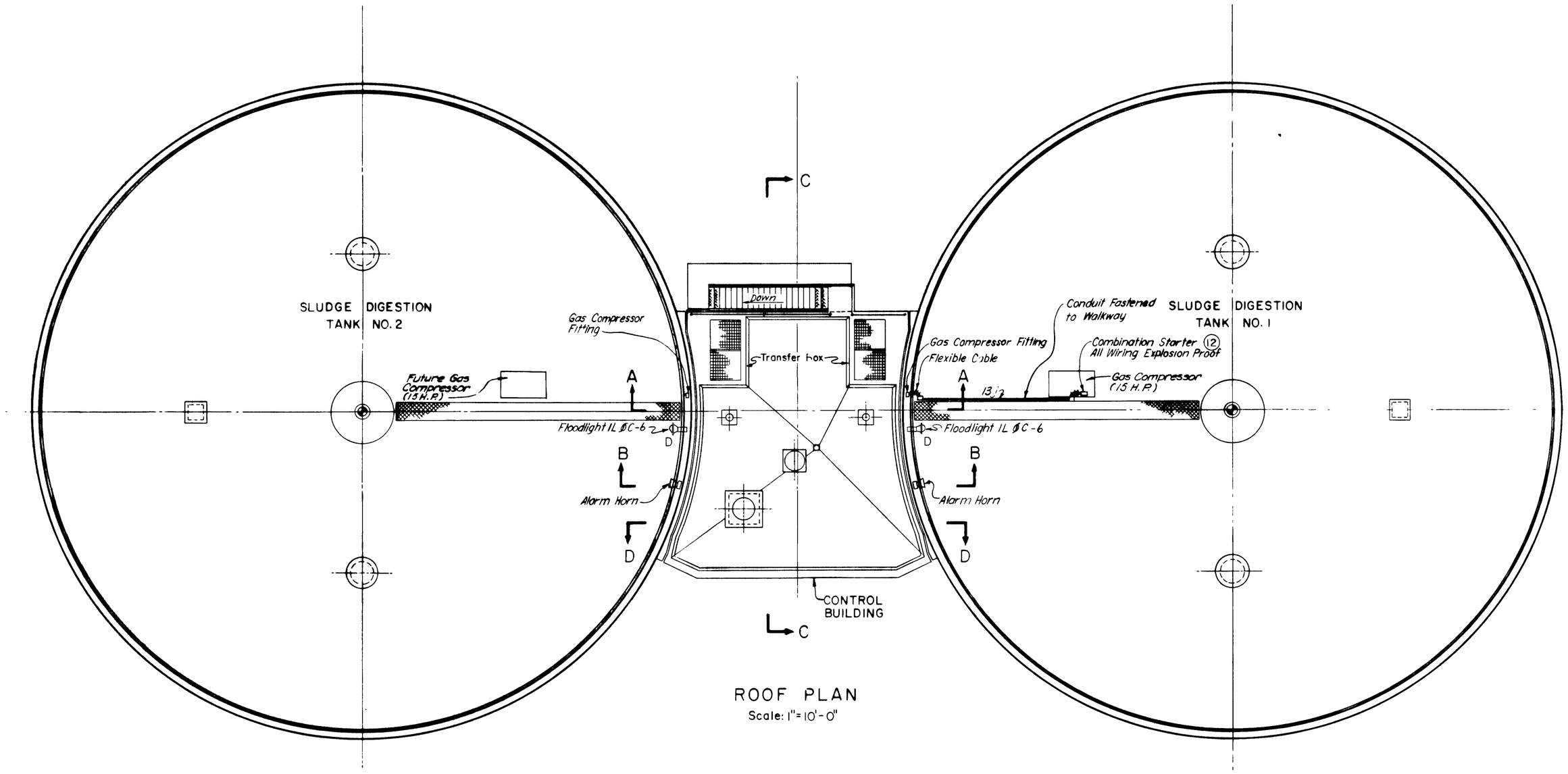
CHLORINE CONTACT TANK

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown

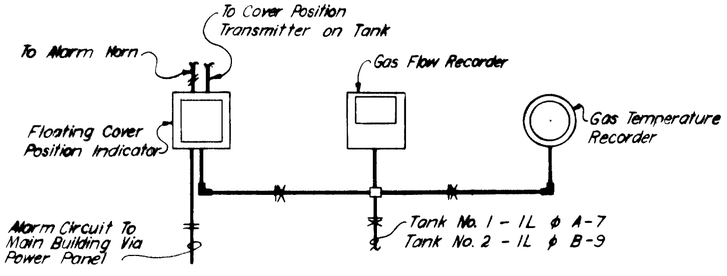
July, 1964

Drawn by: W.J.L.	Traced by: R.D.	Checked by: W.J.L.	Examined by: D.P.	Approved by:
Revisions:				



ROOF PLAN

Scale: 1"=10'-0"



FLOATING COVER POSITION INDICATOR AND GAS RECORDERS

Scale: None

SYMBOLS

——— - ———	Conduit runs exposed or concealed (Power Feeder)
——— -- ———	Conduit runs exposed or concealed (Motor Feeder)
——— - - ———	Conduit runs exposed or concealed (Alarm & Controls)
——— .. ———	Conduit runs exposed or concealed (Instruments)
——— . ———	Conduit runs exposed or concealed (Telephone., Ground)
— — — — —	Conduit runs concealed (General Lighting)
IL ØA-2	Lighting Circuit, "IL" Refers to Lighting Panel No.1, "ØA" Refers to Phase A, "-2" Refers to Circuit No.2
$	1 Pole, 20A., 125V. Tumbler Type Switch (Heavy duty)
$3	3 Way, 20A., 125V. Lighting Switch (Heavy duty)
(A)	Lighting Fixture, "A" Refers to type fixture
F	Fluorescent Lighting Fixture, "F" Refers to type fixture
-///	Hatch Lines indicate number of wires in Conduit
-///	Cross-Hatched Lines indicate number of Neutrals in Conduit
——	Expansion Joint Fitting

AS-BUILT DRAWING

DATE January, 1968

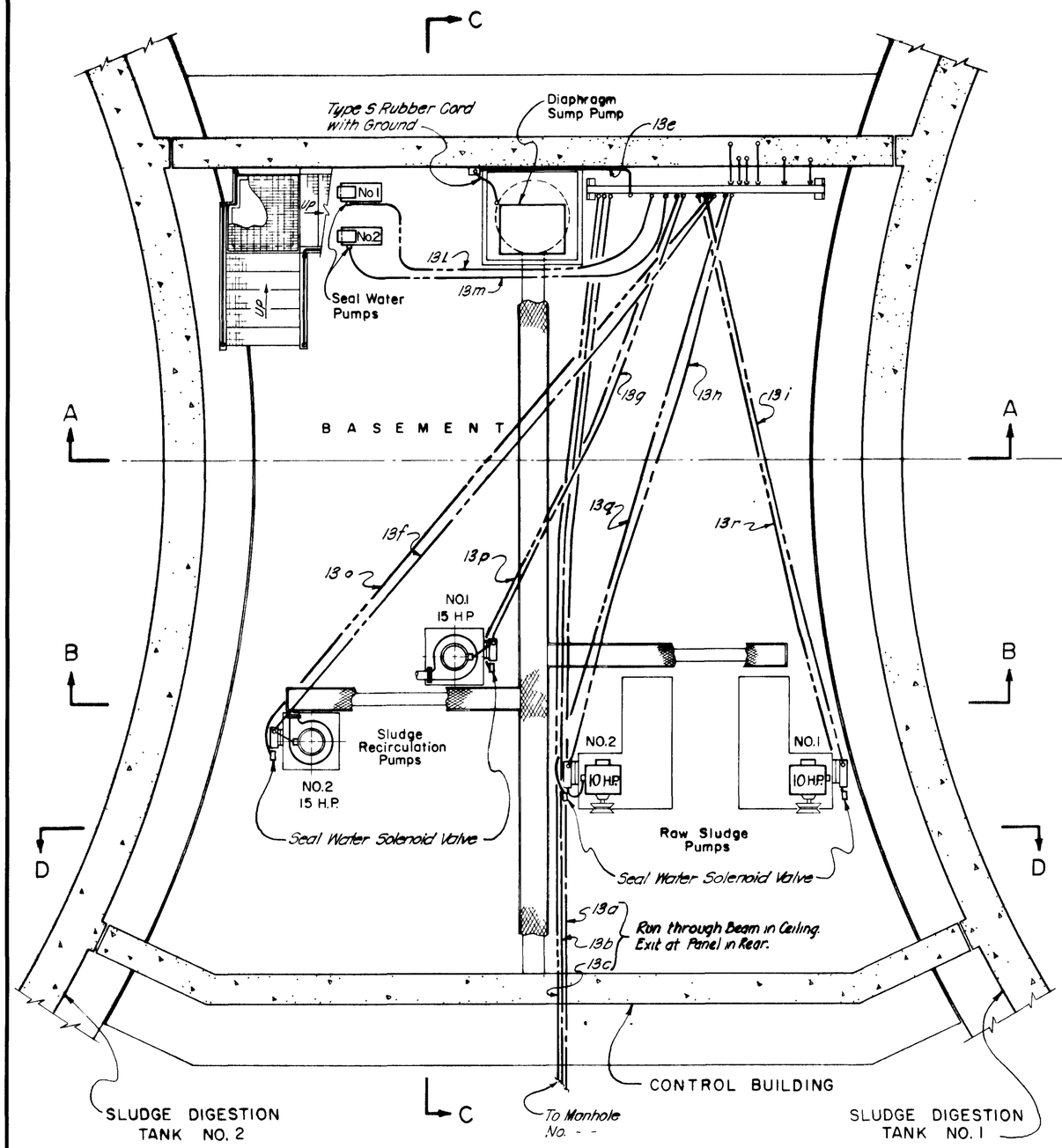
DRAWING NO. 438.22(a-1)-103

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
SLUDGE DIGESTION FACILITIES
ROOF

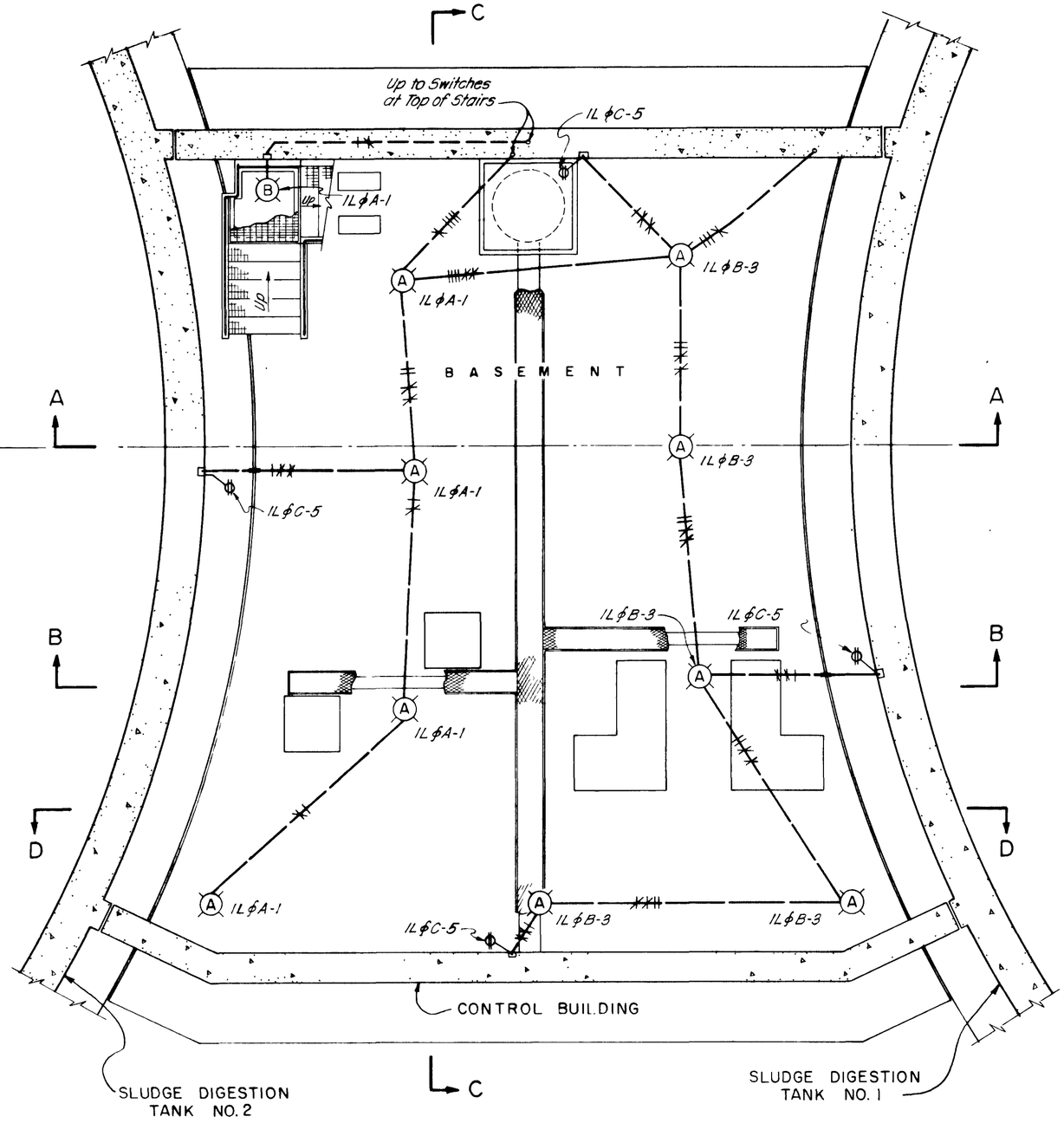
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

Drawn by: W.J.L.	Traced by: D.P.	Checked by: W.J.L.	Examined by: D.P.	Approved by:
Revisions:				



POWER LAYOUT



LIGHTING LAYOUT

Note: All Convenience Outlets shall be 3-wire Grounding Type. Install ground wire (green) from ground terminal in Receptacles to ground rod or other suitable ground.

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-104

HAMPTON ROADS SANITATION DISTRICT

NORTH SHORE SYSTEM

JAMES RIVER SEWAGE TREATMENT PLANT

ELECTRICAL

SLUDGE DIGESTION FACILITIES

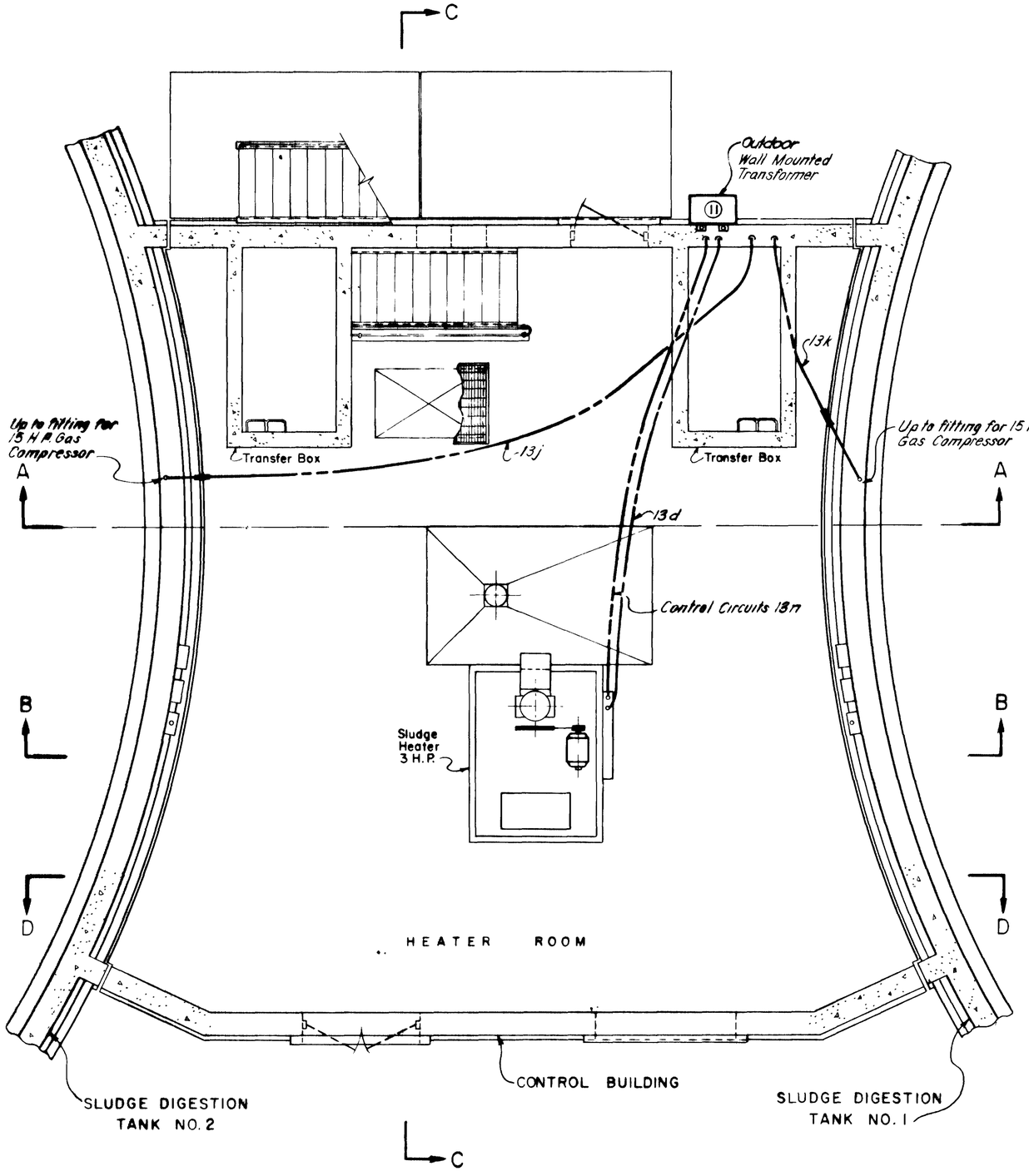
BASEMENT

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

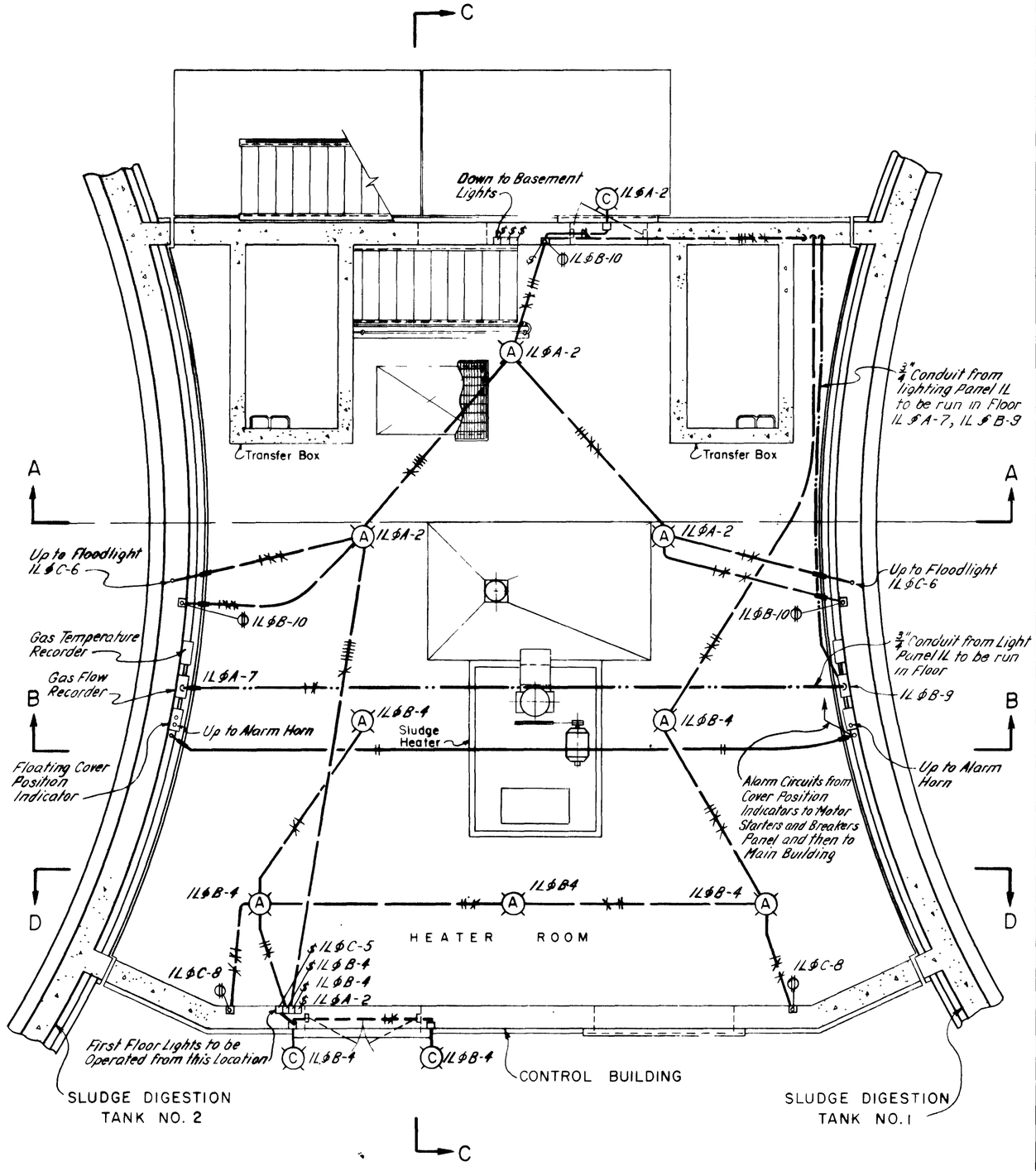
Scale: 1/4" = 1'-0"

July, 1964

Drawn by: W.J.L.	Traced by: R.B.	Checked by: W.J.L.	Examined by: D.P.	Approved by:
Revisions:				



POWER LAYOUT



LIGHTING LAYOUT

DRAWING NO. 438.22(a-1)-105

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
SLUDGE DIGESTION FACILITIES
FIRST FLOOR

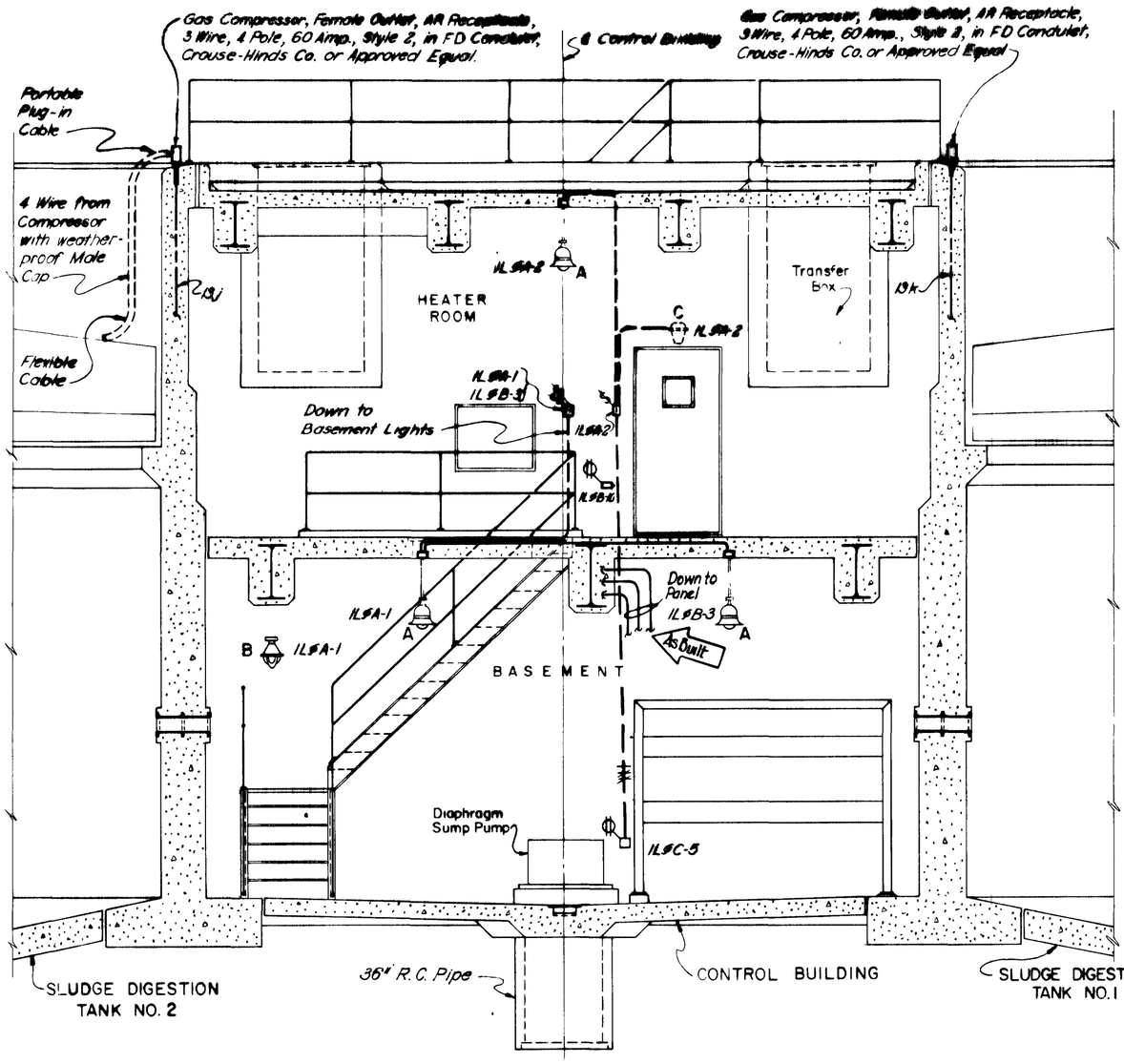
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4" = 1'-0"

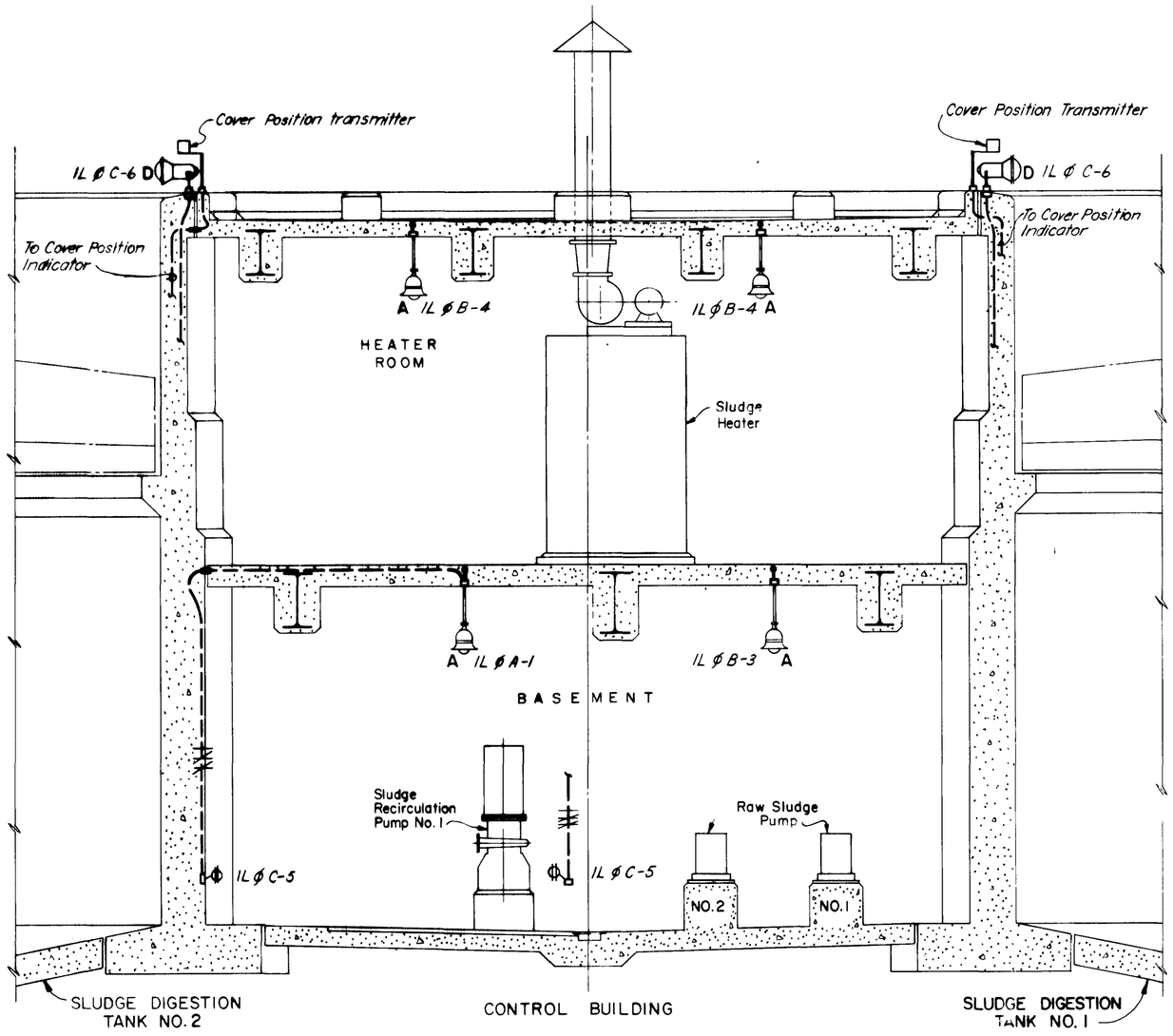
July, 1964

Drawn by: W.J.L.	Traced by: I.V.	Checked by: W.J.L.	Examined by: D.P.	Approved by: G.
Revisions:				

AS-BUILT DRAWING
DATE January, 1968



SECTION A-A



SECTION B-B

LIGHTING FIXTURE SCHEDULE

MARK	WATTAGE	DESCRIPTION	MANUFACTURER	CAT. No.	LOCATION	MOUNTING	No. REQ'D.	LT'G. PANEL	REMARKS
A	150	Explosion Proof	Crouse-Hinds Co.	EVA 2151	Sludge Control Building	Pendent	17	IL	Class I, Division I Hazardous Locations
B	150	Explosion Proof	Crouse-Hinds Co.	DLB 11F	Sludge Control Building	Wall Bracket	1	IL	With Guard
C	150	Weatherproof	Holophane Co.	415	Sludge Control Building	Wall Bracket	3	IL	Prismatic Luminaire
D	500	Floodlight	Benjamin Elect.	R6022B	Sludge Digestion Tanks	Top of Wall	2	IL	Swivel & Stand Type B for mounting

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-106

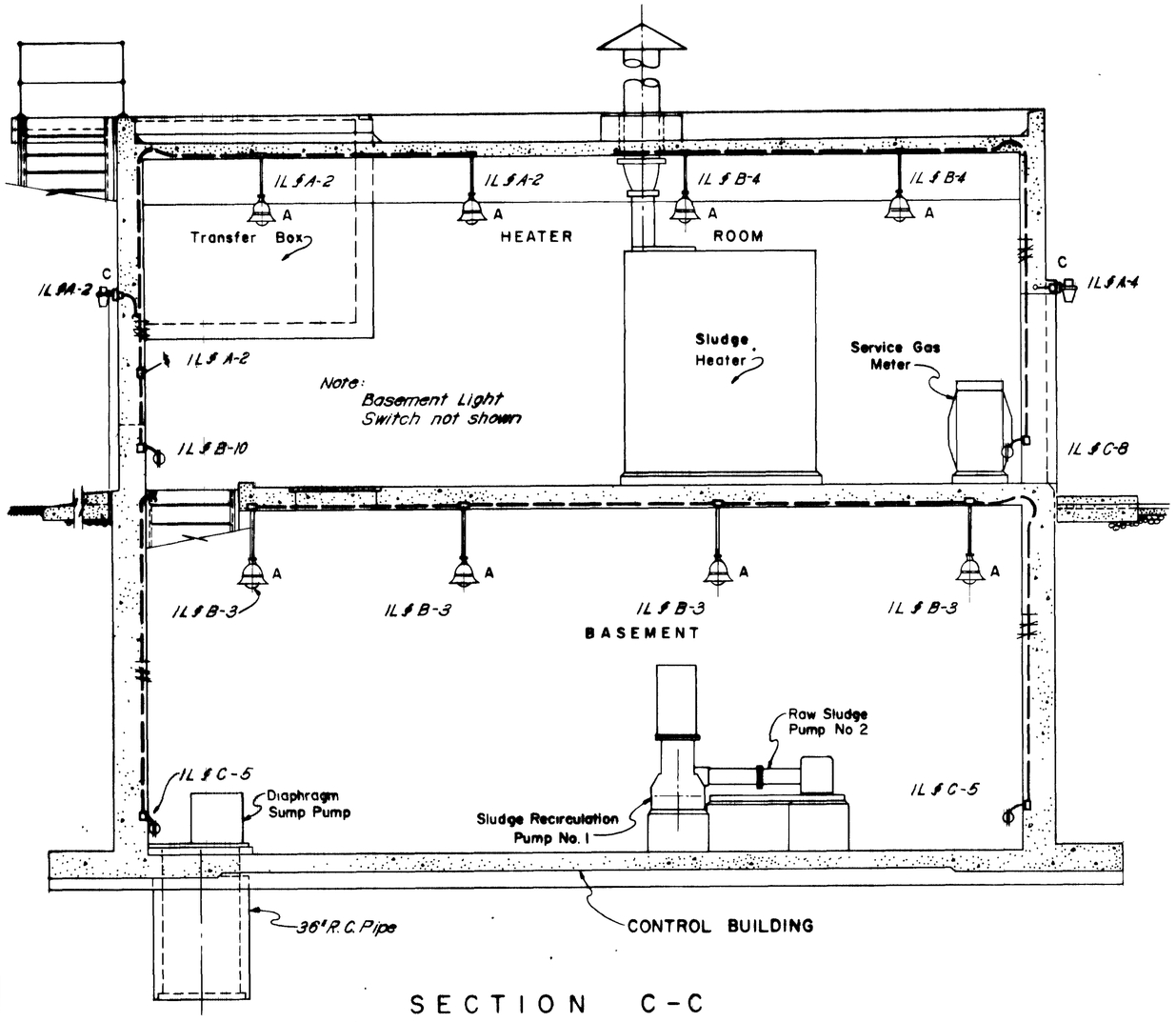
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
SLUDGE DIGESTION FACILITIES
SECTIONS A-A, B-B AND LIGHTING FIXTURE SCHEDULE

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

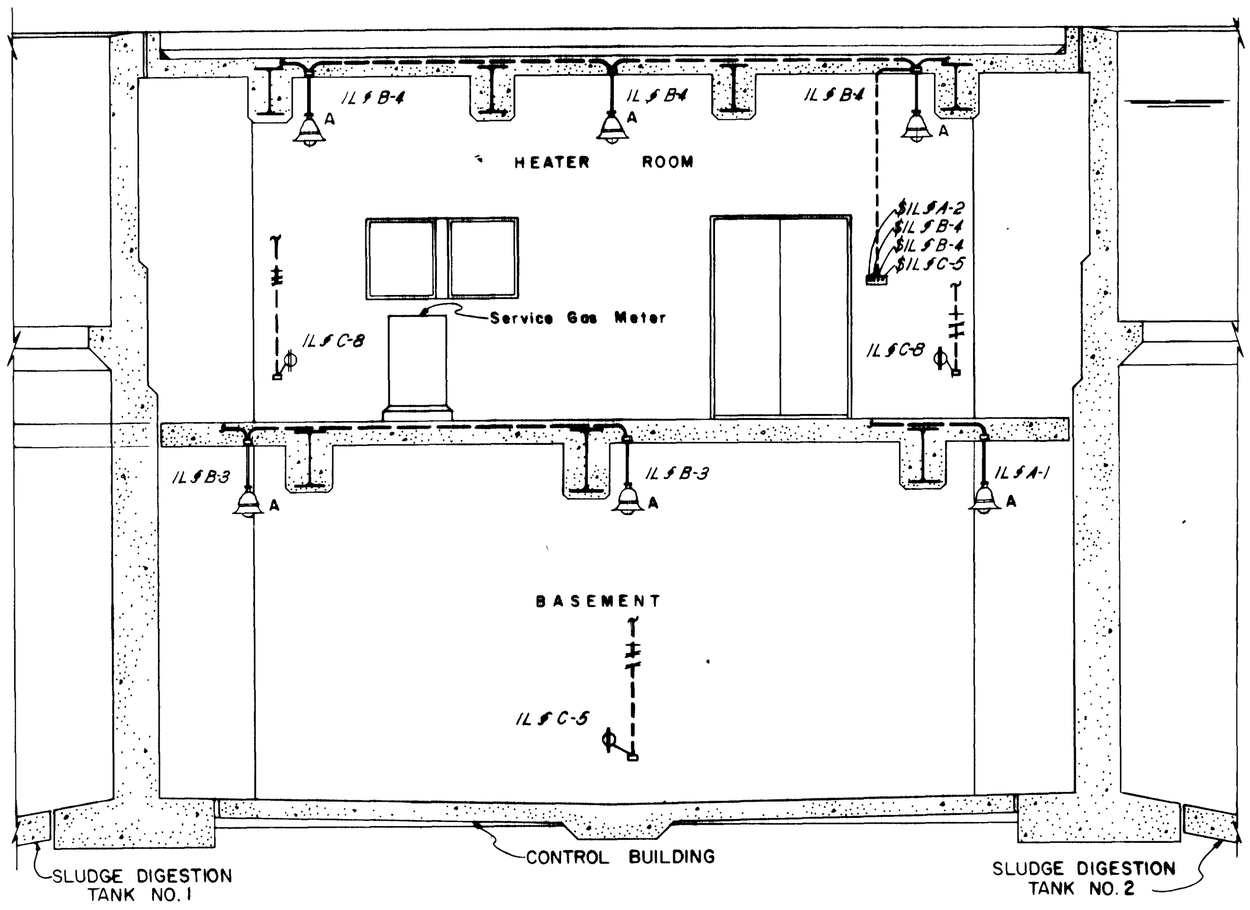
Scale: 1/4" = 1'-0"

July, 1964

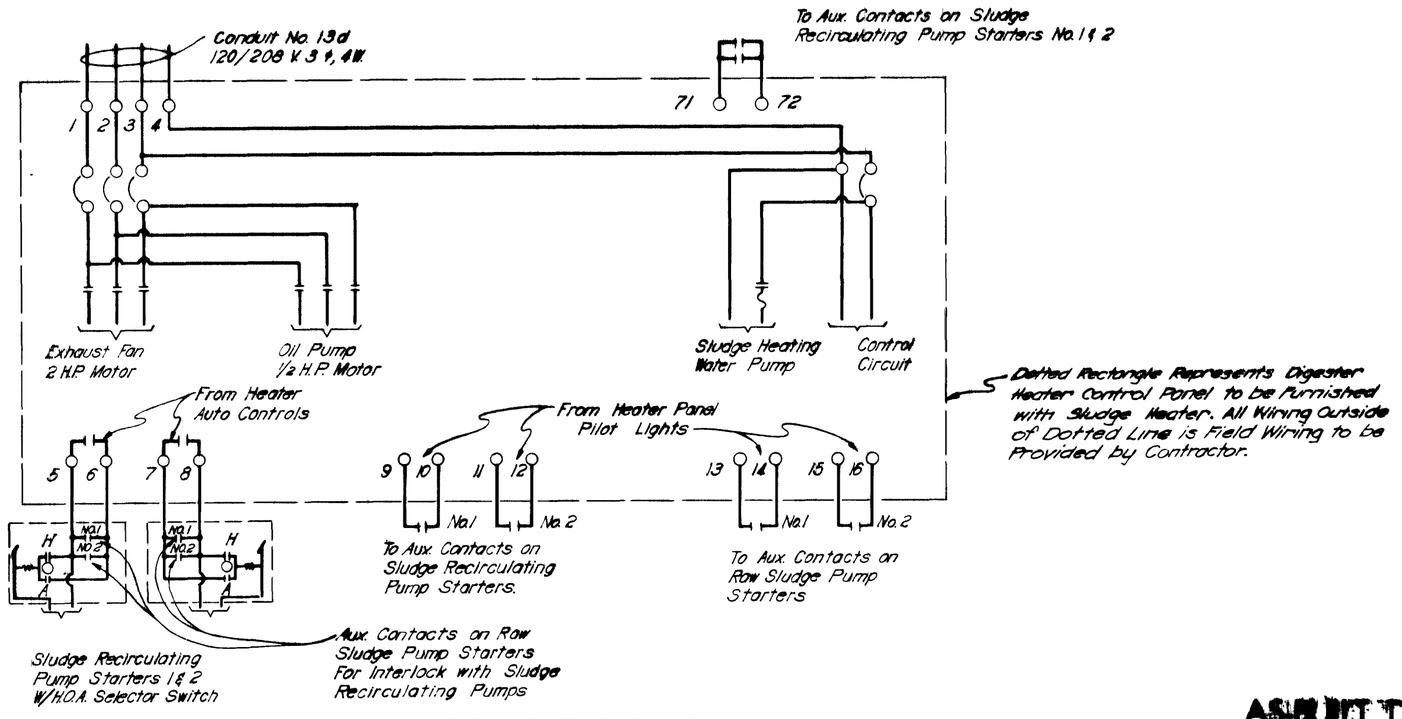
Drawn by: W.J.L	Traced by: H.C.	Checked by: W.J.L	Examined by: D.P	Approved by:
Revisions:	As Built 1/68			



SECTION C-C



SECTION D-D



SLUDGE DIGESTER HEATER PANEL
WIRING DIAGRAM

AS-BUILT DRAWING
DATE January, 1968

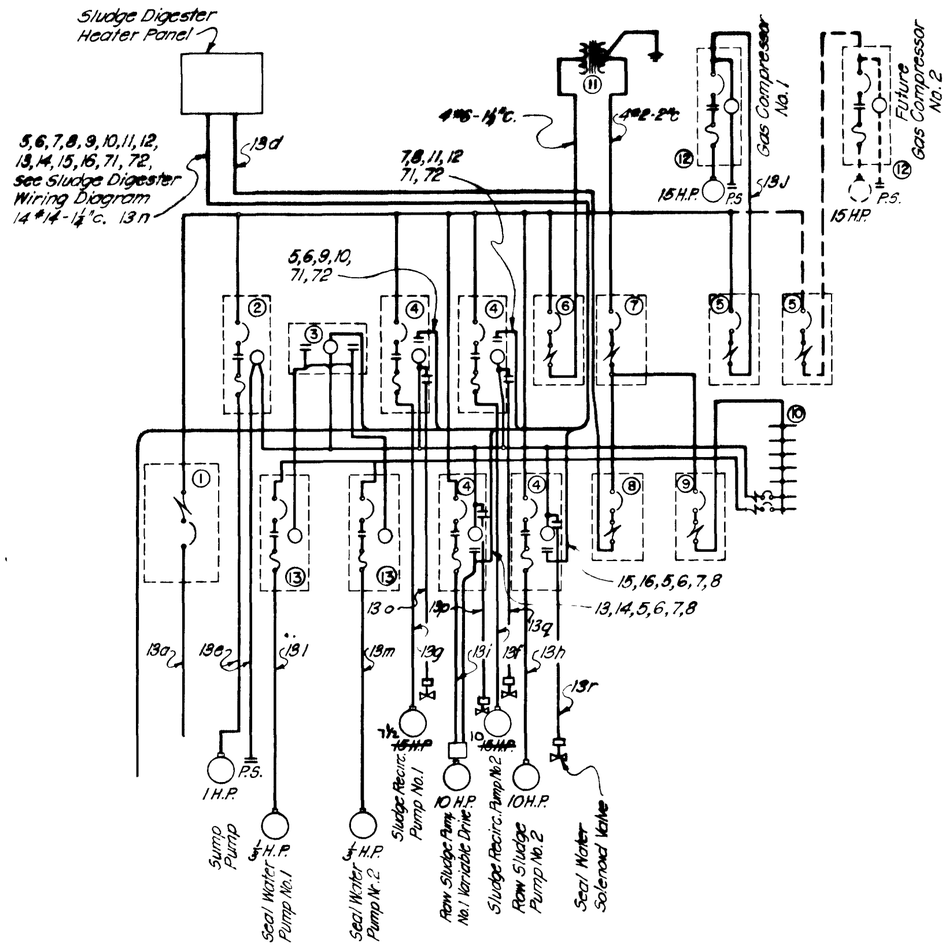
DRAWING NO. 438.22(a-1)-107

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
SLUDGE DIGESTION FACILITIES
SECTIONS C-C, D-D AND WIRING DIAGRAM

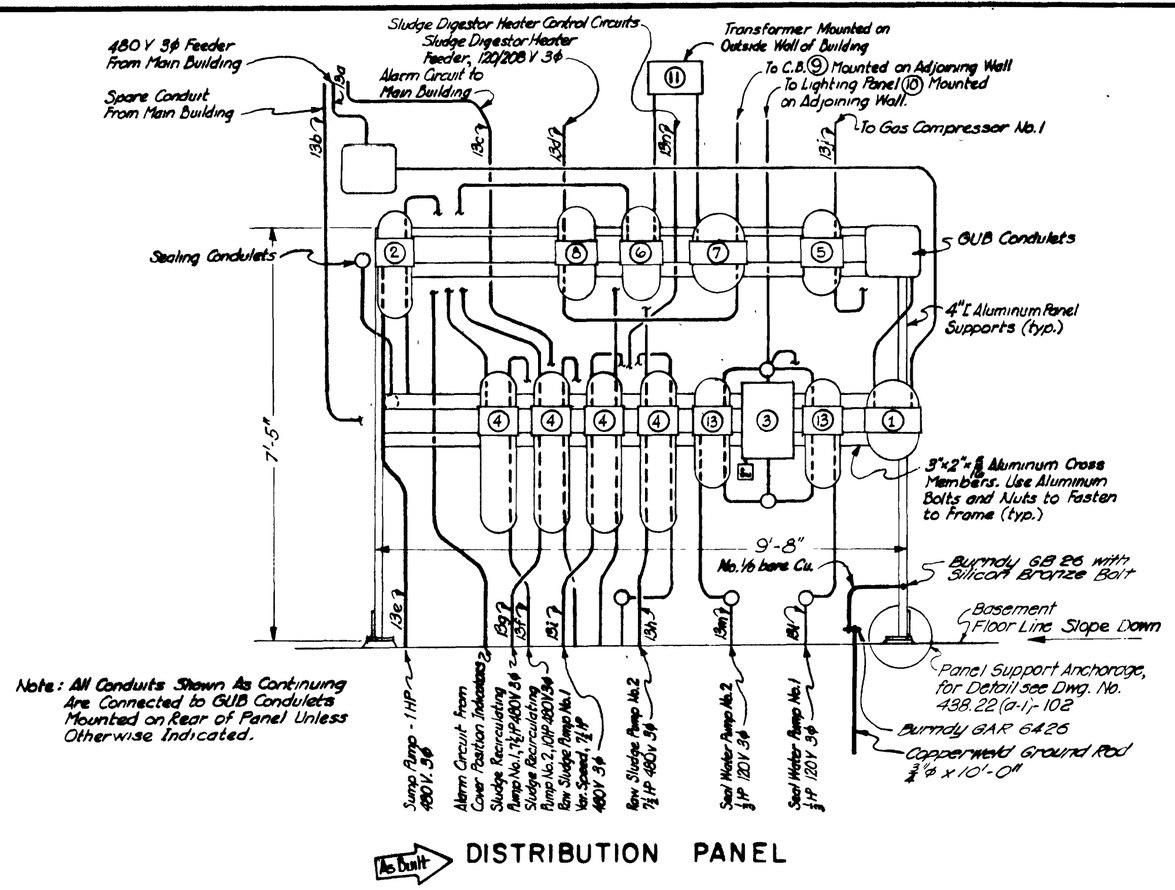
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4" = 1'-0"
July, 1964

Drawn by: W.J.L.	Traced by: A.C.	Checked by: W.J.L.	Examined by: D.J.P.	Approved by:
Revisions:				

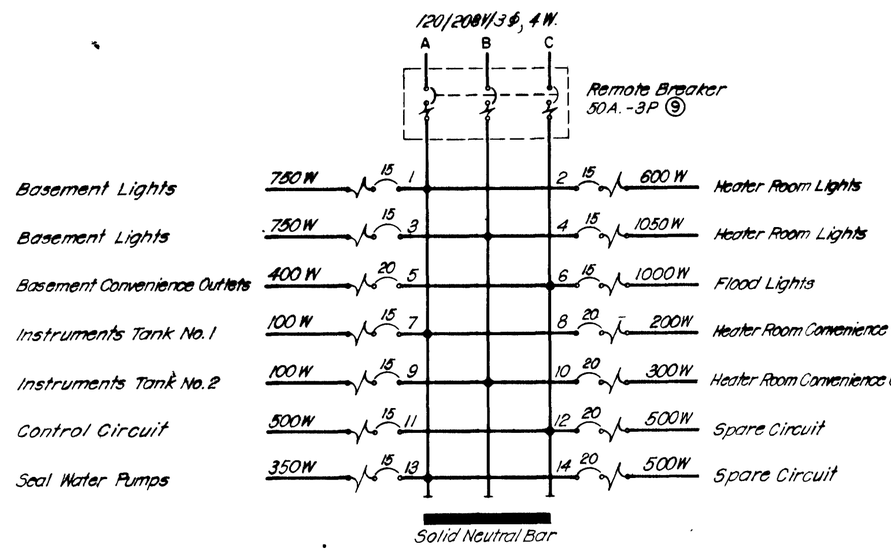


WIRING DIAGRAM



Note: All Conduits Shown As Continuing Are Connected to GUB Conduits Mounted on Rear of Panel Unless Otherwise Indicated.

As Built DISTRIBUTION PANEL



LIGHTING PANEL IL ⑩

L E G E N D

UNIT NO.	NO. REQ'D.	DESCRIPTION
①	1	Circuit Breaker, Molded Case, Type AB; 225 Amps. JA Frame, 3 Pole, 480 V; 20,000 Amp. interrupting rating. Non-Auto. in NEMA 7 explosion-proof enclosure. Crouse-Hinds Cat. No. EPC 4113-WT 225 N-3 or approved equal.
②	1	Combination Magnetic Starter with Circuit Breaker in NEMA 7 explosion-proof enclosure. 480 V., 3φ, 60 ~ size 0, Hand-Off-Automatic Switch, 3 Pole overload protection, indicating lights, one each N.O. and N.C. auxiliary contacts in addition to sealing contacts, Westinghouse Breaker, Allen-Bradley Starter in Crouse-Hinds Cat. No. EPC 870-WT 15 EH-AB 643 or approved equal. 110 V. Coil
③	1	Automatic Electric Alternator. 440 V., 3φ, 60 ~ with 3 position selector switch, NEMA 7 explosion-proof enclosure. Allen-Bradley Cat. No. 841 ZEB or approved equal
④	4	Combination Magnetic Starter with Circuit Breaker in NEMA 7 explosion-proof enclosure. 480 V., 3φ, 60 ~ size 2, Hand-Off-Automatic Switch, 3 Pole overload protection, indicating lights, Four (4) each N.O. auxiliary contacts in addition to sealing contacts. Westinghouse Breaker, Allen-Bradley Starter in Crouse-Hinds Cat. No. EPC 871-WT 30 F-AB 643 Conduilet, or approved equal. 110 V. Coil
⑤	1	Circuit Breaker, Molded Case, Type AB, 100 Amp. F Frame, 3-Pole, 480 V., 15,000 Amp. interrupting rating, 70 Amp. trip in NEMA 7 explosion-proof enclosure. Crouse-Hinds Cat No. EPC 377-WT 70 F-3 or approved equal.
⑥	1	Circuit Breaker, Molded Case, Type AB, 100 Amp. F Frame, 3-Pole, 480 V., 20.000 Amp. interrupting rating, 50 Amp. trip in NEMA 7 explosion-proof enclosure. Crouse-Hinds Cat. No. EPC. 377-WT 50 F-3 or approved equal.
⑦	1	Circuit Breaker, Molded Case, Type AB, 100 Amp. F Frame, 3-Pole, 240 V., 20.000 Amp. interrupting rating, 90 Amp. trip in NEMA 7 explosion-proof enclosure. Crouse-Hinds Cat. No. EPC 377-WT 90 F-3 or approved equal.
⑧	1	Circuit Breaker, Same as ⑦ except 40 Amp trip. Crouse-Hinds Cat. No. EPC 377-WT 40 F-3 or approved equal
⑨	1	Circuit Breaker, Same as ⑦ except 50 Amp. trip. Crouse-Hinds Cat. No. EPC 377-WT 50 F-3 or approved equal.
⑩	1	Panel board. Explosion-Proof, Class I, Group D (NEMA 7) 120/208 V., 3φ, 4W. mains with 1-Pole thermal Magnetic Circuit Breakers main lugs and terminal Connection blocks. 14 branch circuits. Crouse-Hinds Cat. No. EWP 5145-20 or approved equal, except with 15 Amp. and 20 Amp. trips in branch circuit breakers as Shown on Drawings.
⑪	1	Transformer-Outdoor type for wall mounting. 90 KVA., 3φ, 60 ~, 480 V. Primary. 120/208 V. 3φ, 4W Secondary with two 5% FCBN Taps, Westinghouse, Type DT-3 or approved equal.
⑫	1	Combination Magnetic Starter with circuit breaker in NEMA 7 explosion-proof enclosure same as ④ except NEMA Size 2, 440 V. Coil. Crouse-Hinds Cat. No. EPC 892-WT 50 F-AB 643, or approved equal.
⑬	2	Combination Magnetic Starter with Circuit Breaker in NEMA 7 explosion-proof enclosure 120 V. 1φ, 60 ~ size 0, Indicating Lights, one each N.O. and N.C. Auxiliary Contacts in addition to Sealing Contacts, Hand-Off-Automatic Switch, Westinghouse Breaker, Allen-Bradley Starter in Crouse-Hinds Cat. No. EPC 870-WT 15 E-AB 623 with 120 V. Operating Coil, or approved equal.

Note: All Starters shall have a Hand-Off-Automatic Switch

AS-BUILT DRAWING
DATE January, 1968

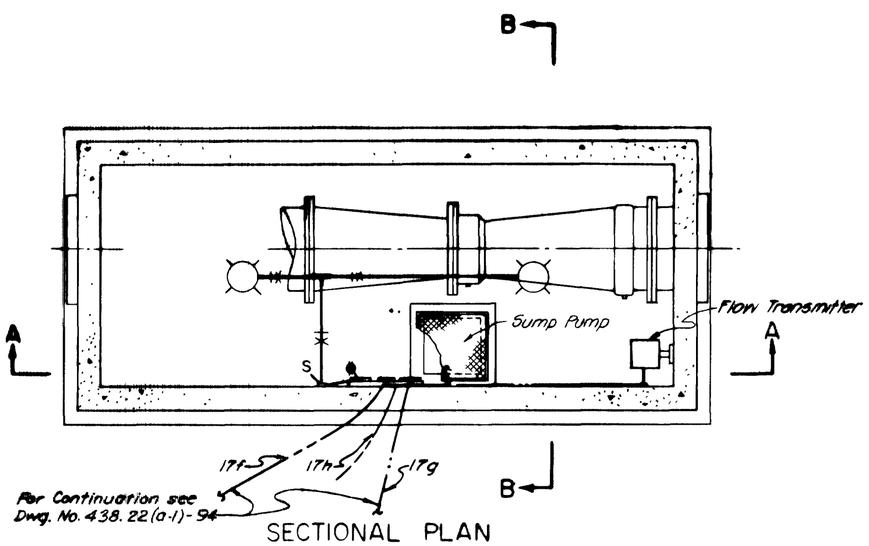
DRAWING NO. 438.22 (a-1)-108

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
SLUDGE DIGESTION FACILITIES
DISTRIBUTION PANEL, WIRING DIAGRAM AND LIGHTING PANEL

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

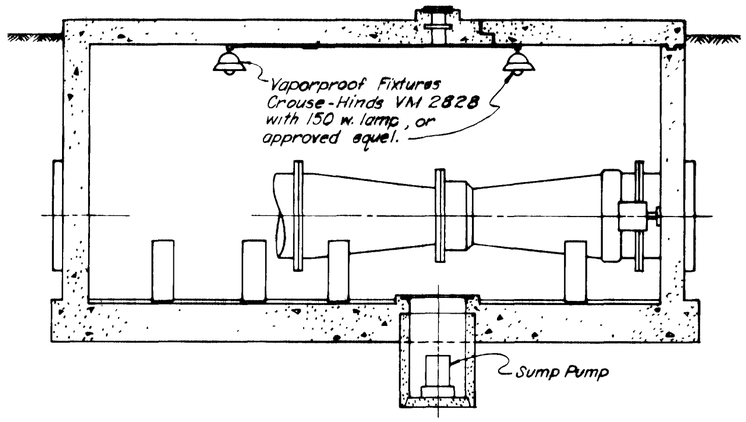
Scale: None

Drawn by: W.J.L.	Traced by: R.B.	Checked by: WJL	Examined by: D.P.	Approved by:
Revisions:	As Built 1/68 RGM			



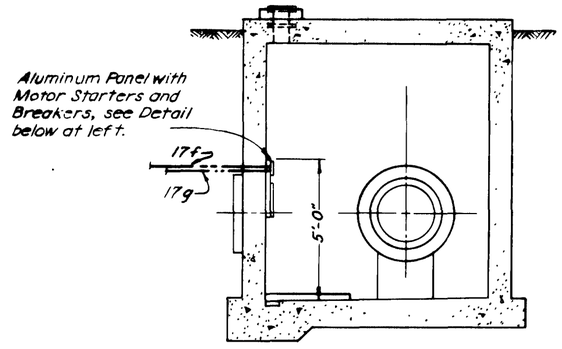
SECTIONAL PLAN

Scale: $\frac{1}{4}$"=1'-0"



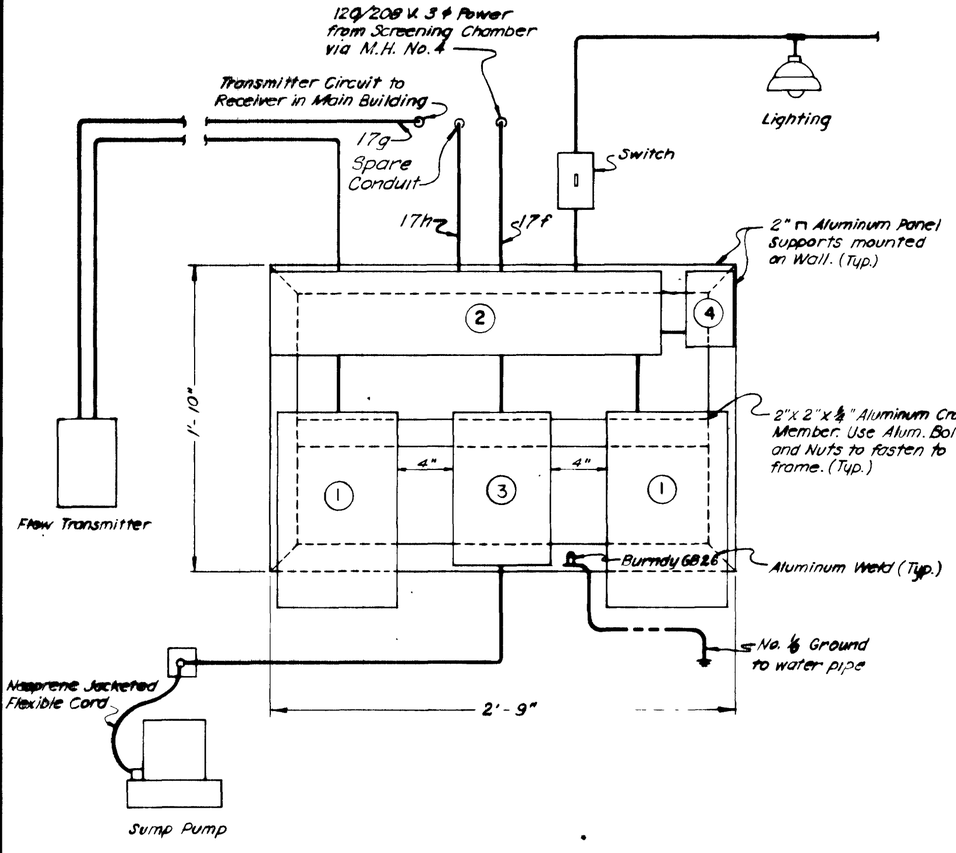
SECTION A-A

Scale: $\frac{1}{4}$"= 1'-0"



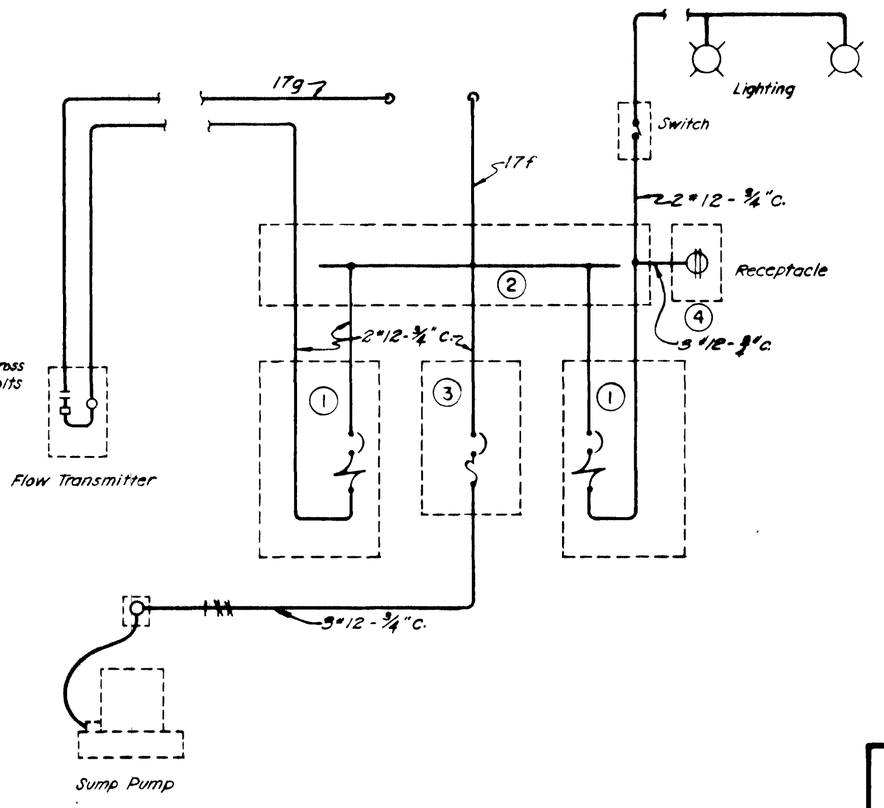
SECTION B-B

Scale $\frac{1}{4}$"=1'-0"



MOTOR STARTERS AND BREAKERS

Scale: None



WIRING DIAGRAM

Scale: None

LEGEND

UNIT NO.	NO. REQUIRED	DESCRIPTION
①	2	Circuit Breaker Molded Case Type AB 100A E-Frame, 3 Pole, 240 V. 15,000 A. Interrupting Rating, 20 amp. trip in NEMA IV Enc. Westinghouse Cat. #W-E3020I.T.E. or approved equal. 8⅝"x 14".
②	1	Wireway 6"x 6"x 2'-4" Stainless Steel weatherproof construction screwed-on cover with rust proof screws and weathertight gaskets.
③	1	Manual Starter in NEMA IV Enclosure, 120 V. 1ϕ 60 ~ Size 0 with overload protection. Allen-Bradley Co. Bulletin No. 600, or approved equal. 7"x 11".
④	1	Receptacle, Weatherproof, 20A. 3 Pole with polarized grounded neutral. Crouse-Hinds Cat. No. DS135 in F.D Series Aluminum Condulet or approved equal.

Note: All NEMA IV Enclosures shall be Stainless Steel.

AS-BUILT DRAWING

DATE January, 1968

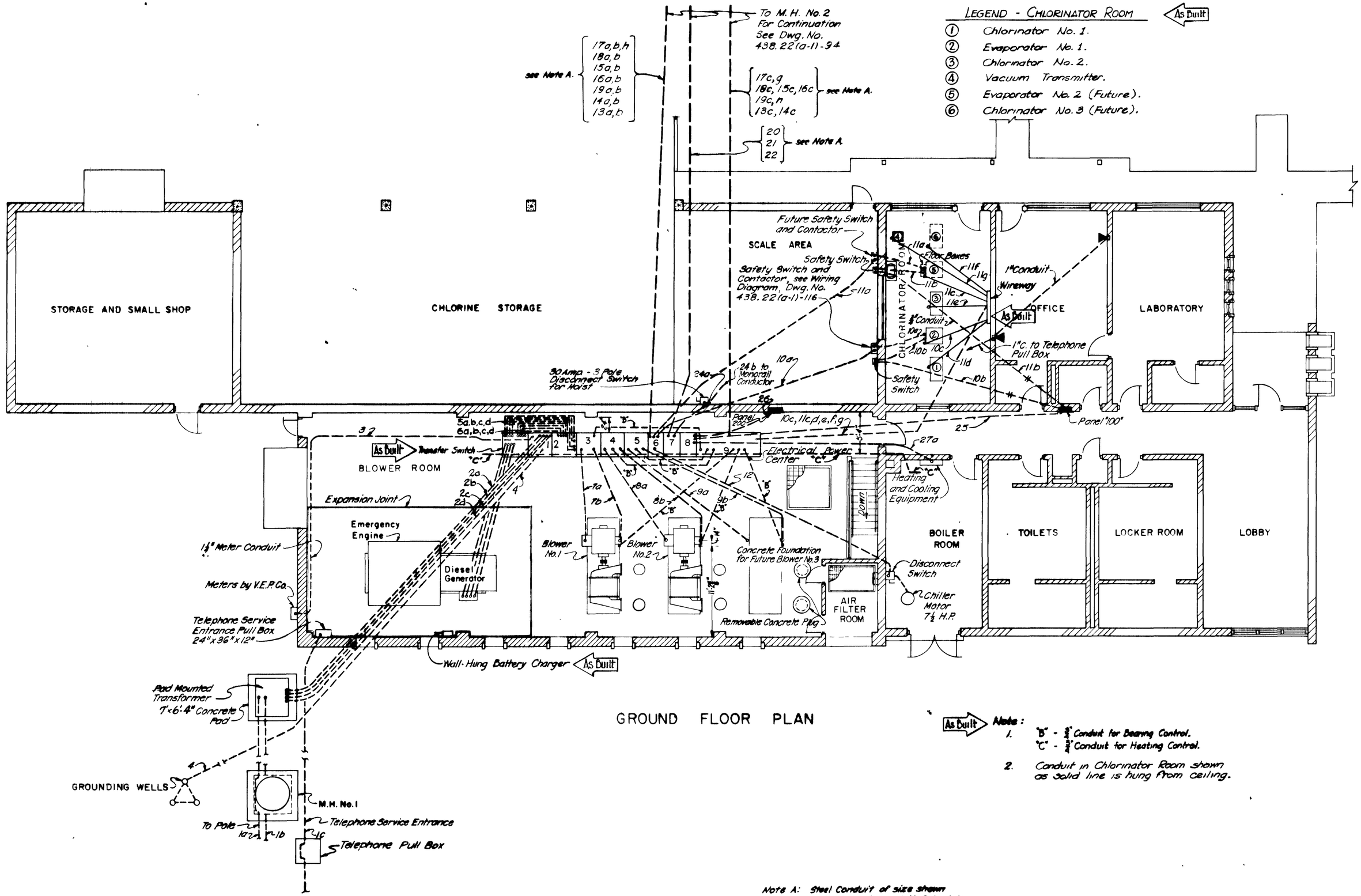
DRAWING NO. 438.22(a-1)-109

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
VENTURI METER VAULT

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

Drawn by: N.J.L.	Traced by: K.P.	Checked by: W.J.L.	Examined by: D.P.	Approved by:
Revisions:				



GROUND FLOOR PLAN

As Built Note:
1. "B" - ¾" Conduit for Bearing Control.
"C" - ¾" Conduit for Heating Control.
2. Conduit in Chlorinator Room shown as solid line is hung from ceiling.

Note A: Steel Conduit of size shown in Cable and Conduit Schedule in Concrete Envelope

AS-BUILT DRAWING
DATE January, 1968

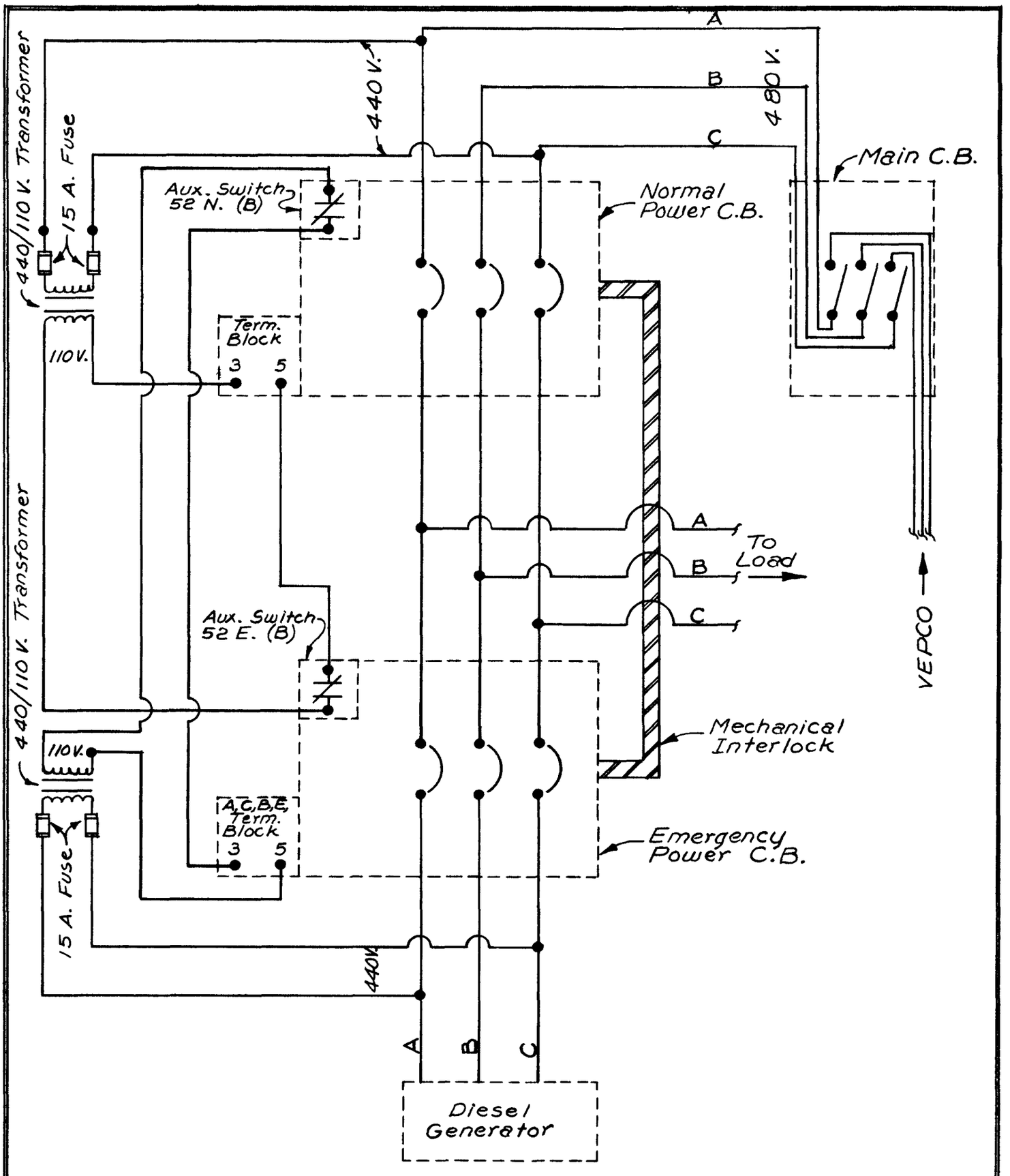
DRAWING NO. 438.22(a-1)-110

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
MAIN BUILDING
POWER - GROUND FLOOR

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: ¼" = 1'-0" July, 1964

Drawn by: W.J.L.	Traced by: R.B.	Checked by: W.J.L.	Examined by: D.P.	Approved by:
Revisions:	As Built 1/68 RGM			



INSTALLED 1969

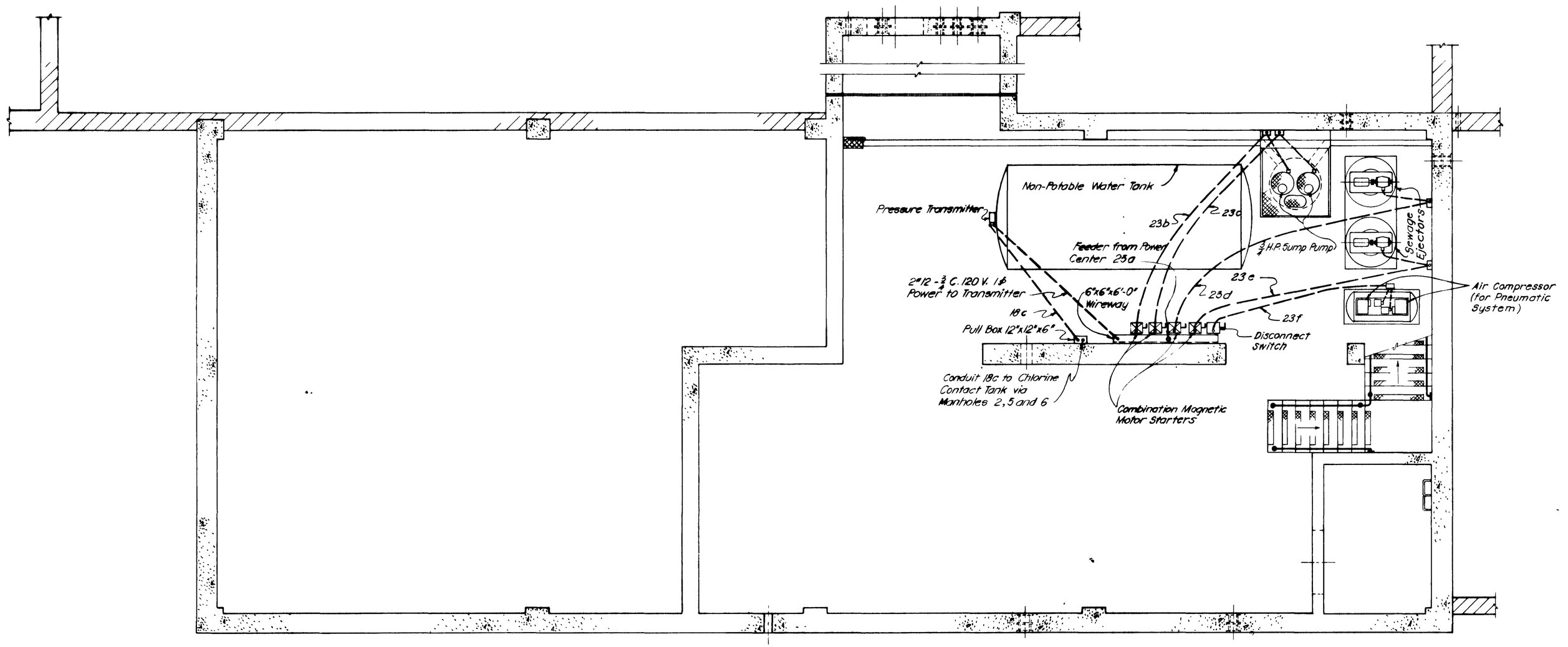
Addendum To Drawing No. 438.22(a-1)-110, James River Sewage Treatment Plant

HAMPTON ROADS SANITATION DISTRICT

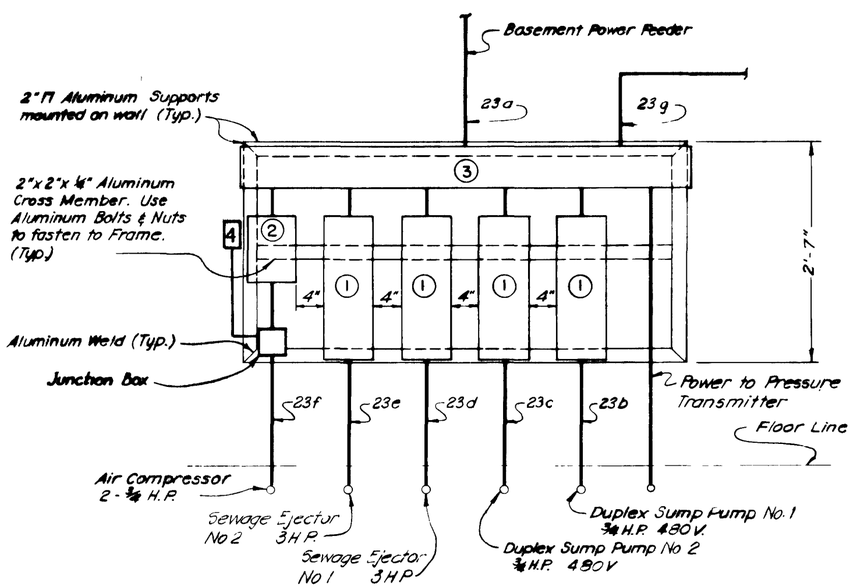
• JAMES RIVER PLANT •

PROPOSED REVISIONS TO POWER INTERLOCK SYSTEM

Date: 6-24-69 | Drawn: EHS | Design: SR | Approved:
Revised: | Scale: NTS

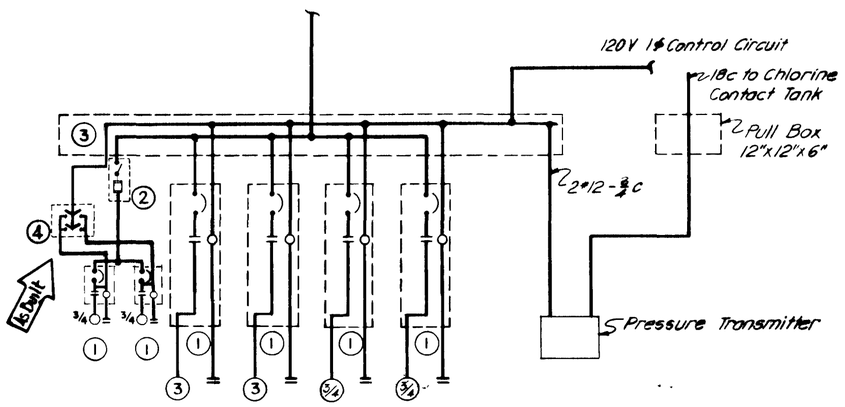


BASEMENT PLAN



MOTOR STARTER AND BREAKER

Scale: None



WIRING DIAGRAM

Scale: None

Note: All NEMA Type 4 Enclosures Shall Be Stainless Steel.

AS-BUILT DRAWING

DATE January, 1968

LEGEND

UNIT NO.	NO. REQUIRED	DESCRIPTION
①	4	Combination Magnetic Starter with Circuit Breaker in NEMA IV stainless steel enclosure, 480 V. 3 ϕ 60 ~, Size 0, Hand-Off-Automatic switch and O.L. reset in cover, Pilot Lights, 3 pole overload protection. One each N.O. and N.C. auxiliary contacts in addition to sealing contacts. Allen-Bradley Bulletin 713 or approved equal. (Encl. 7"x 21½").
②	2	Safety Switch in NEMA IV stainless steel Enclosure, 600V., 3ϕ, 60 ~, 30 Ampere, 3 Pole. Heavy duty Westinghouse NEMA Type H.D. or approved equal. (Encl. 6¾"x 9½").
③	1	Wireway 6"x6"x 5'-6" stainless steel watertight construction, screwed on cover with rustproof screws and gasket.
④	1	Two Position Selector Switch in NEMA Type 4 Stainless Steel Enclosure. Allen Bradley Bulletin 800, Catalog No. R2HGA or Approved Equal.

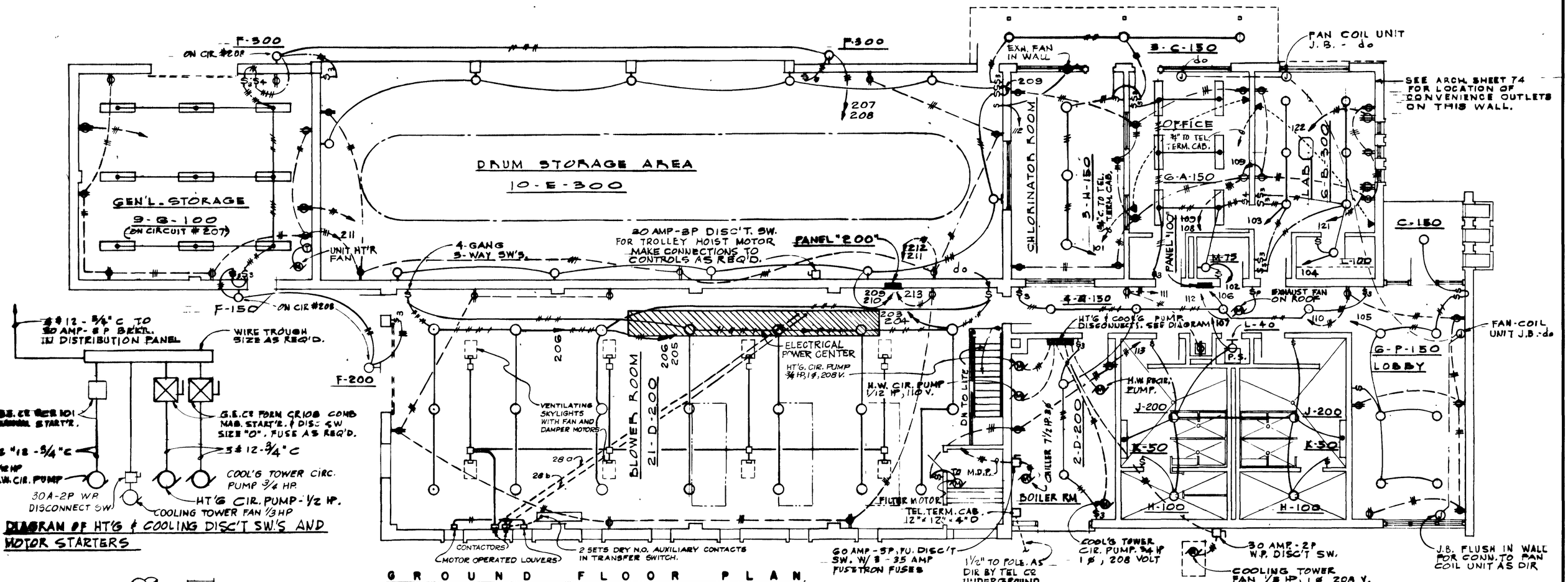
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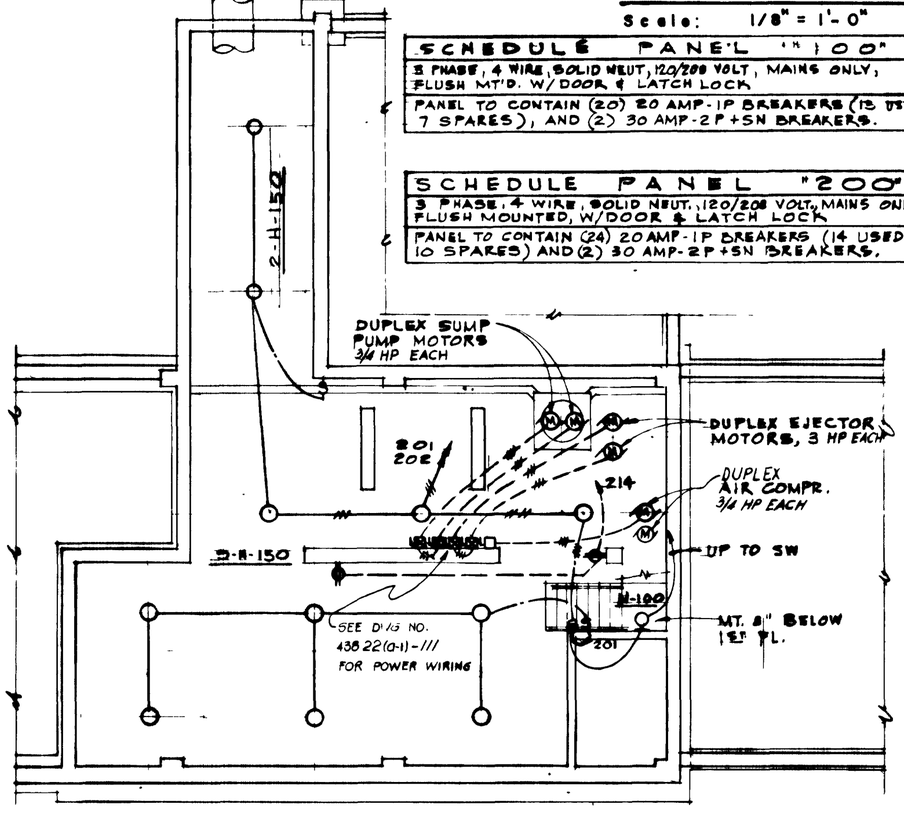
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
MAIN BUILDING
POWER - BASEMENT

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: 1/4" = 1'-0" July, 1964

Drawn by: W.J.L.	Traced by: Q.R.	Checked by: W.J.L.	Examined by: D.J.	Approved by:
Revisions:	As Built 1/68 RSM			





SCHEDULE PANEL "100"

3 PHASE, 4 WIRE, SOLID NEUT., 120/208 VOLT, MAINS ONLY, FLUSH MT'D. W/ DOOR & LATCH LOCK

PANEL TO CONTAIN (20) 20 AMP-1P BREAKERS (13 USED, 7 SPARES), AND (2) 30 AMP-2P+SN BREAKERS.

SCHEDULE PANEL "200"

3 PHASE, 4 WIRE, SOLID NEUT., 120/208 VOLT, MAINS ONLY, FLUSH MOUNTED, W/ DOOR & LATCH LOCK

PANEL TO CONTAIN (24) 20 AMP-1P BREAKERS (14 USED - 10 SPARES) AND (2) 30 AMP-2P+SN BREAKERS.

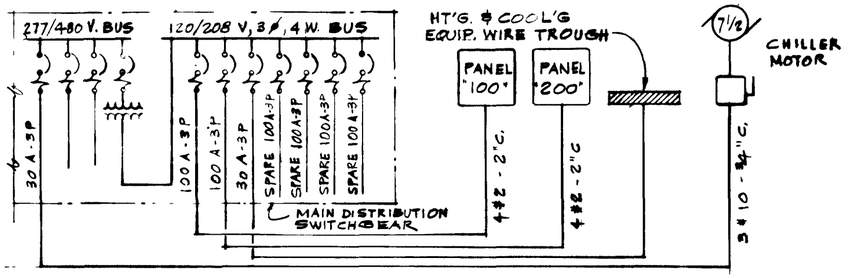
LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER AND CAT. NO.
A	LITECONTROL #9534 RS-6150. WITH (3) F40T12/RS/CW LAMPS.
B	McPHILBEN #68-15 W/ PLASTER FRAME. LAMP: 300 WATT P3-30
C	McPHILBEN #4-814 E W/ PLASTER FR.
D	MILLER #AE-4013 FOR OUTLET BOX MOUNTING
E	HOLOPHANE #485 MT. 8'-0" UP.
F	HOLOPHANE #480 MT. 10'-0" UP
G	LITECONTROL #9724 RS-SC PENDANT MOUNT TO 9'-6"
H	McPHILBEN #43-55 VT
J	McPHILBEN #4-1214 E
K	LITECRAFT #S74961-140
L	PORCELAIN SOCKET W/ PULL SWITCH (P.S.) AS INDICATED.
M	N.L. CORP. #4268
N	McPHILBEN #43-40
P	McPHILBEN #68-814 W/ PLASTER FR.
Q	MIROFLECTOR #B-525

NOTE!
MINIMUM CONDUIT SIZE 3/4"

SYMBOL SCHEDULE

FLUORESCENT LITE FIXTURE	DISCONNECT SW.
INCANDESCENT CLG. OUTLET	COMB. MOT. STARTER & DISC'T. SW.
BRACKET TYPE FIXTURE	MOTOR
$, $_3$, $_4$ SINGLE POLE, 3-WAY, 4-WAY - WALL SW.	THERMOSTAT
DUPLEX CONVENIENCE OUTLET	CIRCUIT RUN IN WALL OR CEILING
RANGE TYPE OUTLET	CIRCUIT RUN IN FLOOR
JUNCTION BOX	HOME RUN TO PANEL
TELEPHONE OUTLET	TELEPHONE CONDUIT, 3/4" MIN.



SCHEMATIC FEEDER DIAGRAM

DRAWING NO. 438.22 (a-1)-112

AS-BUILT DRAWING
DATE January, 1968

COMMONWEALTH OF VIRGINIA
W. BOYCE BLANCHARD
PROFESSIONAL ENGINEER
CERTIFICATE No. 164
CERTIFIED PROFESSIONAL ENGINEER

FORREST COILE AND ASSOCIATES
ARCHITECTS
3415 WARWICK BOULEVARD NEWPORT NEWS, VIRGINIA

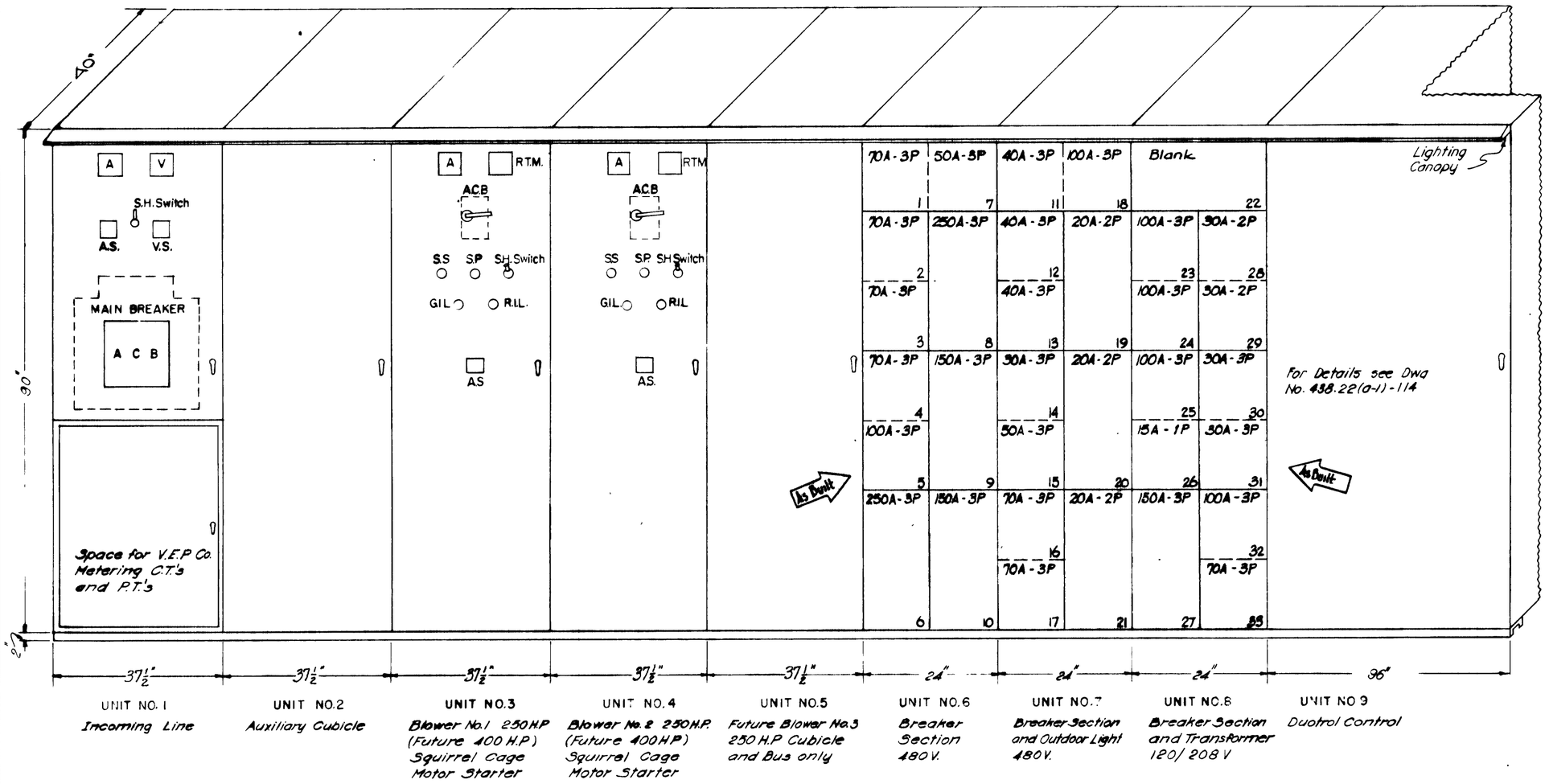
W. BOYCE BLANCHARD
MECHANICAL ELECTRICAL ENGINEERS
3415 WARWICK BOULEVARD NEWPORT NEWS, VIRGINIA

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
MAIN BUILDING
LIGHTING - GROUND FLOOR AND BASEMENT

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As noted — July, 1964

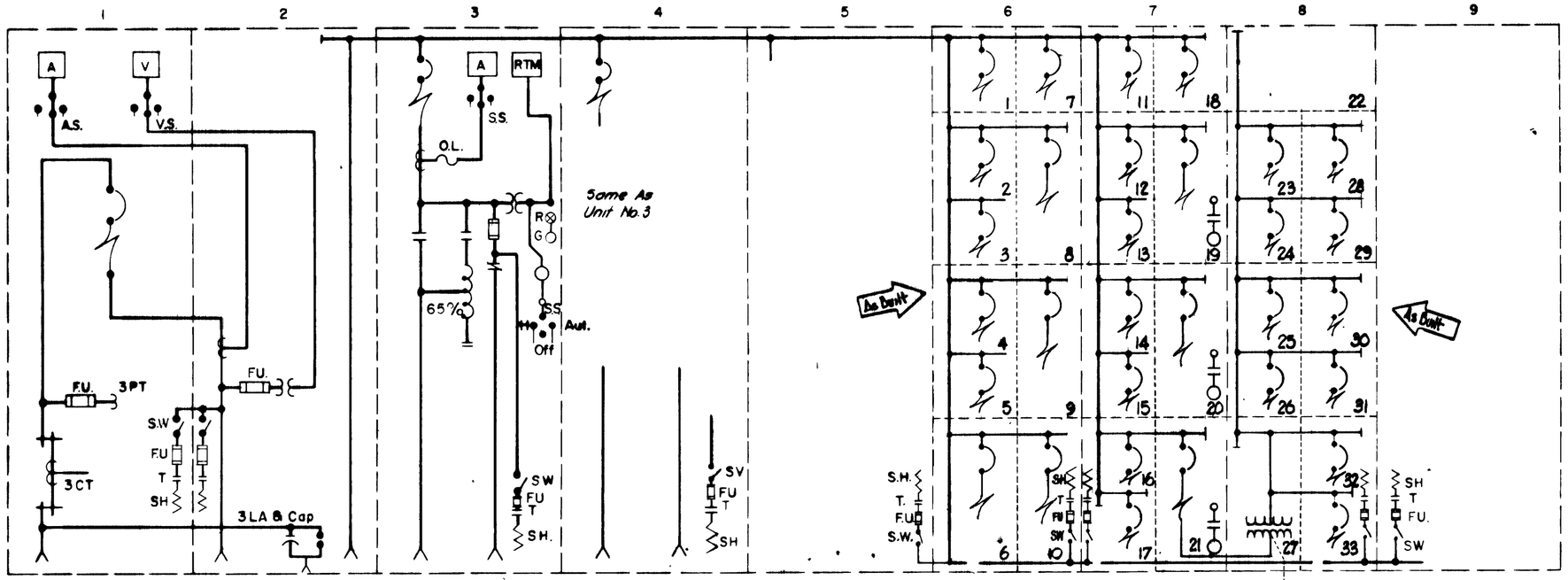
Drawn by: L.H.T.	Traced by: L.H.T.	Checked by: W.B.B.	Examined by: D.P.	Approved by:
Revisions:				



POWER CENTER

Note: An additional module, 2'-10" × 4'-11" × 6'-6", is located to the left of module no. 1 and contains the transfer switch as shown on Dwg. 438-22(a-1)-110.

As Built



POWER CENTER - WIRING DIAGRAM

AS-BUILT DRAWING

DATE January, 1968

LEGEND

A.	Ammeter
A.S	Ammeter Switch
V.	Voltmeter
V.S.	Voltmeter Switch
R.T.M	Running Time Meter
S.H	Space Heater
S.S.	Selector Switch
S.P	Safety Plug
G.I.L.	Green Indicating Light
R.I.L	Red Indicating Light
Aut.	Automatic
H.	Hand
A.C.B.	Air Circuit Breaker
F.U	Fuse
T.	Thermostat

BREAKERS AND CONTROLS
277 480V. 3Ø 4W. SECTIONS

CIR.	BREAKER	DESIGNATION	CONDUIT
9	150A - 3P	Sludge Control Bldg Feeder	13a
8	250A - 3P	Chlorine Contact Tank "	18a
10	150A - 3P	Spare	—
6	250A - 3P	Spare	—
12	40A - 3P	Chlorine Evaporator Feeder	10a
13	40A - 3P	Future Cl_2 " "	11a
14	30A - 3P	Chiller Motor Feeder	12a
3	70A - 3P	Primary Settling Tank Feeder	14a
5	100 A - 3P	Final Settling Tank Feeder	15a
2	70A - 3P	Grit Collector Feeder	16a
1	70A - 3P	Screening Chamber Feeder	17a
4	70A - 3P	Aeration Tank Feeder	19a
11	40A - 3P	Crane Feeder	24a
15	50A - 3P	Basement Power Feeder	23a
7	50A - 3P	Spare	—
18	100A - 3P	Spare	—
16	70A - 3P	Spare	—
22		Blank	—
17	70A - 3P	Spare	—
20	20A - 2P & Cont	Outdoor Lighting Circuit No.2	21
27	150A - 3P	Transformer Primary Breaker	—
19 & 21	20A - 2P & Cont	Outdoor Lighting Circuit No. 1 & 3	20 & 22

120 208V. 3Ø 4W SECTION

CIR.	BREAKER	DESIGNATION	CONDUIT
24	100A - 3P	Lighting Panel 100 Feeder	25
25	100A - 3P	Lighting Panel 200 Feeder	26
23	100A - 3P	Spare	—
32	100A - 3P	Spare	—
30	30A - 3P	Heat and Cool Equip. Feeder	27a
28	30A - 2P	Ventilating Skylights	28a
29	30A - 2P	Motor Operated Louvers	28b
33	70A - 3P	Spare	—
31	30A - 3P	Duotrol	—
26	15A - 1P	Control Circuit	—

As Built

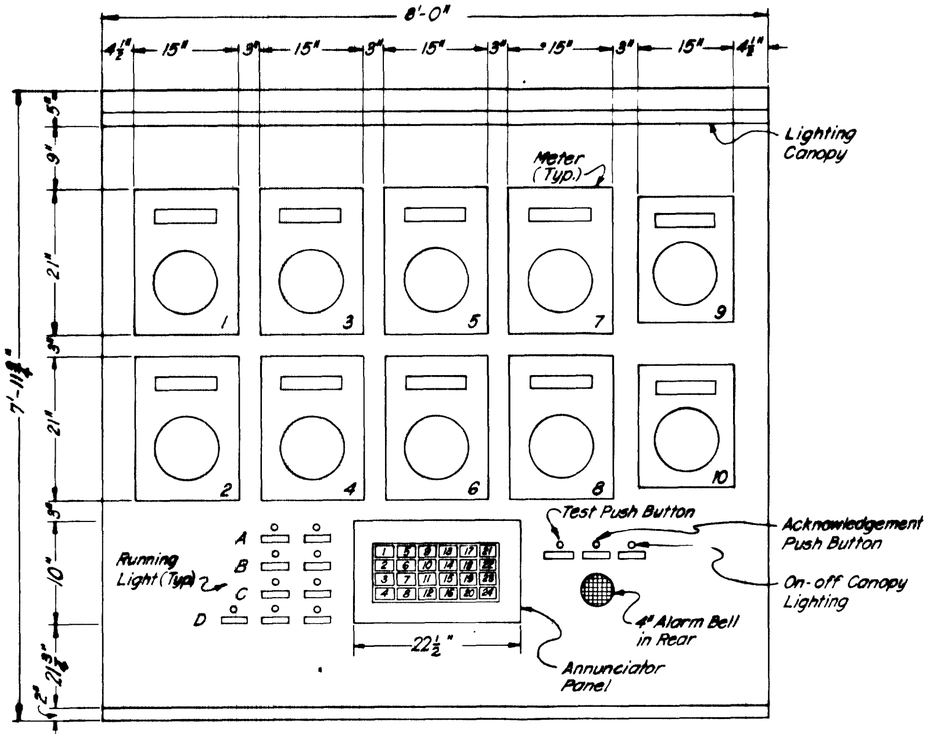
DRAWING NO. 438.22(a-1)-113

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
MAIN BUILDING
POWER CENTER

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: None — July, 1964

Drawn by: W.J.L.	Traced by: O.R.	Checked by: W.J.L.	Examined by: D.P	Approved by:
Revisions:	As Built 1/68 RGM			



UNIT NO. 9 - CONTROL

Scale: None

LEGEND

ANNUNCIATOR PANEL

1.	Screen Chamber High Level
5.	Grit Collector No.1
9.	Grit Collector No.2
17.	Primary Settling Tank No.1
21.	Primary Settling Tank No.2
2.	Final Settling Tank No.1
6.	Final Settling Tank No.2
13.	Sludge Control
10.	Non-Potable Water Supply System High
14.	Non-Potable Water Supply System Low
18.	Chlorine Ejector Water Supply High
22.	Chlorine Ejector Water Supply Low
3.	Chlorinator No.1
7.	Chlorinator No.2
11.	Chlorine Evaporator
15.	Blower No.1, Inlet Bearing, High Temperature
19.	" " Outlet " " "
23.	Blower No.2, Inlet " " "
4.	" Outlet " " "
20.	Spare
8.	"
12.	" "
24.	"
15.	" "

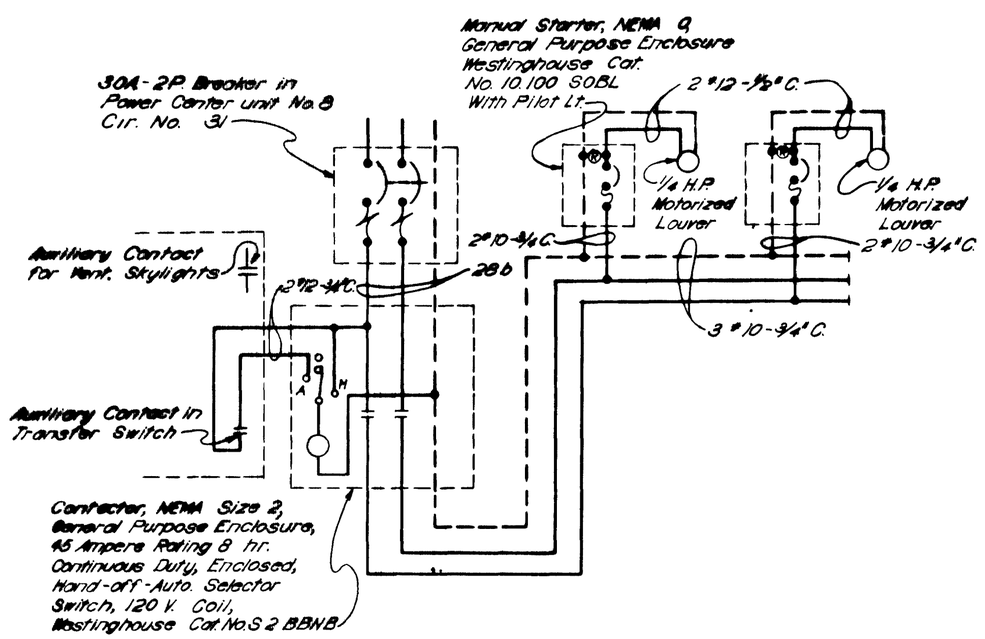
RUNNING LIGHTS

A.	Grit Collectors No.1 & No.2
B.	Primary Settling Tanks No.1 & No.2
C	Final Settling Tanks No.1 & No.2
D.	Chlorinated Effluent Pumps No.1, No.2 & No.3

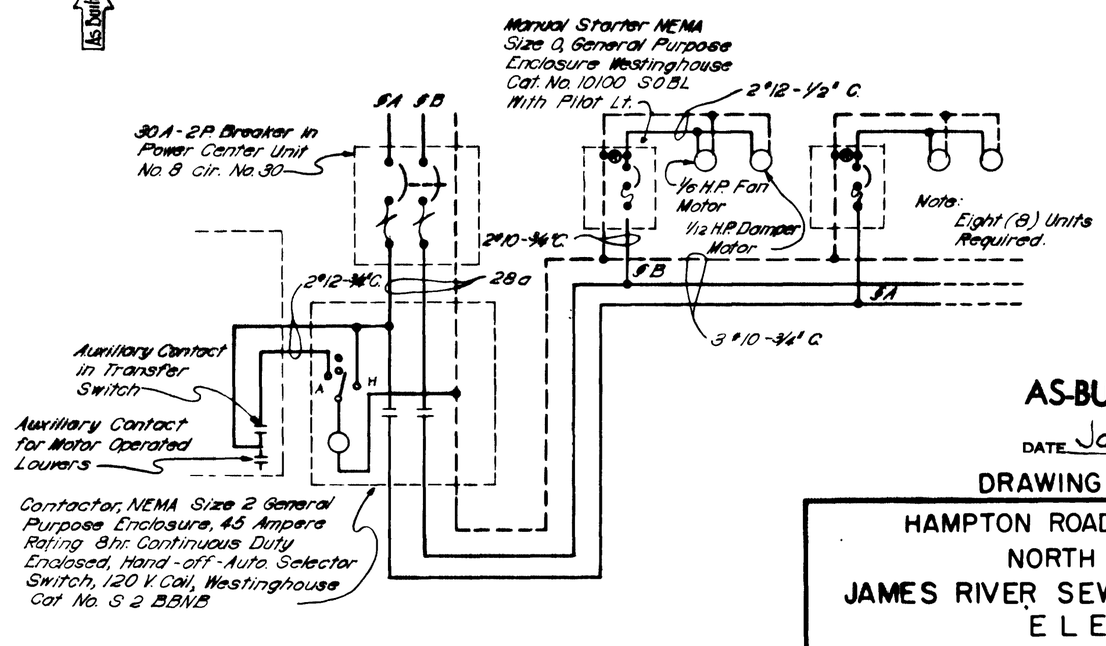
METERS

1.	Plant Influent Flow, Indicator, Totalizer, Recorder
3.	Pre-Aeration Tank Air Supply, Indicator, Totalizer, Recorder
5.	Aeration Tanks 1 & 2 Air Supply " " " "
7.	Aeration Tank 3 Air Supply " " " "
9.	Parshall Flume, Compartment No.1, Flow Indicator, Totalizer, Recorder
2.	" " " No.2, " " " "
4.	" " " No.3, " " " "
6.	" " Compartments No.1, 2 and 3, Flow Totalizer, Recorder
8.	Return Sludge, Indicator, Totalizer, Recorder
10.	Waste Sludge, " " "

As Built



WIRING DIAGRAM
MOTOR OPERATED LOUVERS



WIRING DIAGRAM
VENTILATING SKYLIGHTS

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-114

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
MAIN BUILDING
POWER CENTER AND WIRING DIAGRAMS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

Drawn by: W.J.L.	Traced by: H.S.A.C.	Checked by: W.J.L.	Examined by: D.P.	Approved by:
Revisions:	As Built '68			

Manhole No.1 by Contractor
Fused Disconnects By Contractor
Aerial Service Entrance By V.E.P. Co.
1a
1b
U.G. Primary by Contractor
Riser Pole by V.E.P. Co.
3 L.A. by Contractor
Pad mounted Transformer Unit 750 K.V.A. 12.5 KV/277 480V. 3φ, 4W by V.E.P. Co
U.G. Secondary by Contractor
Meter Box & Meters by V.E.P. Co. Located Outside of Building.
Selector Switch
Main A.B.C.
3 P.T. by V.E.P. Co.
3 C.T. by V.E.P. Co
2a
2b
2c
2d
3
Ground Bus 800A
3 L.A
3 CAP
5a
5b
5c
5d
Transfer Switch
6a
6b
6c
6d
1000 KVA Emergency Plant
Ground Wells
Power Center
Main Bus 1600A 277-480V 3φ 4W
65%
30L
40A-3P
30A-3P
150A-3P
100A-3P
125A-3P
7a
7b
8a
8b
9a
9b
250
Blower No.1
Blower No.2
Future Blower
Starters for future 400 H.P.
10a
11a
12a
CL 2 Evaporator
Future CL 2 Evaporator
Chiller Motor
7½
13a
14a
15a
16a
17a
18a
19a
20A-2P
C/R No.1
C/R No.2
C/R No.3
Outdoor Mercury Vapor Light
Basement Power for:
Spare
Transformer 175 KVA 3φ 4W. 480V/120-208V
Bus 120-208V 3φ 4W 600A
120V Control Circuit
20a
21
22
23a
23b
23c
23d
23e
23f
23g
Duplex Sump Pump
Duplex Sewage Ejector
Air Comp.
24a
24b
Hoist
25
26
27a
LTG Panel 100
LTG Panel 200
Heat & Cool Equip
Wiring Trough
N.A. (Non-Automatic)
N.A.
Space for Future Screen
Space for Future Pump
Sludge Heater
Sump Pump
Sludge Recirculation Pump No.2
Sludge Recirculation Pump No.1
Raw Sludge Pump No.2 (Variable Speed)
Raw Sludge Pump No.1 (Variable Speed)
Gas Compressor No.1
Future Gas Compressor No.2
Seal Water Pump No.1
Seal Water Pump No.2
Alternator
120/208V Panel
Drive Motor No.1
Scum Pump
Drive Motor No.2
Timer
Trip SW No.1
Trip SW No.2
Return Sludge Pump No.1
Return Sludge Pump No.2
Alarm Switch Collector Drive Motor No.2
Rake Drive Motor No.2
Organic Return Pump No.2
Alarm Switch Collector Drive Motor No.1
Rake Drive Motor No.1
Organic Return Pump No.1
9KVA
Spray Water Booster Pump
Air Flow Transmitter
Receptacle
Mechanical Screen
15KVA
Sump Pump Lights & Receptacle
Flow Transmitter
Control Cubicle
Duct rod in Main Building
Pump No.1 Magnetic Drive
Pump No.2 Magnetic Drive
Pump No.3 Future
Spray Water Pump No.1
Spray Water Pump No.2
Spray Water Pump No.3
Hand-off-Automatic Switch
SLUDGE CONTROL BUILDING
PRIMARY SETTLING TANKS
FINAL SETTLING TANKS
GRIT COLLECTOR
SCREENING CHAMBER
CHLORINE CONTACT TANK
AERATION TANKS, RETURN & WASTE SLUDGE CONTROL VAULT
PRE-AERATION TANK
VENTURI METER VAULT

AS-BUILT DRAWING
DATE January, 1968

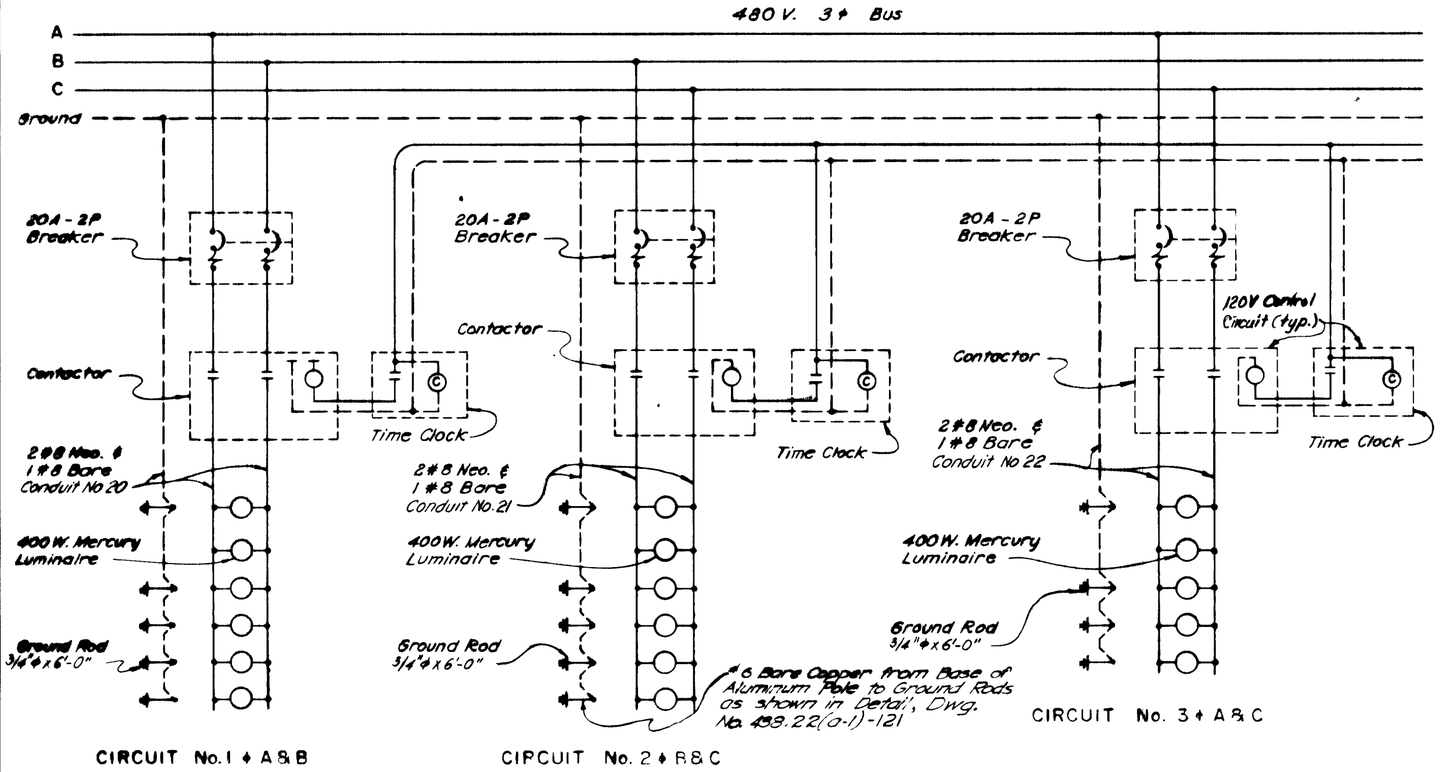
DRAWING NO. 438.22(a-1)-115

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
ONE LINE WIRING DIAGRAM

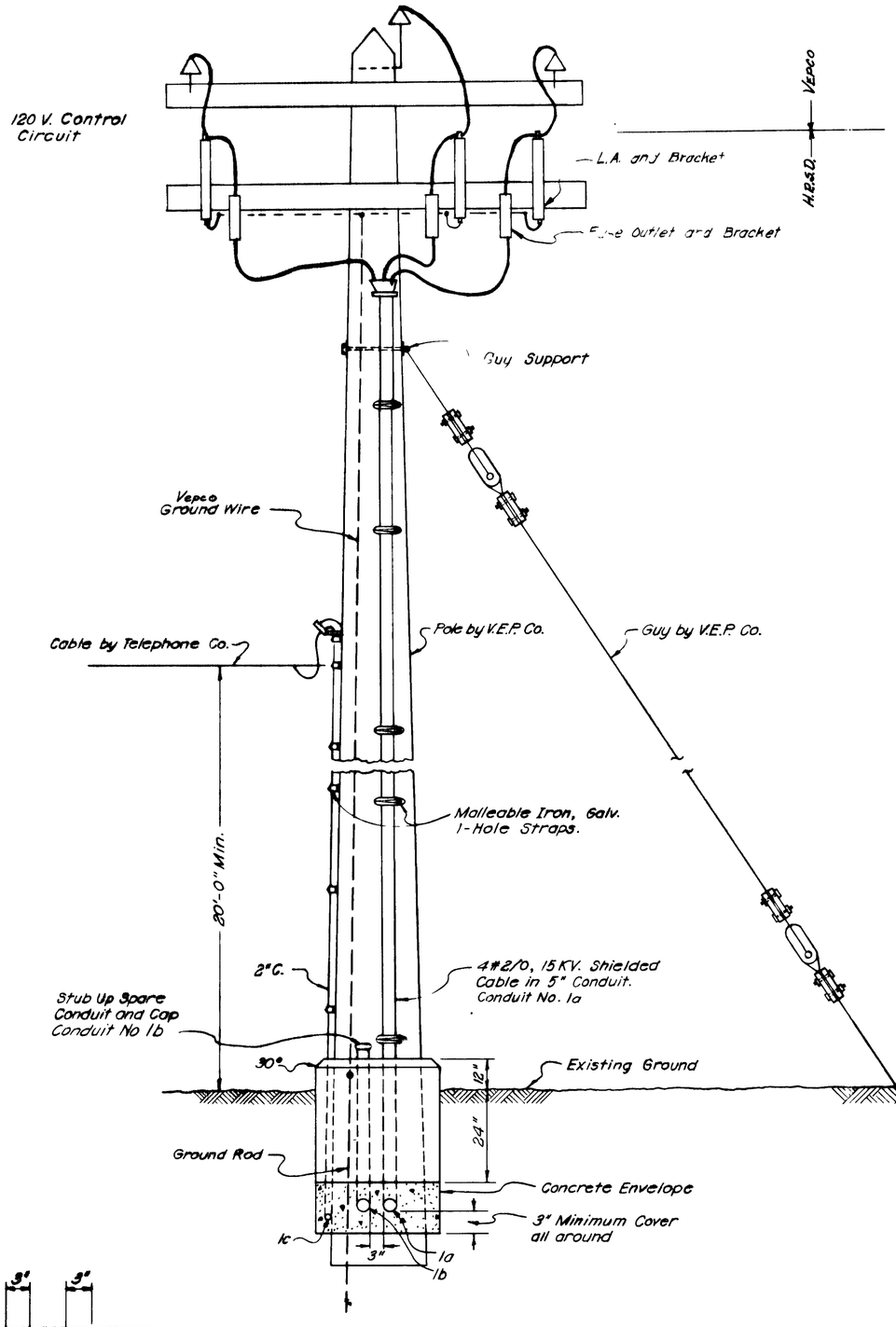
Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: None
July, 1964

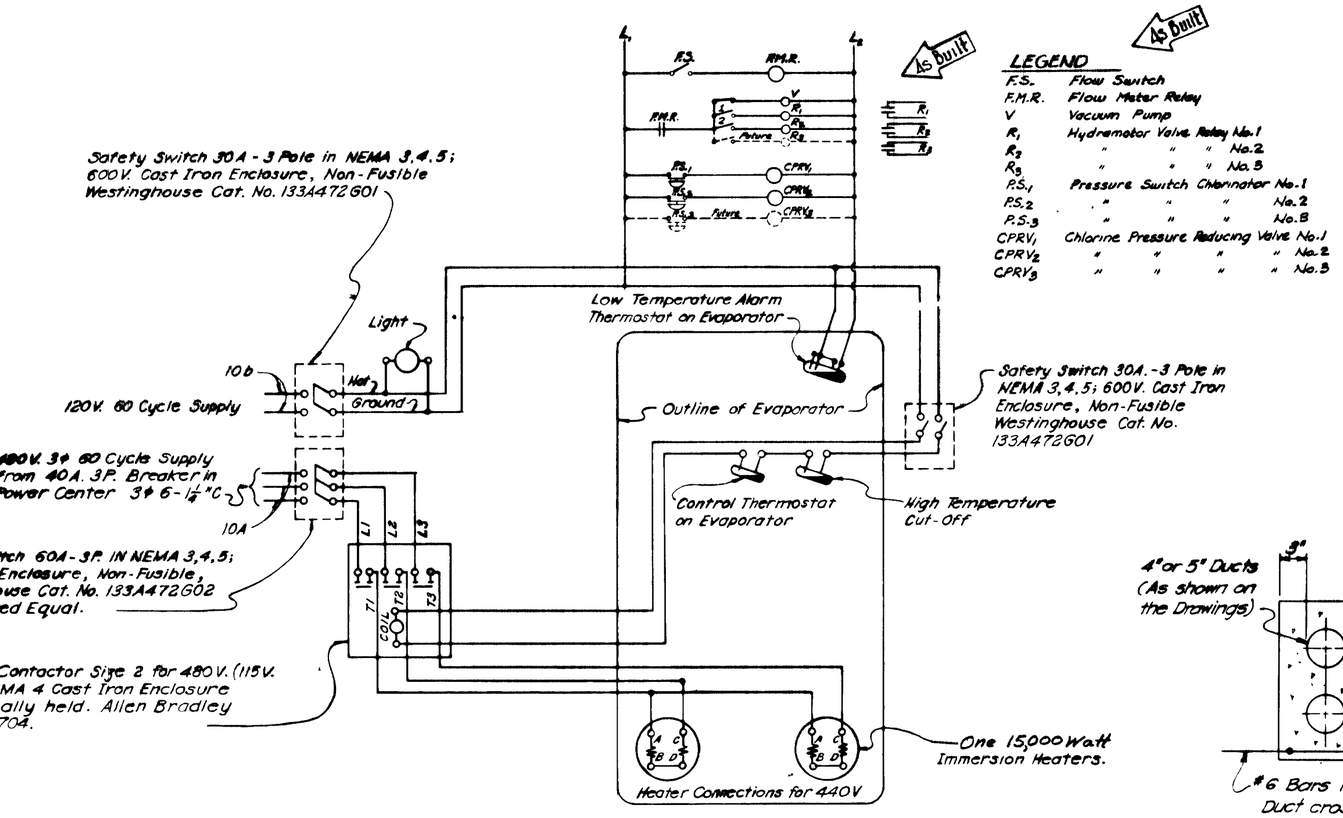
Drawn by: W.J.L.	Traced by: H.S.	Checked by: W.J.L.	Examined by: D.J.	Approved by:
Revisions:				



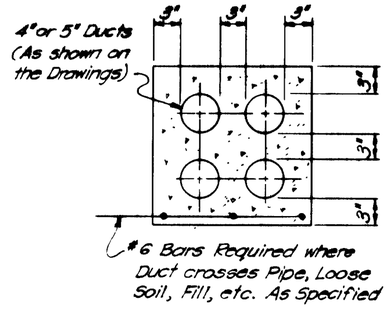
OUTDOOR LIGHTING - WIRING DIAGRAM



RISER POLE CONNECTION DETAIL



CHLORINE EVAPORATOR - WIRING DIAGRAM



FOUR-WAY DUCT

AS-BUILT DRAWING
DATE January, 1968

DRAWING NO. 438.22(a-1)-116

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
WIRING DIAGRAMS AND
MISCELLANEOUS DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: None — July, 1964

Drawn by: W.J.L.	Traced by: K.P.	Checked by: W.J.L.	Examined by: D.P.	Approved by:
Revisions:	As Built 4/67 RGM			

CABLE AND CONDUIT SCHEDULE

UNIT NO.	H.P.	PHASE	VOLTAGE	CYCLES	CONDUIT NO.	DESIGNATION OR PURPOSE	FROM	TO	CABLES SIZE	CABLES No. OF CONDUCTORS	CABLES INSULATION	CABLES COVER	CABLES VOLTS	CONDUIT SIZE	CONDUIT TYPE	REMARKS
1	1	3	12KV	60	1a	12KV Underground Service	Riser Pole	Pad Mounted Transformer	2/0	4-1/c	15 KV		15,000	5"	Fibre	Via Manhole No.1 Steel Conduit Up Pole
					1b	12KV. " " Spare Conduit	Base of Riser Pole	" " "						5"	Fibre	Stub Up and Cap For Future
					1c	Telephone Service Entrance	Riser Pole	Main Building, Pull Box						2"	Fibre	Steel Conduit Up Pole
2		3	480	60	2a	480 V Underground Service	Pad Mounted Transformer	Power Center	750MCM	4-1/c	RHW	Neoprene	600	5"	Fibre	Steel Conduit Within Building
		3	480	60	2b	480 V " "	" " "	" "	750MCM	4-1/c	"	"	600	5"	"	" " " "
		3	480	60	2c	480 V. " "	" " "	" "	750MCM	4-1/c	"	"	600	5"	"	" " " "
					2d	480 V. " ", Spare Conduit	" " "	" "						5"	"	" " " "
3			120	60	3	Metering Conduit	Power Center	V.E.P. Co. Meter Box						1 1/4"	Steel	Meter Cable To Be Supplied and Installed By V.E.P. Co.
4					4	Station Ground	Power Center	Ground Wells	2/0	2-1/c	Bare			2"	Steel	
5		3	480	60	5a	Normal Source Main Feeder	Power Center Main Breaker	Emergency Generator Transfer Switch	750MCM	4-1/c	RHW	Neoprene	600	5"	Steel	
		3	480		5b	" " " "	" " " "	" " " "	750MCM	4-1/c	"	"	600	5"	"	
		3	480		5c	" " " "	" " " "	" " " "	750MCM	4-1/c	"	"	600	5"	"	
					5d	" " " " Spare Conduit	" " " "	" " " "						5"	"	
6		3	480	60	6a	Normal & Emergency Source Main Feeder	Emergency Generator Transfer Switch	Power Center Bus	750MCM	4-1/c	RHW	Neoprene	600	5"	Steel	
		3	480		6b	" " " " "	" " " "	" " "	750MCM	4-1/c	"	"	600	5"	"	
		3	480		6c	" " " " "	" " " "	" " "	750MCM	4-1/c	"	"	600	5"	"	
					6d	" " " " " Spare Conduit	" " " "	" " "						5"	"	
7	250	3	480	60	7a	Blower No.1 Motor Feeder	Power Center Unit No. 3	Blower No. 1 Motor	500MCM	6-1/c	RHW	Neoprene	600	5"	Steel	Future 400 H.P.
					7b	" No.1 " Heater	" " " No.3	" No.1 "	#10	2-1/c	TW	TW	600	1"	"	
8	250	3	480	60	8a	Blower No. 2 Motor Feeder	Power Center Unit No. 4	Blower No. 2 Motor	500MCM	6-1/c	RHW	Neoprene	600	5"	Steel	Future 400 H.P.
					8b	" No. 2 " Heater	" " " No. 4	" No. 2 "	#10	2-1/c	TW	TW	600	1"	"	
9	250	3	480		9a	Blower No. 3 Motor Feeder	Power Center Unit No. 5	Blower No. 3 Motor (Future)						5"	Steel	Future 400 H.P.
					9b	" No. 3 " Heater	" " " No. 5	" No. 3 " "						1"	"	
10	18 KW	3	480	60	10a	Chlorine Evaporator Feeder	Power Center Unit No. 6	Chlorine Evaporator No. 1	#6	3-1/c	T.W.	T.W.	600	1 1/4"	Steel	Via Safety Switch
		1	120	60	10b	Chlorine Evaporator Control Circuit	Light Panel 100	" " No. 1	#12	2-1/c	TW.	TW.	600	3/4"	"	" " "
					10c	" " Signal Circuit	Power Center Unit No. 9	" " No. 1						3/4"	"	
11	18 KW.	3	480	60	11a	Chlorine Evaporator Feeder	Power Center Unit No. 6	Chlorine Evaporator (Future) No. 2						1 1/4"	"	Via Future Safety Switch
					11b	" " "	Light Panel 100	" " " No. 2						3/4"	"	" " "
					11c	" " Signal Circuit	Power Center Unit No. 9	" " " No. 2						3/4"	"	
					11d	Chlorinator No. 1 " "	" " " No. 9	Chlorinator No. 1	#12	2-1/c	RHW	Neoprene	600	3/4"	"	
					11e	" No. 2 " "	" " " No. 9	" No. 2	#12	2-1/c	"	"	600	3/4"	"	
					11f	" No. 3 " "	" " " No. 9	" No. 3 (Future)						3/4"	"	
					11g	Vacuum Transmitter, Signal Circuit	" " " No. 9	Vacuum Transmitter	#12	2-1/c	R.H.W.	Neoprene	600	3/4"	"	

DRAWING NO. 438.22(a-1)-117

AS-BUILT DRAWING
DATE January, 1968

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL

CABLE AND CONDUIT SCHEDULE

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: None — July, 1964

Drawn by: W.J.L.	Traced by: A.C.	Checked by: W.J.L.	Examined by: D.J.	Approved by:
Revisions:				

CABLE AND CONDUIT SCHEDULE

UNIT No.	H.P.	PHASE	VOLTAGE	CYCLES	CONDUIT No.	DESIGNATION OR PURPOSE	FROM	TO	CABLES					CONDUIT		REMARKS
									SIZE	No. OF CONDUCTORS	INSULATION	COVER	VOLTS	SIZE	TYPE	
12	7½	3	480	60	12a	Chiller Motor Feeder	Power Center Unit No.6, Main Building	Chiller Motor	#10	3 - 1/c	TW	TW	600	¾"	Steel	
		1	120	60	13n	Sludge Heating Control Circuits	Distribution Panel	Sludge Heater Panel	#14	14 - 1/c	TW	TW	600	1¼"	Steel	
13		3	480	60	13a	Feeder To Sludge Control Building	Power Center Unit No.6, Main Building	Sludge Control Bldg. Distribution Panel	250MCM	4 - 1/c	RHW	Neoprene	600	3"	Steel	3" Fibre where shown on Dwg. 94
					13b	Spare Conduit To Sludge Control Bldg.	" " " No.6, " "	" " " " "						3"	"	" " " " " " "
		1	120	60	13c	Alarm Circuit To Main Building	" " " No.9, " "	" " " " "	#12	4 - 1/c	RHW	Neoprene	600	1½"	"	" " " " " " "
	3	3	480	60	13d	Sludge Heater Feeder	Sludge Control Bldg. Distribution Panel	Sludge Heater Panel	#8	4 - 1/c	TW	TW	600	1¼"	"	
	1	3	480	60	13e	Sump Pump Feeder	" " " " "	Sump Pump Motor	#12	3 - 1/c	"	"	600	¾"	"	
	15	3	480	60	13f	Sludge Recirculating Pump No.2	" " " " "	Sludge Recirculating Pump No.2	#8	3 - 1/c	"	"	600	1"	"	
	15	3	480	60	13g	Sludge Recirculating Pump No.1	" " " " "	" " " No.1	#8	3 - 1/c	"	"	600	1"	"	
	10	3	480	60	13h	Raw Sludge Pump No 2	" " " " "	Raw Sludge Pump No.2 Motor	#8	3 - 1/c	"	"	600	1"	"	
	10	3	480	60	13i	Raw Sludge Pump No.1	" " " " "	" " " No.1 "	#8	3 - 1/c	"	"	600	1"	"	
	15	3	480	60	13j	Gas Compressor No.1	" " " " "	Gas Compressor No.1	#8	3 - 1/c	"	"	600	1"	"	
					13k	Gas Compressor No.1	" " " " "	Fitting on Roof for Gas Compressor No.2						1"	"	Conduit only for Future Compressor
	⅓	1	120	60	13l	Seal Water Pump No.1	" " " " "	Seal Water Pump No.1 Motor	#12	2 - 1/c	"	"	600	¾"	"	
	⅓	1	120	60	13m	Seal Water Pump No 2	" " " " "	" " " No.2 "	#12	2 - 1/c	"	"	600	¾"	"	
		1	120	60	13o	Seal Water Solenoid Valve Feeder	" " " " "	Seal Water Solenoid Valve	#12	3 - 1/c	"	"	"	¾"	"	
		1	120	60	13p	" " " " "	" " " " "	" " " "	#12	3 - 1/c	"	"	"	¾"	"	
		1	120	60	13q	" " " " "	" " " " "	" " " "	#12	3 - 1/c	"	"	"	¾"	"	
		1	120	60	13r	" " " " "	" " " " "	" " " "	#12	3 - 1/c	"	"	"	¾"	"	
14		3	480	60	14a	Feeder To Primary Settling Tanks	Power Center Unit No.6, Main Building	Primary Settling Tank Distribution Panel	#2	4 - 1/c	RHW	Neoprene	600	2"	Steel	3" Fibre where shown on Dwg. 94
					14b	Spare Conduit To Primary Settling Tanks	" " " No.6, " "	" " " " "						2"	"	" " " " " " "
		1	120	60	14c	Alarm Circuit To Main Building	" " " No.9, " "	" " " " "	#12	4 - 1/c	RHW	Neoprene	600	1½"	"	" " " " " " "
	2	3	480	60	14d	Drive Motor No.1 Feeder and Alarm Circuit	Primary Settling Tank Distribution Panel	Drive Motor No.1 and Alarm Switch	#12	5 - 1/c	"	"	600	1"	"	
	¾	3	480	60	14e	Scum Pump Feeder	" " " " "	Scum Pump Motor	#12	3 - 1/c	"	"	600	¾"	"	
		1	120	60	14f	Trip Switch No 1 Circuit	" " " " "	Trip Switch No.1	#12	2 - 1/c	"	"	600	¾"	"	
		1	120	60	14g	" " No.2 "	" " " " "	" " No.2	#12	2 - 1/c	"	"	600	¾"	"	
	2	3	480	60	14h	Drive Motor No 2 Feeder and Alarm Circuit	" " " " "	Drive Motor No 2 and Alarm Switch	#12	5 - 1/c	"	"	600	¾"	"	
15		3	480	60	15a	Feeder To Final Settling Tanks	Power Center Unit No.6, Main Building	Final Settling Tank Distribution Panel	1/0	4 - 1/c	RHW	Neoprene	600	2½"	Steel	3" Fibre where shown on Dwg. 94
					15b	Spare Conduit To Final Settling Tanks	" " " No.6, " "	" " " " "						2½"	"	" " " " " " "
		1	120	60	15c	Alarm Circuit To Main Building	" " " No.9, " "	" " " " "	#12	4 - 1/c	RHW	Neoprene	600	1½"	"	" " " " " " "
	2	3	480	60	15d	Drive Motor No.1 Feeder and Alarm Circuit	Final Settling Tank Distribution Panel	Drive Motor No.1 and Alarm Switch	#12	5 - 1/c	"	"	600	1"	"	
	7½	3	480	60	15e	Return Sludge Pump No.1 Feeder	" " " " "	Sludge Pump No.1 Motor	#10	3 - 1/c	"	"	600	1"	"	
	1	3	480	60	15f	Scum Pump Feeder	" " " " "	Scum Pump Motor	#12	3 - 1/c	"	"	600	¾"	"	
		1	120	60	15g	Trip Switch No 1 Circuit	" " " " "	Trip Switch No.1	#12	2 - 1/c	"	"	600	¾"	"	
		1	120	60	15h	" " No 2 "	" " " " "	" " No.2	#12	2 - 1/c	"	"	600	¾"	"	
	7½	3	480	60	15i	Return Sludge Pump No 2 Feeder	" " " " "	Sludge Pump No.2 Motor	#10	3 - 1/c	"	"	600	1"	"	
	2	3	480	60	15j	Drive Motor No.2 Feeder and Alarm Circuit	" " " " "	Drive Motor No.2 and Alarm Switch	#12	5 - 1/c	"	"	600	1"	"	
16			480	60	16a	Feeder To Grit Collector	Power Center Unit No.6, Main Building	Grit Collector Distribution Panel	#2	4 - 1/c	RHW	Neoprene	600	2"	Steel	3" Fibre where Shown on Dwg. 94
					16b	Spare Conduit To Grit Collector	" " " No.6, " "	" " " "						2"	"	" " " " " " "

DRAWING NO. 438.22(a-1)-118

AS BUILT DRAWING
January, 1968

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL

CABLE AND CONDUIT SCHEDULE

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: None — July, 1964

Drawn by: W.J.L.	Traced by: I.V.	Checked by: W.J.L.	Examined by: D.P.	Approved by:
Revisions:				

CABLE AND CONDUIT SCHEDULE

UNIT No.	H.P.	PHASE	VOLTAGE	CYCLES	CONDUIT No.	DESIGNATION OR PURPOSE	FROM	TO	CABLES					CONDUIT		REMARKS
									SIZE	No. OF CONDUCTORS	INSULATION	COVER	VOLTS	SIZE	TYPE	
16			120	60	16c	Alarm Circuit to Main Building	Power Center Unit No.9, Main Building	Grit Collector Distribution Panel	#12	4 - 1/c	RHW	Neoprene	600	1½"	Steel	3" Fibre where shown on Dwg. 94
	1⅓	3	480	60	16d	Pre-Aeration Tank Spray Water Pump Feeder	Grit Collector Distribution Panel, Breaker	Spray Water Pump Starter and Motor	#12	3 - 1/c	"	"	600	1"	"	
		1	120	60	16e	Pre-Aeration Tank Air Flow Transmitter Power Supply	" " " " "	A.F Transmitter Breaker and Transmitter	#12	2 - 1/c	"	"	600	1¼"	"	
		1	120	60	16f	Collector Drive Motor No.1 Alarm Switch	" " " " Starter	Alarm Switch No.1	#12	4 - 1/c	"	"	600	¾"	"	
	2	3	480	60	16g	" " " No.1 Feeder	" " " " "	Collector Drive Motor No.1	#12	3 - 1/c	"	"	600	¾"	"	
	1	3	480	60	16h	Organic Return Pump No.1 Feeder	" " " " "	Organic Return Pump No.1 Motor	#12	3 - 1/c	"	"	600	¾"	"	
	2	3	480	60	16i	Rake Drive Motor No.1 Feeder	" " " " "	Rake Drive No.1 Motor	#12	3 - 1/c	"	"	600	¾"	"	
	2	3	480	60	16j	" " " No.2 "	" " " " "	" " No.2 "	#12	3 - 1/c	"	"	600	¾"	"	
	1	3	480	60	16k	Organic Return Pump No.2 Feeder	" " " " "	Organic Return Pump No.2 Motor	#12	3 - 1/c	"	"	600	¾"	"	
	2	3	480	60	16l	Collector Drive Motor No.2 Feeder	" " " " "	Collector Drive Motor No.2	#12	3 - 1/c	"	"	600	¾"	"	
		1	120	60	16m	" " " No.2 Alarm Switch	" " " " "	Alarm Switch No.2	#12	2 - 1/c	"	"	600	¾"	"	
		1	120	60	16n	Pre-Aeration Tank Air Flow Transmitter Circuit	Pre-Aeration Tank Air Flow Transmitter	Receiver in Main Building	#12	2 - 1/c	"	"	600	1"	"	
17		3	480	60	17a	Feeder to Screening Chamber	Power Center Unit No.6 Main Building	Screening Chamber Distribution Panel	#2	4 - 1/c	RHW	Neoprene	600	2"	Steel	3" Fibre where shown on Dwg. 94
					17b	Spare Conduit to Screening Chamber	" " " No.6 " "	" " " "						2"	"	3" " " " " 94
					17c	Alarm Circuit	" " " No 9 " "	" " " "	#12	4 - 1/c	RHW	Neoprene	600	1¼"	"	3" " " " " 94
	1	3	480	60	17d	Mechanical Screen Motor Feeder	Screening Chamber Distribution Panel, Starter	Mechanical Screen Motor	#12	3 - 1/c	"	"	600	¾"	"	
	1	3	480	60	17e	Future Mechanical Screen Feeder	" " " "	Floor Box						¾"	"	
		3	208	60	17f	Feeder to Venturi Meter Vault	" " " " , Breaker	Venturi Meter Vault, Wireway	#8	4 - 1/c	RHW	Neoprene	600	1½"	"	Via Manhole No.4
		1	120	60	17g	Flow Transmitter Circuit	Venturi Meter Vault Flow Transmitter	Power Center Unit No.9, Main Building	#12	2 - 1/c	"	"	600	1"	"	
					17h	Spare Conduit to Main Building	" " " Wireway	" " " No.6, " "						2"	"	3" Fibre where shown on Dwg. 94
					—	Signal Lead to Main Building	Waste Sludge Control Vault	Power Center Unit No. 9, Main Building	#12	—				1"	"	Shielded Signal Lead
18		3	480	60	18a	Feeder to Chlorine Contact Tank	Power Center Unit No 6, Main Building	Chlorine Contact Tank Distribution Panel	500 MCM	4 - 1/c	RHW	Neoprene	600	4"	Steel	4" Fibre where shown on Dwg. 94
					18b	Spare Conduit to Chlorine Contact Tank	" " " No.6, " "	" " " " "						4"	"	4" " " " " " 94
		1	120	60	18c	Signal Circuit to Main Building	" " " No.9, " "	" " " " "	#12	4 - 1/c	RHW	Neoprene	600	1"	"	3" " " " " 94
	40	3	480	60	18d	Pump No.1 Feeders (Motor & Heater)	Chlorine Contact Tank Distribution Panel, Starter	Pump No.1 Motor & Space Heater	#4, #10	3 - 1/c, 2-1/c	"	"	600	2"	"	
	40	3	480	60	18e	" No.2 " " "	" " " " " "	" No.2 " " "	#4, #10	3 - 1/c, 2-1/c	"	"	600	2"	"	
		1	120	60	18f	Control Circuits	" " " " " Starters	Speed Controllers	#12	6 - 1/c	"	"	600	1¼"	"	
		3	480	60	18g	Future Pump No 3 Feeder (Motor & Heater)	" " " " " Future	Floor Box						2"	"	Conduit Only
					18h	Magnetic Drive Power & Feed Back	Speed Control Unit	Magnetic Drive	#4	4 - 1/c	"	"	600	1½"	"	
					18i	" " " "	" " "	" " "	#4	4 - 1/c	"	"	600	1½"	"	
					18j	Future " " " "	" " "	Future Magnetic Drive						1½"		Conduit Only
19		3	480	60	19a	Feeder to Sludge Control Vault	Power Center Unit No.6, Main Building	Return and Waste Sludge Control Vault Distribution Panel	#2	4 - 1/c	RHW	Neoprene	600	2"	Steel	3" Fibre where shown on Dwg. 94
					19b	Spare Conduit to Sludge Control Vault	" " " No.6, " "	" " " " "						2"	"	3" " " " " " 94
					19c	Future Control Circuit	" " " No.9, " "	" " " " "						2"	"	3" " " " " " 94
	½	3	480	60	19d	Spray Water Pump No.1 Feeder	Return and Waste Sludge Control Vault Distribution Panel, Starter	Pump No.1 Motor	#12	3 - 1/c	RHW	Neoprene	600	¾"	"	
	⅓	3	480	60	19e	" " " No.2 "	" " " " " "	" No.2 "	#12	3 - 1/c	"	"	600	¾"	"	
	½	3	480	60	19f	" " " No.3 "	" " " " " "	" No.3 "	#12	3 - 1/c	"	"	600	¾"	"	
		1	120	60	19g	Air Flow Transmitter No.1 Feeder and Signal	" " " " "	Air Flow Transmitter No.1	#12	4 - 1/c	"	"	600	1"	"	
		1	120	60	19h	" " " No.2 " " "	" " " " "	" " " No.2	#12	4 - 1/c	"	"	600	1"	"	
		1	120	60	19i	Parshall Flume Transmitter No.1 Feeder and Signal	" " " " "	Parshall Flume Transmitter No.1	#12	4 - 1/c	"	"	600	1"	"	

As Built

AS-BUILT DRAWING
DATE January, 1968

DRAWING NO. 438.22(a-1)-119

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL

CABLE AND CONDUIT SCHEDULE

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: None — July, 1964

Drawn by: WJL	Traced by: HC	Checked by: WJL	Examined by: DP	Approved by:
Revisions:	As Built 3/24/68 RGM			

CABLE AND CONDUIT SCHEDULE

UNIT No.	H.P.	PHASE	VOLTAGE	CYCLES	CONDUIT No.	DESIGNATION OR PURPOSE	FROM	TO	CABLES					CONDUIT		REMARKS
									SIZE	No. OF CONDUCTORS	INSULATION	COVER	VOLTS	SIZE	TYPE	
19		1	120	60	19j	Parshall Flume Trans. No. 2 Feeder & Signal	Return and Waste Sludge Control Vault Distribution Panel	Parshall Flume Transmitter No. 2	#12	4 - 1/c	RHW	Neoprene	600	1"	Steel	
		1	120	60	19k	" " " No.3 " "	" " " " "	" " " No.3	#12	4 - 1/c	"	"	600	1"	"	
		1	208	60	19l	Magnetic Flow Meter No.1 and No.2	" " " " "	Magnetic Flow Meter No. 1	#12	8 - 1/c	"	"	600	1 1/4"	"	
		1	120	60	19m	" " " No.2 Signal No.1 and 2	" " " " "	" " " No.2	#18	4 - 1/c	RHW Inner Shield	Neoprene Outer Shield	600	1"	"	Shielded
		1	120	60	19n	Transmitter Circuits to Main Building	" " " " "	Power Center Unit No.9, Main Building	#12	14 - 1/c	RHW	Neoprene	600	3"	"	
	1/3	1	120	60	19o	Sump Pump Feeder	" " " " ", Breaker	Sump Pump Manual Starter and Motor	#12	2 - 1/c	"	"	600	3/4"	"	
		1	120	60	19p	Light Fixture and Outlet Feeder	" " " " ", Breaker	Lighting Fixture and Receptacle	#12	2 - 1/c	"	"	600	3/4"	"	
20		1	480	60	20	Outdoor Light Circuit No. 1	Power Center Unit No. 7, Main Building	Outdoor Mercury Vapor Luminaires	#8	2-1/c, 1-1/c	RHW, Bare	Neoprene	600	1 1/4"	Steel	3" Fibre where shown on Dwg. 94
21		1	480	60	21	Outdoor Light Circuit No. 2	Power Center Unit No.7, Main Building	Outdoor Mercury Vapor Luminaires	#8	2-1/c, 1-1/c	RHW, Bare	Neoprene	600	1 1/4"	Steel	3" Fibre where shown on Dwg. 94
22		1	480	60	22	Outdoor Light Circuit No.3	Power Center Unit No.7, Main Building	Outdoor Mercury Vapor Luminaires	#8	2-1/c, 1-1/c	RHW, Bare	Neoprene	600	1 1/4"	Steel	3" Fibre where shown on Dwg. 94
23		3	480	60	23a	Basement Power Feeder	Power Center Unit No.7 main Building	Wireway In Basement	#6	4 - 1/c	TW	TW	600	1 1/2"	Steel	
	3/4	3	480	60	23b	Duplex Sump Pump Feeder No.1	Wireway and Combination Starter	Pump No.1 Motor and Level Switch	#12	5 - 1/c	TW	TW	600	1"	"	
	3/4	3	480	60	23c	" " " " No.2	" " " "	" No.2 " " " "	#12	5 - 1/c	TW	TW	600	1"	"	
	3	3	480	60	23d	Duplex Sewage Ejector Feeder No.1	" " " "	Ejector No.1 Motor and Pressure Switch	#12	5 - 1/c	TW	TW	600	1"	"	
	3	3	480	60	23e	" " " " No.2	" " " "	" No.2 " " " "	#12	5 - 1/c	TW	TW	600	1"	"	
	2-3/4	3	480	60	23f	" Air Compressor Feeder and Control	" " " "	Compressor Motors and Pressure Switch	#12	5 - 1/c	TW	TW	600	1"	"	
		1	120	60	23g	120 V Control Circuit	Power Center Unit No.8, Main Building	Wireway in Basement	#12	5 - 1/c	TW	TW	600	3/4"	"	
24	5	3	480	60	24a	Chlorine Storage Hoist Feeder	Power Center Unit No. 7, Main Building	Disconnect Switch	#8	4 - 1/c	TW	TW	600	1 1/2"	Steel	
	5	3	480	60	24b	" " " "	Disconnect Switch	Monorail Conductor	#8	4 - 1/c	TW	TW	600	1 1/2"	"	
25		3	120/208	60	25	Lighting Panel 100 Feeder	Power Center Unit No.8, Main Building	Lighting Panel 100	#2	4 - 1/c	TW	TW	600	2"	Steel	
26		3	120/208	60	26	Lighting Panel 200 Feeder	Power Center Unit No.8, Main Building	Lighting Panel 200	#2	4 - 1/c	TW	TW	600	2"	Steel	
27		3	120/208	60	27a	Heating and Cooling Equipment Feeder	Power Center Unit No.8, Main Building	Wireway in Mechanical Room, Main Building	#12	4 - 1/c	TW	TW	600	3/4"	Steel	
28		1	120/208	60	28a	Feeder, Ventilating Skylights	Power Center Unit No.8, Main Building	Contactor	#10	3 - 1/c	TW	TW	600	3/4"	Steel	Connections from Contactor to Motors as shown on Drawings.
		1	120/208	60	28b	Feeder, Motor Operated Louvers	" " " " "	"	#10	3 - 1/c	TW	TW	600	3/4"	Steel	" " " "

AS-BUILT DRAWING
DATE January, 1968

DRAWING NO. 438.22(a-1)-120

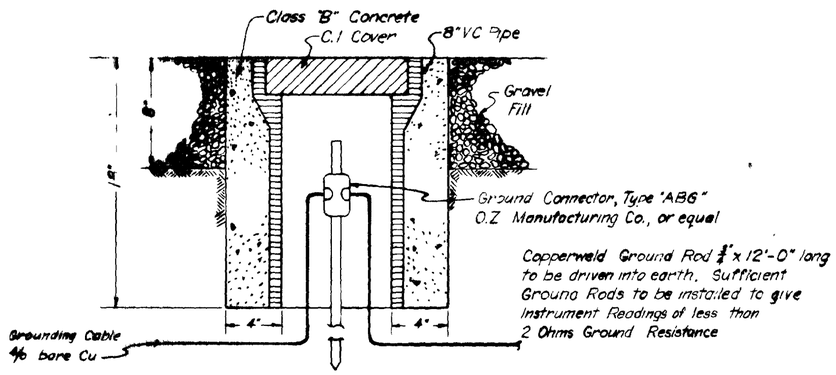
HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL

CABLE AND CONDUIT SCHEDULE

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

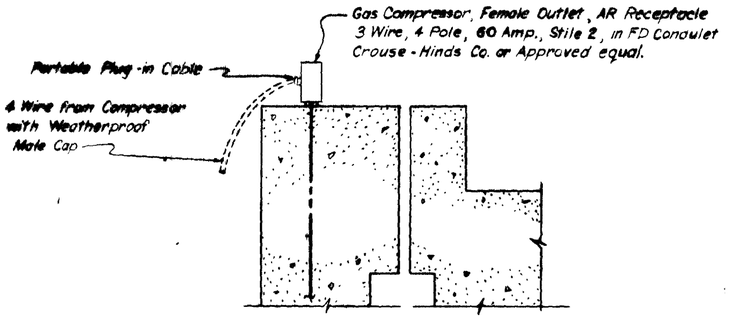
Scale: None — July, 1964

Drawn by: W.J.L	Traced by: D.P.	Checked by: W.J.L.	Examined by: D.J.	Approved by:
Revisions:				



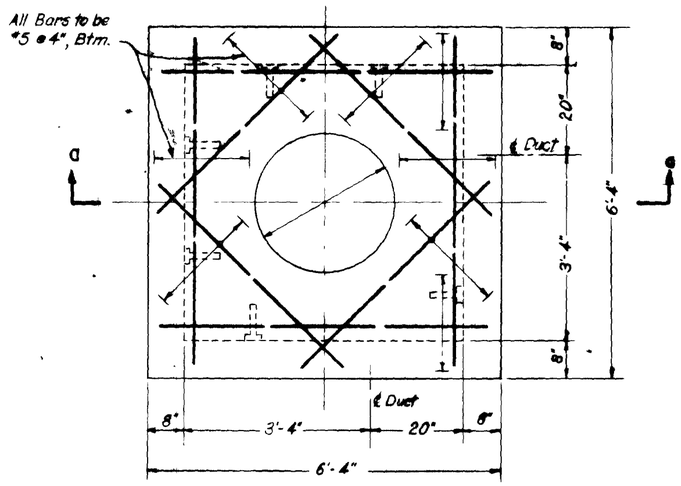
GROUNDING WELL

Scale: $1\frac{1}{2}$" = 1'-0"

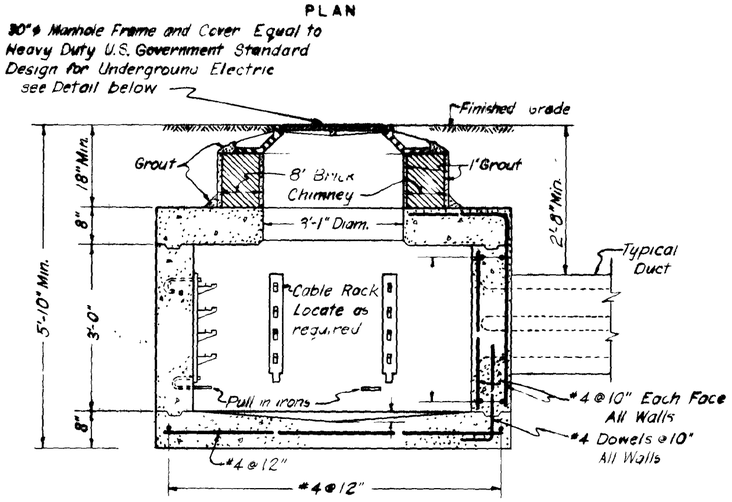


GAS COMPRESSOR FITTING

Scale: 1"=1'-0'



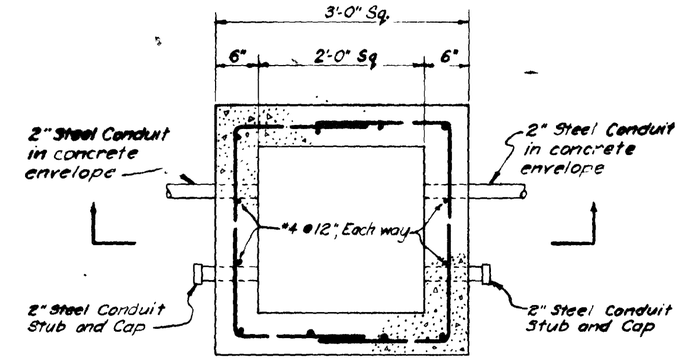
PLAN



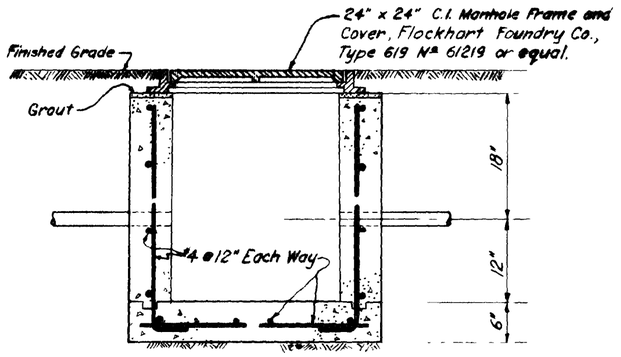
SECTION a-a

ELECTRICAL MANHOLE

Scale: $\frac{1}{2}$" = 1'-0"



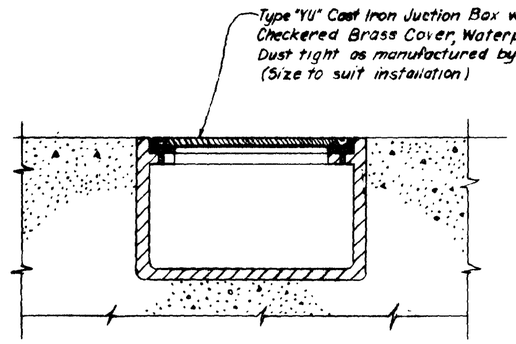
SECTIONAL PLAN



SECTION d-d

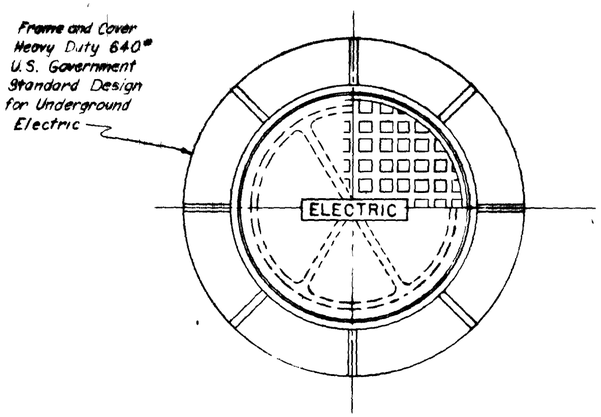
TELEPHONE CONCRETE PULL BOX

Scale: $\frac{3}{4}$" = 1'-0"



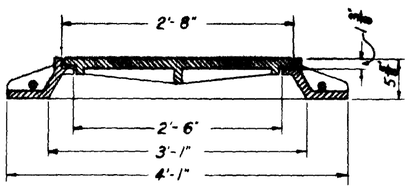
TYPICAL FLOOR BOX FOR FUTURE CONDUIT CONNECTIONS

Scale: None



PLAN

Note: Rough Machined Bearing Surfaces

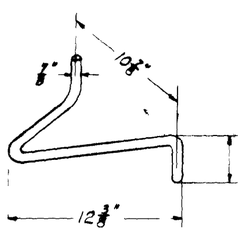


SECTION

MANHOLE FRAME AND COVER

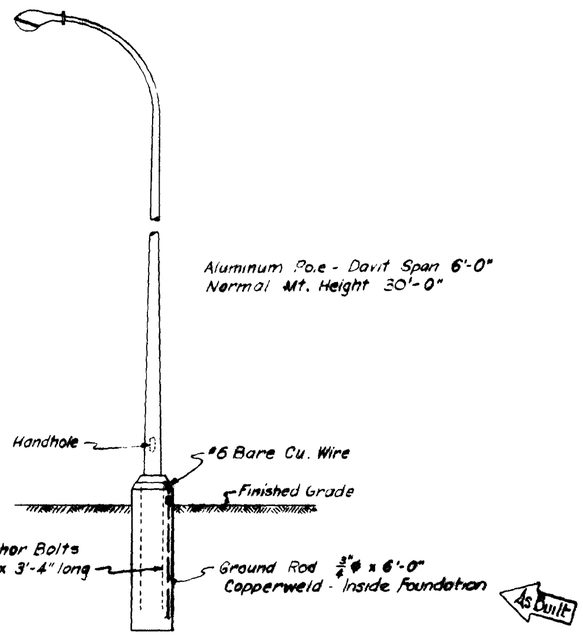
Scale: $\frac{3}{4}$" = 1'-0"

Note: Pull-in Iron to be placed opposite al. Duct Entrances



GALVANIZED PULLING-IN IRON

Scale: None



OUTSIDE LIGHTING STANDARD

Scale: None

AS-BUILT DRAWING

DATE January, 1968

DRAWING NO. 438.22(a-1)-121

HAMPTON ROADS SANITATION DISTRICT
NORTH SHORE SYSTEM
JAMES RIVER SEWAGE TREATMENT PLANT
ELECTRICAL
MISCELLANEOUS DETAILS

Buck, Seifert and Jost
Consulting Engineers
New York 3, N.Y.

Scale: As Shown — July, 1964

Drawn by: W.J.L.	Traced by: M.C.	Checked by: W.J.L.	Examined by: D.J.	Approved by:
Revisions:	As Built 8-25-69 BSM			

SHEET NO.	DWG NO.	DESCRIPTION
GENERAL		
2.1	G-2.1	CARBON SYSTEM INDEX TO DRAWINGS
SITE CIVIL		
17.1	C-2.1	CARBON SYSTEM - SECTOR 1 SITE PLAN
20.1	C-5.1	CARBON SYSTEM - SECTOR 1 EROSION CONTROL PLAN
YARD PIPING		
26.1	YP-1.1	YARD PIPING SECTOR 1 PLAN
SITE ELECTRICAL		
32.1	SE-1.1	SITE ELECTRICAL SECTOR 1 PLAN
33.1	SE-2.1	SITE ELECTRICAL SECTOR 2 PLAN
35.1	SE-4.1	SITE ELECTRICAL CONCRETE ENCASED CONDUIT SECTIONS
IFAS REACTOR TRAINS / IFAS ELECTRICAL BUILDING (05)		
72.1	05-M-1.1	IFAS REACTOR - CARBON SYSTEM OVERVIEW AND KEY PLAN
75.1	05-M-4.1	IFAS REACTOR NO. 1-3 CARBON SYSTEM - UPPER PLAN
76.1	05-M-5.1	IFAS REACTOR NO. 4-6 CARBON SYSTEM - UPPER PLAN
77.1	05-M-6.1	IFAS REACTOR NO. 7-9 CARBON SYSTEM - UPPER PLAN
79.1	05-M-8.1	IFAS REACTOR ODOR CONTROL SYSTEM PARTIAL PLAN AND SECTION
80.1	05-M-9.1	CARBON SYSTEM SECTIONS
CENTRIFUGE POLYMER SYSTEM (17)		
102.1	17-E-1.1	CARBON SYSTEM MCC ELEVATION AND BLOCK DIAGRAM
102.2	17-E-2.1	CENTRIFUGE POLYMER SYSTEM PLAN
CARBON SYSTEM (46)		
103.1	46-M-1	CARBON SYSTEM PLANS
103.2	46-M-2	CARBON SYSTEM SECTIONS
103.3	46-M-3	CARBON SYSTEM SECTIONS
103.4	46-M-4	CARBON SYSTEM MISCELLANEOUS ENLARGED PLANS
103.5	46-E-1	CARBON SYSTEM PLANS
103.7	46-E-3	CABLE BLOCK DIAGRAMS
103.8	46-D-1	STANDARD DETAILS
103.9	46-D-2	STANDARD DETAILS
103.10	46-D-3	STANDARD DETAILS
103.11	46-D-4	STANDARD DETAILS
103.12	46-D-5	STANDARD DETAILS
ELECTRICAL		
126.1	E-17.1	CARBON SYSTEM CONTROL DIAGRAMS
131.1	E-22.1	CARBON SYSTEM CIRCUIT SCHEDULES
INSTRUMENTATION AND CONTROL		
134.1	I-1.1	INSTRUMENTATION AND CONTROL DISTRIBUTED CONTROL SYSTEM BLOCK DIAGRAM CARBON SYSTEM
149.1	I-17	CARBON FEED TANKS CP46-1000
149.2	I-18	P & ID - UNIT PROCESS 46 CARBON SYSTEM

COMMONWEALTH OF VIRGINIA
NED A. JOHNSON
Lic. No. 022691
5/18/09
PROFESSIONAL ENGINEER

NO	DATE	DESCRIPTION	DR	CHK	APVD
N	APVD	REVISION	A. ZILBERMAN	N. JOHNSON	I. DOLAK
	APVR		BY		

DSGN Z. LEWIS DATE

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

CH2MHILL

GENERAL
CARBON SYSTEM INDEX TO DRAWINGS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	G-2.1
SHEET	2.1

FILENAME: dn01G002-1_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:39:32 PM

NOTES:

1. LIMITS OF DISTURBANCE ARE APPROXIMATE.

2. ALL ASPHALT DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED IN ACCORDANCE WITH THE REPLACEMENT ASPHALT DETAIL AND SPECIFICATIONS.

3. MILL EXISTING ASPHALT 1.5 INCHES AND OVERLAY WITH SURFACE MIX IN AREA SHOWN.

4. LAWN RESTORATION SHALL BE IN ACCORDANCE TO SPECIFICATIONS AND DIRECTION BY THE CITY EROSION CONTROL INSPECTOR.

5. DAMAGED OR REMOVED CURB SHALL BE REPLACED IN ACCORDANCE WITH COMBINATION CURB AND GUTTER DETAIL. SEE SHEET D-C-1.

6. ONE EXISTING TREE WILL BE REMOVED TO INSTALL THE CARBON SOLUTION PIPE AS SHOWN ON SHEET YP-1.1 NO TREES SHOULD BE REMOVED AS PART OF INSTALLING THE STORM UNDERDRAIN.

FERRIC CHLORIDE TANKS (4)

PHOSPHORUS REMOVAL FACILITY

ASPHALT

SLUDGE DIGESTION TANK NO. 2

PUMPING CHAMBER

SLUDGE DIGESTION TANK NO. 1

SLUDGE HOLDING TANK

LIMITS OF DISTURBANCE

CONCRETE PAD FOR SAFETY SHOWER, SEE (0330-060)

REPLACE EXISTING ASPHALT WITH PCC SURFACING TO FAR GUTTER (3123-115)

LAWN RESTORATION

EXST CURB & GUTTER

CARBON SOLUTION FILL STATION, SEE DWG YP-1.1

COMBINATION CURB AND GUTTER, SEE (3305-952)

SEE NOTE 6

MATCH LINE FOR CONTINUATION SEE DWG C-3.1

SECTOR 1 SITE PLAN

1"=20'

0 20 40 60

1"=20'

KEY PLAN

NTS

COMMONWEALTH OF VIRGINIA
HOWARD LUSK
Lic. No. 054029
PROFESSIONAL ENGINEER
5-18-09

NO	DATE	DESCRIPTION	DR	CHK	APVD
NO.	DATE	REVISION	H. LUSK	W. HUBBELL	APVD
DSGN	H. LUSK				

		APVR	N
		BY	APVD
			I. DOLAK

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

CH2MHILL

CIVIL
CARBON SYSTEM - SECTOR 1
SITE PLAN

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VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	C-2.1
SHEET	17.1

FILENAME: dn05C101-1_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:39:42 PM

EROSION CONTROL LEGEND

FOR DETAILS, SEE SHEET C-10.

LIMITS OF DISTURBANCE

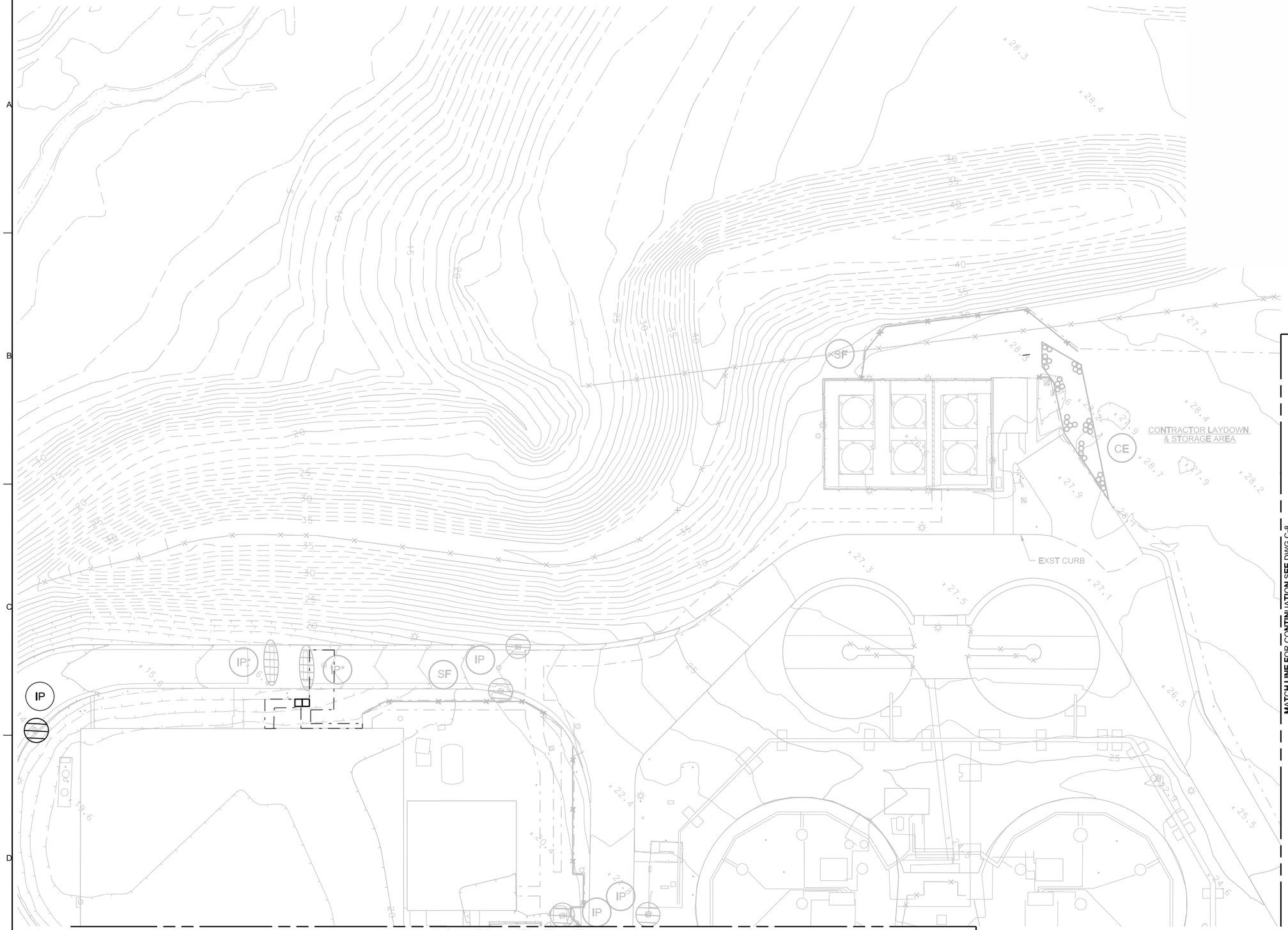
SILT FENCE — SF

INLET PROTECTION — IP

INLET PROTECTION (SYNTHETIC) — IP*

CONSTRUCTION ENTRANCE — CE

ROCK CHECK DAM — CD



SECTOR 1 SITE PLAN
1"=20'

0 20 40 60
1"=20'

KEY PLAN
NTS

COMMONWEALTH OF VIRGINIA
HOWARD LUSK
Lic. No. 054029
PROFESSIONAL ENGINEER
5-18-09

NO	DATE	DSGN	DR	DESCRIPTION REVISION	CHK	APVR	BY	APVD
		H. LUSK	H. LUSK		W. HUBBELL		I. DOLAK	

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

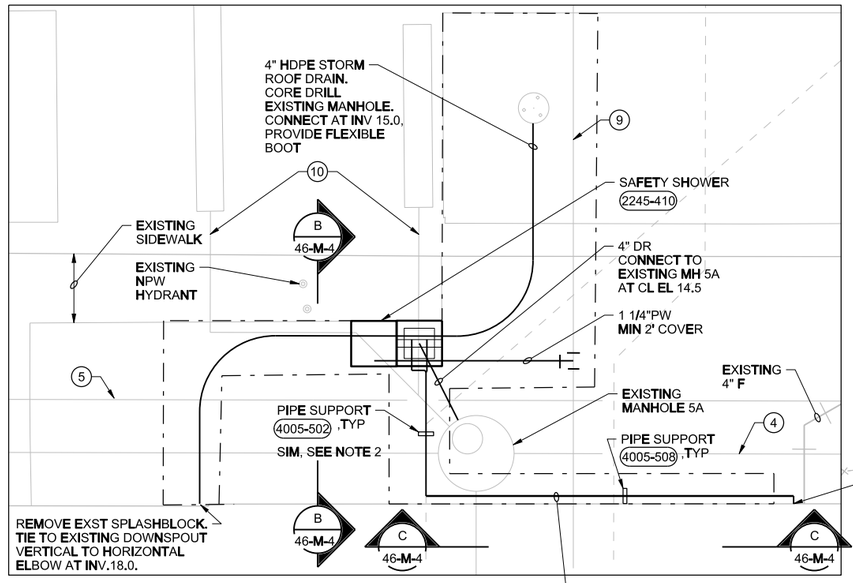
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CIVIL
CARBON SYSTEM - SECTOR 1
EROSION CONTROL PLAN

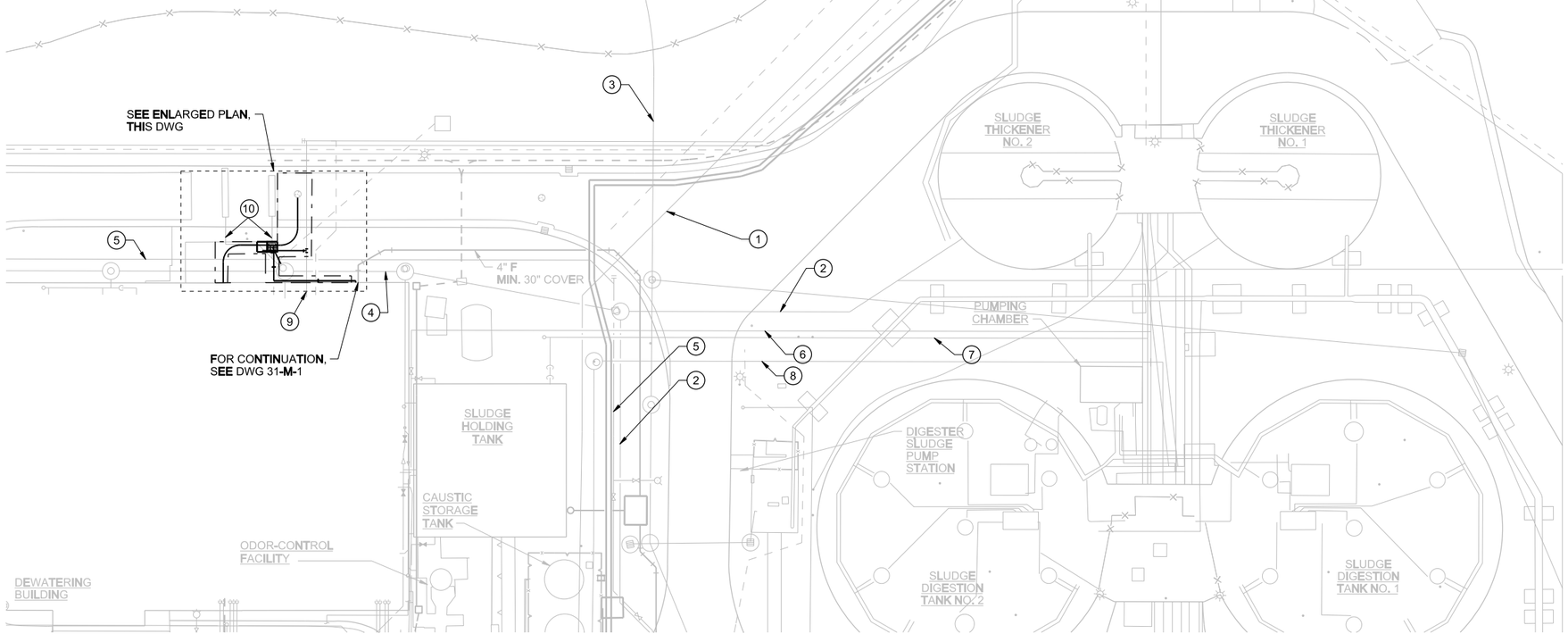
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	C-5.1
SHEET	20.1

FILENAME: dn05C104-1_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:39:54 PM



ENLARGED PLAN
1"= 5'



SECTOR 1 PLAN
1"=20'

0 20 40 60
1"=20'

EXISTING UTILITIES			
(#)	LEGEND ***	SIZE	℄ ELEVATION *
1	CHE	10"	30" COVER
2	DR	10"	12.5
3	STM	**	**
4	DR	6"	13.75
5	NPW	6"	30" COVER
6	RAS	6"	19.5
7	TWAB	6"	17.83
8	WAB	6"	14.0
9	PW	4"	2' COVER
10	DR	6"	14.25 @ MH 5-A

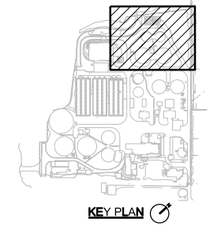
* ELEVATIONS MARKED (TOP) ARE FROM SUBSURFACE UTILITY LOCATION. ℄ ELEV PROVIDED ARE FROM RECORD DRAWINGS.

** INFORMATION NOT AVAILABLE

*** PIPE IDENTIFICATION ACCORDING TO RECORD DRAWINGS

NOTES:

1. (#) DENOTES CROSSING EXST. YARD PIPING. REFER TO TABLE ON THIS DRAWING.
2. SUPPORT ON 18" DIA CONC PEER. PIER SHALL EXTEND 2 FEET BELOW GRADE AND 6 INCHES ABOVE. MIN. REINFORCE W/(6) VERI. #5$_S$ + (4) #5 HOOPS



KEY PLAN

COMMONWEALTH OF VIRGINIA — HOWARD LUSK — Lic. No. 054029 — PROFESSIONAL ENGINEER — 5-18-09

NO	DATE	DSGN
		H. LUSK
	DATE	DR
		I. KHAN
	APVR	CHK
N	APVD	W. HUBBELL
	BY	I. DOLAK

DESCRIPTION
REVISION

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

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CH2MHILL

YARD PIPING
SECTOR 1
PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	YP-1.1
SHEET	26.1

FILENAME: dn05m101-1_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:40:14 PM

LEGEND

WORK ASSOCIATED WITH CARBON SYSTEM

NOTES:

1. PULL CIRCUIT [DP-47] THRU EXISTING SPARE 2" CONDUIT.
2. ROUTE CIRCUIT [DP-47] THRU EXISTING PB-4, EXISTING PB-5, AND EXISTING SPARE 2" CONDUITS.
3. ROUTE CONDUITS AT APPROXIMATELY 26'-0" ABOVE GRADE. ATTACH CONDUITS TO EXTERIOR WALL OF BUILDING.
4. SEE CABLE BLOCK DIAGRAM CBD-17-3 ON DWG. 17-E-3 FOR CONDUIT AND CONDUCTOR SIZING AND ROUTING.

SODIUM HYDROXIDE BLDG.
SEE DWG. 47-E-1

(NOTE 1)

EXST HH-10

J
SE-4.1

PUMP ROOM

FERRIC CHLORIDE TANKS (4)

CONCRETE PAD

EXST SITE SECURITY FENCE

EXST HH-8

SLUDGE DIGESTION TANK NO. 2

SLUDGE DIGESTION TANK NO. 2

CENTRIFUGE POLYMER BLDG.
SEE DWG. 17-E-1

L
SE-4.1

EXST PB-5

EXST HH-15

(NOTE 1)

CP46-1000
(NOTE 4)

(NOTE 2)

SLUDGE HOLDING TANK

PUMPING CHAMBER

DIGESTER SLUDGE PUMP STATION

SLUDGE DIGESTION TANK NO. 2

SLUDGE DIGESTION TANK NO. 1

4"C, SWBD3-P1
4"C, SWBD3-P2
4"C, SWBD3-P3
4"C, SWBD3-P4
4"C, SWBD3-P5
SPARE
(NOTE 3)

[2"C, DP-47]

[2"C, RIO-15F]

FPP-15F

SEE DWG E-24 FOR CONTINUATION

ODOR-CONTROL FACILITY

CAUSTIC STORAGE TANK

P
SE-4.1

EXST PB-4

SEE DWG E-23
FOR CONTINUATION

MATCHLINE FOR CONTINUATION SEE DWG SE-2

SECTOR 1 PLAN
1"=20'

0 20 40 60
1"=20'

KEY PLAN

COMMONWEALTH OF VIRGINIA
DAVID W. DOAR
Lic. No. 029912
PROFESSIONAL ENGINEER
5/18/09

NO	DATE	DESCRIPTION	DR	CHK	APVD
N	APVD	REVISION	A. SODEIFI		
APVR	BY		Z. HUNERS	D.DOAR	I. DOLAK

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

CH2MHILL

SITE ELECTRICAL
SECTOR 1
PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	SE-1.1
SHEET	32.1

FILENAME: dn10e101-1_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:40:27 PM

MATCHLINE FOR CONTINUATION SEE DWG SE-1

4"C, SWBD3-P1
4"C, SWBD3-P2
4"C, SWBD3-P3
4"C, SWBD3-P4
4"C, SWBD3-P5
4"C, SPARE
(NOTE 9)

(NOTE 11)

SE-4.1 W

SEE PROFILE - C ON SHEET YP-6

FRONT

CE

PB-17-6 (NOTE 10)

3305-954) (TYP OF 2)

EXST 2"C CENT BLDG FO RIO-15F (NOTE 8)

CENTRIFUGE BLDG SEE DWG E-23

(NOTE 14)

2"C, DP-47
1 1/4"C, F18-1001
1 1/4"C, F18-1002
3/4"C, HS18-1001
HS18-1002
3/4"C, H518-1001D
H518-1002D
1"C, DPIT18-1001
DPIT18-1002

TX-3

2612-001

CE

EXST PB-2

(NOTE 12)

PB-05-1 (NOTE 13)

PB-HV-6 (NOTE 15)

EXST PB-3

2"C CENT BLDG FO RIO-15F (NOTE 8)

C SE-4.1

4"C, TX-3
4"C, SPARE

SEE DUCTBANK SECTION N SE-4

SEE DWG 05-E-3 FOR CONTINUATION

IFAS REACTORS SEE DWGS. 05-E1, 05-E-2, AND 05-E-3

(NOTE 2)

(NOTE 1)

(FRONT)

SEE DUCTBANK SECTION S SE-4

T SE-4.1

2612-001

TX-2A

(NOTE 1)

AERATION BLOWER BLDG SEE DWG 14-E-1

SEE DUCTBANK SECTION C SE-4

M SE-4.1

(NOTE 5)

CE

HVMH-2

AERATION TANK NO. 9
AERATION TANK NO. 8
AERATION TANK NO. 7
AERATION TANK NO. 6
AERATION TANK NO. 5
AERATION TANK NO. 4
AERATION TANK NO. 3
AERATION TANK NO. 2
AERATION TANK NO. 1

SLUDGE DIGESTION TANK NO. 2

PRIMARY CLARIFIER NO. 2

PRIMARY CLARIFIER NO. 3

PRIMARY CLARIFIER NO. 1

EXST PB-1 (NOTE 4)

(NOTE 6)

(NOTE 6)

EXST HH (NOTE 3)

B SE-4.1

SCUM CONCENTRATOR

PRE-AERATION TANK NO. 1

EXISTING BLOWERS, SEE DWG E-23

1"C, FCV14-3002P
FIT14-3002P

JB14D (NOTE 7)

[3/4"C, FCV14-3002D]
[3/4"C, FIT14-3002P]

PB14P (NOTE 7)

[3/4"C, FCV14-3002P]

PB14A (NOTE 7)

[3/4"C, FCV14-3002A]

CS14-3002

[C12]

(NOTE 7)

1"C, FCV14-3002A
FIT14-3002A

FCV14-3002

FE14-3002

NO. 1

NO. 2

[C1]

[3/4"C, FIT14-3002A]

FIT14-3002

HVMH-1

GRIT COLLECTORS

SEE PROFILE - A ON SHEET YP-6

B SE-4.1

MATCHLINE FOR CONTINUATION SEE DWG SE-3

SECTOR 2 PLAN

1"=20'

0 20 40 60

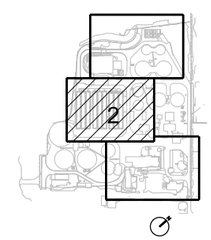
1"=20'

NOTES:

1. TERMINATE SPARE CONDUITS PER DETAIL 2605-401.
2. SPACE RESERVED FOR FUTURE TRANSFORMER TX-2B.
3. REROUTE THE 2 EXISTING 2" CONDUITS ENTERING THIS HANDHOLE FROM MANHOLE MHE TO PB-14A. SEE CONSTRUCTION SEQUENCE. REMOVE EXISTING HANDHOLE.
4. REROUTE THE 2 EXISTNG 2-1/2" CONDUITS ENTERING FROM EXST PB-2 TO PB-14A. SEE CONSTRUCTION SEQUENCE.
5. RELOCATE THE 2 EXISTING 2-1/2" CONDUITS ON TOP OF THE BASIN BETWEEN EXST PB-1 AND EXST PB-2 TO CONCRETE ENCASED DUCT BANK SECTIONS R AND T. SEE CONSTRUCTION SEQUENCE.
6. RELOCATE EXISTING LIGHT FIXTURE TO NEW LOCATION. EXTEND EXISTING CONDUIT AND CONDUCTORS TO NEW LOCATION.
7. PROVIDE 8" ALUMINUM BEAM SIMILAR TO DETAIL 4005-479 BETWEEN EXISTING AERATION PIPE SUPPORTS. ATTACH CONDUITS TO BEAM.
8. ROUTE CIRCUITS [CENT BLDG FO] AND [RIO-15F] THRU EXST PB-2, PB-3, PB-4 AND CONDUITS TO CENTRIFUGE BLDG.
9. ROUTE CONDUITS AT APPROXIMATELY 26'-0" ABOVE GRADE. ATTACH CONDUITS TO EXTERIOR WALL OF BUILDING.
10. LOCATE PB-17-6 AT GRADE.
11. REMOVE EXISTING UTILITY TRANSFORMER AND PAD. RESTORE PAVEMENT AND REMOVE BOLLARDS. COORDINATE WITH UTILITY PRIOR TO ANY WORK.
12. SEE DRAWING E-24 FOR CONTINUATION.
13. PROVIDE METAL BARRIER IN PULL BOX BETWEEN POWER AND ANALOG AND 24 VDC CONDUCTORS.
14. RELOCATE CONDUIT AND CONDUCTORS FOR POWER TO MCC-G1 IN SODIUM HYDROXIDE BUILDING. (SEE DRAWING 47-E-2).
15. MOUNT PB-HV-6 ABOVE GROUND ON SIDE OF EXISTING PIPE SUPPORT.

LEGEND

WORK ASSOCIATED WITH CARBON SYSTEM



COMMONWEALTH OF VIRGINIA ENGINEER DAVID W. DOAR Lic. No. 029912 5/18/09 PROFESSIONAL

NO	DATE	DSGN	DR	DESCRIPTION	CHK	APVD	BY	APVR
		D.DOAR	Z. HUNERS	REVISION	A. SODEIFI	APVD	I. DOLAK	APVR

HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT IMPROVEMENTS - PHASE 1

CH2MHILL

SITE ELECTRICAL
SECTOR 2 PLAN

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	SE-2.1
SHEET	33.1

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SECTION A
NTS

2" C	2" C (NOTE 1)	2" C	2" C		
3" C	3" C	3" C	1" C		
3" C	3" C	3" C	1" C		
3" C	3" C	3" C	1" C		

SECTION B
NTS

4" C TX-2A	4" C SPARE	4" C SPARE	4" C TX-3	4"C SPARE	4"C SPARE

SECTION C
NTS

4" C TX-3	4" C SPARE

SECTION D
NTS

3" C (NOTE 4)	3" C	3" C
3" C	3" C	3" C

SECTION E
NTS

2" GEN-CP-A	2" GEN-CP-D

SECTION F
NTS

5" C SPARE	5" C MVSWGR

SECTION G
NTS

2"RS LIT01-3001 CP01-1001A	2"C CP01-1001D	2"C FV01-1001 WC-1
2"C SPARE (TO JB-01D)	2"C CP01-1001P P01-1002 EF-1 RCPT-VAULT	2"C SPARE (TO JB-01P)

SECTION H
NTS

4" C SWBD2A-P1	4" C SWBD2A-P2	4" C SWBD2A-P3
4" C SWBD2A-P4	4" C SWBD2A-P5	4" SPARE (TO SWBD-2A)
4"C SPARE (NOTE 5)	4"C SPARE (NOTE 5)	4"C SPARE (NOTE 5)
4"C SPARE (NOTE 5)	4"C SPARE (NOTE 5)	4"C SPARE (NOTE 5)

SECTION I
NTS

3" C	3" C	3" C	3" C	3" C	3" C	3" C (NOTE 4)
3" C	3" C	3" C	3" C	3" C	3" C	3" C
3" C	3" C	3" C	3" C	3" C	3" C	3" C
3" C	3" C	3" C	3" C	3" C	3" C	3" C

SECTION J
NTS

2" C	2" C
2" C (NOTE 3)	2" C (NOTE 2)

SECTION K
NTS

2" C	2" C
2" C (NOTE 3)	2" C (NOTE 2)

SECTION L
NTS

2" C (NOTE 3)	2" C (NOTE 2)

SECTION M
NTS

4" C TX-2A	4" C SPARE (TO TX-2A)	
4" C SPARE	4" C SPARE	

SECTION N
NTS

4" C SWBD2A-P1	4" C SWBD2A-P2	4" C SWBD2A-P3
4" C SWBD2A-P4	4" C SWBD2A-P5	4" SPARE (TO TX-2A)

SECTION P
NTS

2" C	2" C P17-1002 (NOTE 9)	2" C P17-1001 (NOTE 9)
2" C FIT17-1410 FIT17-1420 FIT17-1430 (NOTE 8)	2" C SV17-2036 SV17-2037 SV17-2038 DISC P17-1001 DISC P17-1002 DISC P17-1003 CP17-1001 CP17-1002 CP17-1003 CP17-2001	2" C P17-1003 (NOTE 9)

SECTION R
NTS

1" C FP50-1001	2" C DP-47	2" C (TO SWBD-2A) SPARE	2" C HS18-1001D HS18-1002D	2" C (TO PB-14A) CONT BLDG FO (NOTE 10)	1" RS LIT50-1002
1" RS P50-1001	2" C F18-1001	2" C F18-1002	2" C HS18-1001 HS18-1002	2" RS DPIT18-1001 DPIT18-1002	1" RS FP50-1001D

2" C RIO-15F

SECTION S
NTS

3" RS CP14-1001A CP14-1002A CP14-1003A FCV14-3002A FIT14-3002A	2" RS SPARE (TO DCU-2)	2" C FCV14-1001P FCV14-1002P FCV14-1003P	2" C CP14-1001P CP14-1002P CP14-1003P FIT14-3002P	
2" C CENT BLDG FO (NOTE 10)	2" C FDC (NOTE 7)	2" C CP14-1001D CP14-1002D CP14-1003D	2" C FCV14-3002P	2" C SPARE (TO MCC-2A)

SECTION T
NTS

4"C SWBD3-P1	4"C SWBD3-P2	4"C SWBD3-P3	4"C SWBD3-P4	4"C SWBD3-P5	4"C SPARE

SECTION W
NTS

LEGEND

WORK ASSOCIATED WITH CARBON SYSTEM

SECTION X
NTS

8" C UTILITY	8" C UTILITY

SECTION Y
NTS

4"C SWBD1-P1	4"C SWBD1-P2	4"C SWBD1-P3	
4"C SWBD1-P4	4"C SWBD1-P5	4"C SPARE	

SECTION Z
NTS

4" C TX-1	4"C SPARE (NOTE 11)

SECTION U
NTS

4" C TX-4	4"C SPARE (NOTE 11)

NOTES:

1. PULL CIRCUIT [FDC] THRU EXISTING CONDUIT WITH EXISTING FIBER OPTIC CABLE.
2. CONTRACTOR TO FIELD VERIFY EXISTING CONDUIT ARRANGEMENT AND SPARE CONDUITS. PULL CIRCUIT [DP-47] THRU EXISTING SPARE CONDUIT.
3. REMOVE EXISTING 3#2, 1#6 G TO MCC-G1 IN EXISTING CONDUIT AFTER MCC-G1 IS CONNECTED TO DP-47.
4. CONTRACTOR TO FIELD VERIFY EXISTING CONDUIT ARRANGEMENT. REMOVE CONDUCTORS FOR THE ELECTRICAL EQUIPMENT RACK IN SCREENING BUILDING. ELECTRICAL EQUIPMENT RACK IS REMOVED. SEE DRAWING 01-E-1. PULL CIRCUIT [RIO-14F] THRU EXISTING CONDUIT FORMERLY USED FOR ELECTRICAL EQUIPMENT RACK CONDUCTORS.
5. STUB OUT CONDUIT AT FUTURE SWBD-2B MAIN BREAKER SECTION
6. FOR CONCRETE ENCASED CONDUIT DETAILS SEE DETAILS 2605-400b AND 2605-400c.
7. PULL CIRCUIT [FDC] THRU PB-14A AND EXISTING 2"CONDUIT TO MHE.
8. ROUTE CONDUCTORS IN CONDUIT WITH EXISTING ANALOG SIGNAL CONDUCTORS.
9. ROUTE CONDUCTORS IN CONDUIT USED BY EXISTING VFD POWER CONDUCTORS.
10. ROUTE CIRCUIT [CENT BLDG FO] TO FOLLOW ROUTE OF EXISTING RELOCATED FO CABLE.
11. ROUTE SPARE CONDUIT FROM TRANSFORMER TO WALL. CAP AT WALL.

COMMONWEALTH OF VIRGINIA · DAVID W. DOAR · Lic. No. 029912 · ENGINEER · PROFESSIONAL · 5/18/09

NO	DATE	DESCRIPTION	DR	CHK	APVD	APVR
			D.DOAR	Z. HUNERS	A. SODEIFI	I. DOLAK
			DSGN		APVD	BY
1	5/18/09	REVISION				

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JAMES RIVER TRETAMENT PLANT IMPROVEMENTS - PHASE 1

CH2MHILL

SITE ELECTRICAL

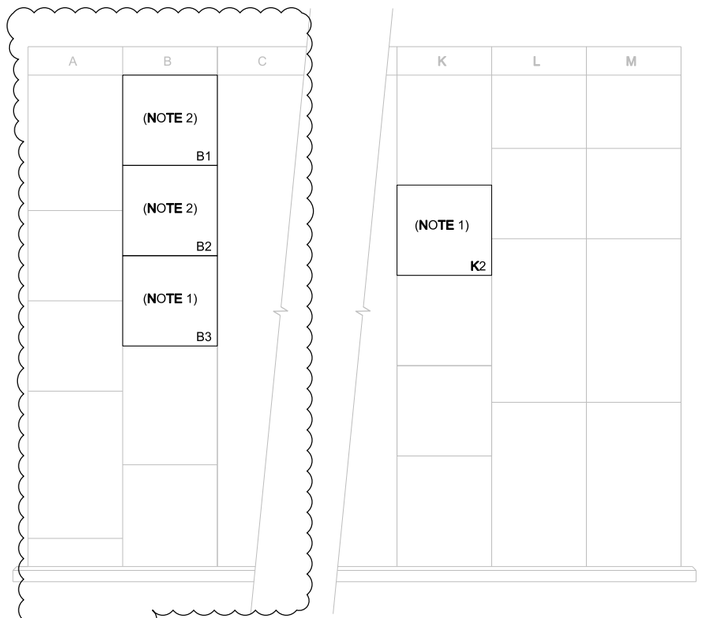
CONCRETE ENCASED CONDUIT SECTIONS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	MAY 2009
PROJ	363254
DWG	SE-4.1
SHEET	35.1

FILENAME: dn10e104-1_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:40:51 PM

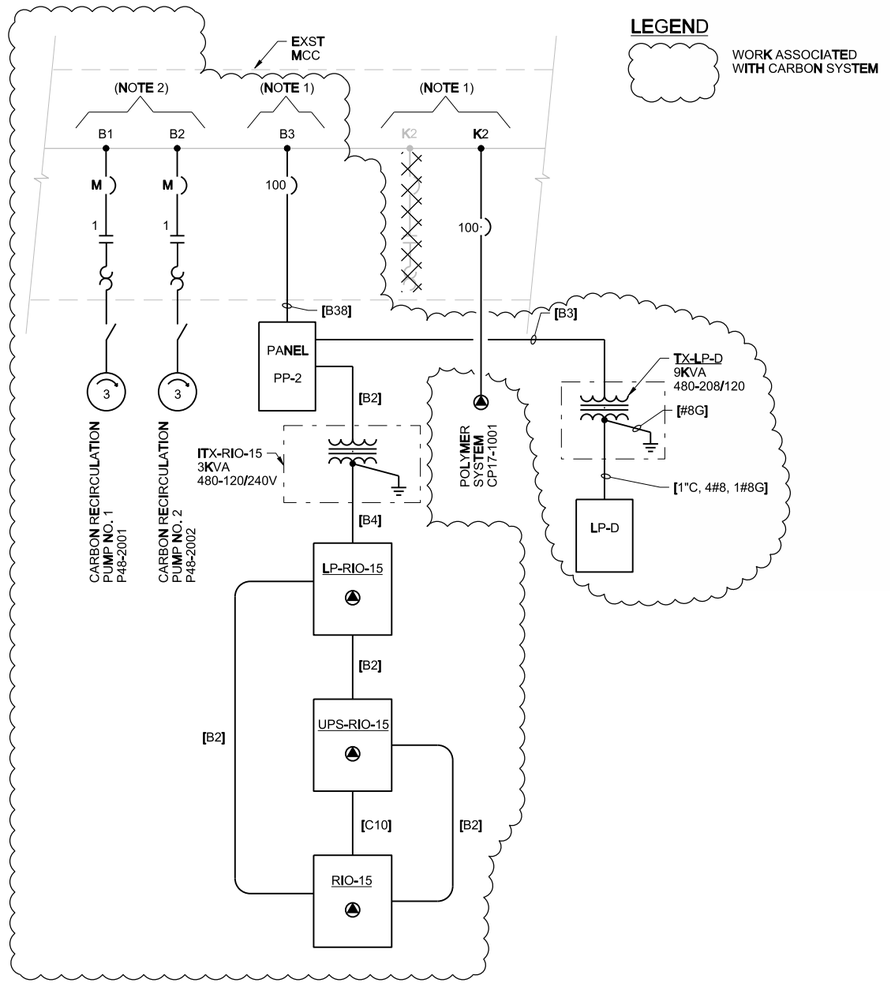


EXST MCC PARTIAL ELEVATION

NTS

NOTES:

1. REMOVE EXISTING MOTOR STARTER AND PROVIDE 100A, 3 POLE THERMAL MAGNETIC CIRCUIT BREAKER IN SPACE. MATCH EXST VOLTAGE AND SHORT CIRCUIT RATINGS. PROVIDE ALL MOUNTING HARDWARE. PROVIDE NEW DOOR.
2. REMOVE EXISTING MOTOR STARTER AND PROVIDE MOTOR CIRCUIT PROTECTOR WITH SIZE 1 STARTER. MATCH EXISTING VOLTAGE AND SHORT CIRCUIT RATINGS. PROVIDE ALL NEW MOUNTING HARDWARE. PROVIDE NEW DOOR.



PANEL: LP-RIO-15 — LOCATION: CENTRIFUGE POLYMER BUILDING
SERVICE VOLTAGE: 120/240 V — PHASE: 1 — WIRE: 3
TOTAL LOAD KVA: 0.7 — BUS SIZE: 60A — MAIN SIZE: 20A — TYPE: BRKR
REMARKS: SCCR 10KA RMS SYMMETRICAL — NEUTRAL: FULL — MOUNTING: SURFACE
NEMA 4X SST ENCLOSURE

LOAD IN VA A	LOAD IN VA B		CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN VA A	LOAD IN VA B	
700			UPS-RIO-15	20/1	1	2	20/1	RIO-15			
					3	4					
					5	6					
700	0	0	TOTAL						0	0	0

PANEL: LP-D — LOCATION: CENTRIFUGE POLYMER BUILDING
SERVICE VOLTAGE: 208Y/120 V — PHASE: 3 — WIRE: 4
TOTAL LOAD KVA: 0.1 — BUS SIZE: 100A — MAIN SIZE: 35A — TYPE: BRKR
REMARKS: NEMA 4X SST ENCLOSURE — NEUTRAL: FULL — MOUNTING: SURFACE
SCCR 10 KA RMS SYMMETRICAL

LOAD IN VA A	LOAD IN VA B	LOAD IN VA C	CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN VA A	LOAD IN VA B	LOAD IN VA C
120			CP-46-1000 CARBON FILL STATION	20/1	1	2	20/1	SPARE			
			SPARE	20/1	3	4	20/1	SPARE			
					5	6					
					7	8					
					9	10					
					11	12					
120	0	0	TOTAL						0	0	0

PANEL: PP-2 — LOCATION: CENTRIFUGE POLYMER BUILDING
SERVICE VOLTAGE: 480 V — PHASE: 3 — WIRE: 3
TOTAL LOAD KVA: 13.3 — BUS SIZE: 100A — MAIN SIZE: 100A — TYPE: BRKR
REMARKS: NEMA 4X SST ENCLOSURE — NEUTRAL: NONE — MOUNTING: SURFACE
SCCR 42 KA RMS SYMMETRICAL

LOAD IN VA A	LOAD IN VA B	LOAD IN VA C	CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO.	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN VA A	LOAD IN VA B	LOAD IN VA C
372			P46-3001	20/3	1	2	20/3	P46-3008	372		
	372		(CARBON FEED PUMP NO.1)		3	4		(CARBON FEED PUMP NO.8)		372	
		372			5	6					372
372			P46-3002	20/3	7	8	20/3	P46-3009	372		
	372		(CARBON FEED PUMP NO.2)		9	10		(CARBON FEED PUMP NO.9)		372	
		372			11	12					372
372			P46 3003	20/3	13	14	20/3	P46 3010	372		
	372		(CARBON FEED PUMP NO.3)		15	16		(CARBON FEED PUMP NO.10)		372	
		372			17	18					372
372			P46-3004	20/3	19	20	20/3	P46-3011	372		
	372		(CARBON FEED PUMP NO.4)		21	22		(CARBON FEED PUMP NO.11)		372	
		372			23	24					372
372			P46-3005	20/3	25	26	20/3	TX-LP-D	120		
	372		(CARBON FEED PUMP NO.5)		27	28					
		372			29	30					
372			P46-3006	20/3	31	32	15/2	ITX-RIO-15	760		
	372		(CARBON FEED PUMP NO.6)		33	34				180	
		372			35	36					
372			P46-3007	20/3	37	38	20/3	TX-LP-D			
	372		(CARBON FEED PUMP NO.7)		39	40					
		372			41	42					
2604	2604	2604	TOTAL						2368	1668	1488

COMMONWEALTH OF VIRGINIA — DAVID W. DOAR — Lic. No. 029912 — 5/18/09 — PROFESSIONAL ENGINEER

NO	DATE	DSGN

APVR	DATE	BY
N	APVD	I. DOLAK

DESCRIPTION / REVISION — CHK — A. SODEIFI — APVD

DR — Z. HUNERS — D.DOAR — DATE

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TRETAMENT PLANT
IMPROVEMENTS - PHASE 1

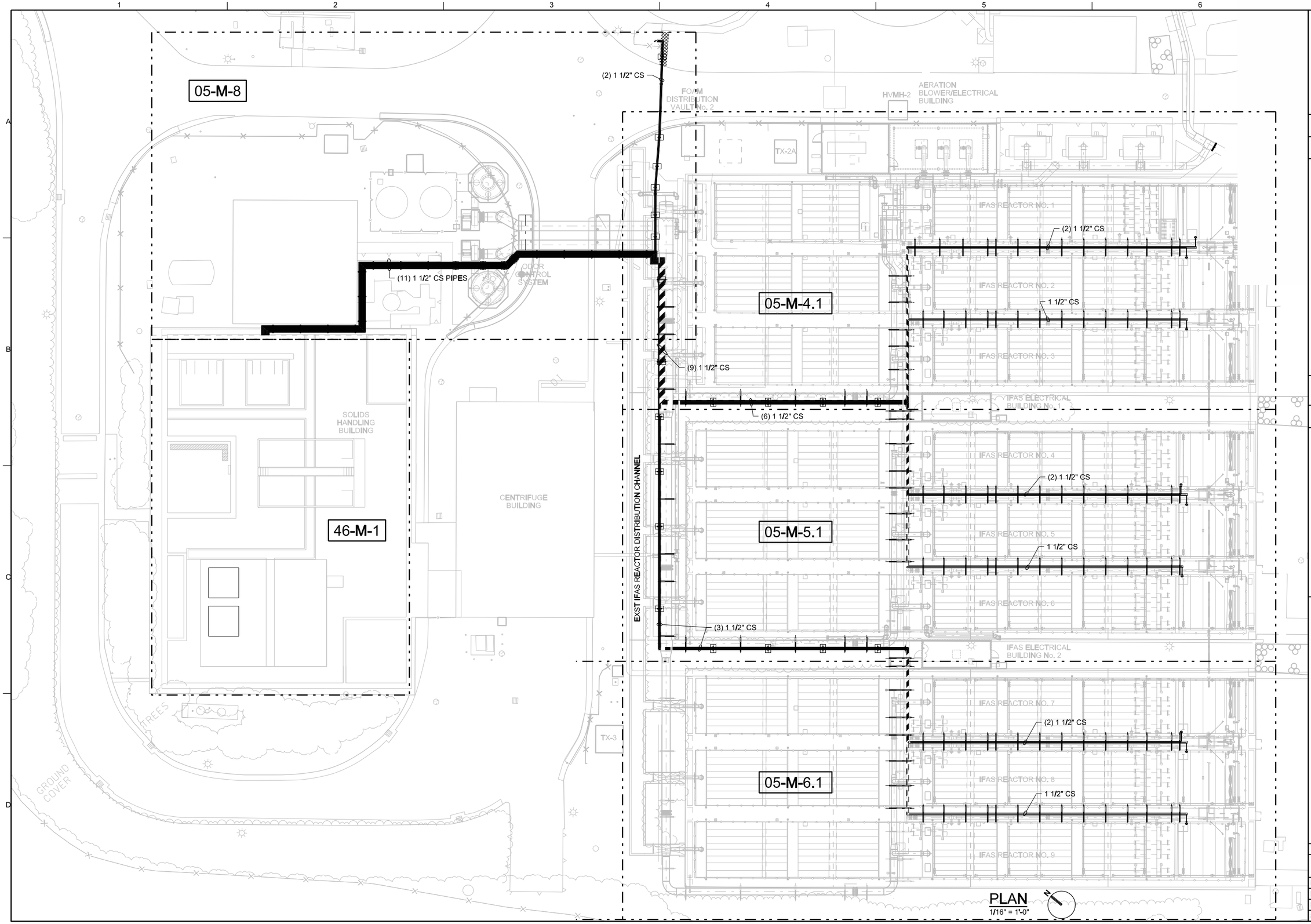
CH2MHILL

ELECTRICAL
CARBON SYSTEM
MCC ELEVATION AND
BLOCK DIAGRAM

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	17-E-2.1
SHEET	102.2

FILENAME: dn17e102_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:41:02 PM



COMMONWEALTH OF VIRGINIA
NED A. JOHNSON
Lic. No. 022661
PROFESSIONAL ENGINEER
5/18/09

NO	DATE	DESCRIPTION	APVR
N	APVD	REVISION	BY

I. DOLAK

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NO.	DATE	DR	CHK	APVD
DSGN	I. DOLAK	L. MACGILLIVRAY	N. JOHNSON	APVD

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

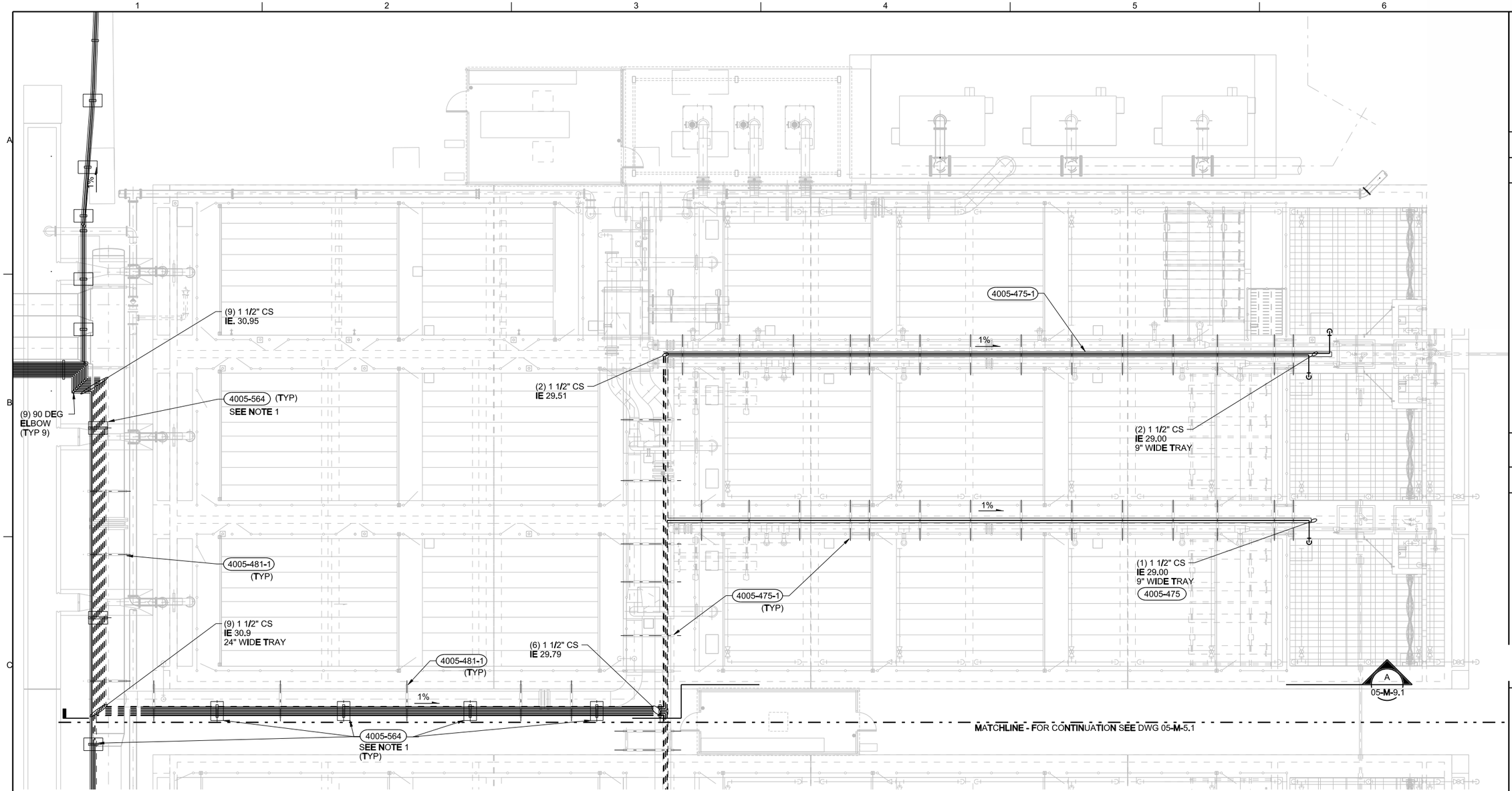
CH2MHILL

MECHANICAL
IFAS REACTOR - CARBON SYSTEM
OVERVIEW AND KEY PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	05-M-1.1
SHEET	72.1

FILENAME: dn20m101-1_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:41:17 PM



NOTES:

1. SUPPORT CARBON SYSTEM PIPE TRAY BETWEEN OA PIPE SUPPORTS USING (4005-564).

IFAS REACTOR NO. 1-3 UPPER PLAN

1/8"=1'-0"

COMMONWEALTH OF VIRGINIA
NED A. JOHNSON
Lic. No. 022691
PROFESSIONAL ENGINEER
5/18/09

NO	DATE	DESCRIPTION	DR	CHK	APVD
		REVISION	L. MACGILLIVRAY	N. JOHNSON	APVD
N	APVD	I. DOLAK			
NO.	DATE	I. DOLAK			
DSGN					

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

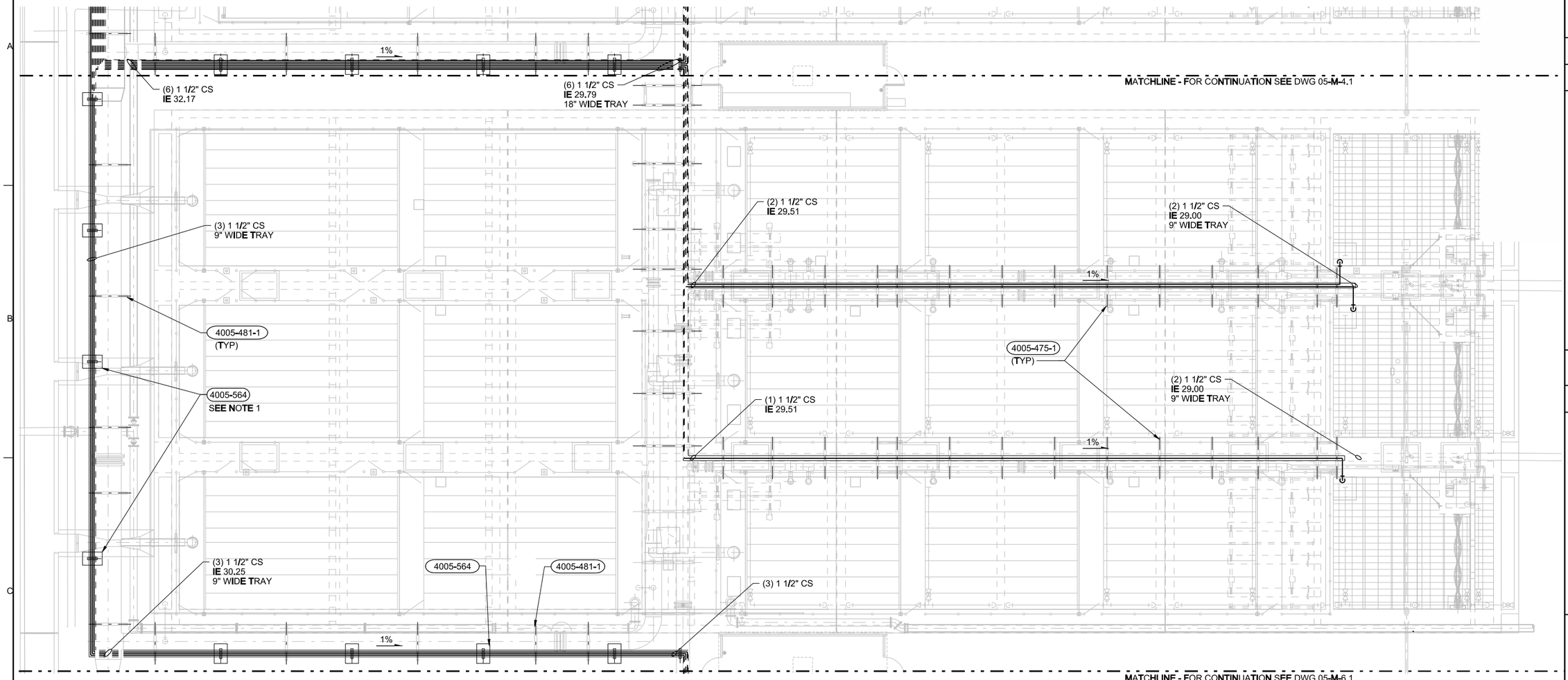
CH2MHILL

MECHANICAL
IFAS REACTOR NO. 1-3
CARBON SYSTEM - UPPER PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	05-M-4.1
SHEET	75.1

FILENAME: dn20m104-1_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:41:31 PM



NOTES:

1. SUPPORT CARBON SYSTEM PIPE TRAY BETWEEN OA PIPE SUPPORTS USING (4005-564).

IFAS REACTOR NO. 4-6 - UPPER PLAN

1/8"=1'-0"

COMMONWEALTH OF VIRGINIA
NED A. JOHNSON
Lic. No. 022691
5/8/09
PROFESSIONAL ENGINEER

NO	DATE	DESCRIPTION	DR	CHK	APVD
		REVISION	L. MACGILLIVRAY	N. JOHNSON	APVD
NO.	DATE	DSGN	I. DOLAK	I. DOLAK	APVR
N				APVD	BY

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

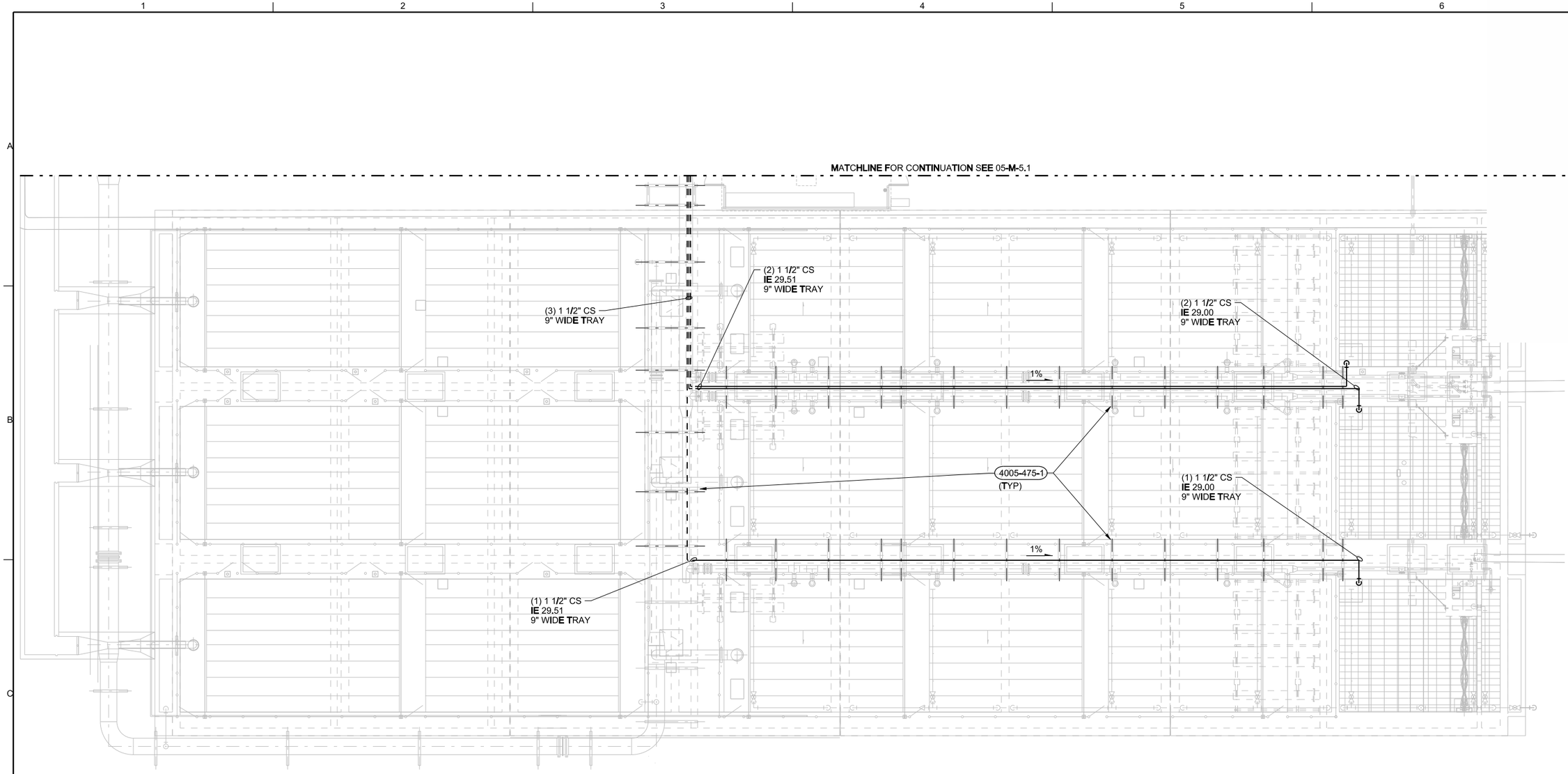
CH2MHILL

MECHANICAL
IFAS REACTOR NO. 4-6
CARBON SYSTEM - UPPER PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	05-M-5.1
SHEET	76.1

FILENAME: dn20m105-1_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:41:42 PM



IFAS REACTOR NO. 7-9 - UPPER PLAN

1/8"=1'-0"

N

COMMONWEALTH OF VIRGINIA
NED A. JOHNSON
Lic. No. 022691
5/18/09
PROFESSIONAL ENGINEER

NO	DATE	DESCRIPTION	DR	CHK	APVD
N	APVD	REVISION			
	APVR	BY	I. DOLAK	N. JOHNSON	
		I. DOLAK	L. MACGILLIVRAY		
DSGN					

HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TRETAMENT PLANT
IMPROVEMENTS - PHASE 1

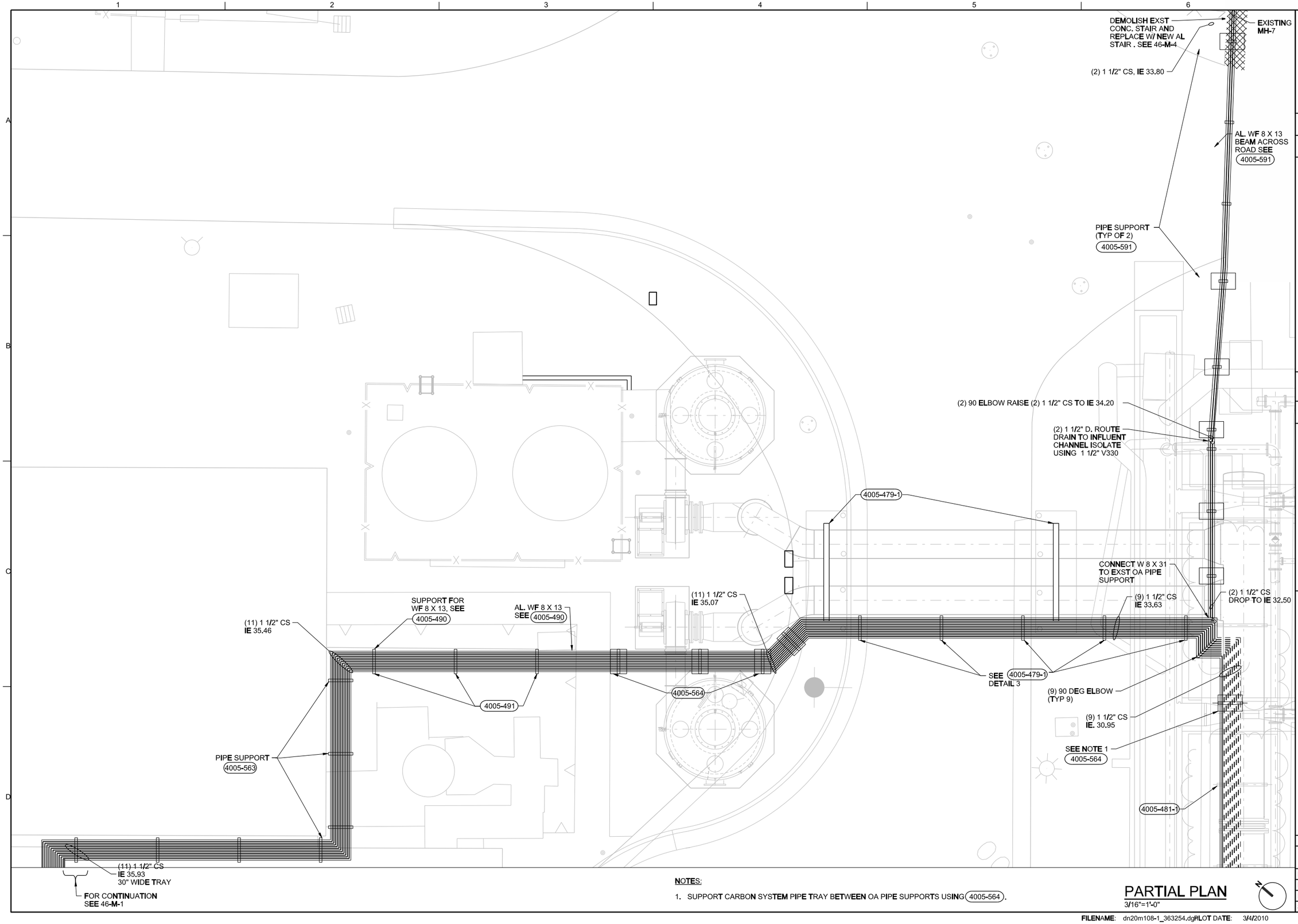
CH2MHILL

MECHANICAL
IFAS REACTOR NO. 7-9
CARBON SYSTEM - UPPER PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	05-M-6.1
SHEET	77.1

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NOTES:

1. SUPPORT CARBON SYSTEM PIPE TRAY BETWEEN OA PIPE SUPPORTS USING (4005-564).

PARTIAL PLAN

3/16"=1'-0"

NO	DATE	DESCRIPTION	DR	CHK	APVD
NO.	DATE	REVISION	C. EASTER	A. ZILBERMAN	J. McQUARRIE
DSGN					

APVR	BY	APVD
N	I. DOLAK	

COMMONWEALTH OF VIRGINIA — NED A. JOHNSON — Lic. No. 022691 — PROFESSIONAL ENGINEER — 5/18/09

HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT IMPROVEMENTS - PHASE 1

CH2MHILL

MECHANICAL
IFAS REACTOR
ODOR CONTROL SYSTEM
PARTIAL PLAN AND SECTION

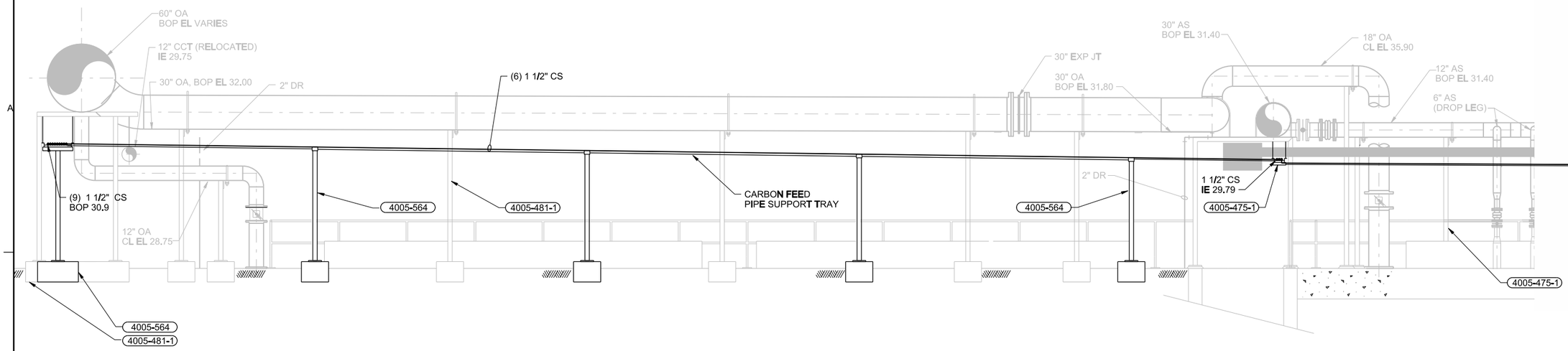
VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

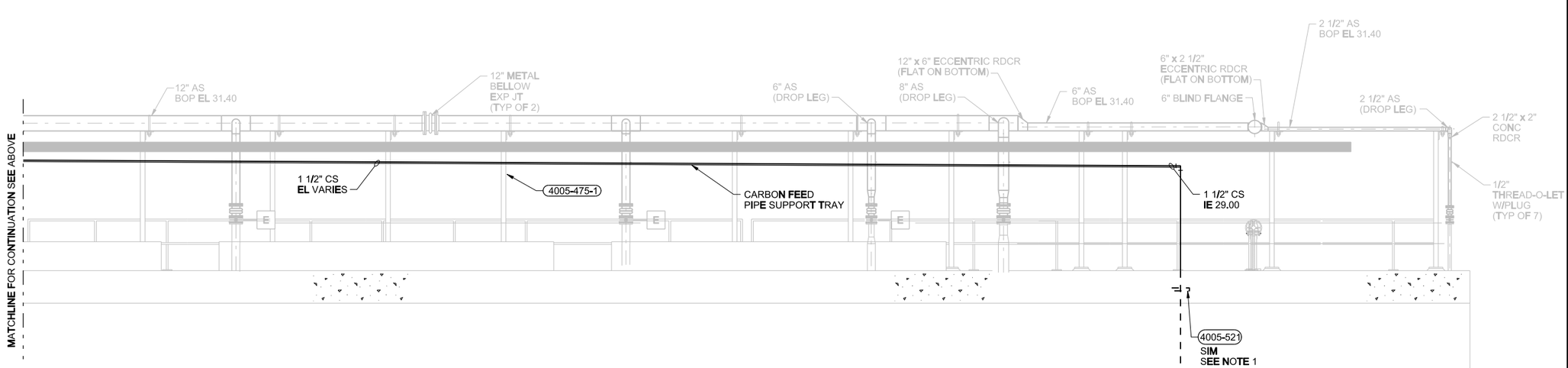
DATE	MAY 2009
PROJ	363254
DWG	05-M-8.1
SHEET	79.1

FILENAME: dn20m108-1_363254.dgr PLOT DATE: 3/4/2010 PLOT TIME: 2:42:07 PM

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A
05-M-4.1 **SECTION**
1/4"=1'-0"



A
05-M-4.1 **SECTION**
1/4"=1'-0"

NOTE:

1. TERMINATE AT MIXER ℄ ELEVATION. EXTEND PIPE HORIZONTALLY TO APPROXIMATELY 2 FEET BEHIND MIXER BLADES SUPPORT W/(4005-524), SIM. MAINTAIN CLEARANCE FOR MIXER REMOVAL.

NO	DATE	DESCRIPTION	DR	CHK	APVD
NO.	DATE	REVISION	A. ZILBERMAN	J. McQUARRIE	APVD
DSGN	J. FOUNTAS				

APVR	N
BY	I. DOLAK

COMMONWEALTH OF VIRGINIA
NED A. JOHNSON
Lic. No. 022661
PROFESSIONAL ENGINEER
5/18/09

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

HAMPTON ROADS SANITATION DISTRICT

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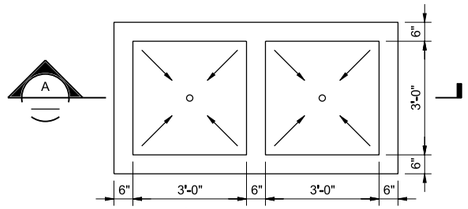
MECHANICAL
CARBON SYSTEM
SECTIONS

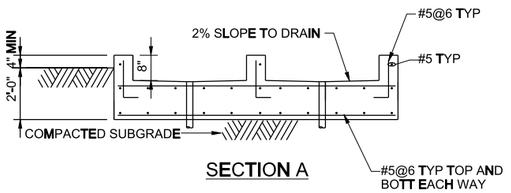
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	05-M-9.1
SHEET	80.1

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FILENAME: dn20m109-1_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:42:22 PM





SAFTY SHOWER AND FILL STATION PADS

NTS

0330-060

EMERGENCY SHOWER/EYEWASH UNIT EXTERIOR - FROST PROOF

NTS

2245-410

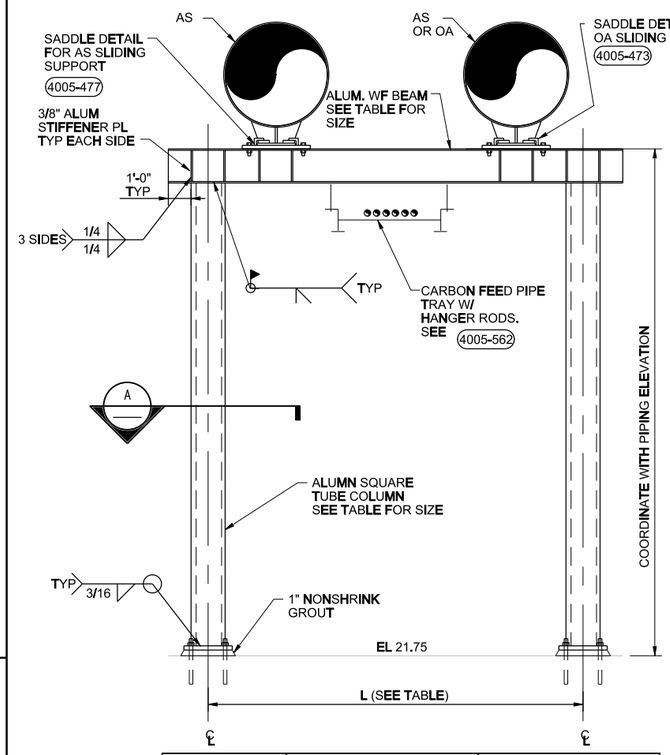
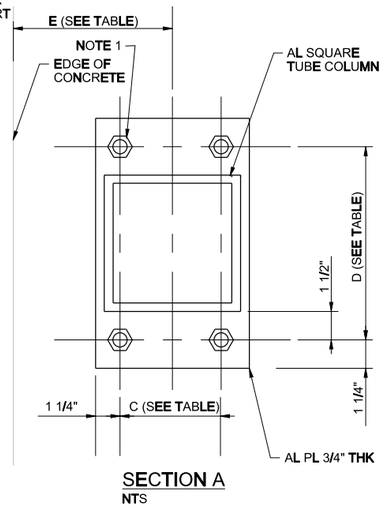


TABLE	SUPPORT FOR PIPES RUNNING EAST-WEST ON 6-FT WIDE WALKWAY	SUPPORT FOR PIPES RUNNING NORTH-SOUTH ON 12-FT WIDE WALKWAY
BEAM	WF8x13	WF8X13
COLUMN	SQUARE TUBE 5"x5"x1/2"	SQUARE TUBE 7"x7"x1/2"
L	4'-6"	7'-0"
C	3 1/2"	5 1/2"
D	8"	10"
E	9"	6"

SLIDING PIPE SUPPORT AND CARBON FEED PIPE SUPPORT

NTS

4005-475-1

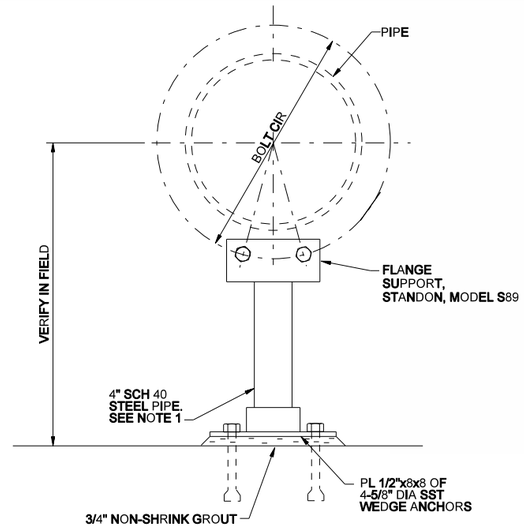


SECTION A

NTS

NOTE

1. USE (4) 3/4" SST ADHESIVE ANCHOR, 7" EMBEDMENT (TYP OF 4) WHEN CONNECTING TO CONCRETE. OR USE (4) 3/4" SST BOLT WHEN CONNECTING TO STEEL BEAM.



NOTE:

1. COORDINATE SIZE AND LENGTH WITH SUPPORT MFR AND FIELD DIMENSIONS.

FLANGE SUPPORT

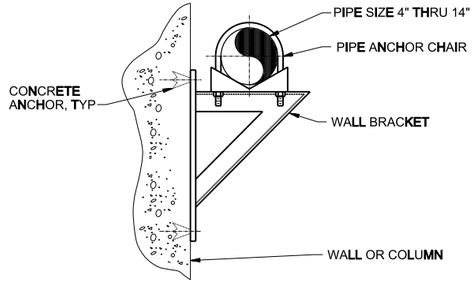
NTS

4005-502

PIPE HANGER

NTS

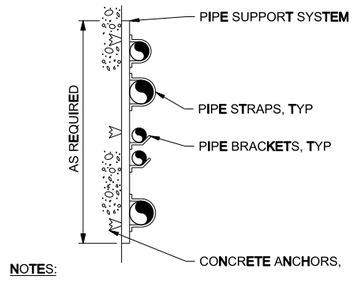
4005-552



PIPE SUPPORT - WALL MOUNTED

NTS

4005-508



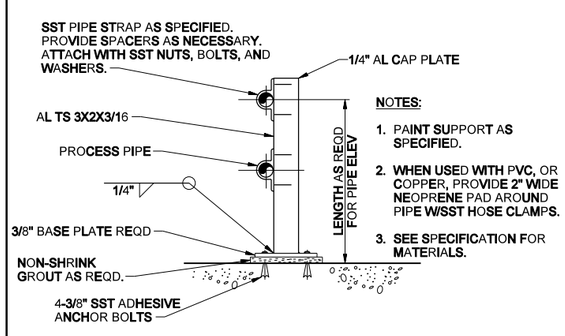
NOTES:

1. PROVIDE PIPE PROTECTION BARRIER AS SPECIFIED.
2. SEE SPECIFICATIONS FOR MATERIALS.

STACKED PIPE WALL SYSTEM

NTS

4005-521



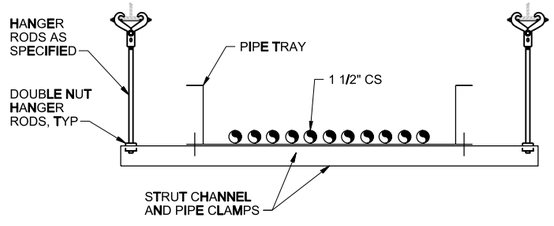
NOTES:

1. PAINT SUPPORT AS SPECIFIED.
2. WHEN USED WITH PVC, OR COPPER, PROVIDE 2" WIDE NEOPRENE PAD AROUND PIPE W/SST HOSE CLAMPS.
3. SEE SPECIFICATION FOR MATERIALS.

PIPE SUPPORT

NTS

4005-524



NOTES:

1. PROVIDE PIPE TRAY SIZED WITH LOAD RATING SUFFICIENT TO SPAN BETWEEN TRAPEZE PIPE SUPPORTS, SEE SPECIFICATIONS.

TRAPEZE PIPE HANGER

NTS

4005-562

COMMONWEALTH OF VIRGINIA — LIN ZHANG Lic. No. 042864 — 5/18/09 — ENGINEER — PROFESSIONAL

NO	DATE	DR	DESCRIPTION	CHK	APVR
	J. FOUNTAS	Z. GHASEMY	REVISION	N. JOHNSON	I. DOLAK
	DATE			APVD	BY APVD

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT IMPROVEMENTS - PHASE 1

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CH2MHILL

DETAILS

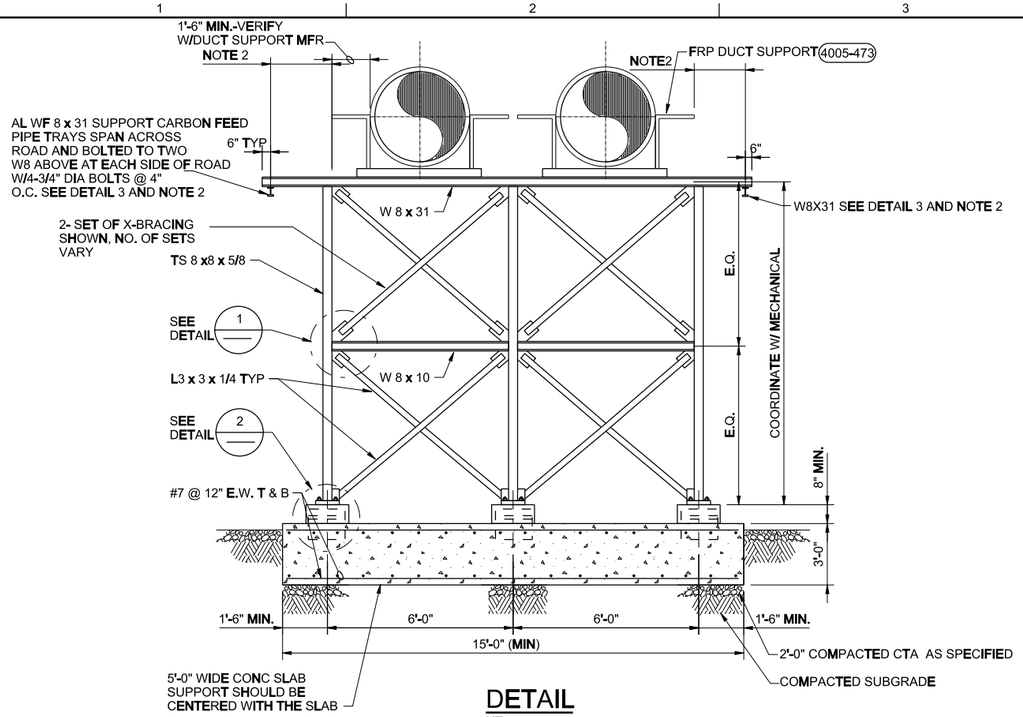
STANDARD DETAILS

VERIFY SCALE

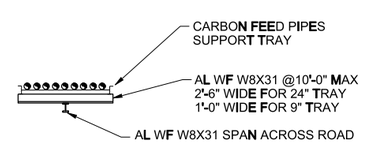
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	MAY 2009
PROJ	363254
DWG	46-D-1
SHEET	103.8

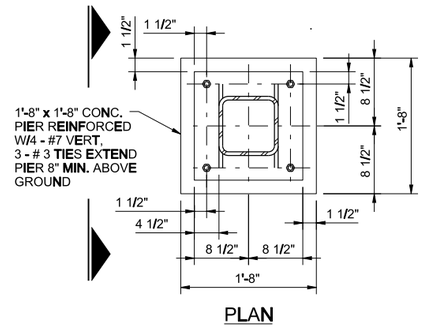
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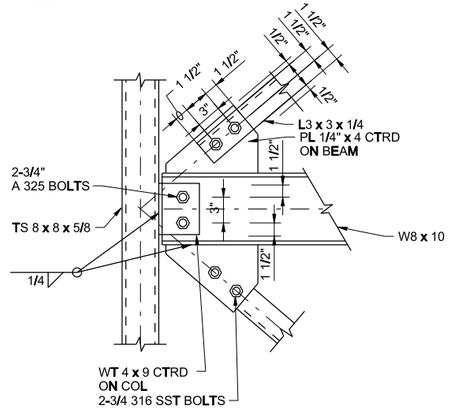
DETAIL
NTS



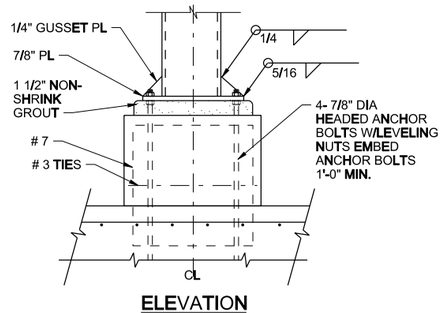
3 DETAIL
NTS



PLAN



1 DETAIL
NTS



ELEVATION

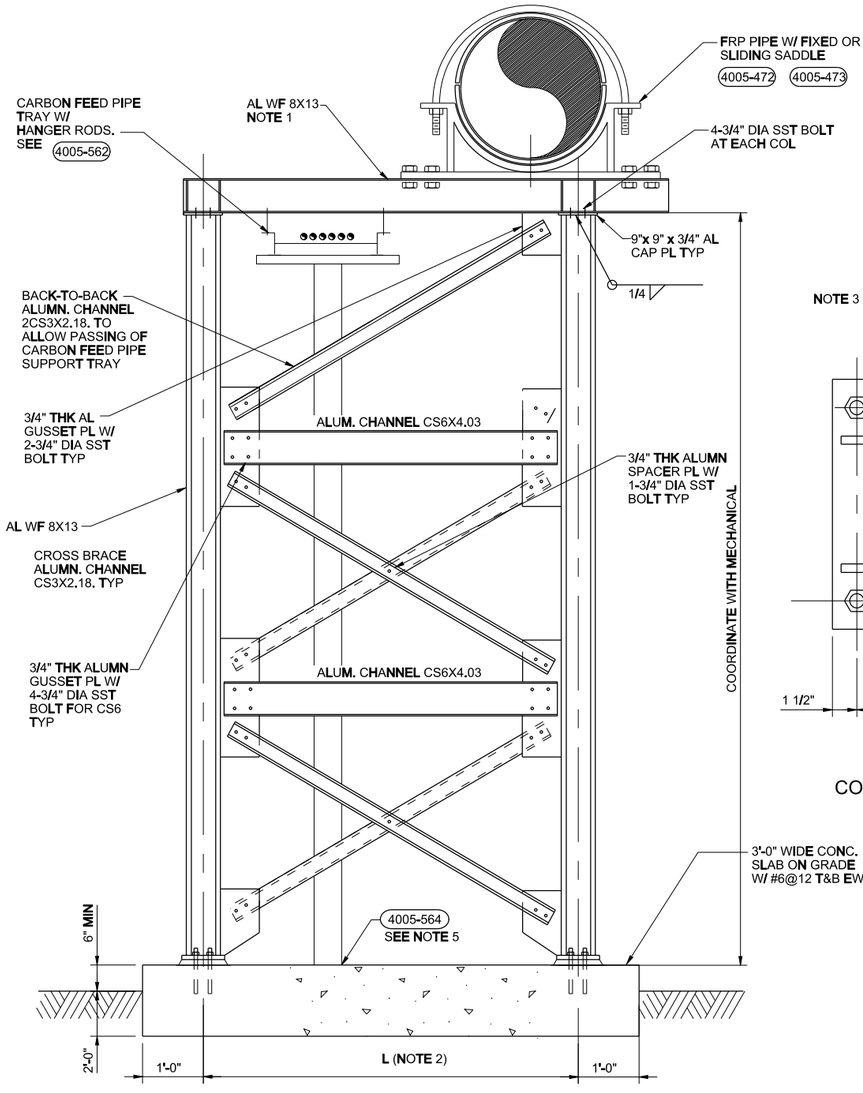
2 DETAIL
NTS

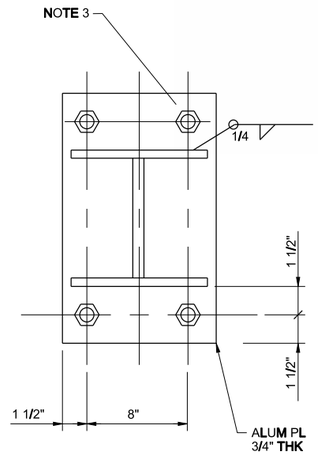
NOTE:

1. AL WF W8X31 TO SUPPORT CARBON FEED PIPE TRAYS. LOCATE W8 CENTERED WITH SUPPORT TRAYS ABOVE.

4005-479-1

ODOR CONTROL DUCT AND CARBON FEED PIPE SUPPORT
NTS





COLUMN BASE DETAIL

NOTES:

1. BEAM OVERHANG LENGTH SHALL BE SUFFICIENT FOR ATTACHING PIPE SADDLE
2. L = 4'-0" FOR PIPE DIAMETER 3-FT AND LESS
   L = 6'-0" FOR PIPE DIAMETER 6-FT AND LESS BUT MORE THAN 3-FT
3. USE (4) 3/4" SS ADHESIVE ANCHOR, 7" EMBEDMENT (TYP OF 4) WHEN CONNECTING TO CONCRETE.OR USE (4) 3/4" SSTL BOLT WHEN CONNECTING TO STEEL BEAM. OMIT GROUT UNDER BASEPLATE WHEN CONNECTING TO STEEL BEAM.
4. AL I12 TO BE CENTERED WITH CARBON FEED PIPE SUPPORT TRAY. ELEVATION SHALL COORD. W/ PROCESS MECHANICAL.
5. SUPPORT CARBON SYSTEM PIPE TRAY BETWEEN OA PIPE SUPPORTS USING 4005-564.

OA AND CARBON FEED PIPE SUPPORT
NTS

4005-481-1

COMMONWEALTH OF VIRGINIA ENGINEER LIN ZHANG Lic. No. 042864 5/18/09 PROFESSIONAL

NO	DATE	DESCRIPTION	DR	CHK	APVD	APVR
N				N. JOHNSON	APVD	N. JOHNSON

ENGINEER

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

CH2MHILL

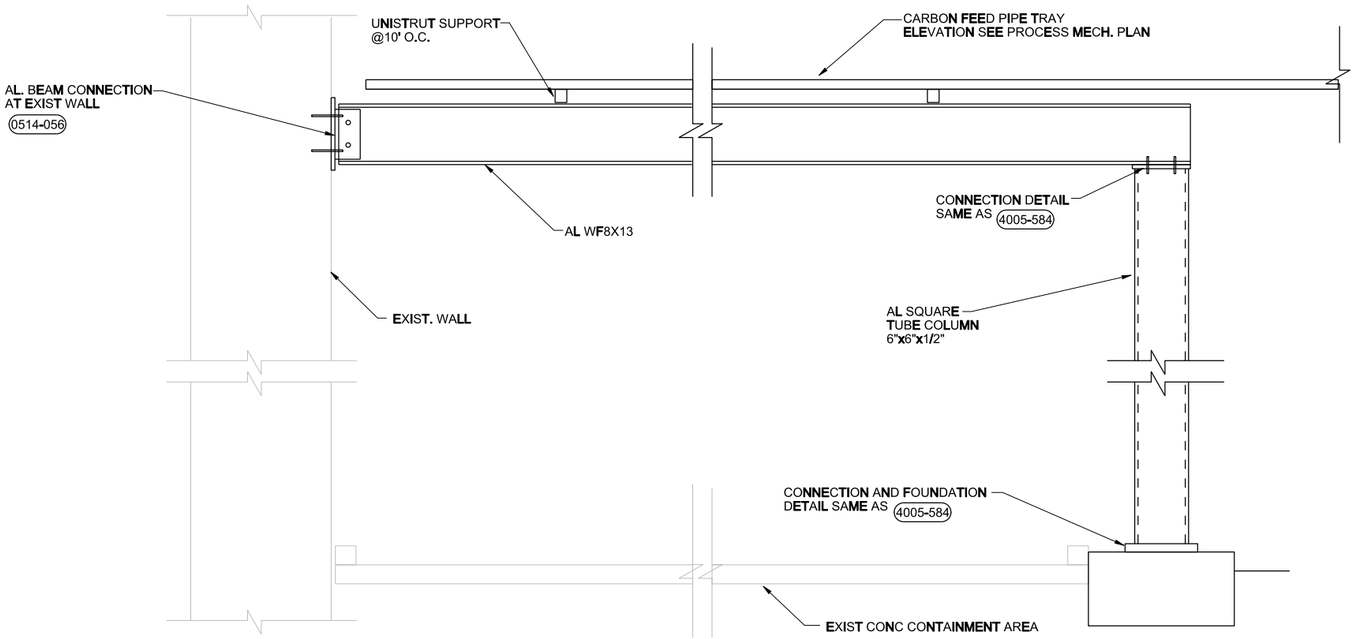
DETAILS

STANDARD DETAILS

VERIFY SCALE

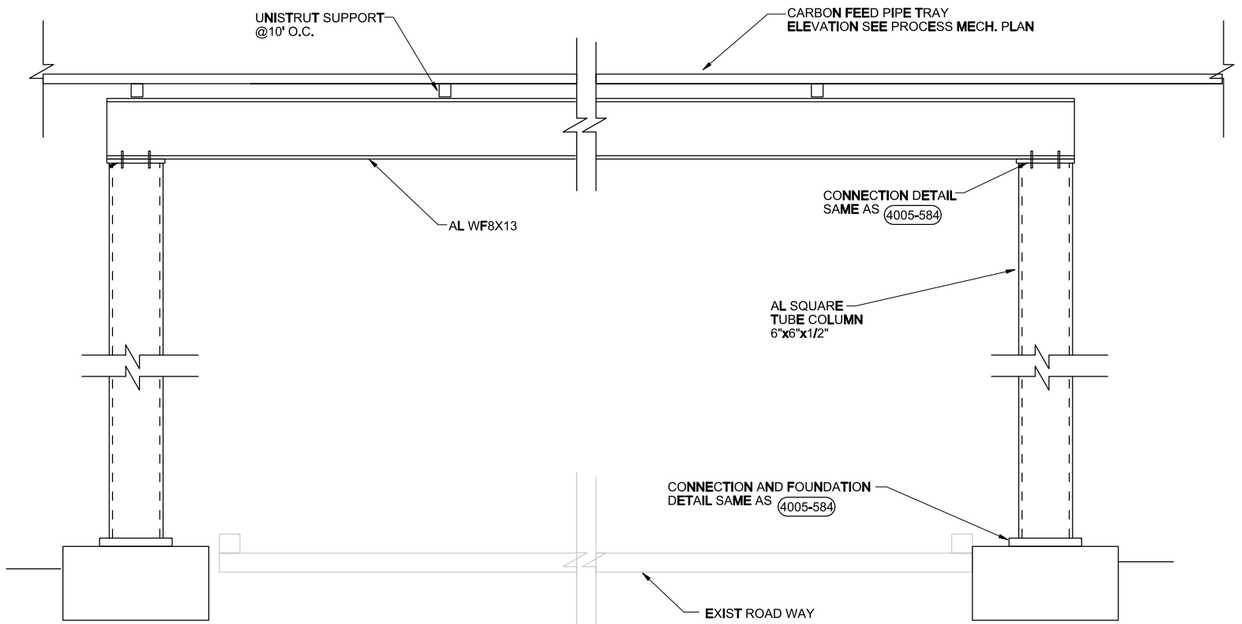
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	46-D-2
SHEET	103,9



CARBON FEED PIPE SUPPORT ACROSS EXIST CONC CONTAINMENT
NTS

4005-490



CARBON FEED PIPE SUPPORT ACROSS EXISTING ROADWAY
NTS

4005-491

COMMONWEALTH OF VIRGINIA
LIN ZHANG
Lic. No. 042864
5/18/09
PROFESSIONAL ENGINEER

NO	DATE	ENGINEER	DR	DESCRIPTION	APVR
NO.	DATE	Z. HUNERS	CHK	REVISION	BY
DSGN		N. JOHNSON	APVD		APVD
					N

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

CH2MHILL

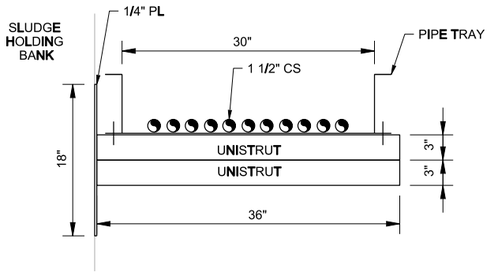
DETAILS

DESIGN DETIALS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	46-D-3
SHEET	103.10

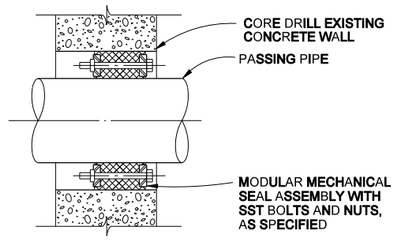
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PIPE SUPPORT DETAIL

NTS

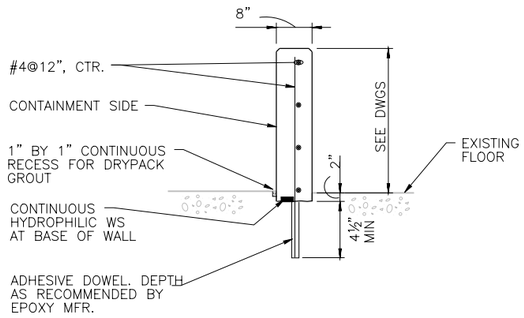
4005-563



PENETRATION FOR EXST WALL

NTS

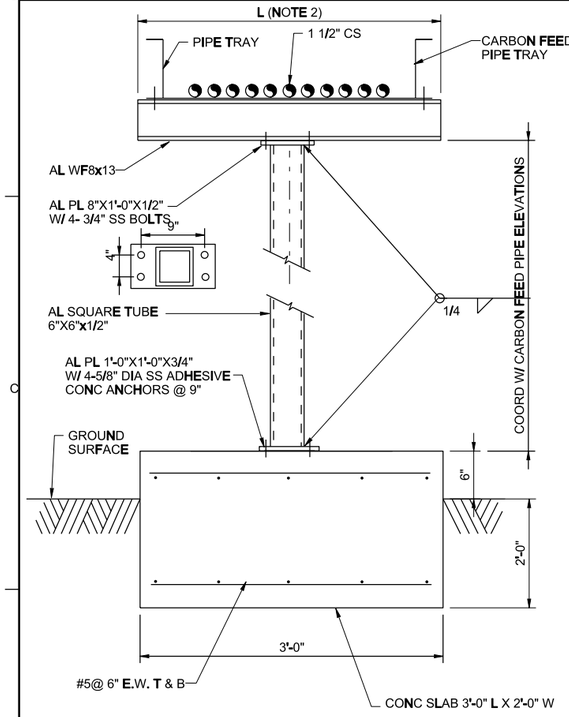
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STANDARD CONTAINMENT WALL

NTS

0330-082



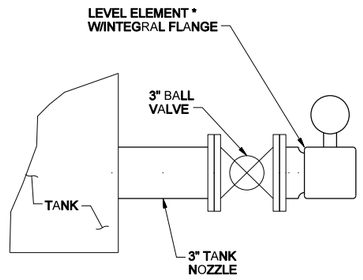
NOTE:

1. L=1'-6" FOR 9" WIDE TRAY
   L=2'-0" FOR 18" AND 24" WIDE TRAY
   L=3'-0" FOR 30" WIDE TRAY

CARBON FEED PIPE SUPPORT DETAIL

NTS

4005-564



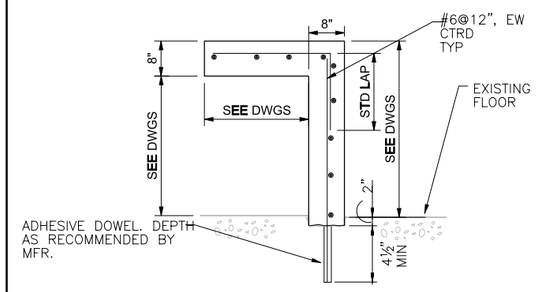
NOTES:

1. COMPONENTS DESIGNATED BY * PROVIDED BY INSTRUMENT MANUFACTURER.

LEVEL ELEMENT-TANK MOUNT

NTS

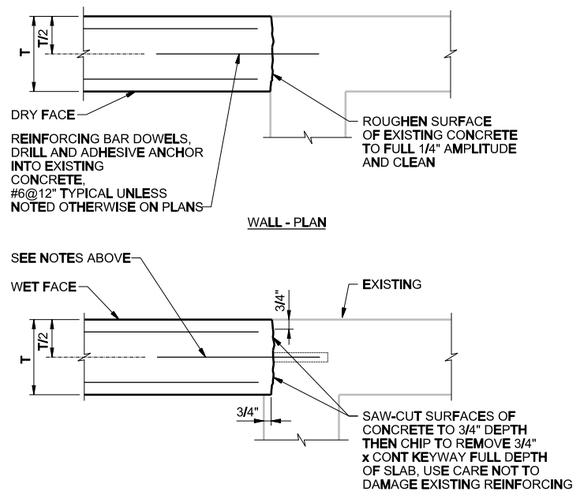
4091-256



STANDARD PUMP SHELF

NTS

0330-081



CONNECTION OF NEW CONCRETE TO EXISTING

NTS

0330-101

COMMONWEALTH OF VIRGINIA
LIN ZHANG
Lic. No. 042864
5/18/09
PROFESSIONAL ENGINEER

NO	DATE	DESCRIPTION	DR	CHK	APVD
NO.	DATE	REVISION	Z. GHASEMY	N. JOHNSON	APVD
DSGN	J. FOUNTAS				

N	APVD	I. DOLAK
	BY	

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT IMPROVEMENTS - PHASE 1

CH2MHILL

DETAILS

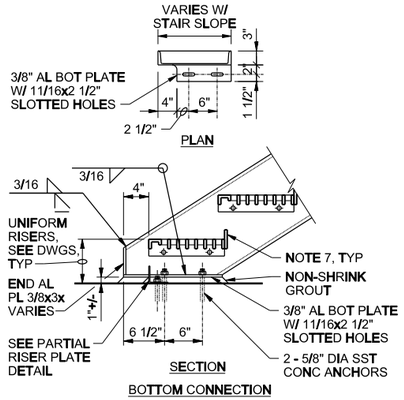
STANDARD DETAILS

VERIFY SCALE

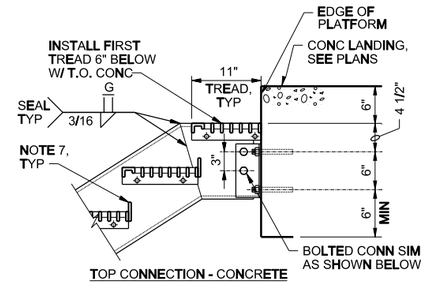
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	46-D-4
SHEET	103.11

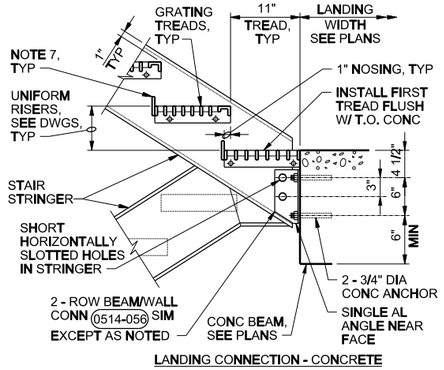
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BOTTOM CONNECTION

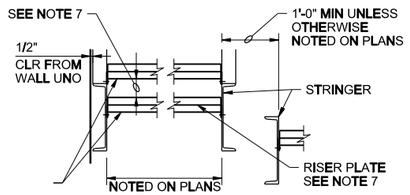


TOP CONNECTION - CONCRETE

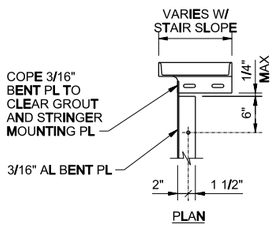


LANDING CONNECTION - CONCRETE

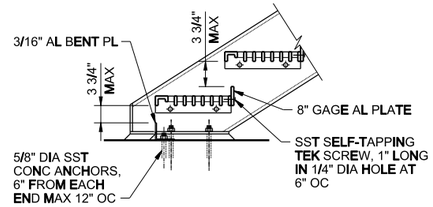
STAIRWAY WIDTH	TREAD BEARING BARS
	ALUMINUM TREAD
2'-3" OR LESS	1" x 3/16"
2'-9" OR LESS	1 1/4" x 3/16"
3'-3" OR LESS	1 1/2" x 3/16"
4'-7" OR LESS	1 3/4" x 3/16"



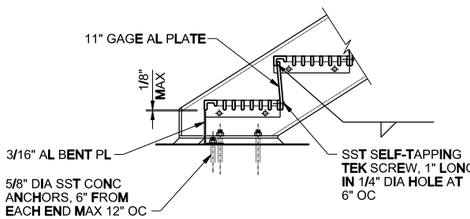
STAIR TREADS



BOTTOM CLOSURE PLATE



PARTIAL RISER PLATE



FULL RISER PLATE

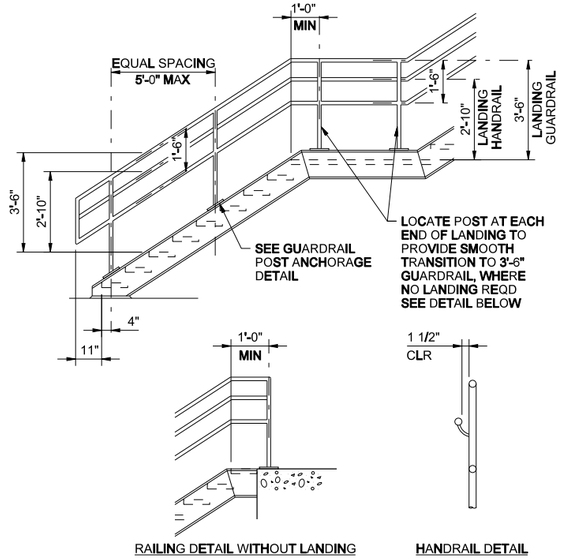
GRATING TREAD

NOTES:
1. PROVIDE PROTECTION FOR DISSIMILAR METALS AND CONCRETE AS SPECIFIED.
2. AMERICAN STANDARD C12x7.41 ALUMINUM STRINGERS TYPICAL EXCEPT WHERE OTHERWISE NOTED ON PLANS.
3. STAIR HANDRAIL NOT SHOWN.
4. STAIR MANUFACTURER TO COORDINATE BOLTED TREADS AND HANDRAIL CONNECTIONS.
5. ALL FASTENERS SHALL BE STAINLESS STEEL.
6. FIELD VERIFY DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION.
7. FOR RISER PLATE SEE PARTIAL RISER PLATE DETAIL UNLESS NOTED OTHERWISE. CLEARANCE BETWEEN TOP OF RISER PLATE AND BOTTOM OF TREAD TO BE 3 3/4" MAX. FOR STAIRS WITH PICKET HANDRAIL EXTEND RISER PLATE PER FULL RISER PLATE DETAIL.

STAIR DETAILS - ALUMINUM

NTS

0551-001



RAILING DETAIL WITHOUT LANDING

HANDRAIL DETAIL

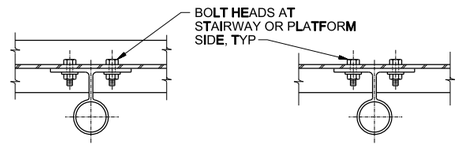
NOTE:

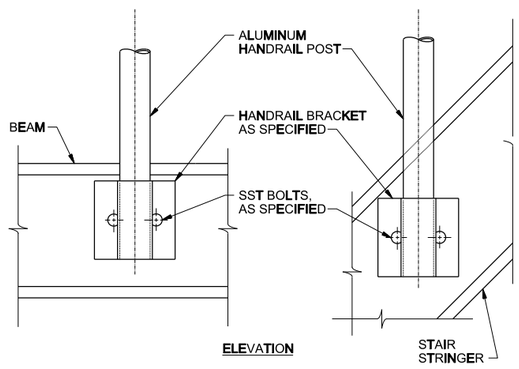
SEE TYPICAL GUARDRAIL DETAIL.

TWO RAIL STAIR HANDRAIL - ALUMINUM

NTS

0552-001F





TYPE "H"

NOTE:

PROVIDE PROTECTION FOR DISSIMILAR METALS AND CONCRETE PER SPECIFICATIONS.

HANDRAIL POST ANCHORAGE-TYPE H-ALUMINUM

NTS

0552-001HH

NO	DATE	DESCRIPTION	DR	CHK	APVD
		REVISION	L. ZHANG		
APVR	N				
BY	APVD				

COMMONWEALTH OF VIRGINIA — LIN ZHANG Lic. No. 042864 — 5/18/09 — ENGINEER — PROFESSIONAL

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT IMPROVEMENTS - PHASE 1

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CH2MHILL

DETAILS

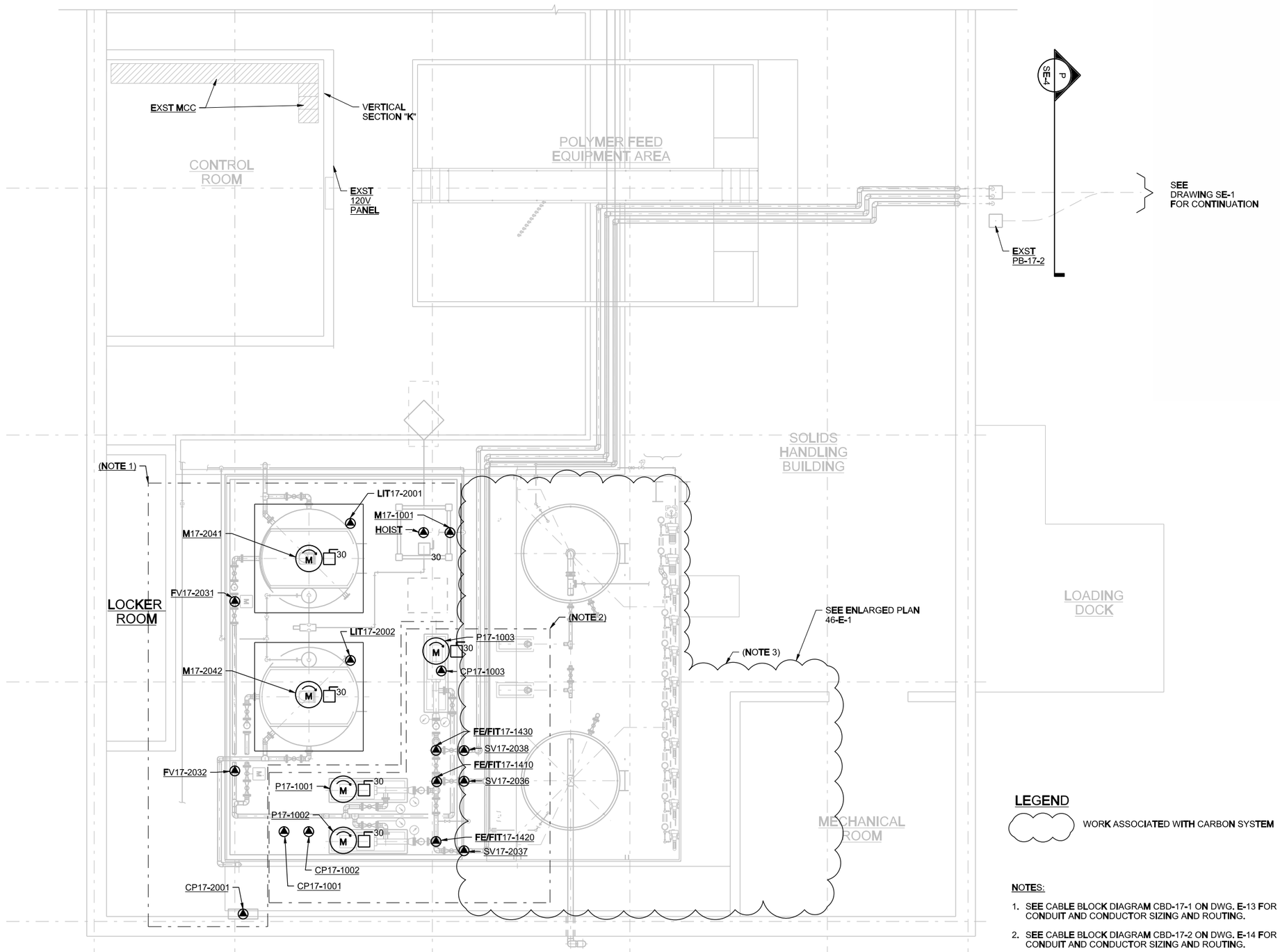
STANDARD DETAILS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	MAY 2009
PROJ	363254
DWG	46-D-5
SHEET	103.12

FILENAME: dn46d005_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:42:59 PM



PLAN
3/16"=1'-0"

LEGEND

WORK ASSOCIATED WITH CARBON SYSTEM

NOTES:

1. SEE CABLE BLOCK DIAGRAM CBD-17-1 ON DWG. E-13 FOR CONDUIT AND CONDUCTOR SIZING AND ROUTING.
2. SEE CABLE BLOCK DIAGRAM CBD-17-2 ON DWG. E-14 FOR CONDUIT AND CONDUCTOR SIZING AND ROUTING.
3. SEE DWG 46-E-1 FOR ENLARGED PLAN OF THIS AREA.

COMMONWEALTH OF VIRGINIA
DAVID W. DOAR
Lic. No. 029912
ENGINEER
PROFESSIONAL
5/18/09

NO	DATE	DESCRIPTION	APVR
NO.	DATE	REVISION	APVD
DSGN	D.DOAR	DR Z. HUNERS CHK A. SODEIFI	BY I. DOLAK

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT IMPROVEMENTS - PHASE 1

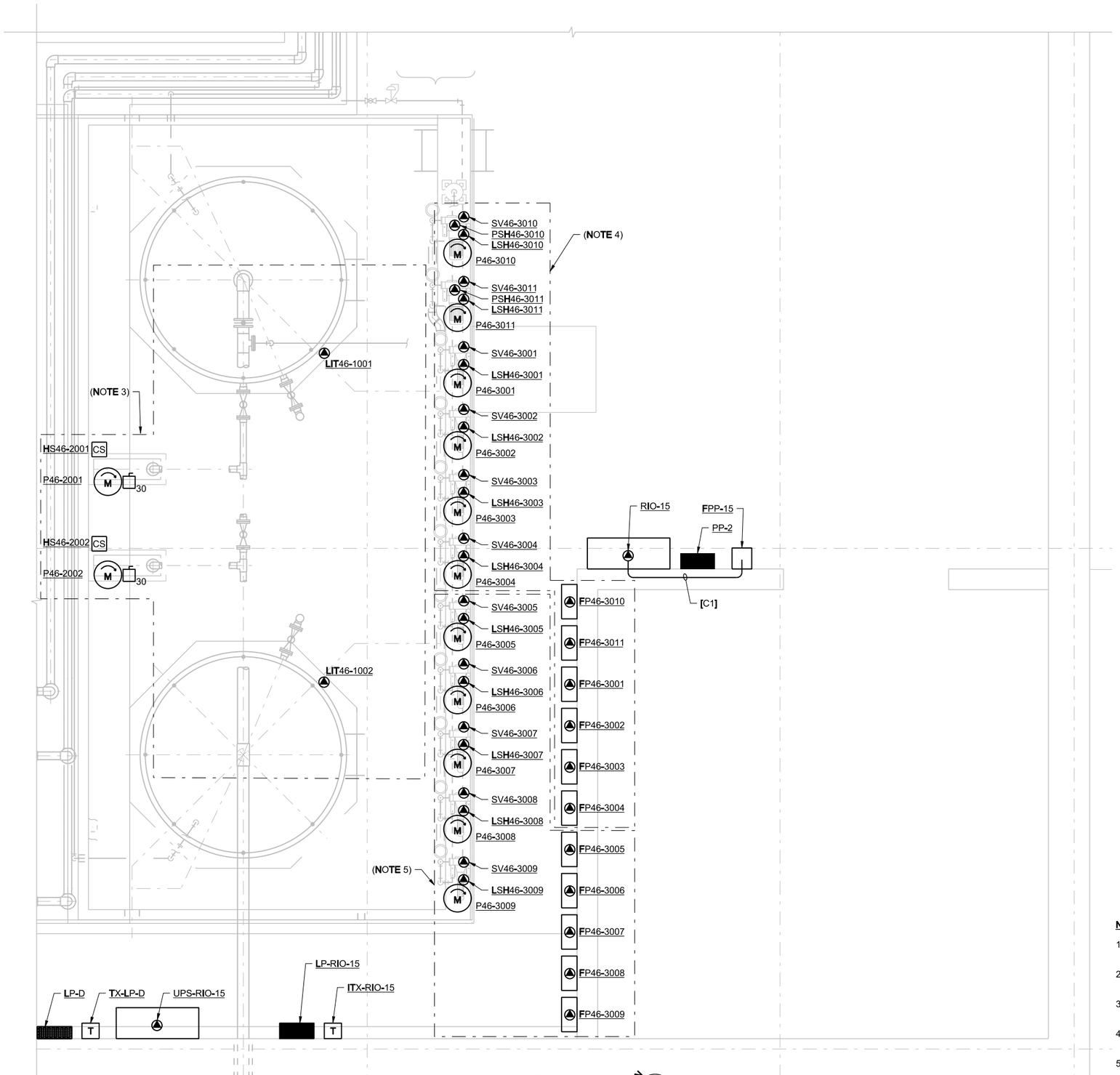
CH2MHILL

ELECTRICAL
CENTRIFUGE POLYMER SYSTEM PLAN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	17-E-1.1
SHEET	102.1

FILENAME: dn46e101.1_363254.dgr PLOT DATE: 3/4/2010 PLOT TIME: 2:43:09 PM



ENLARGED PLAN

3/8" = 1'-0"

NOTES:

1. SEE CABLE BLOCK DIAGRAM CBD-17-1 ON DWG. E-13 FOR CONDUIT AND CONDUCTOR SIZING AND ROUTING.
2. SEE CABLE BLOCK DIAGRAM CBD-17-2 ON DWG. E-14 FOR CONDUIT AND CONDUCTOR SIZING AND ROUTING.
3. SEE CABLE BLOCK DIAGRAM CBD-17-3 ON DWG. 17-E-3 FOR CONDUIT AND CONDUCTOR SIZING AND ROUTING.
4. SEE CABLE BLOCK DIAGRAM CBD-17-4 ON DWG. 17-E-3 FOR CONDUIT AND CONDUCTOR SIZING AND ROUTING.
5. SEE CABLE BLOCK DIAGRAM CBD-17-5 ON DWG. 17-E-3 FOR CONDUIT AND CONDUCTOR SIZING AND ROUTING.

COMMONWEALTH OF VIRGINIA
DAVID W. DOAR
Lic. No. 029912
ENGINEER
PROFESSIONAL ENGINEER
5/18/09

NO	DATE	DESCRIPTION	APVR
N	APVD		

NO.	DATE	REVISION	BY

DSGN	DR	CHK	APVD
D.DOAR	Z. HUNERS	A. SODEIFI	I. DOLAK

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

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CH2MHILL

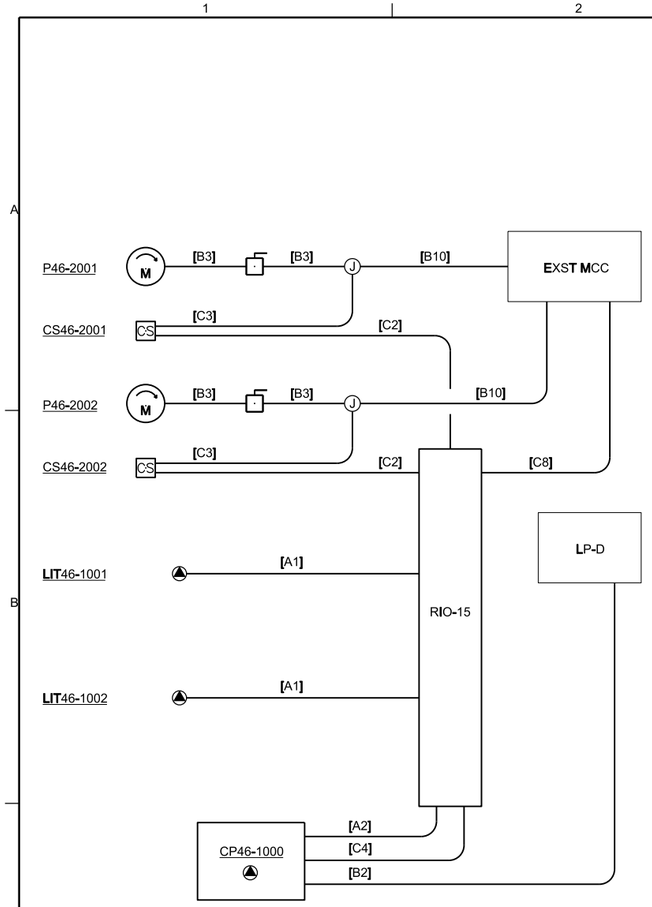
ELECTRICAL
CARBON SYSTEM
PLAN

VERIFY SCALE

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0 1"

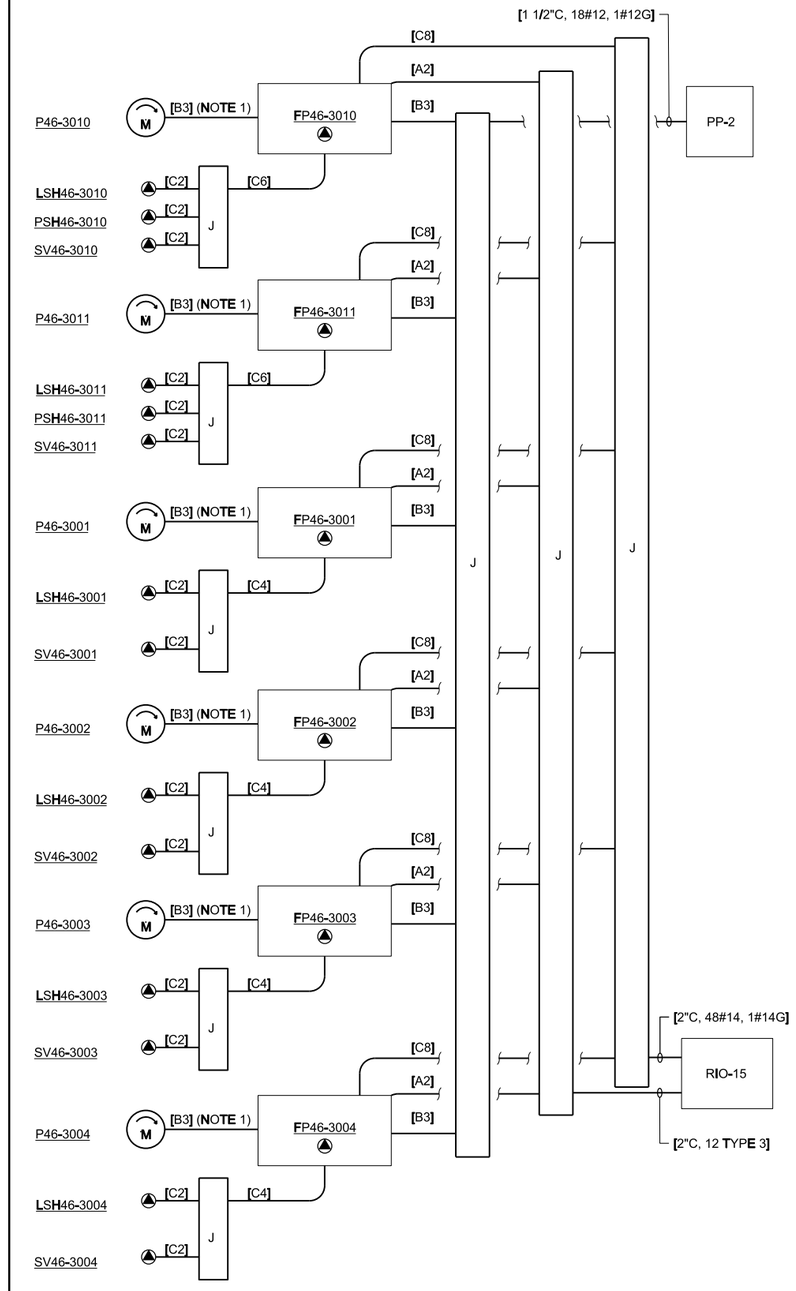
DATE	MAY 2009
PROJ	363254
DWG	46-E-1
SHEET	103.5

FILENAME: dn46e101_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:43:18 PM

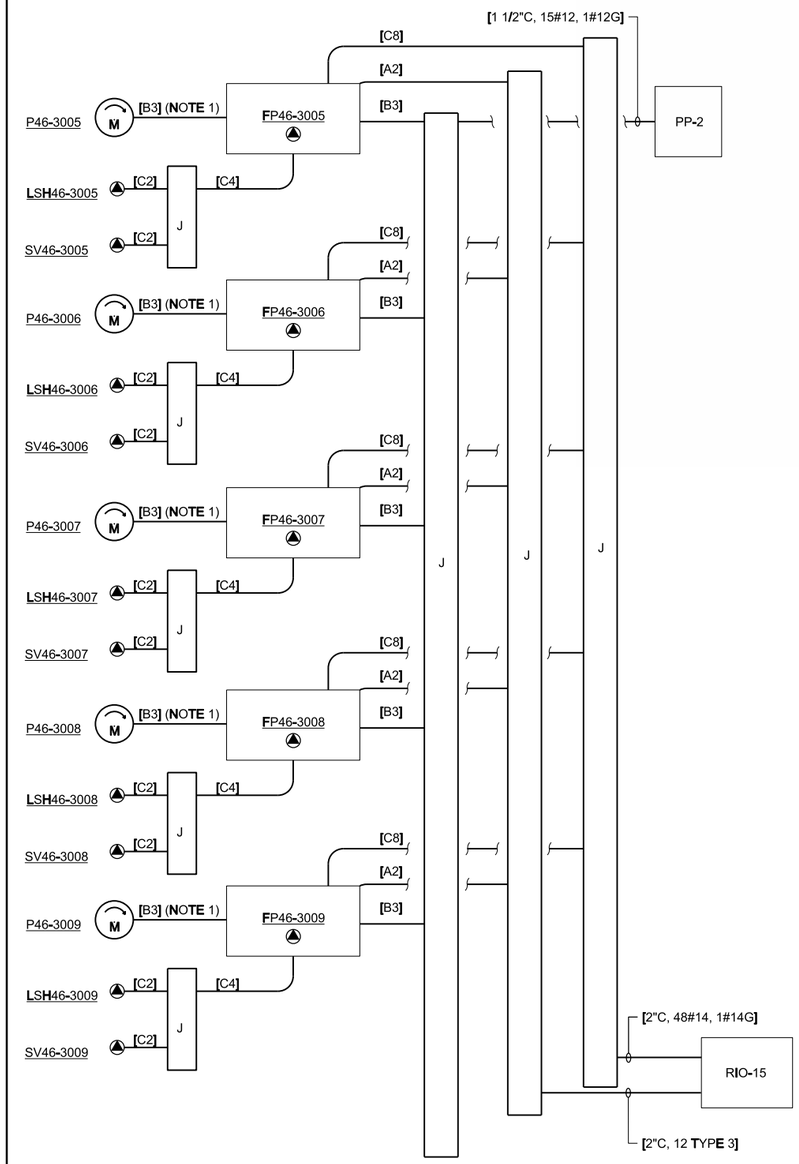


CABLE BLOCK DIAGRAM CBD-17-3

(1 REQUIRED)



CABLE BLOCK DIAGRAM CBD-17-4



CABLE BLOCK DIAGRAM CBD-17-5

NOTES

1. ROUTE ALL POWER CONDUCTORS FROM VFD'S IN FP'S TO MOTORS IN DEDICATED PVC COATED GALVANIZED RIGID STEEL CONDUITS.

COMMONWEALTH OF VIRGINIA
DAVID W. DOAR
Lic. No. 029912
PROFESSIONAL ENGINEER
5/18/09

NO	DATE	DESCRIPTION	APVR
N			

NO.	DATE	REVISION	BY	APVD
DSGN	D.DOAR	DR Z. HUNEKERS	CHK A. SODEIFI	APVD I. DOLAK

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

HAMPTON ROADS SANITATION DISTRICT

CH2MHILL

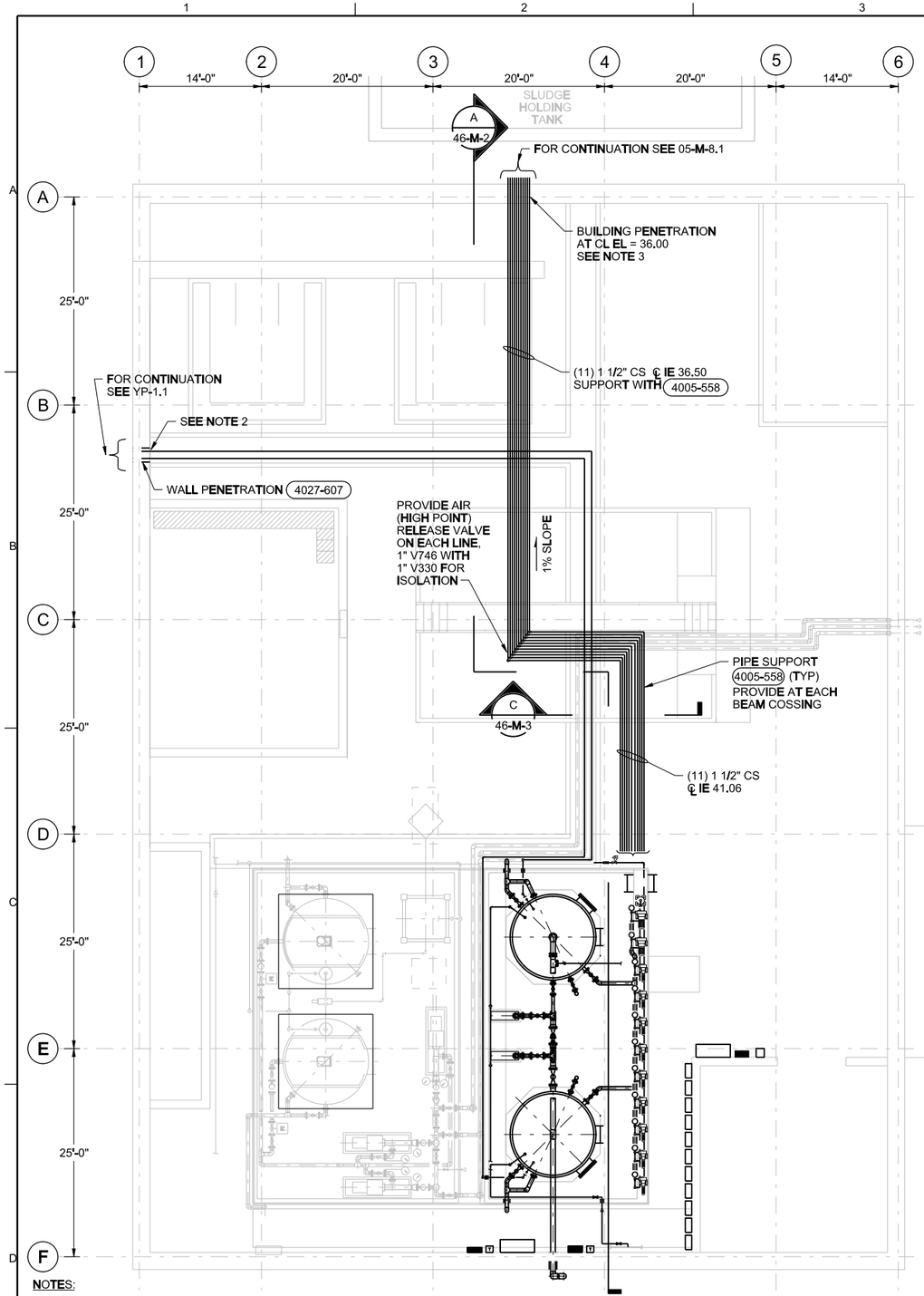
ELECTRICAL

CABLE BLOCK DIAGRAMS

VERIFY SCALE
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0 1"

DATE	MAY 2009
PROJ	363254
DWG	46-E-3
SHEET	103.7

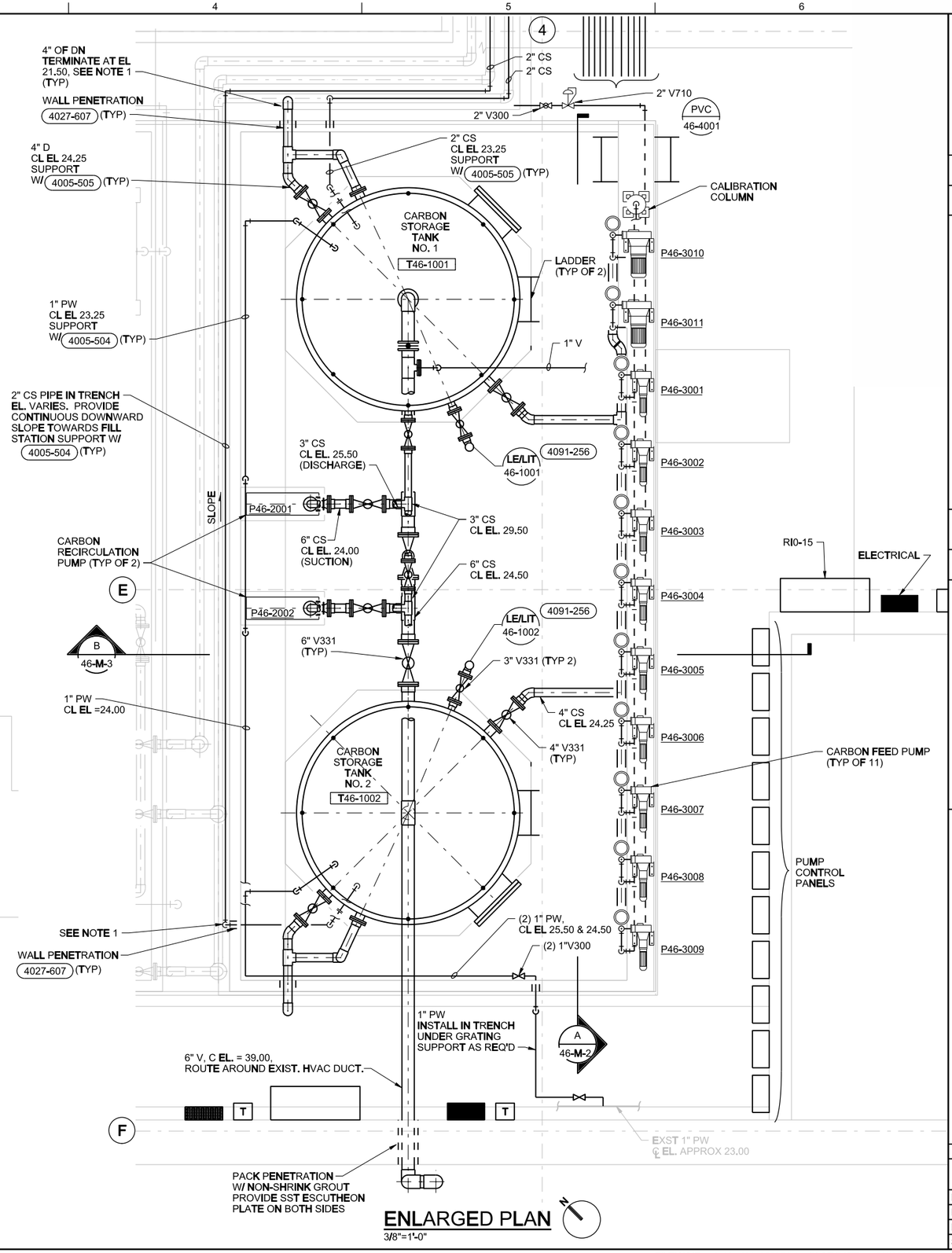
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NOTES:

1. ROUTE PIPE TRY AROUND ALL EXIST. CEILING LIGHT FIXTURES, ELECTRICAL CONDUITS, PIPING, HVAC DUCTS, AND OTHER EXISTING FACILITIES.
2. FIELD ROUTE (2) 2" CS IN EXISTING PIPE TRENCH. DO NOT ALLOW LOW SPOTS IN PIPE VERTICAL ALIGNMENT.
3. CUT SLOT IN EXST WALL AS NECESSARY TO ACCOMODATE PIPING. DO NOT CUT EXST GIRTS. FLASH OPENING W/ ALUMIMUM ESCUTHEONS INSIDE AND OUT AND FILL SPARE BETWEEN W/ EXPANDABLE FOAM.

PLAN
1/8"=1'-0"



ENLARGED PLAN
3/8"=1'-0"

COMMONWEALTH OF VIRGINIA
NED A. JOHNSON
Lic. No. 022691
5/18/09
PROFESSIONAL ENGINEER

NO	DATE	DESCRIPTION	DR	CHK	APVD
		REVISION	A. ZILBERMAN	N. JOHNSON	
NO.	DATE	DSGN	I. DOLAK	APVD	I. DOLAK
				APVR	N

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TRETAMENT PLANT
IMPROVEMENTS - PHASE 1

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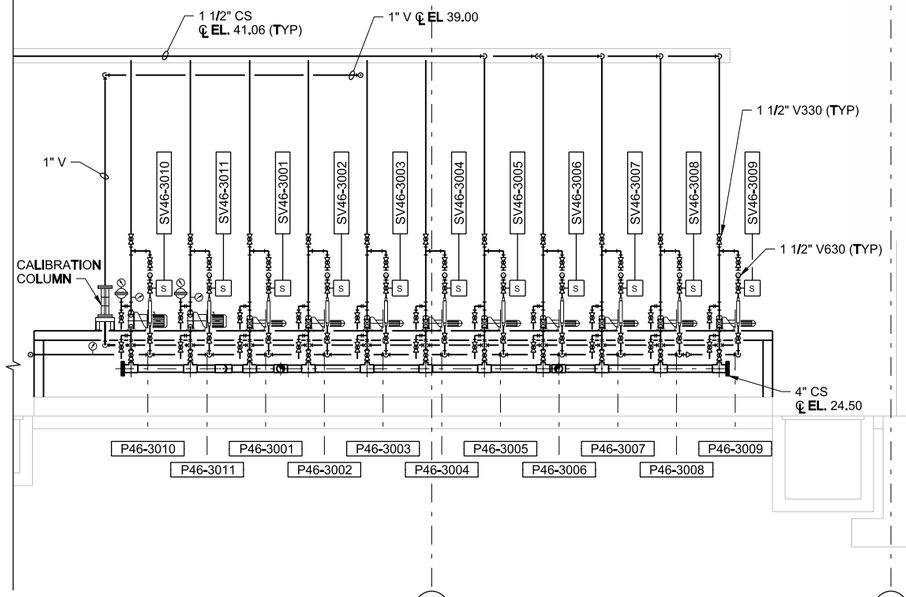
CH2MHILL

MECHANICAL/STRUCTURAL
CARBON SYSTEM
PLANS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	46-M-1
SHEET	103.1





A
46-M-1
SECTION
3/8"=1'-0"

NOTES:

1. ROUTE PIPE TRAY AROUND ALL EXIST. CEILING LIGHT FIXTURES, ELECTRICAL CONDUITS, PIPING, HVAC DUCTS, AND OTHER EXISTING FACILITIES.
2. PROVIDE MAXIMUM CLEARANCE ABOVE EXISTING EQUIPMENT (POLYMER SYSTEM, GRAVITY BELT THICKENERS, OTHER).
3. MAINTAIN ELEVATION OF PIPE TRAY RELATIVE TO EXIST. BUILDING CROSSBEAMS AS SHOWN.
4. SUPPORT PIPE TRAY FROM EVERY EXISTING BUILDING CROSSBEAM. SIZE PIPE TRAY TO SPAN REQUIRED LENGTH.
5.

COMMONWEALTH OF VIRGINIA
NED A. JOHNSON
Lic. No. 022661
5/18/09
PROFESSIONAL ENGINEER

NO	DATE	DESCRIPTION	DR	CHK	APVD
N	APVD	REVISION	A. ZILBERMAN	N. JOHNSON	APVD
	BY		I. DOLAK		I. DOLAK
	APVR				

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

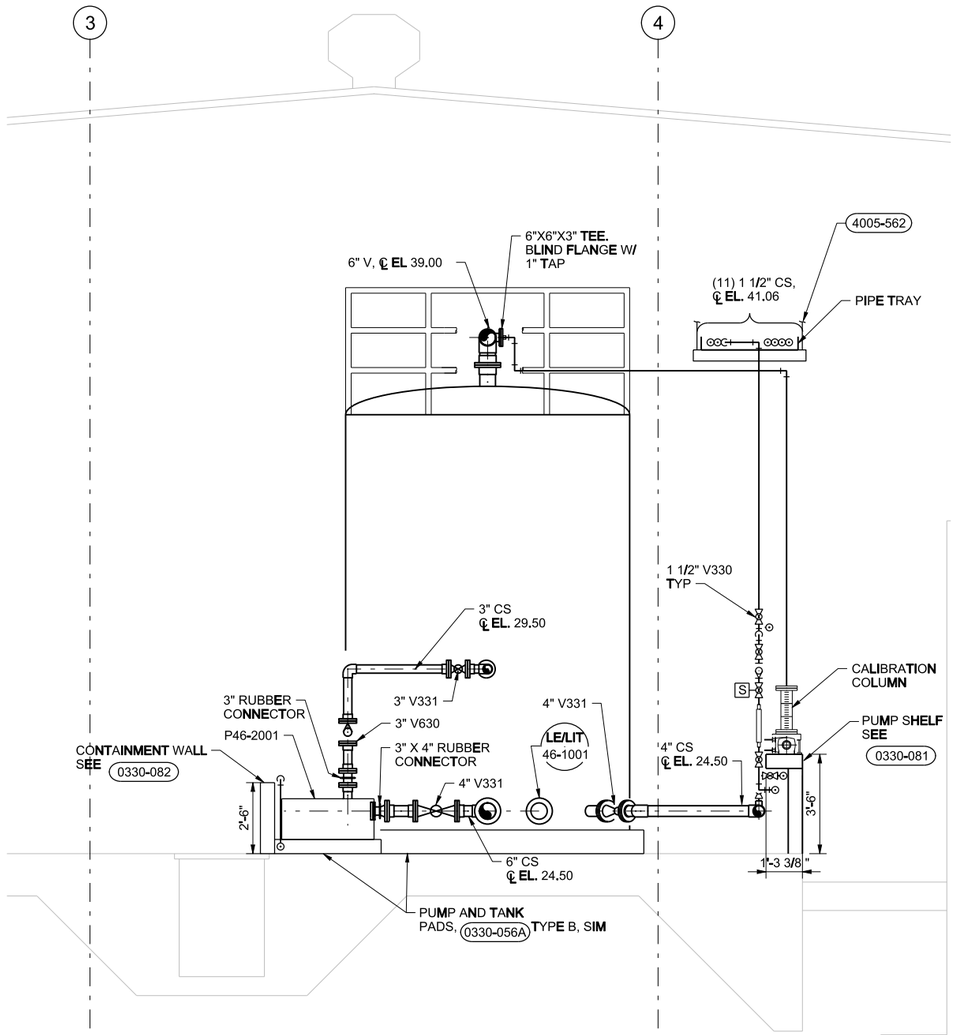
CH2MHILL

MECHANICAL
CARBON SYSTEM
SECTIONS

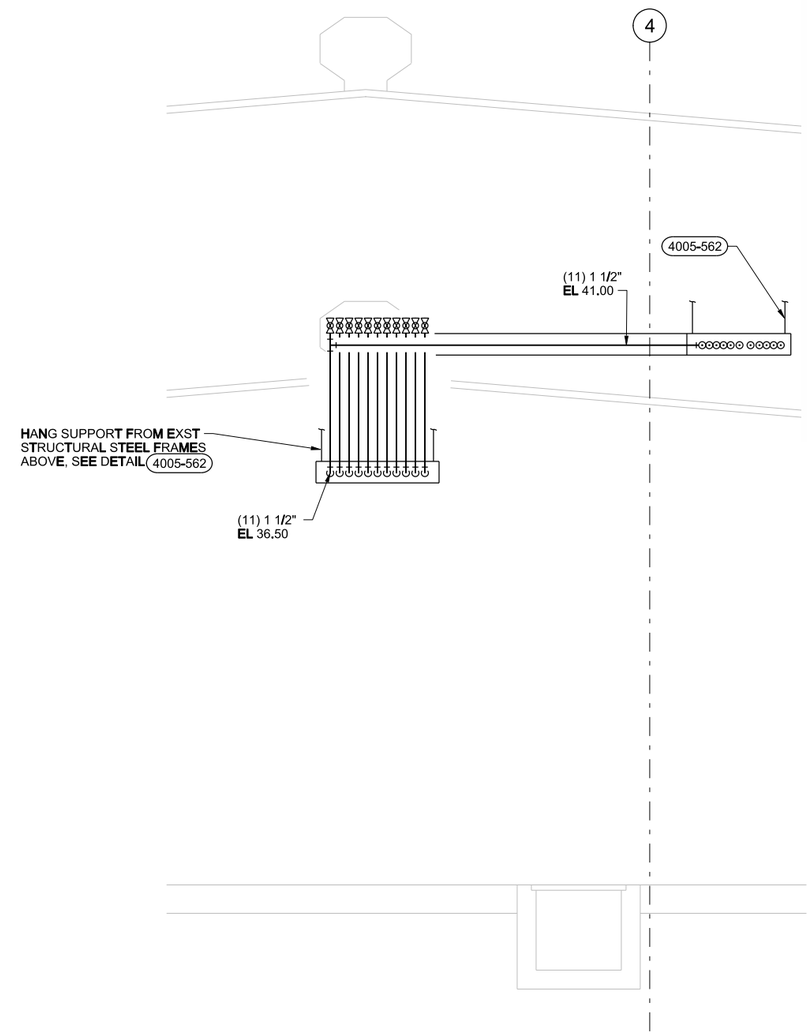
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	46-M-2
SHEET	103.2

FILENAME: dn46m102_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:43:50 PM



B 46-M-1 **SECTION**
3/8"=1'-0"



C 46-M-1 **SECTION**
3/8"=1'-0"

NOTES:

1. ROUTE PIPE TRAY AROUND ALL EXIST. CEILING LIGHT FIXTURES, ELECTRICAL CONDUITS, PIPING, HVAC DUCTS, AND OTHER EXISTING FACILITIES.
2. PROVIDE MAXIMUM CLEARANCE ABOVE EXISTING EQUIPMENT (POLYMER SYSTEM, GRAVITY BELT THICKENERS, OTHER).
3. MAINTAIN ELEVATION OF PIPE TRAY RELATIVE TO EXIST. BUILDING CROSSBEAMS AS SHOWN.
4. SUPPORT PIPE TRAY FROM EVERY EXISTING BUILDING CROSSBEAM. SIZE PIPE TRAY TO SPAN REQUIRED LENGTH.

COMMONWEALTH OF VIRGINIA — NED A. JOHNSON — Lic. No. 022691 — PROFESSIONAL ENGINEER — 5/18/09

NO	DATE	DR	DESCRIPTION	CHK	APVD
N	APVD				
	BY		REVISION		
	APVR	DR		CHK	APVD
NO.	DATE	Z. HUNERS		N. JOHNSON	I. DOLAK
DSGN	I. DOLAK				

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

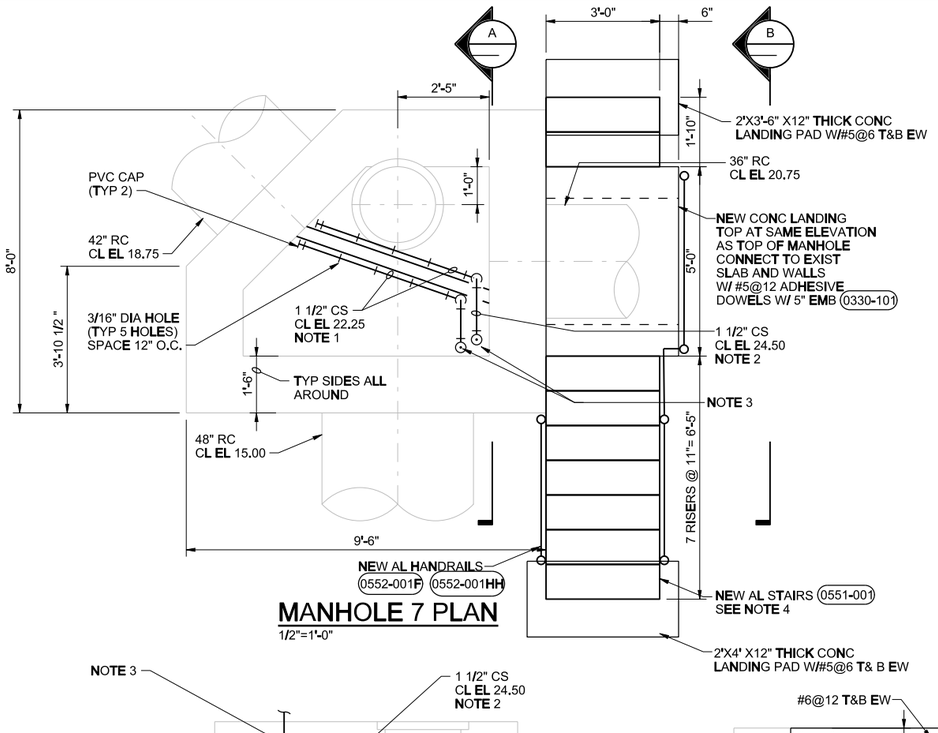
CH2MHILL

MECHANICAL
CARBON SYSTEM SECTIONS

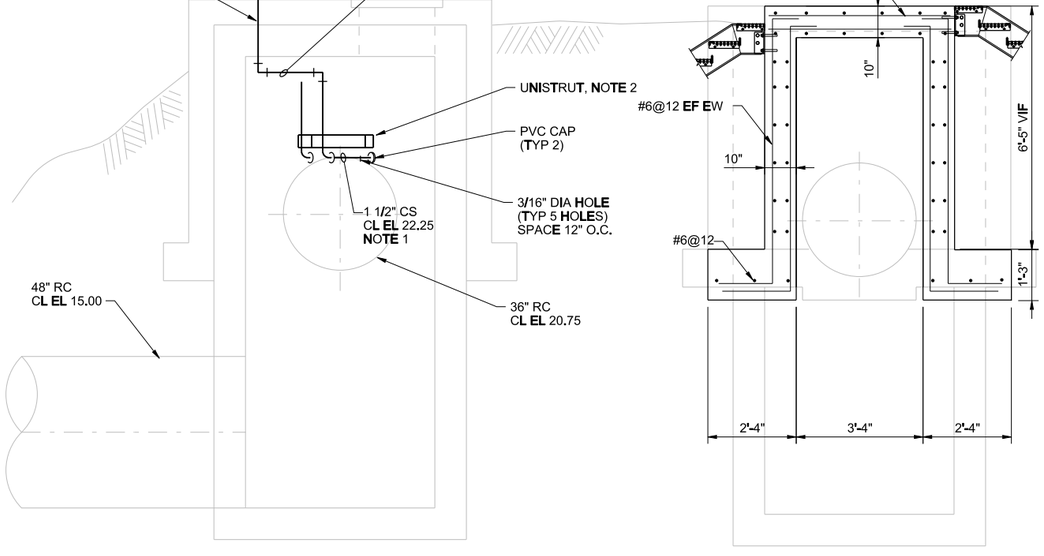
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	46-M-3
SHEET	103,3

FILENAME: dn46m103_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:44:02 PM



MANHOLE 7 PLAN
1/2"=1'-0"

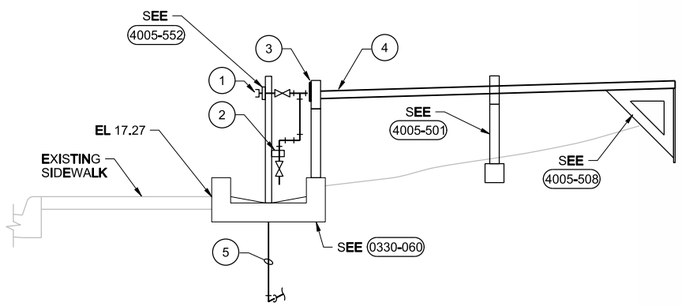


A SECTION
1"=1'-0"

B SECTION
1"=1'-0"

NOTES:

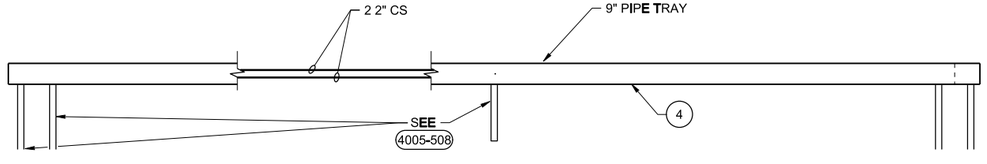
1. ANCHOR DIFFUSER TO UNISTRUTS WITH 316 SST 3/8" UBOLTS AND NUTS.
2. ANCHOR 316 SST UNISTRUT TO EXISTING MAHHOLE WALLS WITH 316 SST BASE PLATE AND TYPE 316 SST ANCHOR BOLTS.
3. CORE DRILL THROUGH EXISTING 18" CONCRETE. ROUTE PIPE AND SEAL OPENING USING DETAIL (4027-607B)
4. BEFORE FABRICATION, FIELD SHALL VERIFY LOCATION OF NEW STAIRS AND HANDRAILS NOT INTERFERE WITH EXISTING ROAD



B SECTION
1/2" = 1'-0"
YP-1.1

WORKING NOTES:

1. (2) 2" CS PIPES, PVC SCH 40 WITH QUICK CONNECT COUPLINGS, CL EL 20.0
2. CLAMP DRAIN PIPE TO PIPE SUPPORT RACK.
3. CAP CASING PIPE USING STEEL PLATE OR BACKER ROD AND CAULK AS APPROVED BY ENGINEER.
4. 9" PIPE TRAY, SEE SPECIFICATIONS. SLOPE AT 2% TOWARDS FILL STATION. APPROXIMATELY 30 FEET ALONG WALL TO PENETRATION INTO PIPE TRENCH INSIDE BUILDING. BEGIN CASING PIPE AT CL EL 20.04. CL EL AT WALL = 20.3. CL EL AT PENETRATION = 20.9
5. 4" DR, DUCTILE IRON. CONNECT TO EXISTING MH 5A AT EL 14.5.



C SECTION
1/2" = 1'-0"
YP-1.1

COMMONWEALTH OF VIRGINIA
NED A. JOHNSON
Lic. No. 022661
PROFESSIONAL ENGINEER
5/18/09

NO	DATE	DESCRIPTION	DR	CHK	APVD
DSGN	I. DOLAK	REVISION	R.STEIGERWALD	N. JOHNSON	APVD
NO.	DATE		BY	APVR	
			I. DOLAK	N	APVD

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

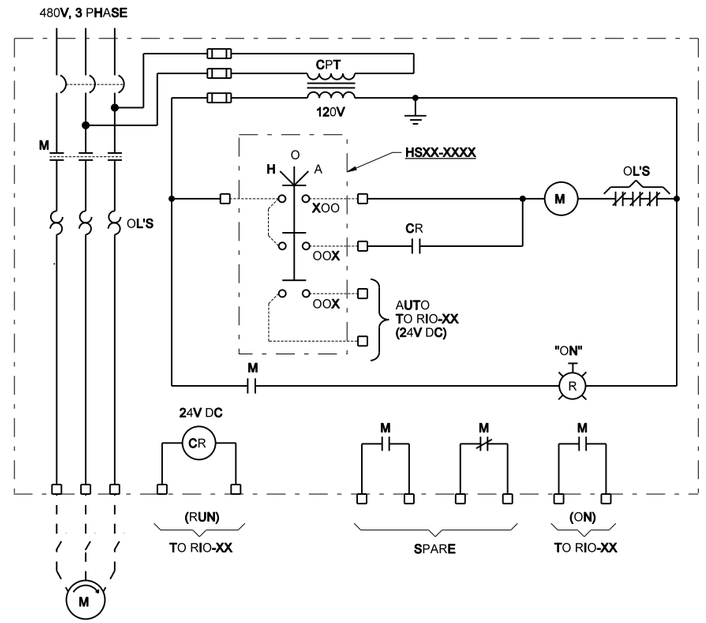
CH2MHILL

MECHANICAL
CARBON SYSTEM
MISCELLANEOUS ENLARGED PLANS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

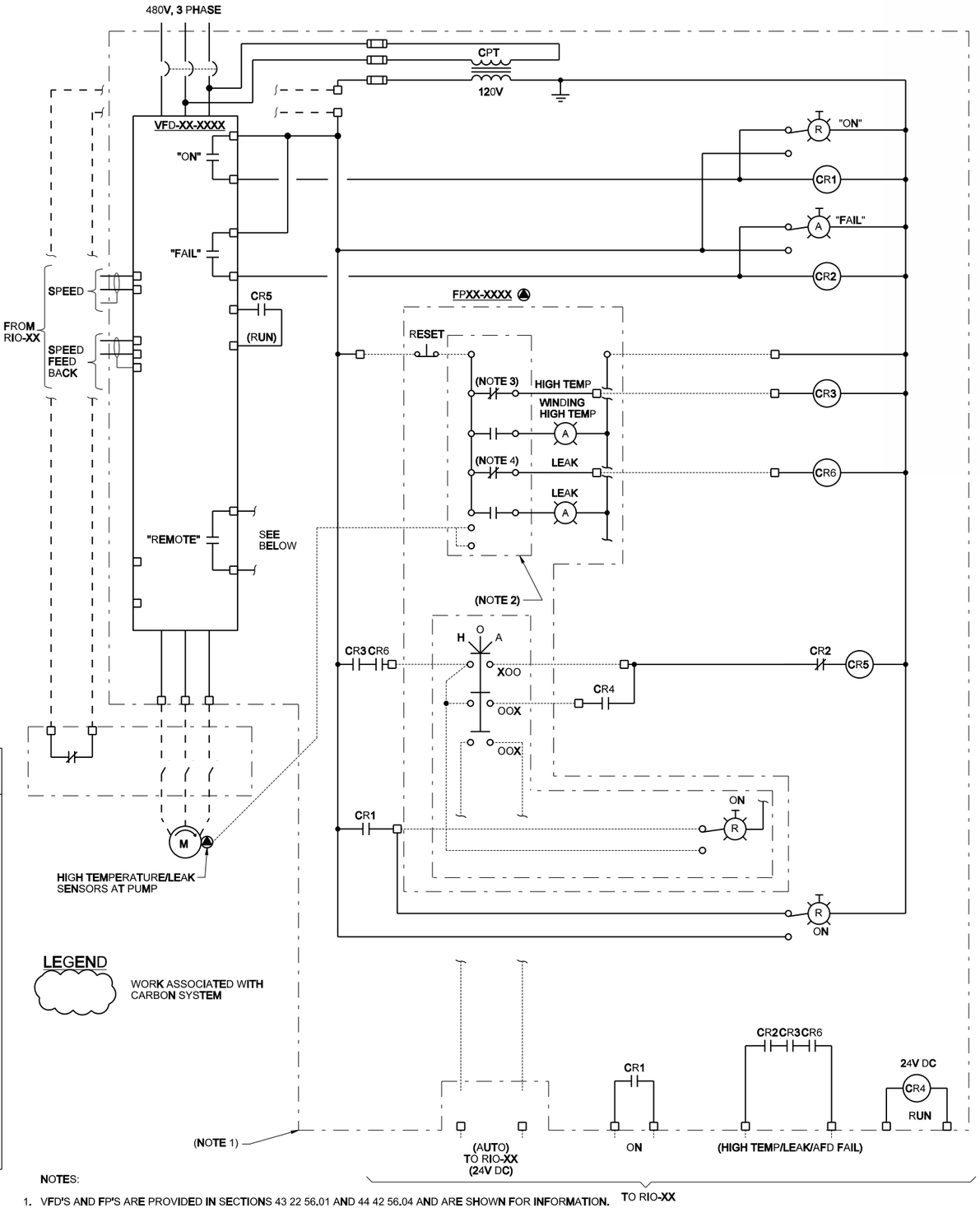
DATE	MAY 2009
PROJ	363254
DWG	46-M-4
SHEET	103.4

FILENAME: dn46m104_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:44:17 PM



EQUIPMENT NAME	FXX-XXXX	HSXX-XXXX	RIO-XX
ODOR CONTROL FAN NO. 1	F18-1001	HS18-1001	DCU-2
ODOR CONTROL FAN NO. 2	F18-1002	HS18-1002	DCU-2
CARBON RECIRCULATION PUMP NO. 1	P46-2001	HS46-2001	RIO-15
CARBON RECIRCULATION PUMP NO. 2	P46-2002	HS46-2002	RIO-15

EQUIPMENT NAME	PXX-XXXX	FPXX-XXXX (NOTE 1)	RIO-XX	VFDXX-XXXX (NOTE 1)
IFAS REACTOR NO. 1 NRCY PUMP NO. 1	P05-3101	FP05-3101	DCU-2	VFD05-3101
IFAS REACTOR NO. 1 NRCY PUMP NO. 2	P05-5101	FP05-5101	DCU-2	VFD05-5101
IFAS REACTOR NO. 2 NRCY PUMP NO. 1	P05-3102	FP05-3102	DCU-2	VFD05-3102
IFAS REACTOR NO. 2 NRCY PUMP NO. 2	P05-5102	FP05-5102	DCU-2	VFD05-5102
IFAS REACTOR NO. 3 NRCY PUMP NO. 1	P05-3103	FP05-3103	DCU-2	VFD05-3103
IFAS REACTOR NO. 3 NRCY PUMP NO. 2	P05-5103	FP05-5103	DCU-2	VFD05-5103
IFAS REACTOR NO. 4 NRCY PUMP NO. 1	P05-3104	FP05-3104	RIO-12	VFD05-3104
IFAS REACTOR NO. 4 NRCY PUMP NO. 2	P05-5104	FP05-5104	RIO-12	VFD05-5104
IFAS REACTOR NO. 5 NRCY PUMP NO. 1	P05-3105	FP05-3105	RIO-12	VFD05-3105
IFAS REACTOR NO. 5 NRCY PUMP NO. 2	P05-5105	FP05-5105	RIO-12	VFD05-5105
IFAS REACTOR NO. 6 NRCY PUMP NO. 1	P05-3106	FP05-3106	RIO-12	VFD05-3106
IFAS REACTOR NO. 6 NRCY PUMP NO. 2	P05-5106	FP05-5106	RIO-12	VFD05-5106
IFAS REACTOR NO. 7 NRCY PUMP NO. 1	P05-3107	FP05-3107	RIO-13	VFD05-3107
IFAS REACTOR NO. 7 NRCY PUMP NO. 2	P05-5107	FP05-5107	RIO-13	VFD05-5107
IFAS REACTOR NO. 8 NRCY PUMP NO. 1	P05-3108	FP05-3108	RIO-13	VFD05-3108
IFAS REACTOR NO. 8 NRCY PUMP NO. 2	P05-5108	FP05-5108	RIO-13	VFD05-5108
IFAS REACTOR NO. 9 NRCY PUMP NO. 1	P05-3109	FP05-3109	RIO-13	VFD05-3109
IFAS REACTOR NO. 9 NRCY PUMP NO. 2	P05-5109	FP05-5109	RIO-13	VFD05-5109
CENTRATE RECYCLE PUMP	P50-1001	FP50-1001	DCU-2	VFD50-1001



NOTES:

1. VFD'S AND FP'S ARE PROVIDED IN SECTIONS 43 22 56.01 AND 44 42 56.04 AND ARE SHOWN FOR INFORMATION.
2. TEMPERATURE AND LEAK DETECTION RELAYS.
3. CONTACT NORMALLY CLOSED. CONTACT OPENS FOR HIGH TEMPERATURE.
4. CONTACT NORMALLY CLOSED. CONTACT OPENS FOR LEAK.

COMMONWEALTH OF VIRGINIA ENGINEER DAVID W. DOAR Lic. No. 029912 5/18/09

NO	DATE	DSGN
		D.DOAR

DESCRIPTION	DATE	DR	CHK	APVD
REVISION		Z. HUNEERS	A. SODEIFI	I. DOLAK

APVR	N
BY	APVD

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

CH2MHILL

ELECTRICAL
CARBON SYSTEM
CONTROL DIAGRAMS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	E-17.1
SHEET	126.1

FILENAME: dn55e017-1_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:44:26 PM

CIRCUIT NAME	CONDUCTORS	FROM	TO
FP05-5009	8#14,1#14G	FP05-5009	MCC-2C
FP05-5009D	2#14,1#14G	FP05-5009	RIO-13
FP05-5101	10#14,1#14G	FP05-5101 J-BOX	VFD05-5101
FP05-5101D	2#14,1#14G	FP05-5101	DCU-2
FP05-5102	10#14,1#14G	FP05-5102 J-BOX	VFD05-5102
FP05-5102D	2#14,1#14G	FP05-5102	DCU-2
FP05-5103	10#14,1#14G	FP05-5103 J-BOX	VFD05-5103
FP05-5103D	2#14,1#14G	FP05-5103	DCU-2
FP05-5104	10#14,1#14G	FP05-5104 J-BOX	VFD05-5104
FP05-5104D	2#14,1#14G	FP05-5104	RIO-12
FP05-5105	10#14,1#14G	FP05-5105 J-BOX	VFD05-5105
FP05-5105D	2#14,1#14G	FP05-5105	RIO-12
FP05-5106	10#14,1#14G	FP05-5106 J-BOX	VFD05-5106
FP05-5106D	2#14,1#14G	FP05-5106	RIO-12
FP05-5107	10#14,1#14G	FP05-5107 J-BOX	VFD05-5107
FP05-5107D	2#14,1#14G	FP05-5107	RIO-13
FP05-5108	10#14,1#14G	FP05-5108 J-BOX	VFD05-5108
FP05-5108D	2#14,1#14G	FP05-5108	RIO-13
FP05-5109	10#14,1#14G	FP05-5109 J-BOX	VFD05-5109
FP05-5109D	2#14,1#14G	FP05-5109	RIO-13
FP31-5101	8#14,1#14G	FP31-5101	MCC-2A
FP31-5101D	2#14,1#14G	FP31-5101	DCU-2
FP31-5102	8#14,1#14G	FP31-5102	MCC-2A
FP31-5102D	2#14,1#14G	FP31-5102	DCU-2
FP31-5103	8#14,1#14G	FP31-5103	MCC-2A
FP31-5103D	2#14,1#14G	FP31-5103	DCU-2
FP31-5104	8#14,1#14G	FP31-5104	MCC-2B
FP31-5104D	2#14,1#14G	FP31-5104	RIO-12
FP31-5105	8#14,1#14G	FP31-5105	MCC-2B
FP31-5105D	2#14,1#14G	FP31-5105	RIO-12
FP31-5106	8#14,1#14G	FP31-5106	MCC-2B
FP31-5106D	2#14,1#14G	FP31-5106	RIO-12
FP31-5107	8#14,1#14G	FP31-5107	MCC-2C
FP31-5107D	2#14,1#14G	FP31-5107	RIO-13
FP31-5108	8#14,1#14G	FP31-5108	MCC-2C
FP31-5108D	2#14,1#14G	FP31-5108	RIO-13
FP31-5109	8#14,1#14G	FP31-5109	MCC-2C
FP31-5109D	2#14,1#14G	FP31-5109	RIO-13
FP50-1001	10#14,1#14G	FP50-1001 J-BOX	VFD50-1001
FP50-1001D	2#14,1#14G	FP50-1001	DCU-2
FV01-1001	3#12,1#12G	FV01-1001	P5C
FV31-5101BP	2#12,1#12G	FV31-5101B	LP-2A
FV31-5102BP	2#12,1#12G	FV31-5102B	LP-2A
FV31-5103BP	2#12,1#12G	FV31-5103B	LP-2A
FV31-5104BP	2#12,1#12G	FV31-5104B	LP-2B
FV31-5105BP	2#12,1#12G	FV31-5105B	LP-2B
FV31-5106BP	2#12,1#12G	FV31-5106B	LP-2B
FV31-5107BP	2#12,1#12G	FV31-5107B	LP-2C
FV31-5108BP	2#12,1#12G	FV31-5108B	LP-2C
FV31-5109BP	2#12,1#12G	FV31-5109B	LP-2C
GEN-CP-A	MVSWGR SUPPLIER REQS	EXST GEN CP	MVSWGR CP
GEN-CP-D	MVSWGR SUPPLIER REQS	EXST GEN CP	MVSWGR CP
HS18-1001	3#14,1#14G	HS18-1001	MCC-2A
HS18-1001D	2#14,1#14G	HS18-1001	DCU-2
HS18-1002	3#14,1#14G	HS18-1002	MCC-2A
HS18-1002D	2#14,1#14G	HS18-1002	DCU-2
HS31-5101B	4#14,1#14G	HS31-5101B	MCC-2A
HS31-5102B	4#14,1#14G	HS31-5102B	MCC-2A
HS31-5103B	4#14,1#14G	HS31-5103B	MCC-2A
HS31-5104B	4#14,1#14G	HS31-5104B	MCC-2B
HS31-5105B	4#14,1#14G	HS31-5105B	MCC-2B
HS31-5106B	4#14,1#14G	HS31-5106B	MCC-2B
HS31-5107B	4#14,1#14G	HS31-5107B	MCC-2C
HS31-5108B	4#14,1#14G	HS31-5108B	MCC-2C
HS31-5109B	4#14,1#14G	HS31-5109B	MCC-2C
HS31-5201	6#14,1#14G	HS31-5201	MCC-2A
HS31-5201D	2#14,1#14G	HS31-5201	DCU-2
HS31-5202	6#14,1#14G	HS31-5202	MCC-2A
HS31-5202D	2#14,1#14G	HS31-5202	DCU-2
HS31-5203	6#14,1#14G	HS31-5203	MCC-2A
HS31-5203D	2#14,1#14G	HS31-5203	DCU-2
HS31-5204	6#14,1#14G	HS31-5204	MCC-2B
HS31-5204D	2#14,1#14G	HS31-5204	RIO-12
HS31-5205	6#14,1#14G	HS31-5205	MCC-2B
HS31-5205D	2#14,1#14G	HS31-5205	RIO-12
HS31-5206	6#14,1#14G	HS31-5206	MCC-2B
HS31-5206D	2#14,1#14G	HS31-5206	RIO-12
HS31-5207	6#14,1#14G	HS31-5207	MCC-2C
HS31-5207D	2#14,1#14G	HS31-5207	RIO-13
HS31-5208	6#14,1#14G	HS31-5208	MCC-2C
HS31-5208D	2#14,1#14G	HS31-5208	RIO-13
HS31-5209	6#14,1#14G	HS31-5209	MCC-2C
HS31-5209D	2#14,1#14G	HS31-5209	RIO-13
HS31-5301D	4#14,1#14G	HS31-5301	DCU-2
HS31-5302D	4#14,1#14G	HS31-5302	DCU-2
HS31-5303D	4#14,1#14G	HS31-5303	DCU-2
HS31-5304D	4#14,1#14G	HS31-5304	RIO-12
HS31-5305D	4#14,1#14G	HS31-5305	RIO-12
HS31-5306D	4#14,1#14G	HS31-5306	RIO-12
HS31-5307D	4#14,1#14G	HS31-5307	RIO-13

CIRCUIT NAME	CONDUCTORS	FROM	TO
HS31-5308D	4#14,1#14G	HS31-5308	RIO-13
HS31-5309D	4#14,1#14G	HS31-5309	RIO-13
LIT01-3001	1-TYPE 3	CP01-1001	LIT01-3001
LIT50-1002	1-TYPE 3	LIT50-1002	DCU-2
LSL/LSH31-5101	4#14,1#14G	LSL/LSH31-5101 J-BOX	MCC-2A
LSL/LSH31-5102	4#14,1#14G	LSL/LSH31-5102 J-BOX	MCC-2A
LSL/LSH31-5103	4#14,1#14G	LSL/LSH31-5103 J-BOX	MCC-2A
LSL/LSH31-5104	4#14,1#14G	LSL/LSH31-5104 J-BOX	MCC-2B
LSL/LSH31-5105	4#14,1#14G	LSL/LSH31-5105 J-BOX	MCC-2B
LSL/LSH31-5106	4#14,1#14G	LSL/LSH31-5106 J-BOX	MCC-2B
LSL/LSH31-5107	4#14,1#14G	LSL/LSH31-5107 J-BOX	MCC-2C
LSL/LSH31-5108	4#14,1#14G	LSL/LSH31-5108 J-BOX	MCC-2C
LSL/LSH31-5109	4#14,1#14G	LSL/LSH31-5109 J-BOX	MCC-2C
M05-1001	3#12,1#12G	M05-1001	MCC-2A
M05-1002	3#12,1#12G	M05-1002	MCC-2A
M05-1003	3#12,1#12G	M05-1003	MCC-2A
M05-1004	3#12,1#12G	M05-1004	MCC-2B
M05-1005	3#12,1#12G	M05-1005	MCC-2B
M05-1006	3#12,1#12G	M05-1006	MCC-2B
M05-1007	3#12,1#12G	M05-1007	MCC-2C
M05-1008	3#12,1#12G	M05-1008	MCC-2C
M05-1009	3#12,1#12G	M05-1009	MCC-2C
M05-2001	3#12,1#12G	M05-2001	MCC-2A
M05-2002	3#12,1#12G	M05-2002	MCC-2A
M05-2003	3#12,1#12G	M05-2003	MCC-2A
M05-2004	3#12,1#12G	M05-2004	MCC-2B
M05-2005	3#12,1#12G	M05-2005	MCC-2B
M05-2006	3#12,1#12G	M05-2006	MCC-2B
M05-2007	3#12,1#12G	M05-2007	MCC-2C
M05-2008	3#12,1#12G	M05-2008	MCC-2C
M05-2009	3#12,1#12G	M05-2009	MCC-2C
M05-3001	3#12,1#12G	M05-3001	MCC-2A
M05-3002	3#12,1#12G	M05-3002	MCC-2A
M05-3003	3#12,1#12G	M05-3003	MCC-2A
M05-3004	3#12,1#12G	M05-3004	MCC-2B
M05-3005	3#12,1#12G	M05-3005	MCC-2B
M05-3006	3#12,1#12G	M05-3006	MCC-2B
M05-3007	3#12,1#12G	M05-3007	MCC-2C
M05-3008	3#12,1#12G	M05-3008	MCC-2C
M05-3009	3#12,1#12G	M05-3009	MCC-2C
M05-5001	3#12,1#12G	M05-5001	MCC-2A
M05-5002	3#12,1#12G	M05-5002	MCC-2A
M05-5003	3#12,1#12G	M05-5003	MCC-2A
M05-5004	3#12,1#12G	M05-5004	MCC-2B
M05-5005	3#12,1#12G	M05-5005	MCC-2B
M05-5006	3#12,1#12G	M05-5006	MCC-2B
M05-5007	3#12,1#12G	M05-5007	MCC-2C
M05-5008	3#12,1#12G	M05-5008	MCC-2C
M05-5009	3#12,1#12G	M05-5009	MCC-2C
M31-5201	3#12,1#12G	M31-5201	MCC-2A
M31-5202	3#12,1#12G	M31-5202	MCC-2A
M31-5203	3#12,1#12G	M31-5203	MCC-2A
M31-5204	3#12,1#12G	M31-5204	MCC-2B
M31-5205	3#12,1#12G	M31-5205	MCC-2B
M31-5206	3#12,1#12G	M31-5206	MCC-2B
M31-5207	3#12,1#12G	M31-5207	MCC-2C
M31-5208	3#12,1#12G	M31-5208	MCC-2C
M31-5209	3#12,1#12G	M31-5209	MCC-2C
MCC-2B	3#350 KCM,1#4G	MCC-2B	SWBD-2A
MCC-2C	3#350 KCM,1#4G	MCC-2C	SWBD-2B
MVSWGR	3#500 KCM (5 KV),1#4/0 G	MVSWGR	UTIL METER ENCL
NSH31-5201D	2#14,1#14G	NSH31-5201	DCU-2
NSH31-5202D	2#14,1#14G	NSH31-5202	DCU-2
NSH31-5203D	2#14,1#14G	NSH31-5203	DCU-2
NSH31-5204D	2#14,1#14G	NSH31-5204	RIO-12
NSH31-5205D	2#14,1#14G	NSH31-5205	RIO-12
NSH31-5206D	2#14,1#14G	NSH31-5206	RIO-12
NSH31-5207D	2#14,1#14G	NSH31-5207	RIO-13
NSH31-5208D	2#14,1#14G	NSH31-5208	RIO-13
NSH31-5209D	2#14,1#14G	NSH31-5209	RIO-13
P01-1002	2#12,1#12G	P01-1002	LP5C
P05-3101	3#12,1#12G	P05-3101	VFD05-3101
P05-3102	3#12,1#12G	P05-3102	VFD05-3102
P05-3103	3#12,1#12G	P05-3103	VFD05-3103
P05-3104	3#12,1#12G	P05-3104	VFD05-3104
P05-3105	3#12,1#12G	P05-3105	VFD05-3105
P05-3106	3#12,1#12G	P05-3106	VFD05-3106
P05-3107	3#12,1#12G	P05-3107	VFD05-3107
P05-3108	3#12,1#12G	P05-3108	VFD05-3108
P05-3109	3#12,1#12G	P05-3109	VFD05-3109
P05-5101	3#12,1#12G	P05-5101	VFD05-5101
P05-5102	3#12,1#12G	P05-5102	VFD05-5102
P05-5103	3#12,1#12G	P05-5103	VFD05-5103
P05-5104	3#12,1#12G	P05-5104	VFD05-5104
P05-5105	3#12,1#12G	P05-5105	VFD05-5105
P05-5106	3#12,1#12G	P05-5106	VFD05-5106
P05-5107	3#12,1#12G	P05-5107	VFD05-5107
P05-5108	3#12,1#12G	P05-5108	VFD05-5108
P05-5109	3#12,1#12G	P05-5109	VFD05-5109
P17-1001	3#12,1#12G	P17-1001	VFD17-1001

CIRCUIT NAME	CONDUCTORS	FROM	
P17-1002	3#12,1#12G	P17-1002	
P17-1003	3#12,1#12G	P17-1003	
P31-5101	3#12,1#12G	P31-5101	
P31-5102	3#12,1#12G	P31-5102	
P31-5103	3#12,1#12G	P31-5103	
P31-5104	3#12,1#12G	P31-5104	
P31-5105	3#12,1#12G	P31-5105	
P31-5106	3#12,1#12G	P31-5106	
P31-5107	3#12,1#12G	P31-5107	
P31-5108	3#12,1#12G	P31-5108	
P31-5109	3#12,1#12G	P31-5109	
P50-1001	3#12,1#12G	P50-1001	
PIT14-3001A	1-TYPE 3	PIT14-3001A	
PIT14-3001B	1-TYPE 3	PIT14-3001B	
RCPTS-REACTOR 1	2#8,1#10G	JB-RCPTS-REACTOR 1	
RCPTS-REACTOR 2	2#8,1#10G	JB-RCPTS-REACTOR 2	
RCPTS-REACTOR 3	2#8,1#10G	JB-RCPTS-REACTOR 3	
RCPTS-REACTOR 4	2#8,1#10G	JB-RCPTS-REACTOR 4	
RCPTS-REACTOR 5	2#8,1#10G	JB-RCPTS-REACTOR 5	
RCPTS-REACTOR 6	2#8,1#10G	JB-RCPTS-REACTOR 6	
RCPTS-REACTOR 7	2#8,1#10G	JB-RCPTS-REACTOR 7	
RCPTS-REACTOR 8	2#8,1#10G	JB-RCPTS-REACTOR 8	
RCPTS-REACTOR 9	2#8,1#10G	JB-RCPTS-REACTOR 9	
RCPT-VAULT	2#12,1#12G	RECEPTACLE	
RIO-12F	1- TYPE II FO	RIO-12	
RIO-13F	1- TYPE II FO	RIO-13	
RIO-14F	1- TYPE II FO	RIO-14	
RIO-15F	2- TYPE I FO	FPP-15	
SV17-2036	2#14,1#14G	SV17-2036	
SV17-2037	2#14,1#14G	SV17-2037	
SV17-2038	2#14,1#14G	SV17-2038	
SV31-5101/5201	4#14,1#14G	SV31-5101/5201 J-BOX	
SV31-5102/5202	4#14,1#14G	SV31-5102/5202 J-BOX	
SV31-5103/5203	4#14,1#14G	SV31-5103/5203 J-BOX	MCC-2A
SV31-5104/5204	4#14,1#14G	SV31-5104/5204 J-BOX	MCC-2B
SV31-5105/5205	4#14,1#14G	SV31-5105/5205 J-BOX	MCC-2B
SV31-5106/5206	4#14,1#14G	SV31-5106/5206 J-BOX	MCC-2B
SV31-5107/5207	4#14,1#14G	SV31-5107/5207 J-BOX	MCC-2C
SV31-5108/5208	4#14,1#14G	SV31-5108/5208 J-BOX	MCC-2C
SV31-5109/5209	4#14,1#14G	SV31-5109/5209 J-BOX	MCC-2C
SV31-5301P	2#12,1#12G	SV31-5301	LP-2A
SV31-5302P	2#12,1#12G	SV31-5302	LP-2A
SV31-5303P	2#12,1#12G	SV31-5303	LP-2A
SV31-5304P	2#12,1#12G	SV31-5304	LP-2B
SV31-5305P	2#12,1#12G	SV31-5305	LP-2B
SV31-5306P	2#12,1#12G	SV31-5306	LP-2B
SV31-5307P	2#12,1#12G	SV31-5307	LP-2C
SV31-5308P	2#12,1#12G	SV31-5308	LP-2C
SV31-5309P	2#12,1#12G	SV31-5309	LP-2C
SWBD1-P1	3#600 KCM,1#250 KCM N	SWBD-1	TX-1
SWBD1-P2	3#600 KCM,1#250 KCM N	SWBD-1	TX-1
SWBD1-P3	3#600 KCM,1#250 KCM N	SWBD-1	TX-1
SWBD1-P4	3#600 KCM,1#250 KCM N	SWBD-1	TX-1
SWBD1-P5	3#600 KCM,1#250 KCM N	SWBD-1	TX-1
SWBD2A-P1	3#600 KCM,1#4/0 GCC	SWBD-2A	TX-2A
SWBD2A-P2	3#600 KCM,1#4/0 GCC	SWBD-2A	TX-2A
SWBD2A-P3	3#600 KCM,1#4/0 GCC	SWBD-2A	TX-2A
SWBD2A-P4	3#600 KCM,1#4/0 GCC	SWBD-2A	TX-2A
SWBD2A-P5	3#600 KCM,1#4/0 GCC	SWBD-2A	TX-2A
SWBD3-P1	3#600 KCM,1#4/0 N	SWBD-3	TX-3
SWBD3-P2	3#600 KCM,1#4/0 N	SWBD-3	TX-3
SWBD3-P3	3#600 KCM,1#4/0 N	SWBD-3	TX-3
SWBD3-P4	3#600 KCM,1#4/0 N	SWBD-3	TX-3
SWBD3-P5	3#600 KCM,1#4/0 N	SWBD-3	TX-3
TX-1	3#4/0 (5KV), 1#1 G	TX-1	MVSWGR
TX-2A	3#4/0 (5KV), 1#1 G	TX-2A	MVSWGR
TX-3	3#4/0 (5KV), 1#1 G	TX-3	MVSWGR
TX-4	3#350 KCM (5KV), 1#1 G	TX-4	MVSWGR
WC-1	3#12,1#12G	WC-1	P5C

LEGEND

WORK ASSOCIATED WITH CARBON SYSTEM

COMMONWEALTH OF VIRGINIA ENGINEER DAVID W. DOAR Lic. No. 029912 5/18/09 PROFESSIONAL ENGINEER

NO	DATE	DESCRIPTION	DR	CHK	APVD
		REVISION	Z. HUNERS	A. SODEIFI	I. DOLAK
DSGN	D.DOAR	DATE	D.DOAR	APVD	APVR

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

CH2MHILL

ELECTRICAL
CARBON SYSTEM
CIRCUIT SCHEDULES

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	E-22.1
SHEET	131.1

SODIUM HYDROXIDE BUILDING

CP47-5601 ◆
NOTE 1

SODIUM HYDROXIDE SYSTEM

ANEROBIC DIGESTERS CONTROL BUILDING

CP10-1001 PACKAGE PANEL ✳
NOTE 1

BOILER AND HEAT EXCHANGER

CP01-1001 ◆

INFLUENT SCREENING BYPASS VALVE VAULT

INFLUENT SCREENING FACILITY

HARDWIRED SIGNALS

CP01-1210 SCREEN PACKAGE PANEL ✳

CP01-1220 SCREEN PACKAGE PANEL ✳

CP01-1230 SCREEN PACKAGE PANEL ✳

RIO14 ◆

UPS

TYPE II 12 MM FIBERS

NOTE 6

CAT 6

SWGR ROOM MAIN BUILDING

MVSWGR MAIN SWITCH GEAR

POLYMER PACKAGE PANEL

CP17-1001 ✳
NOTE 1

SOLIDS HANDLING BLDG

LAB ROOM MAIN BLDG

WS1-OIS/EWS/SS/OPH DCS ENGINEERING WORKSTATION AND OPERATOR INTERFACE ◆

INTERNAL TO WORKSTATION

RAID RAID

NOTE 3

2-CAT 6

UPS

NOTE 3 ◆

UPS

WS2-OIS

EXST FLOW SIGNALS AND ALARMS (NOTE 4)

FIBER PATCH CORDS

FPP PATCH PANEL

COM CABINET ◆

DCU1 ◆

UPS UPS

2-CAT 6

** NOTE 7

DCS ROOM MAIN BLDG

ELECTRICAL ROOM BLOWER BLDG

REACTORS 1, 2, 3

2 TYPE I FIBER

CARBON SYSTEM

RIO-15

UPS

FIBER PATCH CORDS

FPP-15 **

NOTE 7

CP46-1000 ◆

WS3 - OIS/EWS DCS OPERATOR INTERFACE STATION IN ELECTRICAL ROOM ◆

NOTE 3

SINGLE STATION CONSOLE ◆

2-CAT 6

UPS

REMOTE INPUT/OUTPUT CABINET, TYP

LOCATED IN NEW ELECTRICALROOM AT BLOWER BLDG

UPS

DCU2 ◆

TYPE II 12 MM FIBERS

UPS

FDC ◆

NOTE 5

FPP ** NOTE 8

BLOWER BLDG

HIGH SPEED BLOWER CONTROL PANEL (NOTE 2)

CP14 -2004 ✳

CP14 -2005 ✳

CP14 -2006 ✳

TYPE III 6 MM FIBER (TYP FOR 3)

CP13 -1001 ✳

CP13 -1002 ✳

CP13 -1003 ✳

PACKAGE CONTROL PANEL FOR EXISTING BLOWERS (TYP OF 3)

HARDWIRED SIGNALS TO DCU2 (TYPICAL)

2-TYPE I FIBER, AND 1-TYPE II FIBER BACKBONE CABLES IN DUCTBANK

ELECTRICAL BLDG NO. 1 REACTORS 4,5,6

UPS

RIO12 ◆

IFAS AND ODOR CONTROL FACILITIES

ELECTRICAL BLDG NO. 2 REACTORS 7,8,9

UPS

RIO13 ◆

TYPE II 12 MM FIBERS

HARD WIRED SIGNALS, TYP

NOTES:

1. LOCAL CONTROLS WITH PROVISIONS FOR FUTURE DCS CONTROL AND MONITORING.
2. EACH TURBO BLOWER PLC WILL BE CONNECTED DIRECTLY TO DCS ETHERNET SWITCH IN COM CABINET.
3. DCS COMPUTERS WILL BE WINDOWS BASED.
4. EXISTING SIGNALS WILL BE CONNECTED TO DCS BY HRSD.
5. PROVIDE THREE CAT6 TO FIBER MEDIA CONNECTERS IN FDC. COORDINATE WITH DCS INTERFACE REQUIREMENTS.
6. LOCAL CONTROLS AND PANEL PROVIDED BY SYSTEM VENDOR. MONITORING AND AUTOMATIC FUNCTIONS PROVIDED BY DCS.
7. FPP PROVIDED UNDER ELECTRICAL.
8. FPP INSTALLED IN FDC UNDER ELECTRICAL.

LEGEND

CP	CONTROL PANEL
DCU	DISTRIBUTED CONTROL UNIT
EWS	ENGINEERING WORK STATION
FDC	FIBER DISTRIBUTION CABINET
FPP	FIBER PATCH PANEL
MM	MULTI MODE FIBER
OIS	OPERATOR INTERFACE STATION
OPH	OVATION PROCESS HISTORIAN
RAID	NESTED HARD DRIVE ARRAY
RIO	REMOTE INPUT/OUTPUT
SS	SOFTWARE SERVER
UPS	UNINTERUPTIBLE POWER SUPPLY

COMMONWEALTH OF VIRGINIA
RONALD F. BAKER
Lic. No. 019626
PROFESSIONAL ENGINEER
2/11/09

NO	DATE	DSGN	DR	CHK	APVD	APVR	BY	APVD
		R. BAKER	Z. GHASEMY	D. MUNZER			I. DOLAK	

DESCRIPTION
REVISION

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

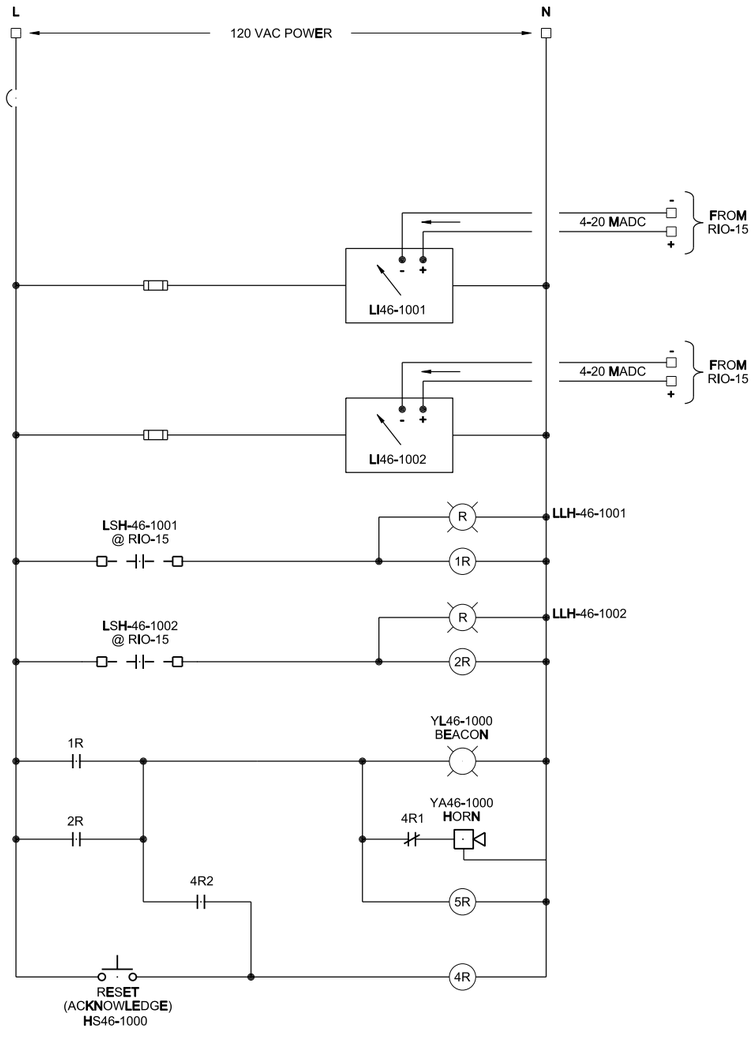
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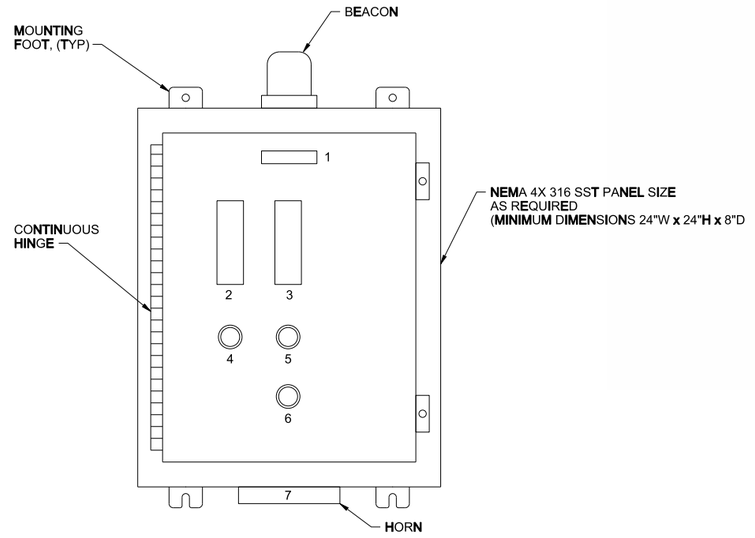
INSTRUMENTATION AND CONTROL
DISTRIBUTED CONTROL SYSTEM
BLOCK DIAGRAM
CARBON SYSTEM

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	I-1.1
SHEET	134.1

FILENAME: dn60i001-1_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:44:51 PM





FRONT PANEL ELEVATION

NTS

PANEL SCHEDULE CP46-1000

ITEM NO.	TAG NUMBER	NAMEPLATE INSCRIPTION (SERVICE LEGEND)	COMPONENT CODE
1	(NAMEPLATE)	CARBON FEED TANKS ALARM PANEL	-
2	LI46-1001	TANK 1 LEVEL	S27
3	LI46-1002	TANK 2 LEVEL	S27
4	LLH46-1001	TANK 1 HIGH LEVEL	M26
5	LLH46-1002	TANK 2 HIGH LEVEL	M26
6	HS46-1000	RESET (ACKNOWLEDGE)	M26
7	YA46-1000	HORN	M30
8	YL46-1000	BEACON	M31

COMMONWEALTH OF VIRGINIA
DAVID W. DOAR
Lic. No. 029912
5/18/09

NO	DATE	DSGN
N	APVD	I. DOLAK
APVR	BY	APVD

DESCRIPTION / REVISION / CHK: D. MUNZER

DR: Z. HUNERS

DATE: R. BAKER

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

CH2MHILL

INSTRUMENTATION AND CONTROL
CARBON FEED TANKS
CP46-1000

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	I-17
SHEET	149.1

R1015-◆

TYP OF 11

(2) (2)(2)

RUN
ON
REMOTE

VENT THROUGH BUILDING WALL
6"

W2
1"
2"
2"
THROTTLING VALVE
3"
HOA
HS
PI 46-2001
PE 46-2001
CARBON STORAGE TANK NO.1 T46-1001
-OF-
4"
LE/LIT 46-1001
6"
CARBON RECIRCULATION PUMP NO.1 P46-2001
**

120V
CP46-1000
RESET ◆
HS
LI
(2)
HORN
YA
LLH
(2)
LIGHT
LY

ALLOWS TANK TO TANK TRANSFER
ALLOWS TANK TO TANK TRANSFER

CARBON STORAGE TANK NO.2 T46-1002

CARBON RECIRCULATION PUMP NO.2 P46-2002

ON
AUTO
FAIL
RUN
SPEED FEEDBACK
SPEED COMMAND
*
460V
FP
*
PSH 46-3010
PI 46-3010
PULSATION DAMPER
PE 46-3010
V
CALIBRATION COLUMN *
4"
2"
LEAK
NOTE 3
2"
NOTE 1
SV 46-3010
S
FI 46-3010
NOTE 2
CF10
1 1/2"
MANHOLE MH-7
PI 46-4001
3" NPW
W2
PCV 46-4001
3"

CARBON FEED PUMP NO. 10 P46-3010

CARBON FEED PUMP NO. 11 P46-3011 (SAME AS ABOVE) — CF11 — 1 1/2" — MANHOLE MH-7

CARBON FEED PUMP NO. 1 P46-3001 (SAME AS ABOVE) (NOTE 1) — CF1 — IFAS REACTOR 1

CARBON FEED PUMP NO. 2 P46-3002 (SAME AS ABOVE) (NOTE 1) — CF2 — IFAS REACTOR 2

CARBON FEED PUMP NO. 3 P46-3003 (SAME AS ABOVE) (NOTE 1) — CF3 — IFAS REACTOR 3

CARBON FEED PUMP NO. 4 P46-3004 (SAME AS ABOVE) (NOTE 1) — CF4 — IFAS REACTOR 4

CARBON FEED PUMP NO. 5 P46-3005 (SAME AS ABOVE) (NOTE 1) — CF5 — IFAS REACTOR 5

CARBON FEED PUMP NO. 6 P46-3006 (SAME AS ABOVE) (NOTE 1) — CF6 — IFAS REACTOR 6

CARBON FEED PUMP NO. 7 P46-3007 (SAME AS ABOVE) (NOTE 1) — CF7 — IFAS REACTOR 7

CARBON FEED PUMP NO. 8 P46-3008 (SAME AS ABOVE) (NOTE 1) — CF8 — IFAS REACTOR 8

CARBON FEED PUMP NO. 9 P46-3009 (SAME AS ABOVE) (NOTE 1) — CF9 — IFAS REACTOR 9

NOTES:

1. FOR PUMPS P46-3010 AND P46-3011 ONLY.
2. VALVES TO ALLOW DRAINING OF PUMP.
3. VALVE TO ALLOW DRAINING OF PUMP LUBRICANT FROM AND PIPE PUMP SHELF.

COMMONWEALTH OF VIRGINIA
RONALD T. BAKER
Lic. No. 019626
5/13/09
PROFESSIONAL ENGINEER

NO	DATE	DSGN
N	APVD	
APVR	BY	I. DOLAK

DESCRIPTION	REVISION	CHK
		D. MUNZER
		APVD
		R. STEIGERWALD
		DR
		R. BAKER
		DATE

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HAMPTON ROADS SANITATION DISTRICT

JAMES RIVER TREATMENT PLANT
IMPROVEMENTS - PHASE 1

CH2MHILL

INSTRUMENTATION AND CONTROL
P & I D - UNIT PROCESS 46
CARBON SYSTEM

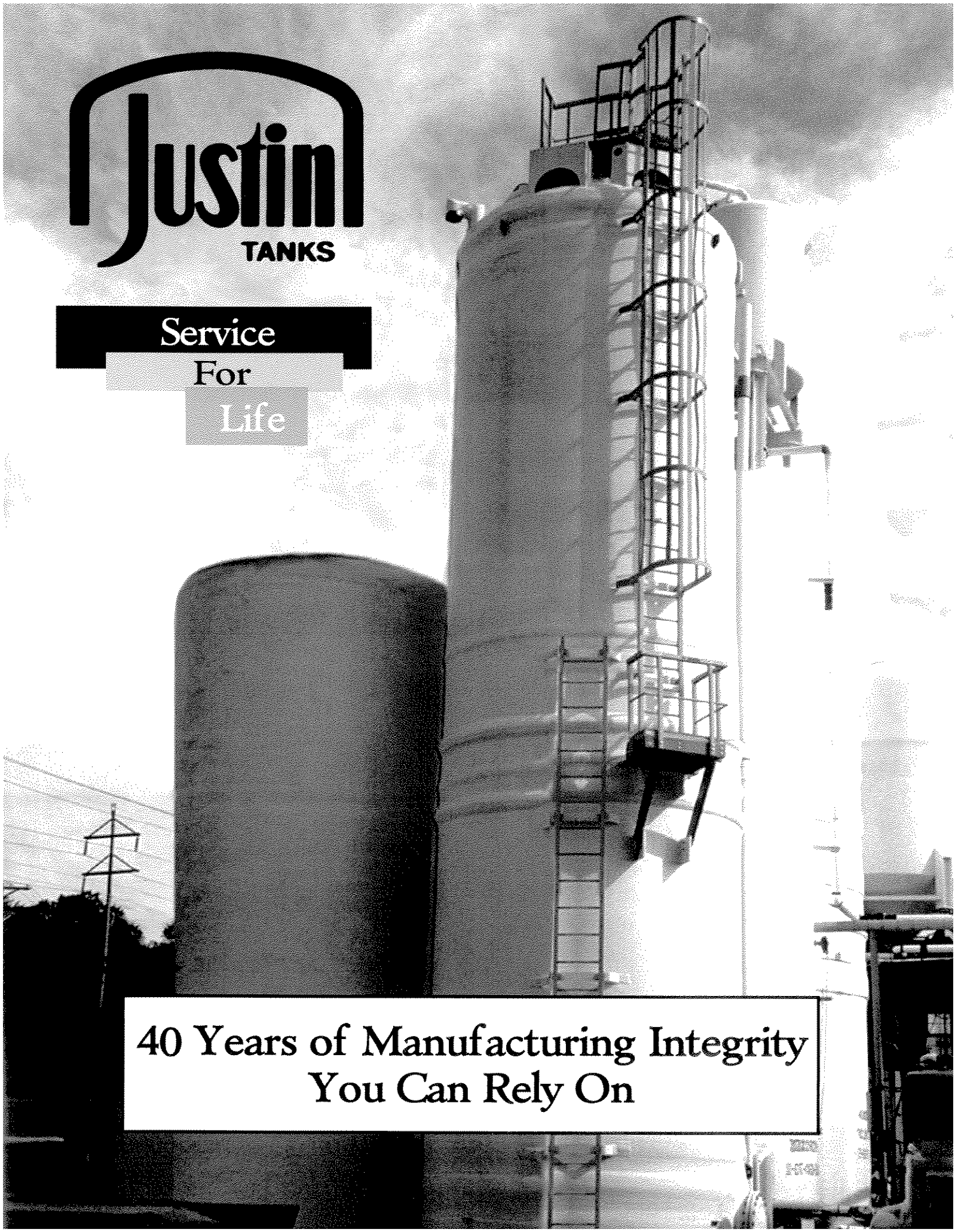
VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	MAY 2009
PROJ	363254
DWG	I-18
SHEET	149.2

FILENAME: dn60I018_363254.dgn PLOT DATE: 3/4/2010 PLOT TIME: 2:45:03 PM

Carbon System Tank
Justin Tanks, manufacturer number MF00135. They are fiberglass tanks with the following information.
Pressure Design – Atmosphere
Operating – Atmosphere
Temperature Design – 40 degrees F to 90 degrees F
Operating – 40 degrees F to 90 degrees F
Specific Gravity – 1.2
Interior Surface Reinforcement – 1 Ply “C” Glass
Corrosion Barrier Resin – Derakane 411 w/MEKP Cure
Structure Resin – Ester Vinyl w/ MEKP Cure
Owners Purchase Order Number – 09.009-22-P
Item Number – T46-1002
Sales Order Number – 6083-04
Date of Manuf – March 2011


Justin
TANKS
Service
For
Life
40 Years of Manufacturing Integrity
You Can Rely On



Justin
TANKS

AMERICA'S FOREMOST PROVIDER OF CUSTOM ENGINEERED FIBERGLASS TANKS.

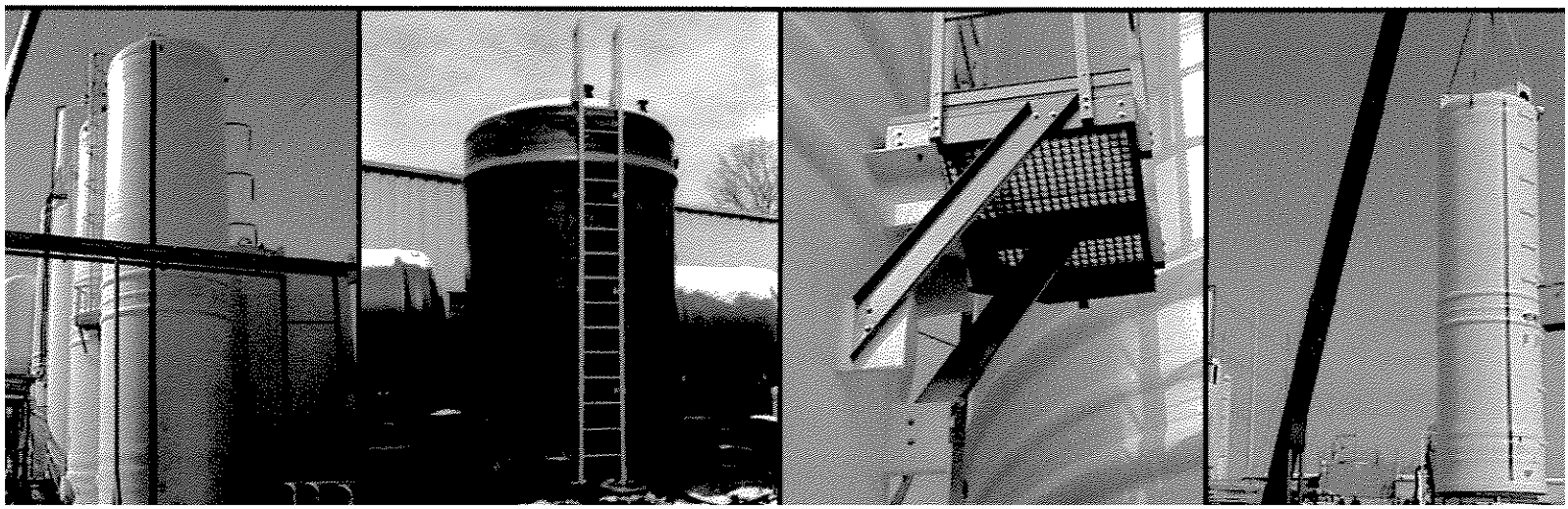
For more than 40 years, Justin has provided cost effective Fiberglass Reinforced Plastic (FRP) tanks and ancillary products for a wide range of applications. Our expertise has earned us the reputation among our satisfied Fortune 100 customers that "Justin tanks never fail".

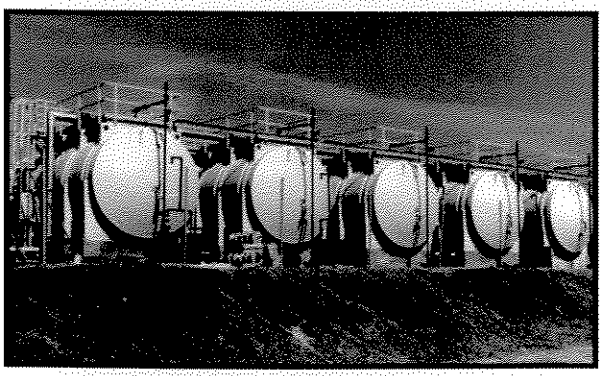
Justin with its pioneering technology builds the world's finest tanks with a wide variety of configurations. Our FRP tanks and vessels provide outstanding corrosion resistance, standing up to a wide range of temperatures , acids, alkalies, and other corrosive chemicals. FRP tanks costs less, provide a greater strength to weight ratio than steel or alloys, have an excellent thermal value and perform better than other materials in a variety of applications.

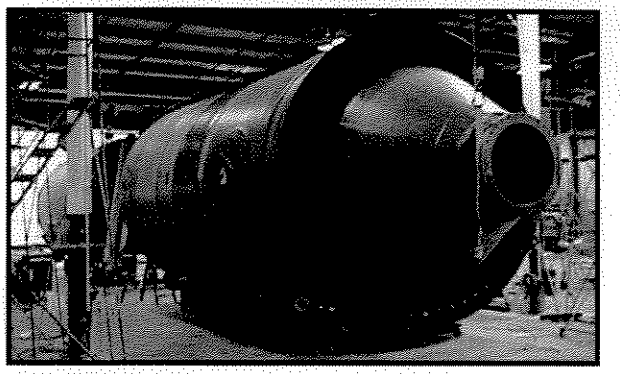
The Justin plant located in Sussex County Airpark in Georgetown, Delaware, is one of the few in the industry specifically designed and built to fabricate FRP tanks and equipment. Through the use of multi-station vertical and horizontal winders, Justin provides tanks with diameters ranging from 3 through 14 foot. Tanks are fabricated utilizing both filament wound and contact molded processes. Non standard diameters and configurations are also available to meet customer needs.

Justin's highly skilled team provides complete solutions and stand by support from design through installation. We support our product during all phases of the project.

Engineering
Fabrication
Field Service







JUSTIN TANKS IS COMMITTED TO PROVIDING HIGH QUALITY LIQUID STORAGE TANKS THROUGH A PARTNERSHIP OF SERVICE, THROUGHOUT THE LIFECYCLE OF OUR PRODUCT.

Justin Provides

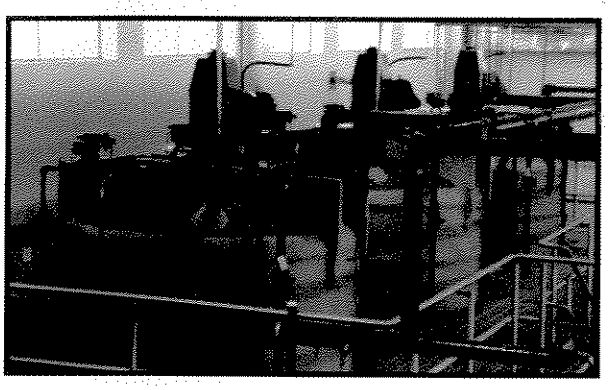
- Most Economically Viable Solutions with Uncompromising Quality
- Engineering and Specifications for a Variety of Customer Specific Applications
- Access to Quality Inspection Records
- All Resin Systems and Applications
- Computer Aided Designs
- Field Modifications and Repair
- Mixer Systems
- Full Compliment of Accessories Including:
  - Agitation
  - Factory Insulated Tanks
  - Temperature Maintenance Systems
  - Platforms & Walkways
  - Ladders & Cages
  - Handrail Systems
  - Flanged Nozzles & Access Manways

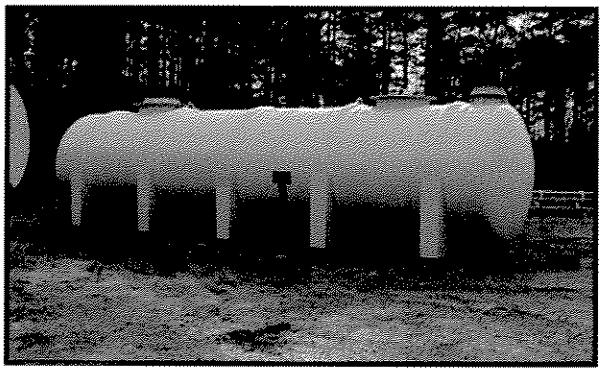
Justin Capabilities

- Filament Wound and Contact Molded Tanks Built to Industry or Customer Specific Standards
- Size is Determined by Shipping and Handling Limitations - Usually Up to 14' ft. Diameter
- Vertical, Horizontal and Rectangular Configurations
- Dished, Coned or Flat Bottoms

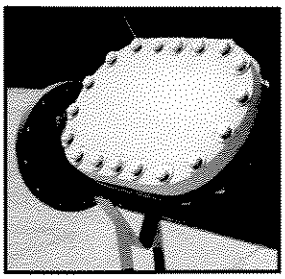
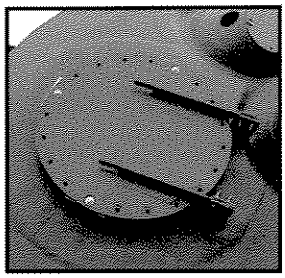
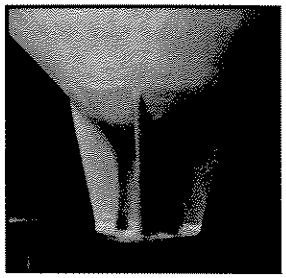
Industries Served

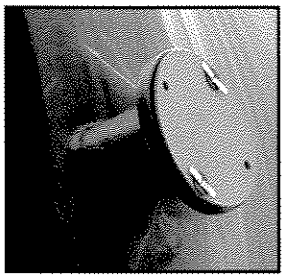
- Chemical
- Food Processing
- Pulp and Paper
- Water Treatment
- Waste Water Treatment
- Brewing & Distillation
- Pharmaceutical
- Biological
- Energy
- Paint & Dye
- Aquaculture

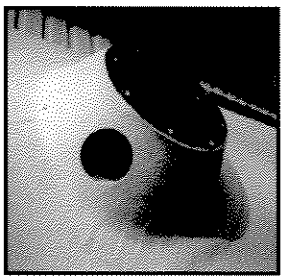
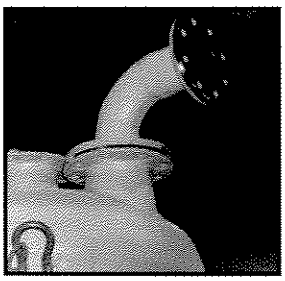


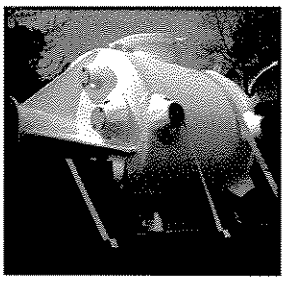
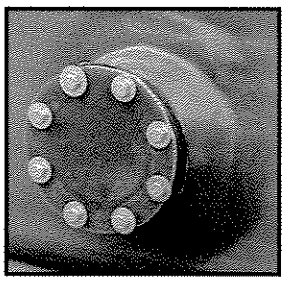


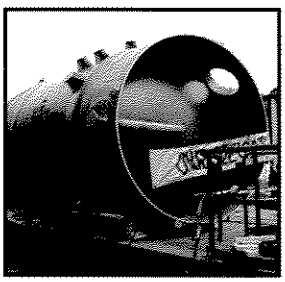
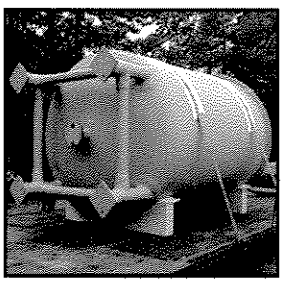
Justin manufactures accessory items to meet your process requirements . . . exactly!



We Say What We Build,
Build What We Say!

Service
For
Life

JUSTIN TANKS L.L.C
21413 Cedar Creek Avenue
Georgetown, DE 19947
(302) 856-3521 • FAX (302) 856-3527
www.justintanks.com

HANDLING & INSTALLATION INSTRUCTIONS

FIBERGLASS REINFORCED PLASTIC TANKS, VESSELS & SCRUBBERS

IT IS THE RESPONSIBILITY OF THE PURCHASER TO CONVEY THESE INSTRUCTIONS AND RECOMMENDATIONS TO THOSE PERSONNEL RESPONSIBLE FOR THE HANDLING AND INSTALLATION OF THIS EQUIPMENT. THE PURCHASER IS FULLY RESPONSIBLE FOR THOROUGH INSPECTION OF THE TANK OR VESSEL UPON ARRIVAL, AND FOR THE PROPER HANDLING AND INSTALLATION, AND SHALL INSURE THAT GOOD, WORKMANLIKE PRACTICES AND CONSTRUCTION PROCEDURES ARE FOLLOWED DURING THE HANDLING AND INSTALLING OF THE TANK, REGARDLESS OF THE INCLUSION OR OMISSION OF ANY APPLICABLE SUGGESTION IN THESE INSTRUCTIONS.

Situations or conditions not covered in these instructions are the responsibility of the Purchaser. The Purchaser also accepts all liability for loss or damage to the tank or contents resulting from improper handling or installation. The presence of a Justin Tanks Representative at the site does not relieve the Purchaser of his responsibility for proper handling and installation.

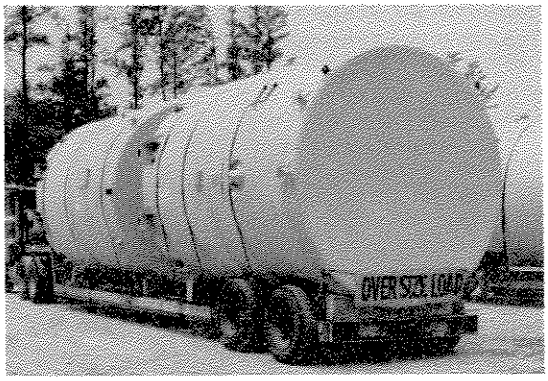
CAUTION: BEFORE UNLOADING

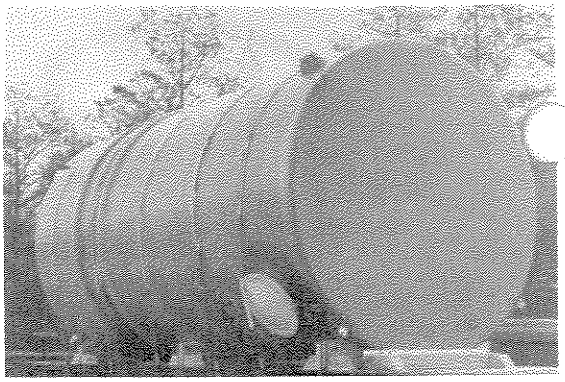
Do not unload equipment or sign the Bill of Lading until each item has been inspected for in-transit damage. Thorough inspection will preclude any later question about the condition of the equipment upon receipt. An inspection checklist is provided to assist you in this inspection. Claims for any damage must be filed immediately with the delivering carrier.

INSPECTION

Fiberglass tanks are susceptible to both internal and external damage because of severe physical shock encountered in transit. Inspect the tank thoroughly inside and outside. The external areas most susceptible to damage are the highest and the widest points of the load, any projections such as nozzles, and the areas where the tank has been in contact with the crating, blocking or banding. The internal surfaces of these same areas must be inspected closely for signs of surface crazing or cracking. Any damage must be repaired prior to putting the tank into service. If the damage is not first repaired by Justin Tanks, prior to the tank being put into service; the Purchaser accepts all further responsibility for the effects of tank failure resulting from such damage.

Color irregularities commonly occur in Fiberglass Reinforced Plastic (FRP) equipment due to different thickness, different reinforcements, or different manufacturing processes for various portions of the product. This is a normal phenomenon and is not a defect. In addition, our Quality Assurance inspections may have required rework of certain areas. Although they appear as "patches" or discolorations, they do not detract from the corrosion resistance or structural integrity of the tank.



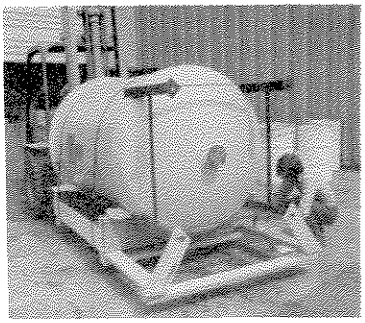
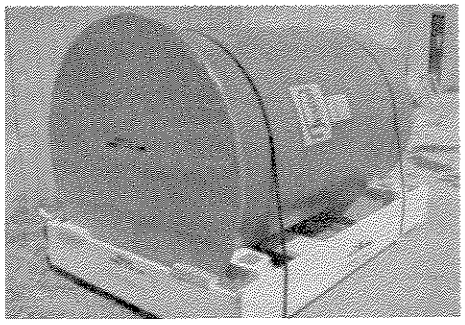
EQUIPMENT INSPECTION

There are several key areas on fiberglass equipment that may receive damage during shipment. A thorough and accurate inspection must be completed prior to unloading. The following will assist in determining and reporting freight damage.

1. Extreme dimensions of the tank including sidewalls, top and bottom.
2. Appurtenances that extend beyond the tank wall.
3. Internal and external areas where banding and support cradles come in contact with the tank wall.
4. Internal and external areas where end blocking is utilized.
5. Internal or external equipment shipped installed on tank should be checked for breakage or detachment.
6. Internal areas where the tank exterior has been scraped or damaged.
7. Separate boxing or crates where loose equipment has been packaged.

When freight damage has occurred; and prior to unloading of the tanks, the following procedure must be initiated.

1. Notify Justin Tanks LLC immediately to determine procedure for obtaining repair of the damage tank.
2. Note on carrier's Bill of Lading that damage has occurred and appropriate claims and supporting documents will follow.
3. Completely document areas damaged and extent thereof. Photographs should be supplied whenever possible. Copies should be forwarded to carrier as well as Justin Tanks.
4. If damage is not first repaired by Justin Tanks prior to the tank being put into service, the purchaser accepts all future responsibility for the effects of tank failure resulting from such damage.

GENERAL HANDLING INSTRUCTIONS

1. Proper rigging practices must be observed at all times.

2. Guidelines must be used to prevent the tank from swinging out of control.

3. Do not drop the tank or allow it to fall.

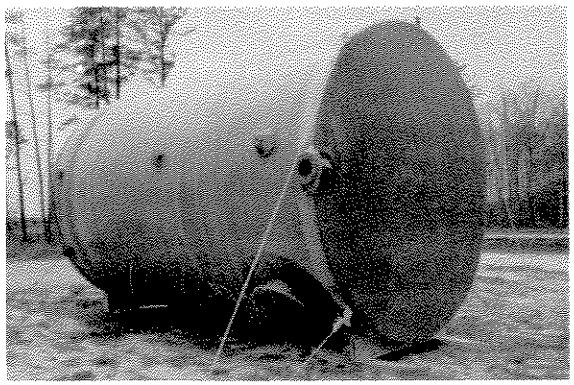
4. Do not roll or slide the tank – always lift.

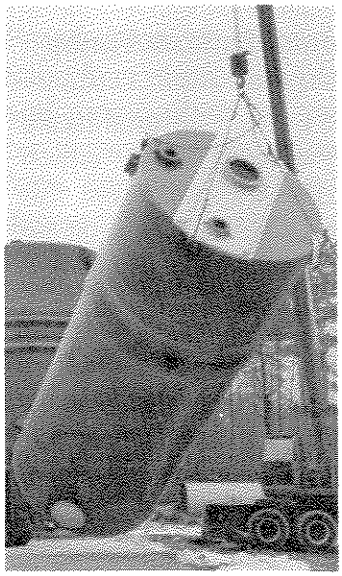
5. Do not pull or lift using any nozzles or other attachments.

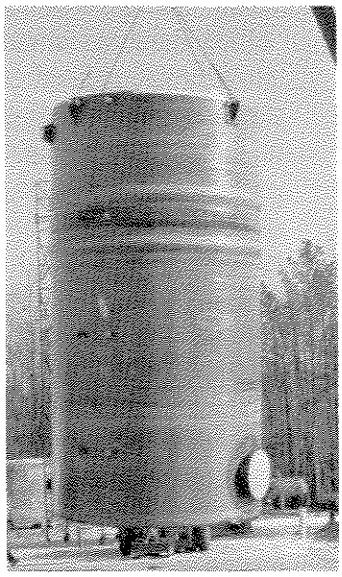
6. While working around the tank, care must be taken to prevent tools from striking the tank or being dropped inside the tank. Soft-soled shoes must be worn by workmen entering the tank. Ladders used inside or outside in contact with the tank must be wood or must have rubber protection at touch points and not be permitted to scratch the tank surface.

7. Under no conditions should chains or cables be allowed to contact the tank.

8. Tanks, which can be shipped inside a truck van, are crated or skidded to facilitate handling with a forklift. Where the crate or skid has to be slid out of the truck, the pull should be only at the bottom of the skid or crate. Do not pull on the nozzles or pipe connections. Take precautions to prevent the forklift points from touching the tank.







9. The recommended method for removing a larger tank shipped on a rail car or flat bed truck is to lift off the slings around the tank, which are fastened to a spreader bar, attached to the hoist cable. The slings should be canvas or nylon.

10. When storing the tank on the ground prior to installation, place it on the padded shipping cradles and tie it down securely so that it cannot roll due to wind or a sloping elevation. All cradles must be used and placed in the same location as when shipped.

11. A number of different lifting lug systems may be provided varying from a single lug to as many as four lugs. It is critical to use each lug in the system so that the loads are applied as intended.

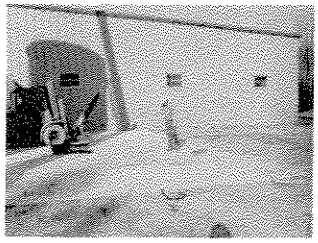
12. When up-righting tanks, place suitable protective padding under the bottom pivot point. Take precautions to prevent the tank from striking other objects when the tank swings free into the vertical. Guidelines must be used to prevent the tank from swinging out of control and to insure that the tank is gently set down.

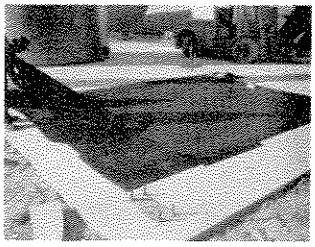
INSTALLATION

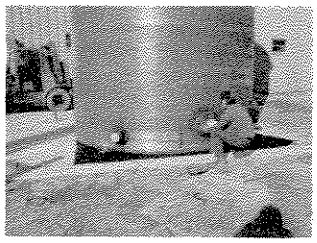
Flat Bottom and Sloped Bottom Tanks

Flat bottom and sloped bottom vertical tanks must be installed on a foundation, which provides full and uniform support over the entire bottom area. The foundation must be designed to prevent settling or deflection under maximum design loads.

The foundation surface should be non-porous and free of cracks, depressions and vertical projections. Reinforced concrete, trowel finished to American Concrete Institute Specifications (ACI-3 0 1 – 7 3, Section 1 1 . 7 .3), "Trowel Finish", is often used as a support base.





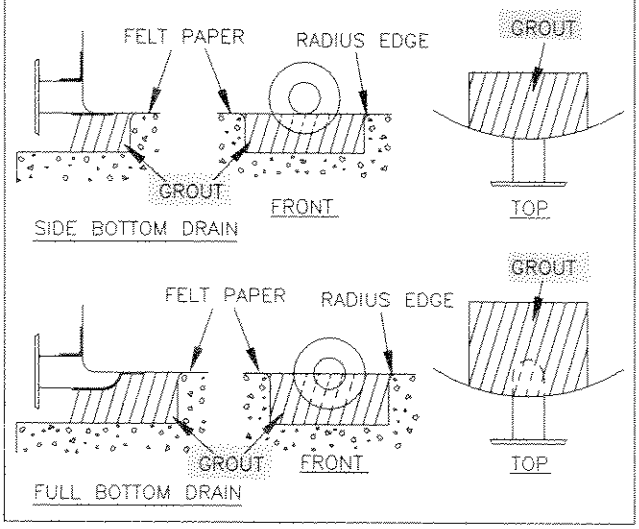


In order to provide continuous contact between the tank bottom and the foundation, and to compensate for surface irregularities in the foundation and the tank bottom, cushioning comprised of minimum two layers of 30-pound roofing felt is to be laid over the entire foundation in alternating directions.

Sweep the foundation before applying the cushioning, and take care to prevent gravel or foreign objects from getting onto the tank foundation when applying the cushioning. Also inspect the tank bottom prior to setting it on the cushioning to make certain that no gravel or foreign object is accidentally adhering to the tank bottom.

Where openings must be provided in the foundation to accommodate bottom projecting fittings, keep the unsupported area around the fittings to a minimum and round or radius all corners of the foundation opening. Carry the foundation cushioning over the rounded corners of these openings.

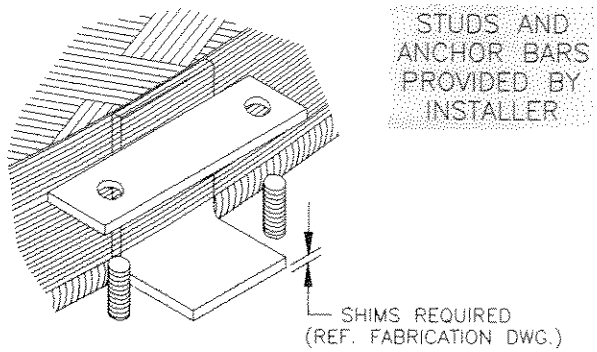
FIG. 1 GROUTING OF PAD OPENINGS



With 1 to 2 feet of liquid in the tank, fill any foundation opening with a suitable grout packed around the fitting so that no area of the tank bottom remains unsupported as shown above in Figure 1.

Use all tie-down lugs to secure the tank to its foundation. The preferred tie-down method uses a bar over each lug with an anchor stud on each side of the lug as shown below in Figure 2.

FIG. 2 TIE–DOWN ANCHORS



ANCHOR STUDS ARE DRILLED AND SET AFTER TANK IS SET. PLACE STUDS 7–8" APART FOR 4" WIDE LUGS OR 8–10" APART FOR 6" WIDE LUGS. TIE–DOWN BARS SHOULD BE FABRICATED TO MATCH INTENDED SPACING AND STUD SIZE.

All tanks must be positively vented to the atmosphere at all times, unless otherwise clearly marked on the vessel. On tanks provided with hinged top manways, remove the second or locking bolt from the hinge, allowing the manway to open in the event of pressure build-up on the tank. It is the Purchaser's responsibility to affix suitable signs on the tank to insure that vent lines will not be accidentally or unknowingly closed.

Tanks are not intended to be filled above the top tangent or straight side unless specifically required in the design. Overflow protection via process control, level control, or overflow nozzle is essential and is the responsibility of the Purchaser.

Extreme caution must be taken when air pressure is used to unload from another vessel into a FRP tank. Leave the top entry manway open during the air pressure unloading process since this method of filling the FRP tank will create a venting requirement considerably greater than normal venting practice would dictate.

CLEANING

Clean tanks prior to putting them into service. This is essential for tanks, which are to be used in food grade or similar service. Tanks manufactured for food grade service have been suitably post-cured prior to shipment. It is the Purchaser's responsibility to suitably sterilize & sanitize according to accepted procedures for the particular service prior to use.

SERVICE LIMITATIONS

Do not allow contents to freeze in tank.

Do not exceed the pressure, temperature or service limitations stated on tank Identification Label, or change to different chemical service without first consulting Justin Tanks.

CUSTOMER SERVICE

Consult you Justin Sales Representative, or call Justin Tanks direct, to discuss any questions regarding applications, inspection, installation or tank repairs. Wherever field repairs or alterations become necessary, personnel are available, subject to prior scheduling, to perform such work.

Any statement or recommendation made or assistance given by Justin Tanks LLC. or its representatives, to the Buyer or its representatives or customers in connection with the use or installation by the Buyer or its customers of any goods sold hereunder shall not constitute a waiver by the Seller of any provision hereof or affect the liability of the Seller as defined herein. The buyer acknowledges that it has approved, prior to fabrication, all construction, drawings, designs, construction specifications, material specifications, orientation and dimensions. The furnishing of published or special design and installation information or field supervision does not constitute the Seller's acceptance of the Buyer's design as its own or a guarantee of performance.

STANDARD WARRANTY

A. Except As Provided In Sections B And C Below, The Seller Warrants
   1. That The Goods Manufactured By It Shall Conform To The Standards Set Forth In Its Order Acknowledgement And/Or Any Construction Drawings Approved By The Buyer.
   2. That The Goods Shall be Free From Defects In Material Where Said Material Was Actually Manufactured By The Seller.
   3. That The Goods Shall Be Free From Defects In Workmanship.
   4. That The Goods Shall Be Made With The Materials Exactly As Specified, And
   5. That The Goods Shall Pass Without Objection In The Trade Under The Contract Description. **This Warranty Is Expressly In Lieu Of All Other Warranties Expressed Or Implied Including Implied Warranties Of Merchantability And Expressed Or Implied Warranties Of Fitness For A Particular Purpose.**

B. Where The Buyer Has Furnished The Seller With Plans And Specifications For The Goods To Be Purchased By The Buyer Hereunder, And The Seller Has Acknowledged Acceptance Of The Same In Writing, The Seller Warrants That The Goods Manufactured By It Shall Meet The Specifications And Plans Furnished To It By The Buyer As Accepted By The Seller And Shall Be Free From Defects In Workmanship. **This Warranty Is Expressly In Lieu Of All Other Warranties Expressed Or Implied Including Implied Warranties Of Merchantability And Expressed Or Implied Warranties Of Fitness For A Particular Purpose.**

C. The Seller Makes No Warranties Expressed Or Implied, Including Warranties Of Merchantability And Expressed Or Implied Warranties Of Fitness For A Particular Purpose, As To Any Goods Or Material Used In Any Goods Sold Hereunder Which Goods Or Material Were Not Actually Manufactured By The Seller And The Seller Assumes No Responsibility For Goods Or Material Not Manufactured By It, And Such Goods Or Material Carry Only The Warranty Of Their Manufacturer.

All information , recommendations & suggestions appearing in this literature concerning the use of our products are based upon tests and data believed to be reliable; however, it is the user's responsibility to determine the suitability for his own use of the products described herein. **Since the actual use by others is beyond our control, no guarantee, expressed or implied, is made by Justin Tanks LLC as to the effects of such use or the results to be obtained**, nor does Justin Tanks LLC assume any liability arising out of use, by others, of the products referenced to herein. Nor is the information herein to be construed as complete, since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations. Nothing herein contained is to be construed as permission or as a recommendation to infringe any patent.

Justin TANKS

JUSTIN TANKS, L. L. C. • 21413 Cedar Creek Avenue • Georgetown, DE 19947
(302) 3521 • FAX (302) 856-3527 • www.justintanks.com

Facsimile Transmittal

ASHLAND

From the desk of...

Kathy E. Kitchen
e-mail: kekitchen@ashland.com
Tel: (614) 790-4546
Fax: (614) 790-6157
www.ashspec.com

Composite Polymers
PO Box 2219
Columbus, OH 43216

5200 Blazer Parkway
Dublin, OH 43017

To:	Ken Ranshaw – Justin Tanks LLC	**From:**	Kathy E. Kitchen Technical Service Representative
Fax:	302-856-3527	**Pages:**	1
Phone:	302-856-3521 ext. 32	**Date:**	3-8-10
Re:	Resin recommendation – James River WWTP SO# 6083-03 & 6083-04	**CC:**	Denny Bement – ADC Julie Santinelli

A properly designed, fabricated and installed FRP tank made from Derakane® 411 series epoxy vinyl ester resins should be suitable for service in the following environment:

Sugar water or 70% glycerin solution at an operating temperature of 40°F to 90°F, atmospheric pressure and a specific gravity of 1.20.

A cobalt/MEKP cure system is recommended. One layer of 'C' glass veil backed by two plies of chopped strand mat in a 100 mil minimum thickness corrosion barrier is recommended.

This recommendation is based solely on data submitted by the requester. The information therein applies to Fiber Reinforced Plastic structures based on Ashland resins, wherein the structures are fully cured and manufactured according to state of the art techniques. The information is intended for utilization by skilled persons, acting on their own risk, and assuming the entire responsibility for the selection of materials, the design, the cure and fabrication, and the installation of the equipment. Having no control over these operations Ashland does not guarantee the quality of the end product.

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SCOTT LANE
PRODUCT LEADER
CORROSION AND FIRE RETARDANT RESINS

March 8, 2010

Mr. Ken Ranshaw
Justin Tanks LLC
21413 Cedar Creek Ave
Georgetown, DE 19947

RE: Vipel® F010 for James River WWTP, Newport News VA

Dear Ken,

The purpose of this letter is to confirm that a properly constructed and cured corrosion barrier made from Vipel F010 premium corrosion resistant bisphenol-A epoxy vinyl ester resin is recommended and appropriate to contain Sugar Water or 70% Glycerin Solution (1.20 Specific Gravity) from 40°F to 90°F. The construction of the corrosion barrier should consist of 1-ply of c-glass veil, 2-plies of 1.5 oz/sf CSM, be at least 0.1" thick, and cured with MEKP/Cobalt.

Please let me know if you have any questions regarding this recommendation.

Regards,

Scott A. Lane

Digitally signed by Scott A. Lane
DN: cn=Scott A. Lane, o=AOC Llc., ou=Corrosion Specialist, email=slane@aoc-resins.com, c=US
Date: 2010.03.08 10:52:18 -06'00'

Scott Lane

VIPEL is a Registered Trademark of AOC, Llc.

950 HIGHWAY 57 EAST • COLLIERVILLE, TN 38017 • 901/861-8362 • FAX 901/854-2895 • slane@aoc-resins.com

Service	Packing List	Ref. Letter	No. Req'd	Dept	Part No.	Description	Size
CS DISCHARGE LINE		N1	1	P	SPECIAL	100 PSI C.M. SCON FLG. NOZ. W/ INTERNAL ELBOW	3"
CS SUCTION LINE		N2	1	P	SPECIAL	100 PSI C.M. SCON FLG. NOZ. W/ INTERNAL ELBOW	6"
CS SUCTION LINE		N3	1	P	5P100604	100 PSI SCON CM FLG NOZZLE	4"
MANWAY		N4	1	M	233224	10 PSI SIDE MANWAY W/DOMED COVER	24"
DRAIN		N5	1	P	5P100604	100 PSI SCON CM FLG NOZZLE	4"
CS FILL LINE		N6	1	P	5P180602	100 PSI C.M. SCON DIP PIPE	2"
OVERFLOW		N7	1	P	5P100604	100 PSI SCON CM FLG NOZZLE	4"
POTABLE WATER		N8	1	P	5P180602	100 PSI C.M. SCON DIP PIPE	2"
CS FILL LINE		N9	1	P	5P100602	100 PSI SCON CM FLG NOZZLE	2"
INSTRUMENT		N10	1	P	5P100603	100 PSI SCON CM FLG NOZZLE	3"
VENT		N11	1	P	5P100606	100 PSI SCON CM FLG NOZZLE	6"
		A	4	S	242806	GALVANIZED STEEL LIFTING CHANNEL	
		B	4	S	251000	GALVANIZED STEEL TIE DOWN LUG	
		C	1	M	099500	TANK IDENTIFICATION LABEL	
		D	2	M	199506	FRP EXTERNAL UNIVERSAL SUPPORT (ITEM N8)	
		E	2	M	199506	FRP EXTERNAL UNIVERSAL SUPPORT (ITEM N6)	
		F	2	M	199602	FRP FIXED PIPE SUPPORT (ITEM N6)	
		H	2	M	199602	FRP FIXED PIPE SUPPORT (ITEM N8)	
		J	3	M	279000	FRP LADDER MOUNTING BRACKET	
		K	1	M	099800	HYDROSTATIC TEST (HOLD MINIMUM 4 HOURS)	
	*	L	1	M	S-5552	FRP HANDRAIL SYSTEM	
	*	M	1	P	7201-L1-0	FRP LADDER	
		P	A/R	M	099000	TRANSLUCENT EXTERIOR PROTECTIVE COATING	
		R	4	S	91159	ZINC PLATED BOLT SET(3/4" - 10 x 8") (ITEM A)	
	*	S	12	S	91622	316SS BOLT SET (3/8" - 16 x 1 1/2") (ITEM J)	
	*	T	20	S	91636	316SS BOLT SET (1/2" - 13 x 3") (ITEM N4)	
	*	U	1	S	90024	1/8" BLACK NEOPRENE GASKET (ITEM N4)	24"

SEE SHEET 2 FOR PLAN & ELEVATION DRAWING

NOTES:

1. INNER CORROSION BARRIER FABRICATED WITH DERAKANE 411 OR EQUAL PREMIUM VINYL ESTER RESIN WITH MEKP CURE SYSTEM. REINFORCED WITH (1) PLY "C"- GLASS SURFACING MAT.

2. 90 MIL BACK-UP. (100 MIL TOTAL LINER)

3. BALANCE OF LAMINATE FABRICATED TO FULL WALL THICKNESS WITH DERAKANE 411 OR EQUAL PREMIUM ESTER RESIN WITH MEKP CURE SYSTEM.

4. TANK TO BE INSTALLED IN ACCORDANCE WITH OUR "HANDLING AND INSTALLATION INSTRUCTIONS".

5. FOR SHIPPING PURPOSES ONLY: SHIPPING DIMENSIONS: L/15'-11" W/11'-2" H/11'-2" @ 245° LOAD DOWN

6. ALL FLANGED NOZZLES CONFORM TO ANSI B16.5 FOR 150 LB. DRILLING.

7. ALL MATING FLANGES MUST BE FLAT FACE, RAISED FACE FLANGES ARE NOT ALLOWED.

8. TANK SUPPORT PAD OR PIERS, AS APPLICABLE, IS RESPONSIBILITY OF OTHERS. SUPPORT PAD OR PIERS TO PROVIDE 100% UNIFORM SUPPORT.

9. (*) IDENTIFIED ITEMS WILL BE INDIVIDUALLY PACKAGED, MARKED AND SHIPPED LOOSE FROM TANK. END USER RESPONSIBLE FOR VERIFYING ALL PACKAGED ITEMS ARE RECEIVED AT TIME OF TANK DELIVERY. JUSTIN TANKS, L.L.C. TO BE NOTIFIED WITHIN (24) HOURS OF RECEIPT OF ANY SHORTAGES.

10. TANK DESIGNED AND FABRICATED PER ASTM D3299-00 AND ASTM D4097-01.

11. ITEM "J" TO BE LOCATED AT ELEVATION 4'-0", 9'-0", AND 13'-0".

12. ALL CUT EDGES OF ITEMS "N1", "N2", "N6", AND "N8" ARE TO BE DOUBLE RESIN COATED.

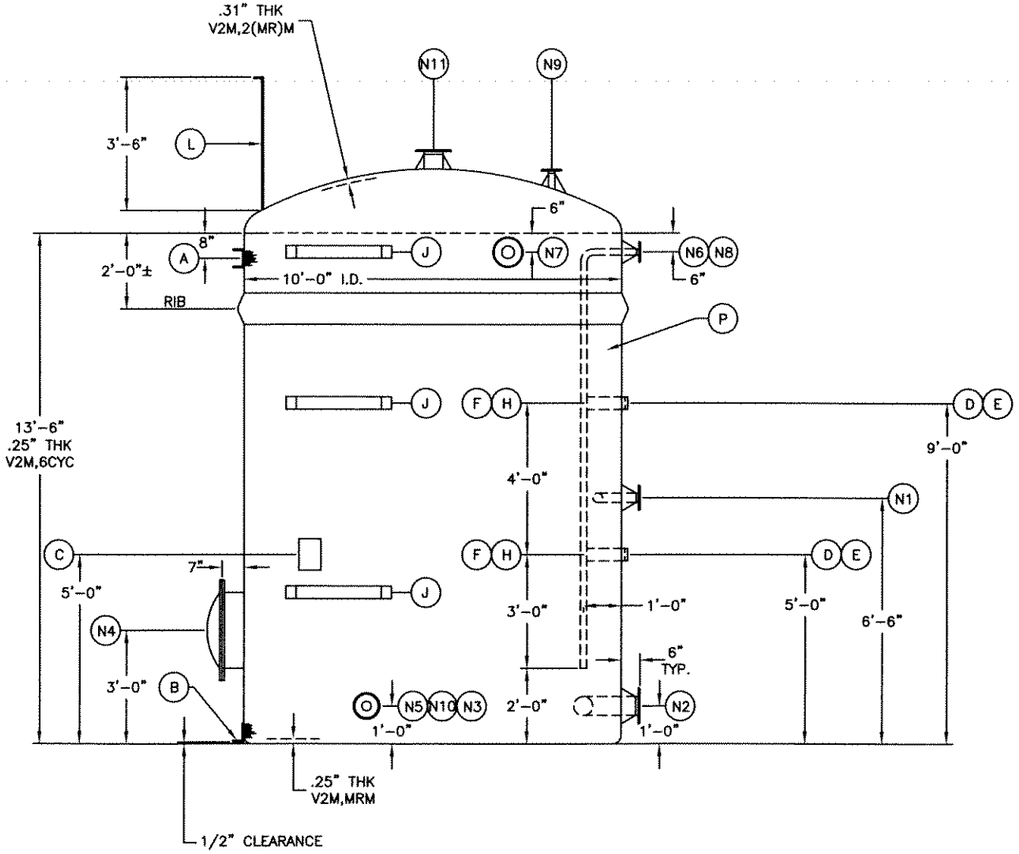
13. A MINIMUM OF (2) LAYERS OF 30 LB. ROOFING FELT IS TO BE LAID OVER ENTIRE FOUNDATION IN ALTERNATING DIRECTIONS.

Rev	Description	Date	By
A	APPROVAL REQUIRED	03/02/10	JMW

Drawn By: JMW | Date: 03/02/10
Ap'vd By: KCR | Scale: N/A
Service: CARBON STORAGE
PRESS Design: ATMOS. | Oper: ATMOS.
TEMP Design: 40°F-90°F | Oper: 40°F-90°F
Cap. Gal: 7,932 | Wgt. Lbs: 2,384 | Sp.Gr.: 1.2

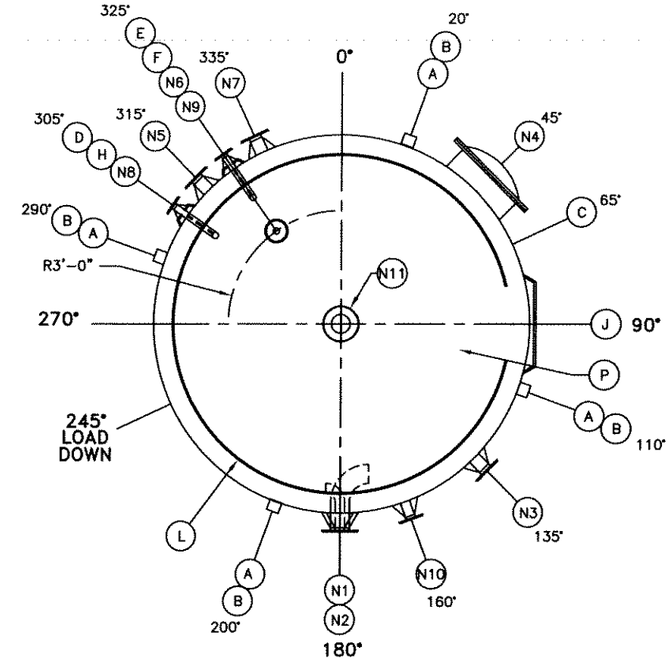
This drawing, all information contained thereon is the exclusive and confidential property of Justin Tanks, L.L.C. and is not to be copied, reproduced, delivered, or disclosed to others in whole or in part

JUSTIN TANKS, L.L.C.
Georgetown, Delaware 19947
Customer: MID EASTERN BUILDERS, INC
Destination: CHESAPEAKE, VA
S.O. No.: 6083 | Item No.: 03
P.O. No.: 09.009-22-P
Spec. Ref. | Tag No.: T46-1001
Code: SFD 1000130612122
Drawing No.: 6083-03 | Rev: A



ELEVATION

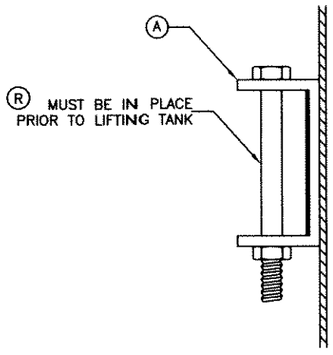
SEE PLAN VIEW FOR TRUE ORIENTATION



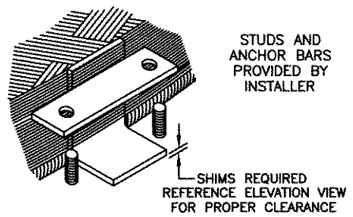
PLAN VIEW

SEE SHEET 1 FOR BILL OF MATERIAL LISTING

Drawn By JMW	Date 03/02/10	JUSTIN TANKS, L.L.C.	
Ap'vd By KCR	Scale N/A	Georgetown, Delaware 19947	
Service CARBON STORAGE		Customer MID EASTERN BUILDERS, INC	
PRESS Design ATMOS.	Oper. ATMOS.	Destination CHESAPEAKE, VA	S.O. No. 6083 / Item No. 03
TEMP Design 40°F-90°F	Oper. 40°F-90°F	P.O. No. 09.009-22-P	
Cap. Gal 7,932 / Wgt. Lbs. 2,384	Sp.Gr. 1.2	Spec. Ref. / Tag No. T46-1001	Drawing No. 6083-03 / Rev A
This drawing, all information contained thereon is the exclusive and confidential property of Justin Tanks, L.L.C. and is not to be copied, reproduced, delivered, or disclosed to others in whole or in part except with express written permission.		Code SFD 1000130612122	SHEET 2 OF 3

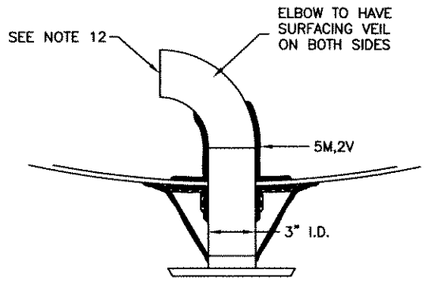


LIFTING BOLT DETAIL

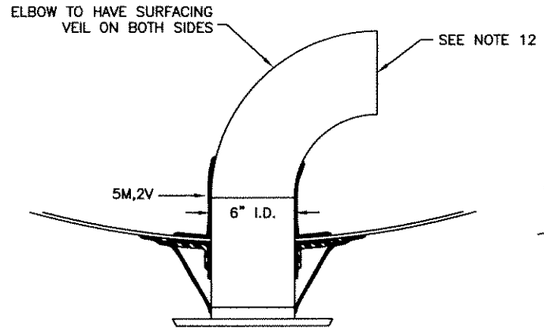


Anchor studs are drilled & set after tank installation. Place studs approx. 2" wider than the lug (each side). Tie-down bars should be fabricated to the same thickness & match intended spacing and stud size.

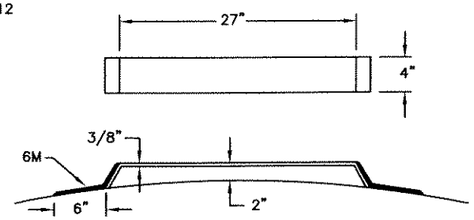
TIE DOWN LUG PROCEDURE



DETAIL "ITEM N1"

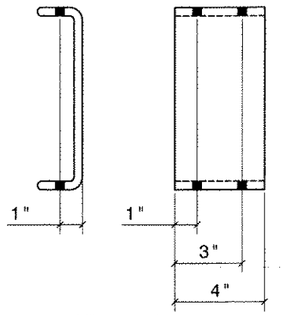


DETAIL "ITEM N2"

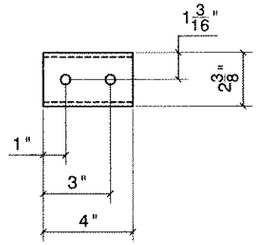


FRP LADDER MOUNTING BRACKET

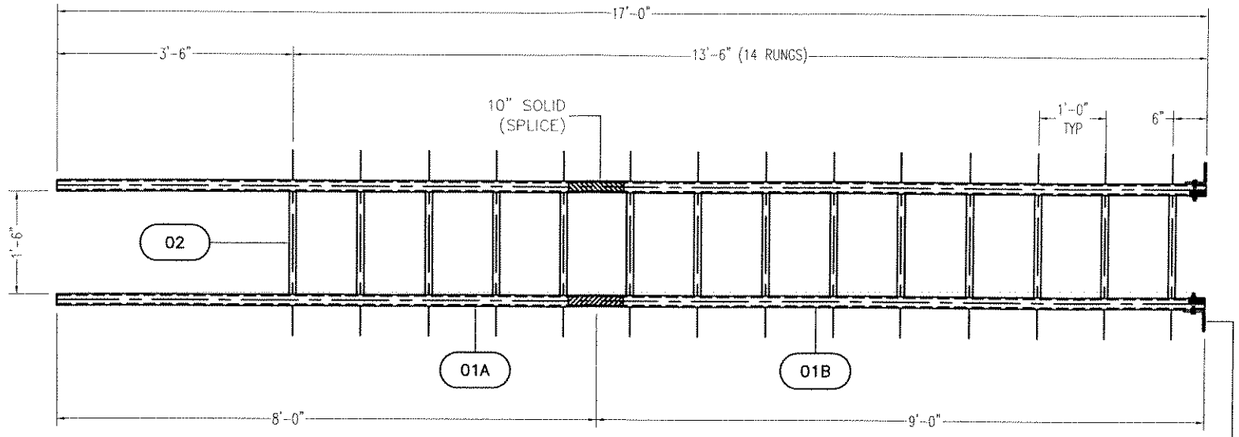
Drawn By JMW	Date 03/02/10	JUSTIN TANKS, L.L.C.	
Ap'vd By KCR	Scale N/A		
Service CARBON STORAGE			
PRESS Design ATMOS.	Oper. ATMOS.		
TEMP Design 40°F–90°F	Oper. 40°F–90°F		
Cap. Gal 7,932 / Wgt. Lbs. 2,384	Sp.Gr. 1.2		
This drawing, all information contained thereon is the exclusive and confidential property of Justin Tanks, L.L.C. and is not to be copied, reproduced, delivered, or disclosed to others in whole or in part except with express written permission.		Customer MID EASTERN BUILDERS, INC	
		Destination CHESAPEAKE, VA	S.O. No. 6083 / Item No. 03
		P.O. No. 09.009–22–P	
		Spec. Ref. Tag No. T46–1001	Drawing No. 6083–03 / Rev A
		Code SFD 1000130612122	SHEET 3 OF 3



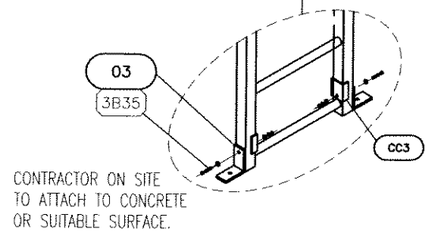
DETAIL ~ 05
SCALE: 4X



DETAIL ~ CC4
SCALE: 4X

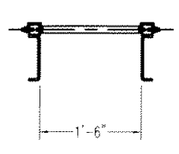


~ PLAN VIEW ~

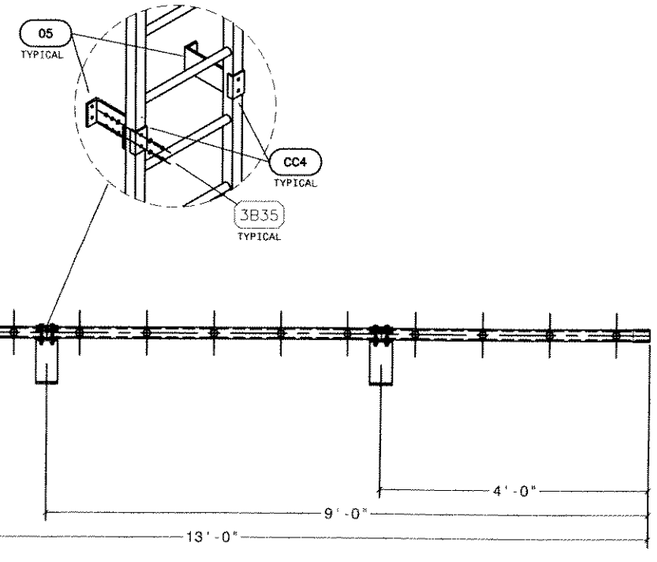


CONTRACTOR ON SITE
TO ATTACH TO CONCRETE
OR SUITABLE SURFACE.

CONTRACTOR ON SITE TO FIELD DRILL TANK AND LADDER RAILS TO RECEIVE #05 BKTS AND #CC4 (TYPICAL).



END VIEW



ELEVATION VIEW

BILL OF MATERIALS

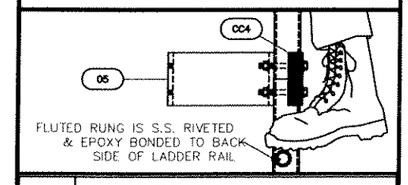
MARK	QTY	LENGTH	MATERIAL
01A	2	8'-0"	TS2x.156 RAIL
01B	2	9'-0"	TS2x.156 RAIL
02	14	21-11/16"	1.25 FLUTED RUNG
03	2	1-3/4"	L4x.375 BASE CLIP
05	4	4"	C8x.375

STOCK MATERIAL

MARK	QTY	MATERIAL
13	2	END CAP
CC3	2	CAP CHANNEL
CC4	4	CAP CHANNEL
S10	2	SOLID (1-11/16" SQ. PLUG x 10" LONG)

FASTENER LIST

MARK	QTY	THREAD SIZE	LENGTH	MATERIAL
3B35	2	3/8-16	3-1/2"	316 STAINLESS STEEL 1-HHCS, 2-FW, 1-LW, 1-NUT EA.



EXTREN SERIES	500 SERIES, GREEN IN COLOR, PREMIUM ISOPHTHALIC POLYESTER RESIN, NON FIRE-RETARDANT.
LADDER	RAILS: SAFRAIL® TS2x2x.156 SQUARE TUBE
PE NP	(PE) POLYESTER RESIN . RUNGS: 1.25" VINYL ESTER FLUTED TUBE
FASTENERS	3/8"ø (316 STAINLESS STEEL) HEX HEAD CAP WITH 2-FLAT WASHERS, 1-LOCK WASHER & 1-HEX HEAD NUT EACH. PILOT HOLE SIZE IS 7/16"ø,
ANCHOR BOLTS	FF-S-325, GRP II, TYPE 4, CLASS 1-NOT INCLUDED. MINIMUM DIA. x EMBEDMENT 1/2"ø x 4",

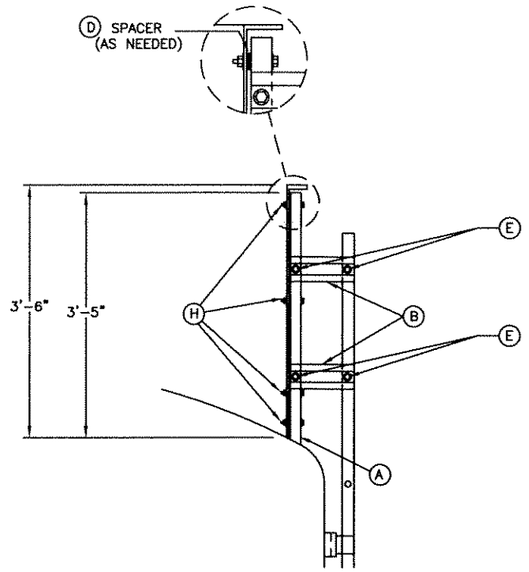
MATERIALS DESCRIPTION

JUSTIN TANKS LLC
21413 CEDAR CREEK AVE
GEORGETOWN, DE 19947
302-856-3521
www.justintanks.com

PROJECT:
MID EASTERN BUILDERS, INC
NEWPORT NEWS, VA
09.009-22-P

DRAWN BY:	CHECKED BY:	DATE DRAWN:	TOLERANCE:	DO NOT SCALE
R. CALDWELL	P. JOHNSON	03-04-10	FRACTION ± 1/8" ANGLE ± 1°	

REV. NO: 0
DRAWING NO: 7201-L1-0

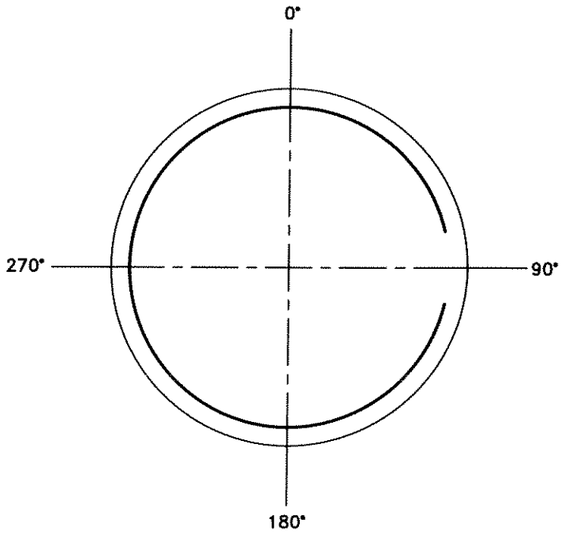


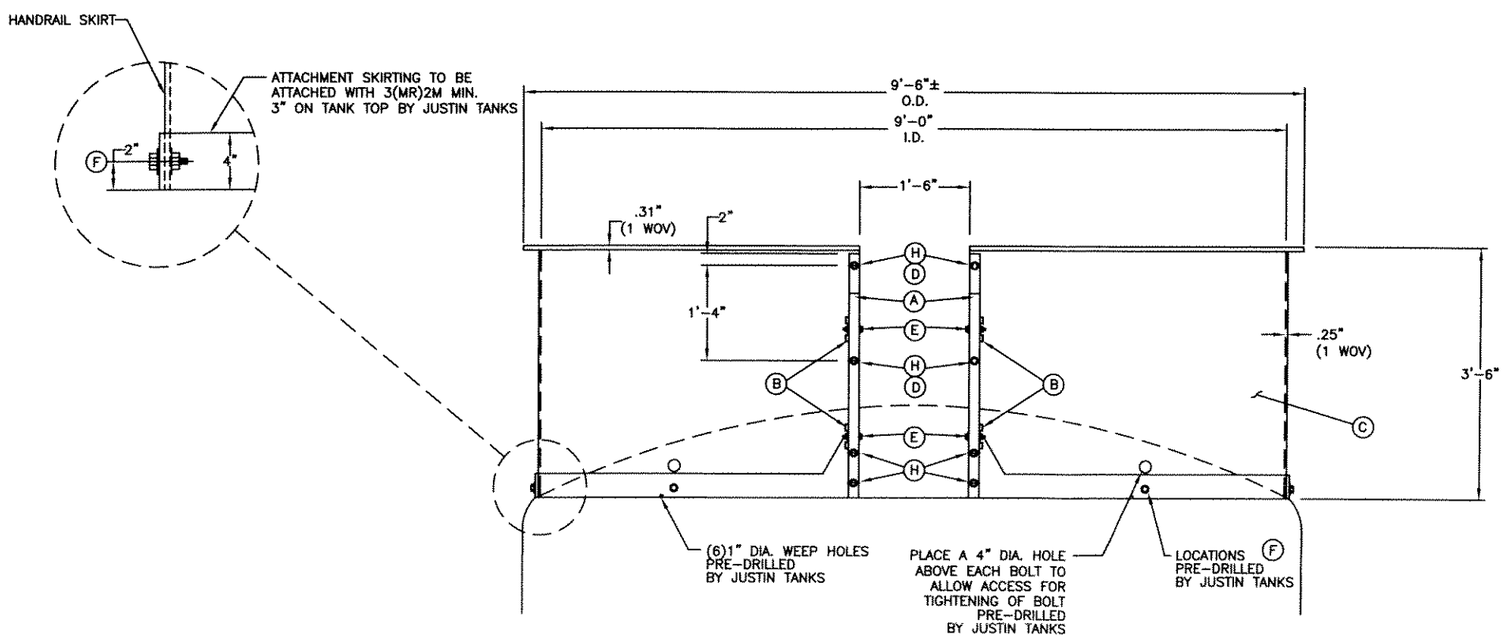
HANDRAIL TO LADDER ATTACHMENT DETAIL

*	A	2	S	SPECIAL	FRP TUBING (1 3/4"x1 3/4"x42")
*	B	4	S	SPECIAL	FRP ATTACHMENT PLATE (3/16"x2 1/2"x24")
	C	A/R	M	099002	LIGHT GRAY EXTERIOR PROTECTIVE GEL COAT
*	D	4	S	SPECIAL	PVC SPACER
*	E	8	P	SPECIAL	316SS BOLT SET (5/16" - 18 x 3")
*	F	7	S	91622	316SS BOLT SET (3/8" - 16 x 1 1/2")
*	H	8	S	91626	316SS BOLT SET (3/8" - 16 x 3")

NOTES:

1. HANDRAIL SKIRT FABRICATED WITH DERAKANE 411 OR EQUAL PREMIUM VINYL ESTER RESIN WITH U.V. INHIBITOR.
2. HANDRAIL SKIRT TO BE BOLTED IN PLACE (USING PRE-DRILLED HOLES) BY OTHERS AFTER TANK IS INSTALLED.
3. ALL LADDER TO HANDRAIL MOUNTING HOLES TO BE DRILLED IN FIELD BY OTHERS TO ENSURE PROPER ALIGNMENT. FRP ATTACHMENT PLATE TO BE TRIMMED IN FIELD BY OTHERS.
4. (*) IDENTIFIED ITEMS WILL BE INDIVIDUALLY PACKAGED, MARKED AND SHIPPED LOOSE FROM TANK. END USER RESPONSIBLE FOR VERIFYING ALL PACKAGED ITEMS ARE RECEIVED AT TIME OF TANK DELIVERY. JUSTIN TANKS, L.L.C. TO BE NOTIFIED WITHIN (24) HOURS OF RECEIPT OF ANY SHORTAGES.





HANDRAIL SKIRT ELEVATION

A	APPROVAL REQUIRED	03/02/10	JMW
Rev	Description	Date	By

Drawn By: JMW | Date: 03/02/10
Appvd By: KCR | Scale: N/A
Service:
PRESS: Design: | Oper.:
TEMP: Design: | Oper.:
Cap. Gal: | Mat. Liq.: | Sp.Gr.:

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JUSTIN TANKS, L.L.C.
Specifications, Delaware, 19947
Customer: MID EASTERN BUILDERS, INC
Destination: CHESAPEAKE, VA
S.O. No.: 6083 | Item No.: 03/04
P.O. No.:
Spec. Ref.: Tag No.:
Code:
FRP HANDRAIL SYSTEM
Drawing No.: S-5552 | Rev: A
SHEET 1 OF 1

Service	Packing List	Ref. Letter	No. Req'd	Dept	Part No.	Description	Size
CS DISCHARGE LINE		N1	1	P	SPECIAL	100 PSI C.M. SCON FLG. NOZ. W/ INTERNAL ELBOW	3"
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CS SUCTION LINE		N3	1	P	5P100604	100 PSI SCON CM FLG NOZZLE	4"
MANWAY		N4	1	M	233224	10 PSI SIDE MANWAY W/DOMED COVER	24"
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CS FILL LINE		N6	1	P	5P180602	100 PSI C.M. SCON DIP PIPE	2"
OVERFLOW		N7	1	P	5P100604	100 PSI SCON CM FLG NOZZLE	4"
POTABLE WATER		N8	1	P	5P180602	100 PSI C.M. SCON DIP PIPE	2"
CS FILL LINE		N9	1	P	5P100602	100 PSI SCON CM FLG NOZZLE	2"
INSTRUMENT		N10	1	P	5P100603	100 PSI SCON CM FLG NOZZLE	3"
VENT		N11	1	P	5P100606	100 PSI SCON CM FLG NOZZLE	6"
		A	4	S	242806	GALVANIZED STEEL LIFTING CHANNEL	
		B	4	S	251000	GALVANIZED STEEL TIE DOWN LUG	
		C	1	M	099500	TANK IDENTIFICATION LABEL	
		D	2	M	199506	FRP EXTERNAL UNIVERSAL SUPPORT (ITEM N8)	
		E	2	M	199506	FRP EXTERNAL UNIVERSAL SUPPORT (ITEM N6)	
		F	2	M	199602	FRP FIXED PIPE SUPPORT (ITEM N6)	
		H	2	M	199602	FRP FIXED PIPE SUPPORT (ITEM N8)	
		J	3	M	279000	FRP LADDER MOUNTING BRACKET	
		K	1	M	099800	HYDROSTATIC TEST (HOLD MINIMUM 4 HOURS)	
	*	L	1	M	S-5552	FRP HANDRAIL SYSTEM	
	*	M	1	P	7201-L1-0	FRP LADDER	
		P	A/R	M	099000	TRANSLUCENT EXTERIOR PROTECTIVE COATING	
		R	4	S	91159	ZINC PLATED BOLT SET(3/4" - 10 x 8") (ITEM A)	
	*	S	12	S	91622	316SS BOLT SET (3/8" - 16 x 1 1/2") (ITEM J)	
	*	T	20	S	91636	316SS BOLT SET (1/2" - 13 x 3") (ITEM N4)	
	*	U	1	S	90024	1/8" BLACK NEOPRENE GASKET (ITEM N4)	24"

SEE SHEET 2 FOR PLAN & ELEVATION DRAWING

NOTES:

1. INNER CORROSION BARRIER FABRICATED WITH DERAKANE 411 OR EQUAL PREMIUM VINYL ESTER RESIN WITH MEKP CURE SYSTEM. REINFORCED WITH (1) PLY "C"- GLASS SURFACING MAT.

2. 90 MIL BACK-UP. (100 MIL TOTAL LINER)

3. BALANCE OF LAMINATE FABRICATED TO FULL WALL THICKNESS WITH DERAKANE 411 OR EQUAL PREMIUM ESTER RESIN WITH MEKP CURE SYSTEM.

4. TANK TO BE INSTALLED IN ACCORDANCE WITH OUR "HANDLING AND INSTALLATION INSTRUCTIONS".

5. FOR SHIPPING PURPOSES ONLY: SHIPPING DIMENSIONS: L/15'-11" W/11'-2" H/11'-2" @ 295* LOAD DOWN.

6. ALL FLANGED NOZZLES CONFORM TO ANSI B16.5 FOR 150 LB. DRILLING.

7. ALL MATING FLANGES MUST BE FLAT FACE, RAISED FACE FLANGES ARE NOT ALLOWED.

8. TANK SUPPORT PAD OR PIERS, AS APPLICABLE, IS RESPONSIBILITY OF OTHERS. SUPPORT PAD OR PIERS TO PROVIDE 100% UNIFORM SUPPORT.

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10. TANK DESIGNED AND FABRICATED PER ASTM D3299-00 AND ASTM D4097-01.

11. ITEM "J" TO BE LOCATED AT ELEVATION 4'-0", 9'-0", AND 13'-0".

12. ALL CUT EDGES OF ITEMS "N1", "N2", "N6", AND "N8" ARE TO BE DOUBLE RESIN COATED.

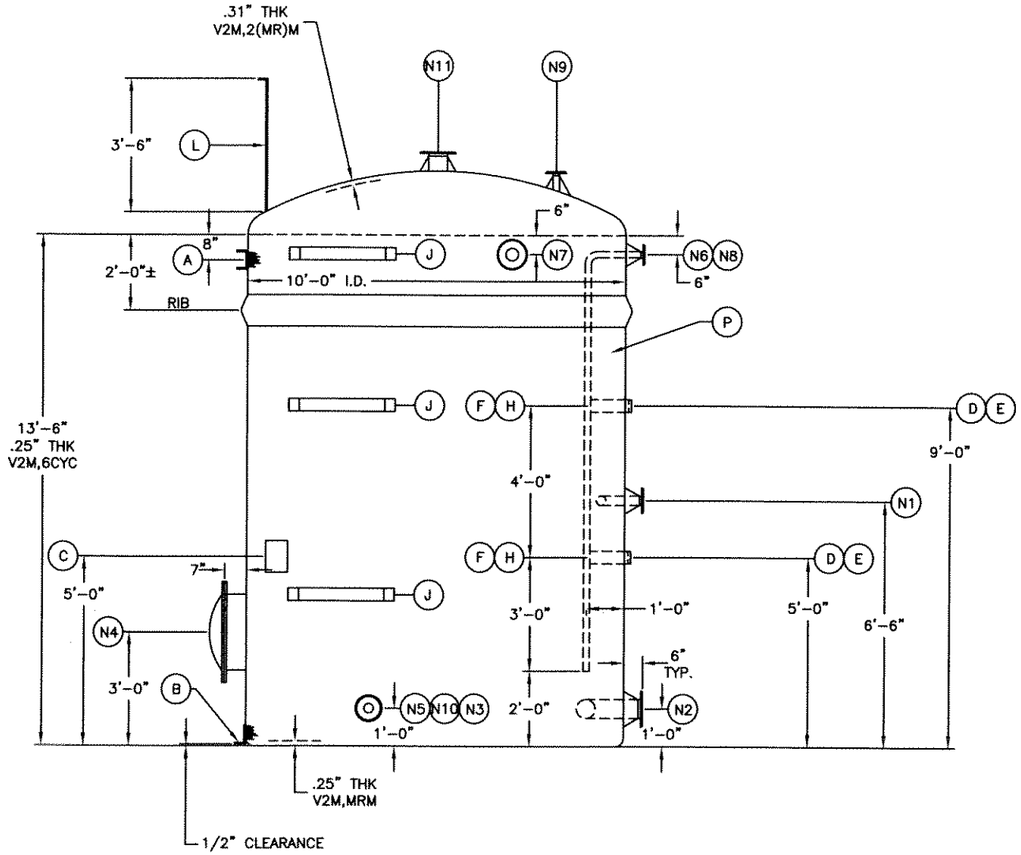
13. A MINIMUM OF (2) LAYERS OF 30 LB. ROOFING FELT IS TO BE LAID OVER ENTIRE FOUNDATION IN ALTERNATING DIRECTIONS.

Rev	Description	Date	By
A	APPROVAL REQUIRED	03/02/10	JMW

Drawn By: JMW | Date: 03/02/10
Ap'vd By: KCR | Scale: N/A
Service: CARBON STORAGE
PRESS: Design ATMOS. | Oper: ATMOS.
TEMP: Design 40°F-90°F | Oper: 40°F-90°F
Cap. Gal: 7,932 | Wgt. Lbs: 2,384 | Sp.Gr. 1.2

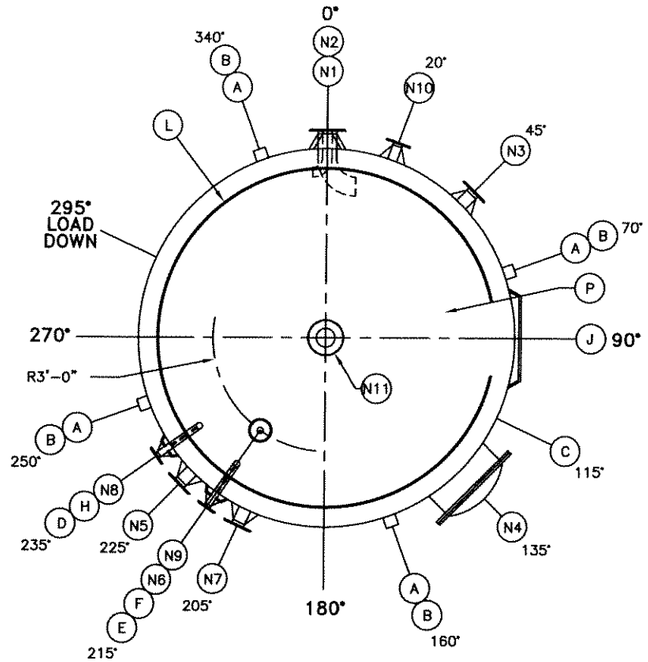
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JUSTIN TANKS, L.L.C.
Georgetown, Delaware 19947
Customer: MID EASTERN BUILDERS, INC
Destination: CHESAPEAKE, VA
S.O. No.: 6083
Item No.: 04
P.O. No.: 09.009-22-P
Spec. Ref. | Tag No. T46-1002
Code: SFD 1000130612122
Drawing No.: 6083-04
Rev: A



ELEVATION

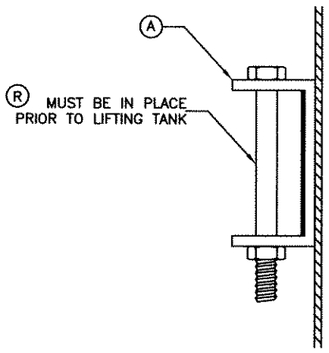
SEE PLAN VIEW FOR TRUE ORIENTATION



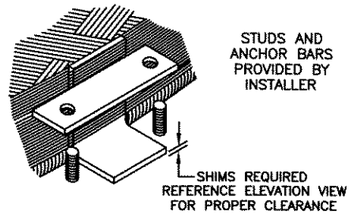
PLAN VIEW

SEE SHEET 1 FOR BILL OF MATERIAL LISTING

Drawn By JMW	Date 03/02/10	JUSTIN TANKS, L.L.C.	
Ap'vd By KCR	Scale N/A		
Service CARBON STORAGE			
PRESS Design ATMOS.	Oper. ATMOS.		
TEMP Design 40°F-90°F	Oper. 40°F-90°F	Customer MID EASTERN BUILDERS, INC	
Cap. Gal 7,932 Wgt. Lbs. 2,384	Sp.Gr. 1.2	Destination CHESAPEAKE, VA	S.O. No. 6083 / Item No. 04
This drawing, all information contained thereon is the exclusive and confidential property of Justin Tanks, L.L.C. and is not to be copied, reproduced, delivered, or disclosed to others in whole or in part		P.O. No. 09.009-22-P	
		Spec. Ref. Tag No. T46-1002	Drawing No. 6083-04 / Rev A
		Code SFD 1000130612122	

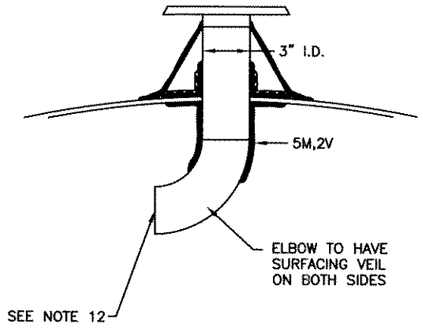


LIFTING BOLT DETAIL

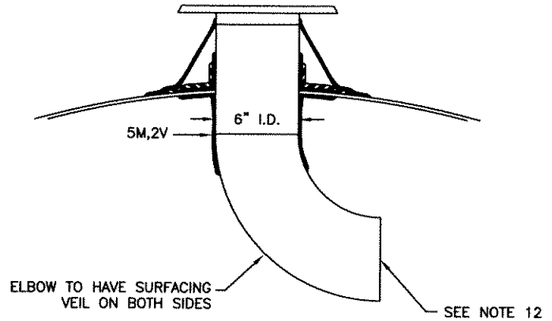


Anchor studs are drilled & set after tank installation. Place studs approx. 2" wider than the lug (each side). Tie-down bars should be fabricated to the same thickness & match intended spacing and stud size.

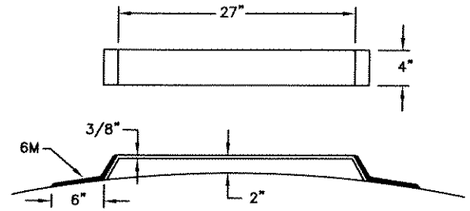
TIE DOWN LUG PROCEDURE



DETAIL "ITEM N1"



DETAIL "ITEM N2"



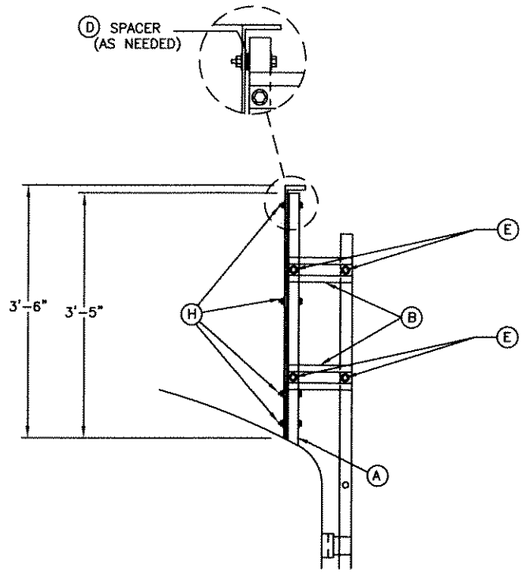
FRP LADDER MOUNTING BRACKET

Drawn By JMW	Date 03/02/10	JUSTIN TANKS, L.L.C.	
Ap'vd By KCR	Scale N/A		
Service CARBON STORAGE			
PRESS Design ATMOS.	Oper. ATMOS.		
TEMP Design 40°F–90°F	Oper. 40°F–90°F		
Cap. Gal 7,932	Wgt. Lbs. 2,384	Sp.Gr. 1.2	
This drawing, all information contained thereon is the exclusive and confidential property of Justin Tanks, L.L.C. and is not to be copied, reproduced, delivered, or disclosed to others in whole or in part		Customer MID EASTERN BUILDERS, INC	
		Destination CHESAPEAKE, VA	S.O. No. 6083 / Item No. 04
		P.O. No. 09.009–22–P	
		Spec. Ref. Tag No. T46–1002	Drawing No. 6083–04 / Rev A
		Code SFD 1000130612122	

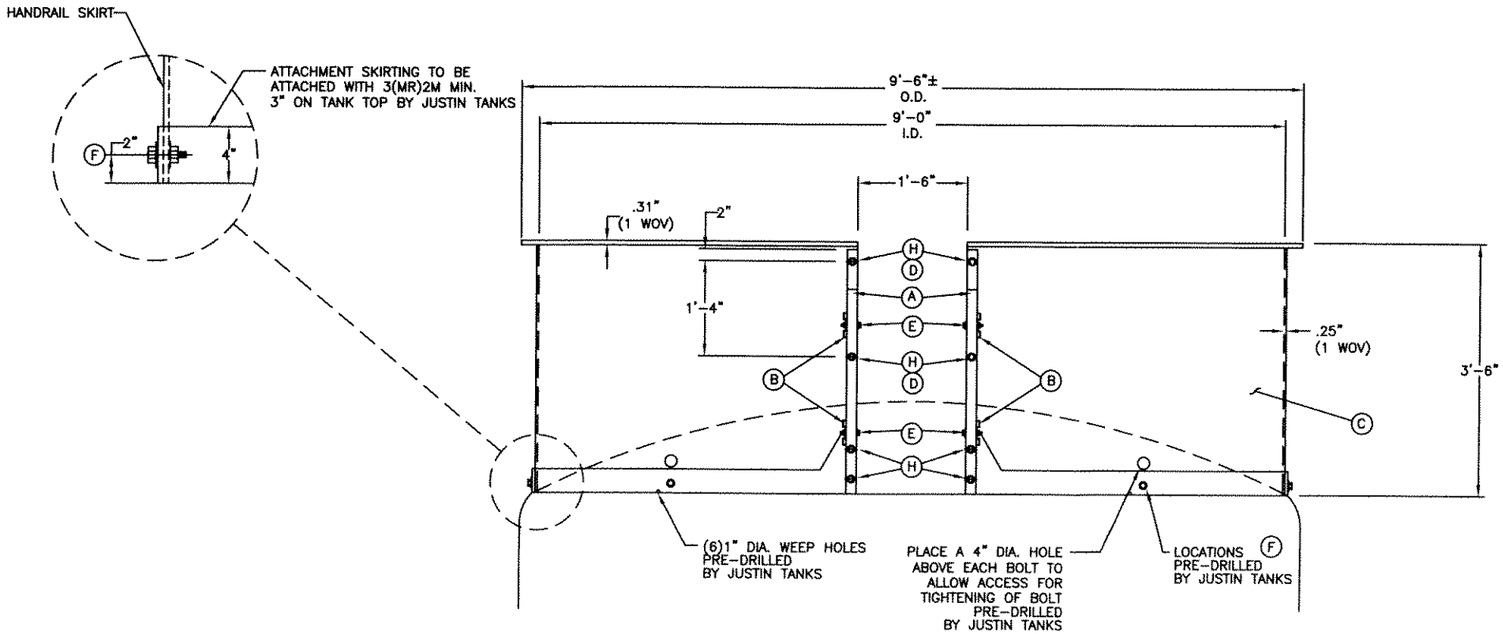
*	A	2	S	SPECIAL	FRP TUBING (1 3/4"x1 3/4"x42")
*	B	4	S	SPECIAL	FRP ATTACHMENT PLATE (3/16"x2 1/2"x24")
	C	A/R	M	099002	LIGHT GRAY EXTERIOR PROTECTIVE GEL COAT
*	D	4	S	SPECIAL	PVC SPACER
*	E	8	P	SPECIAL	316SS BOLT SET (5/16" - 18 x 3")
*	F	7	S	91622	316SS BOLT SET (3/8" - 16 x 1 1/2")
*	H	8	S	91626	316SS BOLT SET (3/8" - 16 x 3")

NOTES:

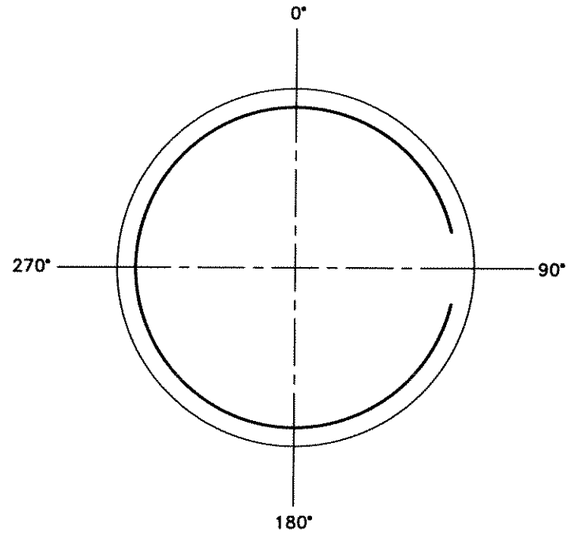
1. HANDRAIL SKIRT FABRICATED WITH DERAKANE 411 OR EQUAL PREMIUM VINYL ESTER RESIN WITH U.V. INHIBITOR.
2. HANDRAIL SKIRT TO BE BOLTED IN PLACE (USING PRE-DRILLED HOLES) BY OTHERS AFTER TANK IS INSTALLED.
3. ALL LADDER TO HANDRAIL MOUNTING HOLES TO BE DRILLED IN FIELD BY OTHERS TO ENSURE PROPER ALIGNMENT. FRP ATTACHMENT PLATE TO BE TRIMMED IN FIELD BY OTHERS.
4. (*) IDENTIFIED ITEMS WILL BE INDIVIDUALLY PACKAGED, MARKED AND SHIPPED LOOSE FROM TANK. END USER RESPONSIBLE FOR VERIFYING ALL PACKAGED ITEMS ARE RECEIVED AT TIME OF TANK DELIVERY. JUSTIN TANKS, L.L.C. TO BE NOTIFIED WITHIN (24) HOURS OF RECEIPT OF ANY SHORTAGES.



HANDRAIL TO LADDER
ATTACHMENT DETAIL



HANDRAIL SKIRT
ELEVATION



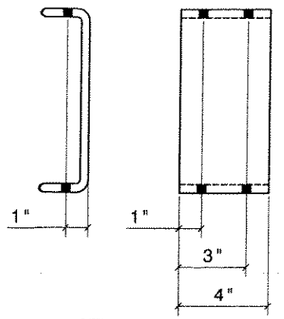
A	APPROVAL REQUIRED	03/02/10	JMW
Rev	Description	Date	By

Drawn By: JMW | Date: 03/02/10
Ap'vd By: KCR | Scale: N/A
Service:
PRESS Design: | Oper.:
TEMP Design: | Oper.:
Cap. Gal: | Wgt. Lbs.: | Sp.Gr.:

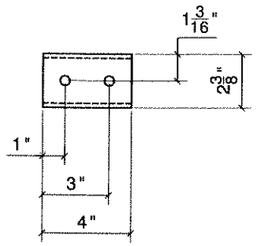
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JUSTIN TANKS, L.L.C.
Georgetown, Delaware 19947
Customer: MID EASTERN BUILDERS, INC
Destination: CHESAPEAKE, VA
P.O. No.:
Spec. Ref.: Tag No.:
Code: FRP HANDRAIL SYSTEM

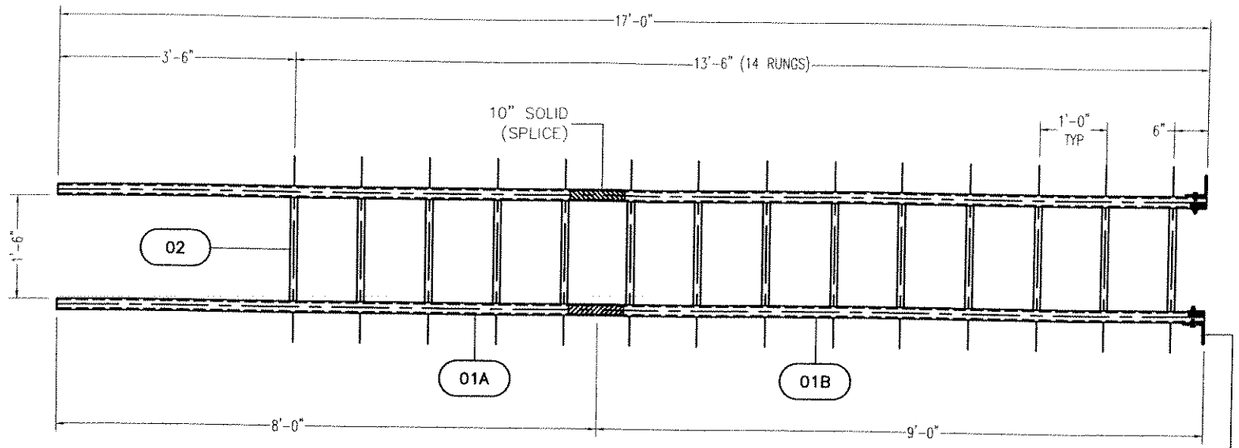
S.O. No.: 6083 | Item No.: 03/04
Drawing No.: S-5552 | Rev: A
SHEET 1 OF 1



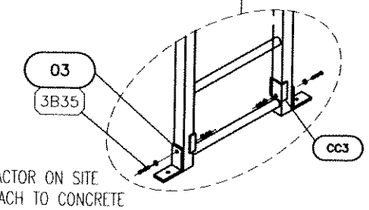
DETAIL ~ 05
SCALE: 4X



DETAIL ~ CC4
SCALE: 4X



~ PLAN VIEW ~

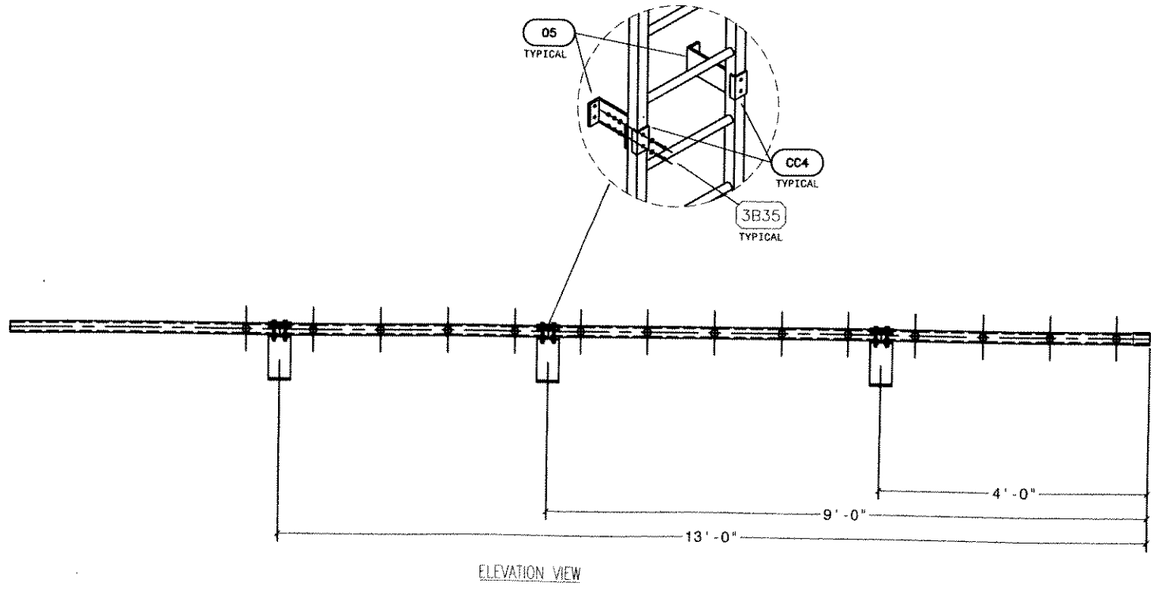


CONTRACTOR ON SITE
TO ATTACH TO CONCRETE
OR SUITABLE SURFACE.

CONTRACTOR ON SITE TO FIELD DRILL TANK AND LADDER RAILS TO RECEIVE #05 BKTS AND #CC4 (TYPICAL).



END VIEW



ELEVATION VIEW

BILL OF MATERIALS

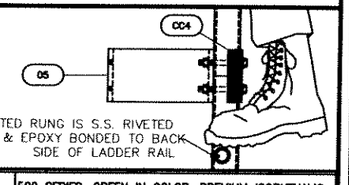
MARK	QTY	LENGTH	MATERIAL
01A	2	8'-0"	TS2x.156 RAIL
01B	2	9'-0"	TS2x.156 RAIL
02	14	21-11/16"	1.25 FLUTED RUNG
03	2	1-3/4"	L4x.375 BASE CLIP
05	4	4"	C8x.375

STOCK MATERIAL

MARK	QTY	MATERIAL
13	2	END CAP
CC3	2	CAP CHANNEL
CC4	4	CAP CHANNEL
S10	2	SOLID (1-11/16" SQ. PLUG x 10" LONG)

FASTENER LIST

MARK	QTY	THREAD SIZE	LENGTH	MATERIAL
3B35	2	3/8-16	3-1/2"	316 STAINLESS STEEL 1-HHCS, 2-FW, 1-LW, 1-NUT EA.



FLUTED RUNG IS S.S. RIVETED
& EPOXY BONDED TO BACK
SIDE OF LADDER RAIL

EXTREN SERIES	500 SERIES, GREEN IN COLOR, PREMIUM ISOPHTHALIC POLYESTER RESIN, NON FIRE-RETARDANT.
LADDER	RAILS: SAFRAIL® TS2x2x.156 SQUARE TUBE
PE NP	(PE) POLYESTER RESIN . RUNGS: 1.25" VINYL ESTER FLUTED TUBE
FASTENERS	3/8"ø (316 STAINLESS STEEL) HEX HEAD CAP WITH 2-FLAT WASHERS, 1-LOCK WASHER & 1-HEX HEAD NUT EACH. PILOT HOLE SIZE IS 7/16"ø,
ANCHOR BOLTS	FF-S-325, GRP II, TYPE 4, CLASS 1-NOT INCLUDED. MINIMUM DIA. x EMBEDMENT 1/2"ø x 4",

MATERIALS DESCRIPTION

JUSTIN TANKS LLC
27413 CEDAR CREEK AVE
GEORGETOWN, DE 19947
302-856-3321
www.justintanks.com

PROJECT:
MID EASTERN BUILDERS, INC
NEWPORT NEWS, VA
09.009-22-P

DRAWN BY:	CHECKED BY:	DATE DRAWN:	TOLERANCE: FRACTION ± 1/8" ANGLE ± 1°	DO NOT SCALE
R. CALDWELL	P. JOHNSON	03-04-10		

REV. NO: 0 | DRAWING NO: 7201-11-0

CAPACITY CHART

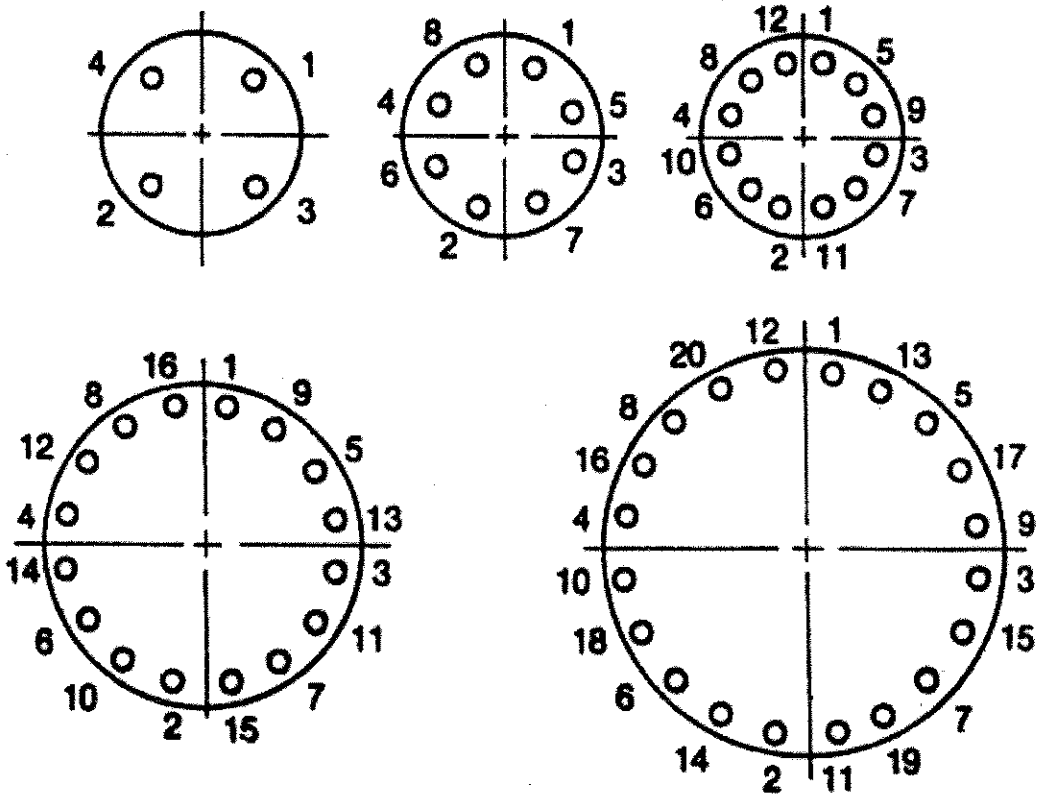
10'-0" Inside Diameter

Depth (in)	Capacity (gal)	Depth (in)	Capacity (gal)	Depth (in)	Capacity (gal)	Depth (in)	Capacity (gal)	Depth (in)	Capacity (gal)
1	49.0	41	2010.6	81	3972.2	121	5933.8	161	7895.4
2	98.1	42	2059.7	82	4021.3	122	5982.9	162	7944.5
3	147.1	43	2108.7	83	4070.3	123	6031.9	163	7993.5
4	196.2	44	2157.8	84	4119.4	124	6081.0	164	8042.6
5	245.2	45	2206.8	85	4168.4	125	6130.0	165	8091.6
6	294.2	46	2255.8	86	4217.4	126	6179.0	166	8140.6
7	343.3	47	2304.9	87	4266.5	127	6228.1	167	8189.7
8	392.3	48	2353.9	88	4315.5	128	6277.1	168	8238.7
9	441.4	49	2403.0	89	4364.6	129	6326.2	169	8287.8
10	490.4	50	2452.0	90	4413.6	130	6375.2	170	8336.8
11	539.4	51	2501.0	91	4462.6	131	6424.2	171	8385.8
12	588.5	52	2550.1	92	4511.7	132	6473.3	172	8434.9
13	637.5	53	2599.1	93	4560.7	133	6522.3	173	8483.9
14	686.6	54	2648.2	94	4609.8	134	6571.4	174	8533.0
15	735.6	55	2697.2	95	4658.8	135	6620.4	175	8582.0
16	784.6	56	2746.2	96	4707.8	136	6669.4	176	8631.0
17	833.7	57	2795.3	97	4756.9	137	6718.5	177	8680.1
18	882.7	58	2844.3	98	4805.9	138	6767.5	178	8729.1
19	931.8	59	2893.4	99	4855.0	139	6816.6	179	8778.2
20	980.8	60	2942.4	100	4904.0	140	6865.6	180	8827.2
21	1029.8	61	2991.4	101	4953.0	141	6914.6	181	8876.2
22	1078.9	62	3040.5	102	5002.1	142	6963.7	182	8925.3
23	1127.9	63	3089.5	103	5051.1	143	7012.7	183	8974.3
24	1177.0	64	3138.6	104	5100.2	144	7061.8	184	9023.4
25	1226.0	65	3187.6	105	5149.2	145	7110.8	185	9072.4
26	1275.0	66	3236.6	106	5198.2	146	7159.8	186	9121.4
27	1324.1	67	3285.7	107	5247.3	147	7208.9	187	9170.5
28	1373.1	68	3334.7	108	5296.3	148	7257.9	188	9219.5
29	1422.2	69	3383.8	109	5345.4	149	7307.0	189	9268.6
30	1471.2	70	3432.8	110	5394.4	150	7356.0	190	9317.6
31	1520.2	71	3481.8	111	5443.4	151	7405.0	191	9366.6
32	1569.3	72	3530.9	112	5492.5	152	7454.1	192	9415.7
33	1618.3	73	3579.9	113	5541.5	153	7503.1	193	9464.7
34	1667.4	74	3629.0	114	5590.6	154	7552.2	194	9513.8
35	1716.4	75	3678.0	115	5639.6	155	7601.2	195	9562.8
36	1765.4	76	3727.0	116	5688.6	156	7650.2	196	9611.8
37	1814.5	77	3776.1	117	5737.7	157	7699.3	197	9660.9
38	1863.5	78	3825.1	118	5786.7	158	7748.3	198	9709.9
39	1912.6	79	3874.2	119	5835.8	159	7797.4	199	9759.0
40	1961.6	80	3923.2	120	5884.8	160	7846.4	200	9808.0

JUSTIN TANKS LLC • 21413 Cedar Creek Avenue • Georgetown, DE 19947
(302) 856-3521 • FAX (302) 856-3527 • www.justintanks.com

Justin TANKS

Typical Bolt Torquing Sequence

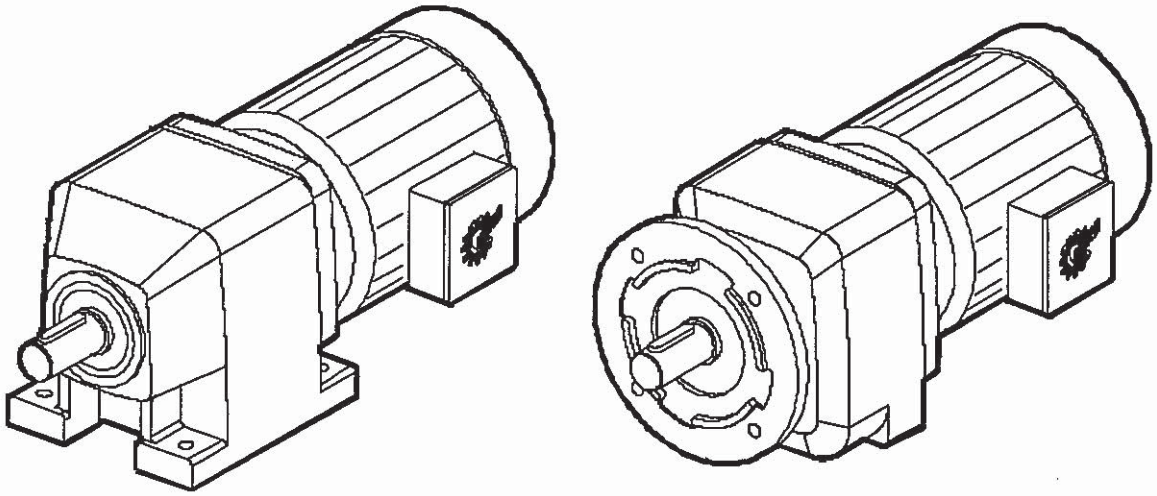


An even torque at 35 ft-lbs should be applied to each of the bolts. Raised face mating flanges cannot be used. Use a minimum 1/8" thick full face gasket of 50 to 70 durometer.

Betriebs- und Wartungsanleitung
Operating and Maintenance Instruction
Instructions de conduite et d'entretien

B 1011
08/2000
D GB F

Diese Sicherheitshinweise sind aufzubewahren
These safety instructions must be kept available
Ces instructions de sécurité doivent être observées



NORDBLOC-Stirnradgetriebe

NORDBLOC-Helical Gearboxes

NORDBLOC-Réducteurs à engrenages cylindriques

⚠ Warnung
Es wird vorausgesetzt, daß die grundsätzlichen Planungsarbeiten der Anlage sowie Transport, Montage, Installation, Inbetriebnahme, Wartung und Reparaturen von qualifiziertem Personal ausgeführt bzw. durch verantwortliche Fachkräfte kontrolliert werden. Bei Arbeiten am Getriebemotor muß garantiert sein, daß keinerlei Spannung anliegt, und dieser gegen Wiedereinschaltung gesichert ist.

⚠ Warnung
Veränderungen gegenüber dem Normalbetrieb (höhere Leistungsaufnahme, Temperaturen, Schwingungen, Geräusche usw. oder Ansprechen der Überwachungseinrichtungen) lassen vermuten, daß die Funktion beeinträchtigt ist. Zur Vermeidung von Störungen, die ihrerseits mittelbar oder unmittelbar schwere Personen- oder Sachschäden bewirken könnten, muß das zuständige Wartungspersonal dann umgehend verständigt werden.

⚠ Im Zweifelsfall die entspechenden Betriebs-mittel sofort abschalten!

Aufstellung, Vorbereitung
- Transportösen am Getriebe sind für das Gewicht des Antriebs ausgelegt
- Fundamente ausreichend bemessen und schwingungsfrei ausführen
- Getriebe oder -motor fest und ohne Verspannung montieren
- ausreichende Belüftung vorsehen
- serienmäßiges Innengewinde nach DIN-EN 332 zum Aufziehen von Verbindungselementen auf die Wellen benutzen
- Schläge auf die Wellen vermeiden (Lagerbeschädigung!)
- Maschine und Getriebe möglichst mit elastischen Kupplungen verbinden
- vor dem Einschalten Abtriebselemente aufziehen bzw. Paßfeder sichern
- bei Aufsteckgetrieben mit Drehmomentstütze Gummipuffer verwenden

Elektrischer Anschluß
- Motoranschluß nach Schaltbild vornehmen
- Übereinstimmung von Netzspannung und Frequenz mit den Typenschild-Daten sicherstellen
- Sichere Schutzleiterverbindung herstellen
- evtl. falsche Drehrichtung korrigieren durch Vertauschen von 2 Phasen
- Nicht benötigte Kabeleinführungsöffnungen und den Kasten selbst staub- und wasserdicht verschließen
- Überbelastung und Phasenausfall durch Schutzschalter vorbeugen
- Einstellen des Motorschutzschalters auf Nennstrom
- Schaltbilder auf der letzten Seite

Inbetriebnahme
- bei längeren Lagerzeiten besondere Vorkehrungen treffen (siehe Werknormblatt "Langzeitlagerung")
- Lage der Ölstandschraube nach Bauformtabellen des entsprechenden Kataloges feststellen
- Prüfen des Ölstandes
- Entfernen des Verschlußstopfens vor Inbetriebnahme (Überdruck!), ggf. Druckentlüftungsschraube montieren
- Normale Erstbefüllung: siehe Schmierstofftabelle
- Luftgekühlte Motoren sind für Umgebungstemperaturen von - 20°C bis +40°C sowie Aufstellungshöhen â 1.000 m über NN ausgelegt
- Der Einsatz im Ex-Bereich ist nicht zulässig, sofern nicht ausdrücklich hierfür vorgesehen

⚠ Caution
It is presumed that fundamental project work as well as all work with regard to transport, assembly, installation, starting-up, maintenance and repair is performed by qualified personnel or supervised by skilled labour taking overall responsibility. Make absolutely sure that no voltage is applied at all while work is being done on the geared motor. Drive must also be secured against switching on.

⚠ Caution
Any deviation from normal operating conditions (increased power consumption, temperature, vibrations, noise etc.) or warning signals by monitoring equipment suggest malfunction. Inform the responsible maintenance personnel at once to prevent the trouble from getting worse and causing, directly or indirectly, serious physical injury or material damage.

⚠ In case of doubt disconnect the machine immediately!

Preparing and performing installation
- Lifting devices on the drive are designed to carry the drive weight
- the foundation (base) should be of adequate size and vibration-proof
- install gear unit or geared motor rigid and braceless
- ensure sufficient ventilation
- make use of tapped hole (DIN-EN 332) to suit fastening to the shaft end
- avoid shocks on shafts (bearing damage!)
- preferably use flexible coupling between output shaft and driven machine
- fit output elements to shaft end or secure feather key before starting the motor
- use torque arm with rubber buffer on shaft mounting gearboxes

Connection of motor
- Connect motor according to diagram
- make sure that mains voltage/frequency are in accordance with nameplate information
- make secure protective conductor conection
- if motor is running in reverse direction, interchange two phases
- Close unused cable entrances holes and the box itself in a dust- and watertight manner.
- install protective switches to prevent overload and phase failure
- set motor protection switch to nominal current
- wiring diagrams on the last page

Starting up
- in case of long-time storage take special precautions (as provided in works standard sheet "Extended Storage")
- check position of oil-level plug with help of mounting position tables in applicable catalogue
- check oil-level
- prior to starting-up, remove vent plug from vent screw if necessary
- if not specified otherwise, first oil filling as is shown in list of lubricants
- air-cooled motors are designed for ambient temperautres between -20°C and +40°C and for installation at altitudes â 1.000 m above M.S.L.
- Their use in hazardous areas is prohibited unless they are expressly intended for such use (follow additional instructions)

⚠ Avertissement
Il est impératif que les travaux fondamentaux de l'installation, ainsi que tous les travaux de transport, montage, installation, mise en exploitation, entretien et réparation soient accomplis par du personnel qualifié et contrôlés par des techniciens spécialisés dans ce domaine. Avant toute intervention sur le motoréducteur, il faut s'assurer que celui-ci n'est plus sous tension et que la remise sous tension soit interdite.

⚠ Avertissement
Si en utilisation normale, des modifications de fonctionnement apparaissent telles que puissance absorbée trop élevée, température élevée, vibrations fortes, bruit intense etc. ou en rapport avec les contrôles techniques, cela laisse supposer que différentes fonctions de l'appareil peuvent être détériorées. Pour éviter ensuite des problèmes, qui pourraient entraîner de graves accidents corporels ou de graves dégats matériels, le personnel d'entretien compétent doit immédiatement être informé.

⚠ Si vous êtes dans le doute, coupez immédiatement l'alimentation!

Mise en place, préparation
- Le matériel utilisé pour la manutention doit tenir compte du poids de l'équipement
- prendre largement les dimensions des embases et les réaliser exemptes de vibrations
- monter les réducteurs et motoréducteurs solidement et sans haubanage
- prévoir une aération suffisante
- prévoir le taraudage conforme à la norme DIN-EN 332 pour monter des accouplements sur les arbres d'entrée et de sortie
- éviter de donner des coups sur les arbres (cela pourrait détériorer le roulement!)
- lier autant que possible la machine et le réducteur avec des accouplements élastiques
- avant la mise en service, enlever l'élément d'accouplement ou/et fixer la clavette
- utiliser pour l'exécution arbre creux avec bras de réaction une butée en caoutchouc

Branchements électriques
- brancher le moteur selon le schéma
- s'assurer que la tension du réseau et la fréquence correspondent aux données inscrites sur la plaque signalétique
- Le cable de raccordement doit être protégé
- corriger un éventuel mauvais sens de rotation par une inversion de deux phases
- Les entrées de câbles non utilisées doivent être obturées, la boîte elle-même devant être fermée de façon à être étanche à l'eau et à la poussiére
- prévoir une protection électrique contre les surcharges, court-circuit et défaut de phases
- régler la protection électrique suivant l'intensité nominale du moteur
- schéma de branchement à la demiére page

Mise en fonctionnement
- si un stockage longue durée du réducteur est prévu, il faut prendre les dispositions nécessaires (voir spécification "Stockage longue durée")
- vérifier que la vis de niveau d'huile corresponde à la position de montage du réducteur (voir catalogue)
- contrôler le niveau d'huile
- enlever la mèche de la vis d'évent avant la mise en route (pour éviter une surpression) ou fixer le clapet d'évent sur le réducteur
- pour le premier remplissage voir le tableau des lubrifiants
- les moteurs autoventilés sont dimensionnés pour des températures ambiantes comprises entre -20°C et +40°C, ainsi que pour une altitude â 1000 mètres au-dessus du niveau de la mer
- Leur utilisation dans des atmosphères explosives est interdite, à moins qu'elles ne soient expressément prévues à cet effet (respecter les indications supplémentaires)

Wartung
MOTOR
- Staubablagerungen entfernen (Überhitzung!)
- Wälzlager ausbauen, reinigen und einfetten
- Es ist zu beachten, daß der gesamte Freiraum um das Lager ca. 1/3 mit Fett gefüllt ist
- Schmierstoffsorten siehe unten

GETRIEBE
- regelmäßige Ölstandskontrolle
- Wechseln des Schmierstoffes alle 10.000 Betriebsstunden oder spätestens nach 2 Jahren.
- Doppelte Fristen bei synthetischen Produkten Verkürzung der Schmierstoffwechselintervalle bei extremen Betriebsbedingungen (hohe Luftfeuchtigkeit, aggressive Umgebung und hohe Temperaturschwankungen)
- Verbinden des Schmierstoffwechsels mit gründlicher Reinigung des Getriebes

Δ Synthetische und mineralische Schmierstoffe nicht miteinander mischen! Das gilt auch für die Entsorgung der Schmierstoffe!

Maintenance
MOTOR
- remove dust deposit (overheating)
- dismount anti-friction bearings for cleaning and refill with grease
- ensure that the bearing cage is packed to about 1/3 with grease, distribute evenly
- select proper type of lubricating grease from following table

GEARBOX
- regular oil level check
- change lubricant every 10.000 working hours or after two years at the latest.
- combine the lubricant change with thorough cleaning of gear unit
- lubricant changing intervals will be twice as long if synthetic products are used
- extreme working conditions (high air humidity, aggressive media and large temperature variations) call for reduced lubricant changing intervals

Δ Synthetic and mineral lubricants must not be mixed either for filling or for disposal!

Entretien
DU MOTEUR
- enlever la poussière du moteur (échauffement)
- démonter les roulements, les nettoyer et les regraisser
- la cage des roulements doit être remplie au 1/3 environ
- lubrifiant voir tableau ci-après

DU REDUCTEUR
- vérifier régulièrement le niveau d'huile
- vidanger le lubrifiant après 10.000 heures de fonctionnement ou au plus tard après 2 ans d'utilisation.
- profiter de la vidange pour effectuer un nettoyage approfondi du réducteur
- pour des lubrifiants synthétiques, ce délai peut être doublé
- réduire les intervalles entre les vidanges dans des conditions d'utilisation extrêmes (hygrométrie élevée, ambiance agressive ou variations importantes des températures)

Δ Des lubrifiants synthétiques et minéraux ne doivent pas être mélangés! Ceci s'applique également pour le retraitement des lubrifiants

ÖLFÜLLMENGE [cm³]	CAPACITY [cm³]						QUANTITE DE LUBRIFIANT [cm³]					
	Waagerechte Anordnung Horizontal position Position horizontale								Senkrechte Anordnung Vertical position Position verticale			
	Stirnradgetriebe zweistufig Helical Gearboxes double reduction Réducteurs à engrenages cylindriques à deux trains d'engrenages											
	B 3	B 6	B 7	B 8	B 5	B 5I	B 5II	B 5III	V 1	V 3	V 5	V 6
SK 172	350	500	500	500	350	500	500	500	500	500	500	500
SK 272	600	1.000	1.000	1.000	600	1.000	1.000	1.000	1.000	1.000	1.000	1.000
SK 372	600	1.000	1.000	1.000	600	1.000	1.000	1.000	1.000	1.000	1.000	1.000
SK 472	1.000	1.800	1.800	1.900	1.000	1.900	1.900	1.500	1.900	1.900	2.000	1.900
SK 572	1.000	1.800	1.800	1.900	1.000	1.900	1.900	1.500	1.900	1.900	2.000	1.900
SK 672	1.400	3.600	3.600	3.600	1.400	3.600	3.600	3.600	3.600	3.600	3.600	3.600
SK 772	2.000	2.700	3.300	3.500	1.600	3.500	3.100	3.100	3.300	3.300	4.200	3.300
SK 872	3.700	4.700	8.000	9.100	3.500	7.900	3.900	7.200	7.700	9.000	7.300	9.600
SK 972	6.500	8.500	14.000	15.700	6.500	13.000	6.500	12.000	13.500	15.000	14.700	16.000
	Stirnradgetriebe dreistufig Helical Gearboxes triple reduction Réducteurs à engrenages cylindriques à trois trains d'engrenages											
	B 3	B 6	B 7	B 8	B 5	B 5I	B 5II	B 5III	V 1	V 3	V 5	V 6
SK 273	620	1.100	1.100	1.100	620	1.100	1.100	1.100	1.100	1.100	1.100	1.100
SK 373	550	1.100	1.100	1.100	550	1.100	1.100	1.100	1.100	1.100	1.100	1.100
SK 473	1.300	2.100	2.100	2.100	1.250	2.100	2.100	2.100	2.500	2.400	2.400	2.500
SK 573	1.300	2.100	2.100	2.100	1.250	2.100	2.100	2.100	2.500	2.400	2.400	2.500
SK 673	1.800	2.800	2.800	2.800	1.700	3.200	3.200	3.200	3.200	3.600	3.200	3.200
SK 773	2.500	3.300	3.300	3.700	2.300	3.600	3.900	3.900	4.500	5.000	4.600	4.500
SK 873	4.500	7.500	7.500	7.500	5.000	7.600	8.000	8.000	8.000	8.800	9.100	8.400
SK 973	8.000	13.300	13.000	13.000	7.900	13.000	14.000	14.000	16.000	16.500	16.000	15.800

Die Getriebe **SK 172 - SK 373** sind mit mineralischem Öl befüllt.Es gibt keine Entlüftungs- oder Ölablaßschrauben.
Die Getriebe **SK 472 - SK 973** sind normal mit Mineralöl befüllt. Diese Getriebe haben Entlüftungs-, Ölstand- und Ölablaßschrauben.
(siehe Bauformen)

The Gear Units **SK 172 - SK 373** are lubricated with mineralic oil. There are no vent or drain plug.
The standard-lubrication for sizes **SK 472 - SK 973** is mineral-oil. There are vent and drain plugs (see mounting positions).

Les réducteurs **SK 172 - SK 373** sont remplis d'huile minérale. Il n'y a aucune vis ni clapet d'évent.
Les réducteurs **SK 472 - SK 973** sont remplis d'huile minérale (voir positions de montage).

HINWEIS / REMARK / REMARQUE:
Ölfüllmengen sind ca.Angaben. Ölniveau anhand der Ölkontrollschraube prüfen.
Filling quantities are approx. figures. Oil level must be checked according to oil-level plugs.
Les quantités d`huile sont données à titre indicatif. Vérifier la quantité d'huile grâce à la vis de niveau d'huile.

INSTALLATION OF UNIT

To ensure long service and dependable performance, an enclosed gear drive must be rigidly supported and the shafts accurately aligned. The following describes the minimum precautions required to accomplish this end.

FOUNDATION
The responsibility for the design and construction of the foundation lies with the user. The foundation must be adequate to withstand normal operating loads and possible overloads while maintaining alignment to attached system components under such loads.

MOUNTING POSITION
Unless a unit is specifically ordered for inclined mounting, the foundation must be level and flat. The lubrication system may not operate properly if the unit is not mounted in the position for which it is designed. It may be desirable to elevate the foundation to facilitate oil drainage.

CONCRETE FOUNDATION
If a concrete foundation is used, steel mounting pads and bolts of sufficient size to distribute the stress into the concrete should be grouted into the foundation.

STEEL FOUNDATION
If a structural steel foundation is used (i.e. wide flange beams or channels), a base plate or sole plate of suitable thickness should be used and should extend under the entire unit.

FOOT MOUNTED UNITS
Use shims under the feet of the unit to align the output shaft to the driven equipment. Make sure that all feet are supported so that the housing will not distort when it is bolted down. Improper shimming will reduce the life of the unit and may cause failure. Dowel pins may be installed to prevent misalignment and ensure proper realignment if removed for service.

FLANGE MOUNTED UNITS
If a structural steel foundation is used (i.e. wide flange beams or channels), a base plate or sole plate of suitable thickness should be used and should extend under the entire unit. If a bulk head plate is used it should be of proper strength to minimize buckling distortions.

Flange Pilot 'AK' or 'AK1' tolerance
Metric (mm)

> ∅ 50 ≤ ∅ 80 = +0.012/-0.007
> ∅ 80 ≤ ∅ 120 = +0.013/-0.009
> ∅ 120 ≤ ∅ 180 = +0.014/-0.011
> ∅ 180 ≤ ∅ 230 = +0.016/-0.013
> ∅ 230 ≤ ∅ 315 = +0.000-0.032
> ∅ 315 ≤ ∅ 400 = +0.000/-0.036
> ∅ 400 ≤ ∅ 500 = +0.000/-0.040

Inch

> ∅ 1.969 ≤ ∅ 3.150 = +0.005/-0.0003
> ∅ 3.150 ≤ ∅ 4.724 = +0.005/-0.0004
> ∅ 4.724 ≤ ∅ 7.087 = +0.006/-0.0004
> ∅ 7.087 ≤ ∅ 9.055 = +0.006/-0.0005
> ∅ 9.055 ≤ ∅ 12.402 = +0.000/-0.0013
> ∅ 12.402 ≤ ∅ 15.748 = +0.000/-0.0014
> ∅ 15.748 ≤ ∅ 19.685 = +0.000/-0.0016

BOLT STRENGTH
Bolt size, strength and quantity should be verified to insure proper torque reaction capacity whatever the mounting arrangement.

PRIME MOVER MOUNTING
Align the prime mover to the reducer-input shaft using shims under the feet. Make sure that the feet are supported. Dowel the prime mover to its foundation.

SHAFT CONNECTIONS
When connecting shafts to either the input or output of the reducer, consider the following instructions.

FITS
Clearance or interference fits for coupling hubs should be in accordance with ANSI/AGMA 9002-A86 or as follows.

Output and Input shaft Diameter tolerance
Metric (mm)

≤ ∅ 18 = +0.012/+0.001
> ∅ 18 ≤ ∅ 30 = +0.015/+0.002
> ∅ 30 ≤ ∅ 50 = +0.018/+0.002
> ∅ 50 ≤ ∅ 80 = +0.030/+0.011
> ∅ 80 ≤ ∅ 120 = +0.035/+0.013
> ∅ 120 ≤ ∅ 180 = +0.040/+0.015

Inch

≤ ∅ 1.750 = +0.0000/-0.0005
> ∅ 1.750 = +0.0000/-0.0010

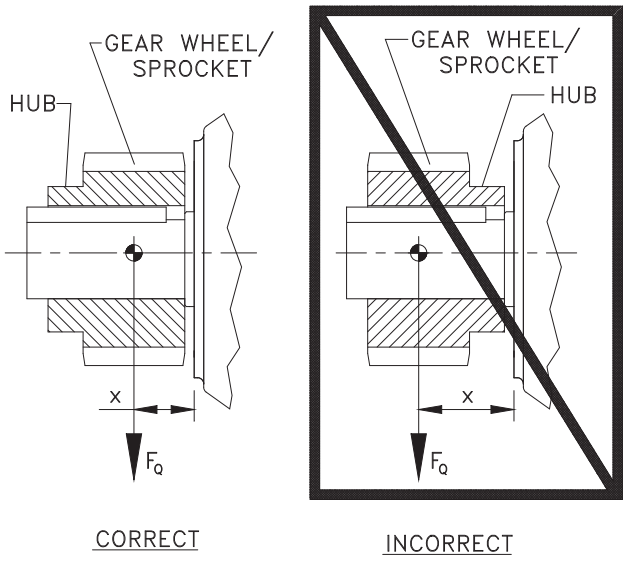
Output and Input shaft Drill and tap shaft end
Metric (mm)

≤ ∅ 16 = M5
> ∅ 16 ≤ ∅ 21 = M6
> ∅ 21 ≤ ∅ 24 = M8
> ∅ 24 ≤ ∅ 30 = M10
> ∅ 30 ≤ ∅ 38 = M12
> ∅ 38 ≤ ∅ 50 = M16
> ∅ 50 ≤ ∅ 85 = M20
> ∅ 85 ≤ ∅ 130 = M24

Inch

≤ ∅ 0.438 = #10-24 x 0.4 deep
> ∅ 0.438 ≤ ∅ 0.813 = ¼-20 x 0.6 deep
> ∅ 0.813 ≤ ∅ 0.938 = 5/16-18 x 0.7 deep
> ∅ 0.938 ≤ ∅ 1.125 = 3/8-16 x 0.9 deep
> ∅ 1.125 ≤ ∅ 1.375 = 1/2-13 x 1.1 deep
> ∅ 1.375 ≤ ∅ 1.875 = 5/8-11 x 1.4 deep
> ∅ 1.875 ≤ ∅ 3.250 = 3/4-10 x 1.7 deep
> ∅ 3.250 = 1-8 x 2.2 deep

Outboard pinion and sprocket fits should be as recommended by the pin sprockets with interference fits should be heated according to the manufacturer's recommendations, generally 250°F to 300°F, (120°C to 150° C) before assembling to the shaft.



LOCATION
Coupling hubs should be mounted flush with the shaft ends, unless specifically ordered for overhung mounting. Pinions, sprockets and sheaves should be mounted as close as possible to the unit housing to minimize bearing loads and shaft deflections.

COUPLING ALIGNMENT
Shaft couplings should be installed according to the coupling manufacturer's recommendations for gap, angular and parallel alignment. In many installations, it is necessary to allow for thermal and mechanical shaft movement when determining shaft alignment. The coupling manufacturer's recommendations should be followed.

AXIAL DISPLACEMENT
The gap between shaft ends should be the same as the specified coupling gap unless overhung mounting of the coupling hub is specified. The coupling gap and shaft gap must be sufficient to accommodate any anticipated thermal or mechanical axial movement.

ANGULAR ALIGNMENT
Insert a spacer or shim stock equal to the required coupling gap between the coupling hub faces and measure the clearance using feeler gauges. Repeat this at the same depth at 90-degree intervals to determine the amount of angular misalignment.

PARALLEL ALIGNMENT
Mount a dial indicator to one coupling hub, and rotate this hub, sweeping the outside diameter of the other hub. The parallel misalignment is equal to one-half of the total indicator reading. Another method is to rest a straight edge squarely on the outside diameter of the hubs at 90-degree intervals and measure any gaps with feeler gauges. The maximum gap measurement is the parallel misalignment.

CHECKING ALIGNMENT
After both angular and parallel alignments are within specified limits, tighten all foundation bolts securely and repeat the above procedure to check alignment. If any of the specified limits for alignment are exceeded, realign the coupling.

SPROCKET OR SHEAVE ALIGNMENT
Align the sheaves or sprockets square and parallel by placing a straight edge across their faces. Alignment of bushed sheaves and sprockets should be checked after bushings have been tightened. Check horizontal shaft alignment by placing a level vertically against the face of the sheave or sprocket. Adjust belt or chain tension per the manufacturer's specified procedure.

OUTBOARD PINION ALIGNMENT
Align the pinion by adjusting the gear tooth clearance according to the manufacturer's recommendations and checking for acceptable outboard pinion tooth contact. The foundation bolts may have to be loosened and the unit moved slightly to obtain this contact. When the unit is moved to correct tooth contact, the prime mover should be realigned.

RECHECK ALIGNMENT
After a period of operation, recheck alignment and adjust as required.

1. Properly install unit on a rigid foundation
   - adequately supported
   - securely bolted into place
   - leveled so as not to distort the gear case
2. Properly install couplings suitable for the application and connected equipment.
3. Ensure accurate alignment with other equipment.
4. Furnish and install adequate machinery guards as needed to protect operating personnel and as required by the applicable standards of the Occupational Safety and Health Administration (OSHA), and by other applicable safety regulations;
5. Ensure that driving equipment is running in the correct direction before coupling to reducers with backstops (designed to operate only in a specific direction) or machinery designed to operate only in one direction.

CHANGES IN PERFORMANCE SPECIFICATIONS

Owner has the responsibility to consult with NORD GEAR if such items such as applied loads, operating speeds or other operating conditions have changed.

WARNING:
LOCK OUT POWER before any maintenance is performed. Make absolutely sure that no voltage is applied while work is being done on the gearbox.

START-UP

1. Ensure that switches, alarms, heaters, coolers and other safety and protection devices are installed and operational for their intended purpose.
2. Verify that the installed mounting position is the same as the nametag mounting position. If not, adjust the oil level accordingly and relocate the vent plug, fill plug and drain plug according to the mounting position. See following.

LUBRICANT
All NORD reducers are shipped from the factory properly filled with lubricant and all plugs are installed according to the mounting position given on the reducer nametag. Acceptable oil fill level is within ½ inch of the bottom of the fill plug threads.

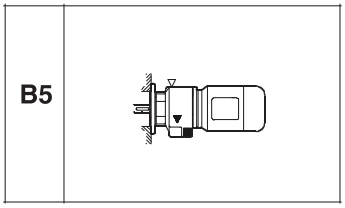
OPERATION AND MAINTENANCE CHECKLIST

1. Operate the equipment as it was intended to be operated
2. Do not overload.
3. Run at correct speed.
4. Maintain lubricant in good condition and at proper level.
5. Dispose of used lubricant in accordance with applicable laws and regulations.
6. Apply proper maintenance to attached equipment at prescribed intervals recommended by the manufacturer.
7. Perform periodic maintenance of the gear drive as recommended by NORD.

MOUNTING POSITIONS

These charts detail the mounting positions for horizontal and vertical mounting. The Autovent, oil fill plug and drain plug are indicated on each mounting position picture. The factory set mounting position and plug locations match that shown on the gearbox nametag. For mounting orientations other than shown consult NORD Gear.

HORIZONTAL POSITIONS



Symbols: Vent plug ▽ Oil level ▼ Drain plug ■ Mounting surface

NORDBLOC sizes SK172-SK373 & SK320 have no vent or drain plugs. They are filled with synthetic oil so the units are "Lubed for Life".

Mineral lubricant should be changed every 10,000 service hours or after two years. For synthetic oils, the lube should be changed every 20,000 service hours or after four years. In case of extreme operating (e.g. high humidity, aggressive environment or large temperature variations), shorter intervals between changes are recommended.

OIL SPECIFICATIONS

NORD supplies all reducers filled with oil from the factory. Consult the sticker adjacent to the fill plug to determine the type of lubricant installed at the factory. Standard lubricant is ISO VG220 mineral-based oil. However, some units have special lubricants designed to operate in certain environments or to extend the service life of the lubricant. If in doubt about which lubricant is needed, contact NORD Gear.

STANDARD OIL – ISO VG220

Ambient Temperature	Formulation
20 to 104°F (-5 to 40°C)	Mineral

TYPICAL OILS

Viscosity ISO NLGI	Formulation	Service Temperature Range	Mobil	Shell	Castrol	Klüber Lubrication	bp	Tribol
VG 460	Conventional Mineral	20°C to +50°C 68F to +122°F	Mobilgear 634	Omala 460	7EP	Klüberoil GEM 1-460	Energol GR-XP 460	Tribol 1100/460
	Synthetic PAO	-30°C to +80°C -22°F to +176°F	Mobil SHC 634	Omala 460 HD	Isolube EP 460	Klübersynth EG 4-460	N/A	Tribol 1510/460
VG 320	Conventional Mineral	0°C to +30°C 32°F to +86°F	Mobilgear 632	Omala 320	6EP	Klüberoil GEM 1-320	Energol GR-XP 320	Tribol 1100/320
	Synthetic PAO	-35°C to +80°C -31°F to +176°F	Mobil SHC 632	Omala 320 HD	Isolube EP 460	Klübersynth EG 4-320	N/A	Tribol 1510/320
VG 220	Conventional Mineral	-5°C to +40°C +20°F to +104°F	Mobilgear 630	Omala 220	5EP	Klüberoil GEM 1-220	Energol GR-XP 220	Tribol 1100/220
	Synthetic PAO	-34°C to +80°C -30°F to +176°F	Mobil SHC 630	Omala 220 HD	Isolube EP 220	Klübersynth EG 4-220	N/A	Tribol 1510/220
VG 150 & VG 100	Conventional Mineral	-15°C to +25°C 5°F to +77°F	Mobilgear 629	Omala 100	4EP	Klüberoil GEM 1-150	Energol GR-XP 100	Tribol 1100/100
	Synthetic PAO	-37°C to +10°C -35°F to +50°F	Mobil SHC 629	Omala 150 HD	Isolube EP 150	Klübersynth EG 4-150	N/A	N/A
VG 68	Conventional Mineral	-15°C to +25°C 5°F to +77F	Mobilgear 626	Omala 68	2EP	Klüberoil GEM 1-68	Energol GR-XP 68	Tribol 1100/68
	Synthetic PAO	-40°C to +10°C -40°F to +50F	Mobil SHC 626	N/A	Isolube EP 68	N/A	N/A	N/A
VG 32	Synthetic PAO	-40°C to +10°C -40°F to +50°F	Mobil SHC 624	N/A	N/A	Klüber-Summit HySyn FG-32	N/A	N/A

PAO = Poly Alpha Olefin

SPECIAL PURPOSE LUBRICANTS

Ambient Temperature	Formulation	Manufacturer	Oil Brand Name
20 to 104°F (-5 to 40°C)	*Food Grade* Oil - Synthetic	Chevron	FM ISO 220
20 to 104°F (-5 to 40°C)	*Food Grade* Oil - Synthetic	OilJAX	Magnaplate 85W140-FG
5 to 125°F (-20 to 50°C)	Fluid Grease	Mobil	Mobilux EP023
-30 to 140°F (-35 to 60°C)	Fluid Grease - Synthetic	Mobil	Mobilith SHC 007
-30 to 140°F (-35 to 60°C)	Fluid Grease - Synthetic	Shell	Albida LC

STANDARD BEARING GREASE – NLGI 2EP Lithium

Ambient Temperature	Formulation
-20 to 140°F (-30 to 60°C)	Mineral

OPTIONAL BEARING GREASES

Ambient Temperature	Formulation	Manufacturer	Grease Brand Name
-40 to 230°F (-40 to 110°C)	Synthetic	Shell	Aeroshell 6
-40 to 230°F (-40 to 110°C)	*Food Grade* - Synthetic	Lubriplate	SFL1

NORDBLOC sizes SK172-SK373 and SK320 have no vent or drain plugs. They are filled with synthetic oil so the units are "Lubed for Life".

LUBRICANT CAPACITY

Each reducer has the oil level and oil quantity adjusted according to the mounting position shown in the tables. When replacing the oil, consult the tables below to determine the proper amount of oil to be installed according to the reducer size and mounting position. Note that this is approximate and the final level will be adjusted when the reducer is installed. Acceptable oil fill level is within ½ inch of the bottom of the fill plug threads.

LUBRICATION CAPACITY – NORDBLOC HELICAL INLINE GEARBOXES

Mounting position		*Horizontal position*	
		B 5	
SK 272	quarts	0.63	
	liters	0.60	

Hinweis:
Diese Tabelle stellt vergleichbare Schmierstoffe unterschiedlicher Hersteller dar. Innerhalb einer Viskosität und Schmierstoffsorte kann der Ölhersteller gewechselt werden. Beim Wechsel der Viskosität bzw. der Schmierstoffsorte muß Rücksprache mit uns gehalten werden, da sonst keine Gewährleistung für die Funktionstüchtigkeit unserer Getriebe übernommen werden kann.

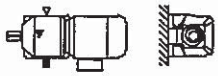
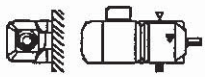
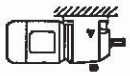
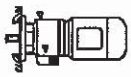
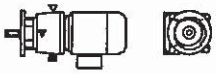
Note:
This table lists compatible lubricants of different suppliers. Within the same viscosity class and type of lubricant the supplier can be chosen freely. In case you change the viscosity class resp. the type of lubricant you should contact us in advance as otherwise we cannot assure the proper function of our drive and the warranty becomes void.

Indication:
Ce tableau présente les lubrifiants comparables des différents fabricants. Si l'on respecte les critères de viscosité et le type de lubrifiant, on peut utiliser n'importe quelle marque d'huile après ne vidange. Afin de pouvoir garantir un bon fonctionnement de nos réducteurs, veuillez nous consulter avant de remplacer un lubrifiant par un autre possédant des caractéristiques différentes de viscosité et de type.

Schmierstoffarten / Type of lubricant / Type de lubrifiant													
Schmierstoffart Type of lubricant Type de lubrifiant	Umgebungstemp. Ambient temp. Temp. ambiante	ARAL	BP	CASTROL	DEA	ESSO	FUCHS	KLÜBER LUBRICATION	Mobil	Optimol	Shell	Tribol
Mineralöl Mineral oil Huile minérale	Schneckengetriebe 0 ... 40°C ISO VG 680	Degol BG 680 Degol BG 680 plus	--	Alpha SP 680	Falcon CLP 680	--	Renolin CLP 680 CLP 680 Plus	Klüberoil GEM 1-680	Mobilgear: - 636 - XMP 680	Optigear BM 680	Shell Omala 680	Tribol 1100/680
	ISO VG 220 - 5 ... 40°C (normal)	Degol BG 220 BG 220 plus	Energol GR-XP 220	Alpha SP 220 Alpha MW220 Alpha MAX 220	Falcon CLP 220	Spartan EP 220	Renolin CLP 220 Renolin CLP 220 Plus	Klüberoil GEM 1-220	Mobilgear 630 Mobilgear XMP 220	Optigear BM 220	Shell Omala 220	Tribol 1100 / 220
	ISO VG 100 - 15 ... 25°C	Degol BG 100 BG 100 plus	Energol GR-XP 100	Alpha SP 100 Alpha MW 100 Alpha MAX 100	Falcon CLP 100	Spartan EP 100	Renolin CLP 100 Renolin CLP 100 Plus	Klüberoil GEM 1-100	Mobilgear: - 627 - XMP 110	Optigear BM 100	Shell Omala 100	Tribol 1100 / 100
	ISO VG 15 - 45 ... - 15°C *	Vitamol 1010	Bartran HV 15	Hyspin AWS 15 Hyspin SP 15 Hyspin ZZ 15	Astron HVLP 15	Univis J13	Renolin B 15 HVI	Isoflex MT 30 rot	Mobil DTE 11 M	Ultra 10	Shell Tellus T 15	Tribol 943 AW 22
Synthetisches Öl Synthetic oil Huile synthétique	Schneckengetriebe -5 ... 60°C ISO VG 680	Degol GS 680	Energol SG-XP 680	--	--	--	Renolin PG 680	Klübersynth GH-6-680	Glygoyle HE 680	Optiflex A 680	Shell Tivela S 680	Tribol 800 / 680
	ISO VG 220 -25 ... 80°C *	Degol GS 220	Enersyn SG-XP 220	Alphasyn PG 220	Polydea PGLP 220	Glycolube 220	Renolin PG 220	Klübersynth GH-6-220	Glygoyle HE 220	Optiflex A 220	Shell Tivela WB Tivela S 220	Tribol 800/ 220
Biologisch abbaubares Öl Biodegradable oil Huiles biodégradables	Schneckengetriebe ISO VG 680 -5 ... 40°C	--	--	--	--	--	Plantogear CLP 680	--	--	--	--	--
	ISO VG 220 -5 ... 40°C	Degol BAB 220	Biogear SE 220	Carelub GES 220	Ergon ELP 220	--	Plantogear CLP 220	Klüberbio GM2-220	--	Optisynt BS 220	--	Tribol BioTop 1418 / 220
Lebensmittelverträgliches Öl [1] Food-grad oil [1] Huiles pour environnement alimentaire [1]	Schneckengetriebe -5 ... 40°C ISO VG 680	--	--	--	--	--	Bel-Ray No-Tox Synt.Worm Gear Oil 680	Klüberoil 4 UH1-680 Klübersynth UH1 6-680	--	Optileb GT 680	Shell Cassida Fluid GL680	Tribol FoodProof 1800 / 680
	ISO VG 220 -25 ... 40°C	Eural Gear 220	--	Vitalube GS 220	--	Gear Oil FM 220	Bel-Ray No-Tox Gear Oil 90 Synt.Gear Oil 220	Klüberoil 4 UH1-220 Klübersynth UH1 6-220	Mobil DTE FM 220	Optileb GT 220	Shell Cassida Fluid GL220	Tribol FoodProof 1810 / 220 oder 1800 / 220
Synth. Fließfett Synth. fluid grease Graisse fluide synthétique	- 25 ... 60°C	Aralub BAB EP0	Enersyn GSF	Alpha Gel 00	--	Fließfett S 420	Renolit LX-PG 00	Klübersynth GE 46-1200 Klübersynth UH1 14-1600 [1]	Glygoyle Grease 00	Obeen UF 00	Tivela Comp. A Tivela GL 00	Tribol 800 / 1000

BAUFORMEN
MOUNTING POSITIONS
POSITION DE MONTAGE

Waagerechte Anordnung — Horizontal position — Position horizontale

B3		B6		B7	
B8		B5		B5I	
B5 II		B5 III			

Senkrechte Anordnung — Vertical position — Position verticale

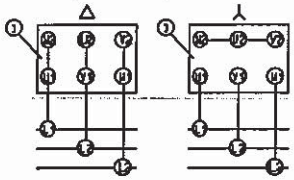
V1		V3		V5	
V6					

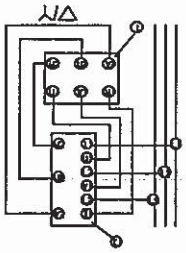
Symbole: / Symboles: / Symboles:
Entlüftung — Vent plug — Event
Ölstand — Oil level — Niveau d'huile
Ölablaß — Drain plug — Vidange
Befestigung — Mounting surface — Fixation

Achtung / Attention / Attention:
Die NORDBLOC-Getriebe der Baugröße **SK 172 - SK 373** sind Lebensdauer geschmiert.Entlüftungs-, Ölstands- und Ablaßschrauben sind nicht vorhanden.
The NORDBLOC gearboxes of sizes **SK 172 - SK 373** are supplied with lifetime-lubrication. Vent-, oil-level- and drain-plugs are not provided.
Les réducteurs NORDBLOC, types **SK 172 - SK 373** sont lubrifiés à vie. Ils sont exempts de vis d'évent, de niveau et de vidange.

Schaltbilder / Wiring diagrams / Schémas de branchement

Drehstrom-Motor mit Kurzschlußanker
Three phase squirrel-cage motor
Moteur triphasé à cage d'écureuil

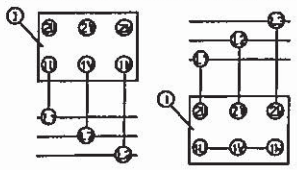




I) Klemmbrett
Terminal board
Plaque à bornes

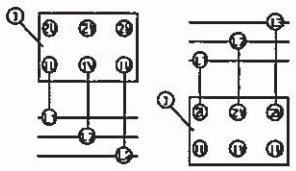
II) Schalter
Switch
Démarreur

Drehstrom-Motor mit Kurzschlußanker, in Dahlander-Schaltung
Three phase squirrel-cage motor, Dahlander connection
Moteur triphasé à cage d'écrureuil, couplage Dahlander



niedrige - Drehzahl - hohe
low - speed - high

Drehstrom-Motor, polumschaltbar, zwei getrennte Wicklungen
Three phase motor, polechanging, two separate windings, two speeds
Moteur triphasé à commutation de pôles, deux bobinages séparés, deux vitesses

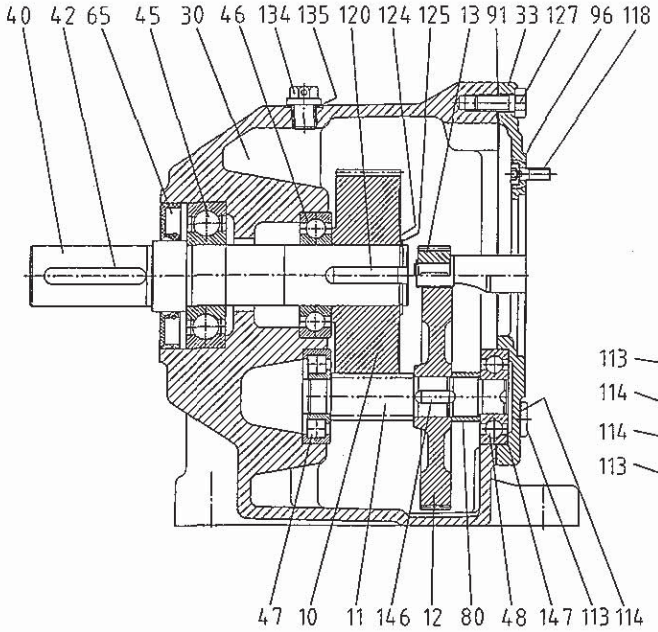


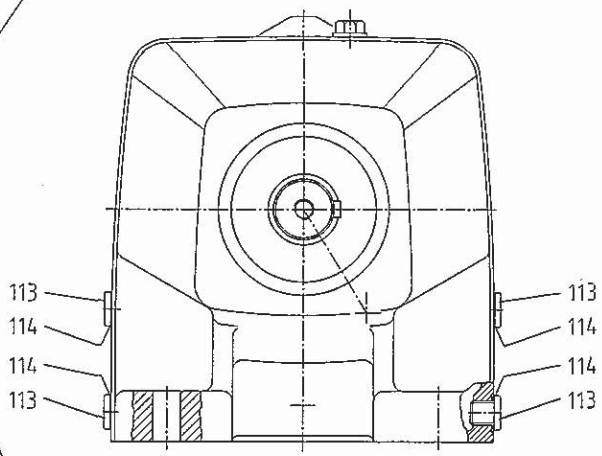
niedrige - Drehzahl - hohe
low - speed - high

Schmierstoffarten für Wälzlager / Type of lubricant for anti friction bearings / Type de librifiant pour roulements à rouleaux												
Schmierstoffart Type of lubricant Type de lubrifiant	Umgebungstemp. Ambient temp. Temp. ambiante	ARAL	BP	Castrol	DEA	ESSO	FUCHS	KLÜBER LUBRICATION	Mobil	Optimol	Shell	Tribol
Fett (Mineralölbasis) Grease (mineral oil basis) Graisse (base huile minérale)	- 30 ... 60°C (normal)	Aralub HL 2	Ener-grease LS 2	Spheerol AP 2 LZV-EP	Glissando 20	Mehr-zweckfett Beacon2	Renolit FWA 160	Klüberplex BEM 41-132	Mobilux 2	Longtime PD 2	Shell Alvania R2	Tribol 4020/220-2
	* - 50 ... 40°C	Aralub SEL 2	--	Spheerol EPL2	--	--	Renolit JP 1619	--	--	Longtime PD 1	Shell Alvania RL 2	Tribol 3785
Synthetisches Fett Synthetic grease Graisse synthétique	* - 25 ... 80°C	Aralub SKL 2	--	Product 783/46	Discor B EP 2 LF	Beacon 325	Renolit S 2 Renolit HLT 2	Isoflex Topas NCA 52 Isoflex Topas NB 52	Mobiltemp SHC 32	Optitemp LG 2	Aero Shell Grease 16 oder 7	Tribol 3499
Biologisch abbaubares Fett Biodegradable Grease Graisse biodégradables	- 25 ... 40°C	Aralub BAB EP 2	BP Bio-grease EP 2	Biotec	Dolon E EP 2	--	Plantogel 2 S	Klüberbio M 32-82	Schmierfett UE 100 B	EF 584	Shell Alvania RLB 2	Molub-Alloy BioTop 9488
Lebensmittelver-trägliches Fett [1] Food-grade grease [1] Graisse pour environnement alimentaire [1]	- 25 ... 40°C	Eural Grease EP 2	BP Energreas e FM 2	Vitalube HT Grease 2	Tamix FRA 1	Carum 330	Renolit G 7 FG 1	Klübersynth UH1 14-151	Mobil-grease FM 102	Obeen UF 2	Shell Cassida RLS 2	Molub-Alloy Food-Proof 823-2 FM

* Bei Umgebungstemperaturen unterhalb -30°C und oberhalb 60°C sind Wellendichtringe in besonderer Werkstoffqualität einzusetzen
* With ambient temperatures below -30°C and above approx. 60°C shaft sealing rings of a special material quality must be used
* Lors d'une température ambiante inférieure à -30°C ou supérieure à environ 60°C, il y a lieu d'utiliser des joints d'étanchéité spéciaux

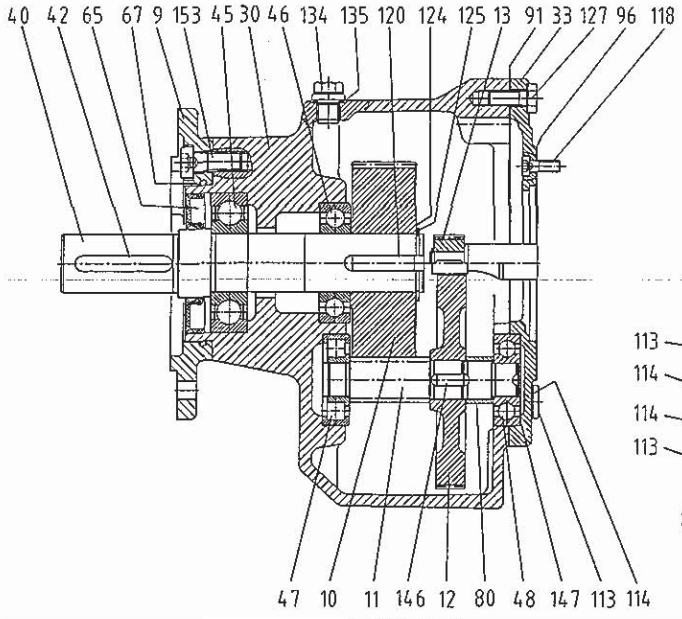
[1] Lebensmittelverträgliche Öle + Fette nach Vorschrift H1 / FDA 178.3570
[1] Food grade lubricants with USDA-H1 approval FDA 178.3570
[1] Huiles pour environnement alimentaire + graisses suivant prescription H1 / FDA 178.3570

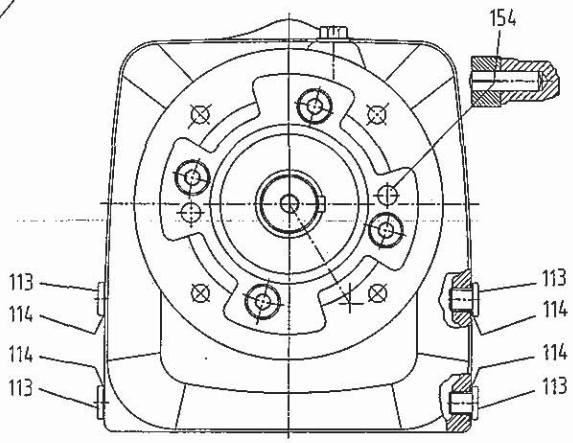




SK 172 ... – SK 972 ...

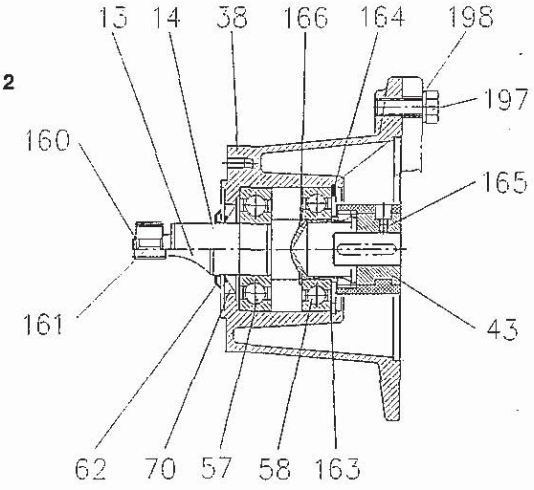
9	Flange	46	Output shaft bearing	118	Bolt
10	Driven gear	47	Pinion shaft bearing	120	Key
11	Pinion shaft	48	Pinion shaft bearing	124	Shim
12	Driving gear	65	Shaft seal	125	Snap ring
13	Driving pinion	67	O-Ring	127	Bolt
30	Gear case	80	Spacer	134	Vent plug
33	Gearbox cover	91	Seal	135	Seal
40	Output shaft	96	Seal	146	Key
42	Key	113	Drain plug	147	Shim
45	Output shaft bearing	114	Seal	153	Bolt
				154	Grooved dowel pin



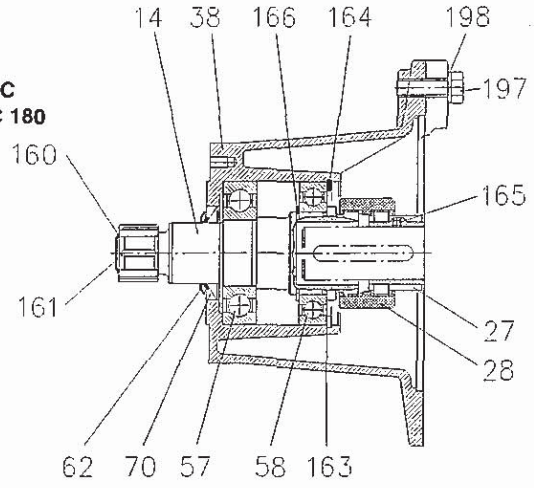


SK 172 F ... – SK 972 F ...

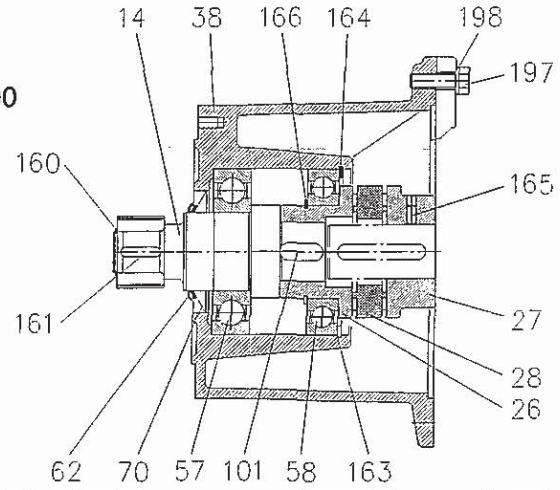
56C - 180 TC
IEC 63 – IEC 112



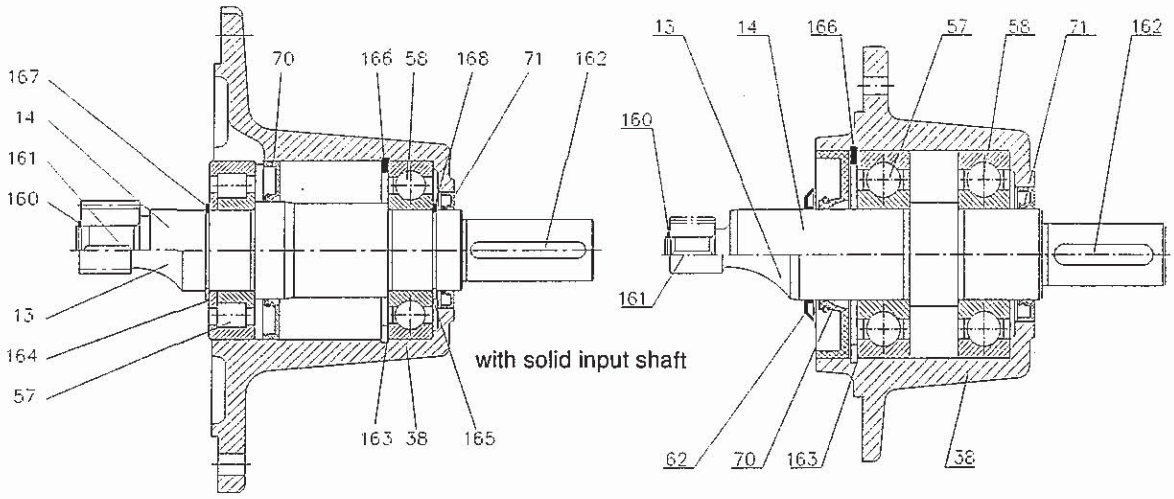
180 TC - 280 TC
IEC 132 – IEC 180



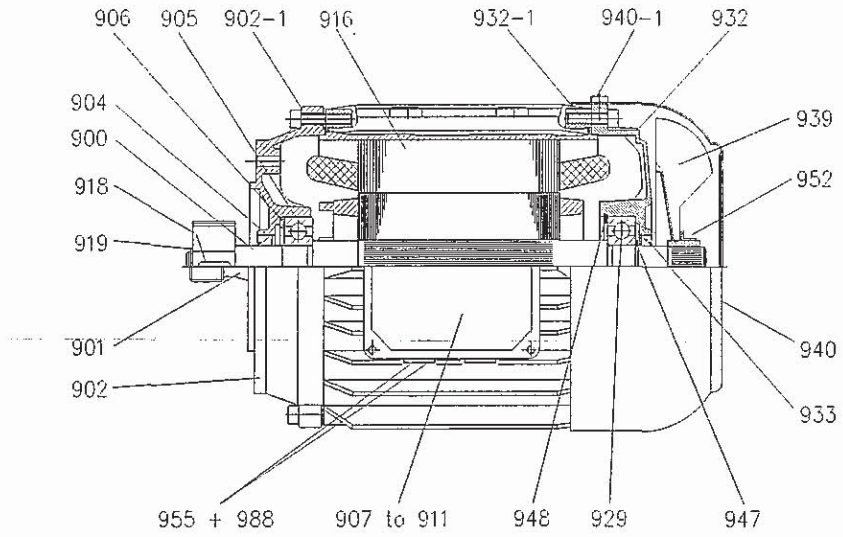
IEC 200



13	Clutch pinion shaft
14	Clutch shaft
26	Coupling
27	Coupling
28	Coupling
38	IEC Adapter
43	Coupling
57	Clutch shaft bearing
58	Clutch shaft bearing
62	Oil flinger
70	Shaft seal
101	Key
160	Snap ring
161	Key
163	Shim
164	Snap ring
165	Set screw
166	Snap ring
197	Bolt
198	Spring washer



13	Clutch pinion shaft	161	Key
14	Clutch shaft	162	Key
38	IEC Adapter	163	Shim
57	Clutch shaft bearing	164	Shim
58	Clutch shaft bearing	165	Shim
70	Shaft seal	166	Snap ring
71	Shaft seal	167	Snap ring
160	Snap ring	168	Snap ring



900	Rotor with shaft, plain
901	Rotor with shaft, gearcut
902	End shield B
902-1	Bolt
904	Shaft seal
905	Bearing A
906	Bearing shim
907	Terminal box frame
908	Terminal box cover
909	Terminal box frame gasket
910	Terminal box cover gasket
911	Terminal board
916	Stator case
918	Key
919	Snap ring
929	Bearing B
932	End shield B
932-1	Bolt
933	Shaft seal
939	Fan
940	Fan cover
940-1	Oval flat-head screw
947	Snap ring
948	Snap ring
952	Spacer
955	Plug
988	Seal

TROUBLE SHOOTING

PROBLEM WITH THE REDUCER		POSSIBLE CAUSES	SUGGESTED REMEDY
Runs Hot	Overloading	Load exceeds the capacity of the reducer	Check rated capacity of reducer, replace with unit of sufficient capacity or reduce load
	Improper lubrication	Insufficient lubrication	Check lubricant level and adjust up to recommended levels
		Excessive lubrication	Check lubricant level and adjust down to recommended levels
		Wrong lubrication	Flush out and refill with correct lubricant as recommended
Runs Noisy	Loose foundation bolts	Weak mounting structure	Inspect mounting of reducer. Tighten loose bolts and/ or reinforce mounting and structure
		Loose hold down bolts	Tighten bolts
	Worn RV Disc	Overloading unit may result in damage to disc	Disassemble and replace disc. Recheck rated capacity of reducer.
	Failure of Bearings	May be due to lack of lubricant	Replace bearing. Clean and flush reducer and fill with recommended lubricant.
		Overload	Check rated capacity of reducer.
	Insufficient Lubricant	Level of lubricant in the reducer not properly maintained.	Check lubricant level and adjust to factory recommended level.
Output Shaft Does Not Turn	Internal parts are broken	Overloading of reducer can cause damage.	Replace broken parts. Check rated capacity of reducer.
		Key missing or sheared off on input shaft.	Replace key.
		Coupling loose or disconnected.	Properly align reducer and coupling. Tighten coupling.
Oil Leakage	Worn Seals	Caused by dirt or grit entering seal.	Replace seals. Autovent may be clogged. Replace or clean.
		Overfilled reducer.	Check lubricant level and adjust to recommended level.
		Autovent clogged.	Clean or replace, being sure to prevent any dirt from falling into the reducer.
		Improper mounting position, such as wall or ceiling mount of horizontal reducer.	Check mounting position. Name tag & verify with mounting chart in manual.

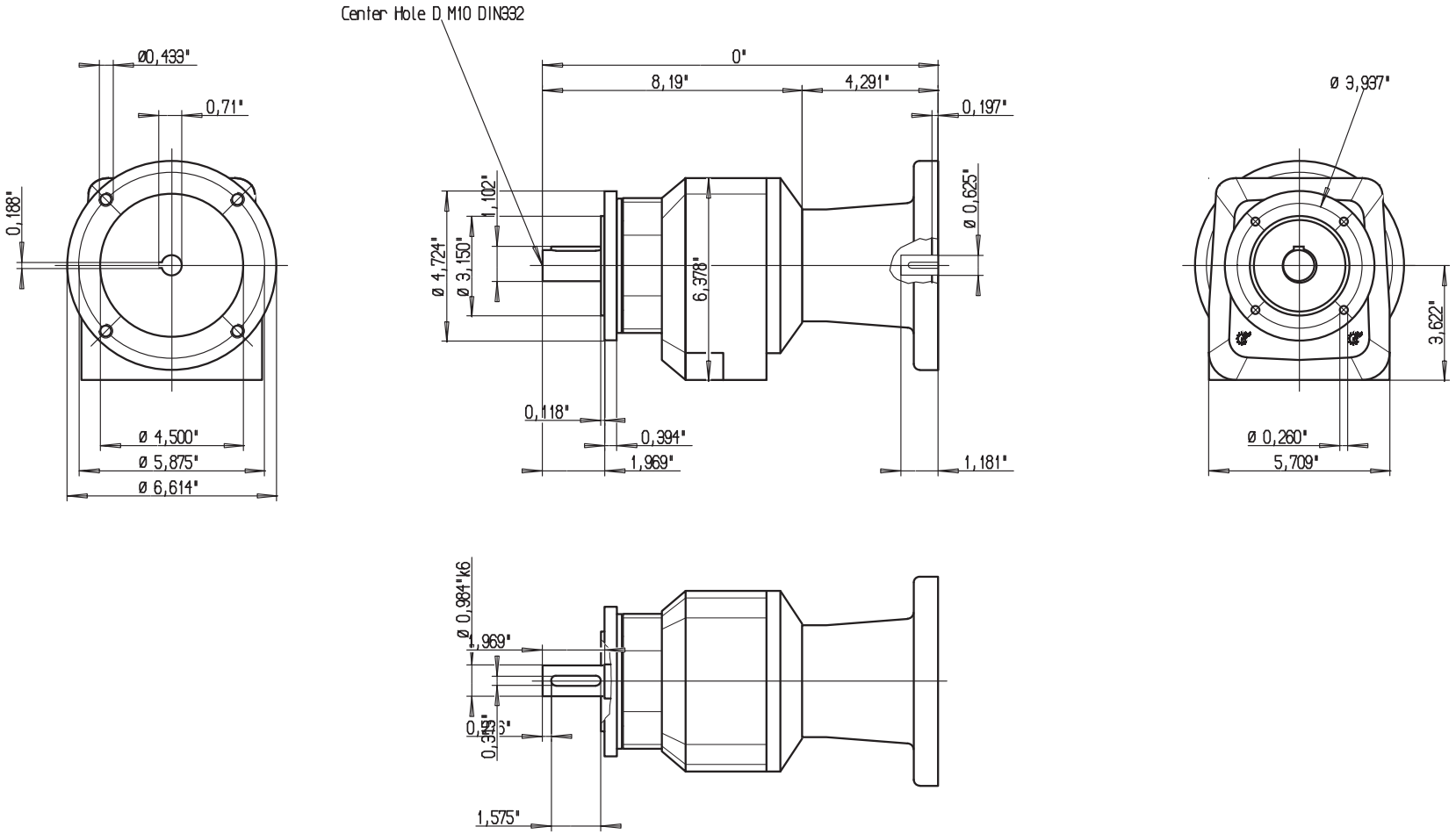
NORD Gear Corporation
National Customer Service Toll Free 888-314-6673
www.nord.com
NORD Gear Limited
Toll Free in Canada 800-668-4378

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1121 Railroad Street
Building 101
Corona, CA 92882
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Fax 888-408-6673

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Waunakee, WI 53597
Phone 608-849-7300
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SOUTH
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Building 100B
Charlotte, NC 28273
Phone 704-529-1255
Fax 888-259-6673

CANADA
41 West Drive
Brampton, Ontario L6T 4A1
Phone 905-796-3606
Fax 905-796-8130



Vent plug ▽ Oil level ▼ Drain plug

SK 272F 56C

Getriebebau NORD
GmbH & Co. KG
Rudolf-Diesel-Straße 1
22934 Bargteheide

	Date	Name
Drawn	1/29/2007	nicholasr
Comm.-No.		

Technical design may subject to change!

MODEL #:	C1301NDF
AIR CONTROL:	CHARGE
BLADDER:	EPDM
CAPACITY:	36 CUBIC INCHES/0.59 LITERS
INLET:	1" FLANGE, US, 150# CLASS
MAXIMUM PRESSURE:	150 PSI/10 BARS
NONWETTED HOUSING:	POLYPROPYLENE
WETTED HOUSING:	POLYPROPYLENE

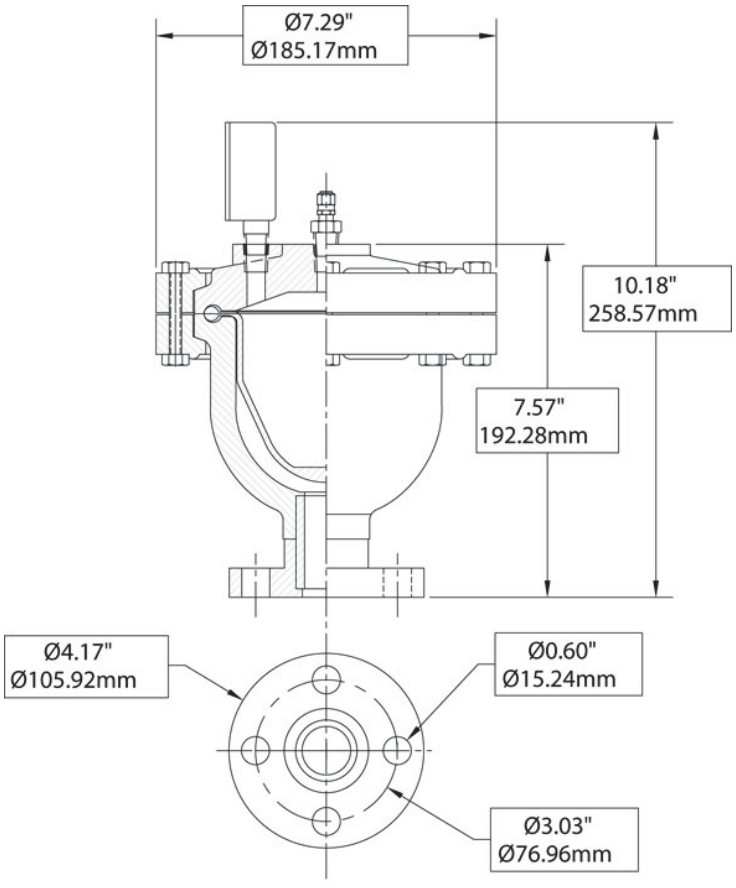
DISCLAIMER

ALTHOUGH THE INFORMATION ON THIS SHEET IS BELIEVED TO HAVE BEEN ACCURATE WHEN THE SHEET WAS FIRST PREPARED, SOME INFORMATION ON THIS SHEET MAY NOT BE ENTIRELY ACCURATE NOW. PLEASE VERIFY MATERIAL COMPONENTS, DIMENSIONS, AND PRESSURE RATING ON THE CURRENT BROCHURE FOR THIS PRODUCT BY BLACOH FLUID CONTROL, INC. (“BLACOH”) OR, IF NECESSARY, CONTACT BLACOH DIRECTLY. PRESSURE TOLERANCES, INCLUDING BUT NOT LIMITED TO, ON MODELS MADE OF PLASTIC, MAY BE REDUCED BY TEMPERATURE VARIATION AND BY THE COMPOSITION OF THE SUBSTANCE BEING PUMPED.

USE OF AN INCOMPATIBLE OR UNSUITABLE DAMPENER ON A PUMP MAY BE DANGEROUS TO PERSONS AND PROPERTY. BY WAY OF EXAMPLE BUT NOT LIMITATION, USE OF AN INCOMPATIBLE OR UNSUITABLE DAMPENER MAY RESULT IN EXPLOSIONS, LEAKAGE OF LIQUIDS OR GASES (WHICH MAY BE HAZARDOUS), OR MALFUNCTIONING EQUIPMENT.

THE USER IS SOLELY RESPONSIBLE FOR (AND BLACOH IS NOT RESPONSIBLE FOR) VERIFYING THE COMPATIBILITY AND SUITABILITY OF A PARTICULAR DAMPENER FOR A PARTICULAR PUMP AND APPLICATION. AS WELL AS DETERMINING WHETHER TESTING OF A DAMPENER IS ADVISABLE PRIOR TO USE IN A PARTICULAR APPLICATION.

DIMENSIONAL DRAWING
(TOLERANCE ± .25")



INLET MATES WITH 1" 150# FLANGE

BLACOH FLUID CONTROL, INC.

601 COLUMBIA AVE. • BLDG. D • RIVERSIDE • CA • 92507 • USA
TEL: 800.603.7867 • 951.342.3100 • FAX: 951.342.3101
SALES@BLACOH.COM • WWW.BLACOH.COM

SENTRY INSTALLATION & OPERATION INSTRUCTIONS
CHARGEABLE (C, CT, M & H MODELS)

INSTALLATION NOTES *READ BEFORE INSTALLATION*

- **If a system pressure test is to be performed, SENTRY must be charged with 80% of the system test pressure prior to test.** This will avoid possible bladder damage.
- Blacoh recommends installing a pressure relief valve in all pump systems to ensure compliance with pressure limits on system equipment.
- Mount SENTRY as close to pump discharge, inlet and/or quick closing valve as possible, but within 10 pipe diameters.
- Temperature and pressure affect the strength and chemical resistance of plastic and rubber. Please consult factory for additional information.
- Remove all pressure from SENTRY unit AND pumping system before attempting maintenance.
- Do not exceed 150 PSI with plastic models; 300 PSI with CT all metal models; 1000 PSI with high pressure "H" metal models. **Check pressure rating shown on serial tag.**
- Always wear safety glasses when installing, charging or repairing SENTRY units.
- Do not operate a SENTRY that is leaking, damaged, corroded or unable to hold internal fluid, air or gas pressure.
- Pre-charge SENTRY with compressed air or nitrogen only. **DO NOT USE OXYGEN**

INSTALLATION FOR PUMP DISCHARGE PULSATION *READ BEFORE INSTALLATION*

Step 1 – Installation Position

Install the dampener in-line, as close to the pump discharge as possible to absorb the pulse at its source. Install ahead of any downstream equipment such as risers, valves, elbows, meters, or filters. Dampener installation should be no more than ten pipe diameters from pump discharge. If using a flexible connector from pump to system piping, dampener should be installed at the pump discharge manifold. The flexible connector should be attached to the dampener's tee and system piping (see Figure 1). Since pressure is equal in all directions, SENTRY can be installed in a vertical, horizontal, or upside-down position. Blacoh recommends a vertical installation for better draining of the unit. Limitations for horizontal and upside-down mounting include high specific gravity, high viscosity, settling of solid material, or possible air entrapment, which could result in shortened bladder life and/or poor dampening performance.

Step 2 – Air Line Connection

Chargeable models do not require an air line connection. Units must be pre-charged with compressed air or Nitrogen, using a hand pump, tank/bottle or compressor. **DO NOT USE OXYGEN.** Charging hose kits are available – part number 701-00.

Step 3 – Charging and Start Up – see *PRE-CHARGE NOTES* on next page.

Prior to starting the pump, pre-charge SENTRY with compressed air or Nitrogen to approximately 80% of expected system pressure and replace fill valve cap. **DO NOT USE OXYGEN.** The gas pre-charge must always be lower than pump discharge pressure. Generally, pulsation is most effectively minimized when the gas charge is 80% of system pressure. Start the pump to generate system pressure.
NOTE: Once system pressure is in contact with the bladder, the gas charge will be compressed to the system pressure and the dampener gauge will read the system pressure, not the initial charge pressure. Once working pressure is achieved, adjustment may be necessary. Gradually increase or decrease the gas charge in the dampener by bleeding or filling through the gas valve. Allow the system to respond to each adjustment (this may take a minute or two) before making further adjustments.

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1221 DODSON WAY, RIVERSIDE, CA 92507 USA
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E-MAIL: sales@blacoh.com WEB SITE: www.blacoh.com

INSTALLATION FOR PUMP INLET *READ BEFORE INSTALLATION*

Step 1 – Installation Position
Install SENTRY as close to the pump inlet as possible. Install after any upstream equipment such as risers, valves, elbows, meters, or filters. If using a flexible connector from system piping to pump, SENTRY should be installed to the pump inlet manifold. The flexible connector should be attached to the SENTRY tee and system piping (see Figure 1).

Step 2 – Air Line Connection
Chargeable models do not require an air line connection. Units must be pre-charged with compressed air or Nitrogen, using a hand pump, tank/bottle or compressor. **DO NOT USE OXYGEN.** Charging hose kits are available – part number 701-00.

Step 3 – Charging and Start Up – see *PRE-CHARGE NOTES.*
A. Suctions Lift/Accumulator: No pre-charge is required in a lift/accumulator installation. Start the pump to generate working pressure. As system pressure and vacuum is created, the acceleration head created with each suction stroke will compress the air trapped in the bladder.

B. Positive Inlet Pressure: Pre-charge SENTRY with 50% of the static pressure realized at the pump inlet. Start the pump to generate working pressure. Minor pressure adjustments may be required. Allow the system to respond to each adjustment (this may take a minute or two) before making further adjustments.

FIGURE 1

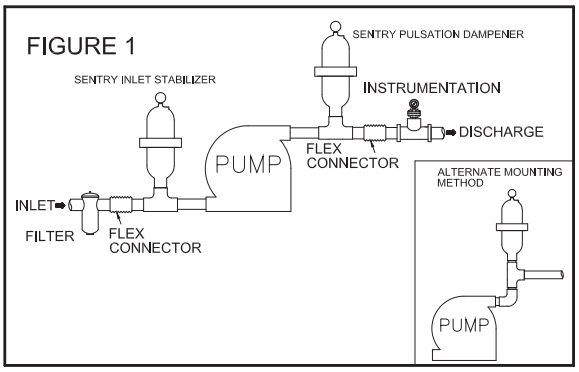
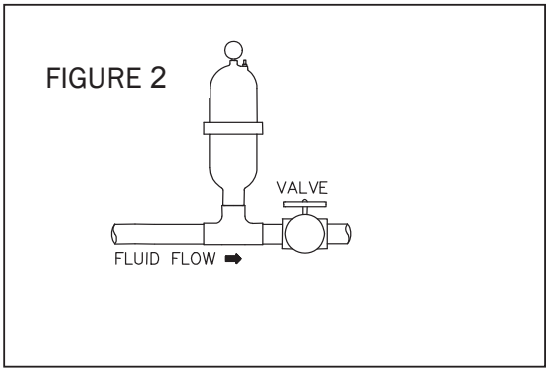


FIGURE 2



PRE-CHARGE NOTES *READ BEFORE INSTALLATION*

Gas molecules will diffuse through elastomer membranes, the speed of which depends on elastomer material, temperature and pressure. As a rule of thumb, the pre-charge pressure should be checked every month. Checks must occur when no system pressure is present or inaccurate readings will be recorded. If temperature is above ambient and/or pressure is over 300 PSI, checks should be performed more frequently. **Also, to prevent pre-charge loss through the fill valve, always replace the cap after charging.** A proper gas charge is the key to dampener effectiveness and bladder life.

Standard Product Warranty: Blacoh Fluid Control warrants its products to be free of defective material and workmanship under normal use and service for two years from date of shipment. The remedy for any product defect covered under this warranty shall be limited to the replacement or repair of the defective part or parts and Blacoh will not be responsible for damages or injury caused to other products, machinery, buildings, property or person. This warranty shall be null and void if the product has been altered, misapplied, misused, or neglected of maintenance. Damage or loss resulting from over-pressurization of a product, whether from gas or fluid does not constitute a defect covered under this warranty nor will Blacoh be responsible in any way for any such damage or loss. Because Blacoh cannot anticipate or control the many different conditions under which its products may be used, Blacoh does not guarantee the applicability or suitability of its products for any particular use or purpose. Each user of Blacoh products should conduct its own tests to determine the suitability of each product for its intended uses or purposes. Blacoh products are sold with this limited warranty and each buyer assumes all responsibility for loss or damage, including consequential damage, arising from the handling and use of Blacoh products whether used in accordance with Blacoh's directions or otherwise. Statements concerning the possible use of Blacoh products are not intended as recommendations for any specific use of such products. This Standard Product Warranty shall be governed by and construed in accordance with the laws of the State of California.

SENTRY PULSATION DAMPENERS

BLACOH FLUID CONTROL, INC.
1221 DODSON WAY, RIVERSIDE, CA 92507 USA
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L-180

PREVENTATIVE MAINTENANCE

SENTRY Pulsation Dampeners require very little maintenance. The rubber bladder or PTFE bellows is the only wear part of the unit.

Bladder replacement should be part of the system preventive maintenance program. Bladder life is a function of many variables. Normal life can be from a few months to several years depending upon usage, proper charge and dampener size, system design, and/or the harshness of the process fluid and application temperature.

SENTRY units used in conjunction with diaphragm pumps should have the rubber bladders replaced at least every second time the diaphragms in the pump are replaced. This does not apply to PTFE bellows. As with any pumping system, component wear is dependent upon many factors; therefore, this suggested maintenance program might need to be adjusted based upon specific applications.

Periodic inspection of units should be as follows:

1. SENTRY housings and fasteners should be inspected for signs of over pressurization, stress, fatigue, corrosion, or UV attack. Housings and fasteners must be replaced at the first indication of deterioration.

2. Fastener tightness should be checked before initial start-up. Consult factory for torque specifications.

3. Fasteners on metal units should be replaced at each re-assembly.

4. Check the gas pre-charge in the unit while no system pressure is present. If system pressure is present, the gauge will display system pressure, NOT the pre-charge pressure.

5. Check the unit pressure gauge during operation. If the dampener is properly charged, the gauge needle should be fluctuating with each pump discharge stroke. Replace the gauge if needed.

6. Adjust the regulator on adjustable models to insure maximum dampening. Replace the self-relieving regulator if needed.

EFFECTIVE DAMPENING TIPS

The primary factors that determine the level of dampening obtained with a SENTRY dampener are capacity, location, and the pressure charge.

CAPACITY: The dampener must be properly sized so that the volume of compressed gas inside is enough to absorb fluid shock, and also enough liquid volume capacity to accumulate the fluid pulse. A key element of effective dampening is the relationship of the gas charge to the fluid volume necessary for the pressure range required. An undersized dampener will result in insufficient dampening and can lead to excessive bladder wear and early failure.

The capacity of a pulsation dampener must be in the correct ratio to the volume per stroke of the pump and the number of pump heads. The larger the ratio is, the higher the level of dampening will be. For an Air Operated Diaphragm Pump the ratio between the dampener capacity and the pump stroke volume should be from 1.5:1 to 5:1, based upon the level of dampening required. For a metering pump the ratio is 10:1 to 30:1, based upon the level of dampening required.

LOCATION: Location is important because of wave frequency and fluid dynamics. Location directly effects dampener performance. The pulsation dampener should be installed as close as possible to the pump discharge and no further away than 10 pipe diameters. Installation should be on a tee in the fluid flow path. Do not install the dampener on a branch or riser. The farther away the dampener inlet is from the pump discharge, the less effective the unit will be.

A dampener installed on a riser or dead-end leg of pipe can actually increase pulsation. A pulse traveling toward the dampener has another pulse directly behind it. When the first pulse is reversed after contact with the dampener, it crashes into the next pulse disrupting the entire wave sequence. This action can change the system's fluid harmonics, which may lead to increased pulsation.

CHARGE: The compressed gas charge applied to any dampener will vary with each application and can have a significant effect on performance. To properly charge the unit, an accurate reading of the system fluid pressure is required. A pressure gauge should be installed on the system piping downstream from the unit. Any time the gas charge is equal to or greater than the system pressure, the dampener will not function properly. An over charged unit will force the internal bladder down, covering the inlet port – shutting off the dampener.

NO DAMPENING OR INSUFFICIENT DAMPENING EFFECT

1. Check the location of the dampener. Dampeners should be mounted within 10 pipe diameters of the pump discharge on a tee in the fluid flow path. The use of elbows and risers will decrease dampener performance.

2. Check the capacity of the dampener in relation to the pump stroke volume. An undersized dampener will decrease dampener performance and shorten bladder life.

3. Check the discharge head. Dampeners do perform better under a little discharge pressure (at least 5 psi). A slow stroking pump may not be filling the discharge pipe completely, creating zero discharge head between strokes. A slight discharge head can be created with a ball valve or back pressure valve.

4. Check for bladder failure. Replace bladder.

5. Check the dampener inlet fluid port for any blockage or restriction.

LEAKING FLUID OR AIR

1. All plastic and PTFE components take an initial set after manufacture. The fasteners may need tightening. Consult factory for torque specifications.

2. Check the air controls and gauge threads for an airtight seal. Tighten if needed. Consult factory for torque specifications.

3. Check the ring flange or clamp band bolts for proper torque. Tighten if needed. Consult factory for torque specifications.

4. Check for a bladder rupture. Replace the bladder if it has failed.

BLADDER RUPTURE OR FAILURE

CAUTION: IF A SYSTEM PRESSURE TEST IS TO BE PERFORMED, THE UNIT MUST BE CHARGED WITH 80% OF THE SYSTEM TEST PRESSURE PRIOR TO THE TEST. FAILURE TO CHARGE THE DAMPENER CAN CAUSE BLADDER FAILURE.

1. Chemical Attack
   Swelling, hardening, and distortion are some of the indications of chemical attack. Check the chemical compatibility charts. Consult factory for assistance.

2. Cut Bladder
   Check for a sharp object that may have been introduced into the dampener through the pumped fluid.

3. Torn Bladder
   - Check for an insufficient air charge in the dampener. Properly charge the unit for the application.
   - Check for a transient high-pressure spike created by pump start up, pump shut down, vertical pipe runs, or a quick closing valve, all of which can destroy a bladder. A Surge Suppressor should be installed at the location where a pressure spike originates.

4. Excessive Bladder Wear
   - Check the size of the unit. An undersized unit does not have the capacity to absorb the volume of the pump stroke, forcing the bladder to be overworked.
   - Check the air charge in the unit. An undercharged unit will cause the bladder to rub excessively and wear against the body housing.

SENTRY PULSATION DAMPENERS

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L-350

Watson-Marlow Pumps Group

Operation & Maintenance Manual

Volume 1 of 1

Project Name:	James River Treatment Plant Improvements, Phase 1
Project Location:	Newport News, Virginia
PO Number:	09.009-65-P
WM Job Number:	157989
Specification Section:	44 42 56.19 – Peristaltic Pumps Carbon Feed Metering Pumps
Equipment:	Qty.(9) SPX10 Peristaltic Hose Pumps Tag No.: P46-3001, P46-3002, P46-3003, P46-3004, P46-3005, P46-3006, P46-3007, P46-3008 & P46-3009 Qty.(2) SPX15 Peristaltic Hose Pumps Tag No. P46-3010 & P46-3011
Engineer:	CH2M HILL
Contractor:	MEB General Contractors 4016 Holland Boulevard P.O. Box 6748 Chesapeake, Virginia 23323 Tel: 757-487-5858; 757-487-5089
Manufacturer:	Watson-Marlow Pumps Group 37 Upton Technology Drive Wilmington, MA 01887 Tel: 800-282-8823, Fax: 978-658-0041
Manufacturer's Contact:	Hakan Y Can, Project Engineer
Mfg. Representative:	Sherwood-Logan & Associates 2140 Renard Court Annapolis, MD 21401 Tel: 410-841-6810, Fax: 410-841-6330
Submittal Number:	444256.19-003-02
Number of Copies:	5
Submittal Date:	03/29/12

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Part 1: Design Parameters & Outline Specification

The World's Leader in Peristaltic Pumping Technology

DESIGN PARAMETERS

Scope: Watson-Marlow, as the contracted hose pump manufacturer, is pleased to submit its Shop Drawings for review detailing all items supplied by Watson-Marlow under **Section 444256.19 – Peristaltic Pumps.** Watson-Marlow's intended scope of supply, as offered in our Bid Date Scope Letter and described below is based upon requirements listed by the above specification section. This proposal includes only equipment mentioned herein and does not include, nor infers inclusion of, any additional equipment, piping, valves, wiring, services, testing, etc. regardless of its relation to the listed equipment. Such services and equipment are to be supplied by the Contractor.

TABLE 2: WATSON-MARLOW SCOPE OF EQUIPMENT SUPPLY / BILL OF MATERIALS

Item Number	Quantity	Description
1	9	P46-3001 & P46-3009 SPX10 Hose Pump Assemblies
2	2	P46-3010 & P46-3011 SPX15 Hose Pump Assemblies
3	11	Machine Drive Co. Custom Control Panels
4	2	Blacoh Sentry II Flat Top Pulsation Dampeners
5	11	Griffco Calibration Columns
6	3	Spare 10mm EPDM Hoses
7	3	Spare 15mm EPDM Hoses
8	2	Spare Gallons of Hose Lubricant
9	1	Spare Set of SPX10-15 Pump Bearings
10	1	Spare Set of SPX10 Pump Gaskets Kit
11	1	Spare Set of SPX15 Pump Gaskets Kit
12	1	Spare Pump Leak Detector
13	6	Spare SPX10 Hose Inserts
14	6	Spare SPX15 Hose Inserts
15	2	Spare Motor Bearings
16	2	Spare Motor Bearings

ENGINEERING COMMENTS MADE AT TIME OF BID

The following comments were issued at the time of bid and are again listed below for your consideration.

SPECIFICATION	COMMENTS
1.02.A, 1.07.A, 2.03.A, 2.05.D-F	Spare seals and gasket kits are one-in-the-same. No special tools are required. End connections consist of hose inserts only. Pressure gauge/switch assemblies are the responsibility of others as they were not described in this section. Equipment guards, lifting lugs, and anchor bolts are the responsibility of others.
2.07.A	Watson Marlow does not have the means or facilities to perform factory performance tests.

EQUIPMENT OUTLINE SPECIFICATION:

BREDEL SPX10 (QUANTITY: 9)	
Name of Pump Manufacturer	Watson-Marlow/Bredel
Model	SPX10 (Low Pressure Rotor)
Flow/Revolution	0.0058 Gallon/Revolution
Nominal Pump Speed	84 rpm
Nominal Flow Rate	0.5 gpm (29 gph)
Maximum Power Requirement	0.19 bhp
Port Connections, Material	½" 150# ANSI Flanges, 316SS
Hose/Wetted Insert Material	EPDM / Polypropylene
Hardware/Mounting Support Material	Stainless Steel / Galvanized Steel
Gearing Type/Model	Integral Helical / SK272F-56C-84
Gearing Ratio	20.06:1
Number of Gearing Stages	2
Maximum Torque	1,239 in-lbs
Gearbox Motor Input Frame	56C
Complete Performance Curves	See Curve
Construction	See Construction Detail
Assembly Details	Position 2 – Ports Facing Right
Paint	Standard – See Paint Specification
Net Weight of Pumphead	110 lbs
Net Weight of Gearing	35 lbs

MOTOR (QUANTITY: 9)	
Name of Manufacturer	Baldor
Type/Model	VEM3538
Horsepower	1/2
Enclosure / Turndown	TEFC / 20:1 Constant Torque
Voltage	208-230/460VAC, 60 Hz, 3-Phase
Service Factor	1.0 on Inverter Power
Synch RPM	1750 rpm
Frame Size	56C
NEMA Design Code	B
Insulation	Class F, 40° C Ambient @ 1.00 S.F.
Paint	Standard – See Pump Paint Specification
Weight	31 lbs
Full Load Efficiency	82.5%
Full Load Amps	1.54 / 0.77

BREDEL SPX15 (QUANTITY: 2)	
Name of Pump Manufacturer	Watson-Marlow/Bredel
Model	SPX15 (Low Pressure Rotor)
Flow/Revolution	0.022 Gallon/Revolution
Nominal Pump Speed	59 rpm
Nominal Flow Rate	1.28 gpm
Maximum Power Requirement	0.35 bhp
Port Connections, Material	¾" 150# ANSI Flanges, 316SS
Hose/Wetted Insert Material	EPDM / Polypropylene
Hardware/Mounting Support Material	Stainless Steel / Galvanized Steel
Gearing Type/Model	Integral Helical / SK272F-56C-59
Gearing Ratio	28.59:1
Number of Gearing Stages	2
Maximum Torque	1,239 in-lbs
Gearbox Motor Input Frame	56C
Complete Performance Curves	See Curve
Construction	See Construction Detail
Assembly Details	Position 2 – Ports Facing Right
Paint	Standard – See Paint Specification
Net Weight of Pumphead	110 lbs
Net Weight of Gearing	35 lbs

MOTOR (QUANTITY: 2)	
Name of Manufacturer	Baldor
Type/Model	VEM3546
Horsepower	1
Enclosure / Turndown	TEFC / 20:1 Constant Torque
Voltage	208-230/460VAC, 60 Hz, 3-Phase
Service Factor	1.0 on Inverter Power
Synch RPM	1750 rpm
Frame Size	56C
NEMA Design Code	B
Insulation	Class F, 40° C Ambient @ 1.00 S.F.
Paint	Standard – See Pump Paint Specification
Weight	39 lbs
Full Load Efficiency	87.5%
Full Load Amps	3.3-3 / 1.5

PULSATION DAMPENERS (QUANTITY: 2)	
Name of Manufacturer	Blacoh
Type/Model	Chargeable Sentry II Flat Top, C1301NDF
Housing Construction	Polypropylene
Bladder Construction	EPDM
Connection	1” 150# RF Flange
Capacity	36 $Inch^3$
Pressure rating	150 psi @ 70^o Fahrenheit
Weight	10 lbs

CALIBRATION COLUMN (QUANTITY: 2)	
Name of Manufacturer	Griffco
Model	CC10000-S
Diameter	6.95 inch
Height	25 inches
Capacity	10000 mL
Graduations	100 mL, 5 GPH
Connections	2” NPTF Top & Bottom
Design	See Vendor Detailed Section

CALIBRATION COLUMN (QUANTITY: 9)	
Name of Manufacturer	Griffco
Model	CC4000-EZ
Diameter	3.7 inch
Height	37 inches
Capacity	4000 mL
Graduations	10 mL, 1 GPH
Connections	1” NPTF Top & Bottom
Design	See Vendor Detailed Section

Ancillary Equipment & Contracted/Recommended Spares				
Item	Quantity	Description	Part Number	Unit Price*
1	2	Gallons of Hose Lubricant	500143001	$65.12
2	3	10mm EPDM Hoses	010075	$152.90
3	3	15mm EPDM Hoses	015075	$210.10
4	1	Leak Detector	29107610	$596.20
5	1	SPX10 Gaskets Kit	201S001	$138.60
6	1	SPX15 Gaskets Kit	215S001	$185.90
7	6	SPX10 Polypropylene Inserts	210696010	$198.00
8	6	SPX15 Polypropylene Inserts	215696015	$215.60
9	2	SPX10-15 Bearings	B141060	$77.99
10	2	Motor Bearings	6203	$28.00
11	2	Motor Bearings	6205	$33.00

*Price Valid Through 2010

Custom Control Panels (Quantity: 11)	
Name of Manufacturer	Machine Drive Company
VFD Type, Horsepower, Model	Two (2) 1 HP ABB ACS350 VFD Nine (9) ½ HP ABB ACS350 VFD
Part Number	MDC-30085A & MDC-30085B
Input Phase, Frequency, Voltage	3-60-460 VAC
Enclosure	NEMA 4X – 316SS
Design	These variable frequency AC drives will include all of the standard operational and protective features as required by the specification including: • Arranged for 3-60-460 VAC input • 3 phase, 460 VAC output • NEMA 1 enclosure • Display/Keypad • Sensorless vector speed control, 60:1 CT • 150% overload current for one minute • 4-20 mA speed control input • 4-20 mA speed output • Run relay output • Fault relay output Vendor will mount to a panel and wire to terminals inside of a NEMA 4X 316 stainless steel enclosure the SVX9000 AC drive and include: • AC incoming circuit breaker rated for 65,000 AIC with door operator • AC line fuses

	• Fused 115VAC control transformer • 115 VAC control logic as needed for each drive • Interface to customer provided controls including: ⇒ Remote start/stop contact input ⇒ 4-20 mA speed input ⇒ Hose failure contact input ⇒ High pressure switch contact input ⇒ 4-20 mA speed output ⇒ Auto mode contact output ⇒ Running contact output ⇒ VFD fail contact output ⇒ High pressure fail contact output ⇒ Pump fail contact output • Interface to front door mounted and wired devices for each pump including: ⇒ Hand-Off-Auto/Jog selector switch ⇒ Jog Forward-Reverse spring return selector switch ⇒ Reset pushbutton ⇒ Run light, PTT ⇒ Control not in Auto, PTT ⇒ Hose fail light, PTT ⇒ High pressure fail light, PTT ⇒ Pump fail light, PTT ⇒ Manual 10 turn speed potentiometer ⇒ Digital speed meter • UL 508A Listed Control Panel

WATSON MARLOW

WATSON-MARLOW PUMPS GROUP

HRSD James River
Newport News, Virginia

Performance Affidavit
For Specification Section 44 4256.19
Peristaltic Pumps

Watson-Marlow, Inc.
37 Upton Technology Park
Wilmington, MA 01887
Tel: 978-658-6168
Fax: 978-658-0041

support@wmpg.us
www.watson-marlow.com

Watson Marlow Pumps Group has examined the Contract Documents and certifies that the SPX10 and SPX15 Peristaltic Hose Pumps meet in every way the performance requirements and design specifications set forth in section 44 4256.19 - Peristaltic Pumps, of the Contract Documents, except as noted on the clarifications reflected in the submittal engineers comments.

Watson-Marlow Pumps Group
37 Upton Technology Drive
Wilmington, MA 01887
Corporation

H. Yalçın Can — **06/02/10**
Hakan Can, Project Engineer **Date**

ISO 9001:2000 TÜV USA Registered Company DAR TGA-ZQ-37-95-00-0

ATTENTION: PURCHASING
NAME PLATE INFORMATION FOR ORDER 157989:

Nameplate Material: 316SS
Size: 1" x 3" in Size
Lettering: At least 3/8" Height Die Stamp or Engraving, Black Enamel Filled
Quantity of Tags: 11

1st Line: Tag Number
2nd Line: Manufacturer's Name
3rd Line: Model
4th Line: Nominal Speed and Flow Rate

CARBON FEED PUMP NO. 1 P46-3001
WATSON MARLOW INC.
SPX10
84 RPM, 0.5 GPM

CARBON FEED PUMP NO. 2 P46-3002
WATSON MARLOW INC.
SPX10
84 RPM, 0.5 GPM

CARBON FEED PUMP NO. 3 P46-3003
WATSON MARLOW INC.
SPX10
84 RPM, 0.5 GPM

CARBON FEED PUMP NO. 4 P46-3004
WATSON MARLOW INC.
SPX10
84 RPM, 0.5 GPM

CARBON FEED PUMP NO. 5 P46-3005
WATSON MARLOW INC.
SPX10
84 RPM, 0.5 GPM

CARBON FEED PUMP NO. 6 P46-3006
WATSON MARLOW INC.
SPX10
84 RPM, 0.5 GPM

CARBON FEED PUMP NO. 7 P46-3007
WATSON MARLOW INC.
SPX10
84 RPM, 0.5 GPM

CARBON FEED PUMP NO. 8 P46-3008
WATSON MARLOW INC.
SPX10
84 RPM, 0.5 GPM

CARBON FEED PUMP NO. 9 P46-3009
WATSON MARLOW INC.
SPX10
84 RPM, 0.5 GPM

CARBON FEED PUMP NO. 10 P46-3010
WATSON MARLOW INC.
SPX15
59 RPM, 1.28 GPM

CARBON FEED PUMP NO. 11 P46-3011
WATSON MARLOW INC.
SPX15
59 RPM, 1.28 GPM

Part 2: Pumphead Specification & Perfomance (SPX10 & SPX15)

WATSON MARLOW Bredel PUMPS

The World's Leader in Peristaltic Pumping Technology

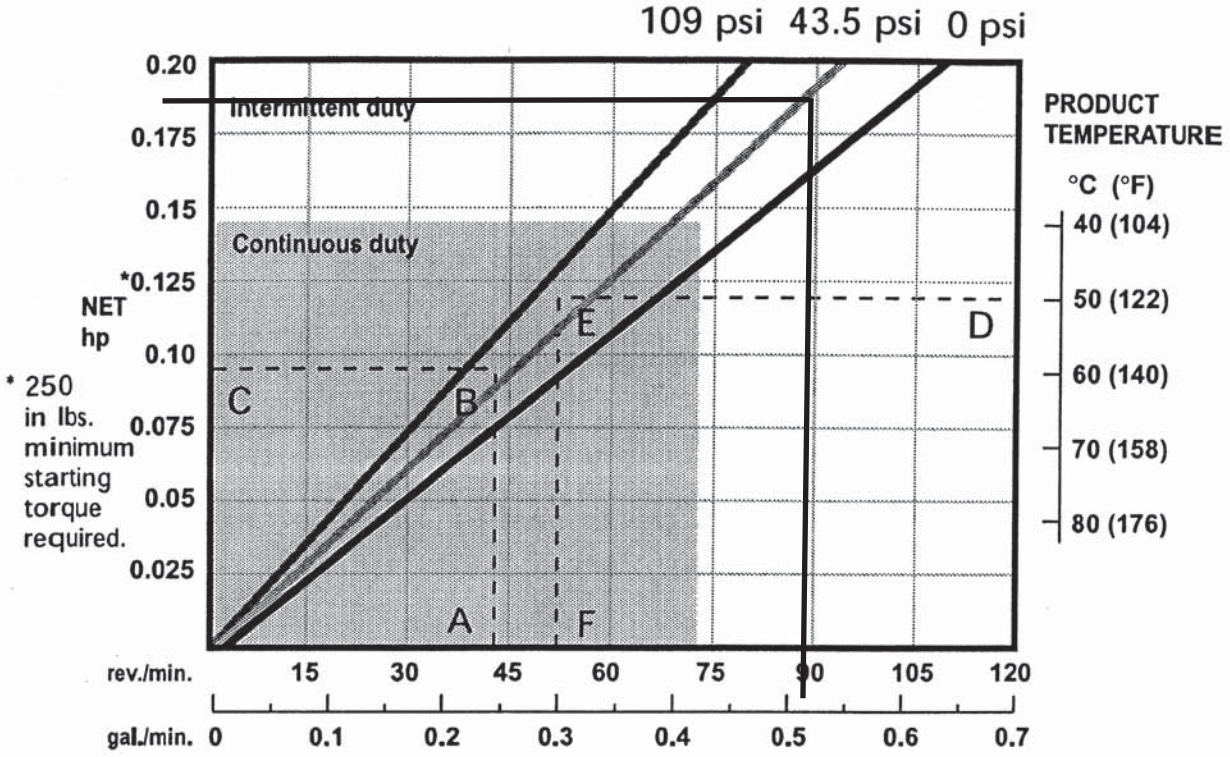
MATERIALS OF CONSTRUCTION
MODEL SPX10
FOR TAG NO. P46-3001 & P46-3009

Pump Housing	Cast Iron ASTM A48 Class 40
Pump Cover	Cast Iron ASTM A48 Class 40 with viewing window constructed of PMMA, high lubricant level sensor (hose fail sensor) Cover gasket: EPDM
Pump Rotor	Cast Iron ASTM A48 Class 45B with integral shoes
Bearings	Anti Friction, permanently greased, SKF equivalent 2RS1, AFBMA L-10 life rating of 100,000 hours min
Pump Hose	Durometer: 53-68 shore A Min Static Burst Pressure: 1090 psi Three layer construction with four layers of nylon cord reinforcement Machined Natural Rubber outer layer EPDM extruded wetted inner layer OD machined to maintain a wall thickness within $\pm$ 0.40 mm tolerance
Port Connections	1/2” 150# ANSI Flanges & Flange Brackets constructed of 316SS with wetted inserts constructed of Polypropylene
Hose Lubricant	Food Grade Glycerin/glycol blend
Finish	Standard – See Paint Specification
Base	Galvanized Steel Pump Supports

MATERIALS OF CONSTRUCTION
MODEL SPX/15
TAG NO. P46-3010 & P46-3011

Pump Housing	Cast Iron ASTM A48 Class 40
Pump Cover	Cast Iron ASTM A48 Class 40 with viewing window, high lubricant level sensor (hose fail sensor) and drain plug Cover gasket: EPDM
Pump Rotor	Cast Iron ASTM A48 Class 45B with integral shoes
Bearings	Anti Friction, permanently greased, SKF equivalent 2RS1, AFBMA L-10 life rating of 100,000 hours min
Pump Hose	Durometer: 53-68 shore A Min Static Burst Pressure: 1090 psi Three layer construction with four layers of nylon cord reinforcement Machined Natural Rubber outer layer EPDM extruded wetted inner layer OD machined to maintain a wall thickness within $\pm$ 0.40 mm tolerance
Port Connections	3/4” 150# ANSI Flanges & Brackets constructed of 316SS with wetted inserts constructed of Polypropylene
Hose Lubricant	Food Grade Glycerin/glycol blend
Finish	Standard – See Paint Specification
Base	Galvanized Steel Pump Supports

Performance Chart SPX10



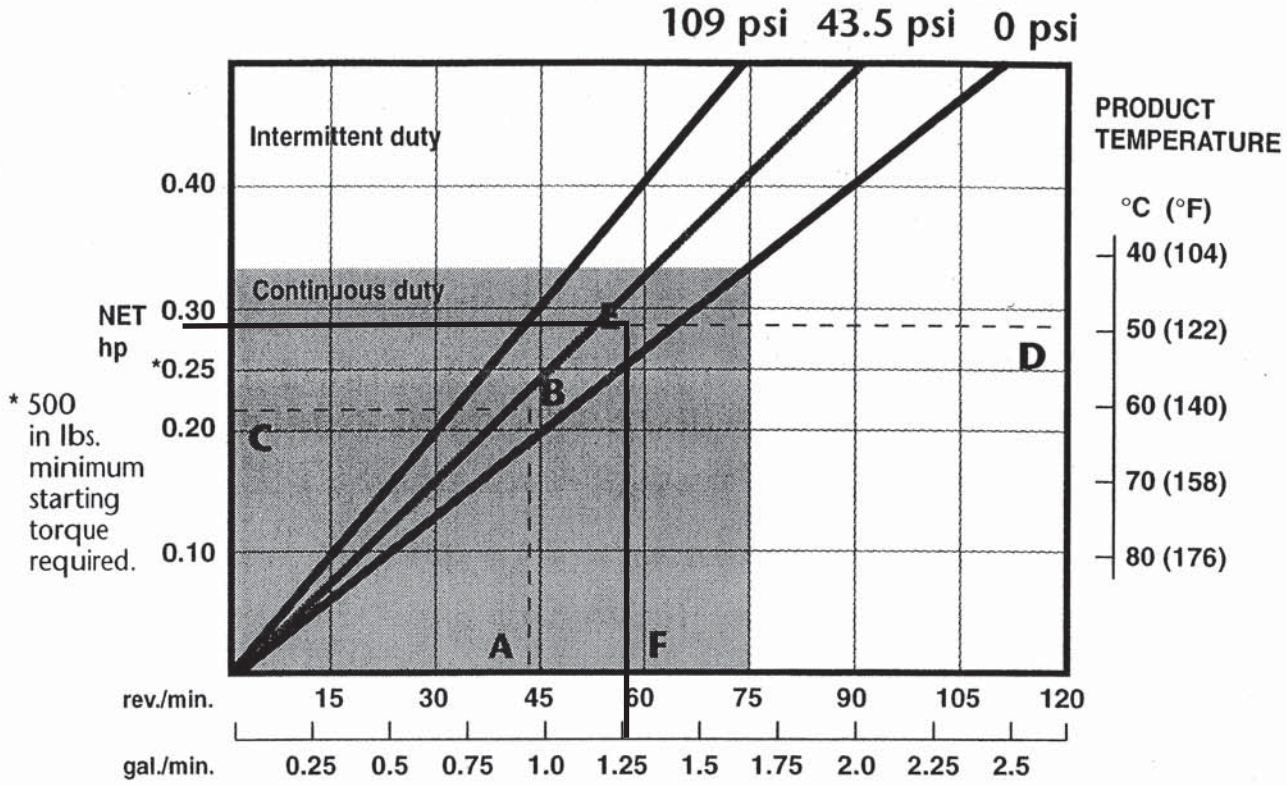
How to calculate speed/horsepower

A Flow required, indicates pump speed
B Calculated discharge pressure
C Horsepower required
D Fluid temperature
E Calculated discharge pressure
F Maximum recommended pump speed**

** For maximum hose life, speed point (A) should be lower than temperature adjusted speed point (F). See example points (A) thru (F).

Performance Chart

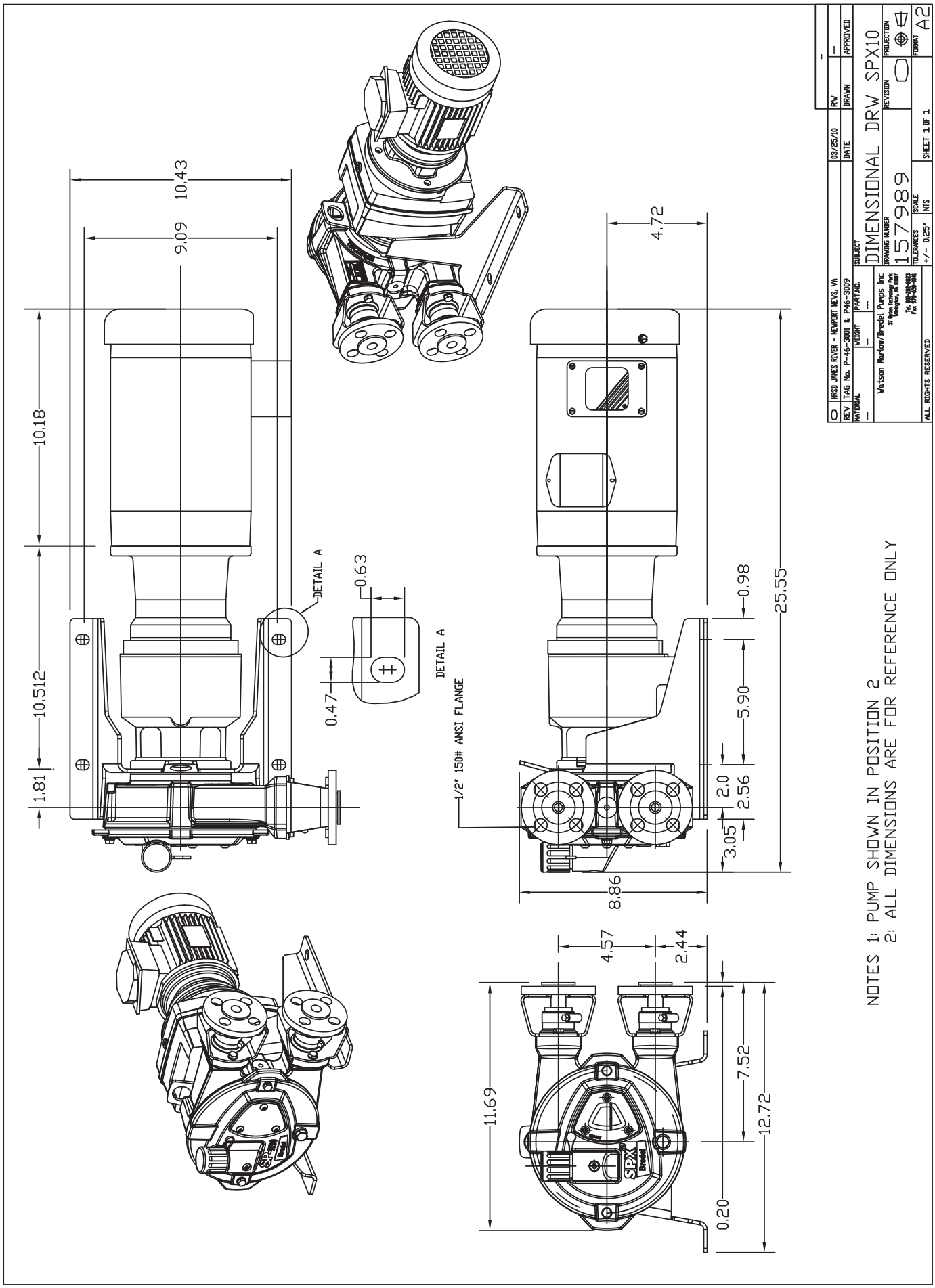
SPX15

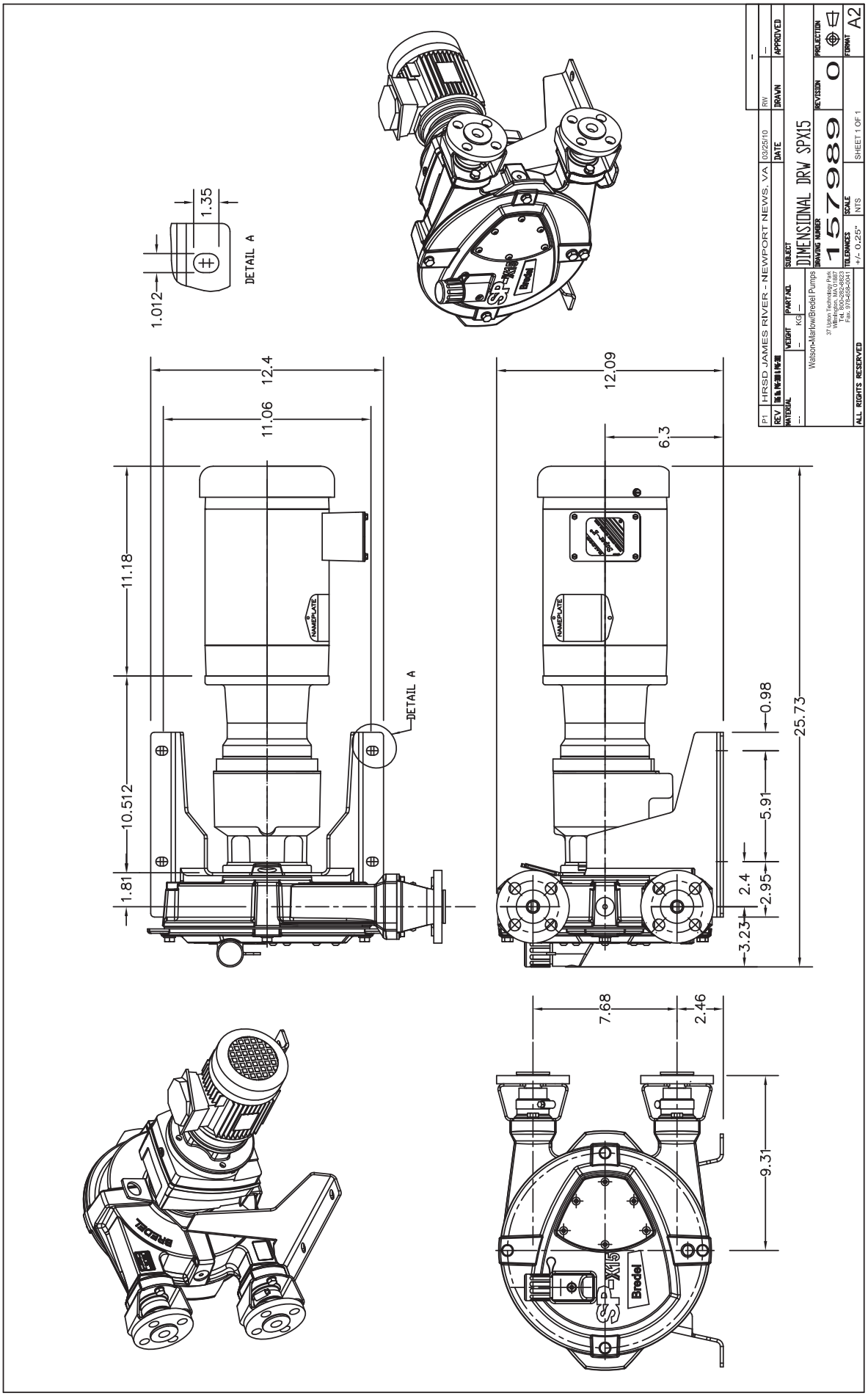


How to calculate speed/horsepower

A Flow required, indicates pump speed
B Calculated discharge pressure
C Horsepower required
D Fluid temperature
E Calculated discharge pressure
F Maximum recommended pump speed**

** For maximum hose life, speed point (A) should be lower than temperature adjusted speed point (F). See example points (A) thru (F).


10.43
9.09
10.18
10.512
1.81
DETAIL A
0.63
0.47
DETAIL A
4.72
1/2" 150# ANSI FLANGE
0.98
25.55
5.90
2.0
2.56
3.05
8.86
4.57
2.44
11.69
7.52
12.72
0.20
NOTES 1: PUMP SHOWN IN POSITION 2
2: ALL DIMENSIONS ARE FOR REFERENCE ONLY
HRSD JAMES RIVER - NEWPORT NEWS, VA
REV TAG No. P-46-3001 & P46-3009
MATERIAL — WEIGHT — PART NO. —
Watson Marlow/Bredel Pumps Inc
SUBJECT
DIMENSIONAL DRW SPX10
DRAWING NUMBER
157989
REVISION
PROJECTION
TOLERANCES +/- 0.25"
SCALE NTS
SHEET 1 OF 1
FORMAT A2
ALL RIGHTS RESERVED
03/25/10 RW —
DATE DRAWN APPROVED


DETAIL A
1.35
1.012
12.4
11.06
11.18
10.512
1.81
DETAIL A
12.09
6.3
0.98
25.73
5.91
2.4
2.95
3.23
7.68
2.46
9.31
NAMEPLATE
Bredel
SPX15
HRSD JAMES RIVER - NEWPORT NEWS, VA
DIMENSIONAL DRW SPX15
Watson-Marlow/Bredel Pumps
37 Upton Technology Park
Wilmington, MA 01887
Tel: 978-658-0900
Fax: 978-658-0041
DRAWING NUMBER
157989
REVISION
0
SCALE
NTS
SHEET 1 OF 1
FORMAT
A2
TOLERANCES
+/- 0.25"
ALL RIGHTS RESERVED

PUMP POSITIONING

Situate the pump on a flat horizontal surface where there is free air to circulate around it. Secure the pump base to the mounting grout support base via anchor bolts mounted through the frame mounting holes as shown in the Drawings. The peristaltic pumphead may be rotated on its frame to accommodate four (4) different port positions:

Position 2: Ports facing right when facing the pump

Pumps supplied under contract will be factory mounted as requested and approved by the customer and as shown in the Drawings. If required once on site, most pumpheads can be rotated from the shipped configuration to another to accommodate different piping layouts than were expected prior to shipment. Consult Watson-Marlow/Bredel for instruction prior to changing pump configuration.

For normal hose changing maintenance, the pump hose must be inserted and removed through the pump ports. Care should be taken to insure maintenance personnel have sufficient working area to access and feed the pump hose through these ports. Although the hose is flexible, sufficient distance from walls or other rigid structures should be allowed to facilitate proper maintenance operation. The pump hose lengths are shown below:

Pump	Hose Length
SPX/10	20.0”
SPX/15	29.7”

In the event the pumphead, gearbox, or motor must be removed or accessed for service, sufficient space should be allowed to remove the units and for personnel and lifting equipment. Please see shop drawings or O&M’s for component sizes and weight.

ELECTRICAL CONNECTION

Pump motor and ancillary control equipment should be wired in accordance with the wiring schematics found with the appropriate vendor supplied information. A registered Electrician following all Industry Safety Standards and Local Electrical Codes should connect all electrical wiring. All power must be OFF and LOCKED OUT during installation. Ensure that the voltage and frequency of the electrical supply corresponds with the data on the motor nameplate. Pumps driven by fixed speed motors should be wired to an appropriate motor starter. Pumps powered by inverter driven motors should be wired to an appropriate VFD. Pumps supplied with either fixed speed or variable speed control panels or auxiliary control panels should be wired in accordance with the manufacturer's instruction. If supplied and listed as provided accessories, items such as discharge pressure switches, hose failure sensors, low lubricant sensors, motor thermal protectors should be wired to the pump controllers as recommended by the controller and accessory manufacturers to provide proper motor shutoff, alarms, or indicators as required by the installation.

DIRECTION OF OPERATION

SPX Series pumps are reversible and may be operated in either direction depending on motor wiring or the use of a reversing controller. Clockwise or counterclockwise operation will not affect pump performance. Either direction may be used to best suit the installation's piping layout.

SUCTION AND DISCHARGE CONNECTION AND PULSATION DAMPENING DEVICES

Pump suction and discharge lines should be of equal or greater inside diameter than the pump ports and sized to hold frictional losses to a minimum. If larger ID process piping is used, pipe size transitions to and from the pump should be made as cleanly and smoothly as possible to prevent product holdup and bridging. To minimize hammer, impulse, and frictional losses, suction and discharge lines should be as short as possible. Pipework to and from the pump should be straight, with a minimum length equal to the length of the corresponding hose prior to redirection. If piping redirection is required immediately at the pump, the use of flexible reinforced line, in lieu of rigid elbows and piping, is highly recommended. For overall piping layout, minimize the number of elbows, and use long sweeping elbows where redirection is required.

Watson-Marlow/Bredel recommends the installation of a pump isolation valve on both the suction and discharge lines of the pump. In the event process lines cannot be drained prior to hose changing maintenance, the isolation of the pump from the process lines will minimize product spillage and cleanup. If the main piping run to the pump is a rigid pipe work, there should be a drop out section or flexible pipe work to allow the pump hose to be installed and removed during maintenance.

Although required in conjunction with other pumping technologies, check valves are not required nor recommended for use with peristaltic hose pumps. Check valves operate in opposition to the occlusion and restitution of the pump hose and will both shorten hose life and create higher degrees of pulsation. All pump ancillary items should be utilized in accordance with the manufacturer's recommendations.

INLET PULSATION ACCUMULATORS – IPA (NOT SUPPLIED UNDER THIS COntract)

IPA's should be located as close to the pump inlet as possible and after any other in line equipment except pressure sensing equipment – with a maximum 3 foot piping distance from the pump inlet. Watson-Marlow/Bredel pumps are commonly utilized with two styles of IPA's:

- Blacoh IPA (also called suction accumulator): Blacoh style IPA's are supplied with a flanged or threaded inlet port and must be mounted as an appendage to the suction line through a pipe tee. Pipe tee is not supplied with the IPA. IPA's must be mounted vertically with a maximum angle of 45° from vertical. See IPA dimensional data for model and flange sizes. Blacoh style IPA's are fitted with an air charge valve. An air charge from a customer-supplied compressor may be required based on the process conditions. See Blacoh O&M data for details.

DISCHARGE PULSATION DAMPENERS - DPD

DPD's should be located as close to the pump discharge and before any other in line equipment – with a maximum 3 foot piping distance from the pump discharge. Watson-Marlow/Bredel pumps are commonly utilized with two styles of DPD's.

- Blacoh DPD: Blacoh style DPD's are supplied with a flanged or threaded inlet port and must be mounted as an appendage to the discharge line through a pipe tee. Pipe tee is not supplied with the DPD. DPD's must be mounted vertically with a maximum angle of 45° from vertical. See DPD dimensional data for model and flange sizes. Blacoh style DPD's are fitted with an air charge valve. An air charge from a customer-supplied compressor may be required based on the process conditions. See Blacoh O&M data for details.

SUCTION GAUGES AND PRESSURE SENSORS (NOT SUPPLIED UNDER THIS CONTRACT)

If selected to be installed, for maximum stability of pressure reading, suction gauges should be mounted between the inlet pulsation accumulator and the pump suction port, if an inlet pulsation accumulator is supplied.

DISCHARGE GAUGES AND PRESSURE SENSORS (NOT SUPPLIED UNDER THIS CONTRACT)

If selected to be installed, for maximum stability of pressure reading, discharge gauges should be mounted after the discharge pulsation dampener if a discharge pulsation dampener is supplied.

PRE-OPERATION CHECK

1. Confirm that pump hose material is chemically compatible with the product being pumped and inspect the hose for any damage that may have occurred through improper handling.
2. Shim pump shoes for the application based on speed, pressure, and temperature in accordance with the shimming table. If process conditions differ from original specifications, pump shims should be readjusted accordingly.
3. Load pump hose in accordance with the hose loading procedures. Fill the pumphead with the proper volume and type of lubricant. Only Watson-Marlow/Bredel lubricant must be used as it is specially formulated for compatibility with the hose and proper cooling. Alternate lubricants must NOT be used.
4. Inspect all pipe and clamp connections for tightness and inspect all valves for proper operational open position.
5. Gearboxes are shipped filled; however, upon service maintenance, check to insure proper filling of lubricating oil.
6. Prepare optional and ancillary equipment for startup in accordance with the vendor's recommendations.

OPERATION

1. Product temperature should not exceed 175° F and should be maintained below the maximum recommended temperature for the rated speed as shown on the performance curves.
2. Pumping pressure should not exceed the maximum torque capability of the drive as shown on the pump performance curves.
3. Pump casing temperature may be elevated during the first 48 hrs of operation with a newly installed hose and will lower itself after hose break in. As the hose is black with a machined outside diameter, it is normal for the pump lubricant to darken during operation.
4. The pump is self-priming and capable of running dry without damage. The pump may be used to evacuate the lines of product by isolating the pump from the source fluid and running the pump. With the pump running, lines may be flushed with water or a chemically compatible cleaning fluid.
5. In the event of a hose failure, pumphead should be stopped immediately and the hose removed. The pumphead should be thoroughly flushed with water to remove any contaminants. Housing may be flushed without removing cover, but care must be taken to remove all foreign matter. Running the pump with a failed hose may result in gearmotor failure and pumphead damage. Contaminated lubricant should NOT be reused and should be disposed of appropriately.
6. Hose loading and unloading should be done in accordance with the listed procedures.

STORAGE

Spare hoses should be stored in a cool area (ideally about 50F, 60% relative humidity). These items should be isolated from direct sunlight and the elements to prevent deterioration of the rubber. The pumphead cover should remain closed.

If the pump has been put into service but is expected to remain idle for a period of longer than one (1) continuous month as a result of process shutdown, etc., proper procedures should be performed to prevent a "compression set" in the hose. On an SPX pump, this can be done in one of three ways:

1. Ideally, the pump should be operated periodically to allow repositioning of the shoe on the hose. This should be done for approximately five minutes on a weekly basis. As the pump has the capability of running dry, it need not be connected to process lines to perform this procedure.
2. If periodic operation cannot be performed, drain the pump lubricant and remove one compressing shoe and shims. Replace the window and power the pump such that the other shoe is positioned in front of the window. Leave the pump in this position until next startup. With this positioning, the hose is not compressed. When ready for re-start, re-install the removed shoe/shims and replace the lubricant and window.
3. As a third option the pump hose may be removed and stored to insure the hose does not take a "compression set" in the event procedure 1 or 2 is not adopted.

Spare hose lubricant should be stored in a suitable environment (see MSDS) and has a shelf life of 5 years.

SHUT DOWN & EMERGENCY INSTRUCTIONS

Post-Shutdown Procedure

1. In the event the pump is shut down for service, isolate pump from process lines by closing suction and discharge valves. Isolate the pump from power mains. Bleed process fluid that is retained in the now isolated loop between these valves. Dispose of waste fluid properly.
2. When long-term shutdown is expected, as with a spare unit, it is recommended that the lubricant is drained and hose is removed.

Emergency Shutdown

1. In the event of an emergency, mains power should be immediately isolated from the pump.
2. Pump should be isolated from the process fluid by closing suction and discharge valves.

Hose Failure Shutdown

1. High liquid level sensor will automatically shut down the pump in the event of a hose failure if so wired.
2. Determine if the pump has stopped due to hose failure by verifying a flooded pumphead chamber through the cover viewport.
3. Drain pumphead chamber fluid and dispose of properly. Do not reuse contaminated lubricant. Be sure to isolate pump from mains power before draining pumphead.
4. Open pumphead cover to remove and replace ruptured hose being sure to wipe away ant residual fluid or debris.

Low Lubricant Level Shutdown

1. Low level sensor will automatically shut down the pump in the event of a seal failure if so wired.
2. Determine if the pump has stopped due to low lubricant level by verifying the level through the lubricant level sight hose.
3. Refill lubricant to the proper level.
4. If lubricant is leaking, replace the seal through which lubricant is leaking.

TROUBLESHOOTING

Pump does not start

- Insure mains power to panel and pump is connected.
- Check panel for fault indication and check appropriate failure sensor.

Pump capacity does not meet expected calibration

- Insure rotor speed corresponds with gearbox nameplate.
- Insure suction and discharge lines are open and unobstructed. (i.e. valves, bypasses, etc. are properly positioned for normal operation).
- Insure peristaltic hose is properly loaded and occlusion is properly adjusted.
- Insure that the hose is new or within its projected operational lifetime.
- If pulsation dampeners are being used, insure they are properly charged and functional.

Discharge line shows excessive pulsation

- Insure discharge dampener air is charged to 5 psi below discharge line pressure.
- Insure discharge line is unobstructed such that line pressure corresponds with expected operational pressure.
- Check suction & discharge line for blockage.
- Insure any in line check valves are removed from the discharge line of the pump.

Pumphead lubricant leaks from pumphead chamber

- Insure pumphead cover seal is intact and cover is tightly secure.
- Insure hose was loaded with the cover on. As the cover is a structural member of the pump, loading a hose with the cover off will prevent proper sealing.
- Insure drain plug and fill port are secure.
- Insure connection at suction and discharge rubber bushings are tight.
- Insure flange connections are tightly secured.
- Insure level sensor housings are secure.

PROBLEMS ASSOCIATED WITH IMPROPER HOSE LOADING

IMPROPER PROCEDURE	RESULT
Hose loaded with cover off. Cover installed after hose loaded.	High pump temperature, leaking pump chamber, reduced hose life, bearing failure
Fittings not tightened in accordance with the torque tables	Pump leakage, premature hose failure

PROBLEMS ASSOCIATED WITH IMPROPER SHIMMING

IMPROPER OCCLUSION	RESULT
Overoccluded	Gap between shoes and track is reduced and causes overocclusion of hose - resulting in premature hose wear.
Underoccluded	Gap between shoes and track is greater than that recommended for the process parameters. Achievable pressure and flow rate is reduced. Due to slip (backflow), hose is damaged by fluid erosion thereby shortening expected hose life

HOSEPUMP PREVENTATIVE MAINTENANCE SCHEDULE

PUMP HEAD

PROCEDURE	TRADE	SKILL LEVEL	TIME REQUIRED	FREQUENCY	POWER LOCKOUT
Remove/replace hose, change lubricant	Mechanical	Apprentice (2)	Per A Below	Speed & duty dependent	Required (procedure dependent)
Shoe inspection/ replacement	Mechanical	Apprentice (2)	Per B Below	Visually inspect with each hose change/ replace as needed	Required

Typical Minimum Hose Replacement Time
A SPX/10: 1 Hr SPX/15: 1 Hr

Typical Minimum Shoe Replacement Time
B SPX/10: 1 Hr SPX/15: 1 Hr

Notes:

1. Frequency of hose change is dependent upon typical operational speed, typical discharge & suction pressures, fluids, and temperature. Watson-Marlow/Bredel recommends that the operator log the running hours of the pump and achieved life of the first hose and place all subsequent hoses on a PM schedule based on 100 hrs less than that duration.
2. In the event of hose failure where fluid has contaminated the pump chamber, the pump should be flushed prior to installation of a new hose. Shoes should be inspected for surface roughness or damage and replaced if necessary. Shoes need not be replaced unless damaged.

GEARBOX LUBRICATION (synthetic oil filled gearboxes only)

PROCEDURE	TRADE	SKILL LEVEL	TIME REQUIRED	FREQUENCY	POWER LOCKOUT
Drain and replace oil	Mechanical	Journeyman	2 hr	after 20,000 operating hours	Required

Motor Lubrication

Service Condition	NEMA Frame Size: 140-180, 1800 rpm
Standard	3 years
Severe	1 year
Seasonal	Lubricate at the beginning of the season. Then follow service schedule.
Amount	1 to 2 pumps

Seasonal Service: The motor remains idle for a period of six months or more.
Standard Service: Eight hours of operation per day, indoors, 100°F maximum ambient.
Severe Service: Continuous operation under high ambient temperatures (100°F to 150°F) and/or any of the following: dirty, moist locations, high vibration (above NEMA standards), heavy shock loading, or where shaft extension end is hot.

Gearbox Replacement

Procedure	Trade	Skill Level	Time Required	Power Lockout
Gearbox Replacement	Mechanical Electrical	Apprentice (2) Apprentice (1)	2 Hour	Required

Motor Replacement

Procedure	Trade	Skill Level	Time Required	Power Lockout
Motor Replacement	Mechanical Electrical	Apprentice (2) Apprentice (1)	1 Hour	Required

BLACOH PULSATION DAMPENERS

Procedure	Trade	Skill Level	Time Required	Frequency	Power Lockout
Pressure Charge Inspection	Instrumentation	Apprentice (1)	1/2 hr	Monthly	Required
Bladder Inspection	Mechanical	Journeyman (1)	1 hr	2,000 hrs	Required
Bladder Replacement	Mechanical	Journeyman (1)	1 hr	as required upon inspection	Required

SPX10 Helical Gearboxes

2-Stage Helical Gearboxes

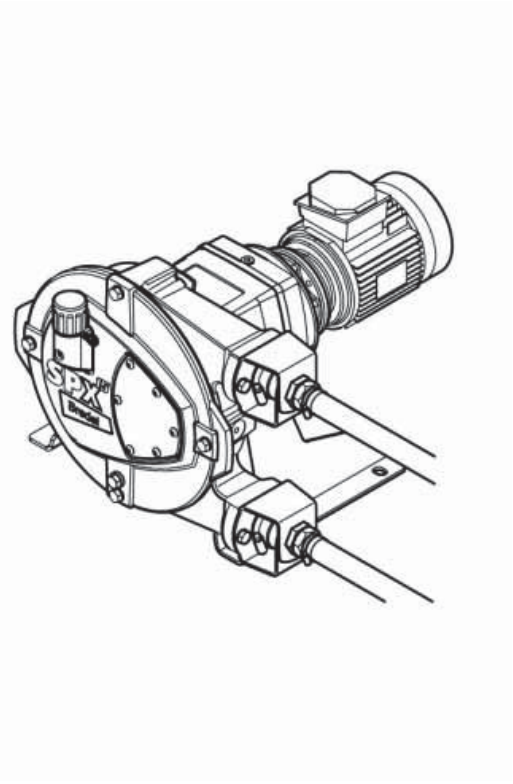
RPM	Peak Discharge Pressure 0 psi	43.5 psi	109 psi	Actual Ratio	T(max) In-lbs	Part Number
84	•	•	•	20.06	1239	SK272F-56C-84

2-Stage Helical Gearboxes

RPM	Peak Discharge Pressure 0 psi	43.5 psi	109 psi	Actual Ratio	T(max) In-lbs	Part Number
59	•	•	•	28.59	1239	SK272F-56C-59

Hose pump series
SPX10 and SPX15

Manual



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1 GENERAL

1.1 How to use this manual

This manual is intended as a reference book by means of which qualified users are able to install, commission and maintain the hose pumps mentioned on the front cover.

1.2 Other supplied documentation

Documentation of components such as the gearbox, the motor and the frequency controller is normally not included in this manual. However, if additional documentation is supplied, you must follow the instructions in this additional documentation.

1.3 Service and support

For information with respect to specific adjustments, installation, maintenance or repair jobs which fall beyond the scope of this manual, contact your Bredel representative. Make sure you have the following data at hand:

- Serial number hose pump
- Article number pump hose
- Article number gearbox
- Article number electric motor
- Article number frequency controller

You will find these data on the identification plates or stickers of the pump head, the pump hose, the gearbox and the electric motor. Refer to § 4.1.1.

1.4 Environment and disposal of waste

	**CAUTION** Always observe the local rules and regulations with respect to processing (non reusable) parts of the hose pump.

Inquire within your local government about the possibilities for reuse or environment friendly processing of packaging materials, (contaminated) lubricant and oil.

2 SAFETY

2.1 Symbols

In this manual the following symbols are used:

	**WARNING** Procedures which, if not carried out with the necessary care, may result in serious damage to the hose pump or in serious bodily harm.

	**CAUTION** Procedures which, if not carried out with the necessary care, may result in serious damage to the hose pump, the surrounding area or the environment.

	Remarks, suggestions and advice.

	**WARNING** Procedures, remarks, suggestions or advice which refer to use in potentially explosive atmospheres in accordance with the ATEX Directive 94/9/EC.

2.2 Intended use

The hose pump is exclusively designed for pumping suitable products. Every other or further use is not in conformance with the intended use.
The "Intended use" as laid down in EN 292-1 is "… the use for which the technical product is intended in accordance with the specifications of the manufacturer, inclusive of his indications in the sales brochure". In case of doubt it is the use which appears to be its intended use judging from the construction, execution

and function of the product. Observing the instructions in the user's documentation also belongs to intended use.
Only use the pump in accordance with the intended use described above. The manufacturer cannot be held responsible for damage or harm resulting from misuse. If you want to change the application of your hose pump, contact your Bredel representative first.

2.3 Use in potentially explosive atmospheres

Refer to chapter 10 for a description of pump configurations that are suitable in a potentially explosive atmosphere. The pumps mentioned meet the requirements as stated in the European Directive 94/9/EC (ATEX Directive).

2.4 Responsibility

The manufacturer does not accept any responsibility for damage or harm caused by not (strictly) observing the safety regulations and instructions in this manual and the also supplied documentation, or by negligence during installation, use, maintenance and repair of the hose pumps mentioned on the front cover. Depending on the specific working conditions or accessories used, additional safety instructions can be required.
Immediately contact your Bredel representative, if you noticed a potential danger while using your hose pump.

	**WARNING** The user of the hose pump is always fully responsible for observing the local valid safety regulations and directives. Observe these safety regulations and directives when using the hose pump.

2.5 Qualification of the user

The installation, use and maintenance of the hose pump is only reserved for well trained and qualified users. Temporary staff and persons in training may only use the hose pump under the supervision and responsibility of well trained and qualified users.

2.6 Regulations and instructions

- Everyone who works with the hose pump must be aware of the contents of this manual and observe the instructions with great care.
- Never change the order of the actions to be carried out.
- Always store the manual near the hose pump.

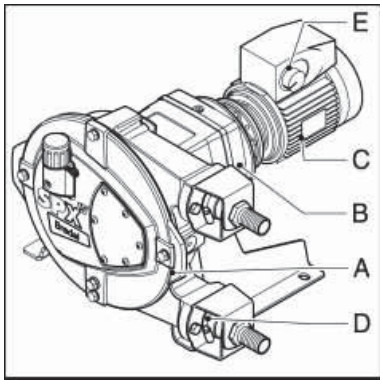
4 DESCRIPTION

4.1 Identification of the product

4.1.1 Identification of the product

The hose pump can be identified based on the identification plates or stickers on:

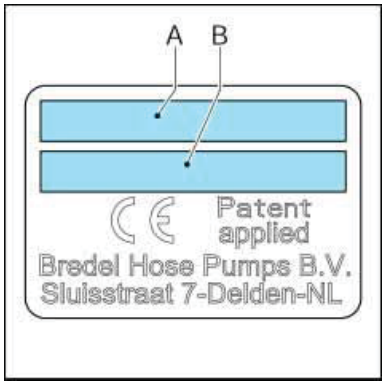
A: Pump head
B: Gearbox
C: Electric motor
D: Pump hose



4.1.2 Identification of the pump

The identification plate on the pump head contains the following data:

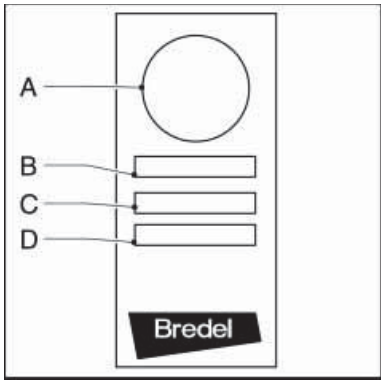
A: Type number
B: Serial number



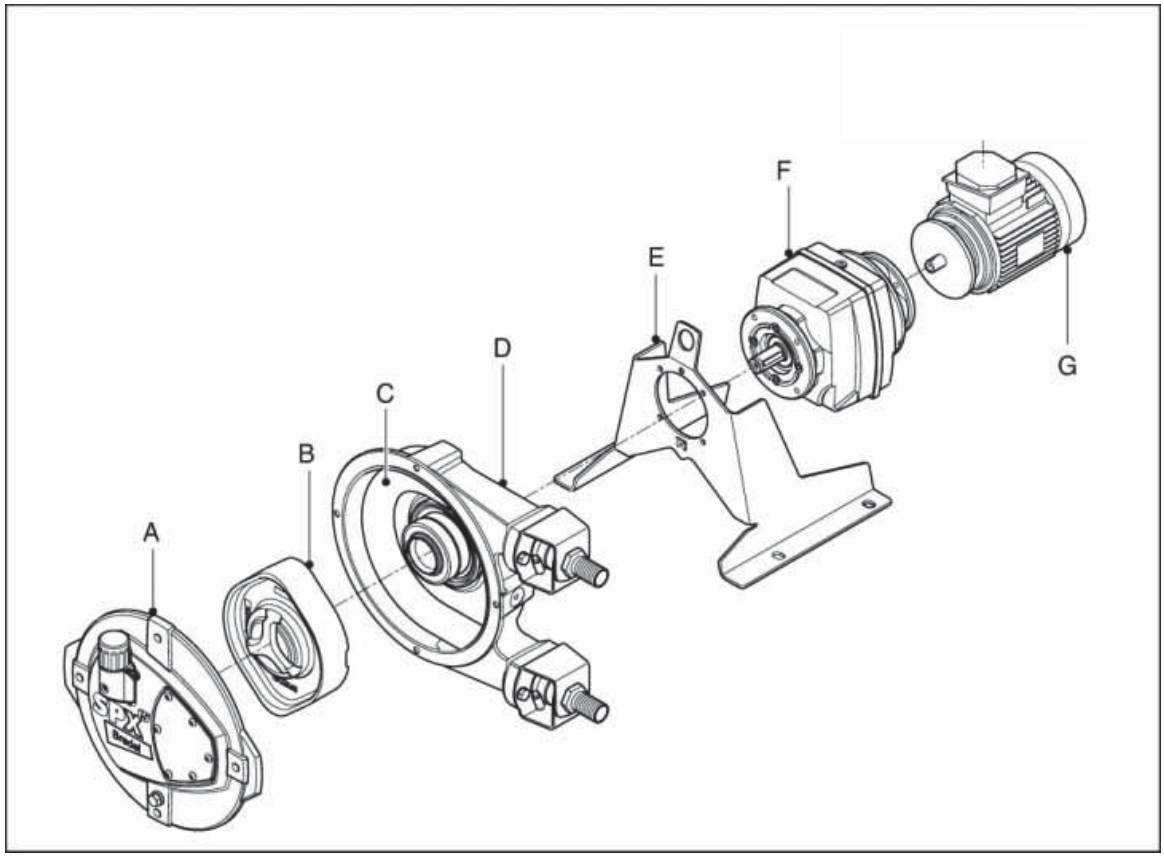
4.1.4 Identification of the pump hose

The identification sticker on the pump hose contains the following data:

A: Reorder number
B: Internal diameter
C: Type of material of inner liner
D: Maximum permissible working pressure



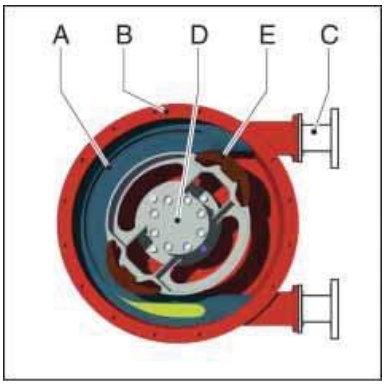
4.2 Construction of the pump



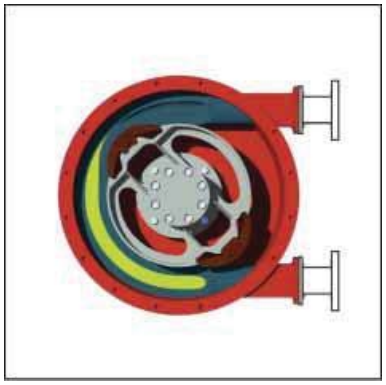
A: Cover
B: Rotor
C: Pump hose
D: Pump housing
E: Support
F: Gearbox
G: Electric motor

4.3 Operation of the pump

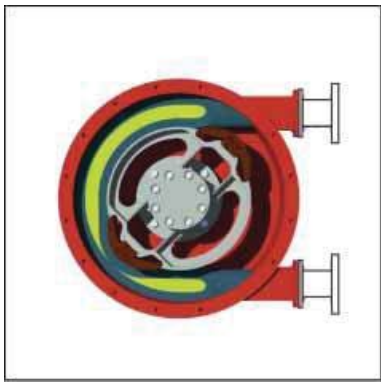
The heart of the pump head consists of a specially constructed pump hose (A) which lies contorted against the inside of the pump housing (B). Both ends of the hose are connected to the suction and discharge lines. A bearing-mounted rotor (D) with two facing integral pressing shoes (E) is in the centre of the pump head.
In phase 1 the lower shoe compresses the pump hose by the rotational movement of the rotor, forcing the fluid through the hose. As soon as the shoe has passed, the hose recovers to its original shape due to the mechanical properties of the material.



In phase 2 the product is drawn into the hose by the (continuous) turning motion of the rotor.



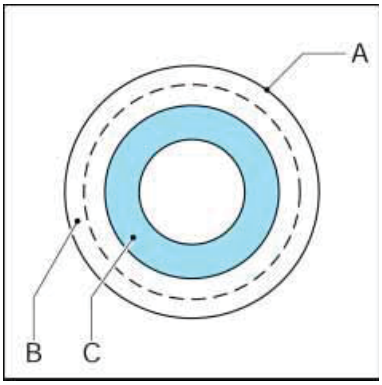
In phase 3, the second integral pressing shoe will subsequently compress the pump hose. Due to the continuous rotating movement of the rotor not only new product is sucked in, but also the already present product is pressed out by the shoe. When the first shoe runs from the pump hose, the second shoe has already closed the pump hose and the product is prevented from flowing back. This method of liquid displacement is also known as the "positive displacement principle".



4.4 Pump hose

4.4.1 General

A: Outer extruded layer made of natural rubber
B: Two nylon reinforcement layers
C: Inner extruded liner



The pump hose liner material should be chemically resistant with the product to be pumped. Dependent on the specific requirements of your application a corresponding pump hose must be selected. For each pump model various hose types are available.

The material of the inner liner of the pump hose determines the hose type. Each hose type is marked by a unique color code.

Hose type	Material	Color code
EPDM	EPDM	Red

i	Consult your Bredel representative for more detailed information about the chemical and temperature resistance of pump hoses.

The Bredel pump hoses have been carefully machined, therefore there are minimum tolerances in wall thickness. It is very important to guarantee the correct compression of the pump hose, because:

- When the compression is too high, it creates a too high load of the pump and pump hose, which may result in a reduction of the life of the pump hose and bearings.

- When the compression is too low, this will result in loss of capacity and backflow. Backflow results in a reduction of the life of the pump hose.

4.4.2 Hose compression force adjustment

The compression force of the pump hose can be adjusted by installing a rotor with a different dimension between the tips of the integral pressing shoes. The rotor is chosen to achieve an optimal life of the pump hose for the intended use of the hose pump. If you want to change the application of your hose pump, contact your Bredel representative.

4.4.3 Lubrication and cooling

The pump head is filled with a special lubricant. This lubricant lubricates and disperses the heat generated by the movement of the pressing shoes against the pump hose.

4.5 Gearbox

The hose pump types described in this manual use helical gearbox units. The gearboxes are fitted with a flange connection. Refer to § 11.2 for specifications. If the pump is to be used in potentially explosive atmospheres, refer to chapter 10.

4.6 Electric motor

If the electric motor has been standard supplied by the manufacturer, it is a standardized squirrel-cage motor. Refer to § 11.3 for specifications. If the pump is to be used in potentially explosive atmospheres, refer to chapter 10.

4.8 Available options

The following options are available for the hose pump:

- High (lubricant) level float switch
- Revolution counter

5 INSTALLATION

5.1 Unpacking

When unpacking carefully follow the instructions as given on the packaging or on the hose pump.

5.2 Inspection

Check that your delivery is correct and check it for any transport damage. Refer to § 4.1.1. Report any damage immediately to your Bredel representative.

5.3 Installation conditions

5.3.1 Ambient conditions

Make sure that the hose pump is in an area where the ambient temperature during operation is not lower than -20 °C (-4 °F) and not higher than +45 °C (+113 °F).

5.3.2 Set-up

- The pump materials and protective layers are suitable for indoor set-up and a protected outdoor set-up. Under certain conditions the pump is suitable for limited outdoor set-up or a salty or aggressive atmosphere. Consult your Bredel representative for more information.
- Make sure that the floor surface is horizontal and has a maximum slope of 1 mm per meter (0.012 in per foot).
- Make sure that there is sufficient room around the pump to carry out the necessary maintenance activities.
- Make sure that the room is sufficiently ventilated, so that the heat developed by the pump and drive can be discharged. Keep some distance between the ventilation cover of the electric motor and wall to enable the supply of necessary cooling air.

5.3.3 Pipework

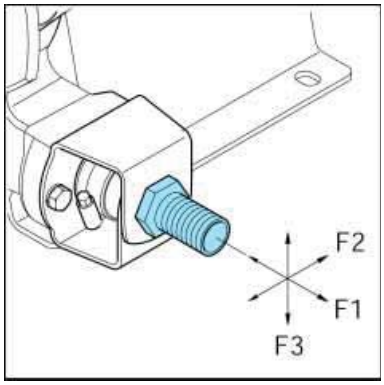
When determining and connecting suction and discharge lines consider the following points:

- The bore size of the suction and discharge lines must be larger than the bore size of the pump hose. For more information consult your Bredel representative.
- Limit the presence of sharp bends in the discharge line. Make sure that the radius of the bent discharge line is as large as possible (preferably 5S). It is recommended to use Y-connections instead of T-connections.
- It is recommended to use a minimum of three quarters (3/4) of the hose length as flexible hose in the suction or discharge line. This avoids the need to remove the connection lines when changing a pump hose.
- Keep the delivery and suction lines as short and direct as possible.
- Select the correct mounting material for flexible hoses and make sure that the installation is suited for the design pressure of the system.
- Prevent any possibilities of exceeding the maximum working pressure of the hose pump. Refer to § 11.1.1. If necessary fit a pressure relief valve.

	**CAUTION** Consider the maximum permissible working pressure on the discharge side. Exceeding the maximum working pressure may lead to serious damage to the pump.

- Make sure that the maximum forces on the flanges are not exceeded. The permissible loads are given in the following table.

Maximum permissible loads [N] on the pump connections		
Force	**SPX10**	**SPX15**
F1	600	600
F2	120	120
F3	300	300



5.3.4 Frequency controller

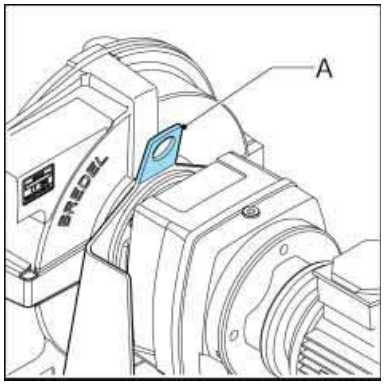
⚠	**WARNING** A frequency controller that is fitted *without the manual control* can start automatically when power is applied.

If the hose pump is fitted with a frequency controller, consider the following points:

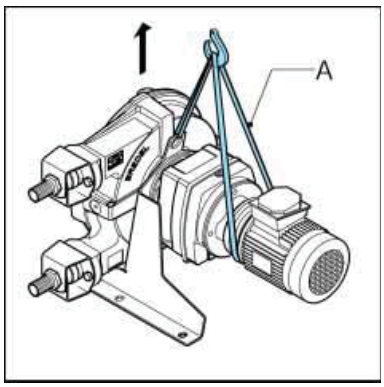
- Take precautions so the motor does not re-start automatically after an unscheduled stop.
  In the event of a power or mechanical failure, the frequency controller controls the motor to stop. When the cause of the failure is removed, the motor can restart automatically. The automatic restart can be dangerous in certain pump installations.
- All control cables outside the enclosure must be shielded and have a cross sectional area between 0.22 and 1 mm^2. The shielding must be connected to earth at both ends.

5.4 Lifting and moving the pump

For lifting and moving the hose pump, the pump support has a lifting eye (A).



The complete hose pump, i.e. pump head, gearbox and electric motor, must be lifted using the lifting eye plus additional support using suitably rated straps or slings (A). For the weights, refer to § 11.1.5.



⚠	**WARNING** If the pump is to be lifted ensure that all standard lifting practices are adhered to and carried out by qualified personnel only.

5.5 Placing the pump

Position the pump on a horizontal surface. Use suitable anchor bolts to attach the pump to the floor surface.

6 COMMISSIONING

6.1 Preparations

	**WARNING** A frequency controller that is fitted *without the manual control* can start automatically when power is applied.

	**WARNING** Disconnect and lock the power supply to the pump drive before any work is carried out. Wait two minutes to make sure that the capacitors have discharged. This is necessary when the motor is fitted with a frequency controller and has single phase power supply.

1. Connect the electric motor and, if present, the frequency controller in conformance with the locally applicable rules and regulations. Refer to § 5.3.4. Have the electrical installation work be carried out by qualified personnel.

2. Check that the lubricant level is above the minimum level line in the inspection window. If necessary refill Bredel lubricant via the breather plug. See also § 7.5.

3. Check the rotation of the rotor.

6.2 Commissioning

1. Connect the pipework. Make sure that there are no obstructions such as closed valves.

2. Switch on the hose pump.

3. Check the rotation of the rotor.

4. Check the capacity of the hose pump. If the capacity differs from your specification, follow the instructions in chapter 9 or consult your Bredel representative.

5. Check the capacity range of the frequency controller. In case of any deviations consult the documentation of the supplier.

6. Check the hose pump in accordance with points 1 to 4 of the maintenance table from § 7.2.

7 MAINTENANCE

7.1 General

	**WARNING** Disconnect and lock the power supply to the pump drive before any work is carried out. Wait two minutes to make sure that the capacitors have discharged. This is necessary when the motor is fitted with a frequency controller and has single phase power supply.

	**WARNING** Only use original Bredel parts when maintaining the hose pump. Bredel cannot guarantee correct operation and any consequential damage that occurs from the use of non-original Bredel components. See also chapters 2 and 3.

7.2 Maintenance and periodic inspections

The following diagram shows the maintenance and periodic inspection that need to be carried out on the hose pump to guarantee optimal safety, operation and life of the pump.

Point	Action	To be carried out	Remark
1	Check the lubricant level.	Before startup of the pump and on a scheduled interval during operation.	Make sure that the lubricant level is above the minimum level line in the inspection window. If necessary refill the lubricant. See also § 7.5.
2	Check the pump head for any leakage of lubricant around the cover, the brackets and the rear of the pump head.	Before startup of the pump and on a scheduled interval during operation.	See § 9.
3	Check the gearbox for any leakage.	Before startup of the pump and on a scheduled interval during operation.	In case of leakage consult your Bredel representative.
4	Check pump for deviating temperature or strange noises.	On a scheduled interval during operation.	See § 9.
5	Check rotor with integral pressing shoes for excessive wear.	When replacing the pump hose.	See § 7.6.
6	Internal cleaning of the pump hose.	Cleaning of the system or product change.	See § 7.4.
7	Replacing pump hose.	Preventive, this means after 75% of the hose life of the first hose.	See § 7.6.
8	Changing lubricant.	After every 2nd hose change or after 5,000 service hours, whichever comes first or after hose rupture.	See § 7.5
9	Replacing seal ring.	If necessary.	See § 7.7.1.

Point	Action	To be carried out	Remark
10	Replacing rotor with integral pressing shoes.	Wear on the running surface of the pump hose and/or seal ring.	
11	Replacing bearings.	If necessary.	See § 7.7.1.

7.3 Additional maintenance in potentially explosive environments

The following diagram shows the additional maintenance and periodic inspections that need to be carried out on the hose pump to guarantee optimal safety, operation and life of the pump in a potentially explosive environment.

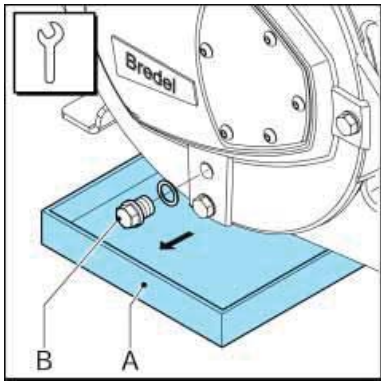
Point	Action	To be carried out	Remark
1	Replacing bearings.	After 40,000 hours service or when damage is suspected.	See § 7.7.1.
2	Cleaning the hose pump.	In potentially explosive (dust) atmospheres, the dust must be removed regularly.	

7.4 Cleaning pump hose

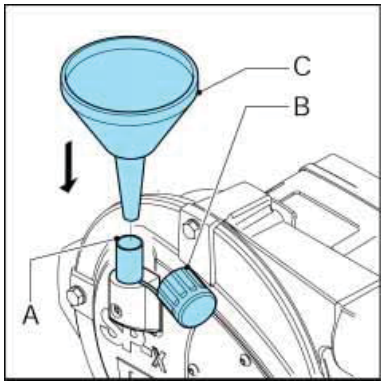
The inside of the pump hose can be easily cleaned by rinsing the pump with clean water. If a cleaning fluid is added to the water, it must be checked that the hose liner material is resistant to that. Also note that the pump hose can resist the cleaning temperature. Special cleaning balls (pigs) are also available (inform with your Bredel representative).

7.5 Changing lubricant

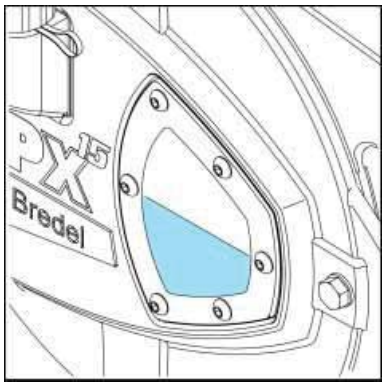
1. Place a tray (A) under the drain plug in the cover of the pump. Remove the drain plug (B). Catch the lubricant from the pump housing in the tray. Position the drain plug and tighten it firmly.



2. The pump housing can be filled with lubricant via the breather (A) on the cover. For this purpose remove the breather cap (B) and position a funnel (C) in the breather. Pour the lubricant in the pump housing via the funnel.



3. Keep on pouring until the lubricant level has risen above the level line in the inspection window.



i	For the required quantity of lubricant, refer to § 11.1.4.

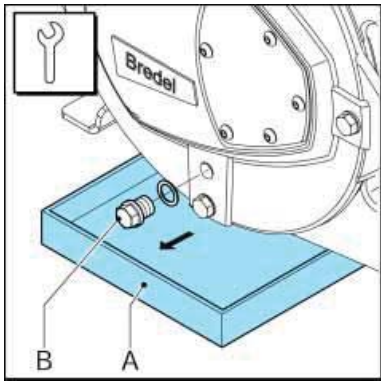
7.6 Replacing pump hose

7.6.1 Removing pump hose

1. Isolate the pump from the electrical supply.

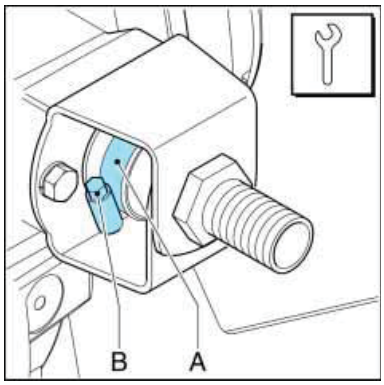
2. Close any shut-off valves in both the suction and discharge line to minimize product loss.

3. Place a tray (A) under the drain plug in the bottom of the pump head. The tray must be large enough to contain the lubricant, possibly contaminated with product fluid, from the pump head. Remove the drain plug (B). Catch the lubricant from the pump housing in the tray. Check that the breather mounted on the cover is not obscured. Position the drain plug and tighten it firmly.



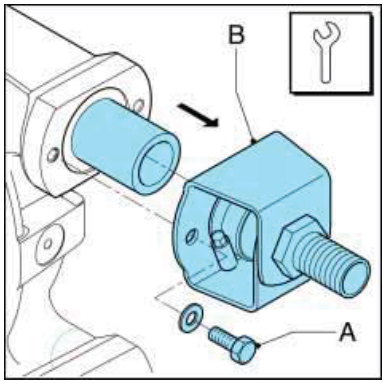
4. Disconnect the suction and discharge lines.

5. Loosen hose clamp (A) of both the inlet and outlet ports by loosening bolt (B).



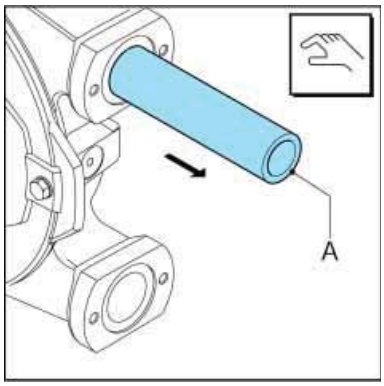
6. Loosen the retaining bolts (A) of the bracket (B) and remove the bolts.

7. Pull the bracket and hose clamp from the hose. Repeat steps 6 to 7 for both the inlet and discharge ports.



8. Switch on the electrical supply.

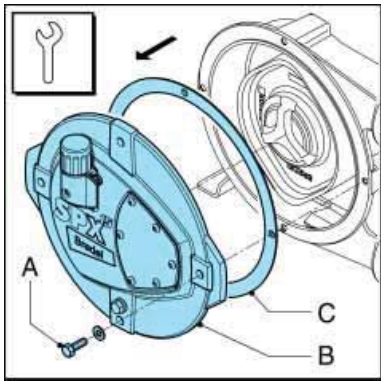
9. Power out the hose (A) from the pump chamber by jogging the drive motor.



7.6.2 Cleaning the pump head

1. Isolate the pump from the electrical supply.

2. Remove the cover (B) by loosening the retaining bolts (A).



3. Check the gasket (C) and replace it if necessary.

4. Rinse the pump head with clean water and remove all residues. Make sure that no rinsing water remains in the pump head.

5. Check the rotor for wear or damage and replace the rotor if necessary. Also see the maintenance diagram in § 7.2.

⚠	**CAUTION** When the rotor is worn the compression force of the hose decreases. If the compression force is too low, this results in a loss of capacity by the backflow of the liquid to be pumped. Backflow results in a reduction of the life of the pump hose.

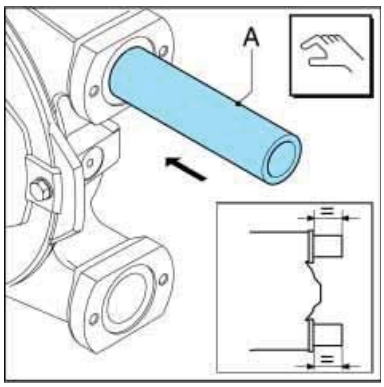
6. Replace the cover and fasten the retaining bolts with the correct torque. Refer to § 11.1.6.

7. Switch on the electrical supply to the pump.

7.6.3 Fitting the pump hose

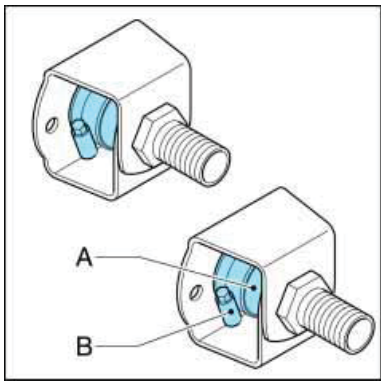
1. Clean the (new) pump hose on the outside and fully lubricate it with Bredel lubricant.

2. Fit the pump hose (A) via one of the ports.



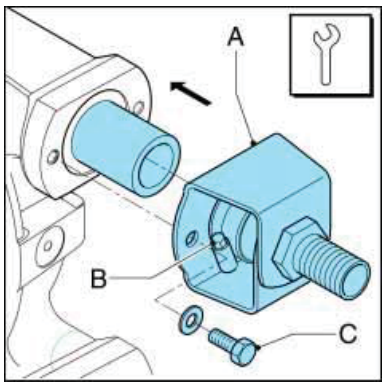
3. Let the motor run to let the rotor pull the hose in the pump housing. Stop the motor when the hose sticks out equally from both sides of the pump housing.

4. Check that the rubber bushes (A) are not deformed or damaged and replace them if necessary.



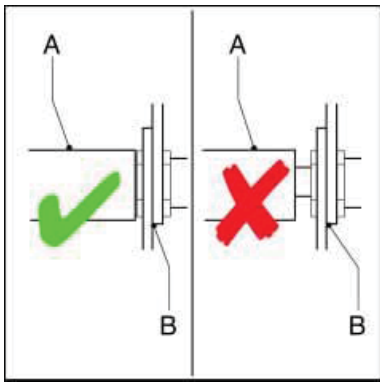
5. Check that the hose clamps (B) are not damaged and replace them if necessary.

6. First fit the inlet port.
Push the bracket (A) and the hose clamp (B) over the hose together. Align the holes in the bracket with the ones at the front of the port. Position the two retaining bolts (C) and tighten them. Make sure the bolts are tightened with the correct torque. Refer to § 11.1.6.

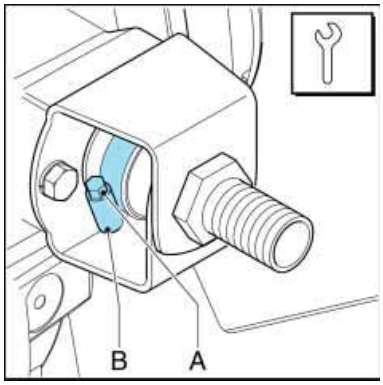


7. Fit the suction line.

8. Turn the rotor in such a way that the hose (A) is pressed firmly against the bracket (B).



9. Tighten the bolt (A) of the hose clamp (B). Make sure the bolt is tightened with the correct torque. Refer to § 11.1.6.



10. Now fit the other port. For this port proceed in the same way as described above for the inlet port.

11. Fill the pump housing with Bredel lubricant. Refer to § 7.5.

7.7 Exchanging replacement parts

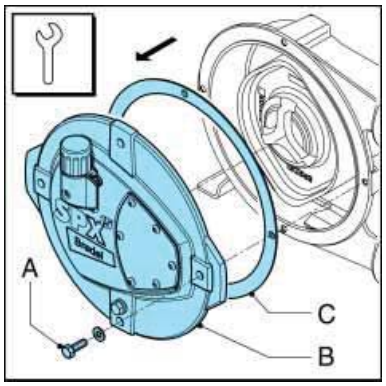
7.7.1 Replacing rotor, bearings and seal ring

1. Remove the pump hose. Refer to § 7.6.1.

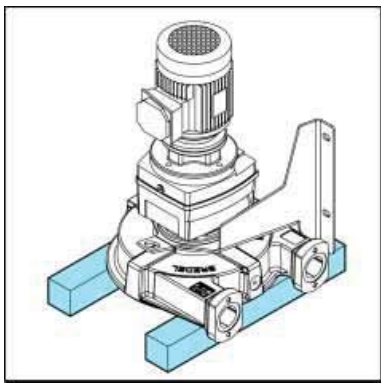
2. Isolate the pump from the electrical supply.

3. Remove the cover (B) by loosening the retaining bolts (A).

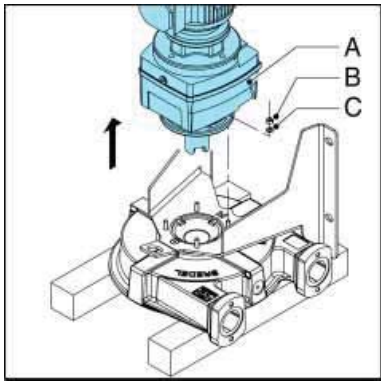
4. Check the gasket (C) and replace it if necessary.



5. Put the hose pump on blocks. Make sure the space between the blocks is wide enough for the rotor to fall.



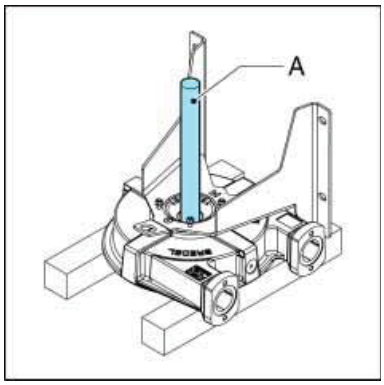
6. Remove the nuts (B) and the pump drive (A).



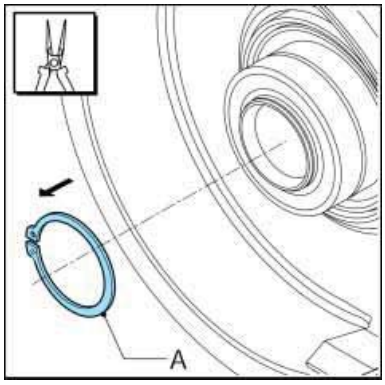
7. Put a plastic or wooden drive pin (A) on the rotor.

8. Hit the drive pin firmly with a hammer to remove the rotor.

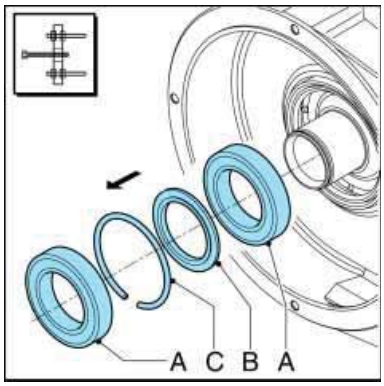
9. Put the hose pump upright on the support.



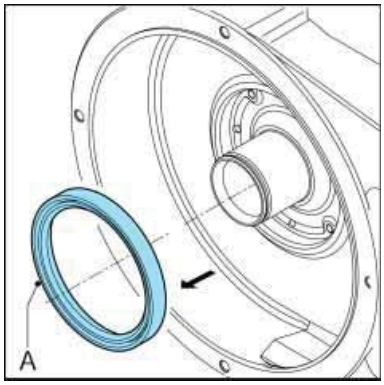
10. Dismount the circlip (A) with the correct tool.



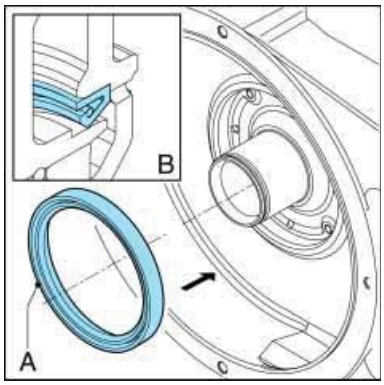
11. Dismount the bearings (A) with the correct tool, the spacer ring (B) and the retaining ring (C).



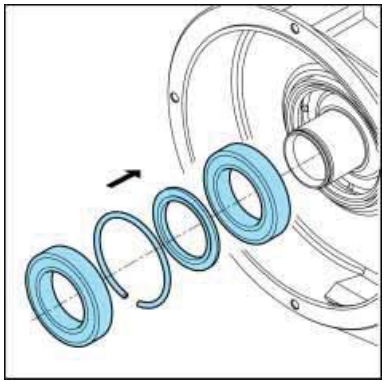
12. Remove the seal ring (A). Clean and degrease the bore.



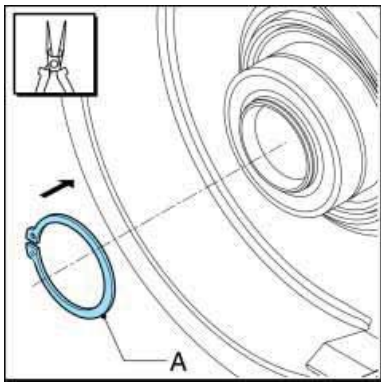
13. Fit a new seal ring (A) using good engineering practices. The seal ring must be fitted in the correct orientation (B). Make sure that the open side points to the pump cover.



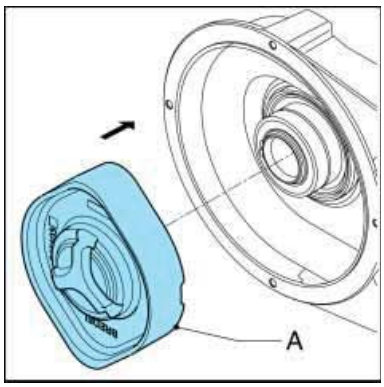
14. Check that the hub is clean and free of grease. Fit the bearings and the rings.
The bearings are placed on the hub with a slight interference fit. Use a pressing tool to press the bearings on the hub.



15. Mount the circlip (A).

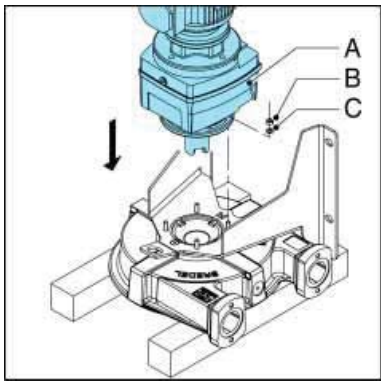


16. Fit the rotor (A). The rotor is placed on the bearings with a loose fit. Press the rotor on the hub until it clicks on the retaining ring.



17. Put the hose pump on two blocks.

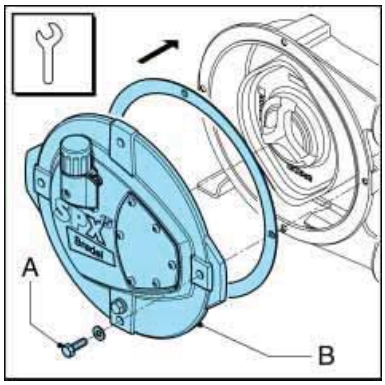
18. Fit the pump drive (A) with the nuts (B) and washers (C). Tighten to the specified torque settings. Refer to § 11.1.6.



19. Put the hose pump upright on the support.

20. Check the position of the rotor. If necessary press the rotor on the hub until it clicks on the retaining ring.

21. Refit the cover (B). Make sure that the 4 bolts (A) are refitted and that they are tightened in the correct order, diagonally opposite each other. Refer to § 11.1.6.



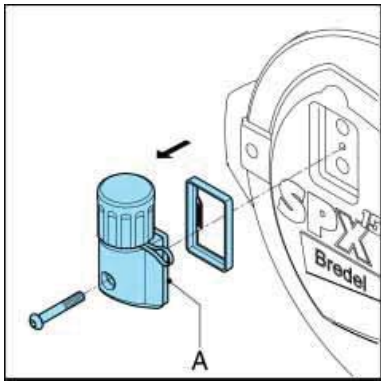
22. Switch on the electrical supply to the pump.

23. Fit the (new) pump hose. Refer to § 7.6.3.

7.8 Fitting options

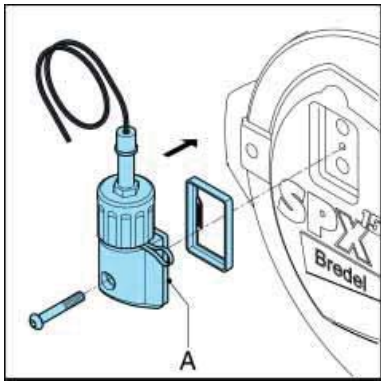
7.8.1 Fitting a high-level float switch

1. Dismount the standard breather (A) on the cover of the pump head.



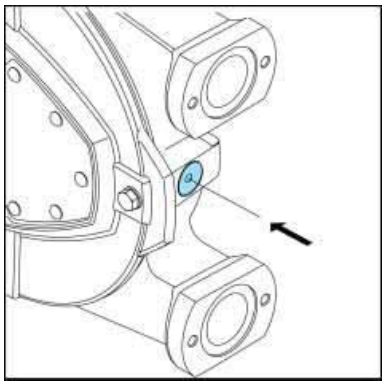
2. Mount the breather (A) with high-level float switch.

3. Connect the high-level float switch to the electrical supply. Bear in mind that the electrical contact of the float switch is normally closed (NC). When the lubricant level is (too) high the contact will open.



7.8.2 Fitting revolution counter

1. Please consult your Bredel representative for instructions to fit a revolution counter.



8 STORAGE

8.1 Hose pump

- Store the hose pump or pump parts in a dry area. Make sure that the hose pump or pump parts are not exposed to temperatures lower than -40 °C (-104 °F) or higher than +70 °C (+158 °F).
- Cover the openings of the inlet and outlet ports.
- Prevent corrosion of untreated parts. For this purpose use the correct protection or packaging means.
- After a long period of standstill or storage, the static load on the pump hose may have caused permanent deformation, which will reduce the life of the pump hose. To prevent this, remove the pump hose.

8.2 Pump hose

- Store the pump hose in a cool and dark room. After 2 years the hose material will age, which will reduce the life of the hose.

9 TROUBLESHOOTING

	**WARNING** Disconnect and lock the power supply to the pump drive before any work is carried out. Wait two minutes to make sure that the capacitors have discharged. This is necessary when the motor is fitted with a frequency controller and has single phase power supply.

If the hose pump does not function (correctly), consult the following checklist to see if you can remedy the error yourself. If this is not the case, contact your Bredel representative.

Problem	Possible cause	Correction
Failure to operate.	No voltage.	Check that the supply power switch is on.
		Check the electrical supply is available at the pump.
	Stalled rotor.	Check if the pump is stalled by incorrect fitting of the hose.
	Lubricant level monitoring system has been activated.	Check that the lubricant level monitoring system has stalled the pump. Check the functioning of the lubricant level monitoring system, or check the lubricant level.

Problem	Possible cause	Correction
High pump temperature.	Non standard hose lubricant used.	Consult the Bredel representative for the correct lubricant.
	Low lubricant level.	Add Bredel lubricant. For the required amount of lubricant refer to § 11.1.4.
	Product temperature too high.	Consult the Bredel representative about the maximum temperature range of the product.
	Internal friction on the hose caused by blocked or poor suction characteristics.	Check pipework/valves for blockages. Ensure that the suction pipework is as short as possible and that the diameter is large enough.
	High pump speed.	Reduce pump speed to a minimum. Consult with your Bredel pump representative for advice on optimum pump speeds.

Problem	Possible cause	Correction
Low capacity / pressure.	Shut-off valve in the suction line (partly) closed.	Fully open the shut-off valve.
	Hose rupture or badly worn hose.	Replace hose. Refer to § 7.6.
	(Partial) blockage of the suction line or too little product on the suction side.	Ensure that the suction line is clear of blockages and that sufficient product is available.
	Connections and hose clamps not correctly mounted, which makes the pump suck air.	Tighten connections and hose clamps.
	The filling degree of the pump hose is too low, because the speed is too high in relation to the viscosity of the product to be pumped and the inlet pressure. The suction line can be too long or too narrow or a combination of these factors.	Consult your Bredel representative for a recommendation.

Problem	Possible cause	Correction
Vibration of the pump and pipework.	Suction and discharge lines are not secured correctly.	Check and secure pipework.
	High pump speed with long suction and discharge lines or high product specific gravity or a combination of these factors.	Reduce pump speed. Reduce the line lengths on both suction and discharge where possible. Consult your Bredel representative for a recommendation.
	Too narrow diameter of suction and/or discharge line.	Increase the diameter of the suction/discharge lines.
Short hose life.	Chemical attack of the hose.	Check the compatibility of the hose material with the product to be pumped. Consult your Bredel representative for correct hose selection.
	High pump speed.	Reduce pump speed.
	High discharge pressures.	Maximum working pressure 750 kPa (109 psi). Check that the discharge line is not blocked, the shut-off valves are fully opened and the pressure relief valve functions properly (if present in the discharge line).
	High product temperature.	Consult your Bredel representative for correct hose selection.
	High pulsations.	Restructure the discharge and inlet conditions.

Problem	Possible cause	Correction
Hose pulled into the pump.	Insufficient or no hose lubricant in the pump head.	Add extra lubricant. Refer to § 7.5.
	No original Bredel lubricant.	Consult the Bredel representative for the correct lubricant.
	Extremely high inlet pressure - larger than 300 kPa (43.5 psi).	Reduce the inlet pressure.
Lubricant leakage at bracket.	Hose blocked by an incompressible object in the hose. The hose cannot be compressed and will be pulled into the pump housing.	Remove hose, check for blockages and replace if necessary.
	Bolts of bracket loose.	Tighten to the specified torque settings. Refer to § 11.1.6.
	Bolts of hose clamps loose.	Tighten to the specified torque settings. Refer to § 11.1.6.
Leakage from the rear of the pump housing "Buffer zone".	Damaged seal ring.	Replace seal ring.

10 HAZARDOUS ENVIRONMENTS (ATEX)

10.1 ATEX compliance

Hose pumps that are configured for use in potentially explosive environments comply to CE directive 94/9/EC (ATEX directive). The hose pumps as mentioned on the front cover comply to: Group II Appliances, category 2 GD. Refer to § 10.2.1 for a more detailed definition.

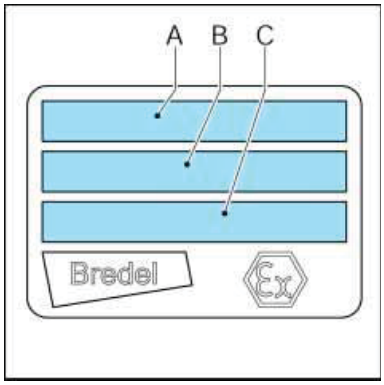
10.2 Identification

10.2.1 Pump head

Hose pumps that are configured for use in potentially explosive environments are identified by an extra ATEX plate on the rear of the pump head on one of the ports. The plate contains the following data:

A ATEX code
B ATEX document number
C year of manufacture

The following table explains the ATEX code on the ATEX plate.



II	Group II equipment for use in potentially explosive atmospheres, other than mines susceptible to firedamp.
2	Category 2 equipment for the requisite level of protection, even if frequently occurring disturbances or equipment faults have to be taken into account.
G	Equipment for use in explosive atmospheres caused by gases, vapours or mists.
D	Equipment for use in explosive atmospheres caused by dusts.
k	Equipment protected by liquid immersion.
c	Equipment protected by constructional safety.
b	Equipment protected by control of ignition source.

T5	Classification for Group II G equipment concerning the maximum surface temperature.
T90°C	Maximum surface temperature for Group II D equipment, according to thermal test (EN 13463).

10.2.2 Gearbox

The gearbox must be selected to meet your requirements concerning ATEX. Please contact your Bredel representative.

10.2.3 Electric motor

The electric motor must be selected to meet your requirements concerning ATEX. Please contact your Bredel representative.

11 SPECIFICATIONS

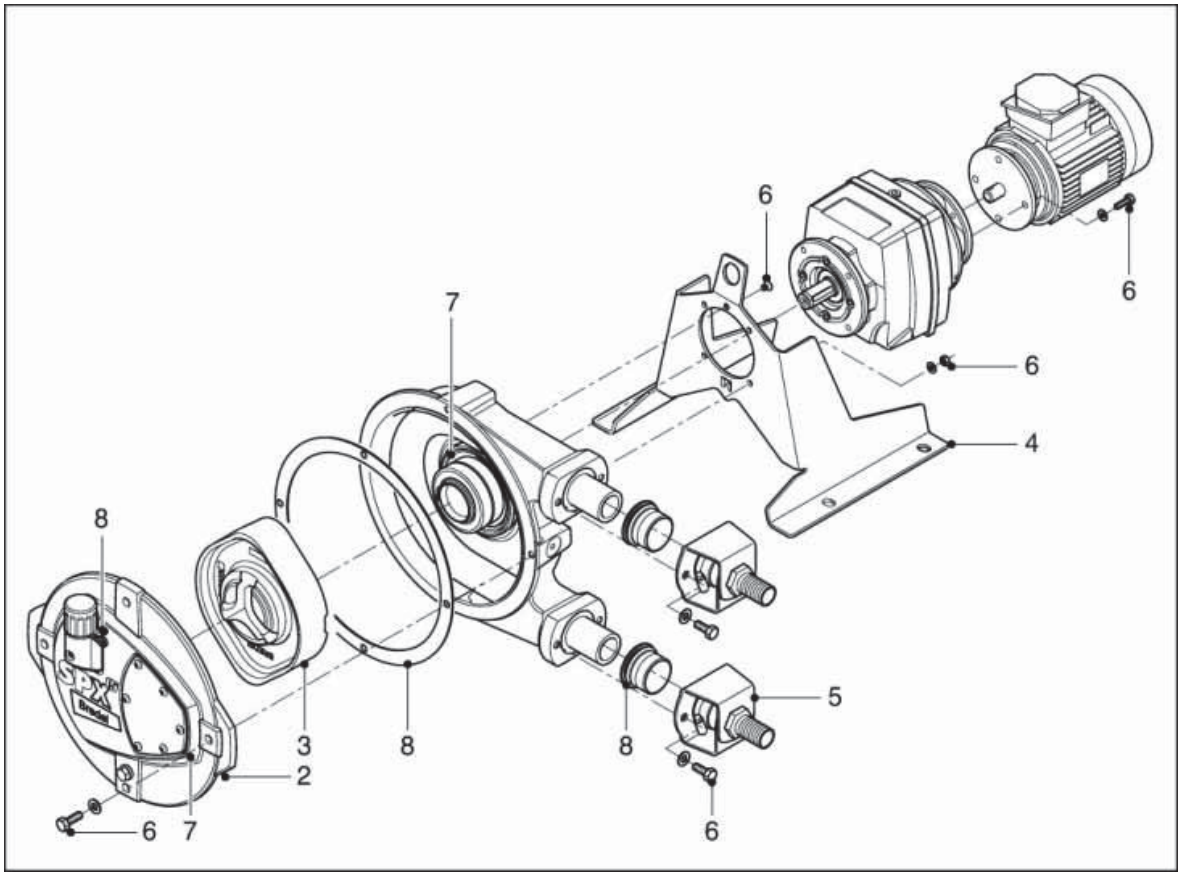
11.1 Pump head

11.1.1 Performance

Description		Unit	SPX10	SPX15	
			∅ 10 mm	∅ 15 mm	∅ 20 mm
Max. capacity, continuous		m^3/h	0.11	0.38	0.62
		gpm	0.48	1.67	2.7
Max. capacity, intermittently *		m^3/h	0.16	0.60	1.09
		gpm	0.70	2.6	4.8
Capacity per revolution		l/rev	0.022	0.083	0.152
		gal/rev	0.0058	0.022	0.040
Max. permissible working pressure	with low-pressure rotor	kPa	400	400	400
		psi	58	58	58
	with high-pressure rotor	kPa	750	750	750
		psi	109	109	109
Permissible ambient temperature		°C	-20 to +45		
		°F	-4 to +113		
Permissible product temperature		°C	-10 to +80		
		°F	+14 to +176		
Sound level at 1 m (3.3 ft)		dB(A)	60		

* Intermitted duty: "Let the pump stand still to cool down for at least 1 hour after 2 hours of operation".

11.1.2 Materials



Pos	Description	Material
1	Pump housing	Cast-iron
2	Cover	Cast-iron
3	Pump rotor	Cast-iron
4	Pump support	AISI 316 or galvanized steel
5	Bracket	AISI 316
6	Fasteners	AISI 316
7	Seals, gaskets	NBR
8	Seals, gaskets	EPDM

11.1.3 Surface treatment

- The pump head, the gearbox and the electric motor are provided with a two component epoxy base coat. After drying the layer thickness must be at least 30 microns.
- Subsequently these components are provided with a two component polyurethane top coat, in the RAL 3011 color red and with a 100% gloss rate. After this coat of paint has dried the layer thickness must be at least 30 microns.
- All galvanized parts, exclusive of mounting articles, have been provided with an electrolytic zinc layer of 15 - 20 microns.

11.1.4 Lubricant table pump

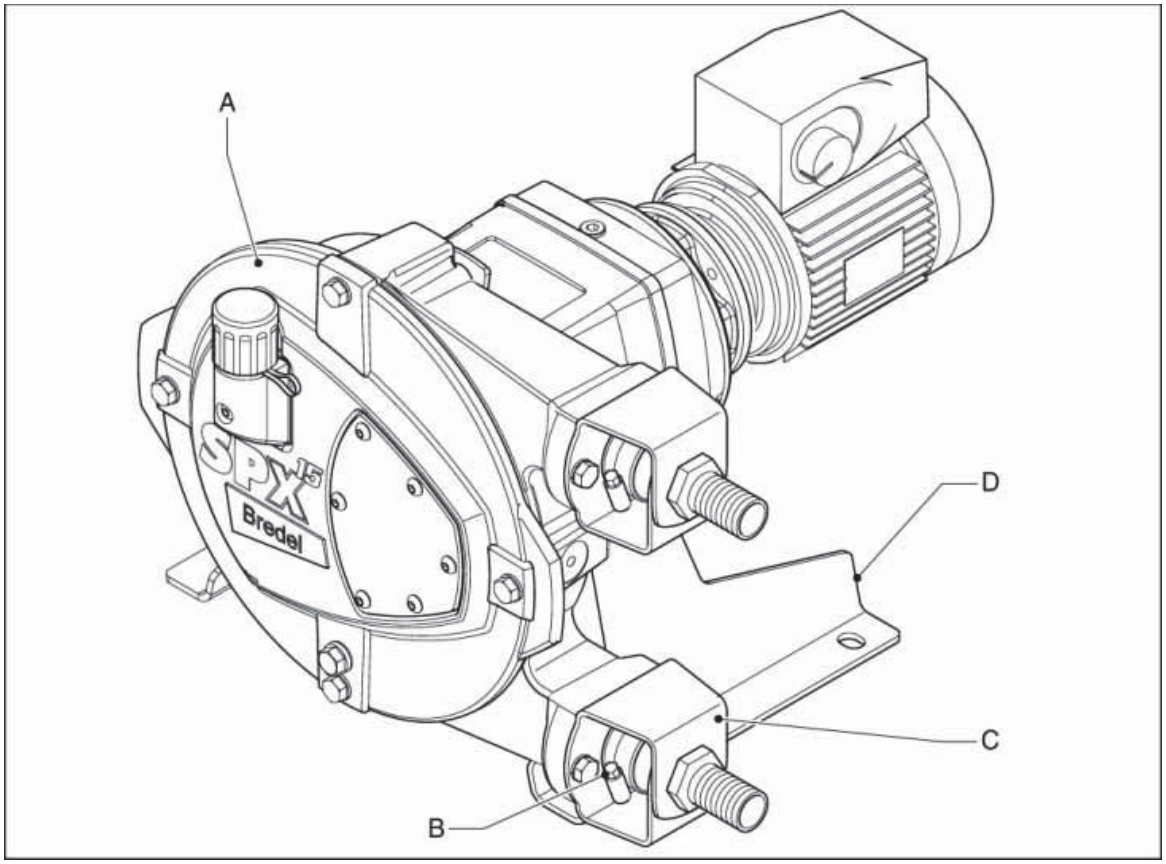
	Unit	SPX10	SPX15
Lubricant	-	Bredel	Bredel
Required quantity	l	0.25	0.5
	gal	0.066	0.13

	Should you require additional information with respect to the safety data sheet, consult your Bredel representative.

11.1.5 Weights

Description		Unit	Weight	
			SPX10	SPX15
Pump head (inclusive of hose, lubricant and pump support)		kg	12.2	18.5
		lbs	26.9	40.8
Pump support		kg	1.8	2.4
		lbs	4.0	5.3
Hose		kg	0.4	0.8
		lbs	0.9	1.8
Lubricant		kg	0.3	0.6
		lbs	0.7	1.3
Pump cover (complete)		kg	2.3	6.0
		lbs	5.1	13.2
Coupling		kg	0.4	0.4
		lbs	0.9	0.9
Gearbox	G042...	kg	9.5	9.0
		lbs	20.9	19.8
	G043...	kg	10	10
		lbs	22	22
Electric motor		kg	4.5	6.5
		lbs	9.9	14.3

11.1.6 Torque figures



Pos	Description	Unit	Torques	
			SPX10	SPX15
A	Cover	Nm	10	25
		lbf in	88.5	221
B	Hose clamp	Nm	40	40
		lbf in	354	354
C	Bracket	Nm	10	25
		lbf in	88.5	221
D	Support	Nm	10	10
		lbf in	88.5	88.5

11.2 Gearbox

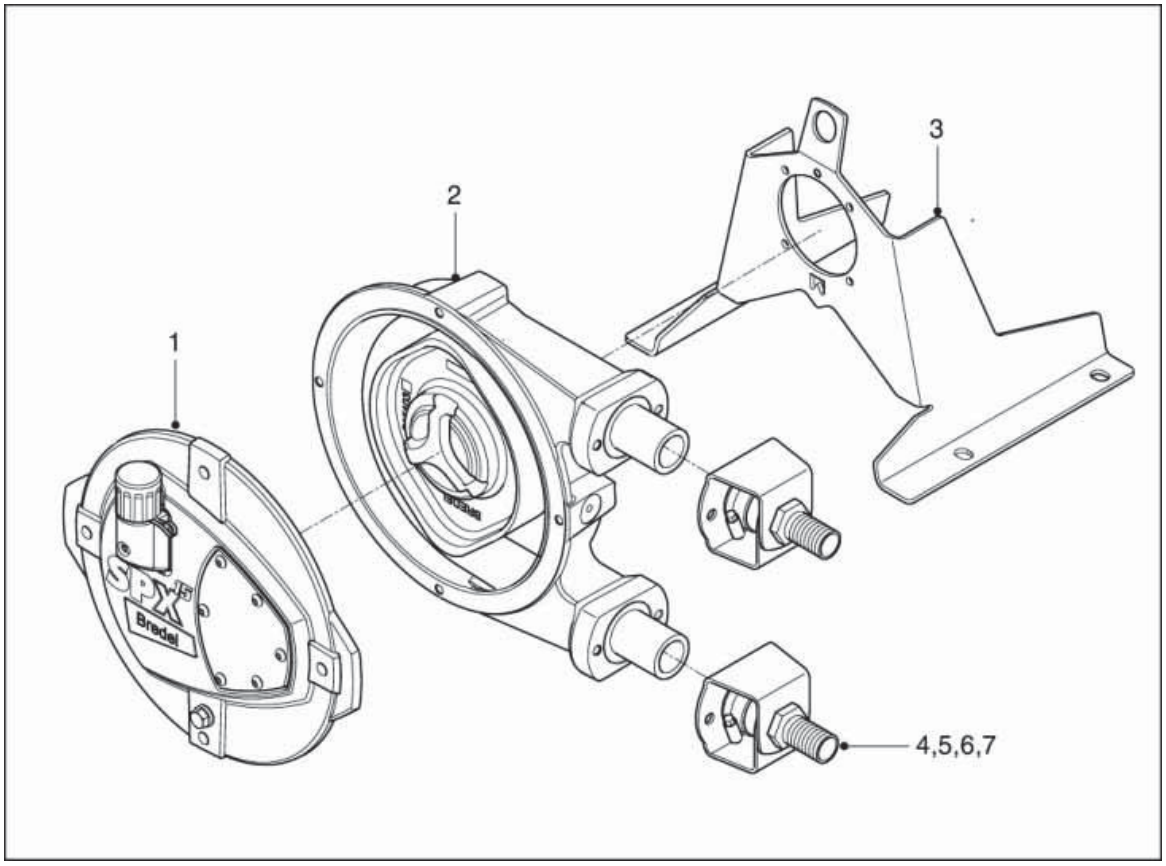
Type	Co-axial gearbox with helical gears
Number of stages	Two or three
Lubrication	Lubricated for life
Mounting position	IM 2001 (IM B5) flanged gearbox with keyed shaft in horizontal position.
Motor adapter	Adapter in conformance with IEC-B5.
Optional motor adapter	Adapter in conformance with NEMA C.

11.3 Electric motor

Protection class	IP55/IK08
Insulation class	F
Increase in temperature	Within class B
Voltage/frequency	230/400 V - 3 phases - 50 Hz

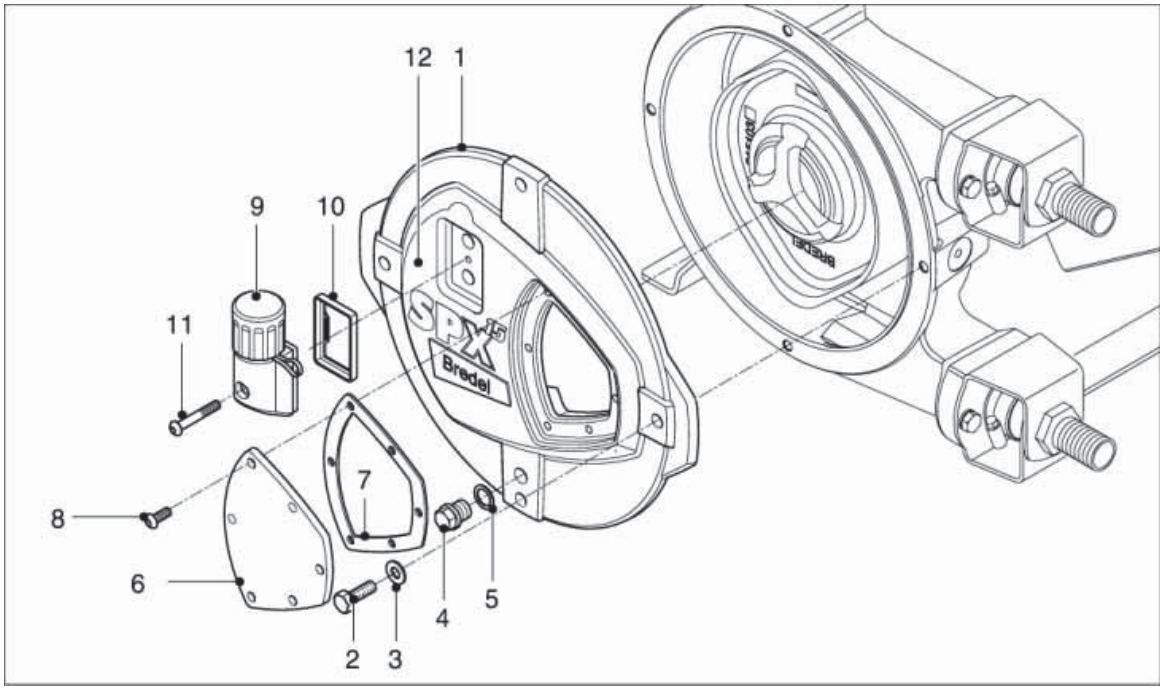
11.5 Parts list

11.5.1 Overview



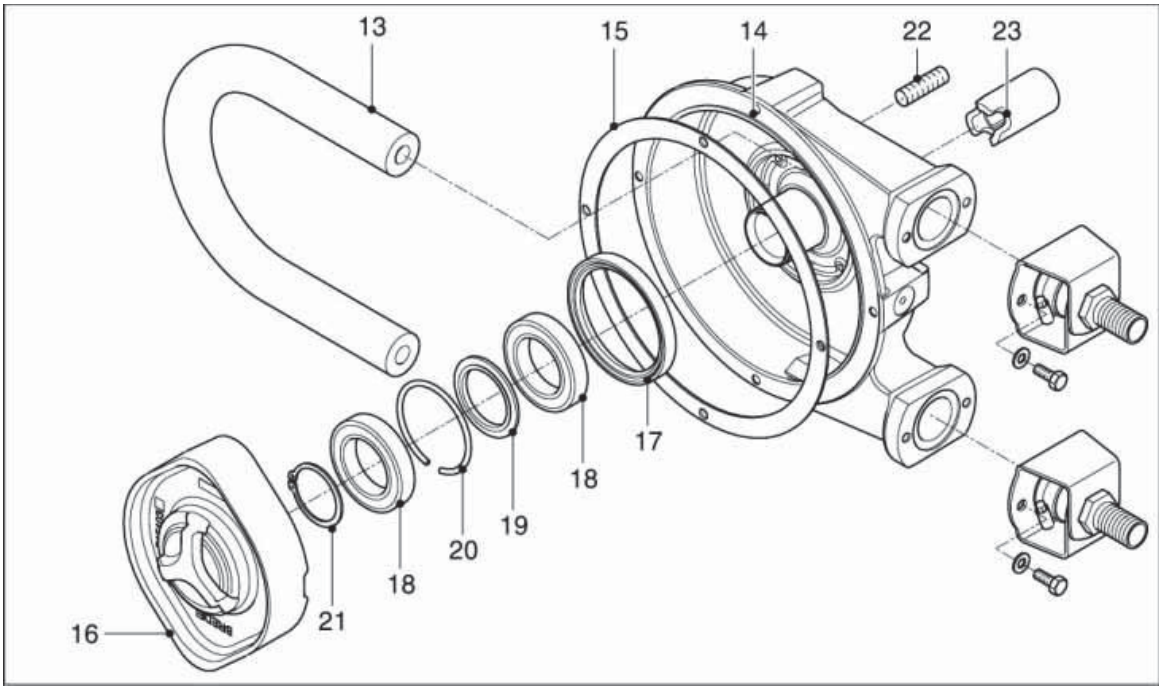
Pos.	Description
1	Cover assembly. Refer to § 11.5.2.
2	Pump head assembly. Refer to § 11.5.3.
3	Pump support assembly. Refer to § 11.5.4.
4	Hose nipple assembly. Refer to § 11.5.5.
5	Threaded nipple assembly. Refer to § 11.5.6.
6	Flange assembly (1). Refer to § 11.5.7.
7	Flange assembly (2). Refer to § 11.5.8.

11.5.2 Cover assembly



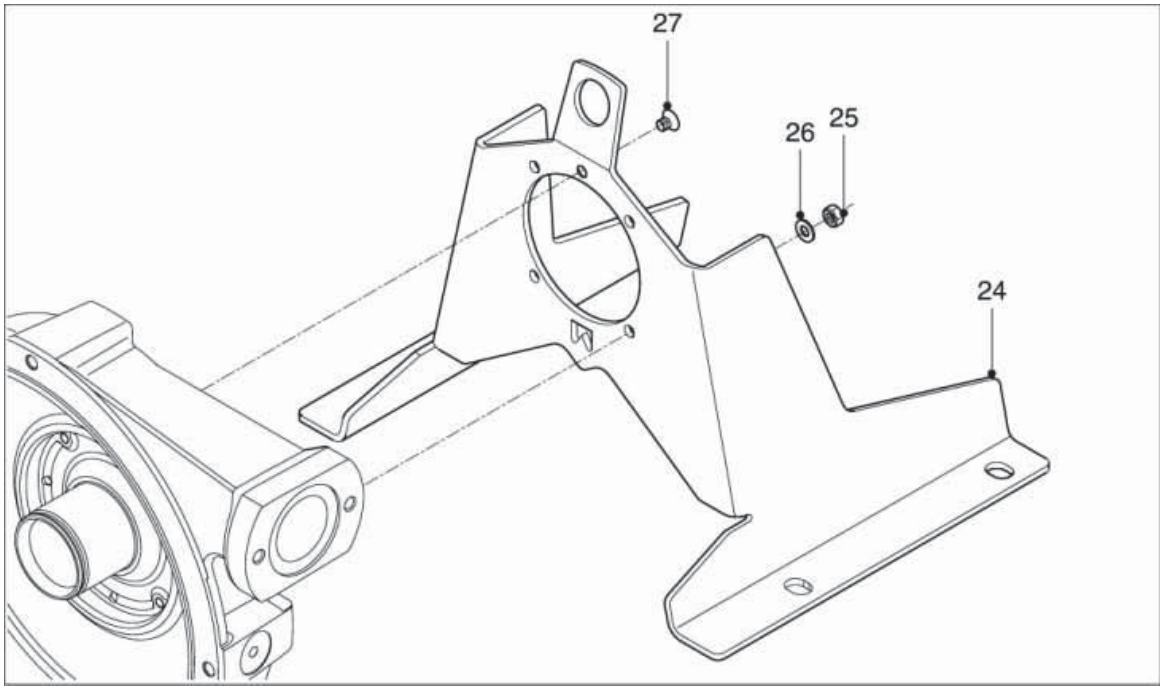
Pos.	Quantity	Description	SPX10	SPX15	
			∅ 10 mm	∅ 15 mm	∅ 20 mm
1	1	Cover	210102	215102	215102
2	2	Bolt, hex. head	F504038	-	-
	4		-	F504055	F504055
3	2	Washer	F523010	-	-
	4		-	F523012	F523012
4	1	Drain plug	F911502	F911502	F911502
5	1	Gasket	F342019	F342019	F342019
6	1	Inspection window	210155	215155	215155
7	1	Gasket	210156	215156	215156
8	3	Round head screw	F552535	-	-
	6		-	F552535	F552535
9	1	Breather	29093146	29093146	29093146
10	1	Gasket	29056334	29056334	29056334
11	1	Round head screw	F552542	F552542	F552542
12	1	Sticker	210238	215238	215238

11.5.3 Pump head assembly



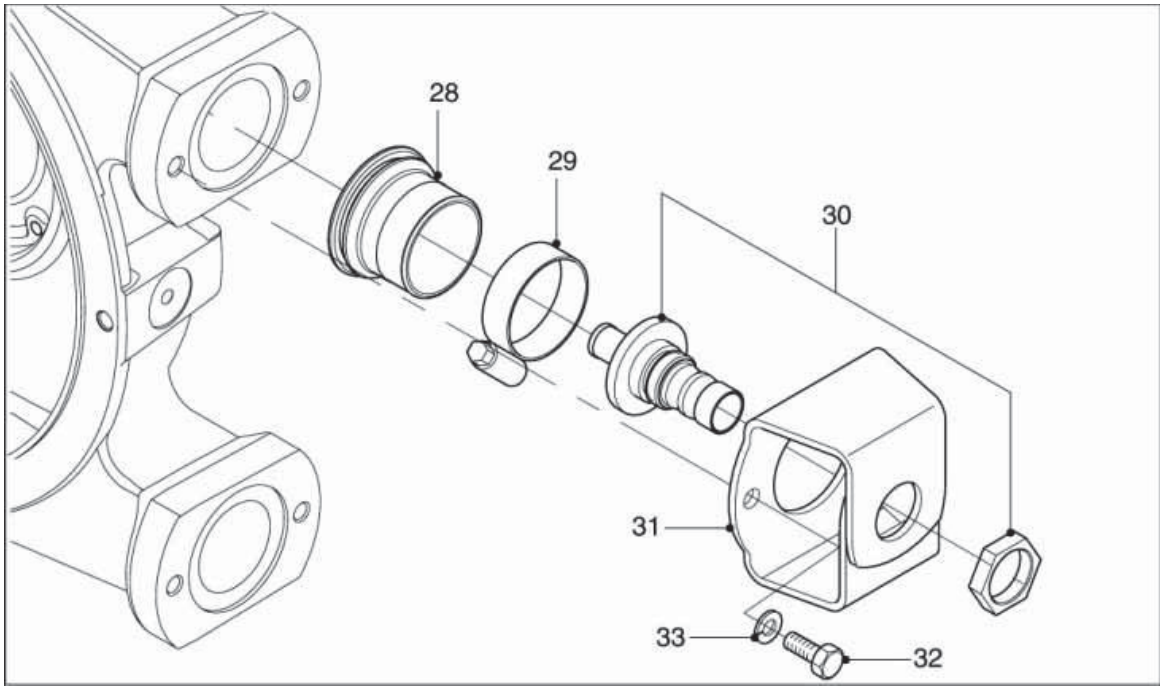
Pos.	Quan-tity	Description	SPX10	SPX15	
			∅ 10 mm	∅ 15 mm	∅ 20 mm
13	1	Hose NR	010020	015020	020020
	1	Hose NBR	010040	015040	-
	1	Hose EPDM	010075	015075	-
14	1	Pump housing	210101	215102	215102
15	1	Gasket	210123	215123	215123
16	1	Rotor, low pressure (L)	210103L	215103L	220103L
		Rotor, high pressure (H)	210103H	215103H	220103H
17	1	Seal ring	S211811	S211811	S211811
18	2	Bearing	B141060	B141060	B141060
19	1	Spacer ring	29070201	29070201	29070201
20	1	Retaining ring	29080297	29080297	29080297
21	1	Circlip	F343043	F343043	F343043
22	4	Stud	F511001	F511001	F511001
23	1	Coupling, ∅ 0.8 x 2.5 in	29063255	29063255	29063255
		Coupling, ∅ 0.8 x 2.7 in	29068255	29068255	29068255
		Coupling, ∅ 1.0 x 2.5 in	29064255	29064255	29064255
		Coupling, ∅ 1.0 x 2.7 in	29069255	29069255	29069255

11.5.4 Support assembly



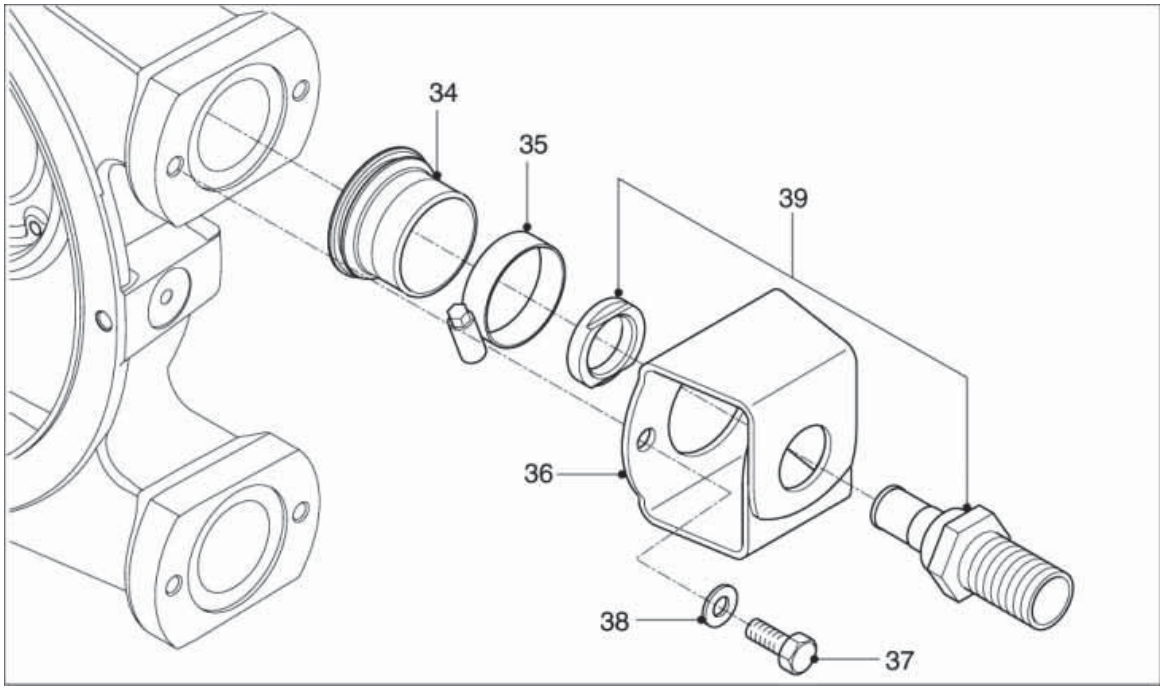
Pos.	Quan-tity	Description	SPX10	SPX15	
			∅ 10 mm	∅ 15 mm	∅ 20 mm
24	1	Pump support	210106	215106	215106
25	4	Nut, hex. head	F516010	F516010	F516010
26	4	Washer	F532008	F532008	F532008
27	1	Screw, countersunk head	F507038	F507038	F507038

11.5.5 Hose nipple assembly (PTFE/PDVF)



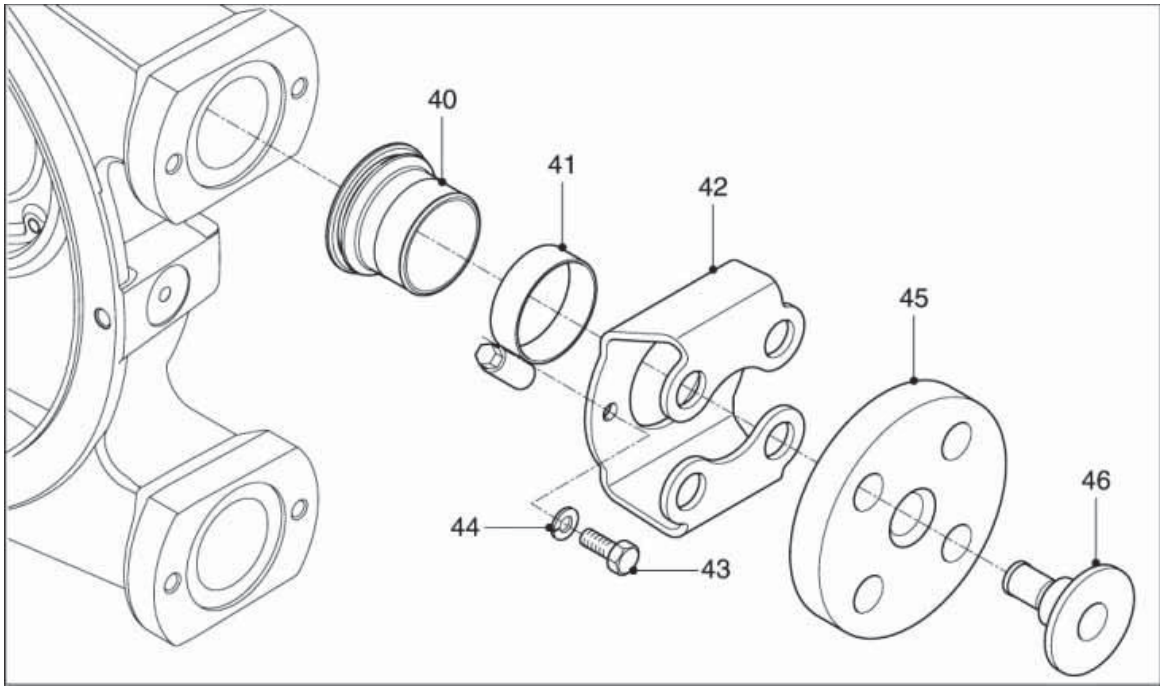
Pos.	Quantity	Description	SPX10	SPX15	
			∅ 10 mm	∅ 15 mm	∅ 20 mm
28	2	Rubber bush	210119	215119	215119
29	2	Hose clamp	C111506	C111508	C111508
30	2	Hose nipple PTFE	210688010	215688015	215688020
		Hose nipple PVDF	210690010	215690015	215690020
31	2	Bracket	210197	215197	215197
32	4	Bolt, Hex. head	F504036	F504054	F504054
33	4	Washer	F532008	F532009	F532009

11.5.6 Hose or threaded nipple assembly (AISI 316)



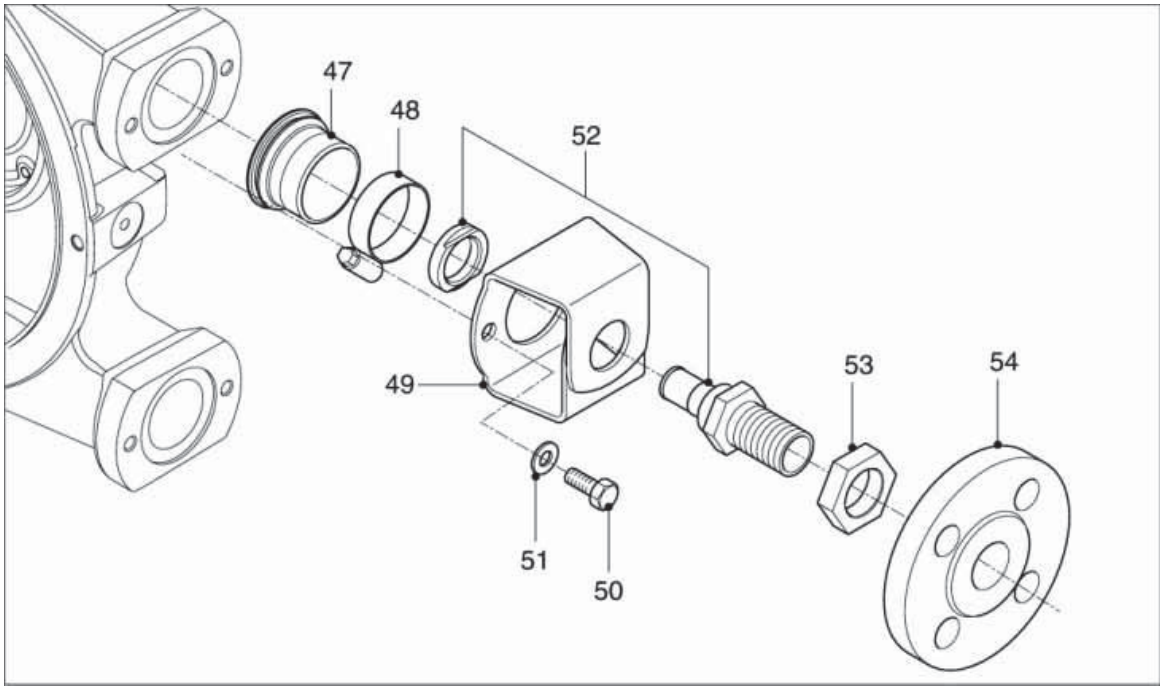
Pos.	Quan-tity	Description	SPX10	SPX15	
			∅ 10 mm	∅ 15 mm	∅ 20 mm
34	2	Rubber bush	210119	215119	215119
35	2	Hose clamp	C111506	C111508	C111508
36	2	Bracket	210197	215197	215197
37	4	Bolt, Hex. head	F504036	F504054	F504054
38	4	Washer	F532008	F532009	F532009
39	2	Threaded nipple (BSP) SS	210693010	215693015	215693020
		Hose nipple SS	210686010	215686015	215686020
		Threaded nipple DIN 11851 SS	210702010	215702015	215702020

11.5.7 Flange assembly (1)



Pos.	Quantity	Description	SPX10	SPX15	
			∅ 10 mm	∅ 15 mm	∅ 20 mm
40	2	Rubber bush	210119	215119	215119
41	2	Hose clamp	C111506	C111508	C111508
42	2	Flange bracket	210197A	215197A	215197A
43	4	Bolt, Hex. head	F504036	F504054	F504054
44	4	Washer	F532008	F532009	F532009
45	2	Flange ASA	210199A	215199A	215199A
46	2	Insert PP	210189	215189	220189

11.5.8 Flange assembly (2)



Pos.	Quan-tity	Description	SPX10	SPX15	
			∅ 10 mm	∅ 15 mm	∅ 20 mm
47	2	Rubber bush	210119	215119	215119
48	2	Hose clamp	C111506	C111508	C111508
49	2	Bracket	210197	215197	215197
50	4	Bolt, Hex. head	F504036	F504054	F504054
51	4	Washer	F532008	F532009	F532009
52	2	Threaded nipple (BSP) SS	210693010	215693015	215693020
53	2	Nut	F519003	F519004	F519004
54	2	Flange DIN SS	A304504	A304505	A304505
	2	Flange ASA SS	A305504	A305505	A305505

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www.bredel.com
E-mail: uusupport@watson-marlow.bredel.com

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29210311 TS 04-027

SPX Hose Pump Paint Specification



HOUSING:

Primary coating:

Two pack (component) epoxy resin primer

dry thickness 20-40 micron

colour grey, RAL 7005

gloss finish 60% reflection

make Schaepman, type Beltipox P.4.G

Final coating:

Two pack (component) acrylate isocyanate combination

dry thickness 20-40 micron

colour grey, RAL 3011 brown red

make Schaepman, type Belticryl C.4.G

PUMP ROTOR

One layer of two pack (component) epoxy resin primer

dry thickness 20-40 micron

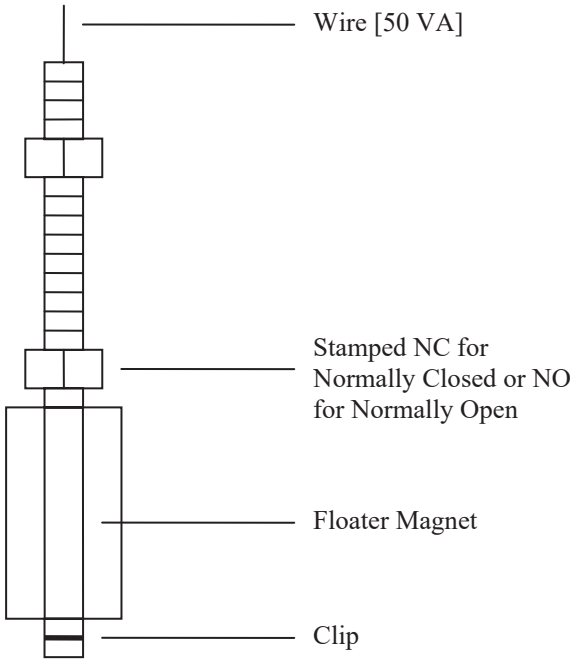
colour grey, RAL 7005

make Schaepman, type Beltipox P.4.G

HIGH LUBRICANT LEVEL SENSOR

FLOAT SWITCHES FOR HOSEPUMPS:

High level switches are devices used for sensing the lubricant level inside the pump casing. Upon hose failure, product being pumped will enter the pump housing through the damaged hose. The pumped product will mix with the hose lubricant causing the level in the pump to rise. A high level float switch installed near the top of the pump casing through the vent cap and will sense the failure which, if wired to the motor starter or speed controller, will shut the pump down. This becomes critical if the pump is left unattended for long periods of time. If the pump is allowed to run with an abrasive product in the pump housing, the pressing shoes or housing can be damaged.



SPECIFICATION

The high level switch is, as standard, configured in the NORMALLY CLOSED position. Converting the switch to NORMALLY OPEN is a simple matter of removing the “clip“ and “flipping over” the floater magnet. The floater magnet has a NO stamped on one end and an NC on the other. The easy way of determining if the switch is NO or NC is to look at the designation closest to the connecting wires.

The switch is rated for the following maxima:
Current Max: 1A
Voltage Max: 250V
Power Max: 50VA

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date: 06/19/2007 Reviewed on: 06/19/2007

1 Identification of substance

· **Product details**

· **Trade name: LUBRICANT/COOLANT FOR BREDEL HOSEPUMP 'FOOD GRADE'**
NSF Registration No 123204, Category Code H1

· **Application of the substance / the preparation:** Coolant/ Cutting solution

· **Manufacturer/Supplier:**
Bredel Hose Pumps B.V.
Sluisstraat 7, 7491 GA tel.: +31 74 3770000
P.O.Box 47, 7490 AA fax.: +31 74 3761175
DELDEN, the Netherlands

· **Information department:** Internal security department

2 Composition/Data on components

· **Chemical characterization**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**
56-81-5 glycerol 50-100%

3 Hazards identification

· **Hazard description:** not applicable
· **Information pertaining to particular dangers for man and environment**
not applicable
· **Classification system**
The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.
· **NFPA-Ratings for USA**
Health = 0
Fire = 1
Reactivity = 0

4 First aid measures

· **General information** No special measures required.
· **After inhalation** Not applicable.
· **After skin contact** Wash with water.
· **After eye contact** Rinse opened eye for several minutes under running water.
· **After swallowing** If symptoms persist consult doctor.

5 Fire fighting measures

· **Suitable extinguishing agents** Water spray, CO2, extinguishing powder, foam.
· **Special hazards caused by the material, its products of combustion or resulting gases:**
Formation of toxic gases is possible during heating or in case of fire.
· **Protective equipment:** Wear fully protective suit.

6 Accidental release measures

· **Person-related safety precautions:** Not required.
· **Measures for environmental protection:** Dilute with plenty of water.

(Contd. on page 2)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date: 06/19/2007 Reviewed on: 06/19/2007

Trade name: LUBRICANT/COOLANT FOR BREDEL HOSEPUMP 'FOOD GRADE'
NSF Registration No 123204, Category Code H1

(Contd. of page 1)

· **Measures for cleaning/collecting:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose of the collected material according to regulations.

7 Handling and storage

· **Handling**
· **Information for safe handling:** No special measures required.
· **Information about protection against explosions and fires:**
No special measures required.

· **Storage**
· **Requirements to be met by storerooms and receptacles:**
Suitable material for receptacles: stainless and carbon steel and plastics.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:**
This product is hygroscopic.
Protect from humidity and water.

* 8 Exposure controls and personal protection

· **Components with limit values that require monitoring at the workplace:**
56-81-5 glycerol
PEL 15*; 5** mg/m³
*Total dust **Respirable fraction

· **Additional information:**
The lists that were valid during the creation were used as basis.

· **Personal protective equipment**
· **General protective and hygienic measures**
The usual precautionary measures for handling chemicals should be followed.
· **Breathing equipment:** Not required.
· **Protection of hands:** Safety gloves recommended.
· **Material of gloves**
Neoprene
Nitrile rubber, NBR
Fluorocarbon rubber (Viton)
· **Penetration time of glove material**
The determined penetration times according to EN 374 part III are not performed under practical conditions. Therefore a maximum wearing time, which corresponds to 50% of the penetration time, is recommended.
· **For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:**
Butyl rubber, BR
· **Eye protection:** Goggles recommended.

(Contd. on page 3)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date: 06/19/2007 Reviewed on: 06/19/2007

Trade name: LUBRICANT/COOLANT FOR BREDEL HOSEPUMP 'FOOD GRADE'
NSF Registration No 123204, Category Code H1

(Contd. of page 2)

9 Physical and chemical properties

· **General Information**

Form:	Fluid
Color:	Clear Green
Odor:	Odorless

· **Change in condition**

Boiling point/Boiling range:	260°C (500°F)
Solidification point:	- 30°C (-22°F)

· **Flash point:** > 100°C (> 212°F) (ASTM D6450)

· **Ignition temperature:** ~ 370°C (~ 698°F)

· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

· **Explosion limits:**

Lower:	2.6 Vol %
Upper:	11.3 Vol %

· **Vapor pressure at 20°C (68°F):** 1.3 hPa (1 mm Hg)

· **Density at 20°C (68°F):** ~ 1.245 g/cm³ (ISO 2811-2)

· **Solubility in / Miscibility with**

Water:	Fully miscible
· **Alcohols:**	Fully miscible

· **pH-value:** Neutral

· **Viscosity:**

dynamic at 20°C (68°F):	600-700 mPas (ASTM D2196)

10 Stability and reactivity

· **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
· **Materials to be avoided:** oxidizing agents
· **Dangerous products of decomposition:** No dangerous decomposition products known

11 Toxicological information

· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**
· **LD50 Product:** oral: > 10000 mg/kg (rat, literature).

· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.

(Contd. on page 4)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date: 06/19/2007 Reviewed on: 06/19/2007

Trade name: LUBRICANT/COOLANT FOR BREDEL HOSEPUMP 'FOOD GRADE'
NSF Registration No 123204, Category Code H1

(Contd. of page 3)

· **Additional toxicological information:**
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

12 Ecological information

· **Information about elimination (persistence and degradability):**
Easily biodegradable
Biodegradability: > 85%.

· **Acquatic toxicity:**
· **fish toxicity:** LC50: > 5000 mg/l, literature.

· **Behavior in sewage processing plants:**
In case of judicious use the product does not cause disturbances in water purification plants, according to experiences made so far.

· **General notes:**
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water.
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Classification according VwVwS dated May 1999. (German legislation)

13 Disposal considerations

· **Product:**
· **Recommendation**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**
· **Recommendation:**
With due observance of local regulations, for instance transport to refuse incinerator.
· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· **Transport/Additional information:**
Not dangerous according to the ADR/RID, IMDG, ICAO/IATA and DOT specifications.

15 Regulations

· **Cancerogenity categories**
· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.
· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.
· **NTP (National Toxicology Program)**
None of the ingredients is listed.

(Contd. on page 5)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date: 06/19/2007 Reviewed on: 06/19/2007

Trade name: LUBRICANT/COOLANT FOR BREDEL HOSEPUMP 'FOOD GRADE'
NSF Registration No 123204, Category Code H1

(Contd. of page 4)

· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients is listed.

· **MAK (German Maximum Workplace Concentration)**
None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

· **Product related hazard informations:**
Observe the general safety regulations when handling chemicals
The product is not subject to identification regulations according to directives on hazardous materials.

· **National regulations**

· **Water hazard class:**
Water hazard class 1 (Self-assessment): slightly hazardous for water.

16 Other information

Disclaimer of liability: the information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

· *** Data compared to the previous version altered.**

USA

Part 3: Motors

The World's Leader in Peristaltic Pumping Technology

BALDOR • RELIANCE

Product Information Packet

VEM3538

.5HP,1735RPM,3PH,60HZ,56C,3513M,TEFC,F1

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Product Detail							
Revision:	D	**Status:**	PRD/A	**Change #:**		**Proprietary:**	No
Type:	AC	**Prod Type:**	3513M	**Elec. Spec:**	35WGP862	**CD Diagram:**	CD0005
Enclosure	TEFC	**Mfg Plant:**		**Mech Spec:**	35J302	**Layout:**	35LYJ302
Frame:	56C	**Mounting:**	F1	**Poles:**	04	**Created Date:**	01-09-2008
Base:	N	**Rotation:**	R	**Insulation:**	F	**Eff. Date:**	09-11-2009
Leads:	9#18	**Literature:**		**Elec. Diagram:**		**Replaced By:**	

Nameplate NP1259L								
CAT.NO.	VEM3538							
SPEC.	35J302P862							
HP	.5							
VOLTS	230/460							
AMP	1.54/.77							
RPM	1735							
FRAME	56C	**HZ**	60	**PH**	3			
SER.F.	1.25	**CODE**	K	**DES**	B	**CL**	F	
NEMA-NOM-EFF	82.5	**PF**	74					
RATING	40C AMB-CONT							
CC		**USABLE AT 208V**	1.68					
DE	6205	**ODE**	6203					
ENCL	TEFC	**SN**						
	SFA 1.8/.9							

Performance Data at 460V, 60Hz, 0.5HP (Typical performance - Not guaranteed values)							
General Characteristics							
Full Load Torque:	1.52 LB-FT			**Start Configuration:**		DOL	
No-Load Current:	0.483 Amps			**Break-Down Torque:**		6.3 LB-FT	
Line-line Res. @ 25°C.:	36.2 Ohms A Ph / 0.0 Ohms B Ph			**Pull-Up Torque:**		3.55 LB-FT	
Temp. Rise @ Rated Load:	20ºC			**Locked-Rotor Torque:**		4.82 LB-FT	
Temp. Rise @ S.F. Load:	27ºC			**Starting Current:**		5.57 Amps	
Load Characteristics							
% of Rated Load:	**25**	**50**	**75**	**100**	**125**	**150**	**S.F.**
Power Factor:	34.0	52.0	65.0	74.0	80.0	85.0	80.0
Efficiency:	71.7	80.3	82.5	82.6	81.5	80.0	81.5
Speed:	1784.0	1770.0	1755.0	1737.0	1718.0	1697.0	1718.0
Line Amperes:	0.512	0.575	0.662	0.768	0.899	1.04	0.899

BALDOR • RELIANCE

Product Information Packet

VEM3546

1HP,1765RPM,3PH,60HZ,56C,3524M,TEFC,F1,N

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Product Detail							
Revision:	E	**Status:**	PRD/A	**Change #:**		**Proprietary:**	No
Type:	AC	**Prod Type:**	3524M	**Elec. Spec:**	35WGP529	**CD Diagram:**	CD0005
Enclosure	TEFC	**Mfg Plant:**		**Mech Spec:**	35J302	**Layout:**	35LYJ302
Frame:	56C	**Mounting:**	F1	**Poles:**	04	**Created Date:**	08-01-2007
Base:	N	**Rotation:**	R	**Insulation:**	F	**Eff. Date:**	09-11-2009
Leads:	9#18	**Literature:**		**Elec. Diagram:**		**Replaced By:**	

Nameplate NP1259L							
CAT.NO.	VEM3546						
SPEC.	35J302P529G1						
HP	1						
VOLTS	208-230/460						
AMP	3.3-3/1.5						
RPM	1765						
FRAME	56C	**HZ**	60	**PH**	3		
SER.F.	1.15	**CODE**	N	**DES**	B	**CL**	F
NEMA-NOM-EFF	87.5	**PF**	70				
RATING	40C AMB-CONT						
CC		**USABLE AT 208V**					
DE	6205	**ODE**	6203				
ENCL	TEFC	**SN**					

Performance Data at 460V, 60Hz, 1.0HP (Typical performance - Not guaranteed values)							
General Characteristics							
Full Load Torque:	2.99 LB-FT			**Start Configuration:**		DOL	
No-Load Current:	1.02 Amps			**Break-Down Torque:**		15.8 LB-FT	
Line-line Res. @ 25°C.:	12.0 Ohms A Ph / 0.0 Ohms B Ph			**Pull-Up Torque:**		9.1 LB-FT	
Temp. Rise @ Rated Load:	26ºC			**Locked-Rotor Torque:**		11.0 LB-FT	
Temp. Rise @ S.F. Load:	32ºC			**Starting Current:**		15.0 Amps	
Load Characteristics							
% of Rated Load:	**25**	**50**	**75**	**100**	**125**	**150**	**S.F.**
Power Factor:	28.0	48.0	60.0	70.0	77.0	81.0	74.0
Efficiency:	74.8	84.4	87.0	87.9	87.7	87.3	87.8
Speed:	1793.0	1785.0	1778.0	1770.0	1761.0	1753.0	1765.0
Line Amperes:	1.07	1.18	1.33	1.53	1.76	2.0	1.67

Part 4: Pulsation Dampener

See Pulsation Dampener - Blacoh Sentry

WATSON MARLOW Bredel PUMPS

The World's Leader in Peristaltic Pumping Technology

Part 5: Calibration Column

See Calibration Cylinder - Griffco PVC

The World's Leader in Peristaltic Pumping Technology

Part 6: Custom Control Panel

See Control Panel - Carbon Feed Pumps
See VFD - ABB ACS350

The World's Leader in Peristaltic Pumping Technology

Part 7: Test Reports

The World's Leader in Peristaltic Pumping Technology

(QCC-A) Assembly Quality Control Checklist

MD EASTERN BUILDERS 157989

Customer/Company: MD EASTERN BUILDERS
PROJECT: ☒YES ☐NO Project Name: HRSD JAMES RIVER
Order No. 157989 Work Order No:

Application Engineer: HAKAN Y CAN Date: 7/13/10
QC Checked By: D. F. Date: 8-19-10
Assembled By: R24 • H Date: 8-19-10

	Assembly (1)	Assembly (2)	Assembly (3)	Assembly (4)
Peristaltic Pumps				
Pumphead Model	SPX-15	SPX-15	SPX-10	SPX-10
Pumphead P/N	215001 US	215001 US	210001 US	210001 US
Pump S/N, or Issue Date No.	23505	23504	21827	21503
Mounting Pos.	2	2	2	2
Hose Material & Branding Code	EPDM SOA	EPDM SOA	EPDM SO6	EPDM SOO
Shims/Occlusion	HI	HI	HI	HI
Insert Material	SS	SS	SS	SS
Lubricant	(GLY.) SIL.	(GLY.) SIL.	(GLY.) SIL.	(GLY.) SIL.
Lubricant Volume, Liters	0.5	0.5	0.25	0.25
Level Sensor (circle)	(HI) LO NONE	(HI) LO NONE	(HI) LO NONE	(HI) LO NONE
Vacuum Assist	YES (NO)	YES (NO)	YES (NO)	YES (NO)
Masosine Pumps				
Pumphead Model				
Pumphead P/N				
Pump S/N				
Mounting Pos.				
Front Support				
Liner Material				
Scrapergate Material				
O-Ring Material				
Sealing System				
Connection Type				
Seal Flush	YES NO	YES NO	YES NO	YES NO
Jacketing	YES NO	YES NO	YES NO	YES NO
Coupling	YES NO	YES NO	YES NO	YES NO
Manufacturer				
Type				
Coupling Alignment check	PASS	PASS	PASS	PASS

(QCC-A' Assembly Quality Control Checklist

MD EASTERN BUILDERS 157989

	Assembly (1)	Assembly (2)	Assembly (3)	Assembly (4)
Gearbox	(YES) NO	(YES) NO	(YES) NO	YES NO
Gearbox Manufacturer	NORD	NORD	NORD	NORD
Gearbox Model	SK272F N56 C	SK272F N56 C	SK272F N56 C	SK272F N56 C
Gearbox S/N	1/81103921920O-002	1/81103921920O-001	1/81103921910O-004	1/81103921910O-003
Gear Reduction	28.59	28.59	20.06	20.06
Nameplate RPM	59	59	84	84
Oil Filled	(YES) NO	(YES) NO	(YES) NO	(YES) NO
Oil Quantity (Qts)	FACTORY	FACTORY	FACTORY	FACTORY
Input Frame Size for Motor	56 C	56 C	56 C	56 C
Motor	(YES) NO	(YES) NO	(YES) NO	(YES) NO
Motor Manufacturer	BALDOR	BALDOR	BALDOR	BALDOR
Motor Model	VEM 3546	VEM 3546	VEM 3538	VEM 2538
Motor S/N	X-1007	X-1007	X-1007	X-1007
Motor HP	1	1	.5	.5
Motor Voltage (N/A if pneumatic)	208-230-460	208-230-460	230-460	230-460
Frame Size (N/A if integral)	56 C	56 C	56 C	56 C
Mechanical VS Drive	YES (NO)	YES (NO)	YES (NO)	YES (NO)
Drive Mfg.				
Drive P/N				
Drive S/N				
Mech.: Ratio				

DOCUMENTS	**Req**	**Assembly (1)**	**Assembly (2)**	**Assembly (3)**	**Assembly (4)**
Documentation Sent with Assy.	☒	(YES) NO	(YES) NO	(YES) NO	(YES) NO
All Loose Components Included	☒	(YES) NO	(YES) NO	(YES) NO	(YES) NO
Appearance Checked	☒	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted
5 min run Test/Manual Rotation Check to verify free rotation	☒	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted
Excessive Noise	☒	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted
Excessive Vibration	☒	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted
Vacuum Test	☐	PASS As Noted	PASS As Noted	PASS As Noted	PASS As Noted
Hydraulic Performance Test	☐	PASS As Noted	PASS As Noted	PASS As Noted	PASS As Noted
Motor Shop Test	☐	PASS As Noted	PASS As Noted	PASS As Noted	PASS As Noted

NOTES:

(QCC-A) Assembly Quality Control Checklist

MD EASTERN BUILDERS 157989

Customer/Company: MD EASTERN BUILDERS
Application Engineer: HAKAN Y CAN
Date: 7/13/10

PROJECT: ☒YES ☐NO
Project Name: HRSD JAMES RIVER
QC Checked By: D. F.
Date: 8-20-10

Order No. 157989
Work Order No:
Assembled By: RAY - H
Date: 8-20-10

	Assembly (5)	Assembly (6)	Assembly (7)	Assembly (8)
Peristaltic Pumps				
Pumphead Model	SPX-10	SPX-10	SPX-10	SPX-10
Pumphead P/N	210001 US	210001 US	210001 US	210001 US
Pump S/N, or Issue Date No.	21818	21829	21825	21819
Mounting Pos.	2	2	2	2
Hose Material & Branding Code	EPDM | SOD	EPDM | SOD	EPDM | SOD	EPDM | SOD
Shims/Occlusion	HI	HI	HI	HI
Insert Material	SS	SS	SS	SS
Lubricant	~~GLY.~~ SIL.	GLY. SIL.	~~GLY.~~ SIL.	GLY. SIL.
Lubricant Volume, Liters	.25	.25	.25	
Level Sensor (circle)	(HI) LO NONE	(HI) LO NONE	(HI) LO NONE	~~HI~~ LO NONE
Vacuum Assist	YES (~~NO~~)	YES (~~NO~~)	YES ~~NO~~	YES ~~NO~~
Masosine Pumps				
Pumphead Model				
Pumphead P/N				
Pump S/N				
Mounting Pos.				
Front Support				
Liner Material				
Scrapergate Material				
O-Ring Material				
Sealing System				
Connection Type				
Seal Flush	YES NO	YES NO	YES NO	YES NO
Jacketing	YES NO	YES NO	YES NO	YES NO
Coupling	YES NO	YES NO	YES NO	YES NO
Manufacturer				
Type				
Coupling Alignment check	PASS	PASS	PASS	PASS

(QCC-A) Assembly Quality Control Checklist

MD EASTERN BUILDERS 157989

	Assembly (5)	Assembly (6)	Assembly (7)	Assembly (8)
Gearbox	(YES) NO	(YES) NO	(YES) NO	(YES) NO
Gearbox Manufacturer	NORD	NORD	NORD	NORD
Gearbox Model	SK272F N56C	SK272F N56C	SK272F N56C	SK272F N56C
Gearbox S/N	1/81103921910O-002	1/81103921910O-001	1/81103921910O-005	1/81103921910O-009
Gear Reduction	20.06	20.06	20.06	20.06
Nameplate RPM	84	84	84	84
Oil Filled	(YES) NO	(YES) NO	(YES) NO	(YES) NO
Oil Quantity (Qts)	FACTORY	FACTORY	FACTORY	FACTORY
Input Frame Size for Motor	56 C	56C	56 C	56 C
Motor	(YES) NO	(YES) NO	(YES) NO	(YES) NO
Motor Manufacturer	BALDOR	BALDOR	BALDOR	BALDOR
Motor Model	VEM 3538	VEM 3538	VEM 3538	VEM 3538
Motor S/N	X-1007	X-1007	X-1007	X-1007
Motor HP	.5	.5	.5	.5
Motor Voltage (N/A if pneumatic)	230-460	230-460	230-460	230-460
Frame Size (N/A if integral)	56 C	56 C	56 C	56 C
Mechanical VS Drive	YES (NO)	YES (NO)	YES (NO)	YES (NO)
Drive Mfg.				
Drive P/N				
Drive S/N				
Mech.: Ratio				

DOCUMENTS	**Req**	**Assembly (5)**	**Assembly (6)**	**Assembly (7)**	**Assembly (8)**
Documentation Sent with Assy.	☒	(YES) NO	(YES) NO	(YES) NO	(YES) NO
All Loose Components Included	☒	(YES) NO	(YES) NO	(YES) NO	(YES) NO
Appearance Checked	☒	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted
5 min run Test/Manual Rotation Check to verify free rotation	☒	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted
Excessive Noise	☒	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted
Excessive Vibration	☒	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted	(PASS) As Noted
Vacuum Test	☐	PASS As Noted	PASS As Noted	PASS As Noted	PASS As Noted
Hydraulic Performance Test	☐	PASS As Noted	PASS As Noted	PASS As Noted	PASS As Noted
Motor Shop Test	☐	PASS As Noted	PASS As Noted	PASS As Noted	PASS As Noted

NOTES:

(QCC-A) Assembly Quality Control Checklist

MD EASTERN BUILDERS 157989

Customer/Company: MD EASTERN BUILDERS
PROJECT: ☒YES ☐NO Project Name: HRSD JAMES RIVER
Order No. 157989 Work Order No:

Application Engineer: HAKAN Y CAN Date: 7/13/10
QC Checked By: D. F. Date: 8-20-10
Assembled By: RAY - H Date: 8-20-10

	Assembly (9)	Assembly (10)	Assembly (11)	Assembly ( )
Peristaltic Pumps				
Pumphead Model	SPX-10	SPX-10	SPX-10	
Pumphead P/N	210001 US	210001 US	210001 US	
Pump S/N, or Issue Date No.	21629	21926	21928	
Mounting Pos.	2	2	2	
Hose Material & Branding Code	EPDM | SOD	EPDM | SOD	EPDM | SOD	|
Shims/Occlusion	HI	HI	HI	
Insert Material	SS	SS	SS	
Lubricant	~~GLY.~~ SIL.	~~GLY.~~ SIL.	GLY. ~~SIL.~~	GLY. SIL.
Lubricant Volume, Liters	0.25	0.25	0.25	
Level Sensor (circle)	(HI) LO NONE	(HI) LO NONE	(HI) LO NONE	HI LO NONE
Vacuum Assist	YES (NO)	YES (NO)	YES (NO)	YES NO
Masosine Pumps				
Pumphead Model				
Pumphead P/N				
Pump S/N				
Mounting Pos.				
Front Support				
Liner Material				
Scrapergate Material				
O-Ring Material				
Sealing System				
Connection Type				
Seal Flush	YES NO	YES NO	YES NO	YES NO
Jacketing	YES NO	YES NO	YES NO	YES NO
Coupling	YES NO	YES NO	YES NO	YES NO
Manufacturer				
Type				
Coupling Alignment check	PASS	PASS	PASS	PASS

(QCC-A) Assembly Quality Control Checklist

MD EASTERN BUILDERS 157989

	Assembly (9)	Assembly (10)	Assembly (11)	Assembly ( )
Gearbox	YES NO	YES NO	YES NO	YES NO
Gearbox Manufacturer	NORD	NORD	NORD	
Gearbox Model	SK 272F N 56C	SK272F N 56 C	SK272F N56 C	
Gearbox S/N	1/B110392191 00-007	1/B110392191 00-006	1/B110392191 00-008	
Gear Reduction	20.06	20.06	20.06	
Nameplate RPM	84	84	84	
Oil Filled	YES NO	YES NO	YES NO	YES NO
Oil Quantity (Qts)	FACTORY	FACTORY	FACTORY	
Input Frame Size for Motor	56 C	56 C	56 C	
Motor	YES NO	YES NO	YES NO	YES NO
Motor Manufacturer	BALDOR	BALDOR	BALDOR	
Motor Model	VEM 3538	VEM 3538	VEM 3538	
Motor S/N	X 1007	X 1007	X 1007	
Motor HP	.5	.5	.5	
Motor Voltage (N/A if pneumatic)	230-460	230 - 460	230 - 460	
Frame Size (N/A if integral)	56 C	56 C	56 C	
Mechanical VS Drive	YES NO	YES NO	YES NO	YES NO
Drive Mfg.				
Drive P/N				
Drive S/N				
Mech.: Ratio				

DOCUMENTS	**Req**	**Assembly (9)**	**Assembly (10)**	**Assembly (11)**	**Assembly ( )**
Documentation Sent with Assy.	☒	YES NO	YES NO	YES NO	YES NO
All Loose Components Included	☒	YES NO	YES NO	YES NO	YES NO
Appearance Checked	☒	PASS As Noted	PASS As Noted	PASS As Noted	PASS As Noted
5 min run Test/Manual Rotation Check to verify free rotation	☒	PASS As Noted	PASS As Noted	PASS As Noted	PASS As Noted
Excessive Noise	☒	PASS As Noted	PASS As Noted	PASS As Noted	PASS As Noted
Excessive Vibration	☒	PASS As Noted	PASS As Noted	PASS As Noted	PASS As Noted
Vacuum Test	☐	PASS As Noted	PASS As Noted	PASS As Noted	PASS As Noted
Hydraulic Performance Test	☐	PASS As Noted	PASS As Noted	PASS As Noted	PASS As Noted
Motor Shop Test	☐	PASS As Noted	PASS As Noted	PASS As Noted	PASS As Noted

NOTES:

MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

OWNER HRSD

EQPT SERIAL NO:

EQPT TAG NO: P46 - 3001 → 3011

EQPT/SYSTEM: Carbon Source Feed Pumps

PROJECT NO: 157989

SPEC. SECTION: 44 42 56.19

I hereby certify that the above-referenced equipment/system has been:

(Check Applicable)

- ☒ Installed in accordance with Manufacturer's recommendations.
- ☒ Inspected, checked, and adjusted.
- ☒ Serviced with proper initial lubricants.
- ☒ Electrical and mechanical connections meet quality and safety standards.
- ☒ All applicable safety equipment has been properly installed.
- ☒ Functional tests.
- ☒ System has been performance tested, and meets or exceeds specified performance requirements. (When complete system of one manufacturer)

Note: Attach any performance test documentation from manufacturer.

Comments: See attached

I, the undersigned Manufacturer's Representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate his equipment and (iii) authorized to make recommendations required to assure that the equipment furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date: 1-30, 2011

Manufacturer: WATSON MARLOW, INC

By Manufacturer's Authorized Representative: (Authorized Signature)

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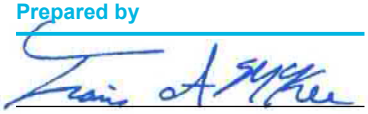
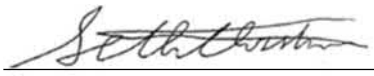
Phase I Environmental Site Assessment of ~10-Acre Portion of Larger Riverview Farm Park Property Newport News, Virginia

Hampton Roads Sanitation District

Project Number: 60617789 – 1.10O

April 2020

Quality information

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Executive Summary

Hampton Roads Sanitation District (HRSD) contracted with AECOM Technical Services, Inc. (AECOM) to perform a Phase I Environmental Site Assessment (Phase I ESA) of an approximately 10-acre portion (subject property) of the larger City of Newport News Riverview Farm Park (Park). The larger Park is located at 125 City Farm Road, Newport News, Virginia. This Phase I ESA was performed in general conformance with the scope and limitations of ASTM International, Designation: E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM E1527-13). Exceptions to, or deletions from, this practice are described in this report.

The site visit occurred on March 30, 2020. The subject property consists of an approximately 10-acre portion of a larger 258.69-acre parcel operated by the City of Newport News as Riverview Farm Park. The subject property is developed with four small structures including the Riverview Farm Park Visitor's Center and outbuilding (approximately 1,400-square feet and 500-feet, respectively), a 690 square-foot open-sided shelter, and an 800 square-foot storage building (City Farm building 2). The subject property is currently operated and maintained by the City of Newport News as a portion of Riverview Farm Park, a recreational City park. All structures observed at the time of the site reconnaissance appeared to be currently un-used, though the site representative indicated that the Visitor's Center building is intermittently used for administrative purposes. No visual evidence of underground storage tanks (e.g., vent pipes, fill ports), potable water wells, monitoring wells, clarifiers, dry wells, septic tanks, or leach fields was observed on the subject property during the site visit.

The subject property is located in an industrial and municipal park area within the City of Newport News. The subject property is bordered to the northwest by the Hampton Roads Sanitation District James River Plant, and to the northeast, east, and southeast by Riverview Farm Park (Park). The James River abuts the subject property to the southwest. Park improvements outside the subject property consist of the Riverview Gymnastics center to the northeast, and City Farm, a former minimum-security City Jail, buildings to the southeast. The remainder of the surrounding Park property consists of grass fields. Gasoline service stations and dry cleaners were not observed in the immediate vicinity (approximately 500 feet) of the subject property.

One possible underground storage tank (UST) vent pipe was observed in close proximity to the subject property, on the southeast adjacent property on the exterior of the former City Farm Prison warden's house (noted on Figure 2). However, it was unclear whether the UST is buried underground, or located in the basement of the structure. Based on the off-site location of the suspect UST, small size (residential), likely contents (heating oil), and lack of reported releases, this suspect UST is not considered to represent a recognized environmental condition (REC) to the subject property. Other off-site sources of concern were not identified in the immediate vicinity.

AECOM's historical research indicates that the subject property was occupied by a small structure consistent with a farm dwelling from at least the early-1900s until circa 1950, when the current Visitor's Center structure and the current City Farm building 2 are first depicted on a topographic map. The subject property is depicted in this layout in all subsequent topographic maps through 1986. The earliest aerial photograph, dated 1970, depicts the subject property as a mix of wooded land and potential wetland on the southwestern portion, and a grass field on the northeastern portion. Information provided by the site representative, and included in the Deep Creek/Menchville

Master Plan, indicates that a pistol range was historically present on the western portion of the subject property through at least the early 1990s, and utilized the current Visitor's Center building as a classroom training facility, and the associated outbuilding as a range officer's post. The pistol range is first identifiable in aerial photographs in the 1990 image. The site representative, Mr. Andy Lunsford (City of Newport News, Park Operations Superintendent) further indicated that to the best of his knowledge, the pistol range operated from circa 1981 to circa 1990. Mr. Lunsford indicated that following the closing of the pistol range, the subject property was converted for its current use as an intermittent administrative building. Mr. Lunsford indicated that the dog park (Fido Field), located on the northernmost portion of the subject property, was constructed in 2006. Based on the historical use of the subject property as a pistol range, the potential exists for subsurface lead impact originating from fired pistol rounds. As such, the former use of the subject property as a pistol range is considered to represent a REC.

AECOM observed one unlabeled steel container (Appendix A - Photo-Log, Photo 17) on the subject property during the site reconnaissance. The container was located within a locked, fenced-in enclosure between the off-site former City Farm warden's house and the James River. Mr. Lunsford indicated that the container description, as observed by AECOM, is consistent with an explosives storage container reportedly maintained at City Farm by the Newport News Fire Department. Mr. Lunsford had no additional information regarding the specific contents of the container. AECOM observed no evidence of leaks or staining in the area of the container, nor were any unusual odors noted. Subsequent information provided by the City of Newport News indicates that the Fire Department plans to remove the container from the subject property. Based on the above information regarding the nature of the container, and on observed conditions, the noted suspect explosives storage container is not considered to represent a REC to the subject property.

The subject property was not identified on the environmental database search report obtained for this project. A number of surrounding sites were identified in the environmental database search report. However, based on AECOM's review and analysis of the database listings, none of the surrounding sites are expected to present a recognized environmental condition (REC) to the subject property, based on their distance (generally greater than 500 feet), regulatory status (i.e. regulatory closure, no violations found), media impacted (soil only), and/or topographical position relative to the subject property (i.e. down-gradient or cross-gradient).

Based on the above-described activities, no controlled RECs (CRECs), historical RECs (HRECs) or de minimis conditions (DMCs) were identified in connection with the subject property.

In addition, no vapor encroachment conditions (VECs), were identified during completion of a Tier 1 vapor encroachment screening (VES) following ASTM International, Designation: E2600-15, *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions* dated October 2015 (ASTM E2600-15).

The following REC was identified during this assessment:

- Information provided by the site representative, and included in the Deep Creek/Menchville Master Plan, indicates that a pistol range was historically present on the western portion of the subject property from circa 1981 to circa 1990. Based on the historical use of the subject property as a pistol range, the potential exists for subsurface lead impact originating from fired pistol rounds. As such, the former use of the subject property as a pistol range is considered to represent a REC.

1. Introduction

1.1 Purpose

This Phase I Environmental Site Assessment (Phase I ESA) was performed in advance of a potential commercial real estate transaction involving an approximately 10-acre portion (subject property) of the larger City of Newport News Riverview Farm Park (Park). The larger Park is located at 125 City Farm Road, Newport News, Virginia. The purpose of this Phase I ESA is to provide Hampton Roads Sanitation District (Client) with information for use in evaluating recognized environmental conditions (RECs) associated with the subject property.

Per ASTM International, Designation: E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM E1527-13), potential findings can include RECs, historical RECs (HRECs), controlled RECs (CRECs), and de minimis conditions (DMCs). A REC is defined by the ASTM standard as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment." The term includes hazardous substances or petroleum products even under conditions in compliance with laws. HRECs are a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. CRECs are a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. DMCs are those situations that do not present a material risk of harm to public health or the environment and generally would not be subject to enforcement action if brought to the attention of the regulating authority.

In addition, a Tier 1 vapor encroachment screening (VES) is completed as part of this assessment. This screening is conducted in general accordance with the ASTM International, Designation: E2600-15, *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions* dated October 2015 (ASTM E2600-15). The objective of the VES is to evaluate if a vapor encroachment condition (VEC) exists or if a VEC does not exist.

This assessment for the Phase I ESA is based on a review of existing conditions, reported pre-existing conditions, and observed operations at the subject property and adjacent properties.

1.2 Scope of Work

The Phase I ESA included a site visit, regulatory research, historical review, and a review of an environmental database analysis of the subject property in general accordance with ASTM E1527-13. In conducting the Phase I ESA, AECOM assessed the subject property for visible signs of possible contamination, researched public records for the subject property and adjacent properties (as applicable), and conducted interviews with persons knowledgeable about the subject property.

Conclusions reached in this report are based upon the assessment performed and are subject to limitations set forth in Sections 1.3, 1.4, and 1.5 below.

1.3 Study Limitations

This report describes the results of AECOM's Phase I ESA to identify the presence of conditions materially affecting the subject facility and/or property within the limits of the established scope of work as described in our proposal.

As with any due diligence assessment, there is a certain degree of dependence upon oral information provided by facility or site representatives, which is not readily verifiable through visual observations or supported by any available written documentation. AECOM shall not be held responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed by facility or site representatives at the time this assessment was performed. In addition, the findings and opinions expressed in this report are subject to certain conditions and assumptions, which are noted in the report. Any party reviewing the findings of the report must carefully review and consider all such conditions and assumptions.

This report and all field data and notes were gathered and/or prepared by AECOM in accordance with the agreed upon scope of work and generally accepted engineering and scientific practice in effect at the time of AECOM's assessment of the subject property. The statements, findings and opinions contained in this report are only intended to give approximations of the environmental conditions at the subject property.

As specified in ASTM E1527-13, it is incumbent that the client and any other parties who review and rely upon this report understand the following inherent conditions surrounding any Phase I ESA:

- Uncertainty Not Eliminated - No Phase I ESA can wholly eliminate uncertainty regarding the potential for REC in connection with a property. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for REC in connection with a property, and this practice recognizes reasonable limits of time and costs. (Section 4.5.1 of ASTM E1527-13)
- Not Exhaustive - "All appropriate inquiry" does not mean an exhaustive assessment of a clean property. There is a point at which the cost of information obtained outweighs the usefulness of the information and, in fact, may be a material detriment to the orderly completion of transactions. One of the purposes of this practice is to identify a balance between the competing goals of limiting the costs and time demands inherent in performing an Phase I ESA and the reduction of uncertainty about unknown conditions resulting from additional information. (Section 4.5.2 of ASTM E1527-13)
- Comparison with Subsequent Inquiry – Phase I ESAs must be evaluated based on the reasonableness of judgments made at the time and under the circumstances in which they were made. Subsequent Phase I ESAs should not be considered valid standards to judge the appropriateness of any prior assessment based on hindsight, new information, use of developing technology or analytical techniques, or other factors. (Section 4.5.4 of ASTM E1527-13)

A similar set of inherent limitations exist in cases where the Phase I ESA included a screening-level assessment of vapor migration or vapor encroachment; such an assessment is a required part of a Phase I ESA when ASTM E1527-13 is employed. According to ASTM E2600-15, the following limitations apply:

- Uncertainty Not Eliminated in Screening - No VES can wholly eliminate uncertainty regarding the identifications of VECs in connection with the target property. (Section 4.5.1 of ASTM E2600-15)
- Not Exhaustive - The guide is not meant to be an exhaustive screening. There is a point at which the cost of information obtained outweighs the usefulness of the information and, in fact, may be a material detriment to the orderly completion of real estate transactions. One of the purposes of this guide is to identify a balance between the competing goals of limiting the costs and time demands inherent in performing a VES and the reduction of uncertainty about unknown conditions resulting from additional information. (Section 4.5.2 of ASTM E2600-15)
- Comparison with Subsequent Investigations - It should not be concluded or assumed that an investigation was not adequate because the investigation did not identify any VECs in connection with a property. The VES must be evaluated based on the reasonableness of judgments made at the time and under the circumstances in which they were made. Subsequent VESs should not be considered valid bases to judge the appropriateness of any prior screening if based on hindsight, new information, use of developing technology or analytical techniques, or similar factors. (Section 4.5.4 of ASTM E2600-15)

This report was prepared pursuant to an agreement between Hampton Roads Sanitation District (Client) and AECOM and is for the exclusive use of the Client. No other party is entitled to rely on the conclusions, observations, specifications, or data contained herein without first obtaining AECOM's written consent and provided any such party signs an AECOM-generated Reliance Letter. A third party's signing of the AECOM Reliance Letter and AECOM's written consent are conditions precedent to any additional use or reliance on this report.

The passage of time may result in changes in technology, economic conditions, site variations, or regulatory provisions, which would render the report inaccurate. Reliance on this report after the date of issuance as an accurate representation of current site conditions shall be at the user's sole risk.

1.4 Site-Related Limiting Conditions

The following site-specific limitations were encountered during the course of this assessment:

- The subject property building interiors were not accessible at the time of the site reconnaissance. Based on the use of the subject property buildings (office/administrative and storage), this particular site-related limiting condition is not expected to present a significant limitation to this assessment.

1.5 Data Gaps/Data Failure

The following data failure/data gaps were encountered during the course of this assessment:

- As specified in the agreed upon scope of work, a title search and environmental lien search were not conducted as part of this Phase I ESA. However, based upon historical data collected from other sources, this data gap is not expected to impact the results of this assessment. In addition, the user was not aware of environmental liens or activity use limitations (AULs) that have been placed on the subject property.

- A limitation was encountered in determining the historical use of the subject property. The earliest source of historical information reasonably ascertainable within the time frame of this report in which usage could be determined was a topographic map from 1907. At the time of the photograph, the subject property appeared to be agricultural-related land (a developed use per ASTM E1527-13). Therefore, the ASTM E1527-13 requirement to determine all obvious uses of the property from the present back to the property's first obvious developed use, or back to 1940, whichever is earlier, could not be achieved. However, based upon the identified agricultural land use, it is unlikely that there had been significant prior development; therefore, this data failure is not expected to impact the results of this assessment.
- Per ASTM E1527-13, past owners, operators, and occupants of the subject property who are likely to have material information regarding the potential for contamination at the subject property shall be contacted to the extent that they can be identified and that the information likely to be obtained is not duplicative of information already obtained from other sources. AECOM was unable to interview past owners and/or operators at the subject property. However, based upon historical data collected from other sources, this data gap is not expected to impact the results of this assessment.
- Per the agreed scope-of-work and ASTM E1527-13, information related to certain site-specific items should be provided by the Phase I ESA report user to AECOM. To assist the user in gathering information that may be material to identifying RECs, AECOM provided the Client (the users) with the User Questionnaire from ASTM E1527-13; at this time the completed form has not been returned for inclusion in this report. However, this data gap is not expected to represent a significant limitation to this investigation given the historical use of the subject
- AECOM submitted Freedom of Information Act (FOIA) requests to the City of Newport News to determine if they have files related to a historical hazardous materials release that may have occurred at the subject property. As of the date of this report, a response to AECOM's FOIA request has not been received. Based on AECOM's research to date, AECOM does not anticipate the response (if any) from the City of Newport News to our FOIA request will significantly alter the conclusions or recommendations of this report. However, if information is received from this FOIA request that significantly impacts the conclusions of this report, this information will be forwarded upon receipt.

2. Site Description

2.1 Site Location and Parcel Description

The subject property is an approximately 10-acre portion of the larger City of Newport News Riverview Farm Park (Park). No specific street address is currently associated with the subject property. The larger Park is located at 125 City Farm Road, Newport News, Virginia. The subject property is situated at the southwest corner of the intersection of City Farm Road and Riverview Parkway, and is accessed from City Farm Road (northeastern property boundary).

According to information provide by the Client, the subject property consists of an approximately 10-acre portion of a larger parcel identified in the online City of Newport News Real Estate Assessor records as a 258.69-acre parcel of land identified as Parcel Number 190000101. The approximate location of the subject property is illustrated on Figure 1 - Site Location Map.

2.2 Site Ownership

According to the City of Newport News Real Estate Assessor records, the subject property is owned by the City of Newport News, who purchased the greater Park property, including the subject property, on June 15, 1918.

2.3 Site Visit

Mr. Travis McKee with AECOM's Glen Allen, Virginia office visited the subject property on March 30, 2020. During the site visit, Mr. McKee was un-accompanied, due to health and safety precautions as a result of the ongoing COVID-19 pandemic. Mr. McKee interviewed the site representative, Mr. Andy Lunsford (City of Newport News, Park Operations Superintendent) via phone on April 1, 2020. Mr. Lunsford provided information on current subject property operations and history and has been associated with the subject property for approximately 23 years. Information obtained from Mr. Lunsford is discussed in relevant sections of this report. Site-related limiting conditions encountered during this assessment were previously summarized in Section 1.4.

The site visit methodology consisted of walking over accessible areas of the subject property, including the building exteriors, the perimeter, and portions of the surrounding area as accessed from public streets and right-of-ways. The following sections summarize the results of the site visit.

2.3.1 Site and Facility Description

The subject property is developed with four small structures including the Riverview Farm Park Visitor's Center and outbuilding (approximately 1,400-square feet and 500-feet, respectively), a 690 square-foot open-sided shelter, and an 800 square-foot storage building (City Farm building 2). The subject property is currently operated and maintained by the City of Newport News in association with Riverview Farm Park, a recreational City park. All structures observed at the time of the site reconnaissance appeared to be currently un-used, though the site representative indicated that the Visitor's Center building is intermittently used for administrative purposes. The outbuilding is used to store irrigation equipment. The open-sided structure is not utilized. The City Farm building 2 is used for the storage of event-related supplies, including temporary fencing and empty water drums which are utilized as traffic barriers. No visual evidence of underground storage tanks (e.g., vent pipes, fill

ports), potable water wells, monitoring wells, clarifiers, dry wells, septic tanks, or leach fields was observed on the subject property during the site visit. The northeastern portion of the property is a mowed field. The southwestern portion is wooded land, and includes the Park Visitor's Center, and a paved public trail and boardwalk, which leads to the James River.

The Visitor's Center and associated outbuilding are constructed of wood framing, with the exception of the outbuilding first floor walls, which are painted concrete masonry unit (CMU) block. The building exteriors are clad with wood panels. Both roofs are covered with asphalt shingles. The open-sided shelter is constructed of painted CMU block with a sheet metal roof and dirt floor. The storage building is constructed of painted CMU block with an asphalt shingle roof. Building foundations, interiors, and flooring construction were not observable during the site reconnaissance.

AECOM notes that based on the City of Newport News Geographic Information System (GIS), and site reconnaissance observations, a wastewater force main appears to transect the northernmost portion of the subject property, adjacent to the Fido Field dog park, which is located on the northernmost portion of the subject property. The force main appears to be associated with the northwest-abutting Hampton Road Sanitation District (HRSD) James River Treatment Plant.

No visual evidence of discolored soil, water, or unusual vegetative conditions or odors was identified during the site visit. The general layout of the subject property is illustrated on Figure 2 - Site Plan and Representative Site Photographs are provided in Appendix A.

AECOM notes that based on the age of the subject property buildings (circa 1950), asbestos containing materials (ACM) and lead-based paint (LBP) may be present in these structures. Evaluation of the presence of ACM and LBP is outside the scope of this assessment.

2.3.2 Surrounding Properties

The subject property is bordered to the northwest by the HRSD James River Treatment Plant, and to the northeast, east, and southeast by Riverview Farm Park (Park). City Farm Road transects the northeastern portion of the subject property. The James River abuts the subject property to the southwest. Park improvements in the area of the subject property consist of the Riverview Gymnastics center to the northeast, and City Farm, a former minimum-security City Jail, buildings to the southeast. The remainder of the surrounding Park property consists of grassy fields.

AECOM did not identify any gasoline service stations or dry cleaners in the immediate vicinity (500 feet) of the subject property. In addition, no sensitive receptors (i.e. day care centers, schools, hospitals) were identified as being located adjacent to the subject property.

One possible underground storage tank vent pipe was observed within approximately 50 feet of the subject property, on the southeast adjacent property on the exterior of the former City Farm warden's house (noted on Figure 2). However, it was unclear whether the UST is buried underground, or located in the basement of the structure. Based on the off-site location of the UST, small size (residential), likely contents (heating oil), and lack of reported releases, this possible UST is not considered to represent a recognized environmental condition (REC) to the subject property.

Based on AECOM's site reconnaissance of the surrounding neighborhood, no other off-site sources of concern were identified.

2.3.3 Petroleum Products and Hazardous Materials

AECOM observed one unlabeled steel container (Appendix A - Photo-Log, Photo 17) on the subject property during the site reconnaissance. The container was located within a locked, fenced-in enclosure between the off-site former City Farm warden's house and the James River. Mr. Lunsford indicated that the container description, as observed by AECOM, is consistent with an explosives storage container reportedly maintained at City Farm by the Newport News Fire Department. Mr. Lunsford had no additional information regarding the specific contents of the container. AECOM observed no evidence of leaks or staining in the area of the container, nor were any unusual odors noted. Subsequent information provided by the City of Newport News indicates that the Fire Department plans to remove the container from the subject property. Based on the above information regarding the nature of the container, and on observed conditions, the noted suspect explosives storage container is not considered to represent a REC to the subject property

AECOM did not observe evidence of other petroleum products or hazardous materials on the subject property during the site reconnaissance, and none were reported by Mr. Lunsford to be located at the subject property. Staining or visual evidence of a hazardous materials release was not identified at the time of the site visit.

2.3.4 Hazardous Waste

No evidence of hazardous waste generation was observed at the subject property, and the site representative reported no such activities. In addition, the subject property was not listed as a generator of hazardous waste in the site-specific database report.

2.3.5 Polychlorinated Biphenyls

Polychlorinated biphenyl (PCB)-containing dielectric fluids have been widely used as coolants and lubricants in transformers, capacitors, and other electric equipment due to their insulating and nonflammable properties. Based on the age of the subject property (pre-1979), the potential exists for PCBs to be present on-site.

During the site visit, four pole-mounted transformers were observed on the subject property. One transformer is located along the northeast boundary of the Visitor's Center parking lot. The remaining three transformers are located along the northwest subject property boundary, approximately 50-feet from City Farm Road. Labeling indicating PCB content was not observed on the transformers. Staining was not identified at the base of the transformer poles. According to Mr. Lunsford, the local electric utility company owns these transformers and would be responsible for a release regardless of PCB content.

No other suspect PCB-containing equipment (transformers, elevators, trash compactors, lifts) was identified on the subject property.

2.3.6 Aboveground Storage Tanks

No evidence of aboveground storage tanks (ASTs) was identified during the site reconnaissance. Mr. Lunsford indicated that no ASTs are located on the subject property or have historically been located on the subject property. In addition, no ASTs were listed in the site-specific environmental database report reviewed by AECOM, or otherwise identified during AECOM's review of historical aerial photographs.

2.3.7 Underground Storage Tanks

No visual evidence of USTs (e.g., vent pipes, fill ports) was identified at the subject property during the site visit. Mr. Lunsford indicated that no USTs are located on the subject property or have historically been located on the subject property. In addition, no USTs were listed in the site-specific environmental database report.

2.3.8 Solid Waste

AECOM did not observe evidence of the generation, storage, or disposal of solid waste on the subject property during the site reconnaissance.

2.3.9 Water

AECOM observed one unknown vertical 1" polyvinyl chloride (PVC) pipe protruding from the ground on the subject property, to the southwest of the Visitor's Center. AECOM was unable to determine the function of the pipe, and no other equipment was present in the surrounding area to suggest a possible use. Mr. Lunsford indicated that a water spigot was formerly located in the general area of the observed pipe. Based on the nature of construction (small diameter PVC), this appears to be the most plausible use of the pipe. Based on this information, the observed PVC pipe is not considered to represent a REC to the subject property.

The facility receives its potable water supply from the City of Newport News Waterworks. No potable water wells were identified at the subject property or reported by the site representative to be present on-site.

2.3.10 Wastewater

Wastewater discharges at the subject property include effluent from human consumptive use at the Visitor's Center building which, according to site representative, discharges directly to the Hampton Roads Sanitation District sanitary sewer system.

2.3.11 Stormwater

Stormwater from the subject property appears to infiltrate the ground or drain via sheet flow to the southwest-abutting James River. No evidence of staining was observed on the subject property.

2.3.12 Heating and Cooling

The subject property Visitor's Center building is heated and cooled by pad-mounted electrical heating ventilation and air conditioning (HVAC) units. Dominion Virginia Power provides electricity service to the subject property.

3. Environmental Setting

3.1 Topography

The United States Geological Survey (USGS) 7.5-minute topographic maps of the Mulberry Island, Virginia quadrangle indicates that the subject property elevation is approximately 20 feet above mean sea level (USGS, 2013). Topography in the immediate subject property area generally slopes to the southwest, toward the James River, which abuts the subject property.

3.2 Soil/Geology

Site-specific geologic information was not identified during the course of this assessment; however, according to the United States Geological Survey, Mineral Resources Online Spatial database, the subject property is located in the Coastal Plain physiographic province, and is underlain by the Shirley Formation, which consists of surficial deposits of riverine terraces and relict baymouth barriers and bay-floor plains inset below depositional surfaces of the Chuckatuck Formation.

According to the United Sates Department of Agriculture Natural Resources Conservation Service online Web Soil Survey, surface soils at the subject property are mapped as the following:

Bohicket muck, 0-1% slopes, very frequently flooded – in a representative profile, the top 8 inches is composed of mucky silt clay loam, with silty clay loam from 8-29 inches below ground surface (bgs), and silty clay from 29-65 inches bgs. The depth to a restrictive feature is greater than 80 inches. The depth to bedrock is not listed. This soil is very poorly drained, with a depth to water table of zero inches, very low to moderately low permeability, and a moderate available water storage capacity.

Nevarc-Uchee complex, 6-15% slopes – in Nevarc soils, the top 11 inches is composed of sandy loam, with clay from 11-54 inches bgs, and fine sandy loam from 54-72 inches bgs. The depth to a restrictive feature is greater than 80 inches. The depth to bedrock is not listed. This soil is moderately well drained, with a depth to water table of 18-36 inches, moderately low to moderately high permeability, and a moderate available water storage capacity. In Uchee soils, the top 4 inches is composed of loamy fine sand, with loamy sand from 4-26 inches bgs, and sandy clay loam from 26-50 inches bgs. The depth to a restrictive feature is greater than 80 inches. The depth to bedrock is not listed. This soil is well drained, with a depth to water table of 42-60 inches, moderately high permeability, and a moderate available water storage capacity

Slagle-Urban land complex, 0-2% slopes – in Slagle soils, the top 10 inches is composed of fine sandy loam, with sandy clay loam from 10-63 inches bgs. The depth to a restrictive feature is greater than 80 inches. The depth to bedrock is not listed. This soil is moderately well drained, with a depth to water table of 18-36 inches, moderately low to moderately high permeability, and a moderate available water storage capacity. Areas where soils have been heavily altered so that physical properties cannot be observed or classified characterize Urban Land. Urban Land is generally comprised of indeterminate fill materials and is characterized by variable infiltration and runoff rates.

3.3 Groundwater/Hydrology

No past groundwater investigations have been identified for the subject property; thus, no site-specific groundwater information was available. However, regional groundwater flow direction is generally influenced by major hydrogeologic features such as a river or lake. Surface and/or bedrock topography may also influence regional groundwater flow direction. The available hydrogeologic information indicates that the presumed local groundwater flow direction is to the southwest towards the James River, which abuts the subject property to the southwest. Therefore, in assessing potential external environmental impact, properties located directly northeast (presumed upgradient) of the subject property are of primary concern. It should be noted that local geologic features may cause local groundwater flow direction to differ from the regional flow direction. Local hydraulic gradient at the subject property was interpreted based on a review of the Mulberry Island, Virginia USGS topographic Map. Based on the topography and geologic conditions, uppermost groundwater likely occurs within 20 feet of the ground surface at the subject property. However, a complete hydrogeologic investigation would be necessary to determine actual groundwater depth and flow direction.

Estimated groundwater levels and/or flow direction(s) may vary due to seasonal fluctuations in precipitation, local usage demands, geology, underground structures, or de-watering operations.

4. Site and Area History

Historical information for the subject property and surrounding properties is based on AECOM's review and analysis of the following historical sources:

- Aerial photographs dated 1970, 1973, 1982, 1990, 1994, 2006, 2009, 2012, and 2016;
- Topographic maps dated 1907, 1943, 1950, 1957, 1965, 1970, 1973, 1979, 1986, and 2013;
- City directories for the years 1969, 1975, 1979, 1984, 1989, 1992, 1995, 2000, 2005, 2010, 2014, and 2017; and
- Building Department records for the years 1997 and 1998.

In addition, an interview was conducted with Mr. Lunsford who has been associated with the subject property for the past 23 years. AECOM also reviewed available public records including online newspaper articles, and a copy of the City of Newport News Master Plan for Deep Creek/Menchville, dated February 27, 1990. According to Environmental Data Resources, Inc. (EDR), Sanborn® Fire Insurance Map coverage is not available for the subject property.

4.1 Subject Property

According to City of Newport News Real Estate Assessor records, the subject property has been owned by the City of Newport News since 1918. Historical research indicates that the subject property was occupied by a small structure consistent with a farm dwelling from at least the early-1900s until circa 1950, when the current Visitor's Center structure and the current City Farm building 2 are first depicted on a topographic map. The subject property is depicted in this layout in all subsequent topographic maps through 1986. The earliest aerial photograph, dated 1970, depicts the subject property as a mix of wooded land and wetland on the southwestern portion, and a grassy field on the northeastern portion. Information provided by Mr. Lunsford, and included in the Deep Creek/Menchville Master Plan, indicates that a pistol range was historically present on the western portion of the subject property through at least the early 1990s, and utilized the current Visitor's Center building as a classroom training facility, and the associated outbuilding as a range officer's post. The pistol range is first identifiable in aerial photographs in the 1990 image. Mr. Lunsford further indicated that Newport News Parks Department "old-timers" had told him that the pistol range operated from circa 1981 to circa 1990. Mr. Lunsford indicated that following the closing of the pistol range, the subject property was converted for its current use. This assertion is supported by subsequent aerial photographs from the years 2006 through 2016, which depict the subject property features as essentially identical to those noted during AECOM's site reconnaissance. The northernmost portion of the subject property was developed as a dog park in 2006, prior to which, it was agricultural land.

AECOM notes that the subject property was not identified in the city directories. Two entries were noted for the subject property address of 125 City Farm Road, in the years 2000 and 2010, but these entries correspond to the northeast-adjacent Riverview Gymnastics Center, which is co-addressed with the subject property Visitor's Center building.

Based on the historical use of the subject property as a pistol range, the potential exists for subsurface lead impact originating from fired pistol rounds. As such, the former use of the subject property as a pistol range is considered to represent a REC.

No other RECs were identified based on the historical review.

4.2 Off-site Properties

The 1907 and 1943 topographic maps depict the surrounding properties as consisting of undeveloped and agricultural land. The southeast-adjacent property appears to have first been developed for modern use circa 1950 with the City Farm prison, and barracks and outbuildings are depicted on topographic maps and contemporary aerial photographs from 1950 through the present. The northwest-adjacent property was first developed for modern use as the current HRSD James River Treatment Plant circa 1970, and is visible in all subsequent topographic maps and aerial photographs. This facility is a sanitary wastewater treatment plant, which serves the City of Newport News and James City County. According to information obtained from the Virginia Department of Environmental Quality (VDEQ) online Water Quality Improvement Fund List website, the facility wastewater treatment process "consists of screening, grit collection, pre-aeration, and primary clarification followed by aeration tanks, secondary clarification, and chlorine contact tanks. Solids handling at the plant consists of gravity thickening (primary solids), belt thickening (waste activated sludge), digestion, and centrifuge dewatering. Dewatered biosolids are transported to a contract composting facility. Scum, grit, and screenings are disposed of at a local landfill." This facility is discussed in additional detail in Section 5.3.2. The northeast-adjacent property was historically agricultural land prior to development with the current Riverview Gymnastics Center in the mid-1990s.

AECOM notes that based on the location of the subject property and surrounding area in a culturally significant region, additional historical uses may exist. However, these past uses (if any) are not considered to represent a likely source of petroleum products or hazardous materials.

Based on AECOM's review of available historical record sources, no historical off-site property uses of concern were identified. Due to the size and age of the facility, and the nature of its operations, the northwest-adjacent HRSD facility is discussed in additional detail in Section 5.3.2

4.3 Previously Prepared Environmental Reports

AECOM inquired about existing environmental reports associated with the subject property. Previously prepared environmental reports were not identified during this assessment. Mr. Lunsford indicated that to his knowledge, there were no previous environmental assessments or reports associated with the subject property.

5. Database and Records Review

5.1 User Provided Information

Section 6 of ASTM E1527-13 states that certain tasks, which will help to determine the possibility of RECs associated with the subject property, are generally conducted by the Phase I ESA report user. This includes the following: reviewing title records for environmental liens or activity and land use limitations and considering awareness of any specialized knowledge (e.g., information about previous ownership or environmental litigation), experience related to RECs at the subject property, or significant reduction in the purchase price of the subject property. Per the agreed scope-of-work, information related to these items should be provided by the Phase I ESA report user to AECOM. To assist the user in gathering information that may be material to identifying RECs, AECOM has provided the Client (the users) with the User Questionnaire from ASTM E1527-13; however, at this time the completed form has not been returned for inclusion in this report. This data gap is not expected to represent a significant limitation to this investigation based on other documentation reviewed as part of the Phase I ESA.

5.2 Title Records/Environmental Liens

Per the agreed upon scope of work, a chain-of-title and an environmental lien search were not performed as part of this assessment.

5.3 Database Information

In accordance with the scope of work and ASTM E1527-13, a search of various governmental databases was conducted by EDR. The site-specific environmental database report was reviewed to evaluate if soil and or groundwater from on-site and/or off-site sources of concern has the potential to impact the subject property. The database abbreviations are provided in the site-specific environmental database report.

The database report includes various reports detailing database information for each of the sites identified/geocoded within the specified radius. One additional site (Old Menchville Landfill) was identified within the database report; however, EDR was not able to map this site to a specific location due to insufficient and/or contradicting address information. This site was included in the database report as an "orphan" site. Based upon historical investigations conducted by AECOM of the Old Menchville Landfill location approximately 0.5 miles northeast of the subject property, and on the inferred local groundwater gradient in the landfill area (towards the southeast-adjacent Deep Creek), there does not appear to be a significant concern associated with the listed orphan site. A summary of AECOM's review and analysis of the site-specific environmental database report is presented below. A copy of the database report is provided in Appendix B.

Based on AECOM's research, the subject property is not located on or within a 1-mile radius of tribal lands.

5.3.1 Subject Property

The subject property was not identified in the site-specific environmental database report.

5.3.2 Surrounding Sites

According to the environmental database report, seven sites were identified within their respective ASTM E1527-13 and/or EDR search distances from the subject property. Based on AECOM's review of these database listings, none of these sites are expected to present a REC to the subject property based on their distance from the subject property, regulatory status (i.e. closed, no violations found), media impacted (i.e. soil only), and/or topographical position from the subject property (i.e. down-gradient or cross-gradient). Due to their proximity to the subject property, the following sites are discussed in additional detail:

- (HRSD) James River Treatment Plant, at 111 City Farm Road, is located northwest-abutting to the subject property. The facility is listed on the following databases:
    - The Resource Conservation and Recovery Act, Very Small Quantity Generator (RCRA-VSQG) database, for the generation of small quantities of hazardous wastes, including ignitable waste, corrosive waste, and spent non-halogenated solvents. No violations were reported in association with the RCRA-VSQG database listing.
    - The UST database, for the current use of one 20,000-gallon diesel fuel UST and one 2,500-gallon gasoline UST. Both USTs are listed as being double-walled fiberglass with internal secondary containment, automatic gauging and inventory reconciliation, and as having double-walled, suction-based piping with secondary containment. Both USTs were reportedly installed in 1991. The facility is also listed for the historical presence of one 6,000-gallon diesel fuel UST listed as having been installed in 1991 and one 2,000-gallon gasoline UST listed as having been installed in 1968. Both of these USTs are listed as having been removed from the ground. No spills have been reported in relation to any of the listed USTs.
    - The SPILLS database, for multiple releases of non-potable water and raw sewage between 2016 and 2018. The majority of the releases involved non-potable water. All reported releases are currently listed as closed, with no further remedial action planned.
    - The US AIRS database, as a potential emitter of volatile organic compounds in association with sanitary waste treatment. Facility US AIRS information available on the EPA's Envirofacts database indicates that the facility is currently in compliance.
    - The TIER 2 database, for the storage of large quantities of multiple hazardous materials in association with sanitary waste treatment operations. No information regarding spills or releases was included in the database report.

Based on the location of the facility cross-gradient to the subject property, the lack of reported UST releases, and the regulatory status of closed for SPILLS cases, it is AECOM's opinion that this facility does not represent a REC to the subject property.

- City Farm Maintenance (Newport News City – City Farm), at 100 City Farm Road, is located southeast-abutting to the subject property. This facility is listed on the UST and LUST/LTANKS databases. According to the site-specific environmental database report, this facility had one 1,000-gallon diesel UST, two 2,000-gallon diesel USTs, and one 2,000-gallon gasoline UST. All facility USTs are listed as having been removed from the ground. The facility is listed in the LUST and LTANKS database for a release which was reported on June

24, 2002, and issued Pollution Complaint Number 20025102. The current case status is listed as Closed, with a closure date of October 9, 2003. No additional detail regarding the nature of the release or subsequent remediation efforts was included in the database report. AECOM submitted a Freedom of Information Act (FOIA) request to the VDEQ, Tidewater Regional Office (TRO) on March 31, 2020 requesting additional LUST/LTANKS case information. At the time this report was prepared, a response had not been received. AECOM notes that according to the site representative, the City Farm Maintenance facility is no longer in operation, and was formerly located approximately 300 feet southeast of the subject property boundary. Based on the facility distance and cross-gradient location in relation to the subject property, and on the regulatory case closure, it is AECOM's opinion that this facility does not represent a REC to the subject property.

5.4 Vapor Encroachment Screening

AECOM conducted a Tier 1 VES as part of this assessment. This screening was conducted in general accordance with the ASTM E2600-15. The objective of the VES was to determine if a VEC exists or if a VEC does not exist.

5.4.1 Subject Property

No on-site sources of vapor encroachment (e.g. UST, contaminated soil, groundwater plume, etc.) were identified during this assessment. Based on this information, a VEC due to an on-site source does not appear to exist.

5.4.2 Off-site

To conduct the VES of the nearby area, AECOM conducted a detailed review and analysis of the site-specific environmental database report with particular focus on the follow two types of sites:

1. Off-site properties that are impacted by chlorinated volatile organic compounds (CVOCs) and/or semi-volatile-organic compounds (SVOCs) and are located within approximately 1,750 feet of the subject property, and
2. Off-site properties that are impacted by petroleum hydrocarbons and are located within approximately 525 feet of the subject property.

The following paragraph summarizes the results of AECOM's VES of the nearby area.

A review of the site-specific environmental database indicates that no CVOC/SVOC sites, and one petroleum hydrocarbon impacted site (City Farm Maintenance facility) are located with the above-described radii of the subject property. However, this site can be ruled out due to its regulatory status (i.e. regulatory closure has been issued) and topographical position from the subject property (i.e. cross-gradient). Based on this information, it is AECOM's opinion that a VEC at the subject property due to an off-site source does not appear to exist.

5.5 Agency File Review

5.5.1 Local

AECOM submitted a FOIA request to the City of Newport News to determine if they have files related to historical hazardous materials releases that may have occurred at the subject property. As of the date of this report, a response to AECOM's FOIA request has not been received. Based on AECOM's research to date, AECOM does not anticipate the response (if any) from the City of Newport News to our FOIA request will significantly alter the conclusions or recommendations of this report. However, if information is received from this FOIA request that significantly impacts the conclusions of this report, this information will be forwarded upon receipt.

5.5.2 State

In addition, AECOM submitted a FOIA request to the VDEQ TRO for information pertaining to the southeasterly abutting LUST/LTANKS site. No information was received during the time-frame of this assessment. Based on AECOM's research to date, AECOM does not anticipate the response (if any) from the VDEQ to our FOIA request will significantly alter the conclusions or recommendations of this report. However, if information is received from this FOIA request that significantly impacts the conclusions of this report, this information will be forwarded upon receipt.

5.5.3 Federal

AECOM searched the United States Environmental Protection Agency's (U.S. EPA) Envirofacts and Superfund Enterprise Management System (SEMS) online databases. The SEMS database replaced the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) which has since been retired. SEMS includes the same data fields and content as CERCLIS. The Envirofacts database retrieves information obtained from 17 national systems, including the CERCLIS, Superfund program (NPL sites), hazardous waste sites, and potential hazardous waste sites. The subject property was not listed on the Envirofacts or SEMS databases.

6. Findings and Opinions

AECOM performed a Phase I ESA of the subject property in conformance with the scope and limitations of ASTM E1527-13, which meets the requirements of Title 40, Code of Federal Regulations Part 312 and is intended to constitute *all appropriate inquiry* for purposes of the landowner liability protections. Any exceptions to, or deletions from, this practice are described in Section 1.3 through 1.5 of this report.

The following sections summarize the findings and opinions of this Phase I ESA of the subject property.

6.1 Recognized Environmental Conditions

The following REC was identified during this assessment:

- A pistol range was formerly present on the subject property. Information provided by the site representative, and included in the Deep Creek/Menchville Master Plan, indicates that a pistol range was present on the western portion of the subject property from circa 1981 to circa 1990. Based on the historical use of the subject property as a pistol range, the potential exists for subsurface lead impact originating from fired pistol rounds. As such, the former use of the subject property as a pistol range is considered to represent a REC.

6.2 Controlled Recognized Environmental Conditions

Based on the above-described activities, no CRECs were identified in connection with the subject property.

6.3 Historical Recognized Environmental Conditions

Based on the above-described activities, no HRECs were identified in connection with the subject property.

6.4 Vapor Encroachment Conditions

Based on the above-described activities, no VECs were identified in connection with the subject property.

6.5 De Minimis Conditions

Based on the above-described activities, no DMCs were identified in connection with the subject property.

7. Conclusions

We have performed a Phase I ESA in conformance with the scope and limitations of ASTM E1527-13 of the approximately 10-acre portion (the subject property) of a larger parcel located at 125 City Farm Road, Newport News, Virginia., the subject property. Any exception to, or deletions from, this practice are described in Sections 1.3 through 1.5 of this report. This assessment has revealed no evidence of RECs or CRECs in connection with the property except the following:

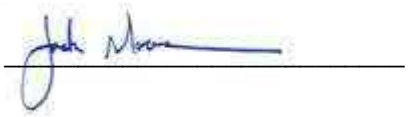
The following REC was identified during this assessment:

- Information provided by the site representative, and included in the Deep Creek/Menchville Master Plan, indicates that a pistol range was historically present on the western portion of the subject property from circa 1981 to circa 1990. Based on the historical use of the subject property as a pistol range, the potential exists for subsurface lead impact originating from fired pistol rounds. As such, the former use of the subject property as a pistol range is considered to represent a REC.

8. Environmental Professional Statement

Mr. Jack Moore was the Environmental Professional (EP) for this project. Mr. Moore's EP statement is below and his resume is provided in Appendix C:

I declare that, to the best of my professional knowledge and belief, I meet the definition of an EP as defined in §312.10 of 40 Code of Federal Regulations (CFR) and that I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Signature:  Date: April 24, 2020

9. References

9.1 Persons Interviewed

Lunsford, Andy, Newport News Parks Department, (757) 886-7912, slunsford@nnva.gov. Provided site history on April 1, 2020.

9.2 Agencies Contacted

Assessor parcel information, reviewed for City of Newport News, Virginia at https://www.nngov.com/302/Property-Assessment-Search. This information was reviewed online by Mr. Travis McKee with AECOM on April 1, 2020.

City of Newport News, Virginia, FOIA Officer, AECOM submitted a FOIA to the City on March 31, 2020

Environmental Protection Agency CERCLIS database - http://www.epa.gov/enviro/facts/cerclis/search.html

Environmental Protection Agency Envirofacts database - http://www.epa.gov/enviro/

Environmental Protection Agency Superfund Enterprise Management System (SEMS) database, https://cumulis.epa.gov/supercpad/cursites/srchsites.cfm .

Virginia Environmental Geographic Information System (VEGIS), https://apps.deq.virginia.gov/mapper_ext/?service=public/wimby#, This information was reviewed online by Mr. Travis McKee with AECOM on March 31, 2020.

9.3 Documents Reviewed

ASTM E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, dated November 2013. www.astm.org

ASTM E2600-15, Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions, dated October 2015. www.astm.org

EDR 7.5 Minute Topographic Maps, prepared for 125 City Farm Road, Newport News, Virginia 26302, dated March 24, 2020. Inquiry number 6020295.4. Topographic Maps 1907, 1943, 1950, 1957, 1965, 1970, 1973, 1979, 1986, and 2013. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, www.edrnet.com.

EDR Aerial Photos Decade Package prepared for 125 City Farm Road, Newport News, Virginia 26302, dated March 24, 2020. Inquiry number 6020295.11. Aerial photographs dated 1970, 1973, 1982, 1990, 1994, 2006, 2009, 2012, and 2016. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, www.edrnet.com.

EDR City Directory Abstract prepared for 125 City Farm Road, Newport News, Virginia 26302, dated March 26, 2020. Inquiry number 6020295.5. City directories reviewed included 1969, 1975, 1979, 1984, 1989, 1992, 1995, 2000, 2005, 2010, 2014, and 2017. Report prepared by

Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, www.edrnet.com.

EDR Radius Map with GeoCheck®, prepared for 125 City Farm Road, Newport News, Virginia 26302, dated March 24, 2020. Inquiry number 6020295.2s. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, www.edrnet.com.

EDR Building Permit Report, prepared for 125 City Farm Road, Newport News, Virginia 26302, dated March 24, 2020. Inquiry number 6020295.8. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, www.edrnet.com.

EDR Sanborn Map Report, prepared for 125 City Farm Road, Newport News, Virginia 26302, dated March 24, 2020. Inquiry number 6020295.3. Report prepared by Environmental Data Resources Inc., 6 Armstrong Road, Shelton, Connecticut 06484, (800) 352-0050, www.edrnet.com.

Google Earth website, www.google.earth.com. This information was reviewed online by Mr. Travis McKee with AECOM on April 1, 2020.

U.S. Environmental Protection Agency, Technical Guide For Addressing Petroleum Vapor Intrusion At Leaking Underground Storage Tank Sites dated June 2015, https://www.epa.gov/sites/production/files/2015-06/documents/pvi-guide-final-6-10-15.pdf

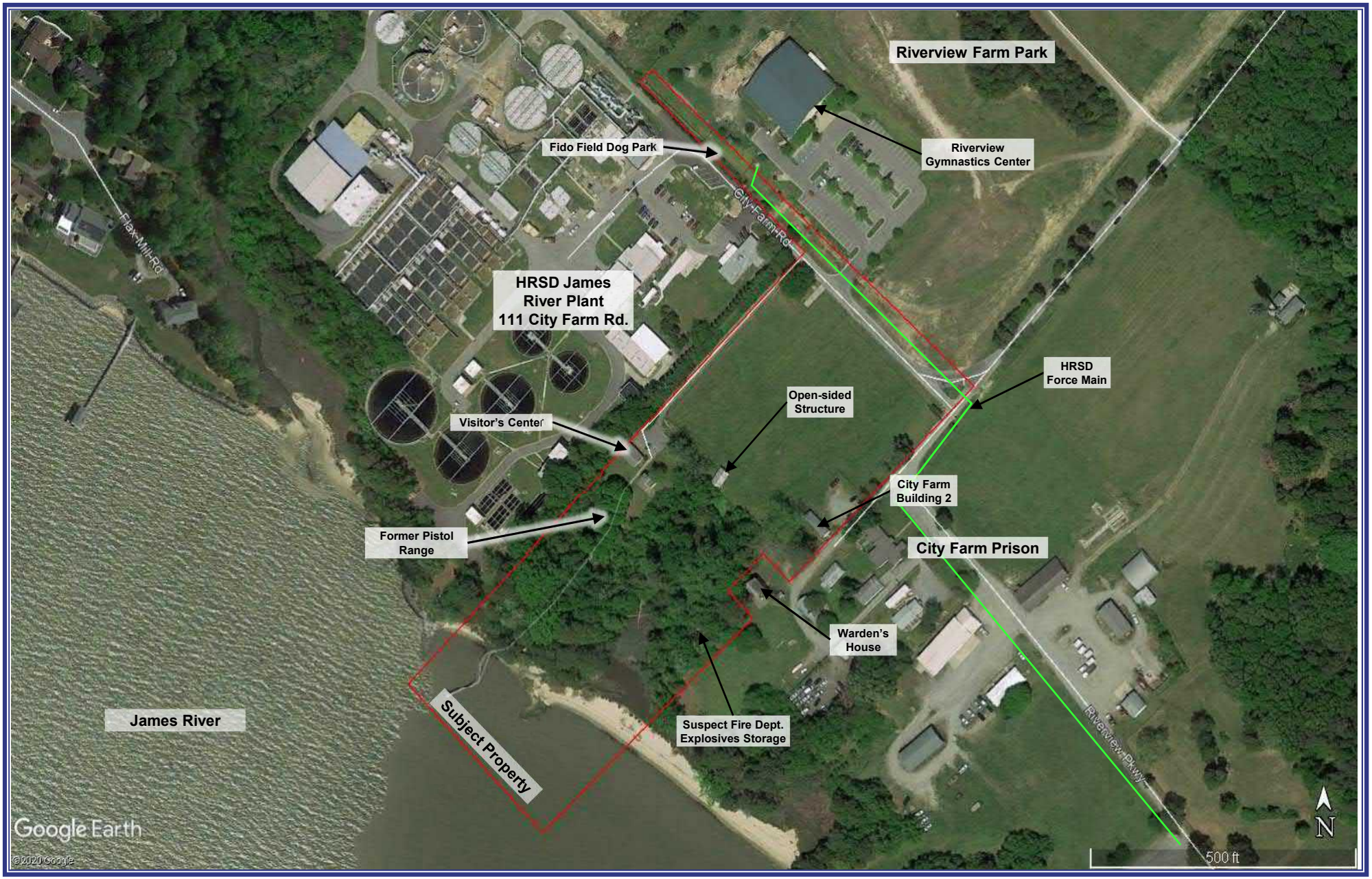
Web Soil Survey. U.S. Department of Agriculture, Natural Resources Conservation Service website - http://websoilsurvey.nrcs.usda.gov/app/

Figures



Figure 1: Site Location Map

Image Source: EDR	AECOM	**Phase I Environmental Site Assessment** Proposed HRSD James River Plant Expansion 125 City Farm Road Newport News, Virginia AECOM Project No. 60617789



AECOM	Phase I ESA Proposed HRSD Plant Expansion 125 City Farm Road Newport News, Virginia	Project No. 60617789 Property Boundaries Are Approximate	**Figure 2 - Site Plan**

Appendix A Representative Site Photographs

PHOTOGRAPHIC LOG

Facility Name:	Site Location:	US Project No.
Proposed HRSD James River Plant Expansion	125 City Farm Road, Newport News, Virginia	60617789

Photo No. 1	Date: 03/30/2020

Direction Photo Taken:

Southwest

Description:

View of the subject property from the corner of the Visitor's Center access road and City Farm Road.



Photo No. 2	Date: 03/30/2020

Direction Photo Taken:

Northwest

Description:

View of the northernmost portion of the subject property along City Farm Road, looking toward Fido Field.



PHOTOGRAPHIC LOG

Facility Name:	Site Location:	US Project No.
Proposed HRSD James River Plant Expansion	125 City Farm Road, Newport News, Virginia	60617789

Photo No. 3	Date: 03/30/2020

Direction Photo Taken:

Northwest

Description:

View of the Fido Field dog park located on the northernmost portion of the subject property.



Photo No. 4	Date: 03/30/2020

Direction Photo Taken:

Southwest

Description:

View of the open field portion of the subject property to the northeast of the Visitor's Center building.



AECOM

PHOTOGRAPHIC LOG

Facility Name:	Site Location:	US Project No.
Proposed HRSD James River Plant Expansion	125 City Farm Road, Newport News, Virginia	60617789

Photo No.	Date:
5	03/30/2020

Direction Photo Taken:

Southwest

Description:

View of the southeastern portion of the open field located on the northeastern portion of the subject property.



Photo No.	Date:
6	03/30/2020

Direction Photo Taken:

Southwest

Description:

View of the subject property Visitor's Center building and associated outbuilding. Former pistol range administrative building and range officer's tower.



PHOTOGRAPHIC LOG

Facility Name:	Site Location:	US Project No.
Proposed HRSD James River Plant Expansion	125 City Farm Road, Newport News, Virginia	60617789

Photo No.	Date:
7	03/30/2020

Direction Photo Taken:

North

Description:

View of the rear of the Visitor's Center building.



Photo No.	Date:
8	03/30/2020

Direction Photo Taken:

Northeast

Description:

View of the rear of the former range officer's tower. Currently utilized for irrigation equipment storage.



AECOM

PHOTOGRAPHIC LOG

Facility Name:	Site Location:	US Project No.
Proposed HRSD James River Plant Expansion	125 City Farm Road, Newport News, Virginia	60617789

Photo No.	Date:
9	03/30/2020

Direction Photo Taken:

Southwest

Description:

View of the entrance to the park trail. Formerly a pistol range.



Photo No.	Date:
10	03/30/2020

Direction Photo Taken:

Southeast

Description:

View of the suspect former water spigot location behind the Visitor's Center building.



PHOTOGRAPHIC LOG

Facility Name:	Site Location:	US Project No.
Proposed HRSD James River Plant Expansion	125 City Farm Road, Newport News, Virginia	60617789

Photo No.	Date:
11	03/30/2020

Direction Photo Taken:

Northeast

Description:

View of the southwestern portion of the subject property from the scenic overlook pier.



Photo No.	Date:
12	03/30/2020

Direction Photo Taken:

Southeast

Description:

View of the James River shoreline along the southwestern edge of the subject property.



PHOTOGRAPHIC LOG

Facility Name:	Site Location:	US Project No.
Proposed HRSD James River Plant Expansion	125 City Farm Road, Newport News, Virginia	60617789

Photo No.	Date:
13	03/30/2020

Direction Photo Taken:

Southwest

Description:

Representative view of the wooded portion of the subject property interior.



Photo No.	Date:
14	03/30/2020

Direction Photo Taken:

West

Description:

View of the open-sided structure in the central portion of the subject property.



PHOTOGRAPHIC LOG

Facility Name:	Site Location:	US Project No.
Proposed HRSD James River Plant Expansion	125 City Farm Road, Newport News, Virginia	60617789

Photo No.	Date:
15	03/30/2020

Direction Photo Taken:

South

Description:

View of the northeast side of the subject property storage building (City Farm building 2) used for the storage of events supplies.



Photo No.	Date:
16	03/30/2020

Direction Photo Taken:

East

Description:

View of empty water drums on the subject property,outside City Farm building 2, used for events traffic control by the Parks Department.



AECOM

PHOTOGRAPHIC LOG

Facility Name:	Site Location:	US Project No.
Proposed HRSD James River Plant Expansion	125 City Farm Road, Newport News, Virginia	60617789

Photo No.	Date:
17	03/30/2020

Direction Photo Taken:

Northwest

Description:

View of the suspect Fire Department explosives storage container on the subject property. Not a REC.



Photo No.	Date:
18	03/30/2020

Direction Photo Taken:

Southwest

Description:

View of the southeast-adjacent City Farm Prison former Warden's house and associated water well.



AECOM

PHOTOGRAPHIC LOG

Facility Name:	Site Location:	US Project No.
Proposed HRSD James River Plant Expansion	125 City Farm Road, Newport News, Virginia	60617789

Photo No.	Date:
19	03/30/2020

Direction Photo Taken:

Southwest

Description:

View of the suspect underground storage tank vent pipe on the exterior of the Warden's house on the southeast-adjacent property. Not a REC.



Photo No.	Date:
20	03/30/2020

Direction Photo Taken:

East

Description:

View of the southeast-adjacent City Farm property from the southwestern portion of the subject property.



PHOTOGRAPHIC LOG

Facility Name:	Site Location:	US Project No.
Proposed HRSD James River Plant Expansion	125 City Farm Road, Newport News, Virginia	60617789

Photo No.	Date:
21	03/30/2020

Direction Photo Taken:

South

Description:

Second view of the southeast-adjacent City Farm property, from the intersection of City Farm Road and Riverview Parkway.



Photo No.	Date:
22	03/30/2020

Direction Photo Taken:

East

Description:

View of the east-adjacent portion of City Farm.



PHOTOGRAPHIC LOG

Facility Name:	Site Location:	US Project No.
Proposed HRSD James River Plant Expansion	125 City Farm Road, Newport News, Virginia	60617789

Photo No.	Date:
23	03/30/2020

Direction Photo Taken:

Northeast

Description:

View of the northeast-adjacent Riverview Farm Park.



Photo No.	Date:
24	03/30/2020

Direction Photo Taken:

North

Description:

View of the northeast-adjacent Riverview Gymnastics Center.



PHOTOGRAPHIC LOG

Facility Name:	Site Location:	US Project No.
Proposed HRSD James River Plant Expansion	125 City Farm Road, Newport News, Virginia	60617789

Photo No. 25	Date: 03/30/2020

Direction Photo Taken:

Northwest

Description:

View of the northwest-adjacent HRSD James River Plant.



Photo No. 26	Date: 03/30/2020

Direction Photo Taken:

Northwest

Description:

Representative view of electrical transformers at the subject property.



Appendix B Environmental Database Report

HRSD JR Plant Expansion

125 City Farm Road

Newport News, VA 23602

Inquiry Number: 6020295.3

March 24, 2020

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

03/24/20

Site Name:

HRSD JR Plant Expansion
125 City Farm Road
Newport News, VA 23602
EDR Inquiry # 6020295.3

Client Name:

AECOM
1500 Wells Fargo Center
Norfolk, VA 23510-0000
Contact: Travis Mckee

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by AECOM were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # E8F6-48D9-B533

PO # 60617789-1.10O

Project HRSD JR Plant Phase I ESA

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: E8F6-48D9-B533

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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HRSD JR Plant Expansion
125 City Farm Road
Newport News, VA 23602

Inquiry Number: 6020295.4
March 24, 2020

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

03/24/20

Site Name:	Client Name:
HRSD JR Plant Expansion	AECOM
125 City Farm Road	1500 Wells Fargo Center
Newport News, VA 23602	Norfolk, VA 23510-0000
EDR Inquiry # 6020295.4	Contact: Travis Mckee

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by AECOM were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:		*Coordinates:*	
P.O.#	60617789-1.10O	**Latitude:**	37.084031 37° 5' 3" North
Project:	HRSD JR Plant Phase I ESA	**Longitude:**	-76.532405 -76° 31' 57" West
		UTM Zone:	Zone 18 North
		UTM X Meters:	363798.35
		UTM Y Meters:	4105292.69
		Elevation:	21.48' above sea level

Maps Provided:

2013	1943
1986	1907
1979	
1973	
1970	
1965	
1957	
1950	

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2013 Source Sheets



Mulberry Island
2013
7.5-minute, 24000

1986 Source Sheets



Mulberry Island
1986
7.5-minute, 24000
Aerial Photo Revised 1981

1979 Source Sheets



Mulberry Island
1979
7.5-minute, 24000
Aerial Photo Revised 1978

1973 Source Sheets



Mulberry Island
1973
7.5-minute, 24000
Aerial Photo Revised 1973

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1970 Source Sheets



Mulberry Island
1970
7.5-minute, 24000
Aerial Photo Revised 1970

1965 Source Sheets



Mulberry Island
1965
7.5-minute, 24000
Aerial Photo Revised 1963

1957 Source Sheets



Mulberry Island
1957
7.5-minute, 24000
Aerial Photo Revised 1955

1950 Source Sheets



Mulberry Island
1950
7.5-minute, 24000
Aerial Photo Revised 1947

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1943 Source Sheets



Yorktown
1943
15-minute, 62500

1907 Source Sheets



Yorktown
1907
15-minute, 62500

Historical Topo Map

2013



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Mulberry Island, 2013, 7.5-minute

SITE NAME: HRSD JR Plant Expansion
ADDRESS: 125 City Farm Road
Newport News, VA 23602
CLIENT: AECOM

N

Historical Topo Map

1986



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

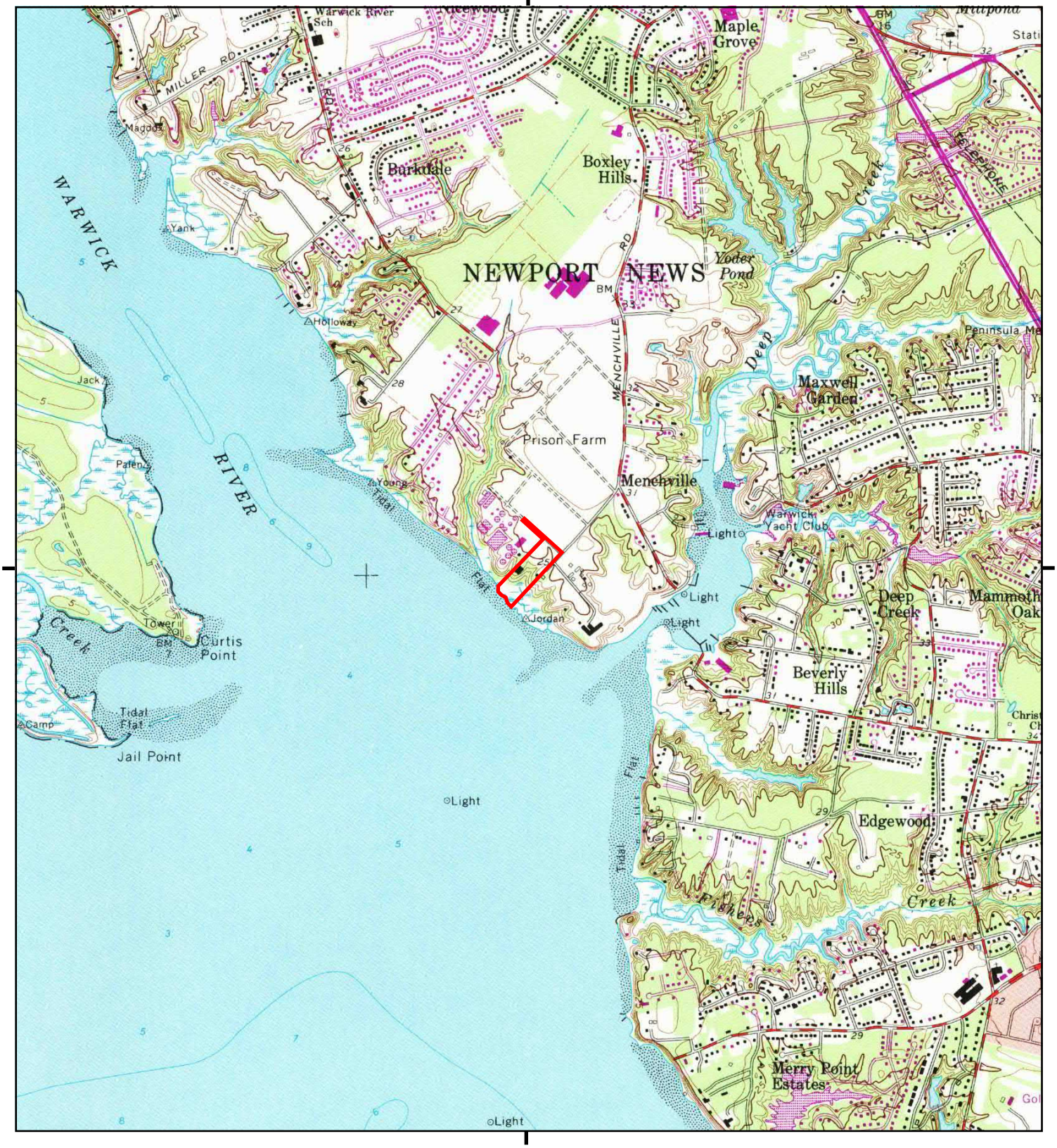
TP, Mulberry Island, 1986, 7.5-minute

SITE NAME: HRSD JR Plant Expansion
ADDRESS: 125 City Farm Road
Newport News, VA 23602
CLIENT: AECOM

N

Historical Topo Map

1979



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

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W E
SW S SE

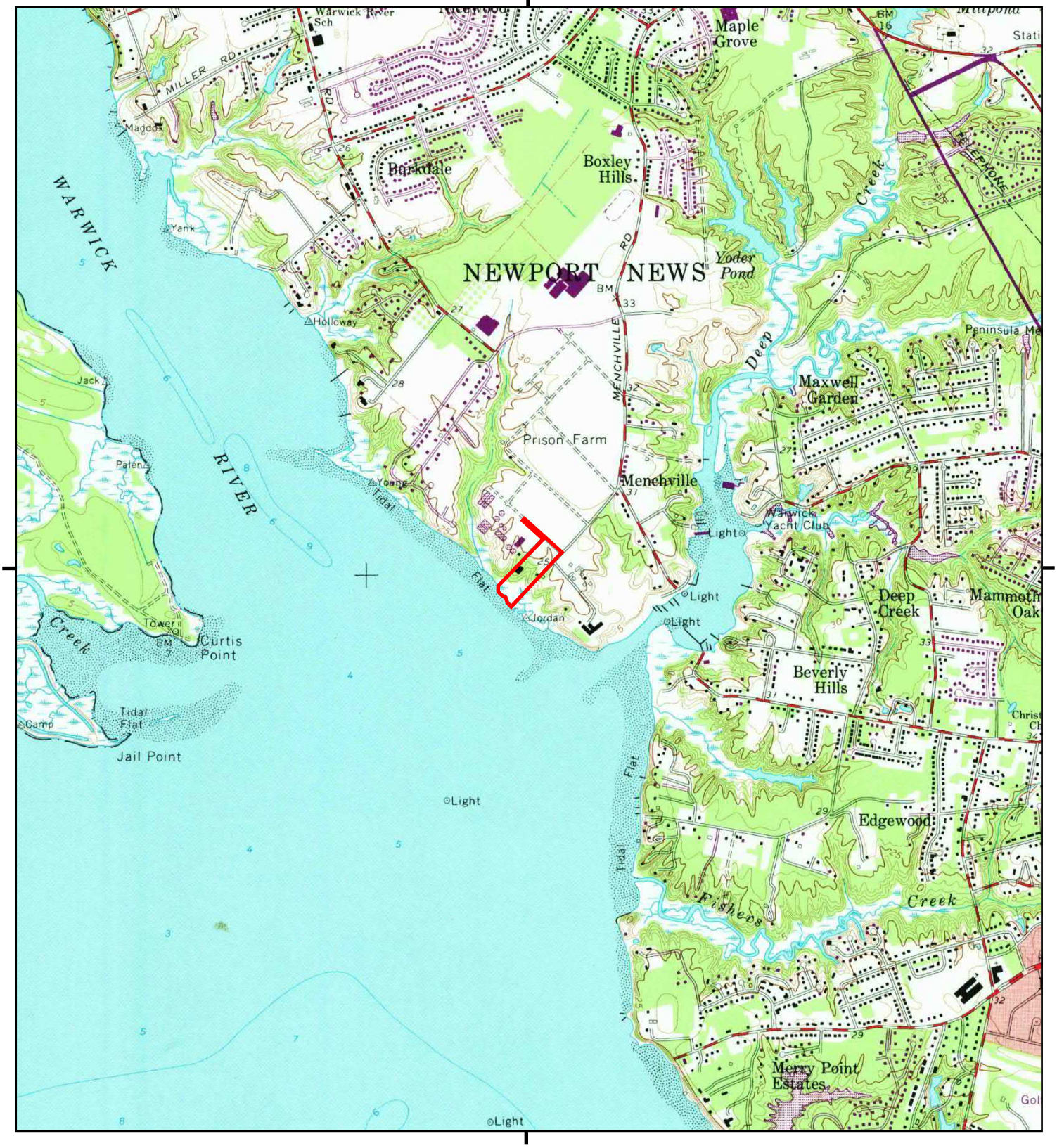
TP, Mulberry Island, 1979, 7.5-minute

SITE NAME: HRSD JR Plant Expansion
ADDRESS: 125 City Farm Road
Newport News, VA 23602
CLIENT: AECOM

N

Historical Topo Map

1973



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Mulberry Island, 1973, 7.5-minute

SITE NAME: HRSD JR Plant Expansion
ADDRESS: 125 City Farm Road
Newport News, VA 23602
CLIENT: AECOM

N

Historical Topo Map

1970



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Mulberry Island, 1970, 7.5-minute

SITE NAME: HRSD JR Plant Expansion
ADDRESS: 125 City Farm Road
Newport News, VA 23602
CLIENT: AECOM

N

Historical Topo Map

1965



This report includes information from the following map sheet(s).

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W E
SW S SE

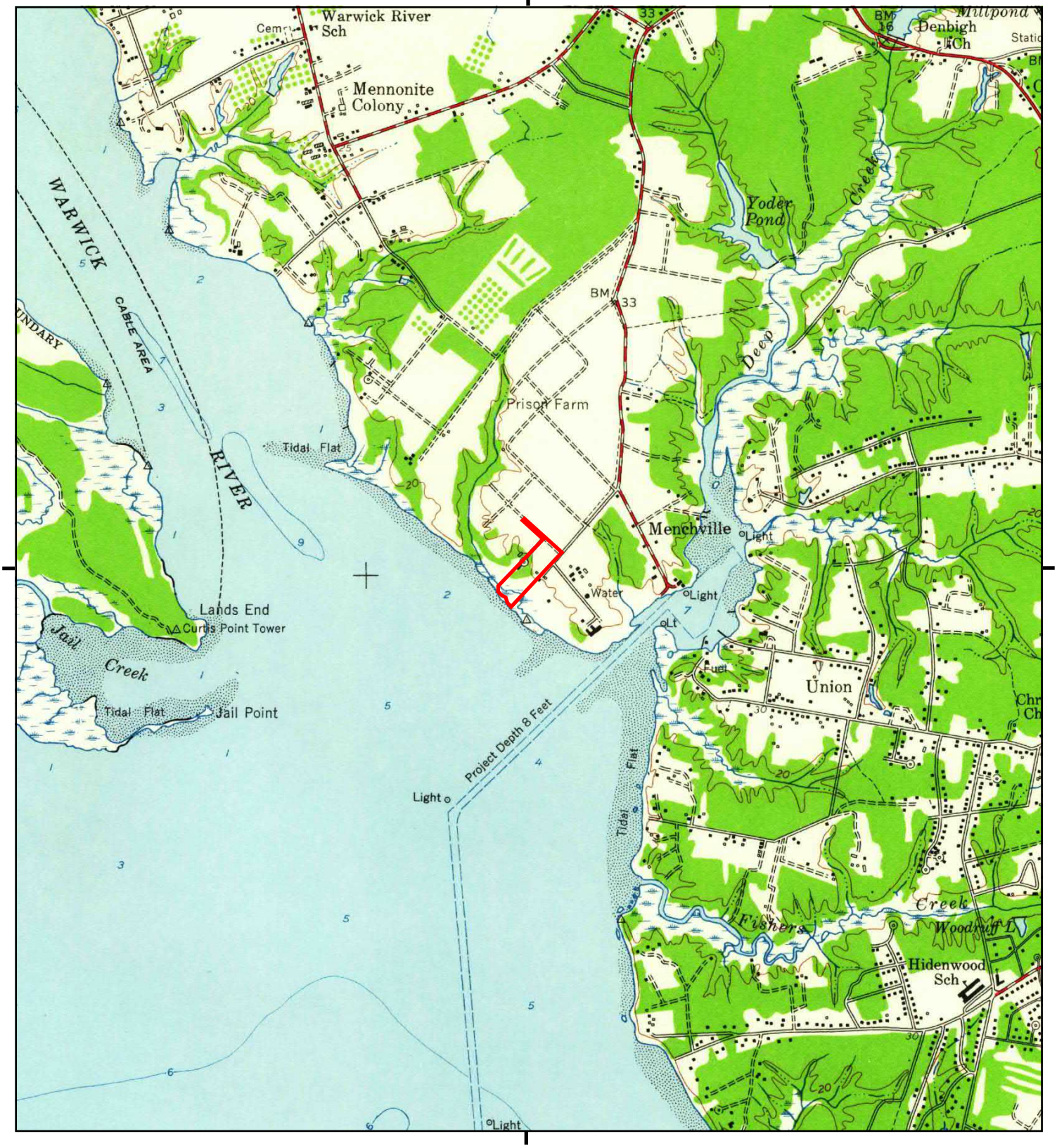
TP, Mulberry Island, 1965, 7.5-minute

SITE NAME: HRSD JR Plant Expansion
ADDRESS: 125 City Farm Road
Newport News, VA 23602
CLIENT: AECOM

N

Historical Topo Map

1957



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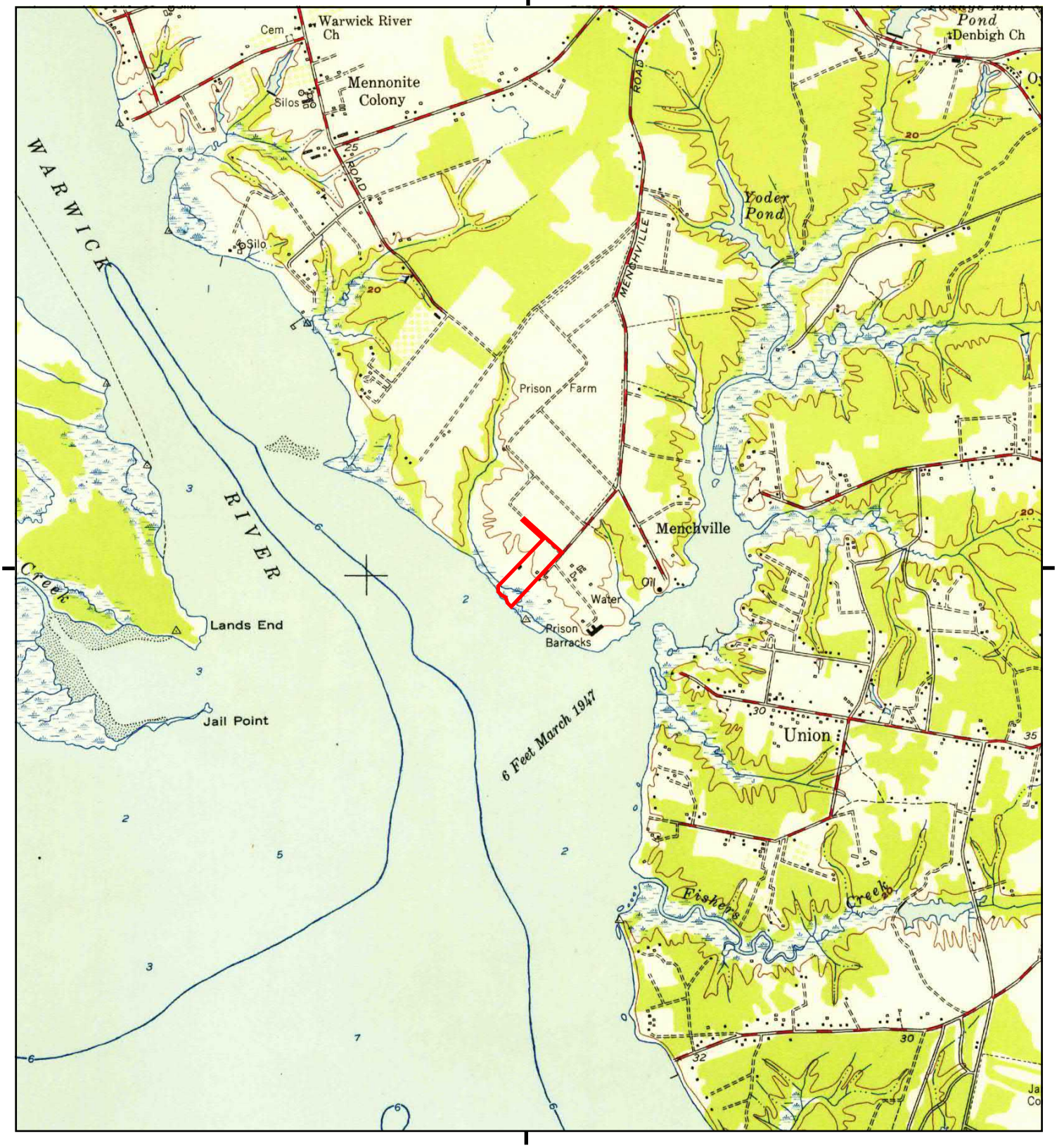
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Mulberry Island, 1957, 7.5-minute

SITE NAME: HRSD JR Plant Expansion
ADDRESS: 125 City Farm Road
Newport News, VA 23602
CLIENT: AECOM

N



This report includes information from the following map sheet(s).

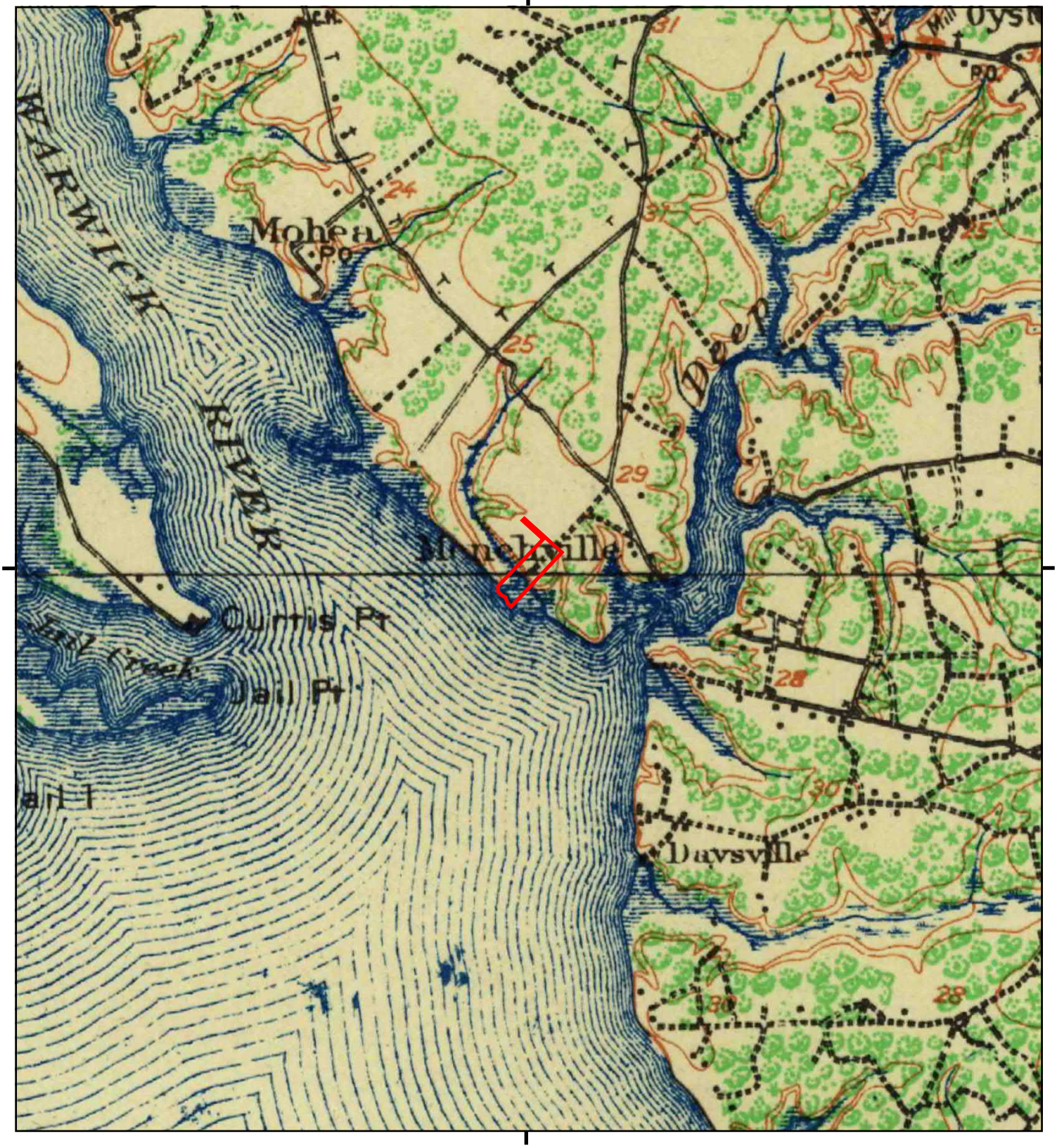
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Mulberry Island, 1950, 7.5-minute

SITE NAME: HRSD JR Plant Expansion
ADDRESS: 125 City Farm Road
Newport News, VA 23602
CLIENT: AECOM

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

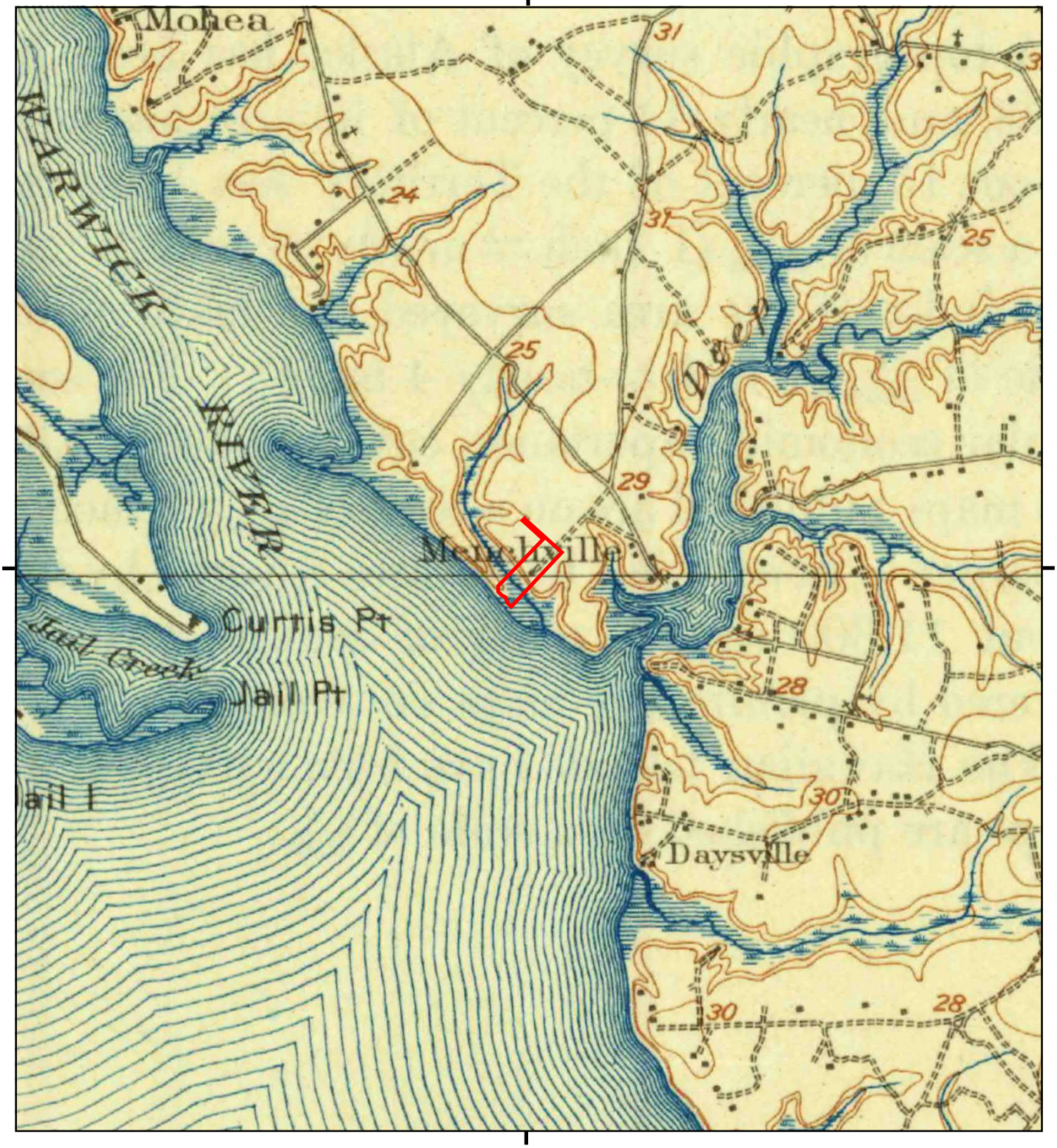
TP, Yorktown, 1943, 15-minute

SITE NAME: HRSD JR Plant Expansion
ADDRESS: 125 City Farm Road
Newport News, VA 23602
CLIENT: AECOM

N

Historical Topo Map

1907



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Yorktown, 1907, 15-minute

SITE NAME: HRSD JR Plant Expansion
ADDRESS: 125 City Farm Road
Newport News, VA 23602
CLIENT: AECOM

N

HRSD JR Plant Expansion

125 City Farm Road

Newport News, VA 23602

Inquiry Number: 6020295.11

March 24, 2020

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

03/24/20

Site Name:

HRSD JR Plant Expansion
125 City Farm Road
Newport News, VA 23602
EDR Inquiry # 6020295.11

Client Name:

AECOM
1500 Wells Fargo Center
Norfolk, VA 23510-0000
Contact: Travis Mckee

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1994	1"=500'	Acquisition Date: March 06, 1994	USGS/DOQQ
1990	1"=750'	Flight Date: April 08, 1990	USGS
1982	1"=500'	Flight Date: April 01, 1982	USDA
1973	1"=500'	Flight Date: April 01, 1973	USGS
1970	1"=500'	Flight Date: September 22, 1970	USGS

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INQUIRY #: 6020295.11

YEAR: 2016

= 500'

N

EDR



INQUIRY #: 6020295.11

YEAR: 2012

= 500'

N

EDR



INQUIRY #: 6020295.11

YEAR: 2009

= 500'

N

EDR



INQUIRY #: 6020295.11

YEAR: 2006

= 500'

N

EDR



INQUIRY #: 6020295.11

YEAR: 1994

= 500'

N

EDR



INQUIRY #: 6020295.11

YEAR: 1990

= 750'

N

EDR

Subject boundary not shown because it exceeds image extent or image is not georeferenced.



INQUIRY #: 6020295.11

YEAR: 1982

= 500'

N

EDR



INQUIRY #: 6020295.11

YEAR: 1973

= 500'

N

EDR



INQUIRY #: 6020295.11

YEAR: 1970

= 500'

N

EDR

HRSD JR Plant Expansion
125 City Farm Road
Newport News, VA 23602

Inquiry Number: 6020295.5
March 26, 2020

The EDR-City Directory Image Report

Environmental Data Resources Inc
6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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Findings

City Directory Images

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EXECUTIVE SUMMARY

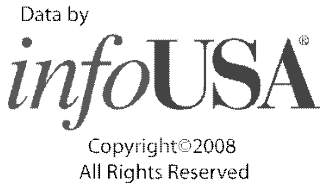
DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2017	☑	☐	EDR Digital Archive
2014	☑	☐	EDR Digital Archive
2010	☑	☐	EDR Digital Archive
2005	☐	☐	EDR Digital Archive
2000	☑	☐	EDR Digital Archive
1995	☑	☐	EDR Digital Archive
1992	☑	☐	EDR Digital Archive
1989	☑	☐	Polk's City Directory
1984	☑	☐	Polk's City Directory
1979	☑	☐	Hill's City Directory
1975	☑	☐	Hill's City Directory
1969	☑	☐	Hill's City Directory
1964	☐	☐	Hill's City Directory

FINDINGS

TARGET PROPERTY STREET

125 City Farm Road
Newport News, VA 23602

Year	*CD Image*	*Source*	
CITY FARM RD			
2017	pg A1	EDR Digital Archive	
2014	pg A2	EDR Digital Archive	
2010	pg A3	EDR Digital Archive	
2000	pg A4	EDR Digital Archive	
1995	pg A5	EDR Digital Archive	
1992	pg A6	EDR Digital Archive	
1989	pg A7	Polk's City Directory	
1984	pg A8	Polk's City Directory	
1979	pg A9	Hill's City Directory	
1975	pg A10	Hill's City Directory	
1969	pg A11	Hill's City Directory	
1964	-	Hill's City Directory	Street not listed in Source

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*	
RIVERVIEW PKWY			
2017	-	EDR Digital Archive	Street not listed in Source
2014	-	EDR Digital Archive	Street not listed in Source
2010	-	EDR Digital Archive	Street not listed in Source
2005	-	EDR Digital Archive	Street not listed in Source
2000	-	EDR Digital Archive	Street not listed in Source
1995	-	EDR Digital Archive	Street not listed in Source
1992	-	EDR Digital Archive	Street not listed in Source
1989	-	Polk's City Directory	Street not listed in Source
1984	-	Polk's City Directory	Street not listed in Source
1979	-	Hill's City Directory	Street not listed in Source
1975	-	Hill's City Directory	Street not listed in Source
1969	-	Hill's City Directory	Street not listed in Source
1964	-	Hill's City Directory	Street not listed in Source

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

CITY FARM RD 2017

100 CITY OF NEWPORT NEWS

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

CITY FARM RD 2014

100 NEWPORT NEWS CITY FARM

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

CITY FARM RD 2010

100 NEWPORT NEWS CITY FARM
111 HRSD
125 RIVERVIEW GYMNASTICS CTR

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

CITY FARM RD 2000

100	NEWPORT NEWS CITY OF CITY FARM
125	RIVERVIEW PARKS & RECREATION GYMNASTIC CENTER

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

CITY FARM RD 1995

100 NEWPORT NEWS CITY FARM
112 IRISH, SHEILA J

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

CITY FARM RD 1992

100 NEWPORT NEWS CITY FARM

Target Street	Cross Street	Source
✓	-	Polk's City Directory

CITY FARM RD 1989



377

CITY FARM RD -FROM 401
MENCHVILLE RD SOUTHWEST 1
SOUTH CAMELLIA DR

ZIP CODE 23602
100 City Prison Farm 886-2724
★Payne Billy 886-2724
111 James River Treatment Plant 877-9356
North Shore Laboratory 874-1287

Target Street	Cross Street	Source
✓	-	Polk's City Directory

CITY FARM RD 1984

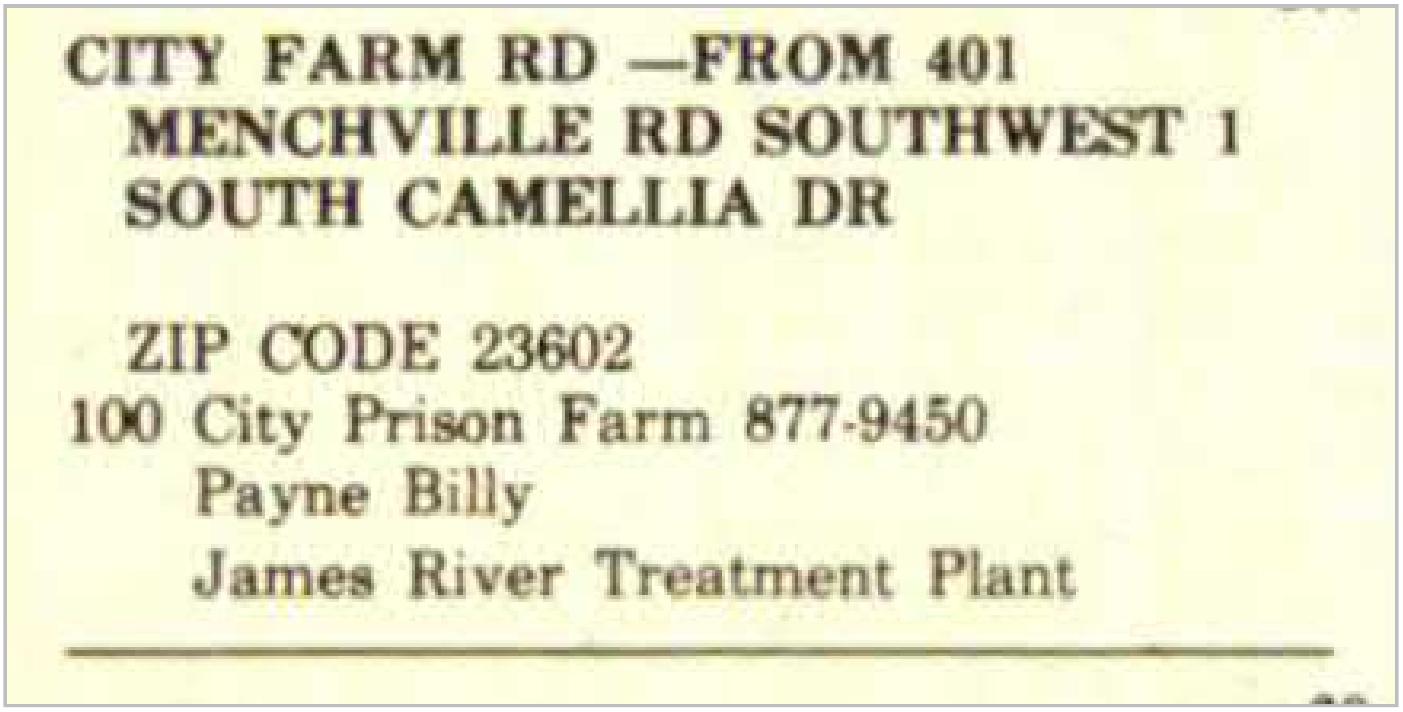


CITY FARM RD —FROM 401
MENCHVILLE RD SOUTHWEST 1
SOUTH CAMELLIA DR

ZIP CODE 23602
100 City Prison Farm 877-9450
Payne Billy
111 James River Treatment Plant 877-9356
North Shore Laboratory 874-1287

Target Street	Cross Street	Source
✓	-	Hill's City Directory

CITY FARM RD 1979

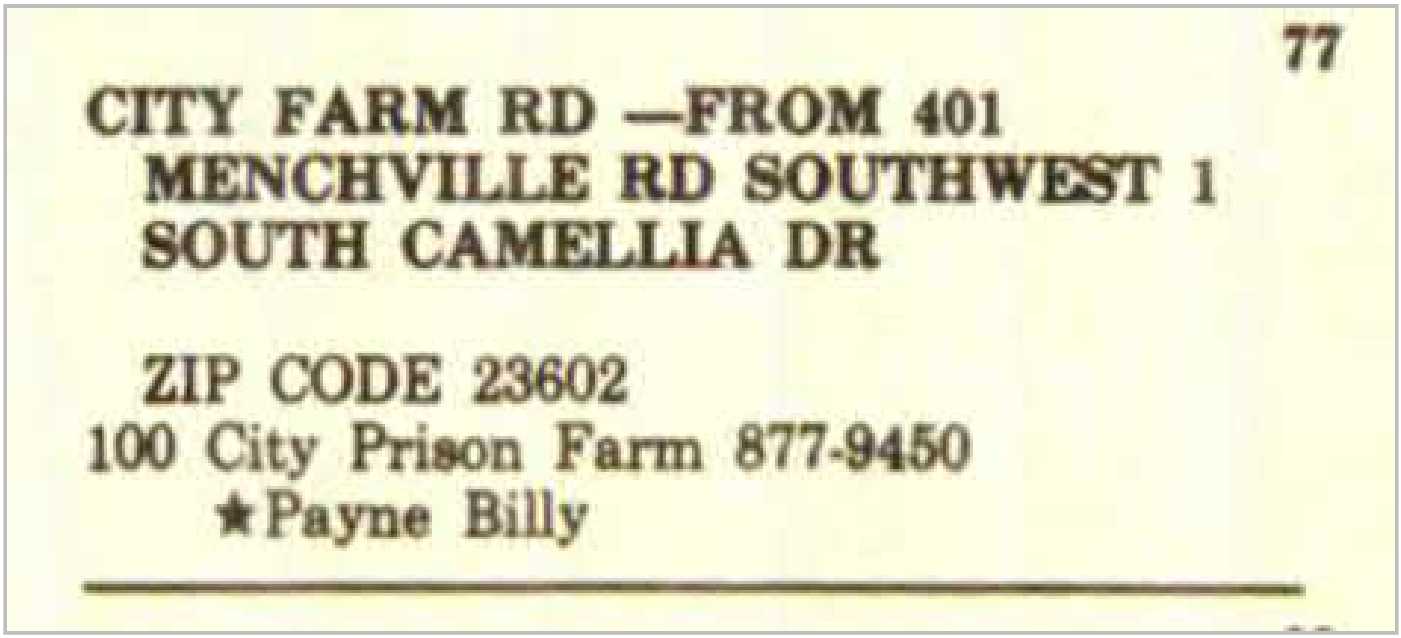


CITY FARM RD —FROM 401
MENCHVILLE RD SOUTHWEST 1
SOUTH CAMELLIA DR

ZIP CODE 23602
100 City Prison Farm 877-9450
Payne Billy
James River Treatment Plant

Target Street	Cross Street	Source
✓	-	Hill's City Directory

CITY FARM RD 1975



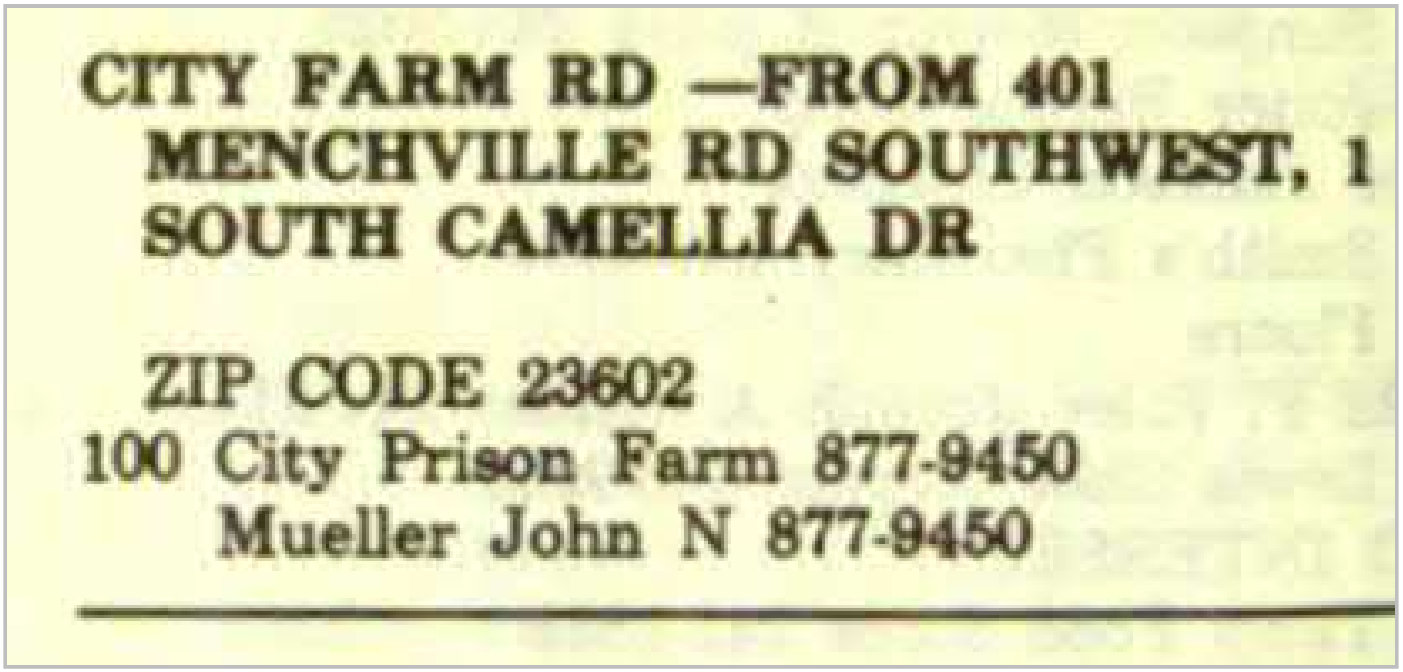
77

CITY FARM RD —FROM 401
MENCHVILLE RD SOUTHWEST 1
SOUTH CAMELLIA DR

ZIP CODE 23602
100 City Prison Farm 877-9450
★Payne Billy

Target Street	Cross Street	Source
✓	-	Hill's City Directory

CITY FARM RD 1969



CITY FARM RD —FROM 401
MENCHVILLE RD SOUTHWEST, 1
SOUTH CAMELLIA DR

ZIP CODE 23602
100 City Prison Farm 877-9450
Mueller John N 877-9450

HRSD JR Plant Expansion
125 City Farm Road
Newport News, VA 23602

Inquiry Number: 6020295.2s
March 24, 2020

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

125 CITY FARM ROAD
NEWPORT NEWS, VA 23602

COORDINATES

Latitude (North):	37.0840310 - 37° 5' 2.51''
Longitude (West):	76.5324050 - 76° 31' 56.65''
Universal Tranverse Mercator:	Zone 18
UTM X (Meters):	363795.0
UTM Y (Meters):	4105089.2
Elevation:	21 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5954353 MULBERRY ISLAND, VA
Version Date:	2013

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140701
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
125 CITY FARM ROAD
NEWPORT NEWS, VA 23602

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
Reg	FORT EUSTIS MILITARY		DOD	Same	4986, 0.944, West
Reg	FORT EUSTIS (US ARMY	END OF MULBERRY ISLA	NPL, SEMS, CORRACTS, RCRA-TSDF, RCRA-LQG, US ENG...	Same	4632, 0.877, West
1	JAMES RIVER TREATMEN	111 CITY FARM ROAD	RCRA-VSQG, UST, SPILLS, US AIRS, Financial...	Higher	165, 0.031, ESE
A2	NEWPORT NEWS CITY -	100 CITY FARM RD	LUST, LTANKS	Higher	591, 0.112, ESE
A3	CITY FARM MAINTENANC	100 CITY FARM RD	UST	Higher	591, 0.112, ESE
4	USHMAN PROPERTY	360 OLD MENCHVILLE R	LTANKS	Higher	1579, 0.299, NE
5	MENCHVILLE MARINE SU	494 MENCHVILLE ROAD	LUST, LTANKS, UST, RCRA NonGen / NLR, FINDS, ECHO	Lower	1722, 0.326, East

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent CERCLIS

SHWS ---------- This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Management Facilities

State and tribal leaking storage tank lists

INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST ---------- Underground Storage Tank Listing
AST ---------- Registered Petroleum Storage Tanks
INDIAN UST ---------- Underground Storage Tanks on Indian Land

State and tribal institutional control / engineering control registries

ENG CONTROLS ---------- Engineering Controls Sites Listing
INST CONTROL ---------- Voluntary Remediation Program Database

State and tribal voluntary cleanup sites

INDIAN VCP ---------- Voluntary Cleanup Priority Listing
VCP ---------- Voluntary Remediation Program

State and tribal Brownfields sites

BROWNFIELDS ---------- Brownfields Site Specific Assessments

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

INDIAN ODI ---------- Report on the Status of Open Dumps on Indian Lands
ODI ---------- Open Dump Inventory
DEBRIS REGION 9 ---------- Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS ---------- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---------- Delisted National Clandestine Laboratory Register
US CDL ---------- National Clandestine Laboratory Register

Local Land Records

LIENS 2 ---------- CERCLA Lien Information

Records of Emergency Release Reports

HMIRS ---------- Hazardous Materials Information Reporting System

SPILLS ---------- Prep/Spills Database Listing
SPILLS 90 ---------- SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR ---------- RCRA - Non Generators / No Longer Regulated
FUDS ---------- Formerly Used Defense Sites
SCRD DRYCLEANERS ---------- State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ---------- Financial Assurance Information
EPA WATCH LIST ---------- EPA WATCH LIST
2020 COR ACTION ---------- 2020 Corrective Action Program List
TSCA ---------- Toxic Substances Control Act
TRIS ---------- Toxic Chemical Release Inventory System
SSTS ---------- Section 7 Tracking Systems
RMP ---------- Risk Management Plans
RAATS ---------- RCRA Administrative Action Tracking System
PRP ---------- Potentially Responsible Parties
PADS ---------- PCB Activity Database System
ICIS ---------- Integrated Compliance Information System
FTTS ---------- FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ---------- Material Licensing Tracking System
COAL ASH DOE ---------- Steam-Electric Plant Operation Data
COAL ASH EPA ---------- Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ---------- PCB Transformer Registration Database
RADINFO ---------- Radiation Information Database
HIST FTTS ---------- FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ---------- Incident and Accident Data
CONSENT ---------- Superfund (CERCLA) Consent Decrees
INDIAN RESERV ---------- Indian Reservations
FUSRAP ---------- Formerly Utilized Sites Remedial Action Program
UMTRA ---------- Uranium Mill Tailings Sites
LEAD SMELTERS ---------- Lead Smelter Sites
US AIRS ---------- Aerometric Information Retrieval System Facility Subsystem
US MINES ---------- Mines Master Index File
ABANDONED MINES ---------- Abandoned Mines
FINDS ---------- Facility Index System/Facility Registry System
UXO ---------- Unexploded Ordnance Sites
ECHO ---------- Enforcement & Compliance History Information
DOCKET HWC ---------- Hazardous Waste Compliance Docket Listing
FUELS PROGRAM ---------- EPA Fuels Program Registered Listing
AIRS ---------- Permitted Airs Facility List
NPDES ---------- Comprehensive Environmental Data System
COAL ASH ---------- Coal Ash Disposal Sites
DRYCLEANERS ---------- Drycleaner List
ENF ---------- Enforcement Actions Data
Financial Assurance ---------- Financial Assurance Information Listing
TIER 2 ---------- Tier 2 Information Listing
UIC ---------- Underground Injection Control Wells
MINES MRDS ---------- Mineral Resources Data System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ---------- EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Hist Auto---------- EDR Exclusive Historical Auto Stations
EDR Hist Cleaner---------- EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF---------- Recovered Government Archive Solid Waste Facilities List
RGA LUST---------- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: Also known as Superfund, the National Priority List database is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund program. The source of this database is the U.S. EPA.

A review of the NPL list, as provided by EDR, and dated 01/30/2020 has revealed that there is 1 NPL site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FORT EUSTIS (US ARMY Cerclis ID:: 302859 EPA Id: VA6210020321	***END OF MULBERRY ISLA***	***W 1/2 - 1 (0.877 mi.)***	***0***	***8***

Federal RCRA CORRACTS facilities list

CORRACTS: CORRACTS is a list of handlers with RCRA Corrective Action Activity. This report shows which nationally-defined corrective action core events have occurred for every handler that has had corrective action activity.

A review of the CORRACTS list, as provided by EDR, and dated 12/16/2019 has revealed that there is 1 CORRACTS site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FORT EUSTIS (US ARMY	***END OF MULBERRY ISLA***	***W 1/2 - 1 (0.877 mi.)***	***0***	***8***

EXECUTIVE SUMMARY

EPA ID:: VA8213720321

Federal RCRA generators list

RCRA-VSQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

A review of the RCRA-VSQG list, as provided by EDR, and dated 12/16/2019 has revealed that there is 1 RCRA-VSQG site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JAMES RIVER TREATMEN	***111 CITY FARM ROAD***	***ESE 0 - 1/8 (0.031 mi.)***	***1***	***79***
EPA ID:: VAD000800813				

State and tribal leaking storage tank lists

LUST: The Leaking Underground Storage Tank Database.

A review of the LUST list, as provided by EDR, has revealed that there are 2 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NEWPORT NEWS CITY -	***100 CITY FARM RD***	***ESE 0 - 1/8 (0.112 mi.)***	***A2***	***98***
Database: LUST REG TD, Date of Government Version: 06/30/2013				
Facility Status: Closed				
Facility ID: 200000064560				
Pollution Complaint Num: 20025102				

Lower Elevation	Address	Direction / Distance	Map ID	Page
MENCHVILLE MARINE SU	***494 MENCHVILLE ROAD***	***E 1/4 - 1/2 (0.326 mi.)***	***5***	***104***
Database: LUST REG TD, Date of Government Version: 06/30/2013				
Facility Status: Closed				
Facility ID: 200000197895				
Pollution Complaint Num: 20005171				

LTANKS: The Leaking Tanks Database contains current Leaking petroleum tanks. The data comes from the Department of Environmental Quality.

A review of the LTANKS list, as provided by EDR, and dated 11/04/2019 has revealed that there are 3 LTANKS sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NEWPORT NEWS CITY -	***100 CITY FARM RD***	***ESE 0 - 1/8 (0.112 mi.)***	***A2***	***98***

Facility Status: Closed
CEDS Facility Id: 200000064560
Pollution Complaint #: 20025102

USHMAN PROPERTY	360 OLD MENCHVILLE R	NE 1/4 - 1/2 (0.299 mi.)	4	104
Facility Status: Closed CEDS Facility Id: 200000878460 Pollution Complaint #: 20155009				

Lower Elevation	Address	Direction / Distance	Map ID	Page
MENCHVILLE MARINE SU	***494 MENCHVILLE ROAD***	***E 1/4 - 1/2 (0.326 mi.)***	***5***	***104***
Facility Status: Closed CEDS Facility Id: 200000197895 Pollution Complaint #: 20005171				

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Quality's Underground Storage Tank Data Notification Information.

A review of the UST list, as provided by EDR, and dated 11/01/2019 has revealed that there are 2 UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JAMES RIVER TREATMEN	***111 CITY FARM ROAD***	***ESE 0 - 1/8 (0.031 mi.)***	***1***	***79***
Tank Status: CURR IN USE Tank Status: REM FROM GRD Facility Id: 5016809 CEDS Facility ID: 200000065569				
CITY FARM MAINTENANC	100 CITY FARM RD	ESE 0 - 1/8 (0.112 mi.)	A3	99
Tank Status: REM FROM GRD Facility Id: 5020757 CEDS Facility ID: 200000064560				

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

DOD: Consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

A review of the DOD list, as provided by EDR, and dated 12/31/2005 has revealed that there is 1 DOD site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FORT EUSTIS MILITARY		W 1/2 - 1 (0.944 mi.)	0	8

EXECUTIVE SUMMARY

ROD: Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid the cleanup.

A review of the ROD list, as provided by EDR, and dated 01/30/2020 has revealed that there is 1 ROD site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FORT EUSTIS (US ARMY	***END OF MULBERRY ISLA***	***W 1/2 - 1 (0.877 mi.)***	***0***	***8***
EPA ID:: VA6210020321				

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
OLD MENCHVILLE LANDFILL	SEMS-ARCHIVE

OVERVIEW MAP - 6020295.2S



0 1/4 1/2 1 Miles

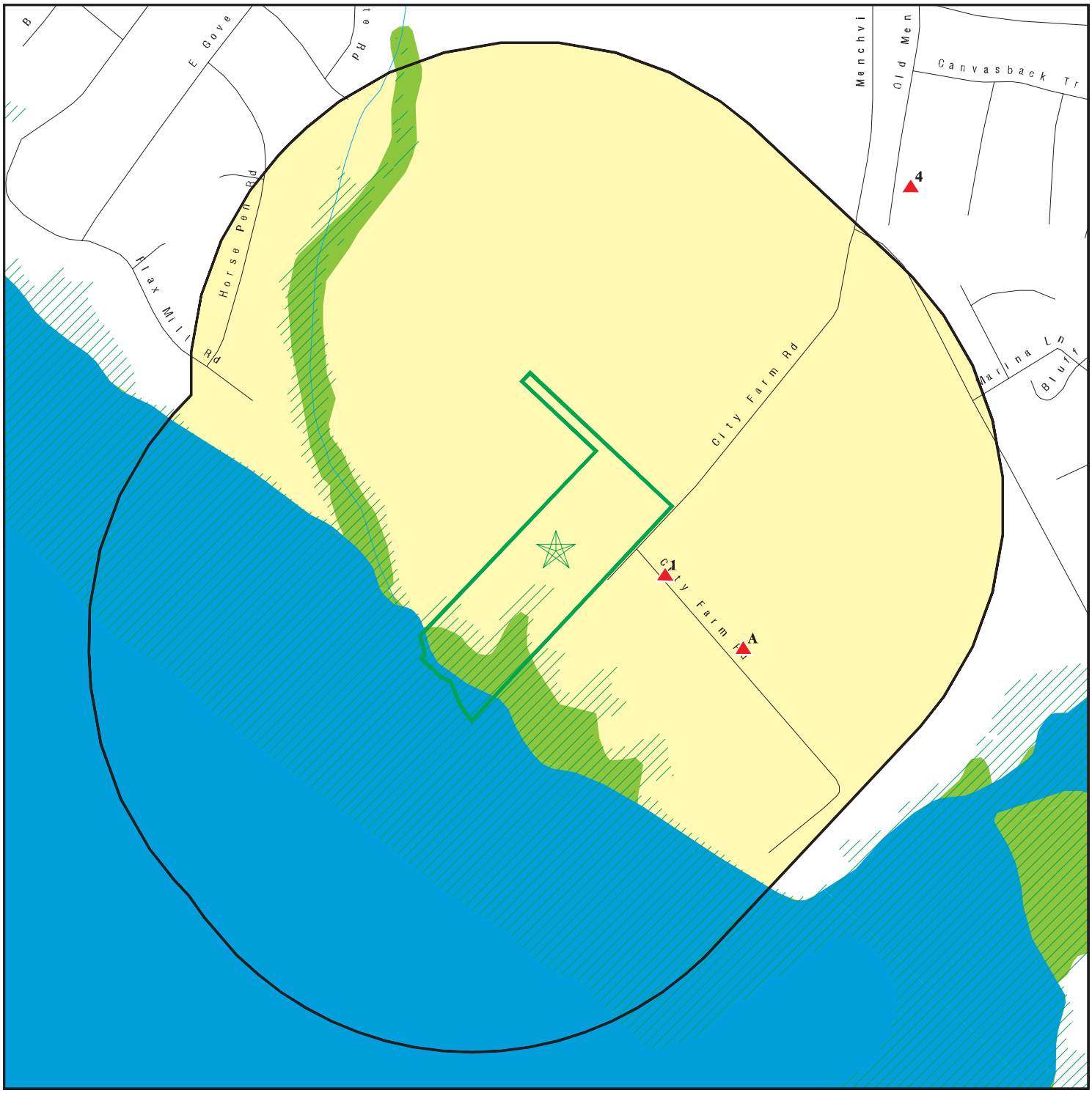
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: HRSD JR Plant Expansion	CLIENT: AECOM
ADDRESS: 125 City Farm Road Newport News VA 23602	CONTACT: Travis Mckee
LAT/LONG: 37.084031 / 76.532405	INQUIRY #: 6020295.2s DATE: March 24, 2020 10:27 am

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DETAIL MAP - 6020295.2S



Target Property
Sites at elevations higher than or equal to the target property
Sites at elevations lower than the target property
Manufactured Gas Plants
Sensitive Receptors
National Priority List Sites
Dept. Defense Sites

0 1/16 1/8 1/4 Miles

Indian Reservations BIA
Special Flood Hazard Area (1%)
0.2% Annual Chance Flood Hazard
National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	HRSD JR Plant Expansion	CLIENT:	AECOM
ADDRESS:	125 City Farm Road Newport News VA 23602	CONTACT:	Travis Mckee
LAT/LONG:	37.084031 / 76.532405	INQUIRY #:	6020295.2s
		DATE:	March 24, 2020 10:28 am

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	1	NR	1
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	1	NR	1
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		1	0	NR	NR	NR	1
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
SHWS	N/A		N/A	N/A	N/A	N/A	N/A	N/A
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		1	0	1	NR	NR	2
INDIAN LUST	0.500		0	0	0	NR	NR	0
LTANKS	0.500		1	0	2	NR	NR	3
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UST	0.250		2	0	NR	NR	NR	2
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
ENG CONTROLS	0.500		0	0	0	NR	NR	0
INST CONTROL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	1	NR	1
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	1	NR	1
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
TIER 2	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
MINES MRDS	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	5	0	3	4	0	12

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

N/A = This State does not maintain a SHWS list. See the Federal CERCLIS list.

DOD **FORT EUSTIS MILITARY RESERVATION** **DOD** **CUSA136885**
Region **N/A**
West **FORT EUSTIS MILITARY RESE (County), VA**
1/2-1
4986 ft.

DOD:
- Feature 1: Army DOD
- Feature 2: Not reported
- Feature 3: Not reported
- URL: Not reported
- Name 1: Fort Eustis Military Reservation
- Name 2: Not reported
- Name 3: Not reported
- State: VA
- DOD Site: Yes
- Tile name: VANEWPORT_NEWS

NPL **FORT EUSTIS (US ARMY)** **NPL** **1000114665**
Region **END OF MULBERRY ISLAND** **SEMS** **VA8213720321**
West **NEWPORT NEWS, VA 23604** **CORRACTS**
1/2-1 **RCRA-TSDF**
4632 ft. **RCRA-LQG**
US ENG CONTROLS
US INST CONTROL
ROD

NPL:
- Name: FORT EUSTIS (US ARMY)
- Address: END OF MULBERRY ISLAND
- City,State,Zip: NEWPORT NEWS, VA 23604
- EPA ID: VA6210020321
- EPA Region: 3
- Federal: Y
- Final Date: 1994-12-16 00:00:00
- Site ID: 302859
- Latitude: 37.104999999999997
- Site Score: 50
- Longitude: -76.568331999999998

NPL:
- EPA ID: VA6210020321
- Site ID: 0302859
- Site Status: F
- Federal Site: Y
- EPA Region: 03
- Date Proposed: 01/18/94
- Date Deleted: Not reported
- Date Finalized: 12/16/94

NPL:
- EPA ID: VA6210020321
- NPL Status: Currently on the Final NPL
- Substance ID: Not reported
- Substance: Not reported
- CAS #: Not reported
- Pathway: Not reported
- Scoring: Not reported

- EPA ID: VA6210020321

FORT EUSTIS (US ARMY) (Continued) **1000114665**

NPL Status: Currently on the Final NPL
Substance ID: A003
Substance: ANTIMONY AND COMPOUNDS
CAS #: Not reported
Pathway: SURFACE WATER PATHWAY
Scoring: 4

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: A023
Substance: DDE
CAS #: 72-55-9
Pathway: SURFACE WATER PATHWAY
Scoring: 4

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: A035
Substance: HEPTACHLOR EPOXIDE(ALPHA,BETA,GAMMA)
CAS #: Not reported
Pathway: SURFACE WATER PATHWAY
Scoring: 4

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: A038
Substance: NICKEL AND COMPOUNDS
CAS #: Not reported
Pathway: SURFACE WATER PATHWAY
Scoring: 4

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: C054
Substance: ETHYLENE GLYCOL
CAS #: 107-21-1
Pathway: SURFACE WATER PATHWAY
Scoring: 2

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: C178
Substance: COPPER AND COMPOUNDS
CAS #: Not reported
Pathway: SURFACE WATER PATHWAY
Scoring: 2

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: C247
Substance: ZINC AND COMPOUNDS
CAS #: Not reported
Pathway: SURFACE WATER PATHWAY
Scoring: 2

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Substance ID: C266
Substance: ETHYL CHLORIDE
CAS #: 75-00-3
Pathway: SURFACE WATER PATHWAY
Scoring: 2

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: C613
Substance: METHYL PHENOL, 4-
CAS #: 106-44-5
Pathway: SURFACE WATER PATHWAY
Scoring: 2

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: C629
Substance: AROCLOR 1260
CAS #: 11096-82-5
Pathway: SURFACE WATER PATHWAY
Scoring: 4

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: C630
Substance: AROCLOR 1254
CAS #: 11097-69-1
Pathway: SURFACE WATER PATHWAY
Scoring: 4

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: C634
Substance: AROCLOR 1242
CAS #: 53469-21-9
Pathway: SURFACE WATER PATHWAY
Scoring: 4

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: C635
Substance: AROCLOR 1248
CAS #: 12672-29-6
Pathway: SURFACE WATER PATHWAY
Scoring: 4

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: D004
Substance: ARSENIC
CAS #: 7440-38-2
Pathway: SURFACE WATER PATHWAY
Scoring: 4

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: D008

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Substance: LEAD (PB)
CAS #: 7439-92-1
Pathway: SURFACE WATER PATHWAY
Scoring: 4

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: P022
Substance: CARBON DISULFIDE
CAS #: 75-15-0
Pathway: SURFACE WATER PATHWAY
Scoring: 2

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: U036
Substance: CHLORDANE
CAS #: 57-74-9
Pathway: SURFACE WATER PATHWAY
Scoring: 4

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: U060
Substance: DDD
CAS #: 72-54-8
Pathway: SURFACE WATER PATHWAY
Scoring: 4

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: U061
Substance: DDT
CAS #: 50-29-3
Pathway: SURFACE WATER PATHWAY
Scoring: 4

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: U088
Substance: DIETHYL PHTHALATE
CAS #: 84-66-2
Pathway: SURFACE WATER PATHWAY
Scoring: 2

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: U121
Substance: TRICHLOROFLUOROMETHANE
CAS #: 75-69-4
Pathway: SURFACE WATER PATHWAY
Scoring: 2

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: U188
Substance: PHENOL

FORT EUSTIS (US ARMY) (Continued) **1000114665**

CAS #: 108-95-2
Pathway: SURFACE WATER PATHWAY
Scoring: 2

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: U242
Substance: PENTACHLOROPHENOL (PCP)
CAS #: 87-86-5
Pathway: SURFACE WATER PATHWAY
Scoring: 2

EPA ID: VA6210020321
NPL Status: Currently on the Final NPL
Substance ID: U247
Substance: METHOXYCHLOR
CAS #: 72-43-5
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL:
EPA ID: VA6210020321
Summary: Conditions at Proposal January 18, 1994): Fort Eustis, owned and operated by the U.S. Department of the Army, occupies approximately 8,300 acres in southeastern Virginia, within the City of Newport News. The site is located on the western side

EPA ID: VA6210020321
Summary: enyldichloroethane DDD), dichlorodiphenyldichloroethylene DDE), DDT, and lead. Fish collected from Bailey s Creek contained PCBs. A sanitary landfill that received ha ardous waste is located at the headwaters of Bailey s Creek. In addition, the

EPA ID: VA6210020321
Summary: Central Heating Fuel Spill Area, where waste oils were stored, is on a bluff overlooking the creek. Brown s Lake once was used as a drainage lagoon for the adjacent Helicopter Maintenance Area HMA) and the upgradient Locomotive Area. The lak

EPA ID: VA6210020321
Summary: e was used for recreation but was closed to water sports and fishing in the late 1970s by the Fort Eustis Preventive Medicine Group. A 1990 survey of Brown s Lake indicated that fish had lesions, ectoparasites, and skeletal deformities. Contaminan

EPA ID: VA6210020321
Summary: ts detected in the lake in 1987 included PCBs, pesticides, and polyaromatic hydrocarbons PAHs). Sediment sampling in 1990 revealed contamination by PCBs and heavy metals in the lake and a tributary to the lake below the Locomotive Area. Surface d

EPA ID: VA6210020321
Summary: The sources include unlined landfills, pesticide storage areas, firefighting training areas, maintenance shops, range and impact areas, and numerous other areas that were created as a result of operations. Sanitary landfills at Fort Eustis are curr

FORT EUSTIS (US ARMY) (Continued) **1000114665**

EPA ID: VA6210020321
Summary: ently undergoing closure. EPA initially evaluated seven sources based on documented releases of ha ardous substances to surface water. Two of the sources are adjacent to Bailey s Creek, a 160-acre, low-lying wetland area used for fishing. Thirteen

EPA ID: VA6210020321
Summary: of the34 identified sources are presently undergoing a Remedial Investigation/Feasibility Study. Sampling conducted in 1987 and 1990 indicated contamination of sediments from Bailey s Creek. The contamination included PCBs, chlordane, dichlorodiph

EPA ID: VA6210020321
Summary: rainage from Brown s Lake flows south through a sanitary landfill that is adjacent to the HMA and enters wetlands along the Warwick River and Milstead Island Creek drainage way. Both the Warwick River and Milstead Creek are used for fishing. In 19

EPA ID: VA6210020321
Summary: 88, sampling in Milstead Island Creek found sediments contaminated with PAHs and pesticides. The site includes all the sources identified in the package and areas where contamination has come to be located. In addition, the site may include o

EPA ID: VA6210020321
Summary: ther sources and suspect areas later determined by EPA after NPL listing of the initial sources; conversely, if an area is later determined to be uncontaminated, it will not be included in the NPL site. Status December 1994): EPA is currentl

EPA ID: VA6210020321
Summary: y consideringvarious alternatives for the site. The description of the site release) is based on information available at the time the site was scored. The description may change as additional information is gathered on the sources and exte

EPA ID: VA6210020321
Summary: nt of contamination. See 56 FR 5600, February 11, 1991, or subsequent FR notices.)

EPA ID: VA6210020321
Summary: of a low-lying peninsula formed by the York River and the James River estuaries, approximately 30 miles upstream of the confluence of the James River and the Chesapeake Bay. The facility is bounded on the west and south by the James River and to th

EPA ID: VA6210020321
Summary: e east by the Warwick River, a large tributary of the James River. The James River is a major commercial fishing and recreational resource area. The site began operations in 1918 as a training center known as Camp Abraham Eustis. In 1923, it

EPA ID: VA6210020321
Summary: became a permanent military installation renamed Fort Eustis. From 1931 to the early 1940s, Fort Eustis was operated by several nonmilitary Federal agencies for various uses. During World War II, it resumed military operations and was used for int

FORT EUSTIS (US ARMY) (Continued) **1000114665**

EPA ID: VA6210020321
Summary: ensive antiaircraft training. In 1946, Fort Eustis became the Transportation Corps Training Center, providing training in rail, marine, and amphibian operations and other modes of transportation. Currently, Fort Eustis is the U.S. Army Transportat

EPA ID: VA6210020321
Summary: ion Training Center. Approximately 17,500 military personnel, their dependents, and civilians live or work at the installation. In 1988, the U.S. Army Toxic and Ha ardous Materials Agency identified 34 potential waste sources at Fort Eustis.

NPL:
EPA ID: VA6210020321
NPL Status: Final
Proposed Date: 01/18/1994
Final Date: 12/16/1994
Deleted Date: Not reported

NPL:
EPA ID: VA6210020321
NPL Name: FORT EUSTIS (US ARMY)

SEMS:
Site ID: 0302859
EPA ID: VA6210020321
Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
Address 2: Not reported
City,State,Zip: NEWPORT NEWS, VA 23604
Cong District: 03
FIPS Code: 51700
Latitude: +37.105000
Longitude: -76.568332
FF: Y
NPL: Currently on the Final NPL
Non NPL Status: Not reported

SEMS Detail:
Region: 03
Site ID: 0302859
EPA ID: VA6210020321
Site Name: FORT EUSTIS (US ARMY)
NPL: F
FF: Y
OU: 00
Action Code: SI
Action Name: SI
SEQ: 1
Start Date: 1990-09-28 04:00:00
Finish Date: 9/28/1990 4:00:00 AM
Qual: H
Current Action Lead: EPA Perf

Region: 03

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	00
Action Code:	NP
Action Name:	PROPOSED
SEQ:	1
Start Date:	1994-01-18 05:00:00
Finish Date:	1/18/1994 5:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf

Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	00
Action Code:	RS
Action Name:	RV ASSESS
SEQ:	1
Start Date:	1989-08-16 04:00:00
Finish Date:	8/16/1989 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf

Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	00
Action Code:	NF
Action Name:	NPL FINL
SEQ:	1
Start Date:	1994-12-16 05:00:00
Finish Date:	12/16/1994 5:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf

Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	00
Action Code:	DS
Action Name:	DISCVRY
SEQ:	1
Start Date:	1979-12-01 05:00:00
Finish Date:	12/1/1979 5:00:00 AM
Qual:	Not reported

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Current Action Lead:	EPA Perf
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	01
Action Code:	LV
Action Name:	FF RV
SEQ:	5
Start Date:	2002-04-04 05:00:00
Finish Date:	11/1/2003 5:00:00 AM
Qual:	C
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	01
Action Code:	RO
Action Name:	ROD
SEQ:	5
Start Date:	2011-09-26 04:00:00
Finish Date:	9/26/2011 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	04
Action Code:	LY
Action Name:	FF RA
SEQ:	3
Start Date:	2012-02-27 05:00:00
Finish Date:	9/25/2013 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	06
Action Code:	NH
Action Name:	FF RI
SEQ:	4

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Start Date:	1995-01-30 05:00:00
Finish Date:	12/30/2001 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	05
Action Code:	NH
Action Name:	FF RI
SEQ:	2
Start Date:	1997-05-30 04:00:00
Finish Date:	9/28/2001 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	02
Action Code:	LV
Action Name:	FF RV
SEQ:	3
Start Date:	1999-01-07 05:00:00
Finish Date:	4/26/1999 4:00:00 AM
Qual:	S
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	01
Action Code:	LV
Action Name:	FF RV
SEQ:	4
Start Date:	1999-04-06 04:00:00
Finish Date:	3/26/2001 5:00:00 AM
Qual:	S
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	00

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Action Code:	LZ
Action Name:	FF CR
SEQ:	1
Start Date:	1995-04-26 04:00:00
Finish Date:	6/25/2012 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	07
Action Code:	NH
Action Name:	FF RI
SEQ:	5
Start Date:	1997-05-30 04:00:00
Finish Date:	11/1/2001 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	07
Action Code:	NI
Action Name:	FF FS
SEQ:	5
Start Date:	2001-06-19 04:00:00
Finish Date:	10/24/2001 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	07
Action Code:	RO
Action Name:	ROD
SEQ:	8
Start Date:	2002-10-29 05:00:00
Finish Date:	10/29/2002 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)

FORT EUSTIS (US ARMY) (Continued) **1000114665**

NPL:	F
FF:	Y
OU:	07
Action Code:	LX
Action Name:	FF RD
SEQ:	7
Start Date:	2002-10-30 05:00:00
Finish Date:	5/31/2004 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	07
Action Code:	LY
Action Name:	FF RA
SEQ:	7
Start Date:	2004-06-01 04:00:00
Finish Date:	9/20/2006 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	02
Action Code:	RO
Action Name:	ROD
SEQ:	6
Start Date:	2007-09-25 04:00:00
Finish Date:	9/25/2007 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	09
Action Code:	NI
Action Name:	FF FS
SEQ:	6
Start Date:	2015-05-05 05:00:00
Finish Date:	6/27/2018 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	09
Action Code:	LY
Action Name:	FF RA
SEQ:	12
Start Date:	2018-05-25 04:00:00
Finish Date:	9/20/2018 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	09
Action Code:	RO
Action Name:	ROD
SEQ:	14
Start Date:	2018-06-27 05:00:00
Finish Date:	6/27/2018 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	05
Action Code:	NI
Action Name:	FF FS
SEQ:	3
Start Date:	1997-05-30 04:00:00
Finish Date:	9/28/2001 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	01
Action Code:	LX
Action Name:	FF RD
SEQ:	1
Start Date:	2010-09-01 04:00:00
Finish Date:	9/29/2011 4:00:00 AM
Qual:	Not reported

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	03
Action Code:	RO
Action Name:	ROD
SEQ:	4
Start Date:	2008-10-10 04:00:00
Finish Date:	10/10/2008 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	02
Action Code:	LX
Action Name:	FF RD
SEQ:	2
Start Date:	2006-09-30 04:00:00
Finish Date:	8/10/2009 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	10
Action Code:	NI
Action Name:	FF FS
SEQ:	9
Start Date:	2015-03-06 05:00:00
Finish Date:	2/15/2018 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	11
Action Code:	NI
Action Name:	FF FS
SEQ:	10

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Start Date: 2008-08-06 05:00:00
Finish Date: Not reported
Qual: Not reported
Current Action Lead: Fed Fac

Region: 03
Site ID: 0302859
EPA ID: VA6210020321
Site Name: FORT EUSTIS (US ARMY)
NPL: F
FF: Y
OU: 12
Action Code: NI
Action Name: FF FS
SEQ: 11
Start Date: 2010-03-31 04:00:00
Finish Date: Not reported
Qual: Not reported
Current Action Lead: Fed Fac

Region: 03
Site ID: 0302859
EPA ID: VA6210020321
Site Name: FORT EUSTIS (US ARMY)
NPL: F
FF: Y
OU: 01
Action Code: LY
Action Name: FF RA
SEQ: 1
Start Date: 2012-04-13 04:00:00
Finish Date: 9/25/2013 5:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 03
Site ID: 0302859
EPA ID: VA6210020321
Site Name: FORT EUSTIS (US ARMY)
NPL: F
FF: Y
OU: 05
Action Code: RO
Action Name: ROD
SEQ: 3
Start Date: 2001-09-28 04:00:00
Finish Date: 9/28/2001 4:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 03
Site ID: 0302859
EPA ID: VA6210020321
Site Name: FORT EUSTIS (US ARMY)
NPL: F
FF: Y
OU: 00

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Action Code:	PA
Action Name:	PA
SEQ:	1
Start Date:	1985-02-01 06:00:00
Finish Date:	2/1/1985 6:00:00 AM
Qual:	L
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	01
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	1
Start Date:	1996-04-30 04:00:00
Finish Date:	9/26/2011 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	04
Action Code:	LX
Action Name:	FF RD
SEQ:	4
Start Date:	2010-08-30 04:00:00
Finish Date:	8/17/2011 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	02
Action Code:	EE
Action Name:	EE/CA
SEQ:	1
Start Date:	1997-05-30 04:00:00
Finish Date:	10/20/1998 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)

FORT EUSTIS (US ARMY) (Continued) **1000114665**

NPL:	F
FF:	Y
OU:	04
Action Code:	RO
Action Name:	ROD
SEQ:	2
Start Date:	2009-09-30 04:00:00
Finish Date:	9/30/2009 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	04
Action Code:	NH
Action Name:	FF RI
SEQ:	1
Start Date:	1997-07-30 04:00:00
Finish Date:	7/1/2003 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	04
Action Code:	NI
Action Name:	FF FS
SEQ:	2
Start Date:	2003-05-31 04:00:00
Finish Date:	9/30/2009 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	03
Action Code:	NH
Action Name:	FF RI
SEQ:	3
Start Date:	1995-01-30 05:00:00
Finish Date:	2/28/1997 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	03

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	02
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	2
Start Date:	1995-10-01 04:00:00
Finish Date:	9/25/2007 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	07
Action Code:	GM
Action Name:	GWTRMON
SEQ:	2
Start Date:	2004-07-01 04:00:00
Finish Date:	9/25/2008 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	05
Action Code:	GM
Action Name:	GWTRMON
SEQ:	3
Start Date:	2003-08-01 04:00:00
Finish Date:	12/31/2008 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	03
Action Code:	NI
Action Name:	FF FS
SEQ:	1
Start Date:	2004-12-13 05:00:00
Finish Date:	10/10/2008 4:00:00 AM
Qual:	Not reported

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Current Action Lead: Fed Fac

Region: 03
Site ID: 0302859
EPA ID: VA6210020321
Site Name: FORT EUSTIS (US ARMY)
NPL: F
FF: Y
OU: 05
Action Code: LX
Action Name: FF RD
SEQ: 5
Start Date: 2002-03-08 05:00:00
Finish Date: 12/13/2002 5:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 03
Site ID: 0302859
EPA ID: VA6210020321
Site Name: FORT EUSTIS (US ARMY)
NPL: F
FF: Y
OU: 05
Action Code: LY
Action Name: FF RA
SEQ: 4
Start Date: 2002-12-16 05:00:00
Finish Date: 6/23/2006 4:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 03
Site ID: 0302859
EPA ID: VA6210020321
Site Name: FORT EUSTIS (US ARMY)
NPL: F
FF: Y
OU: 05
Action Code: LV
Action Name: FF RV
SEQ: 1
Start Date: 1997-06-30 04:00:00
Finish Date: 7/16/1997 4:00:00 AM
Qual: S
Current Action Lead: Fed Fac

Region: 03
Site ID: 0302859
EPA ID: VA6210020321
Site Name: FORT EUSTIS (US ARMY)
NPL: F
FF: Y
OU: 02
Action Code: LY
Action Name: FF RA
SEQ: 5

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Start Date: 2008-08-11 05:00:00
Finish Date: 8/13/2009 5:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 03
Site ID: 0302859
EPA ID: VA6210020321
Site Name: FORT EUSTIS (US ARMY)
NPL: F
FF: Y
OU: 06
Action Code: NI
Action Name: FF FS
SEQ: 4
Start Date: 2001-11-01 05:00:00
Finish Date: Not reported
Qual: Not reported
Current Action Lead: Fed Fac

Region: 03
Site ID: 0302859
EPA ID: VA6210020321
Site Name: FORT EUSTIS (US ARMY)
NPL: F
FF: Y
OU: 13
Action Code: LW
Action Name: FF RI/FS
SEQ: 4
Start Date: 2008-03-24 04:00:00
Finish Date: Not reported
Qual: Not reported
Current Action Lead: Fed Fac

Region: 03
Site ID: 0302859
EPA ID: VA6210020321
Site Name: FORT EUSTIS (US ARMY)
NPL: F
FF: Y
OU: 14
Action Code: LW
Action Name: FF RI/FS
SEQ: 5
Start Date: 2010-10-20 04:00:00
Finish Date: Not reported
Qual: Not reported
Current Action Lead: Fed Fac

Region: 03
Site ID: 0302859
EPA ID: VA6210020321
Site Name: FORT EUSTIS (US ARMY)
NPL: F
FF: Y
OU: 15

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Action Code:	LW
Action Name:	FF RI/FS
SEQ:	6
Start Date:	2010-10-20 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	16
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	7
Start Date:	2010-10-20 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	17
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	8
Start Date:	2010-10-20 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)
NPL:	F
FF:	Y
OU:	18
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	9
Start Date:	2010-10-20 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	03
Site ID:	0302859
EPA ID:	VA6210020321
Site Name:	FORT EUSTIS (US ARMY)

FORT EUSTIS (US ARMY) (Continued) **1000114665**

NPL: F
FF: Y
OU: 10
Action Code: RO
Action Name: ROD
SEQ: 17
Start Date: 2018-02-15 05:00:00
Finish Date: 2/15/2018 5:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 03
Site ID: 0302859
EPA ID: VA6210020321
Site Name: FORT EUSTIS (US ARMY)
NPL: F
FF: Y
OU: 01
Action Code: LX
Action Name: FF RD
SEQ: 19
Start Date: 2018-10-16 04:00:00
Finish Date: 10/7/2019 4:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

CORRACTS:
EPA ID: VA8213720321
EPA Region: 03
Area Name: ENTIRE FACILITY
Actual Date: Not reported
Action: CA210SF - CA Responsibility Referred To A Non-RCRA Federal Authority, Corrective Action at the facility or area referred to CERCLA
NAICS Code(s): 928110
National Security
Original schedule date: 1996-06-28 00:00:00.0
Schedule end date: Not reported

EPA ID: VA8213720321
EPA Region: 03
Area Name: ENTIRE FACILITY
Actual Date: Not reported
Action: CA075HI - CA Prioritization, Facility or area was assigned a high corrective action priority
NAICS Code(s): 928110
National Security
Original schedule date: 1996-06-28 00:00:00.0
Schedule end date: Not reported

RCRA-TSDF:
Date form received by agency: 2018-02-22 00:00:00.0
Facility name: JOINT BASE LANGLEY EUSTIS - EUSTIS
Facility address: B1208 TAYLOR AVENUE
FORT EUSTIS, VA 23604
EPA ID: VA8213720321

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Mailing address:	ATTN: CED/CEIE 1407 WASHINGTON BOULEVARD FORT EUSTIS, VA 23604
Contact:	PAUL A JAMES
Contact address:	B1407 WASHINGTON BLVD FORT EUSTIS, VA 23604
Contact country:	US
Contact telephone:	757-878-7362
Contact email:	PAUL.A.JAMES8.CIV@MAIL.MIL
EPA Region:	03
Land type:	Federal
Classification:	TSDF
Description:	Handler is engaged in the treatment, storage or disposal of hazardous waste
Classification:	Large Quantity Generator
Description:	Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:

Owner/operator name:	U.S. ARMY
Owner/operator address:	WASHINGTON BLVD FORT EUSTIS, VA 23604
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Federal
Owner/Operator Type:	Owner
Owner/Op start date:	1918-03-16 00:00:00.
Owner/Op end date:	Not reported

Owner/operator name:	U.S. ARMY
Owner/operator address:	WASHINGTON BLVD FORT EUSTIS, VA 23604
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Federal
Owner/Operator Type:	Operator
Owner/Op start date:	1918-03-16 00:00:00.
Owner/Op end date:	Not reported

Handler Activities Summary:

FORT EUSTIS (US ARMY) (Continued) **1000114665**

U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:

Date form received by agency: 2016-02-25 00:00:00.0
Site name: JOINT BASE LANGLEY EUSTIS - EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2014-02-27 00:00:00.0
Site name: JOINT BASE LANGLEY EUSTIS - EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2012-02-23 00:00:00.0
Site name: U.S. ARMY GARRISON FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2010-09-30 00:00:00.0
Site name: JOINT BASE LANGLEY-EUSTIS (JBLE)(EUSTIS) 733D MISSION SUPPORT GROUP MSG
Classification: Large Quantity Generator

Date form received by agency: 2010-02-19 00:00:00.0
Site name: U.S. ARMY GARRISON FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2009-10-05 00:00:00.0
Site name: U.S. ARMY GARRISON FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2008-02-22 00:00:00.0
Site name: U.S. ARMY GARRISON FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2006-02-23 00:00:00.0
Site name: U.S. ARMY GARRISON FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2004-02-23 00:00:00.0
Site name: FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2002-02-25 00:00:00.0
Site name: FORT EUSTIS
Classification: Large Quantity Generator

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Date form received by agency: 2001-03-15 00:00:00.0
Site name: FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 1998-07-01 00:00:00.0
Site name: FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 1996-02-27 00:00:00.0
Site name: US ARMY TRANSPORTATION CENTER
Classification: Large Quantity Generator

Date form received by agency: 1994-03-22 00:00:00.0
Site name: U S ARMY TRANSPORTATION CENTER
Classification: Large Quantity Generator

Date form received by agency: 1992-03-25 00:00:00.0
Site name: U.S. ARMY TRANSPORTATION CENTER
Classification: Large Quantity Generator

Date form received by agency: 1991-09-06 00:00:00.0
Site name: US ARMY TRANSP CTR
Classification: Large Quantity Generator

Date form received by agency: 1990-03-01 00:00:00.0
Site name: U S ARMY FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 1980-11-19 00:00:00.0
Site name: US ARMY TRANSP CTR
Classification: Not a generator, verified

Date form received by agency: 1980-08-18 00:00:00.0
Site name: US ARMY TRANSP CTR
Classification: Large Quantity Generator

Hazardous Waste Summary:

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007

FORT EUSTIS (US ARMY) (Continued) **1000114665**

. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D013
. Waste name: LINDANE (1,2,3,4,5,6-HEXA-CHLOROCYCLOHEXANE, GAMMA ISOMER)

. Waste code: D018
. Waste name: BENZENE

. Waste code: D021
. Waste name: CHLOROBENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D026
. Waste name: CRESOL

. Waste code: D027
. Waste name: 1,4-DICHLOROBENZENE

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D029
. Waste name: 1,1-DICHLOROETHYLENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: F001
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS USED IN DEGREASING: TETRACHLOROETHYLENE, TRICHLORETHYLENE, METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE, CARBON TETRACHLORIDE AND CHLORINATED FLUOROCARBONS; ALL SPENT SOLVENT MIXTURES/BLENDS USED IN DEGREASING CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

FORT EUSTIS (US ARMY) (Continued) **1000114665**

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F017
. Waste name: Not Defined

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P030
. Waste name: CYANIDES (SOLUBLE CYANIDE SALTS), NOT OTHERWISE SPECIFIED

. Waste code: P042
. Waste name: 1,2-BENZENEDIOL, 4-[1-HYDROXY-2-(METHYLAMINO)ETHYL]-, (R)- (OR) EPINEPHRINE

. Waste code: P066
. Waste name: ETHANIMIDOTHIOIC ACID, N-[[(METHYLAMINO)CARBONYL]OXY]-, METHYL ESTER (OR) METHOMYL

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

. Waste code: P081
. Waste name: 1,2,3-PROPANETRIOL, TRINITRATE (R) (OR) NITROGLYCERINE (R)

FORT EUSTIS (US ARMY) (Continued) **1000114665**

. Waste code: P098
. Waste name: POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)

. Waste code: P122
. Waste name: ZINC PHOSPHIDE ZN3P2, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 10% (R,T)

. Waste code: P188
. Waste name: BENZOIC ACID, 2-HYDROXY-, COMPD. WITH (3AS-CIS)-1,2,3,3A,8,8A-HEXAHYDRO-1,3A,8-TRIMETHYLPYRROLO[2,3-B]INDOL-5-YL METHYLCARBAMATE ESTER (1:1) (OR) PHYSOSTIGMINE SALICYLATE

. Waste code: P204
. Waste name: PHYSOSTIGMINE (OR) PYRROLO[2,3-B]INDOL-5-OL, 1,2,3,3A,8,8A-HEXAHYDRO-1,3A,8-TRIMETHYL-METHYLCARBAMATE (ESTER), (3AS-CIS)-

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

. Waste code: U013
. Waste name: Not Defined

. Waste code: U028
. Waste name: 1,2-BENZENEDICARBOXYLIC ACID, BIS(2-ETHYLHEXYL) ESTER (OR) DIETHYLHEXYL PHTHALATE

. Waste code: U041
. Waste name: EPICHLOROHYDRIN (OR) OXIRANE, (CHLOROMETHYL)-

. Waste code: U051
. Waste name: CREOSOTE

. Waste code: U061
. Waste name: BENZENE, 1,1'-(2,2,2-TRICHLOROETHYLIDENE)BIS[4-CHLORO- (OR) DDT

. Waste code: U080
. Waste name: METHANE, DICHLORO- (OR) METHYLENE CHLORIDE

. Waste code: U129
. Waste name: CYCLOHEXANE, 1,2,3,4,5,6-HEXACHLORO-, (1ALPHA, 2ALPHA, 3BETA, 4ALPHA, 5ALPHA, 6BETA)- (OR) LINDANE

. Waste code: U135
. Waste name: HYDROGEN SULFIDE (OR) HYDROGEN SULFIDE H2S

. Waste code: U154
. Waste name: METHANOL (I) (OR) METHYL ALCOHOL (I)

. Waste code: U159
. Waste name: 2-BUTANONE (I,T) (OR) METHYL ETHYL KETONE (MEK) (I,T)

. Waste code: U160
. Waste name: 2-BUTANONE, PEROXIDE (R,T) (OR) METHYL ETHYL KETONE PEROXIDE (R,T)

. Waste code: U161
. Waste name: 4-METHYL-2-PENTANONE (I) (OR) METHYL ISOBUTYL KETONE (I) (OR)

FORT EUSTIS (US ARMY) (Continued) **1000114665**

PENTANOL, 4-METHYL-

. Waste code: U162
. Waste name: 2-PROPENOIC ACID, 2-METHYL-, METHYL ESTER (I,T) (OR) METHYL METHACRYLATE (I,T)

. Waste code: U165
. Waste name: NAPHTHALENE

. Waste code: U188
. Waste name: PHENOL

. Waste code: U205
. Waste name: SELENIUM SULFIDE (OR) SELENIUM SULFIDE SES2 (R,T)

. Waste code: U226
. Waste name: ETHANE, 1,1,1-TRICHLORO- (OR) METHYL CHLOROFORM

. Waste code: U239
. Waste name: BENZENE, DIMETHYL- (I,T) (OR) XYLENE (I)

. Waste code: U248
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYL-BUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS OF 0.3% OR LESS (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS OF 0.3% OR LESS

. Waste code: U279
. Waste name: CARBARYL (OR) 1-NAPHTHALENOL, METHYLCARBAMATE

Biennial Reports:

Last Biennial Reporting Year: 2017

Annual Waste Handled:

Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
Amount (Lbs): 11983

Waste code: D002
Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.
Amount (Lbs): 782

Waste code: D003
Waste name: A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF

FORT EUSTIS (US ARMY) (Continued) **1000114665**

DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.
Amount (Lbs): 75

Waste code: D005
Waste name: BARIUM
Amount (Lbs): 65

Waste code: D006
Waste name: CADMIUM
Amount (Lbs): 96

Waste code: D007
Waste name: CHROMIUM
Amount (Lbs): 11756

Waste code: D008
Waste name: LEAD
Amount (Lbs): 4991

Waste code: D009
Waste name: MERCURY
Amount (Lbs): 48

Waste code: D011
Waste name: SILVER
Amount (Lbs): 281

Waste code: D018
Waste name: BENZENE
Amount (Lbs): 3109

Waste code: D022
Waste name: CHLOROFORM
Amount (Lbs): 22

Waste code: D028
Waste name: 1,2-DICHLOROETHANE
Amount (Lbs): 22

Waste code: D035
Waste name: METHYL ETHYL KETONE
Amount (Lbs): 4762

Waste code: D039
Waste name: TETRACHLOROETHYLENE
Amount (Lbs): 572

Waste code: D040
Waste name: TRICHLOROETHYLENE
Amount (Lbs): 572

Waste code: F002
Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND

FORT EUSTIS (US ARMY) (Continued) **1000114665**

1,1,2-TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE LISTED IN F001, F004, OR F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 22

Waste code: F003
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 8100

Waste code: F005
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 7896

Waste code: P001
Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%
Amount (Lbs): 607

Waste code: P042
Waste name: 1,2-BENZENEDIOL, 4-[1-HYDROXY-2-(METHYLAMINO)ETHYL]-, (R)-
Amount (Lbs): 607

Waste code: P075
Waste name: NICOTINE, & SALTS
Amount (Lbs): 607

Waste code: P081
Waste name: NITROGLYCERINE (R)
Amount (Lbs): 607

Waste code: P188
Waste name: BENZOIC ACID, 2-HYDROXY-, COMPD. WITH (3AS-CIS)-1,2,3,3A,8,8A-HEXAHYDRO-1,3A,8-TRIMETHYLPYRROLO[2,3-
Amount (Lbs): 45

Waste code: P204
Waste name: PHYSOSTIGMINE (OR) PYRROLO[2,3-B]INDOL-5-OL, 1,2,3,3A,8,8A-HEXAHYDRO-1,3A,8-TRIMETHYL-METHYLCARBAMAT
Amount (Lbs): 607

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Waste code: U159
Waste name: 2-BUTANONE (I,T)
Amount (Lbs): 9

Waste code: U165
Waste name: NAPHTHALENE
Amount (Lbs): 10

Waste code: U205
Waste name: SELENIUM SULFIDE
Amount (Lbs): 562

Waste code: U248
Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYL-BUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS OF 0.3% OR LESS
Amount (Lbs): 607

Corrective Action Summary:
Event date: Not reported
Event: REFERRED TO A NON-RCRA AUTHORITY-REFERRED TO CERCLA

Event date: Not reported
Event: CA PRIORITIZATION-HIGH CA PRIORITY

Facility Has Received Notices of Violations:
Regulation violated: Not reported
Area of violation: TSD IS-Contingency Plan and Emergency Procedures
Date violation determined: 2009-08-17 00:00:00.0
Date achieved compliance: 2009-12-21 00:00:00.0
Violation lead agency: EPA
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 2009-12-02 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Universal Waste - Small Quantity Handlers
Date violation determined: 2007-01-30 00:00:00.0
Date achieved compliance: 2007-01-30 00:00:00.0
Violation lead agency: State
Enforcement action: NON-FINANCIAL RECORD REVIEW
Enforcement action date: 2007-02-16 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Date violation determined: 2006-04-24 00:00:00.0
Date achieved compliance: 2007-02-13 00:00:00.0
Violation lead agency: EPA
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 2008-02-13 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: 6577
Paid penalty amount: 6577

Regulation violated: Not reported
Area of violation: Generators - Pre-transport
Date violation determined: 2006-04-24 00:00:00.0
Date achieved compliance: 2007-02-13 00:00:00.0
Violation lead agency: EPA
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 2008-02-13 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: 6577
Paid penalty amount: 6577

Regulation violated: SR - 9 VAC 20-60-360
Area of violation: Generators - Manifest
Date violation determined: 1997-12-10 00:00:00.0
Date achieved compliance: 1997-12-16 00:00:00.0
Violation lead agency: State
Enforcement action: NON-FINANCIAL RECORD REVIEW
Enforcement action date: 1998-01-08 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - 9 VAC 20-60-350 & 420
Area of violation: Generators - General
Date violation determined: 1997-12-10 00:00:00.0
Date achieved compliance: 1997-12-16 00:00:00.0
Violation lead agency: State
Enforcement action: NON-FINANCIAL RECORD REVIEW
Enforcement action date: 1998-01-08 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - 9 vac 20-60-370(6.a.e.3.a.(1))
Area of violation: Generators - Pre-transport
Date violation determined: 1997-01-22 00:00:00.0

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Date achieved compliance: 1997-01-22 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 1997-01-24 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - 13.5.
Area of violation: Generators - General
Date violation determined: 1995-06-13 00:00:00.0
Date achieved compliance: 1995-08-09 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 1995-06-20 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - VHWMR 6.1.
Area of violation: Generators - General
Date violation determined: 1994-08-08 00:00:00.0
Date achieved compliance: 1996-03-14 00:00:00.0
Violation lead agency: State
Enforcement action: FOCUSED COMPLIANCE INSPECTION
Enforcement action date: 1994-08-08 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - 6.4.E.3.a(2)
Area of violation: Generators - General
Date violation determined: 1994-07-19 00:00:00.0
Date achieved compliance: 1994-08-30 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 1994-07-28 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - 6.4.E.3.a.(1)
Area of violation: Generators - General
Date violation determined: 1994-07-19 00:00:00.0
Date achieved compliance: 1994-08-30 00:00:00.0

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 1994-07-28 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - VHWMR 6.4.E;9.8;9.2;9.3
Area of violation: Generators - General
Date violation determined: 1992-03-12 00:00:00.0
Date achieved compliance: 1993-07-20 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - VHWMR PART V AND 13.5
Area of violation: Generators - Manifest
Date violation determined: 1992-03-12 00:00:00.0
Date achieved compliance: 1993-07-20 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - VHWMR 9.3; 9.1.G.
Area of violation: Generators - Records/Reporting
Date violation determined: 1992-03-12 00:00:00.0
Date achieved compliance: 1993-07-20 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: LDR - General
Date violation determined: 1991-02-04 00:00:00.0
Date achieved compliance: 1991-05-29 00:00:00.0
Violation lead agency: State

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 1991-04-05 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General
Date violation determined: 1991-02-04 00:00:00.0
Date achieved compliance: 1991-05-29 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 1991-04-05 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General
Date violation determined: 1988-11-07 00:00:00.0
Date achieved compliance: 1988-10-20 00:00:00.0
Violation lead agency: State
Enforcement action: NON-FINANCIAL RECORD REVIEW
Enforcement action date: 1988-09-30 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General
Date violation determined: 1987-11-24 00:00:00.0
Date achieved compliance: 1988-10-20 00:00:00.0
Violation lead agency: EPA
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 1988-01-28 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 2009-08-17 00:00:00.0
Evaluation: WRITTEN INFORMAL
Area of violation: TSD IS-Contingency Plan and Emergency Procedures
Date achieved compliance: 2009-12-21 00:00:00.0
Evaluation lead agency: EPA

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Evaluation date: 2007-01-30 00:00:00.0
Evaluation: INSPECTOR FACT FINDING LETTER - Warning letter
Area of violation: Universal Waste - Small Quantity Handlers
Date achieved compliance: 2007-01-30 00:00:00.0
Evaluation lead agency: State

Evaluation date: 2006-04-24 00:00:00.0
Evaluation: SINGLE SITE CA/FO
Area of violation: Generators - Pre-transport
Date achieved compliance: 2007-02-13 00:00:00.0
Evaluation lead agency: EPA

Evaluation date: 2006-04-24 00:00:00.0
Evaluation: SINGLE SITE CA/FO
Area of violation: TSD - Container Use and Management
Date achieved compliance: 2007-02-13 00:00:00.0
Evaluation lead agency: EPA

Evaluation date: 1997-12-10 00:00:00.0
Evaluation: VERBAL INFORMAL
Area of violation: Generators - General
Date achieved compliance: 1997-12-16 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1997-12-10 00:00:00.0
Evaluation: VERBAL INFORMAL
Area of violation: Generators - Manifest
Date achieved compliance: 1997-12-16 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1997-01-22 00:00:00.0
Evaluation: VERBAL INFORMAL
Area of violation: Generators - Pre-transport
Date achieved compliance: 1997-01-22 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1995-06-13 00:00:00.0
Evaluation: WRITTEN INFORMAL
Area of violation: Generators - General
Date achieved compliance: 1995-08-09 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1994-08-08 00:00:00.0
Evaluation: WRITTEN INFORMAL
Area of violation: Generators - General
Date achieved compliance: 1996-03-14 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1994-07-19 00:00:00.0
Evaluation: WRITTEN INFORMAL
Area of violation: Generators - General
Date achieved compliance: 1994-08-30 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1991-02-04 00:00:00.0
Evaluation: WRITTEN INFORMAL
Area of violation: TSD - General

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Date achieved compliance: 1991-05-29 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1991-02-04 00:00:00.0
Evaluation: WRITTEN INFORMAL
Area of violation: LDR - General
Date achieved compliance: 1991-05-29 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1988-11-07 00:00:00.0
Evaluation: FINAL 3008(A) COMPLIANCE ORDER
Area of violation: TSD - General
Date achieved compliance: 1988-10-20 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1987-11-24 00:00:00.0
Evaluation: WRITTEN INFORMAL
Area of violation: TSD - General
Date achieved compliance: 1988-10-20 00:00:00.0
Evaluation lead agency: EPA

RCRA-LQG:
Date form received by agency: 2018-02-22 00:00:00.0
Facility name: JOINT BASE LANGLEY EUSTIS - EUSTIS
Facility address: B1208 TAYLOR AVENUE
FORT EUSTIS, VA 23604
EPA ID: VA8213720321
Mailing address: ATTN: CED/CEIE
1407 WASHINGTON BOULEVARD
FORT EUSTIS, VA 23604
Contact: PAUL A JAMES
Contact address: B1407 WASHINGTON BLVD
FORT EUSTIS, VA 23604
Contact country: US
Contact telephone: 757-878-7362
Contact email: PAUL.A.JAMES8.CIV@MAIL.MIL
EPA Region: 03
Land type: Federal
Classification: TSDF
Description: Handler is engaged in the treatment, storage or disposal of hazardous waste
Classification: Large Quantity Generator
Description: Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:
Owner/operator name: U.S. ARMY

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Owner/operator address: WASHINGTON BLVD
FORT EUSTIS, VA 23604
Owner/operator country: US
Owner/operator telephone: Not reported
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Federal
Owner/Operator Type: Owner
Owner/Op start date: 1918-03-16 00:00:00.
Owner/Op end date: Not reported

Owner/operator name: U.S. ARMY
Owner/operator address: WASHINGTON BLVD
FORT EUSTIS, VA 23604
Owner/operator country: US
Owner/operator telephone: Not reported
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Federal
Owner/Operator Type: Operator
Owner/Op start date: 1918-03-16 00:00:00.
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 2016-02-25 00:00:00.0
Site name: JOINT BASE LANGLEY EUSTIS - EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2014-02-27 00:00:00.0
Site name: JOINT BASE LANGLEY EUSTIS - EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2012-02-23 00:00:00.0
Site name: U.S. ARMY GARRISON FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2010-09-30 00:00:00.0

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Site name: JOINT BASE LANGLEY-EUSTIS (JBLE)(EUSTIS) 733D MISSION SUPPORT GROUP MSG
Classification: Large Quantity Generator

Date form received by agency: 2010-02-19 00:00:00.0
Site name: U.S. ARMY GARRISON FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2009-10-05 00:00:00.0
Site name: U.S. ARMY GARRISON FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2008-02-22 00:00:00.0
Site name: U.S. ARMY GARRISON FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2006-02-23 00:00:00.0
Site name: U.S. ARMY GARRISON FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2004-02-23 00:00:00.0
Site name: FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2002-02-25 00:00:00.0
Site name: FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 2001-03-15 00:00:00.0
Site name: FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 1998-07-01 00:00:00.0
Site name: FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 1996-02-27 00:00:00.0
Site name: US ARMY TRANSPORTATION CENTER
Classification: Large Quantity Generator

Date form received by agency: 1994-03-22 00:00:00.0
Site name: U S ARMY TRANSPORTATION CENTER
Classification: Large Quantity Generator

Date form received by agency: 1992-03-25 00:00:00.0
Site name: U.S. ARMY TRANSPORTATION CENTER
Classification: Large Quantity Generator

Date form received by agency: 1991-09-06 00:00:00.0
Site name: US ARMY TRANSP CTR
Classification: Large Quantity Generator

Date form received by agency: 1990-03-01 00:00:00.0
Site name: U S ARMY FORT EUSTIS
Classification: Large Quantity Generator

Date form received by agency: 1980-11-19 00:00:00.0

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Site name: US ARMY TRANSP CTR
Classification: Not a generator, verified

Date form received by agency: 1980-08-18 00:00:00.0
Site name: US ARMY TRANSP CTR
Classification: Large Quantity Generator

Hazardous Waste Summary:

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D003
. Waste name: REACTIVE WASTE

. Waste code: D004
. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D007
. Waste name: CHROMIUM

. Waste code: D008
. Waste name: LEAD

. Waste code: D009
. Waste name: MERCURY

. Waste code: D010
. Waste name: SELENIUM

. Waste code: D011
. Waste name: SILVER

. Waste code: D013
. Waste name: LINDANE (1,2,3,4,5,6-HEXA-CHLOROCYCLOHEXANE, GAMMA ISOMER)

. Waste code: D018
. Waste name: BENZENE

. Waste code: D021
. Waste name: CHLOROBENZENE

. Waste code: D022
. Waste name: CHLOROFORM

. Waste code: D026
. Waste name: CRESOL

FORT EUSTIS (US ARMY) (Continued) **1000114665**

. Waste code: D027
. Waste name: 1,4-DICHLOROBENZENE

. Waste code: D028
. Waste name: 1,2-DICHLOROETHANE

. Waste code: D029
. Waste name: 1,1-DICHLOROETHYLENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: D039
. Waste name: TETRACHLOROETHYLENE

. Waste code: D040
. Waste name: TRICHLORETHYLENE

. Waste code: F001
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS USED IN DEGREASING: TETRACHLOROETHYLENE, TRICHLORETHYLENE, METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE, CARBON TETRACHLORIDE AND CHLORINATED FLUOROCARBONS; ALL SPENT SOLVENT MIXTURES/BLENDS USED IN DEGREASING CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F002
. Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2, TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS

FORT EUSTIS (US ARMY) (Continued) **1000114665**

LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F017
. Waste name: Not Defined

. Waste code: P001
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3% (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%

. Waste code: P030
. Waste name: CYANIDES (SOLUBLE CYANIDE SALTS), NOT OTHERWISE SPECIFIED

. Waste code: P042
. Waste name: 1,2-BENZENEDIOL, 4-[1-HYDROXY-2-(METHYLAMINO)ETHYL]-, (R)- (OR) EPINEPHRINE

. Waste code: P066
. Waste name: ETHANIMIDOTHIOIC ACID, N-[[(METHYLAMINO)CARBONYL]OXY]-, METHYL ESTER (OR) METHOMYL

. Waste code: P075
. Waste name: NICOTINE, & SALTS (OR) PYRIDINE, 3-(1-METHYL-2-PYRROLIDINYL)-,(S)-, & SALTS

. Waste code: P081
. Waste name: 1,2,3-PROPANETRIOL, TRINITRATE (R) (OR) NITROGLYCERINE (R)

. Waste code: P098
. Waste name: POTASSIUM CYANIDE (OR) POTASSIUM CYANIDE K(CN)

. Waste code: P122
. Waste name: ZINC PHOSPHIDE ZN3P2, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 10% (R,T)

. Waste code: P188
. Waste name: BENZOIC ACID, 2-HYDROXY-, COMPD. WITH (3AS-CIS)-1,2,3,3A,8,8A-HEXAHYDRO-1,3A,8-TRIMETHYLPYRROLO[2,3-B]INDOL-5-YL METHYLCARBAMATE ESTER (1:1) (OR) PHYSOSTIGMINE SALICYLATE

. Waste code: P204
. Waste name: PHYSOSTIGMINE (OR) PYRROLO[2,3-B]INDOL-5-OL, 1,2,3,3A,8,8A-HEXAHYDRO-1,3A,8-TRIMETHYL-METHYLCARBAMATE (ESTER), (3AS-CIS)-

. Waste code: U002
. Waste name: 2-PROPANONE (I) (OR) ACETONE (I)

. Waste code: U013
. Waste name: Not Defined

. Waste code: U028
. Waste name: 1,2-BENZENEDICARBOXYLIC ACID, BIS(2-ETHYLHEXYL) ESTER (OR) DIETHYLHEXYL PHTHALATE

. Waste code: U041

FORT EUSTIS (US ARMY) (Continued) **1000114665**

. Waste name: EPICHLOROHYDRIN (OR) OXIRANE, (CHLOROMETHYL)-

. Waste code: U051
. Waste name: CREOSOTE

. Waste code: U061
. Waste name: BENZENE, 1,1'-(2,2,2-TRICHLOROETHYLIDENE)BIS[4-CHLORO- (OR) DDT

. Waste code: U080
. Waste name: METHANE, DICHLORO- (OR) METHYLENE CHLORIDE

. Waste code: U129
. Waste name: CYCLOHEXANE, 1,2,3,4,5,6-HEXACHLORO-, (1ALPHA, 2ALPHA, 3BETA, 4ALPHA, 5ALPHA, 6BETA)- (OR) LINDANE

. Waste code: U135
. Waste name: HYDROGEN SULFIDE (OR) HYDROGEN SULFIDE H2S

. Waste code: U154
. Waste name: METHANOL (I) (OR) METHYL ALCOHOL (I)

. Waste code: U159
. Waste name: 2-BUTANONE (I,T) (OR) METHYL ETHYL KETONE (MEK) (I,T)

. Waste code: U160
. Waste name: 2-BUTANONE, PEROXIDE (R,T) (OR) METHYL ETHYL KETONE PEROXIDE (R,T)

. Waste code: U161
. Waste name: 4-METHYL-2-PENTANONE (I) (OR) METHYL ISOBUTYL KETONE (I) (OR) PENTANOL, 4-METHYL-

. Waste code: U162
. Waste name: 2-PROPENOIC ACID, 2-METHYL-, METHYL ESTER (I,T) (OR) METHYL METHACRYLATE (I,T)

. Waste code: U165
. Waste name: NAPHTHALENE

. Waste code: U188
. Waste name: PHENOL

. Waste code: U205
. Waste name: SELENIUM SULFIDE (OR) SELENIUM SULFIDE SES2 (R,T)

. Waste code: U226
. Waste name: ETHANE, 1,1,1-TRICHLORO- (OR) METHYL CHLOROFORM

. Waste code: U239
. Waste name: BENZENE, DIMETHYL- (I,T) (OR) XYLENE (I)

. Waste code: U248
. Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYL-BUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS OF 0.3% OR LESS (OR) WARFARIN, & SALTS, WHEN PRESENT AT CONCENTRATIONS OF 0.3% OR LESS

. Waste code: U279
. Waste name: CARBARYL (OR) 1-NAPHTHALENOL, METHYLCARBAMATE

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Biennial Reports:

Last Biennial Reporting Year: 2017

Annual Waste Handled:

Waste code:	D001
Waste name:	IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
Amount (Lbs):	11983
Waste code:	D002
Waste name:	A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.
Amount (Lbs):	782
Waste code:	D003
Waste name:	A MATERIAL IS CONSIDERED TO BE A REACTIVE HAZARDOUS WASTE IF IT IS NORMALLY UNSTABLE, REACTS VIOLENTLY WITH WATER, GENERATES TOXIC GASES WHEN EXPOSED TO WATER OR CORROSIVE MATERIALS, OR IF IT IS CAPABLE OF DETONATION OR EXPLOSION WHEN EXPOSED TO HEAT OR A FLAME. ONE EXAMPLE OF SUCH WASTE WOULD BY WASTE GUNPOWDER.
Amount (Lbs):	75
Waste code:	D005
Waste name:	BARIUM
Amount (Lbs):	65
Waste code:	D006
Waste name:	CADMIUM
Amount (Lbs):	96
Waste code:	D007
Waste name:	CHROMIUM
Amount (Lbs):	11756
Waste code:	D008
Waste name:	LEAD
Amount (Lbs):	4991
Waste code:	D009
Waste name:	MERCURY
Amount (Lbs):	48
Waste code:	D011
Waste name:	SILVER
Amount (Lbs):	281
Waste code:	D018

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Waste name: BENZENE
Amount (Lbs): 3109

Waste code: D022
Waste name: CHLOROFORM
Amount (Lbs): 22

Waste code: D028
Waste name: 1,2-DICHLOROETHANE
Amount (Lbs): 22

Waste code: D035
Waste name: METHYL ETHYL KETONE
Amount (Lbs): 4762

Waste code: D039
Waste name: TETRACHLOROETHYLENE
Amount (Lbs): 572

Waste code: D040
Waste name: TRICHLOROETHYLENE
Amount (Lbs): 572

Waste code: F002
Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2-TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE LISTED IN F001, F004, OR F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 22

Waste code: F003
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 8100

Waste code: F005
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Amount (Lbs): 7896

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Waste code: P001
Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYLBUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS GREATER THAN 0.3%
Amount (Lbs): 607

Waste code: P042
Waste name: 1,2-BENZENEDIOL, 4-[1-HYDROXY-2-(METHYLAMINO)ETHYL]-, (R)-
Amount (Lbs): 607

Waste code: P075
Waste name: NICOTINE, & SALTS
Amount (Lbs): 607

Waste code: P081
Waste name: NITROGLYCERINE (R)
Amount (Lbs): 607

Waste code: P188
Waste name: BENZOIC ACID, 2-HYDROXY-, COMPD. WITH (3AS-CIS)-1,2,3,3A,8,8A-HEXAHYDRO-1,3A,8-TRIMETHYLPYRROLO[2,3-
Amount (Lbs): 45

Waste code: P204
Waste name: PHYSOSTIGMINE (OR) PYRROLO[2,3-B]INDOL-5-OL, 1,2,3,3A,8,8A-HEXAHYDRO-1,3A,8-TRIMETHYL-METHYLCARBAMAT
Amount (Lbs): 607

Waste code: U159
Waste name: 2-BUTANONE (I,T)
Amount (Lbs): 9

Waste code: U165
Waste name: NAPHTHALENE
Amount (Lbs): 10

Waste code: U205
Waste name: SELENIUM SULFIDE
Amount (Lbs): 562

Waste code: U248
Waste name: 2H-1-BENZOPYRAN-2-ONE, 4-HYDROXY-3-(3-OXO-1-PHENYL-BUTYL)-, & SALTS, WHEN PRESENT AT CONCENTRATIONS OF 0.3% OR LESS
Amount (Lbs): 607

Corrective Action Summary:
Event date: Not reported
Event: REFERRED TO A NON-RCRA AUTHORITY-REFERRED TO CERCLA

Event date: Not reported
Event: CA PRIORITIZATION-HIGH CA PRIORITY

Facility Has Received Notices of Violations:
Regulation violated: Not reported
Area of violation: TSD IS-Contingency Plan and Emergency Procedures
Date violation determined: 2009-08-17 00:00:00.0

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Date achieved compliance: 2009-12-21 00:00:00.0
Violation lead agency: EPA
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 2009-12-02 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: Universal Waste - Small Quantity Handlers
Date violation determined: 2007-01-30 00:00:00.0
Date achieved compliance: 2007-01-30 00:00:00.0
Violation lead agency: State
Enforcement action: NON-FINANCIAL RECORD REVIEW
Enforcement action date: 2007-02-16 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - Container Use and Management
Date violation determined: 2006-04-24 00:00:00.0
Date achieved compliance: 2007-02-13 00:00:00.0
Violation lead agency: EPA
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 2008-02-13 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: 6577
Paid penalty amount: 6577

Regulation violated: Not reported
Area of violation: Generators - Pre-transport
Date violation determined: 2006-04-24 00:00:00.0
Date achieved compliance: 2007-02-13 00:00:00.0
Violation lead agency: EPA
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 2008-02-13 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: EPA
Proposed penalty amount: Not reported
Final penalty amount: 6577
Paid penalty amount: 6577

Regulation violated: SR - 9 VAC 20-60-360
Area of violation: Generators - Manifest
Date violation determined: 1997-12-10 00:00:00.0
Date achieved compliance: 1997-12-16 00:00:00.0

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Violation lead agency: State
Enforcement action: NON-FINANCIAL RECORD REVIEW
Enforcement action date: 1998-01-08 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - 9 VAC 20-60-350 & 420
Area of violation: Generators - General
Date violation determined: 1997-12-10 00:00:00.0
Date achieved compliance: 1997-12-16 00:00:00.0
Violation lead agency: State
Enforcement action: NON-FINANCIAL RECORD REVIEW
Enforcement action date: 1998-01-08 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - 9 vac 20-60-370(6.a.e.3.a.(1))
Area of violation: Generators - Pre-transport
Date violation determined: 1997-01-22 00:00:00.0
Date achieved compliance: 1997-01-22 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 1997-01-24 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - 13.5.
Area of violation: Generators - General
Date violation determined: 1995-06-13 00:00:00.0
Date achieved compliance: 1995-08-09 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 1995-06-20 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - VHWMR 6.1.
Area of violation: Generators - General
Date violation determined: 1994-08-08 00:00:00.0
Date achieved compliance: 1996-03-14 00:00:00.0
Violation lead agency: State

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Enforcement action: FOCUSED COMPLIANCE INSPECTION
Enforcement action date: 1994-08-08 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - 6.4.E.3.a(2)
Area of violation: Generators - General
Date violation determined: 1994-07-19 00:00:00.0
Date achieved compliance: 1994-08-30 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 1994-07-28 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - 6.4.E.3.a.(1)
Area of violation: Generators - General
Date violation determined: 1994-07-19 00:00:00.0
Date achieved compliance: 1994-08-30 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 1994-07-28 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - VHWMR 6.4.E;9.8;9.2;9.3
Area of violation: Generators - General
Date violation determined: 1992-03-12 00:00:00.0
Date achieved compliance: 1993-07-20 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - VHWMR PART V AND 13.5
Area of violation: Generators - Manifest
Date violation determined: 1992-03-12 00:00:00.0
Date achieved compliance: 1993-07-20 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: SR - VHWMR 9.3; 9.1.G.
Area of violation: Generators - Records/Reporting
Date violation determined: 1992-03-12 00:00:00.0
Date achieved compliance: 1993-07-20 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: LDR - General
Date violation determined: 1991-02-04 00:00:00.0
Date achieved compliance: 1991-05-29 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 1991-04-05 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General
Date violation determined: 1991-02-04 00:00:00.0
Date achieved compliance: 1991-05-29 00:00:00.0
Violation lead agency: State
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 1991-04-05 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General
Date violation determined: 1988-11-07 00:00:00.0
Date achieved compliance: 1988-10-20 00:00:00.0
Violation lead agency: State
Enforcement action: NON-FINANCIAL RECORD REVIEW
Enforcement action date: 1988-09-30 00:00:00.0

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: Not reported
Area of violation: TSD - General
Date violation determined: 1987-11-24 00:00:00.0
Date achieved compliance: 1988-10-20 00:00:00.0
Violation lead agency: EPA
Enforcement action: COMPLIANCE EVALUATION INSPECTION ON-SITE
Enforcement action date: 1988-01-28 00:00:00.0
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 2009-08-17 00:00:00.0
Evaluation: WRITTEN INFORMAL
Area of violation: TSD IS-Contingency Plan and Emergency Procedures
Date achieved compliance: 2009-12-21 00:00:00.0
Evaluation lead agency: EPA

Evaluation date: 2007-01-30 00:00:00.0
Evaluation: INSPECTOR FACT FINDING LETTER - Warning letter
Area of violation: Universal Waste - Small Quantity Handlers
Date achieved compliance: 2007-01-30 00:00:00.0
Evaluation lead agency: State

Evaluation date: 2006-04-24 00:00:00.0
Evaluation: SINGLE SITE CA/FO
Area of violation: Generators - Pre-transport
Date achieved compliance: 2007-02-13 00:00:00.0
Evaluation lead agency: EPA

Evaluation date: 2006-04-24 00:00:00.0
Evaluation: SINGLE SITE CA/FO
Area of violation: TSD - Container Use and Management
Date achieved compliance: 2007-02-13 00:00:00.0
Evaluation lead agency: EPA

Evaluation date: 1997-12-10 00:00:00.0
Evaluation: VERBAL INFORMAL
Area of violation: Generators - General
Date achieved compliance: 1997-12-16 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1997-12-10 00:00:00.0
Evaluation: VERBAL INFORMAL
Area of violation: Generators - Manifest
Date achieved compliance: 1997-12-16 00:00:00.0
Evaluation lead agency: State

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Evaluation date: 1997-01-22 00:00:00.0
Evaluation: VERBAL INFORMAL
Area of violation: Generators - Pre-transport
Date achieved compliance: 1997-01-22 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1995-06-13 00:00:00.0
Evaluation: WRITTEN INFORMAL
Area of violation: Generators - General
Date achieved compliance: 1995-08-09 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1994-08-08 00:00:00.0
Evaluation: WRITTEN INFORMAL
Area of violation: Generators - General
Date achieved compliance: 1996-03-14 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1994-07-19 00:00:00.0
Evaluation: WRITTEN INFORMAL
Area of violation: Generators - General
Date achieved compliance: 1994-08-30 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1991-02-04 00:00:00.0
Evaluation: WRITTEN INFORMAL
Area of violation: TSD - General
Date achieved compliance: 1991-05-29 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1991-02-04 00:00:00.0
Evaluation: WRITTEN INFORMAL
Area of violation: LDR - General
Date achieved compliance: 1991-05-29 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1988-11-07 00:00:00.0
Evaluation: FINAL 3008(A) COMPLIANCE ORDER
Area of violation: TSD - General
Date achieved compliance: 1988-10-20 00:00:00.0
Evaluation lead agency: State

Evaluation date: 1987-11-24 00:00:00.0
Evaluation: WRITTEN INFORMAL
Area of violation: TSD - General
Date achieved compliance: 1988-10-20 00:00:00.0
Evaluation lead agency: EPA

SIte:
Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
Address 2: Not reported
City,State,Zip: NEWPORT NEWS, VA 23604
Event Code: Not reported
Action Taken Date: 09/30/2011
EPA ID: VA6210020321
Site ID: 0302859
Action Name: RECORD OF DECISION

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Action ID: 005
Operable Unit: 01
Action Completion Date: 09/26/2011
Contaminated Media: Sediment
Engineering Control: Dewatering
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Media:
Engineering Control: Disposal
EPA ID: VA6210020321
Contaminated Media: Debris
Site ID: 0302859
Action ID: 001
Action Completion Date: 09/29/2004
Operable Unit: 07
Action Name: Explanation Of Significant Differences
Action Taken Date: 09/30/2004
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Engineering Control: Other, (N.O.S.)
EPA ID: VA6210020321
Contaminated Media: Debris
Site ID: 0302859
Action ID: 001
Action Completion Date: 09/29/2004
Operable Unit: 07
Action Name: Explanation Of Significant Differences
Action Taken Date: 09/30/2004
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Engineering Control: Disposal
EPA ID: VA6210020321
Contaminated Media: Sludge
Site ID: 0302859
Action ID: 001
Action Completion Date: 09/29/2004
Operable Unit: 07
Action Name: Explanation Of Significant Differences
Action Taken Date: 09/30/2004
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Engineering Control: Other, (N.O.S.)
EPA ID: VA6210020321
Contaminated Media: Sludge
Site ID: 0302859
Action ID: 001
Action Completion Date: 09/29/2004

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Operable Unit:	07
Action Name:	Explanation Of Significant Differences
Action Taken Date:	09/30/2004
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Other, (N.O.S.)
EPA ID:	VA6210020321
Contaminated Media:	Solid Waste
Site ID:	0302859
Action ID:	001
Action Completion Date:	09/29/2004
Operable Unit:	07
Action Name:	Explanation Of Significant Differences
Action Taken Date:	09/30/2004
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Sampling
EPA ID:	VA6210020321
Contaminated Media:	Fish Tissue
Site ID:	0302859
Action ID:	002
Action Completion Date:	09/30/2009
Operable Unit:	04
Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2009
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Dewatering
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	002
Action Completion Date:	09/30/2009
Operable Unit:	04
Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2009
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Disposal
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	002
Action Completion Date:	09/30/2009
Operable Unit:	04

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2009
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Excavation
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	002
Action Completion Date:	09/30/2009
Operable Unit:	04
Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2009
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Monitoring
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	002
Action Completion Date:	09/30/2009
Operable Unit:	04
Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2009
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Surface Drainage Control
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	002
Action Completion Date:	09/30/2009
Operable Unit:	04
Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2009
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Wetland Restoration
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	002
Action Completion Date:	09/30/2009
Operable Unit:	04
Action Name:	RECORD OF DECISION

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Action Taken Date:	09/30/2009
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Monitoring
EPA ID:	VA6210020321
Contaminated Media:	Groundwater
Site ID:	0302859
Action ID:	003
Action Completion Date:	09/28/2001
Operable Unit:	05
Action Name:	RECORD OF DECISION
Action Taken Date:	01/01/2003
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Dewatering
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	003
Action Completion Date:	09/28/2001
Operable Unit:	05
Action Name:	RECORD OF DECISION
Action Taken Date:	01/01/2003
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Disposal
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	003
Action Completion Date:	09/28/2001
Operable Unit:	05
Action Name:	RECORD OF DECISION
Action Taken Date:	01/01/2003
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Engineering Control, (N.O.S.)
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	003
Action Completion Date:	09/28/2001
Operable Unit:	05
Action Name:	RECORD OF DECISION
Action Taken Date:	01/01/2003

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Excavation
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	003
Action Completion Date:	09/28/2001
Operable Unit:	05
Action Name:	RECORD OF DECISION
Action Taken Date:	01/01/2003
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Impermeable Barrier
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	003
Action Completion Date:	09/28/2001
Operable Unit:	05
Action Name:	RECORD OF DECISION
Action Taken Date:	01/01/2003
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Monitoring
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	003
Action Completion Date:	09/28/2001
Operable Unit:	05
Action Name:	RECORD OF DECISION
Action Taken Date:	01/01/2003
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Other, (N.O.S.)
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	003
Action Completion Date:	09/28/2001
Operable Unit:	05
Action Name:	RECORD OF DECISION
Action Taken Date:	01/01/2003
Event Code:	Not reported

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Engineering Control: Revegetation
EPA ID: VA6210020321
Contaminated Media: Sediment
Site ID: 0302859
Action ID: 003
Action Completion Date: 09/28/2001
Operable Unit: 05
Action Name: RECORD OF DECISION
Action Taken Date: 01/01/2003
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Engineering Control: Surface Drainage Control
EPA ID: VA6210020321
Contaminated Media: Sediment
Site ID: 0302859
Action ID: 003
Action Completion Date: 09/28/2001
Operable Unit: 05
Action Name: RECORD OF DECISION
Action Taken Date: 01/01/2003
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Engineering Control: Wetlands Replacement
EPA ID: VA6210020321
Contaminated Media: Sediment
Site ID: 0302859
Action ID: 003
Action Completion Date: 09/28/2001
Operable Unit: 05
Action Name: RECORD OF DECISION
Action Taken Date: 01/01/2003
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Engineering Control: Dewatering
EPA ID: VA6210020321
Contaminated Media: Soil
Site ID: 0302859
Action ID: 003
Action Completion Date: 09/28/2001
Operable Unit: 05
Action Name: RECORD OF DECISION
Action Taken Date: 01/01/2003
Event Code: Not reported
Contact Name: Not reported

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Contact Telephone: Not reported
Event: Not reported

Engineering Control: Disposal
EPA ID: VA6210020321
Contaminated Media: Soil
Site ID: 0302859
Action ID: 003
Action Completion Date: 09/28/2001
Operable Unit: 05
Action Name: RECORD OF DECISION
Action Taken Date: 01/01/2003
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Engineering Control: Dust Suppression
EPA ID: VA6210020321
Contaminated Media: Soil
Site ID: 0302859
Action ID: 003
Action Completion Date: 09/28/2001
Operable Unit: 05
Action Name: RECORD OF DECISION
Action Taken Date: 01/01/2003
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Engineering Control: Excavation
EPA ID: VA6210020321
Contaminated Media: Soil
Site ID: 0302859
Action ID: 003
Action Completion Date: 09/28/2001
Operable Unit: 05
Action Name: RECORD OF DECISION
Action Taken Date: 01/01/2003
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Engineering Control: Impermeable Barrier
EPA ID: VA6210020321
Contaminated Media: Soil
Site ID: 0302859
Action ID: 003
Action Completion Date: 09/28/2001
Operable Unit: 05
Action Name: RECORD OF DECISION
Action Taken Date: 01/01/2003
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Event:	Not reported
Engineering Control:	Monitoring
EPA ID:	VA6210020321
Contaminated Media:	Soil
Site ID:	0302859
Action ID:	003
Action Completion Date:	09/28/2001
Operable Unit:	05
Action Name:	RECORD OF DECISION
Action Taken Date:	01/01/2003
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Other, (N.O.S.)
EPA ID:	VA6210020321
Contaminated Media:	Soil
Site ID:	0302859
Action ID:	003
Action Completion Date:	09/28/2001
Operable Unit:	05
Action Name:	RECORD OF DECISION
Action Taken Date:	01/01/2003
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Revegetation
EPA ID:	VA6210020321
Contaminated Media:	Soil
Site ID:	0302859
Action ID:	003
Action Completion Date:	09/28/2001
Operable Unit:	05
Action Name:	RECORD OF DECISION
Action Taken Date:	01/01/2003
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Surface Drainage Control
EPA ID:	VA6210020321
Contaminated Media:	Soil
Site ID:	0302859
Action ID:	003
Action Completion Date:	09/28/2001
Operable Unit:	05
Action Name:	RECORD OF DECISION
Action Taken Date:	01/01/2003
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Engineering Control:	Wetlands Replacement
EPA ID:	VA6210020321
Contaminated Media:	Soil
Site ID:	0302859
Action ID:	003
Action Completion Date:	09/28/2001
Operable Unit:	05
Action Name:	RECORD OF DECISION
Action Taken Date:	01/01/2003
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Engineering Control:	No Action
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	004
Action Completion Date:	10/10/2008
Operable Unit:	03
Action Name:	RECORD OF DECISION
Action Taken Date:	12/31/2008
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Engineering Control:	No Action
EPA ID:	VA6210020321
Contaminated Media:	Surface Water
Site ID:	0302859
Action ID:	004
Action Completion Date:	10/10/2008
Operable Unit:	03
Action Name:	RECORD OF DECISION
Action Taken Date:	12/31/2008
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Engineering Control:	Dewatering
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	005
Action Completion Date:	09/26/2011
Operable Unit:	01
Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2011
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Engineering Control:	Disposal

FORT EUSTIS (US ARMY) (Continued) **1000114665**

EPA ID: VA6210020321
Contaminated Media: Sediment
Site ID: 0302859
Action ID: 005
Action Completion Date: 09/26/2011
Operable Unit: 01
Action Name: RECORD OF DECISION
Action Taken Date: 09/30/2011
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Engineering Control: Enhanced Natural Recovery
EPA ID: VA6210020321
Contaminated Media: Sediment
Site ID: 0302859
Action ID: 005
Action Completion Date: 09/26/2011
Operable Unit: 01
Action Name: RECORD OF DECISION
Action Taken Date: 09/30/2011
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Engineering Control: Excavation
EPA ID: VA6210020321
Contaminated Media: Sediment
Site ID: 0302859
Action ID: 005
Action Completion Date: 09/26/2011
Operable Unit: 01
Action Name: RECORD OF DECISION
Action Taken Date: 09/30/2011
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Engineering Control: Monitored Natural Recovery
EPA ID: VA6210020321
Contaminated Media: Sediment
Site ID: 0302859
Action ID: 005
Action Completion Date: 09/26/2011
Operable Unit: 01
Action Name: RECORD OF DECISION
Action Taken Date: 09/30/2011
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Engineering Control: Monitoring
EPA ID: VA6210020321

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	005
Action Completion Date:	09/26/2011
Operable Unit:	01
Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2011
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Engineering Control:	Subaqueous Sediment Cap
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	005
Action Completion Date:	09/26/2011
Operable Unit:	01
Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2011
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Engineering Control:	Monitored Natural Attenuation
EPA ID:	VA6210020321
Contaminated Media:	Fish Tissue
Site ID:	0302859
Action ID:	006
Action Completion Date:	09/25/2007
Operable Unit:	02
Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2007
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Engineering Control:	Cap
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	006
Action Completion Date:	09/25/2007
Operable Unit:	02
Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2007
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Engineering Control:	Dewatering
EPA ID:	VA6210020321
Contaminated Media:	Sediment

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Site ID:	0302859
Action ID:	006
Action Completion Date:	09/25/2007
Operable Unit:	02
Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2007
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Disposal
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	006
Action Completion Date:	09/25/2007
Operable Unit:	02
Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2007
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Excavation
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	006
Action Completion Date:	09/25/2007
Operable Unit:	02
Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2007
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Monitoring
EPA ID:	VA6210020321
Contaminated Media:	Sediment
Site ID:	0302859
Action ID:	006
Action Completion Date:	09/25/2007
Operable Unit:	02
Action Name:	RECORD OF DECISION
Action Taken Date:	09/30/2007
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Monitoring
EPA ID:	VA6210020321
Contaminated Media:	Groundwater
Site ID:	0302859

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Action ID:	008
Action Completion Date:	10/29/2002
Operable Unit:	07
Action Name:	RECORD OF DECISION
Action Taken Date:	12/31/2002
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Engineering Control:	Dewatering
EPA ID:	VA6210020321
Contaminated Media:	Soil
Site ID:	0302859
Action ID:	008
Action Completion Date:	10/29/2002
Operable Unit:	07
Action Name:	RECORD OF DECISION
Action Taken Date:	12/31/2002
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Engineering Control:	Disposal
EPA ID:	VA6210020321
Contaminated Media:	Soil
Site ID:	0302859
Action ID:	008
Action Completion Date:	10/29/2002
Operable Unit:	07
Action Name:	RECORD OF DECISION
Action Taken Date:	12/31/2002
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Engineering Control:	Dust Suppression
EPA ID:	VA6210020321
Contaminated Media:	Soil
Site ID:	0302859
Action ID:	008
Action Completion Date:	10/29/2002
Operable Unit:	07
Action Name:	RECORD OF DECISION
Action Taken Date:	12/31/2002
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Engineering Control:	Excavation
EPA ID:	VA6210020321
Contaminated Media:	Soil
Site ID:	0302859
Action ID:	008

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Action Completion Date:	10/29/2002
Operable Unit:	07
Action Name:	RECORD OF DECISION
Action Taken Date:	12/31/2002
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Engineering Control:	Monitoring
EPA ID:	VA6210020321
Contaminated Media:	Soil
Site ID:	0302859
Action ID:	008
Action Completion Date:	10/29/2002
Operable Unit:	07
Action Name:	RECORD OF DECISION
Action Taken Date:	12/31/2002
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

US INST CONTROL:

Name:	FORT EUSTIS (US ARMY)
Address:	END OF MULBERRY ISLAND
Address 2:	Not reported
City,State,Zip:	NEWPORT NEWS, VA 23604
EPA ID:	VA6210020321
Site ID:	0302859
Action Name:	RECORD OF DECISION
Action ID:	002
Operable Unit:	04
Action Completion Date:	09/30/2009
Actual Date:	09/30/2009
Contaminated Media:	Sediment
Institutional Control:	Fishing Restriction
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Name:	FORT EUSTIS (US ARMY)
Address:	END OF MULBERRY ISLAND
Address 2:	Not reported
City,State,Zip:	NEWPORT NEWS, VA 23604
EPA ID:	VA6210020321
Site ID:	0302859
Action Name:	RECORD OF DECISION
Action ID:	002
Operable Unit:	04
Action Completion Date:	09/30/2009
Actual Date:	09/30/2009
Contaminated Media:	Sediment
Institutional Control:	Institutional Controls, (N.O.S.)
Event Code:	Not reported

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
Address 2: Not reported
City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
Site ID: 0302859
Action Name: RECORD OF DECISION
Action ID: 002
Operable Unit: 04
Action Completion Date: 09/30/2009
Actual Date: 09/30/2009
Contaminated Media: Sediment
Institutional Control: Swimming Restriction
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
Address 2: Not reported
City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
Site ID: 0302859
Action Name: RECORD OF DECISION
Action ID: 005
Operable Unit: 01
Action Completion Date: 09/26/2011
Actual Date: 09/30/2011
Contaminated Media: Sediment
Institutional Control: Access Restriction
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
Address 2: Not reported
City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
Site ID: 0302859
Action Name: RECORD OF DECISION
Action ID: 005
Operable Unit: 01
Action Completion Date: 09/26/2011
Actual Date: 09/30/2011
Contaminated Media: Sediment
Institutional Control: Fishing Restriction
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
Address 2: Not reported
City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
Site ID: 0302859
Action Name: RECORD OF DECISION
Action ID: 005
Operable Unit: 01
Action Completion Date: 09/26/2011
Actual Date: 09/30/2011
Contaminated Media: Sediment
Institutional Control: Swimming Restriction
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
Address 2: Not reported
City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
Site ID: 0302859
Action Name: RECORD OF DECISION
Action ID: 006
Operable Unit: 02
Action Completion Date: 09/25/2007
Actual Date: 09/30/2007
Contaminated Media: Fish Tissue
Institutional Control: Fishing Restriction
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
Address 2: Not reported
City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
Site ID: 0302859
Action Name: RECORD OF DECISION
Action ID: 006
Operable Unit: 02
Action Completion Date: 09/25/2007
Actual Date: 09/30/2007
Contaminated Media: Sediment
Institutional Control: Base use plan change
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

ROD:
Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND

FORT EUSTIS (US ARMY) (Continued) **1000114665**

City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
RG: 3
Site ID: 302859
Action: FF ESD
Operable Unit Number: OIL SLUDGE HOLDING POND
SEQ ID: 1
Action Completion: 2004-09-29 00:00:00
NPL Status: Final
Non NPL Status: Not reported

Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
RG: 3
Site ID: 302859
Action: FF ESD
Operable Unit Number: BAILEYS CREEK
SEQ ID: 2
Action Completion: 2018-05-18 00:00:00
NPL Status: Final
Non NPL Status: Not reported

Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
RG: 3
Site ID: 302859
Action: FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number: EUSTIS LAKE
SEQ ID: 2
Action Completion: 2009-09-30 00:00:00
NPL Status: Final
Non NPL Status: Not reported

Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
RG: 3
Site ID: 302859
Action: FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number: DOL STORAGE YARD
SEQ ID: 3
Action Completion: 2001-09-28 00:00:00
NPL Status: Final
Non NPL Status: Not reported

Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
RG: 3
Site ID: 302859
Action: FF ROD (RCRA Statement of Basis/RTC)

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Operable Unit Number: MILSTEAD ISLAND CREEK
SEQ ID: 4
Action Completion: 2008-10-10 00:00:00
NPL Status: Final
Non NPL Status: Not reported

Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
RG: 3
Site ID: 302859
Action: FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number: BAILEYS CREEK
SEQ ID: 5
Action Completion: 2011-09-26 00:00:00
NPL Status: Final
Non NPL Status: Not reported

Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
RG: 3
Site ID: 302859
Action: FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number: BROWN'S LAKE
SEQ ID: 6
Action Completion: 2007-09-25 00:00:00
NPL Status: Final
Non NPL Status: Not reported

Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
RG: 3
Site ID: 302859
Action: FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number: OIL SLUDGE HOLDING POND
SEQ ID: 8
Action Completion: 2002-10-29 00:00:00
NPL Status: Final
Non NPL Status: Not reported

Name: FORT EUSTIS (US ARMY)
Address: END OF MULBERRY ISLAND
City,State,Zip: NEWPORT NEWS, VA 23604
EPA ID: VA6210020321
RG: 3
Site ID: 302859
Action: FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number: LANDFILL 7 (SOUTH LANDFILL)
SEQ ID: 14
Action Completion: 2018-06-27 00:00:00
NPL Status: Final
Non NPL Status: Not reported

FORT EUSTIS (US ARMY) (Continued) **1000114665**

Name:	FORT EUSTIS (US ARMY)
Address:	END OF MULBERRY ISLAND
City,State,Zip:	NEWPORT NEWS, VA 23604
EPA ID:	VA6210020321
RG:	3
Site ID:	302859
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	LANDFILL 1 (OFFICER'S CLUB)
SEQ ID:	17
Action Completion:	2018-02-15 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported

1
ESE
< 1/8
0.031 mi.
165 ft.

Relative:
Higher

Actual:
25 ft.

JAMES RIVER TREATMENT PLANT **RCRA-VSQG** **1004789410**
111 CITY FARM ROAD **UST** **VAD000800813**
NEWPORT NEWS, VA 23602 **SPILLS**
US AIRS
Financial Assurance
TIER 2

RCRA-VSQG:

Date form received by agency:	1980-08-18 00:00:00.0
Facility name:	JAMES RIVER TREATMENT PLANT
Facility address:	111 CITY FARM ROAD NEWPORT NEWS, VA 23602
EPA ID:	VAD000800813
Mailing address:	PO BOX 5000 VIRGINIA BEACH, VA 23455
Contact:	NORMAN LEBLANC
Contact address:	PO BOX 5000 VIRGINIA BEACH, VA 23455
Contact country:	US
Contact telephone:	804-460-2261
Contact email:	Not reported
EPA Region:	03
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	HAMPTON ROADS SANITATION DISTRICT
Owner/operator address:	PO BOX 5000 VA BEACH, VA 23455
Owner/operator country:	Not reported
Owner/operator telephone:	215-555-1212

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Municipal
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: OPERNAME
Owner/operator address: OPERSTREET
OPERCITY, AK 99999
Owner/operator country: Not reported
Owner/operator telephone: 215-555-1212
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Municipal
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Hazardous Waste Summary:

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Violation Status: No violations found

Facility:
Name: JAMES RIVER TREATMENT PLANT
Address: 111 CITY FARM RD
City,State,Zip: NEWPORT NEWS, VA 23602
Facility Id: 5016809
Facility Type: LOCAL
CEDS Facility ID: 200000065569

Owner:
Owner Id: 33681
Owner Name: HRSD - Hampton Roads Sanitation District
Owner Address: 1434 Air Rail Ave
Owner Address2: Not reported
Owner City, State, Zip: Virginia Beach, VA 23455
Owner Type: LOCAL
Number of Active AST: 0
Number of Active UST: 2
Number of Inactive AST: 0
Number of Inactive UST: 2

UST:
Facility ID: 5016809
Federally Regulated: Yes

Tank Number: 1
Tank Capacity: 20000
Tank Contents: DIESEL
Tank Status: **CURR IN USE**
Tank Type: UST

Tank Material:
Install Date: 4/4/2013
Tank Materials: Bare Steel No
Tank Materials: Cath Protect Steel No
Tank Materials: Epoxy Steel No
Tank Materials: Fiberglass Yes
Tank Materials: Concrete No
Tank Materials: Composite No
Tank Materials: Double Walled Yes
Tank Materials: Lined Interior No
Tank Materials: Excav Liner No
Tank Materials: Insulated Tank Jacket No
Tank Materials: Repaired No
Tank Materials: Unknown No
Tank Materials: Other No

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Tank Materials: Other Note	Not reported
Release Detection:	
Tank Release Detection: Leak Deferred	No
Tank Release Detection: Manual Gauge	No
Tank Release Detection: Auto Gauge	Yes
Tank Release Detection:Tank Tightness	Yes
Tank Release Detection: Vapor Monitor	No
Tank Release Detection: Inventory	Yes
Tank Release Detection: Stat Invent Recon	No
Tank Release Detection: Spill Install	Yes
Tank Release Detection: Overfill Install	Yes
Tank Release Detection: Groundwater	No
Tank Release Detection: Int Sec Containment	Yes
Tank Release Detection: Int Double Walled	Yes
Tank Release Detection: Other Method	No
Tank Release Detection: Other Note	Not reported
Pipe Release Detection: Leak Deferred	No
Pipe Release Detection: Autoleak	Not reported
Pipe Release Detection: Line Tightness	Yes
Pipe Release Detection: Stat Invent Recon	No
Pipe Release Detection: Groundwater	No
Pipe Release Detection: Int Sec Containment	No
Pipe Release Det: Interior Double Walled	Yes
Pipe Release Detection: Other Method	No
Pipe Release Detection: Other Note	Not sure why ALLDs on this piping?
Pipe Type:	VALVE SUCTION
Pipe Materials: Bare Steel	No
Pipe Materials: Galvanized Steel	No
Pipe Materials: Copper	No
Pipe Materials: Fiberglass	No
Pipe Materials: Cath Protect	No
Pipe Materials: Double Walled	Yes
Pipe Materials: Sec Containment	Yes
Pipe Materials: Repaired	No
Pipe Materials: Unknown	No
Pipe Materials: Other	No
Pipe Materials: Other Note	Poly-Flex
Facility ID:	5016809
Federally Regulated:	Yes
Tank Number:	2
Tank Capacity:	6000
Tank Contents:	DIESEL
Tank Status:	**REM FROM GRD**
Tank Type:	UST
Tank Material:	
Install Date:	9/1/1991
Tank Materials: Bare Steel	No
Tank Materials: Cath Protect Steel	No
Tank Materials: Epoxy Steel	No
Tank Materials: Fiberglass	Yes
Tank Materials: Concrete	No

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Tank Materials: Composite	No
Tank Materials: Double Walled	Yes
Tank Materials: Lined Interior	No
Tank Materials: Excav Liner	No
Tank Materials: Insulated Tank Jacket	No
Tank Materials: Repaired	No
Tank Materials: Unknown	No
Tank Materials: Other	No
Tank Materials: Other Note	Not reported

Release Detection:

Tank Release Detection: Leak Deferred	No
Tank Release Detection: Manual Gauge	No
Tank Release Detection: Auto Gauge	Yes
Tank Release Detection:Tank Tightness	No
Tank Release Detection: Vapor Monitor	No
Tank Release Detection: Inventory	No
Tank Release Detection: Stat Invent Recon	No
Tank Release Detection: Spill Install	Yes
Tank Release Detection: Overfill Install	Yes
Tank Release Detection: Groundwater	No
Tank Release Detection: Int Sec Containment	No
Tank Release Detection: Int Double Walled	Yes
Tank Release Detection: Other Method	No
Tank Release Detection: Other Note	Not reported
Pipe Release Detection: Leak Deferred	Not reported
Pipe Release Detection: Autoleak	Not reported
Pipe Release Detection: Line Tightness	No
Pipe Release Detection: Stat Invent Recon	No
Pipe Release Detection: Groundwater	No
Pipe Release Detection: Int Sec Containment	No
Pipe Release Det: Interior Double Walled	Yes
Pipe Release Detection: Other Method	No
Pipe Release Detection: Other Note	Not reported

Pipe Type:	NO VALVE SUCTION
Pipe Materials: Bare Steel	No
Pipe Materials: Galvanized Steel	No
Pipe Materials: Copper	Yes
Pipe Materials: Fiberglass	Yes
Pipe Materials: Cath Protect	No
Pipe Materials: Double Walled	Yes
Pipe Materials: Sec Containment	No
Pipe Materials: Repaired	No
Pipe Materials: Unknown	No
Pipe Materials: Other	No
Pipe Materials: Other Note	Not reported

Facility ID:	5016809
Federally Regulated:	Yes

Tank Number:	4
Tank Capacity:	2500
Tank Contents:	GASOLINE
Tank Status:	**CURR IN USE**
Tank Type:	UST

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Tank Material:

Install Date:	9/1/1991
Tank Materials: Bare Steel	No
Tank Materials: Cath Protect Steel	No
Tank Materials: Epoxy Steel	No
Tank Materials: Fiberglass	Yes
Tank Materials: Concrete	No
Tank Materials: Composite	No
Tank Materials: Double Walled	Yes
Tank Materials: Lined Interior	No
Tank Materials: Excav Liner	No
Tank Materials: Insulated Tank Jacket	No
Tank Materials: Repaired	No
Tank Materials: Unknown	No
Tank Materials: Other	No
Tank Materials: Other Note	Not reported

Release Detection:

Tank Release Detection: Leak Deferred	No
Tank Release Detection: Manual Gauge	No
Tank Release Detection: Auto Gauge	Yes
Tank Release Detection:Tank Tightness	No
Tank Release Detection: Vapor Monitor	No
Tank Release Detection: Inventory	No
Tank Release Detection: Stat Invent Recon	No
Tank Release Detection: Spill Install	Yes
Tank Release Detection: Overfill Install	Yes
Tank Release Detection: Groundwater	No
Tank Release Detection: Int Sec Containment	Yes
Tank Release Detection: Int Double Walled	Yes
Tank Release Detection: Other Method	No
Tank Release Detection: Other Note	Not reported
Pipe Release Detection: Leak Deferred	Not reported
Pipe Release Detection: Autoleak	Not reported
Pipe Release Detection: Line Tightness	No
Pipe Release Detection: Stat Invent Recon	No
Pipe Release Detection: Groundwater	No
Pipe Release Detection: Int Sec Containment	Yes
Pipe Release Det: Interior Double Walled	Yes
Pipe Release Detection: Other Method	No
Pipe Release Detection: Other Note	Not reported

Pipe Type:	NO VALVE SUCTION
Pipe Materials: Bare Steel	No
Pipe Materials: Galvanized Steel	No
Pipe Materials: Copper	No
Pipe Materials: Fiberglass	Yes
Pipe Materials: Cath Protect	No
Pipe Materials: Double Walled	Yes
Pipe Materials: Sec Containment	No
Pipe Materials: Repaired	No
Pipe Materials: Unknown	No
Pipe Materials: Other	No
Pipe Materials: Other Note	Not reported

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Facility ID:	5016809
Federally Regulated:	Yes
Tank Number:	R4
Tank Capacity:	2000
Tank Contents:	GASOLINE
Tank Status:	**REM FROM GRD**
Tank Type:	UST

Tank Material:

Install Date:	5/7/1968
Tank Materials: Bare Steel	Yes
Tank Materials: Cath Protect Steel	No
Tank Materials: Epoxy Steel	No
Tank Materials: Fiberglass	No
Tank Materials: Concrete	No
Tank Materials: Composite	No
Tank Materials: Double Walled	No
Tank Materials: Lined Interior	No
Tank Materials: Excav Liner	No
Tank Materials: Insulated Tank Jacket	No
Tank Materials: Repaired	No
Tank Materials: Unknown	No
Tank Materials: Other	No
Tank Materials: Other Note	Not reported

Release Detection:

Tank Release Detection: Leak Deferred	No
Tank Release Detection: Manual Gauge	No
Tank Release Detection: Auto Gauge	No
Tank Release Detection:Tank Tightness	No
Tank Release Detection: Vapor Monitor	No
Tank Release Detection: Inventory	No
Tank Release Detection: Stat Invent Recon	No
Tank Release Detection: Spill Install	No
Tank Release Detection: Overfill Install	No
Tank Release Detection: Groundwater	No
Tank Release Detection: Int Sec Containment	No
Tank Release Detection: Int Double Walled	No
Tank Release Detection: Other Method	No
Tank Release Detection: Other Note	Not reported
Pipe Release Detection: Leak Deferred	Not reported
Pipe Release Detection: Autoleak	Not reported
Pipe Release Detection: Line Tightness	No
Pipe Release Detection: Stat Invent Recon	No
Pipe Release Detection: Groundwater	No
Pipe Release Detection: Int Sec Containment	No
Pipe Release Det: Interior Double Walled	No
Pipe Release Detection: Other Method	No
Pipe Release Detection: Other Note	Not reported
Pipe Type:	UNKNOWN
Pipe Materials: Bare Steel	Yes
Pipe Materials: Galvanized Steel	No
Pipe Materials: Copper	No
Pipe Materials: Fiberglass	No
Pipe Materials: Cath Protect	No

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Pipe Materials: Double Walled	No
Pipe Materials: Sec Containment	No
Pipe Materials: Repaired	No
Pipe Materials: Unknown	No
Pipe Materials: Other	Yes
Pipe Materials: Other Note	COLD TAR EPOXY

SPILLS:

Name:	Not reported
Address:	111 CITY FARM RD
City,State,Zip:	NEWPORT NEWS, VA 23602
City,State,Zip:	NEWPORT NEWS, VA 23602
Fips City/County:	700/Newport News City
Status:	Closed
Reference Id:	77369
IR Number:	2017-T-1075
Associated IR:	Not reported
Incident Date:	10/08/2016
Call Received Date:	10/12/2016
Closure Comments:	Incident documented within SSORs. NFA for PREP at this time.
Threat To:	Ground Water
Terrorism (Y/N):	N
Characterize Incident:	Accidental
Incident Type:	SSO(Water), Water(Water)
Incident Subtype:	SSO * Water
Materials:	Sewage
Effect To Receptor:	Impacted
Water Body:	James River
Low Quantity To Water:	0
High Quantity To Water:	10000
Quantity Units:	Gallons
Other Receptors:	Not reported
RP Company:	Not reported
RP Name:	JoeBattersby
Property Owner:	Not reported
Property Company:	Not reported
Duration Of Event (Hrs):	0
Impacts:	Not reported
Other Impacts:	Not reported
Steps Taken:	Not reported
Steps Taken Description:	Not reported
System Components:	Not reported
Other System Components:	Not reported
Cause Of Event:	Not reported
Corrective Action Taken:	Not reported
Weather Status:	No
Precipitation (Wet):	0
Discharge Type:	Not reported
Discharge Volume:	0
Unknown Discharge (Y/N):	N
Site Name:	SSO
Closure Date:	10/26/2016
Orig. Call Incident Description:	HAMPTON ROADS SANITATION DISTRICT / JAMES RIVER PLANT REPORTS RAW SEWAGE OVERFLOW FROM SEWAGE TREATMENT PLANT (MIXED WITH RAIN WATER). AT 2 LOCATIONS ON PLANT GROUNDS; HEADWORKS BLDG & INFLUENT CHAMBER. WATERWAY AFFECTED. NO ASSISTANCE NEEDED.

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Original Call Material Description:	SSO
Original Call Location Description:	111 CITY FARM ROAD, NEWPORT NEWS VA 23602
Incident Ongoing at time of Call:	No
Agencies Notified (Y/N):	Not reported
Other Agencies:	Not reported
Permitted (Y/N):	No
Call Reported By Company Name:	Not reported
Call Property Owner Company Name:	Not reported
Call Property Owner Name:	Not reported
Site Summary:	HAMPTON ROADS SANITATION DISTRICT / JAMES RIVER PLANT REPORTS RAW SEWAGE OVERFLOW FROM SEWAGE TREATMENT PLANT (MIXED WITH RAIN WATER). AT 2 LOCATIONS ON PLANT GROUNDS; HEADWORKS BLDG & INFLUENT CHAMBER. WATERWAY AFFECTED. NO ASSISTANCE NEEDED.
Name:	HRSD JAMES RIVER STP
Address:	111 CITY FARM RD
City,State,Zip:	NEWPORT NEWS, VA 23602
City,State,Zip:	NEWPORT NEWS, VA 23602
Fips City/County:	700/Newport News City
Status:	Closed
Reference Id:	73797
IR Number:	2017-T-0723
Associated IR:	Not reported
Incident Date:	09/09/2016
Call Received Date:	09/09/2016
Closure Comments:	I submitted an electronic reporting notice this morning, reference ID 73797. The plant folks were able to recover the flow, and the NPW did not reach state waters. Will you please rescind that notification? Thanks! Lauren
Threat To:	Ground Water
Terrorism (Y/N):	N
Characterize Incident:	Accidental
Incident Type:	Upset(Water), Water(Water)
Incident Subtype:	Upset * Water
Materials:	Non-Potable Water
Effect To Receptor:	Not reported
Water Body:	Not reported
Low Quantity To Water:	Not reported
High Quantity To Water:	Not reported
Quantity Units:	Not reported
Other Receptors:	Not reported
RP Company:	HRSD
RP Name:	LaurenGrimmer
Property Owner:	Not reported
Property Company:	Not reported
Duration Of Event (Hrs):	0
Impacts:	Not reported
Other Impacts:	Not reported
Steps Taken:	Not reported
Steps Taken Description:	Not reported
System Components:	Not reported
Other System Components:	Not reported
Cause Of Event:	Not reported
Corrective Action Taken:	Not reported
Weather Status:	No
Precipitation (Wet):	0
Discharge Type:	Not reported

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Discharge Volume:	0
Unknown Discharge (Y/N):	N
Site Name:	NPW LEAK
Closure Date:	09/12/2016
Orig. Call Incident Description:	Non-Potable Water (NPW) leak occurring at the James River STP. NPW is fully treated, chlorinated effluent. Repairs are ongoing.
Original Call Material Description:	Not reported
Original Call Location Description:	James River STP, 111 City Farm Road, Newport News, VA 23602
Incident Ongoing at time of Call:	Yes
Agencies Notified (Y/N):	N
Other Agencies:	Not reported
Permitted (Y/N):	Yes
Call Reported By Company Name:	HRSD
Call Property Owner Company Name:	Not reported
Call Property Owner Name:	Not reported
Site Summary:	Non-Potable Water (NPW) leak occurring at the James River STP. NPW is fully treated, chlorinated effluent. Repairs are ongoing.
Name:	HRSD JAMES RIVER STP
Address:	111 CITY FARM RD
City,State,Zip:	NEWPORT NEWS, VA 23606
City,State,Zip:	NEWPORT NEWS, VA 23606
Fips City/County:	700/Newport News City
Status:	Closed
Reference Id:	113429
IR Number:	Not reported
Associated IR:	Not reported
Incident Date:	10/18/2017
Call Received Date:	10/18/2017
Closure Comments:	Incident tracked by VPDES Permit VA0081272. 5 day letter in ECM under VPDES Permit file. Water compliance program tracking.
Threat To:	Not reported
Terrorism (Y/N):	Not reported
Characterize Incident:	Unknown
Incident Type:	Not reported
Incident Subtype:	Not reported
Materials:	Wastewater
Effect To Receptor:	Not reported
Water Body:	James River
Low Quantity To Water:	Not reported
High Quantity To Water:	Not reported
Quantity Units:	Not reported
Other Receptors:	Not reported
RP Company:	HRSD
RP Name:	LaurenGrimmer
Property Owner:	Not reported
Property Company:	Not reported
Duration Of Event (Hrs):	0
Impacts:	Not reported
Other Impacts:	Not reported
Steps Taken:	Not reported
Steps Taken Description:	Not reported
System Components:	Not reported
Other System Components:	Not reported
Cause Of Event:	Not reported
Corrective Action Taken:	Not reported
Weather Status:	No

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Precipitation (Wet):	0
Discharge Type:	Not reported
Discharge Volume:	0
Unknown Discharge (Y/N):	Not reported
Site Name:	JAMES RIVER STP
Closure Date:	02/26/2018
Orig. Call Incident Description:	Loss of dechlorination for 19 minutes at the James River STP
Original Call Material Description:	Not reported
Original Call Location Description:	James River STP 111 City Farm Rd Newport News
Incident Ongoing at time of Call:	No
Agencies Notified (Y/N):	Not reported
Other Agencies:	Not reported
Permitted (Y/N):	Yes
Call Reported By Company Name:	HRSD
Call Property Owner Company Name:	Not reported
Call Property Owner Name:	Not reported
Site Summary:	Loss of dechlorination for 19 minutes at the James River STP
Name:	HRSD - JAMES RIVER STP
Address:	111 CITY FARM ROAD
City,State,Zip:	NEWPORT NEWS, VA 23602
City,State,Zip:	NEWPORT NEWS, VA 23602
Fips City/County:	700/Newport News City
Status:	Closed
Reference Id:	106172
IR Number:	2018-T-0295
Associated IR:	Not reported
Incident Date:	08/02/2017
Call Received Date:	08/02/2017
Closure Comments:	5-day letter received. Incident forwarded to DEQ Water Compliance (Ken Raum & Roger Everton). No further action for PREP.
Threat To:	Not reported
Terrorism (Y/N):	N
Characterize Incident:	Unknown
Incident Type:	Point Source(Water), Water(Water)
Incident Subtype:	Point Source * Water
Materials:	NPW
Effect To Receptor:	Impacted
Water Body:	James River
Low Quantity To Water:	7100
High Quantity To Water:	7100
Quantity Units:	Gallons
Other Receptors:	Not reported
RP Company:	HRSD
RP Name:	LaurenGrimmer
Property Owner:	Not reported
Property Company:	Not reported
Duration Of Event (Hrs):	0
Impacts:	Not reported
Other Impacts:	Not reported
Steps Taken:	Not reported
Steps Taken Description:	Not reported
System Components:	Not reported
Other System Components:	Not reported
Cause Of Event:	Not reported
Corrective Action Taken:	Not reported
Weather Status:	No

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Precipitation (Wet):	0
Discharge Type:	Not reported
Discharge Volume:	0
Unknown Discharge (Y/N):	N
Site Name:	JAMES RIVER STP
Closure Date:	08/09/2017
Orig. Call Incident Description:	Contractor released approximately 7100 gallons of Non-Potable Water onto the ground surface at the James River STP
Original Call Material Description:	Not reported
Original Call Location Description:	James River STP, 111 City Farm Road, Newport News, VA 23602
Incident Ongoing at time of Call:	No
Agencies Notified (Y/N):	N
Other Agencies:	Not reported
Permitted (Y/N):	Yes
Call Reported By Company Name:	HRSD
Call Property Owner Company Name:	Not reported
Call Property Owner Name:	Not reported
Site Summary:	Contractor released approximately 7100 gallons of Non-Potable Water onto the ground surface at the James River STP

Name:	Not reported
Address:	111 CITY FARM RD
City,State,Zip:	NEWPORT NEWS, VA 23602
City,State,Zip:	NEWPORT NEWS, VA 23602
Fips City/County:	700/Newport News City
Status:	Closed
Reference Id:	59250
IR Number:	2016-T-3320
Associated IR:	Not reported
Incident Date:	05/04/2016
Call Received Date:	05/05/2016
Closure Comments:	5-day letter received. NFA at this time.
Threat To:	Ground Water
Terrorism (Y/N):	N
Characterize Incident:	Accidental
Incident Type:	SSO(Water), Water(Water)
Incident Subtype:	SSO * Water
Materials:	Waste Water
Effect To Receptor:	Impacted
Water Body:	James River
Low Quantity To Water:	0
High Quantity To Water:	500
Quantity Units:	Gallons
Other Receptors:	Not reported
RP Company:	HRSD
RP Name:	JBattersby
Property Owner:	Not reported
Property Company:	Not reported
Duration Of Event (Hrs):	0
Impacts:	Not reported
Other Impacts:	Not reported
Steps Taken:	Not reported
Steps Taken Description:	Not reported
System Components:	Not reported
Other System Components:	Not reported
Cause Of Event:	Not reported
Corrective Action Taken:	Not reported

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Weather Status: No
Precipitation (Wet): 0
Discharge Type: Not reported
Discharge Volume: 0
Unknown Discharge (Y/N): N
Site Name: SSO - UNTREATED WASTE WATER
Closure Date: 05/20/2016
Orig. Call Incident Description: 500 GALLONS OF UNTREATED WATER RELEASE FROM PLANT DO TO MECHANICAL FAILURE: FLOW RATE 50 GPM, RELEASE BEGAN AT 2243 HRS, ENDED AT 22:53 HRS. UNTREATED WATER RELEASED INTO STORM DRAINAGE, WHICH FEEDS INTO UN-NAMED CREEK, AND THEN INTO JAMES RIVER. LEAK SECURED, NO STATE RESOURCES REQUESTED. REPORT ONLY
Original Call Material Description: UNTREATED WASTE WATER
Original Call Location Description: 111 CITY FARM RD, NEWPORT NEWS VA 23602
Incident Ongoing at time of Call: No
Agencies Notified (Y/N): Not reported
Other Agencies: Not reported
Permitted (Y/N): No
Call Reported By Company Name: HRSD
Call Property Owner Company Name: Not reported
Call Property Owner Name: Not reported
Site Summary: 500 GALLONS OF UNTREATED WATER RELEASE FROM PLANT DO TO MECHANICAL FAILURE: FLOW RATE 50 GPM, RELEASE BEGAN AT 2243 HRS, ENDED AT 22:53 HRS. UNTREATED WATER RELEASED INTO STORM DRAINAGE, WHICH FEEDS INTO UN-NAMED CREEK, AND THEN INTO JAMES RIVER. LEAK SECURED, NO STATE RESOURCES REQUESTED. REPORT ONLY

US AIRS MINOR:
Envid: 1004789410
Region Code: 03
Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
D and B Number: Not reported
Primary SIC Code: Not reported
NAICS Code: 221320
Default Air Classification Code: MIN
Facility Type of Ownership Code: NON
Air CMS Category Code: Not reported
HPV Status: Not reported

US AIRS MINOR:
Region Code: 03
Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
Air Operating Status Code: OPR
Default Air Classification Code: MIN
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2015-02-19 00:00:00
Activity Status Date: 2015-03-31 00:00:00
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 03
Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
Air Operating Status Code: OPR

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Default Air Classification Code: MIN
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2016-06-21 00:00:00
Activity Status Date: 2016-07-14 00:00:00
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 03
Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
Air Operating Status Code: OPR
Default Air Classification Code: MIN
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2016-07-15 00:00:00
Activity Status Date: 2016-07-22 00:00:00
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Active

Region Code: 03
Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
Air Operating Status Code: OPR
Default Air Classification Code: MIN
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 1991-07-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 03
Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
Air Operating Status Code: OPR
Default Air Classification Code: MIN
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 1994-02-15 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 03
Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
Air Operating Status Code: OPR
Default Air Classification Code: MIN
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 1995-06-01 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 03

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
Air Operating Status Code: OPR
Default Air Classification Code: MIN
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 1996-01-30 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 03
Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
Air Operating Status Code: OPR
Default Air Classification Code: MIN
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 1997-02-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 03
Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
Air Operating Status Code: OPR
Default Air Classification Code: MIN
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 1999-02-10 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 03
Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
Air Operating Status Code: OPR
Default Air Classification Code: MIN
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2003-02-07 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 03
Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
Air Operating Status Code: OPR
Default Air Classification Code: MIN
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2003-08-26 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Activity Status: Not reported

Region Code: 03
Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
Air Operating Status Code: OPR
Default Air Classification Code: MIN
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-03-13 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 03
Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
Air Operating Status Code: OPR
Default Air Classification Code: MIN
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2009-09-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

Region Code: 03
Programmatic ID: AIR VA0000005170000073
Facility Registry ID: 110002030962
Air Operating Status Code: OPR
Default Air Classification Code: MIN
Air Program: State Implementation Plan for National Primary and Secondary Ambient Air Quality Standards
Activity Date: 2012-02-21 00:00:00
Activity Status Date: Not reported
Activity Group: Compliance Monitoring
Activity Type: Inspection/Evaluation
Activity Status: Not reported

VA Financial Assurance 1:
Name: JAMES RIVER TREATMENT PLANT
Address: 111 CITY FARM RD
Address 2: Not reported
City,State,Zip: NEWPORT NEWS, VA 23602
Facility ID: 5016809
Owner Name: HRSD - Hampton Roads Sanitation District
ROF Own Id: 33681
Tank Type: UST
Mechanism: Financial Test
Gallonage: 247954
Per Occurence: 5000
Third Party: 15000
Annual Aggregate: 20000
In Compliance: Not reported
Total Capacity: 2500
CEDS Facility Name: HRSD - James River Sewage Treatment Plant
Tank Status: CURR IN USE

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Active Federally Regualted UST: Y

Name:	JAMES RIVER TREATMENT PLANT
Address:	111 CITY FARM RD
Address 2:	Not reported
City,State,Zip:	NEWPORT NEWS, VA 23602
Facility ID:	5016809
Owner Name:	HRSD - Hampton Roads Sanitation District
ROF Own Id:	33681
Tank Type:	UST
Mechanism:	Financial Test
Gallonage:	247954
Per Occurence:	5000
Third Party:	15000
Annual Aggregate:	20000
In Compliance:	Not reported
Total Capacity:	20000
CEDS Facility Name:	HRSD - James River Sewage Treatment Plant
Tank Status:	CURR IN USE
Active Federally Regualted UST:	Y

TIER 2:

Facility ID:	Not reported
CAS Number:	1310-73-2
SIC Code:	4952
NAICS:	Not reported
Entered Chemical Name:	SODIUM HYDROXIDE
Average Amt Code:	4
Owner Name:	HRSD
Owner Phone:	757-460-2261
Contact Type:	Not reported

Facility ID:	Not reported
CAS Number:	7681-52-9
SIC Code:	4952
NAICS:	Not reported
Entered Chemical Name:	SODIUM HYPOCHLORITE
Average Amt Code:	4
Owner Name:	HRSD
Owner Phone:	757-460-2261
Contact Type:	Not reported

Facility ID:	Not reported
CAS Number:	7647-01-0
SIC Code:	4952
NAICS:	Not reported
Entered Chemical Name:	MURIATIC ACID
Average Amt Code:	4
Owner Name:	HRSD
Owner Phone:	757-460-2261
Contact Type:	Not reported

Facility ID:	Not reported
CAS Number:	7705-08-0
SIC Code:	4952
NAICS:	Not reported
Entered Chemical Name:	FERRIC CHLORIDE

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

Average Amt Code: 5
Owner Name: HRSD
Owner Phone: 757-460-2261
Contact Type: Not reported

Facility ID: Not reported
CAS Number: Not reported
SIC Code: 4952
NAICS: Not reported
Entered Chemical Name: POLYDYNE SE-746
Average Amt Code: 4
Owner Name: HRSD
Owner Phone: 757-460-2261
Contact Type: Not reported

Facility ID: Not reported
CAS Number: Not reported
SIC Code: 4952
NAICS: Not reported
Entered Chemical Name: POLYDYNE FLOFOAM 476
Average Amt Code: 3
Owner Name: HRSD
Owner Phone: 757-460-2261
Contact Type: Not reported

Facility ID: Not reported
CAS Number: Not reported
SIC Code: 4952
NAICS: Not reported
Entered Chemical Name: CLARIFLOC A-3330 POLYMER
Average Amt Code: 4
Owner Name: HRSD
Owner Phone: 757-460-2261
Contact Type: Not reported

Facility ID: Not reported
CAS Number: Not reported
SIC Code: 4952
NAICS: Not reported
Entered Chemical Name: POLYDYNE C-6266
Average Amt Code: 3
Owner Name: HRSD
Owner Phone: 757-460-2261
Contact Type: Not reported

Facility ID: Not reported
CAS Number: 8008-20-6
SIC Code: 4952
NAICS: Not reported
Entered Chemical Name: DIESEL FUEL
Average Amt Code: 4
Owner Name: HRSD
Owner Phone: 757-460-2261
Contact Type: Not reported

Facility ID: Not reported
CAS Number: 8006-61-9

JAMES RIVER TREATMENT PLANT (Continued) **1004789410**

SIC Code: 4952
NAICS: Not reported
Entered Chemical Name: GASOLINE, UNLEADED
Average Amt Code: 3
Owner Name: HRSD
Owner Phone: 757-460-2261
Contact Type: Not reported

Facility ID: Not reported
CAS Number: 68476-34-6
SIC Code: 4952
NAICS: Not reported
Entered Chemical Name: FUEL OIL, NO 2
Average Amt Code: 4
Owner Name: HRSD
Owner Phone: 757-460-2261
Contact Type: Not reported

Facility ID: Not reported
CAS Number: 74-98-6
SIC Code: 4952
NAICS: Not reported
Entered Chemical Name: PROPANE
Average Amt Code: 3
Owner Name: HRSD
Owner Phone: 757-460-2261
Contact Type: Not reported

Facility ID: Not reported
CAS Number: 7631-90-5
SIC Code: 4952
NAICS: Not reported
Entered Chemical Name: SODIUM BISULFITE (40% SOLUTION)
Average Amt Code: 4
Owner Name: HRSD
Owner Phone: 757-460-2261
Contact Type: Not reported

Facility ID: Not reported
CAS Number: 1336-21-6
SIC Code: 4952
NAICS: Not reported
Entered Chemical Name: AMMONIA, AQUA
Average Amt Code: 3
Owner Name: HRSD
Owner Phone: 757-460-2261
Contact Type: Not reported

A2
ESE
< 1/8
0.112 mi.
591 ft.

NEWPORT NEWS CITY - CITY FARM
100 CITY FARM RD
NEWPORT NEWS, VA 23607

Site 1 of 2 in cluster A

LUST **S105566748**
LTANKS **N/A**

Relative:
Higher

Actual:
26 ft.

LUST REG TD:

Region:	TD
Region Code:	TRO
Facility ID:	200000064560
Facility Status:	**Closed**
Completed Date:	06/24/2002
Pollution Complaint Num:	20025102
Fed Regulated Tank:	Yes
Phase Code:	RR
Event Description:	Release Reported
Comments:	Release reported

Region:	TD
Region Code:	TRO
Facility ID:	200000064560
Facility Status:	**Closed**
Completed Date:	10/09/2003
Pollution Complaint Num:	20025102
Fed Regulated Tank:	Yes
Phase Code:	CLOSURE
Event Description:	Case Closure Date - Letter Sent
Comments:	Case closed, no further assessment letter sent

LTANKS:

Name:	NEWPORT NEWS CITY - CITY FARM
Address:	100 CITY FARM RD
City,State,Zip:	NEWPORT NEWS, VA 23607
City,State,Zip:	NEWPORT NEWS, VA 23607
Region:	TRO
CEDS Facility Id:	200000064560
Case Status:	**Closed**
Pollution Complaint #:	20025102
Reported:	06/24/2002
Case Closed Date:	10/09/2003
Program:	RP Lead
Federally Regulated UST (Y/N):	Y
Regulated Petroleum UST (1):	Y
Excluded UST (1):	N
Deferred UST (1):	N
Partially Deferred UST (1):	N
Exempt 1 UST (2):	N
Exempt 2 Heating Oil UST (2):	N
Small Heating Oil AST (2):	N
Regulated AST (3):	N
Unregulated AST (3):	N
Other Y/N:	N
Unknown Y/N:	N
Other Description:	Not reported
Heating Oil Category:	Not reported

A3 **CITY FARM MAINTENANCE** **UST** **U003691946**
ESE **100 CITY FARM RD** **N/A**
< 1/8 **NEWPORT NEWS, VA 23607**
0.112 mi.
591 ft. **Site 2 of 2 in cluster A**

Relative:
Higher

Actual:
26 ft.

Facility:

Name:	CITY FARM MAINTENANCE
Address:	100 CITY FARM RD
City,State,Zip:	NEWPORT NEWS, VA 23607
Facility Id:	5020757
Facility Type:	LOCAL
CEDS Facility ID:	200000064560

Owner:

Owner Id:	26609
Owner Name:	City of Newport News
Owner Address:	2400 Washington Ave
Owner Address2:	Not reported
Owner City, State, Zip:	Newport News, VA 23607
Owner Type:	LOCAL
Number of Active AST:	0
Number of Active UST:	0
Number of Inactive AST:	0
Number of Inactive UST:	4

Owner Id:	36739
Owner Name:	City of Newport News Dept of Public Utilities
Owner Address:	700 Town Center Dr Ste 500
Owner Address2:	Not reported
Owner City, State, Zip:	Newport News, VA 23606
Owner Type:	LOCAL
Number of Active AST:	0
Number of Active UST:	0
Number of Inactive AST:	0
Number of Inactive UST:	4

UST:

Facility ID:	5020757
Federally Regulated:	Yes
Tank Number:	Tank10
Tank Capacity:	1000
Tank Contents:	DIESEL
Tank Status:	**REM FROM GRD**
Tank Type:	UST

Tank Material:

Install Date:	Not reported
Tank Materials: Bare Steel	No
Tank Materials: Cath Protect Steel	No
Tank Materials: Epoxy Steel	No
Tank Materials: Fiberglass	Yes
Tank Materials: Concrete	No
Tank Materials: Composite	No
Tank Materials: Double Walled	No
Tank Materials: Lined Interior	No
Tank Materials: Excav Liner	No
Tank Materials: Insulated Tank Jacket	No
Tank Materials: Repaired	No

CITY FARM MAINTENANCE (Continued) **U003691946**

Tank Materials: Unknown	No
Tank Materials: Other	No
Tank Materials: Other Note	Not reported

Release Detection:

Tank Release Detection: Leak Deferred	No
Tank Release Detection: Manual Gauge	No
Tank Release Detection: Auto Gauge	Yes
Tank Release Detection:Tank Tightness	No
Tank Release Detection: Vapor Monitor	No
Tank Release Detection: Inventory	No
Tank Release Detection: Stat Invent Recon	No
Tank Release Detection: Spill Install	Yes
Tank Release Detection: Overfill Install	Yes
Tank Release Detection: Groundwater	No
Tank Release Detection: Int Sec Containment	No
Tank Release Detection: Int Double Walled	No
Tank Release Detection: Other Method	No
Tank Release Detection: Other Note	Not reported
Pipe Release Detection: Leak Deferred	No
Pipe Release Detection: Autoleak	Not reported
Pipe Release Detection: Line Tightness	No
Pipe Release Detection: Stat Invent Recon	No
Pipe Release Detection: Groundwater	No
Pipe Release Detection: Int Sec Containment	No
Pipe Release Det: Interior Double Walled	No
Pipe Release Detection: Other Method	Yes
Pipe Release Detection: Other Note	Suction:no valve at tank

Pipe Type:	NO VALVE SUCTION
Pipe Materials: Bare Steel	No
Pipe Materials: Galvanized Steel	No
Pipe Materials: Copper	No
Pipe Materials: Fiberglass	Yes
Pipe Materials: Cath Protect	No
Pipe Materials: Double Walled	No
Pipe Materials: Sec Containment	No
Pipe Materials: Repaired	No
Pipe Materials: Unknown	No
Pipe Materials: Other	No
Pipe Materials: Other Note	Not reported

Facility ID:	5020757
Federally Regulated:	Yes
Tank Number:	Tank11
Tank Capacity:	2000
Tank Contents:	DIESEL
Tank Status:	**REM FROM GRD**
Tank Type:	UST

Tank Material:

Install Date:	11/15/2000
Tank Materials: Bare Steel	No
Tank Materials: Cath Protect Steel	No
Tank Materials: Epoxy Steel	No

CITY FARM MAINTENANCE (Continued) **U003691946**

Tank Materials: Fiberglass	Yes
Tank Materials: Concrete	No
Tank Materials: Composite	No
Tank Materials: Double Walled	No
Tank Materials: Lined Interior	No
Tank Materials: Excav Liner	No
Tank Materials: Insulated Tank Jacket	No
Tank Materials: Repaired	No
Tank Materials: Unknown	No
Tank Materials: Other	No
Tank Materials: Other Note	Not reported

Release Detection:

Tank Release Detection: Leak Deferred	No
Tank Release Detection: Manual Gauge	No
Tank Release Detection: Auto Gauge	Yes
Tank Release Detection:Tank Tightness	No
Tank Release Detection: Vapor Monitor	No
Tank Release Detection: Inventory	No
Tank Release Detection: Stat Invent Recon	No
Tank Release Detection: Spill Install	Yes
Tank Release Detection: Overfill Install	Yes
Tank Release Detection: Groundwater	No
Tank Release Detection: Int Sec Containment	No
Tank Release Detection: Int Double Walled	No
Tank Release Detection: Other Method	No
Tank Release Detection: Other Note	Not reported
Pipe Release Detection: Leak Deferred	No
Pipe Release Detection: Autoleak	Not reported
Pipe Release Detection: Line Tightness	No
Pipe Release Detection: Stat Invent Recon	No
Pipe Release Detection: Groundwater	No
Pipe Release Detection: Int Sec Containment	No
Pipe Release Det: Interior Double Walled	No
Pipe Release Detection: Other Method	Yes
Pipe Release Detection: Other Note	Suction:no valve at tank

Pipe Type:	NO VALVE SUCTION
Pipe Materials: Bare Steel	No
Pipe Materials: Galvanized Steel	No
Pipe Materials: Copper	No
Pipe Materials: Fiberglass	Yes
Pipe Materials: Cath Protect	No
Pipe Materials: Double Walled	No
Pipe Materials: Sec Containment	No
Pipe Materials: Repaired	No
Pipe Materials: Unknown	No
Pipe Materials: Other	No
Pipe Materials: Other Note	Not reported

Facility ID:	5020757
Federally Regulated:	Yes

Tank Number:	Tank12
Tank Capacity:	2000
Tank Contents:	GASOLINE

CITY FARM MAINTENANCE (Continued) **U003691946**

Tank Status:	**REM FROM GRD**
Tank Type:	UST
Tank Material:	
Install Date:	Not reported
Tank Materials: Bare Steel	No
Tank Materials: Cath Protect Steel	No
Tank Materials: Epoxy Steel	No
Tank Materials: Fiberglass	Yes
Tank Materials: Concrete	No
Tank Materials: Composite	No
Tank Materials: Double Walled	No
Tank Materials: Lined Interior	No
Tank Materials: Excav Liner	No
Tank Materials: Insulated Tank Jacket	No
Tank Materials: Repaired	No
Tank Materials: Unknown	No
Tank Materials: Other	No
Tank Materials: Other Note	Not reported
Release Detection:	
Tank Release Detection: Leak Deferred	No
Tank Release Detection: Manual Gauge	No
Tank Release Detection: Auto Gauge	Yes
Tank Release Detection:Tank Tightness	No
Tank Release Detection: Vapor Monitor	No
Tank Release Detection: Inventory	No
Tank Release Detection: Stat Invent Recon	No
Tank Release Detection: Spill Install	Yes
Tank Release Detection: Overfill Install	Yes
Tank Release Detection: Groundwater	No
Tank Release Detection: Int Sec Containment	No
Tank Release Detection: Int Double Walled	No
Tank Release Detection: Other Method	No
Tank Release Detection: Other Note	Not reported
Pipe Release Detection: Leak Deferred	No
Pipe Release Detection: Autoleak	Not reported
Pipe Release Detection: Line Tightness	No
Pipe Release Detection: Stat Invent Recon	No
Pipe Release Detection: Groundwater	No
Pipe Release Detection: Int Sec Containment	No
Pipe Release Det: Interior Double Walled	No
Pipe Release Detection: Other Method	Yes
Pipe Release Detection: Other Note	Suction:no valve at tank
Pipe Type:	NO VALVE SUCTION
Pipe Materials: Bare Steel	No
Pipe Materials: Galvanized Steel	No
Pipe Materials: Copper	No
Pipe Materials: Fiberglass	Yes
Pipe Materials: Cath Protect	No
Pipe Materials: Double Walled	No
Pipe Materials: Sec Containment	No
Pipe Materials: Repaired	No
Pipe Materials: Unknown	No
Pipe Materials: Other	No
Pipe Materials: Other Note	Not reported

CITY FARM MAINTENANCE (Continued) **U003691946**

Facility ID:	5020757
Federally Regulated:	Yes
Tank Number:	Tank9
Tank Capacity:	2000
Tank Contents:	GASOLINE
Tank Status:	**REM FROM GRD**
Tank Type:	UST

Tank Material:

Install Date:	11/15/2000
Tank Materials: Bare Steel	No
Tank Materials: Cath Protect Steel	No
Tank Materials: Epoxy Steel	No
Tank Materials: Fiberglass	Yes
Tank Materials: Concrete	No
Tank Materials: Composite	No
Tank Materials: Double Walled	No
Tank Materials: Lined Interior	No
Tank Materials: Excav Liner	No
Tank Materials: Insulated Tank Jacket	No
Tank Materials: Repaired	No
Tank Materials: Unknown	No
Tank Materials: Other	No
Tank Materials: Other Note	Not reported

Release Detection:

Tank Release Detection: Leak Deferred	No
Tank Release Detection: Manual Gauge	No
Tank Release Detection: Auto Gauge	Yes
Tank Release Detection:Tank Tightness	No
Tank Release Detection: Vapor Monitor	No
Tank Release Detection: Inventory	No
Tank Release Detection: Stat Invent Recon	No
Tank Release Detection: Spill Install	Yes
Tank Release Detection: Overfill Install	Yes
Tank Release Detection: Groundwater	No
Tank Release Detection: Int Sec Containment	No
Tank Release Detection: Int Double Walled	No
Tank Release Detection: Other Method	No
Tank Release Detection: Other Note	Not reported
Pipe Release Detection: Leak Deferred	Not reported
Pipe Release Detection: Autoleak	Not reported
Pipe Release Detection: Line Tightness	No
Pipe Release Detection: Stat Invent Recon	No
Pipe Release Detection: Groundwater	No
Pipe Release Detection: Int Sec Containment	No
Pipe Release Det: Interior Double Walled	No
Pipe Release Detection: Other Method	Yes
Pipe Release Detection: Other Note	Suction:no valve at tank
Pipe Type:	NO VALVE SUCTION
Pipe Materials: Bare Steel	No
Pipe Materials: Galvanized Steel	No
Pipe Materials: Copper	No
Pipe Materials: Fiberglass	Yes
Pipe Materials: Cath Protect	No

CITY FARM MAINTENANCE (Continued) **U003691946**

Pipe Materials: Double Walled	No
Pipe Materials: Sec Containment	No
Pipe Materials: Repaired	No
Pipe Materials: Unknown	No
Pipe Materials: Other	No
Pipe Materials: Other Note	Not reported

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4 **USHMAN PROPERTY** **LTANKS** **S117273694**
NE **360 OLD MENCHVILLE RD** **N/A**
1/4-1/2 **NEWPORT NEWS, VA 23602**
0.299 mi.
1579 ft.

Relative:
Higher

Actual:
31 ft.

LTANKS:

Name:	USHMAN PROPERTY
Address:	360 OLD MENCHVILLE RD
City,State,Zip:	NEWPORT NEWS, VA 23602
City,State,Zip:	NEWPORT NEWS, VA 23602
Region:	TRO
CEDS Facility Id:	200000878460
Case Status:	**Closed**
Pollution Complaint #:	20155009
Reported:	07/10/2014
Case Closed Date:	07/17/2014
Program:	RP Lead
Federally Regulated UST (Y/N):	N
Regulated Petroleum UST (1):	N
Excluded UST (1):	N
Deferred UST (1):	N
Partially Deferred UST (1):	N
Exempt 1 UST (2):	N
Exempt 2 Heating Oil UST (2):	Y
Small Heating Oil AST (2):	N
Regulated AST (3):	N
Unregulated AST (3):	N
Other Y/N:	N
Unknown Y/N:	N
Other Description:	Not reported
Heating Oil Category:	NFA

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5 **MENCHVILLE MARINE SUPPLY CORP** **LUST** **1000171213**
East **494 MENCHVILLE ROAD** **LTANKS** **VAD023821663**
1/4-1/2 **NEWPORT NEWS, VA 23602** **UST**
0.326 mi. **RCRA NonGen / NLR**
1722 ft. **FINDS**
ECHO

Relative:
Lower

Actual:
15 ft.

LUST REG TD:

Region:	TD
Region Code:	TRO
Facility ID:	200000197895
Facility Status:	**Closed**
Completed Date:	01/18/2000
Pollution Complaint Num:	20005171
Fed Regulated Tank:	Yes

MENCHVILLE MARINE SUPPLY CORP (Continued) **1000171213**

Phase Code:	RR
Event Description:	Release Reported
Comments:	Release Reported
Region:	TD
Region Code:	TRO
Facility ID:	200000197895
Facility Status:	**Closed**
Completed Date:	10/10/2006
Pollution Complaint Num:	20005171
Fed Regulated Tank:	Yes
Phase Code:	CLOSURE
Event Description:	Case Closure Date - Letter Sent
Comments:	Case Closed

LTANKS:

Name:	MENCHVILLE MARINA
Address:	494 B MENCHVILLE MARINA
City,State,Zip:	NEWPORT NEWS, VA 23607
City,State,Zip:	NEWPORT NEWS, VA 23607
Region:	TRO
CEDS Facility Id:	200000197895
Case Status:	**Closed**
Pollution Complaint #:	20005171
Reported:	01/18/2000
Case Closed Date:	10/10/2006
Program:	RP Lead
Federally Regulated UST (Y/N):	Y
Regulated Petroleum UST (1):	Y
Excluded UST (1):	N
Deferred UST (1):	N
Partially Deferred UST (1):	N
Exempt 1 UST (2):	N
Exempt 2 Heating Oil UST (2):	N
Small Heating Oil AST (2):	N
Regulated AST (3):	N
Unregulated AST (3):	N
Other Y/N:	N
Unknown Y/N:	N
Other Description:	Not reported
Heating Oil Category:	Not reported

Facility:

Name:	MENCHVILLE MARINA
Address:	494 B MENCHVILLE MARINA
City,State,Zip:	NEWPORT NEWS, VA 23607
Facility Id:	5037646
Facility Type:	COMMERCIAL
CEDS Facility ID:	200000197895

Owner:

Owner Id:	26609
Owner Name:	City of Newport News
Owner Address:	2400 Washington Ave
Owner Address2:	Not reported
Owner City, State, Zip:	Newport News, VA 23607
Owner Type:	LOCAL

MENCHVILLE MARINE SUPPLY CORP (Continued) **1000171213**

Number of Active AST:	0
Number of Active UST:	0
Number of Inactive AST:	0
Number of Inactive UST:	3
Owner Id:	29911
Owner Name:	City of Newport News Dept of Public Works
Owner Address:	513 Oyster Point Rd
Owner Address2:	Not reported
Owner City, State, Zip:	Newport News, VA 23602
Owner Type:	LOCAL
Number of Active AST:	0
Number of Active UST:	0
Number of Inactive AST:	0
Number of Inactive UST:	3

UST:

Facility ID:	5037646
Federally Regulated:	Yes
Tank Number:	1
Tank Capacity:	2000
Tank Contents:	GASOLINE
Tank Status:	**CLS IN GRD**
Tank Type:	UST

Tank Material:

Install Date:	Not reported
Tank Materials: Bare Steel	No
Tank Materials: Cath Protect Steel	No
Tank Materials: Epoxy Steel	No
Tank Materials: Fiberglass	No
Tank Materials: Concrete	No
Tank Materials: Composite	No
Tank Materials: Double Walled	No
Tank Materials: Lined Interior	No
Tank Materials: Excav Liner	No
Tank Materials: Insulated Tank Jacket	No
Tank Materials: Repaired	No
Tank Materials: Unknown	Yes
Tank Materials: Other	No
Tank Materials: Other Note	Not reported

Release Detection:

Tank Release Detection: Leak Deferred	No
Tank Release Detection: Manual Gauge	No
Tank Release Detection: Auto Gauge	No
Tank Release Detection:Tank Tightness	No
Tank Release Detection: Vapor Monitor	No
Tank Release Detection: Inventory	No
Tank Release Detection: Stat Invent Recon	No
Tank Release Detection: Spill Install	No
Tank Release Detection: Overfill Install	No
Tank Release Detection: Groundwater	No
Tank Release Detection: Int Sec Containment	No
Tank Release Detection: Int Double Walled	No
Tank Release Detection: Other Method	No

MENCHVILLE MARINE SUPPLY CORP (Continued) **1000171213**

Tank Release Detection: Other Note	Not reported
Pipe Release Detection: Leak Deferred	Not reported
Pipe Release Detection: Autoleak	Not reported
Pipe Release Detection: Line Tightness	No
Pipe Release Detection: Stat Invent Recon	No
Pipe Release Detection: Groundwater	No
Pipe Release Detection: Int Sec Containment	No
Pipe Release Det: Interior Double Walled	No
Pipe Release Detection: Other Method	No
Pipe Release Detection: Other Note	Not reported

Pipe Type:	Not reported
Pipe Materials: Bare Steel	No
Pipe Materials: Galvanized Steel	No
Pipe Materials: Copper	No
Pipe Materials: Fiberglass	No
Pipe Materials: Cath Protect	No
Pipe Materials: Double Walled	No
Pipe Materials: Sec Containment	No
Pipe Materials: Repaired	No
Pipe Materials: Unknown	Yes
Pipe Materials: Other	No
Pipe Materials: Other Note	Not reported

Facility ID:	5037646
Federally Regulated:	Yes

Tank Number:	2
Tank Capacity:	3000
Tank Contents:	DIESEL
Tank Status:	**CLS IN GRD**
Tank Type:	UST

Tank Material:

Install Date:	Not reported
Tank Materials: Bare Steel	No
Tank Materials: Cath Protect Steel	No
Tank Materials: Epoxy Steel	No
Tank Materials: Fiberglass	No
Tank Materials: Concrete	No
Tank Materials: Composite	No
Tank Materials: Double Walled	No
Tank Materials: Lined Interior	No
Tank Materials: Excav Liner	No
Tank Materials: Insulated Tank Jacket	No
Tank Materials: Repaired	No
Tank Materials: Unknown	Yes
Tank Materials: Other	No
Tank Materials: Other Note	Not reported

Release Detection:

Tank Release Detection: Leak Deferred	No
Tank Release Detection: Manual Gauge	No
Tank Release Detection: Auto Gauge	No
Tank Release Detection:Tank Tightness	No
Tank Release Detection: Vapor Monitor	No

MENCHVILLE MARINE SUPPLY CORP (Continued) **1000171213**

Tank Release Detection: Inventory	No
Tank Release Detection: Stat Invent Recon	No
Tank Release Detection: Spill Install	No
Tank Release Detection: Overfill Install	No
Tank Release Detection: Groundwater	No
Tank Release Detection: Int Sec Containment	No
Tank Release Detection: Int Double Walled	No
Tank Release Detection: Other Method	No
Tank Release Detection: Other Note	Not reported
Pipe Release Detection: Leak Deferred	Not reported
Pipe Release Detection: Autoleak	Not reported
Pipe Release Detection: Line Tightness	No
Pipe Release Detection: Stat Invent Recon	No
Pipe Release Detection: Groundwater	No
Pipe Release Detection: Int Sec Containment	No
Pipe Release Det: Interior Double Walled	No
Pipe Release Detection: Other Method	No
Pipe Release Detection: Other Note	Not reported

Pipe Type:	Not reported
Pipe Materials: Bare Steel	No
Pipe Materials: Galvanized Steel	No
Pipe Materials: Copper	No
Pipe Materials: Fiberglass	No
Pipe Materials: Cath Protect	No
Pipe Materials: Double Walled	No
Pipe Materials: Sec Containment	No
Pipe Materials: Repaired	No
Pipe Materials: Unknown	Yes
Pipe Materials: Other	No
Pipe Materials: Other Note	Not reported

Facility ID:	5037646
Federally Regulated:	Yes

Tank Number:	3
Tank Capacity:	4000
Tank Contents:	GASOLINE
Tank Status:	**CLS IN GRD**
Tank Type:	UST

Tank Material:

Install Date:	Not reported
Tank Materials: Bare Steel	No
Tank Materials: Cath Protect Steel	No
Tank Materials: Epoxy Steel	No
Tank Materials: Fiberglass	No
Tank Materials: Concrete	No
Tank Materials: Composite	No
Tank Materials: Double Walled	No
Tank Materials: Lined Interior	No
Tank Materials: Excav Liner	No
Tank Materials: Insulated Tank Jacket	No
Tank Materials: Repaired	No
Tank Materials: Unknown	Yes
Tank Materials: Other	No
Tank Materials: Other Note	Not reported

MENCHVILLE MARINE SUPPLY CORP (Continued) **1000171213**

Release Detection:

Tank Release Detection: Leak Deferred	No
Tank Release Detection: Manual Gauge	No
Tank Release Detection: Auto Gauge	No
Tank Release Detection:Tank Tightness	No
Tank Release Detection: Vapor Monitor	No
Tank Release Detection: Inventory	No
Tank Release Detection: Stat Invent Recon	No
Tank Release Detection: Spill Install	No
Tank Release Detection: Overfill Install	No
Tank Release Detection: Groundwater	No
Tank Release Detection: Int Sec Containment	No
Tank Release Detection: Int Double Walled	No
Tank Release Detection: Other Method	No
Tank Release Detection: Other Note	Not reported
Pipe Release Detection: Leak Deferred	Not reported
Pipe Release Detection: Autoleak	Not reported
Pipe Release Detection: Line Tightness	No
Pipe Release Detection: Stat Invent Recon	No
Pipe Release Detection: Groundwater	No
Pipe Release Detection: Int Sec Containment	No
Pipe Release Det: Interior Double Walled	No
Pipe Release Detection: Other Method	No
Pipe Release Detection: Other Note	Not reported

Pipe Type:	Not reported
Pipe Materials: Bare Steel	No
Pipe Materials: Galvanized Steel	No
Pipe Materials: Copper	No
Pipe Materials: Fiberglass	No
Pipe Materials: Cath Protect	No
Pipe Materials: Double Walled	No
Pipe Materials: Sec Containment	No
Pipe Materials: Repaired	No
Pipe Materials: Unknown	Yes
Pipe Materials: Other	No
Pipe Materials: Other Note	Not reported

RCRA NonGen / NLR:

Date form received by agency:	1980-08-18 00:00:00.0
Facility name:	MENCHVILLE MARINE SUPPLY CORP
Facility address:	494 MENCHVILLE ROAD NEWPORT NEWS, VA 23602
EPA ID:	VAD023821663
Contact:	STEPHEN_A PEROK
Contact address:	494 MENCHVILLE ROAD NEWPORT NEWS, VA 23602
Contact country:	US
Contact telephone:	804-877-0207
Contact email:	Not reported
EPA Region:	03
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

MENCHVILLE MARINE SUPPLY CORP (Continued) **1000171213**

Owner/Operator Summary:

Owner/operator name:	STEVE PEROK
Owner/operator address:	OWNERSTREET
	OWNERCITY, AK 99999
Owner/operator country:	Not reported
Owner/operator telephone:	215-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	OPERNAME
Owner/operator address:	OPERSTREET
	OPERCITY, AK 99999
Owner/operator country:	Not reported
Owner/operator telephone:	215-555-1212
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

FINDS:

Registry ID:	110005220652
Facility URL:	http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110005220652

Environmental Interest/Information System:

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and

MENCHVILLE MARINE SUPPLY CORP (Continued) **1000171213**

corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1000171213
Registry ID:	110005220652
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110005220652
Name:	MENCHVILLE MARINE SUPPLY CORP
Address:	494 MENCHVILLE ROAD
City,State,Zip:	NEWPORT NEWS, VA 23602

Count: 1 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
NEWPORT NEWS	1003866208	OLD MENCHVILLE LANDFILL	OLD MENCHVILLE LANDFILL	23602	SEMS-ARCHIVE

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: EPA
Telephone: N/A
Last EDR Contact: 03/04/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: EPA
Telephone: N/A
Last EDR Contact: 03/04/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: EPA
Telephone: N/A
Last EDR Contact: 03/04/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/04/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 11/04/2019
Date Data Arrived at EDR: 11/13/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 76

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 02/10/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 11/22/2019
Date Data Arrived at EDR: 11/22/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/20/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 11/22/2019
Date Data Arrived at EDR: 11/22/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/20/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/19/2019
Date Made Active in Reports: 03/06/2020
Number of Days to Update: 78

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

SHWS: This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: Department of Environmental Quality
Telephone: 804-698-4236
Last EDR Contact: 03/16/2020
Next Scheduled EDR Contact: 06/29/2020
Data Release Frequency: N/A

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Solid Waste Management Facilities

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/03/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 69

Source: Department of Environmental Quality
Telephone: 804-698-4238
Last EDR Contact: 03/02/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Semi-Annually

State and tribal leaking storage tank lists

LUST REG PD: Leaking Underground Storage Tank Sites

Leaking underground storage tank site locaitons. Includes: counties of Amelia, Brunswick, Charles City, Chesterfield, Dinwiddie, Essex, Gloucester, Goochland, Greensville, Hanover, Henrico, King and Queen, King William, Lancaster, Mathews, Middlesex, New Kent, Northumberland, Powhatan, Prince George, Richmond, Surry, Sussex, Westmoreland; cities of Colonial Heights, Emporia, Hopewell, Petersburg.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/04/2014
Date Made Active in Reports: 01/16/2015
Number of Days to Update: 43

Source: Department of Environmental Quality Piedmont Regional Office
Telephone: 804-527-5020
Last EDR Contact: 08/29/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: Quarterly

LUST REG WC: Leaking Underground Storage Tank List

Leaking underground storage tank site locations. Includes: counties of Alleghany, Bedford, Botetourt, Craig, Floyd, Franklin, Giles, Henry, Montgomery, Patrick, Pulaski, Roanoke; cities of Bedford, Clifton Forge, Covington, Martinsville, Radford, Roanoke, Salem.

Date of Government Version: 06/04/2015
Date Data Arrived at EDR: 06/05/2015
Date Made Active in Reports: 07/07/2015
Number of Days to Update: 32

Source: Department of Environmental Quality West Central Regional Office
Telephone: 540-562-6700
Last EDR Contact: 08/29/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: No Update Planned

LUST REG VA: Leaking Underground Storage Tank List

Leaking underground storage tank site locations. Includes: counties of Albemarle, Augusta, Bath, Clarke, Fluvanna, Frederick, Greene, Highland, Nelson, Page, Rockbridge, Rockingham, Shenandoah, Warren; cities of Buena Vista, Charlottesville, Harrisonburg, Lexington, Staunton, Waynesboro, Winchester.

Date of Government Version: 12/06/2011
Date Data Arrived at EDR: 12/08/2011
Date Made Active in Reports: 01/16/2012
Number of Days to Update: 39

Source: Department of Environmental Quality Valley Regional Office
Telephone: 540-574-7800
Last EDR Contact: 08/29/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: No Update Planned

LUST REG TD: Leaking Underground Storage Tank Sites

Leaking underground storage tank site locations. Includes: counties of Accomack, Isle of Wight, James City, Northampton, Southampton, York; cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, Williamsburg.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 09/16/2013
Number of Days to Update: 73

Source: Department of Environmental Quality Tidewater Regional Office
Telephone: trofoia@deq.vir
Last EDR Contact: 09/26/2016
Next Scheduled EDR Contact: 01/09/2017
Data Release Frequency: Quarterly

LUST REG SW: Leaking Underground Storage Tank Database

Leaking underground storage tank site locations. Includes: counties of Bland, Buchanan, Carroll, Dickenson, Grayson, Lee, Russell, Scott, Smyth, Tazewell, Washington, Wise, Wythe; cities of Bristol, Galax, Norton.

Date of Government Version: 07/15/2013
Date Data Arrived at EDR: 07/18/2013
Date Made Active in Reports: 09/16/2013
Number of Days to Update: 60

Source: Department of Environmental Quality Southwest Regional Office
Telephone: 276-676-4800
Last EDR Contact: 10/11/2016
Next Scheduled EDR Contact: 01/23/2017
Data Release Frequency: No Update Planned

LUST REG SC: Leaking Underground Storage Tanks

Leaking underground storage tank site locations. Includes: counties of Amherst, Appomattox, Buckingham, Campbell, Charlotte, Cumberland, Halifax, Lunenburg, Mecklenburg, Nottoway, Pittsylvania, Prince Deward; cities of Danville, Lynchburg.

Date of Government Version: 09/06/2013
Date Data Arrived at EDR: 09/06/2013
Date Made Active in Reports: 09/17/2013
Number of Days to Update: 11

Source: Department of Environmental Quality, South Central Region
Telephone: 434-582-5120
Last EDR Contact: 08/29/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: Semi-Annually

LUST REG NO: Leaking Underground Storage Tank Tracking Database

Leaking underground storage tank site locations. Includes: counties of Arlington, Caroline, Culpeper, Fairfax, Fauquier, King George, Loudoun, Louisa, Madison, Orange, Prince William, Rappahannock, Spotsylvania, Stafford; cities of Alexandria, Fairfax, Falls Church, Fredericksburg, Manassas, Manassas Park.

Date of Government Version: 05/18/2004
Date Data Arrived at EDR: 05/22/2004
Date Made Active in Reports: 07/09/2004
Number of Days to Update: 48

Source: Department of Environmental Quality Northern Regional Office
Telephone: 703-583-3800
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 10/15/2019
Date Data Arrived at EDR: 12/17/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 55
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/04/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/27/2020
Number of Days to Update: 85
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/03/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 72
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/11/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/10/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 67
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/02/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

LTANKS: Leaking Petroleum Storage Tanks
Includes releases of petroleum from underground storage tanks and aboveground storage tanks.

Date of Government Version: 11/04/2019
Date Data Arrived at EDR: 11/25/2019
Date Made Active in Reports: 02/03/2020
Number of Days to Update: 70

Source: Department of Environmental Quality
Telephone: 804-698-4010
Last EDR Contact: 02/26/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Quarterly

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 08/27/2019
Date Data Arrived at EDR: 08/28/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 75

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

UST: Registered Petroleum Storage Tanks
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 11/01/2019
Date Data Arrived at EDR: 11/25/2019
Date Made Active in Reports: 02/03/2020
Number of Days to Update: 70

Source: Department of Environmental Quality
Telephone: 804-698-4010
Last EDR Contact: 02/26/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Quarterly

AST: Registered Petroleum Storage Tanks
Registered Aboveground Storage Tanks.

Date of Government Version: 11/01/2019
Date Data Arrived at EDR: 11/25/2019
Date Made Active in Reports: 02/03/2020
Number of Days to Update: 70

Source: Department of Environmental Quality
Telephone: 804-698-4010
Last EDR Contact: 02/26/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/11/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/04/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/27/2020
Number of Days to Update: 85

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/03/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 72

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 10/11/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/02/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/10/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

ENG CONTROLS: Engineering Controls Sites Listing

A listing of sites with Engineering Controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/07/2020
Date Data Arrived at EDR: 01/08/2020
Date Made Active in Reports: 03/13/2020
Number of Days to Update: 65

Source: Department of Environmental Quality
Telephone: 804-698-4228
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Quarterly

INST CONTROL: Voluntary Remediation Program Database

Sites included in the Voluntary Remediation Program database that have deed restrictions.

Date of Government Version: 01/07/2020
Date Data Arrived at EDR: 01/08/2020
Date Made Active in Reports: 03/13/2020
Number of Days to Update: 65

Source: Department of Environmental Quality
Telephone: 804-698-4228
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Quarterly

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/18/2020
Next Scheduled EDR Contact: 07/06/2020
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VRP: Voluntary Remediation Program

The Voluntary Cleanup Program encourages owners of elected contaminated sites to take the initiative and conduct voluntary cleanups that meet state environmental standards.

Date of Government Version: 01/07/2020
Date Data Arrived at EDR: 01/08/2020
Date Made Active in Reports: 03/13/2020
Number of Days to Update: 65

Source: Department of Environmental Quality
Telephone: 804-698-4228
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Brownfields Site Specific Assessments

To qualify for Brownfields Assessment, the site must meet the Federal definition of a Brownfields and should have contaminant issues that need to be addressed and a redevelopment plan supported by the local government and community. Virginia's Department of Environmental Quality performs brownfields assessments under a cooperative agreement with the U.S. Environmental Protection Agency at no cost to communities, property owners or, prospective purchasers. The assessment is an evaluation of environmental impacts caused by previous site uses similar to a Phase II Environmental Assessment.

Date of Government Version: 10/21/2019
Date Data Arrived at EDR: 10/23/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 72

Source: Department of Environmental Quality
Telephone: 804-698-4207
Last EDR Contact: 01/23/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 03/06/2020
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/17/2020
Next Scheduled EDR Contact: 06/29/2020
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 01/27/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/13/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/21/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/13/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/21/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Quarterly

PFAS: Per- and Polyfluoroalkyl Substances

PFOS and PFOA stand for perfluorooctane sulfonate and perfluorooctanoic acid, respectively. Both are fluorinated organic chemicals, part of a larger family of compounds referred to as perfluoroalkyl substances (PFASs).

Date of Government Version: 10/07/2019
Date Data Arrived at EDR: 10/17/2019
Date Made Active in Reports: 01/06/2020
Number of Days to Update: 81

Source: Department of Environmental Quality
Telephone: 804-698-4336
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 03/05/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/05/2019
Date Data Arrived at EDR: 12/06/2019
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 70

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 12/06/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

SPILLS: Prep/Spills Database Listing

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment. PREP staff often work to assist local emergency responders, other state agencies, federal agencies, and responsible parties, as may be needed, to manage pollution incidents. Oil spills, fish kills, and hazardous materials spills are examples of incidents that may involve the DEQ's PREP Program.

Date of Government Version: 11/04/2019
Date Data Arrived at EDR: 11/25/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 71

Source: Department of Environmental Quality
Telephone: 804-698-4287
Last EDR Contact: 02/26/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Quarterly

SPILLS PC: Pollution Complaint Database

Pollution Complaints Database. The pollution reports contained in the PC database include the initial release reporting of Leaking Underground Storage Tanks and all other releases of petroleum to the environment as well as releases to state waters. The database is current through 12/1/93. Since that time, all spill and pollution reporting information has been collected and tracked through the DEQ regional offices.

Date of Government Version: 06/01/1996
Date Data Arrived at EDR: 10/22/1996
Date Made Active in Reports: 11/21/1996
Number of Days to Update: 30

Source: Department of Environmental Quality
Telephone: 804-698-4287
Last EDR Contact: 03/08/2010
Next Scheduled EDR Contact: 06/21/2010
Data Release Frequency: No Update Planned

SPILLS NO: PREP Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/29/2009
Date Made Active in Reports: 10/30/2009
Number of Days to Update: 31

Source: Department of Environmental Quality, Northern Region
Telephone: 703-583-3864
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

SPILLS PD: PREP Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 10/20/2009
Date Data Arrived at EDR: 10/29/2009
Date Made Active in Reports: 12/03/2009
Number of Days to Update: 35

Source: Department of Environmental Quality, Piedmont Region
Telephone: 804-527-5020
Last EDR Contact: 02/06/2012
Next Scheduled EDR Contact: 05/21/2012
Data Release Frequency: Quarterly

SPILLS SW: Reportable Spills

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 01/21/2010
Date Data Arrived at EDR: 01/22/2010
Date Made Active in Reports: 02/16/2010
Number of Days to Update: 25

Source: Department of Environmental Quality, Southwest Region
Telephone: 276-676-4839
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: No Update Planned

SPILLS TD: PREP Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 09/17/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/06/2009
Number of Days to Update: 13

Source: Department of Environmental Quality, Tidewater Region
Telephone: trofoia@deq.vir
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: Quarterly

SPILLS VA: PREP Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 08/08/2012
Date Data Arrived at EDR: 08/09/2012
Date Made Active in Reports: 10/05/2012
Number of Days to Update: 57

Source: Department of Environmental Quality, Valley Regional Office
Telephone: 540-574-7800
Last EDR Contact: 05/06/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Quarterly

SPILLS WC: Prep Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 09/21/2009
Date Data Arrived at EDR: 09/29/2009
Date Made Active in Reports: 10/30/2009
Number of Days to Update: 31

Source: Department of Environmental Quality, West Central Region
Telephone: 540-562-6700
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

SPILLS BRL: Prep/Spills Database Listing

A listing of spills locations located in the Blue Ridge Regional area, Lynchburg.

Date of Government Version: 09/18/2009
Date Data Arrived at EDR: 09/18/2009
Date Made Active in Reports: 10/06/2009
Number of Days to Update: 18

Source: DEQ, Blue Ridge Regional Office
Telephone: 434-582-6218
Last EDR Contact: 11/28/2011
Next Scheduled EDR Contact: 03/12/2012
Data Release Frequency: Varies

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 09/01/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/15/2013
Number of Days to Update: 43

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 11/12/2019
Date Data Arrived at EDR: 11/19/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 70

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 02/19/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 01/10/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 01/09/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 02/13/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/19/2019
Date Made Active in Reports: 02/27/2020
Number of Days to Update: 70

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 02/03/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 02/07/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/20/2020
Next Scheduled EDR Contact: 06/29/2020
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 11/16/2018
Date Made Active in Reports: 11/21/2019
Number of Days to Update: 370

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 10/23/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 84

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/04/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/25/2019
Date Data Arrived at EDR: 05/02/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/06/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 8

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 03/04/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/09/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 70

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 01/10/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 10/25/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 82

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 42

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 03/06/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 02/07/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 78
Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 01/28/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 01/17/2020
Date Made Active in Reports: 03/06/2020
Number of Days to Update: 49

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 02/27/2020
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 02/21/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 03/04/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 12/03/2019
Date Data Arrived at EDR: 12/03/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 56

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 03/02/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Quarterly

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/06/2019
Date Data Arrived at EDR: 11/25/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 64

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 02/25/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 02/28/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 02/28/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 12/09/2019
Date Data Arrived at EDR: 12/11/2019
Date Made Active in Reports: 02/27/2020
Number of Days to Update: 78

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 03/05/2020
Next Scheduled EDR Contact: 06/22/2020
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 11/22/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 03/02/2020
Number of Days to Update: 89

Source: EPA
Telephone: (215) 814-5000
Last EDR Contact: 03/03/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 01/05/2020
Date Data Arrived at EDR: 01/07/2020
Date Made Active in Reports: 03/06/2020
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 02/21/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 74

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 01/13/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/19/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 70

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 02/19/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Quarterly

AIRS: Permitted Airs Facility List

A listing of permitted Airs facilities.

Date of Government Version: 12/23/2019
Date Data Arrived at EDR: 01/02/2020
Date Made Active in Reports: 03/03/2020
Number of Days to Update: 61

Source: Department of Environmental Quality
Telephone: 804-698-4000
Last EDR Contact: 03/16/2020
Next Scheduled EDR Contact: 06/29/2020
Data Release Frequency: Annually

CEDS: Comprehensive Environmental Data System

Virginia Water Protection Permits, Virginia Pollution Discharge System (point discharge) permits and Virginia Pollution Abatement (no point discharge) permits.

Date of Government Version: 12/11/2019
Date Data Arrived at EDR: 12/20/2019
Date Made Active in Reports: 03/03/2020
Number of Days to Update: 74

Source: Department of Environmental Quality
Telephone: 804-698-4077
Last EDR Contact: 03/02/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Quarterly

COAL ASH: Coal Ash Disposal Sites

A listing of facilities with coal ash impoundments.

Date of Government Version: 12/19/2019
Date Data Arrived at EDR: 12/23/2019
Date Made Active in Reports: 03/03/2020
Number of Days to Update: 71

Source: Department of Environmental Protection
Telephone: 804-698-4285
Last EDR Contact: 03/02/2020
Next Scheduled EDR Contact: 06/15/2020
Data Release Frequency: Varies

DRYCLEANERS: Drycleaner List

A listing of registered drycleaners.

Date of Government Version: 10/21/2019
Date Data Arrived at EDR: 10/23/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 72

Source: Department of Environmental Quality
Telephone: 804-698-4407
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

ENFORCEMENT: Enforcement Actions Data

A listing of enforcement actions.

Date of Government Version: 11/21/2019
Date Data Arrived at EDR: 11/21/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 68

Source: Department of Environmental Quality
Telephone: 804-698-4031
Last EDR Contact: 03/23/2020
Next Scheduled EDR Contact: 07/13/2020
Data Release Frequency: Quarterly

Financial Assurance 1: Financial Assurance Information Listing

A listing of financial assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 10/29/2019
Date Data Arrived at EDR: 10/30/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 70

Source: Department of Environmental Quality
Telephone: 804-698-4205
Last EDR Contact: 01/27/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information listing

Solid waste financial assurance information.

Date of Government Version: 10/29/2019
Date Data Arrived at EDR: 10/31/2019
Date Made Active in Reports: 01/10/2020
Number of Days to Update: 71

Source: Department of Environmental Quality
Telephone: 804-698-4123
Last EDR Contact: 01/27/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Varies

TIER 2: Tier 2 Information Listing

A listing of facilities which store or manufacture hazardous materials and submit a chemical inventory report.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 01/20/2017
Date Made Active in Reports: 02/14/2017
Number of Days to Update: 25

Source: Department of Environmental Quality
Telephone: 804-698-4159
Last EDR Contact: 03/16/2020
Next Scheduled EDR Contact: 06/29/2020
Data Release Frequency: Annually

UIC: Underground Injection Control Wells

A listing of underground injection controls wells.

Date of Government Version: 10/29/2019
Date Data Arrived at EDR: 10/30/2019
Date Made Active in Reports: 01/10/2020
Number of Days to Update: 72

Source: Department of Mines, Minerals and Energy
Telephone: 276-415-9700
Last EDR Contact: 01/29/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Quarterly

MINES MRDS: Mineral Resources Data System

Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 02/28/2020
Next Scheduled EDR Contact: 06/08/2020
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Virgina.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/20/2014
Number of Days to Update: 203

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Virgina and at the Regional VA Levels.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/15/2014
Number of Days to Update: 198

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 01/30/2020
Date Made Active in Reports: 03/09/2020
Number of Days to Update: 39

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 01/30/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 05/01/2019
Date Made Active in Reports: 06/21/2019
Number of Days to Update: 51

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 01/14/2020
Next Scheduled EDR Contact: 04/07/2020
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 10/02/2019
Date Made Active in Reports: 12/10/2019
Number of Days to Update: 69

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 02/18/2020
Next Scheduled EDR Contact: 06/01/2020
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/09/2020
Next Scheduled EDR Contact: 06/22/2020
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 804-692-1900

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

HRSD JR PLANT EXPANSION
125 CITY FARM ROAD
NEWPORT NEWS, VA 23602

TARGET PROPERTY COORDINATES

Latitude (North):	37.084031 - 37° 5' 2.51''
Longitude (West):	76.532405 - 76° 31' 56.66''
Universal Tranverse Mercator:	Zone 18
UTM X (Meters):	363795.0
UTM Y (Meters):	4105089.2
Elevation:	21 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5954353 MULBERRY ISLAND, VA
Version Date:	2013

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

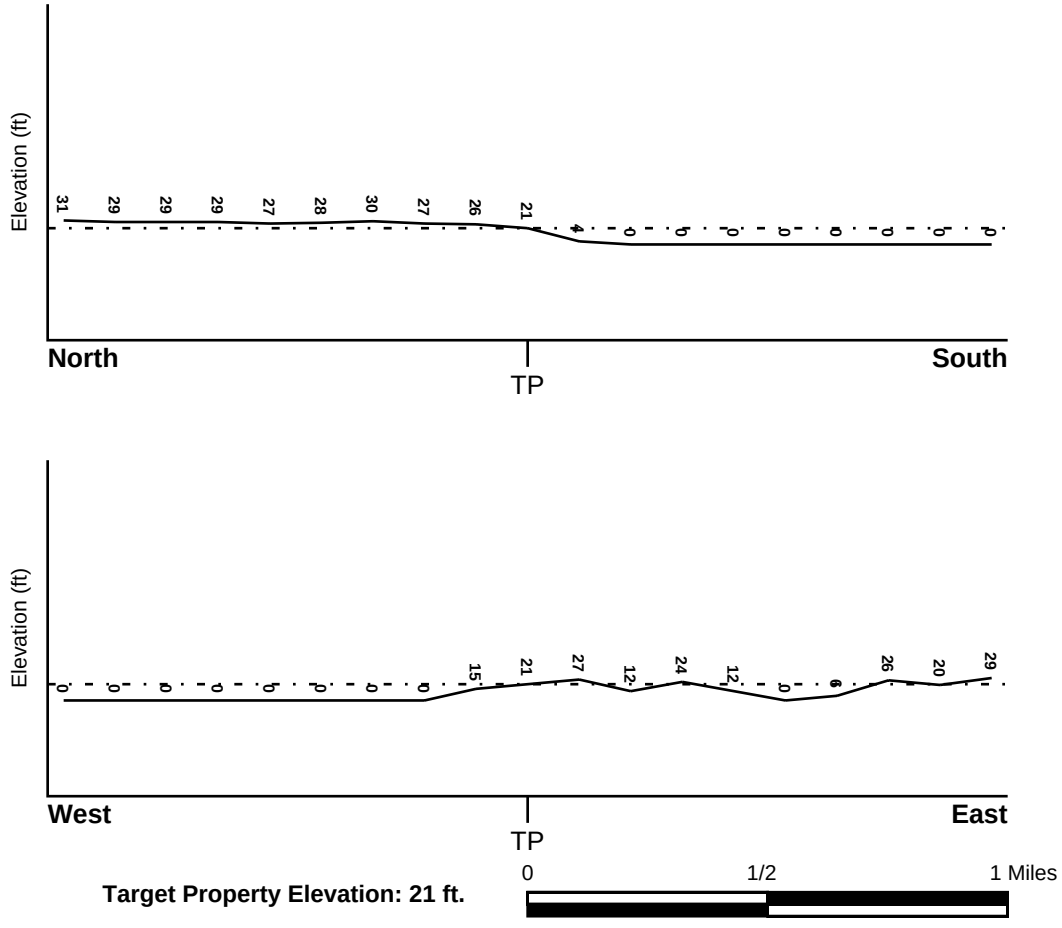
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SSW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
5101030108D	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
5101030106D	FEMA FIRM Flood data
5101030107D	FEMA FIRM Flood data
5101030109D	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
MULBERRY ISLAND	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

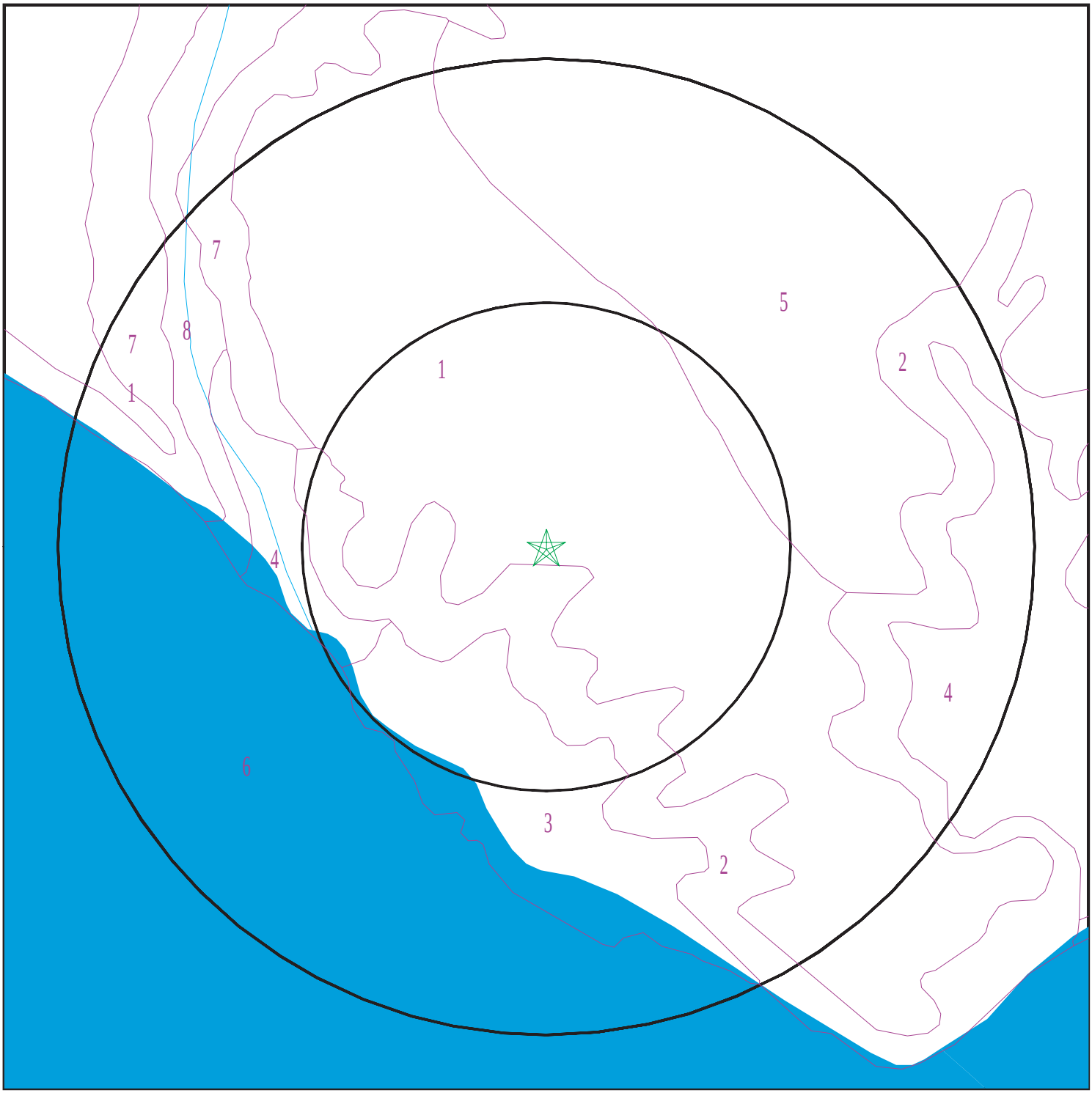
Era:	Cenozoic
System:	Tertiary
Series:	Miocene
Code:	Tm *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 6020295.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	HRSD JR Plant Expansion	CLIENT:	AECOM
ADDRESS:	125 City Farm Road Newport News VA 23602	CONTACT:	Travis Mckee
LAT/LONG:	37.084031 / 76.532405	INQUIRY #:	6020295.2s
		DATE:	March 24, 2020 10:28 am

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Slagle

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 69 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 0.01	Max: 5.5 Min: 3.6
2	9 inches	25 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 0.01	Max: 5.5 Min: 3.6
3	25 inches	59 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 0.01	Max: 5.5 Min: 3.6

Soil Map ID: 2

Soil Component Name: Uchee

Soil Surface Texture: loamy fine sand

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 69 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	24 inches	loamy fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 5.5 Min: 4.5
2	24 inches	55 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 5.5 Min: 4.5
3	55 inches	64 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 5.5 Min: 4.5

Soil Map ID: 3

Soil Component Name: Bohicket

Soil Surface Texture: muck

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Very poorly drained

Hydric Status: All hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	muck	A-8	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 0.42 Min: 0.01	Max: 8.4 Min: 6.1
2	5 inches	79 inches	silty clay	A-8	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 0.42 Min: 0.01	Max: 8.4 Min: 6.1

Soil Map ID: 4

Soil Component Name: Udorthents

Soil Surface Texture: muck

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class:
Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

Soil Map ID: 5

Soil Component Name: Craven

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 76 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 42 Min: 1.4	Max: 5.5 Min: 3.6
2	9 inches	53 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 42 Min: 1.4	Max: 5.5 Min: 3.6
3	53 inches	79 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 42 Min: 1.4	Max: 5.5 Min: 3.6

Soil Map ID: 6

Soil Component Name: Water

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class:
Hydric Status: Unknown

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

Soil Map ID: 7

Soil Component Name: Uchee

Soil Surface Texture: loamy fine sand

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 69 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	24 inches	loamy fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 5.5 Min: 4.5
2	24 inches	55 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 5.5 Min: 4.5
3	55 inches	64 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 5.5 Min: 4.5

Soil Map ID: 8

Soil Component Name: Johnston

Soil Surface Texture: silt loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Very poorly drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: All hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	33 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 141 Min: 42	Max: 5.5 Min: 4.5
2	33 inches	59 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 141 Min: 42	Max: 5.5 Min: 4.5

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

PHYSICAL SETTING SOURCE MAP - 6020295.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	HRSD JR Plant Expansion	CLIENT:	AECOM
ADDRESS:	125 City Farm Road Newport News VA 23602	CONTACT:	Travis Mckee
LAT/LONG:	37.084031 / 76.532405	INQUIRY #:	6020295.2s
		DATE:	March 24, 2020 10:28 am

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

EPA Region 3 Statistical Summary Readings for Zip Code: 23602

Number of sites tested: 66.

Maximum Radon Level: 5.5 pCi/L.
Minimum Radon Level: -0.1 pCi/L.

pCi/L <4	pCi/L 4-10	pCi/L 10-20	pCi/L 20-50	pCi/L 50-100	pCi/L >100
62 (93.94%)	4 (6.06%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)

Federal EPA Radon Zone for NEWPORT NEWS CITY County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Virginia Public Water Supplies
Source: Department of Health, Office of Water Programs
Telephone: 804-786-1756

OTHER STATE DATABASE INFORMATION

Virginia Oil and Gas Wells
Source: Department of Mines, Minerals and Energy
Telephone: 804-692-3200
A listing of oil and gas well locations.

RADON

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

EPA Region 3 Statistical Summary Readings
Source: Region 3 EPA
Telephone: 215-814-2082
Radon readings for Delaware, D.C., Maryland, Pennsylvania, Virginia and West Virginia.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

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Appendix C Qualifications of Environmental Professional

Jack Moore

Senior Program Manager

Education:
MEM, Water Resources Management
BS, Business Administration

Mr. Moore has over 25 years of experience in environmental assessment, permitting, and remediation projects and programs for state, federal, municipal, and commercial clients regulated under the Clean Water Act, RCRA, CERCLA, NEPA, and numerous state programs. Mr. Moore has won and managed a wide range of environmental projects including large soil and groundwater remediation sites; due diligence for new power plants, roads, utilities, and industrial facilities; and design and permitting for natural resource restoration sites involving living shorelines, endangered species habitat restoration, and wetlands/stream evaluation. Mr. Moore is located in AECOM's Norfolk, Virginia, office and is responsible for business development, project delivery, and client and regulatory communications, to ensure overall project and program success.

Recent Due Diligence project experience includes the following:

Dominion Resources, Inc., Louisa County, Virginia. Project manager responsible for Phase I ESA for approximately 500-acre proposed regulated solar generation facility.

Old Bermuda Hundred Road Improvements, Chesterfield County, Virginia. Environmental Manager responsible for Phase I ESA for 2 miles of roadway widening and upgrades in Chesterfield County, VA. Adjacent land uses included industrial facilities, residential areas, and a civil war battlefield.

Beulah Road Improvements, Chesterfield County, Virginia. Environmental Manager responsible for Phase I ESA for approximately 1/2 mile of roadway widening and upgrades in Chesterfield county. Adjacent land uses generally included residential and agricultural areas.

Creighton/Cold Harbor Road Improvements, Hanover County, Virginia. Environmental Manager responsible for Phase I ESA for 1 mile of road widening, and land purchase for stormwater management facilities.

Mount Cross Road Improvements, Danville, Virginia. Environmental Manager responsible for Phase I ESA for 2 miles of roadway expansion in Danville, Virginia.

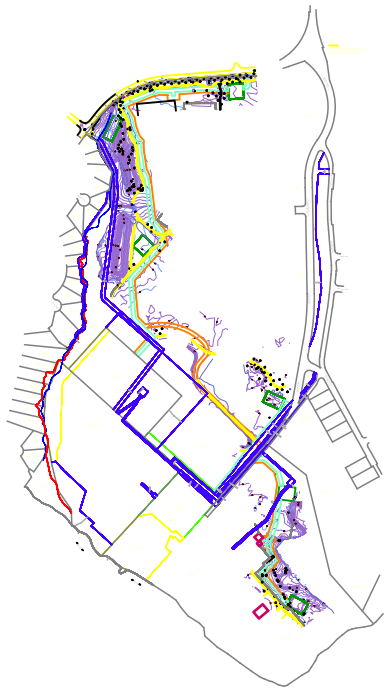
Private Retail Client, Mid-Atlantic Region. Project Manager responsible for executing Phase I ESA due diligence projects for multiple retail property acquisitions with rapid turnaround times using staff from multiple offices.

City of Suffolk, Village of Holland Water Line Extension, Suffolk, Virginia. Environmental Manager responsible for scoping and completing Phase I ESA for 6 miles of new water line along Route 58 in Suffolk, VA. Coordinated Phase II sampling activities in conjunction with geotechnical borings and identified one site with actual impacts. Prepared construction specifications for handling impacted soil and groundwater encountered during excavation. Coordinated regulatory reporting and follow-up.

VDOT, Jamestown Scotland Ferry Security Stations. Environmental Manager responsible for coordinating environmental due diligence, environmental regulatory compliance, NEPA documentation, and evaluation of new water supply well location.

Raytheon Service Company, Phase I Environmental Site Assessments, Chesapeake and Virginia Beach, Virginia. Project manager for Phase I ESAs in general accordance with ASTM 1527-05 to provide due diligence for lease termination or new lease of approximately 150,000 square feet of warehouse, manufacturing, and office space to establish baseline conditions prior to and/or following Raytheon's use of the property.





Date: June 26, 2020

AMENDMENT/ADDENDUM NO. 3
to the PROPOSAL DOCUMENTS
for the Design-Build of
JAMES RIVER SWIFT FACILITY and
JAMES RIVER TREATMENT PLANT ADVANCED NUTRIENT REDUCTION IMPROVEMENTS
CIP No. GN016360 and JR013400
City of Newport News, Virginia

To All Proposers:

The following changes, additions and/or deletions are hereby made part of the Proposal Documents for the Design-Build of the JAMES RIVER SWIFT FACILITY and JAMES RIVER TREATMENT PLANT ADVANCED NUTRIENT REDUCTION IMPROVEMENTS, Newport News, Virginia, for HRSD dated April 2020, as fully and completely as if the same were fully set forth therein.

CHANGES TO VOLUME 1 OF 3

A. General Requirements, provide the following changes:

1. DELETE in its entirety Section 01 10 00 Stipulated Price Requirements 1.02.A.15. ADD the text to Section 01 50 00 Temporary Facilities 1.09 'C' as follows:

   C. The Owner is negotiating the usage of City owned land for Design-Builder laydown and staging area.

      1. Refer to Drawing C200 Site Key Plan. Usage of the former berm location for Design-builder laydown and staging area shall be coordinated with access to City facilities and installation of a temporary meeting space for City public usage. Fencing of Design-Builder laydown and staging areas is required.

      2. Refer to the attached Figure 01 50 00-3 Proposed Location of Laydown and Staging on City Property. Usage of the former City Farm in Riverview Farm Park for Design-Builder laydown and staging area shall be coordinated with the City's access. Fencing of Design-Builder laydown and staging areas is required.

2. REPLACE Section 01 31 13 Project Coordination with the attached. Revisions provided with bold and strike-through text.

3. ADD text to Section 01 50 00 Temporary Facilities 1.07.A '2' as follows:

   2**.** Fencing visible to the public shall be provided with site signage and graphically engaging wrapping. The wrapping shall screen construction visibility from the public. HRSD shall review all wrapping graphics.

CHANGES TO VOLUME 2 OF 3

A. Basis of Design Report, make the following changes:

1. REPLACE Appendix J JRTP Effluent Data Summary in its entirety attached.

2. REPLACE in Section 1.5 Process Mechanical Design the ninth bullet in its entirety as follows:

   - NPW is a supply of chlorinated JRTP secondary clarifier effluent that is used for various plant O&M activities. The NPW supply will not extend to any SWIFT facilities.

3. ADD bold text to Section 3.10.5 Recharge Well Buildings paragraph 3 after the last sentence:

   See **Figure 3-9** for possible aesthetic layout. **Offsite recharge wells require sound proofing to minimize noise and interference with the park activities and surrounding activities. The offsite recharge well materials shall include at a minimum acoustical CMU and interior sound curtains for sound dampening to comply with all City noise ordinances.**

B. Basis of Design Drawings, make the following changes:

1. REVISE drawing M2100 SWIFT Influent Pump Station Mechanical Isometric, Plans and Section as follows:

   a. TOP PLAN drawing view DELETE the text 24" in the call out note, 24" 17.00, and REPLACE with 42" EL AS REQUIRED.

   b. ISOMETRIC VIEW drawing view replace the 24" diameter SWIFT Influent Equalization Interconnect pipe with 42" diameter SWIFT Influent Equalization Interconnect.

2. REVISE I1302 Instrumentation MBBR Blowers and I1303 Instrumentation MBBR Air as follows:

   a. Drawing I1302 symbol FE-63-1001 shall be thermal mass flow meter.

   b. Drawing I1303 symbol FE-63-1303/1304/1307/1308 shall be thermal mass flow meter.

3. DELETE the following drawings and replace with the attached drawings:

   a. Drawing C-200

   b. Drawing C-203

   c. Drawing C-204

   d. Drawing C-205

   e. Drawing C-206

   f. Drawing C-300

   g. Drawing M-1301

   h. Drawing I-1303

4. ADD the following drawings:

   a. Drawing C-301

   b. Drawing C-302

CHANGES TO VOLUME 3 OF 3

A. DELETE the following reference documents and replace with the attached:

1. Reference Document 1 As-Built Drawings: Hampton Roads Sanitation District North Shore System James River Sewage Plant

2. Reference Document 22 Record Drawing: Hampton Roads Sanitation District James River Treatment Plant Improvements – Phase 1 Carbon System

B. ADD Reference Document 32:

1. Existing glycerol feed system equipment information

C. ADD Reference Document 33:

1. Final Phase I ESA – HRSD JRTP Adjacent Parcel

CLARIFICATIONS

A. Biofilter plenum and GAC underdrains: Access underneath the biofilter plenum and GAC underdrains is not expected as required maintenance and installation are performed from above the equipment for the listed manufacturers in BODR Sections 3.7.7.4 Equipment Summary Table and 3.7.9.3 Equipment Summary Table. If additional access is recommended by the Design-Builder, recommendations should be included in the Technical Proposal as an alternative. Refer to the Request for Proposal Article 8 Preparation of Price Proposal.

B. Seal Water Backwash Supply and Intermediate Pumps: When SWIFT NPW is unavailable for pump seal water the potable water supply is proposed as an alternative seal water source. Refer to BODR Section 3.7.8.3 Additional Design Considerations and Drawing I2500 Instrumentation SWIFT Water Pump Station.

C. Water Softening: Potable or SNPW are water sources for water softening.

1. REVISE Drawing I2707 Instrumentation Preformed Monochloramine System as follows:
   - REPLACE "POTABLE WATER" with "SNPW"
   - DELETE the Backflow Preventer and PI 81-0141
2. ADD to BODR Section 3.8.1.4 Equipment Summary Table, Table 3-47 Equipment Summary for Water Softening System superscript (3) after SWIFT NPW. ADD the text below Table 3-47 as follows:

   (3) SWIFT NPW is the primary makeup supply for softened water with Newport News as the secondary source. Location of the dual supply connection is noted on Drawing I2500 Instrumentation SWIFT Water Pump Station.

D. Permitting SWIFT process equipment and startup: Refer to Section 01 76 00 Start-up, Testing and Commissioning. The Section describes the requirements for sequential unit process startups and testing.

E. Outfall buried piping: Refer to Reference Document 12 for dual outfall existing dechlorination manhole, sampling manhole, piping and valving. REPLACE Section 01 11 00 Summary of Work 1.02.B.1.p with the following:

p. The Design-Builder shall provide yard piping and appurtenances downstream of the CCTs to achieve equal flow split between the two outfalls. The final design shall maintain a single point of dechlorination and a new single sampling point.

F. Carbon Source: Carbon is required for MBBR startup and operation. Drawings M-1301 MBBR Mechanical Partial Plan – Lower North and I-1303 Instrumentation MBBR Air, with additional carbon feed points. ADD text to BODR Section 2.4.4.6 Additional Design Considerations after the last bullet:

- Design-Builder shall evaluate, design and install a glycerol feed system for the proposed MBBR utilizing the existing IFAS Carbon Feed Storage system by installing new dedicated MBBR glycerol feed pumps and piping to feed glycerol to MBBR Zones 1A, 1B in FDN mode and MBBR Zones 1A, 1B, 3A and 3B in PdNA mode.

G. UV AOP: HRSD is concurrently in the process of confirming several elements of the SWIFT AWT process design including the necessity for hydrogen peroxide feed, associated peroxide feed rate, and the approach to peroxide quenching (if required). Refer to the Request for Proposal Article 8 Preparation of Price Proposal.

ATTACHMENTS

A. Figure 01 50 00-3 Proposed Location of Laydown and Staging on City Property as a .pdf

B. Section 01 31 13 Project Coordination as a .pdf

C. Appendix J JRTP Effluent Data Summary as .pdf

D. Basis of Design Drawings as a .pdf:

   a. Drawing C-200

   b. Drawing C-203

   c. Drawing C-204

   d. Drawing C-205

   e. Drawing C-206

   f. Drawing C-300

   g. Drawing C-301

   h. Drawing C-302

   i. Drawing M-1301

   j. Drawing I-1303

E. Reference Document 1 As-Built Drawings: Hampton Roads Sanitation District North Shore System James River Sewage Plant as a pdf

F. Reference Document 22 Record Drawing: Hampton Roads Sanitation District James River Treatment Plant Improvements – Phase 1 Carbon System as a pdf

G. Reference Document 32 Existing glycerol feed system as a pdf

H. Reference Document 33 Final Phase I ESA – HRSD JRTP Adjacent Parcel as a pdf

I. Riverview Farm Park topographic survey information as a .dwg

PROPOSERS MUST ACKNOWLEDGE RECEIPT OF THIS AMENDMENT/ADDENDUM IN THE ONLINE SOLICITATION IN ORDER TO SUBMIT PROPOSAL. FAILURE TO ACKNOWLEDGE AMENDMENT WILL NOT ALLOW PROPOSER TO SUBMIT PROPOSAL.

Solicitation 404776,3

Title	**JR SWIFT Facility (GN016360) and JRTP Advanced NRI (JR013400)**
Amendment Date	**26-JUN-2020 13:46:27**
Amendment Description	**Miscellaneous updates to Volumes 1, 2, and 3.**

Due Date	**30-JUL-2020 11:00:00**	Award Date	**Not Specified**
Time Zone	**Eastern Time**		

Note **All Proposers are encouraged to attend a virtual pre-proposal conference, which will be held online on April 29, 2020 at 10:00 a.m. local time. Attendance at the pre-proposal conference shall not be mandatory for Proposers to submit a Technical Proposal or Price Proposal. The pre-proposal conference will include a review of the Project. A link to the virtual pre-proposal conference will be sent through HRSD's Online Oracle ERP system as an online discussion.**

All Proposers are scheduled to attend a virtual individual proprietary meeting, which will be held online on May 20, 2020, with HRSD and its Owner's Consultant. Each meeting would be private, in that only 1 Proposer would meet with HRSD at a time and is expected to last no longer than 2 hours per Proposer. Proposers are not required to accept an invitation to the Proprietary meeting. A link to the virtual pre-proposal conference will be sent through HRSD's Online Oracle ERP system as an online discussion.

The purpose of the Proprietary meetings is to give each Proposer, in a confidential setting, an opportunity to ask questions and discuss concerns related to the Project, details of the Project scope, administrative procedures and for the Proposer to discuss any proposed deviations to the RFP. The meetings are also intended to enable HRSD to express, among other things, whether the Proposer is pursuing an approach that will not meet the RFP Documents or is otherwise unacceptable to HRSD. At least 5 calendar days before each meeting the Proposer shall submit to the Contract Specialist, identified in Article 6.01.A, via email the names and functions of each of its attendees and the issues and questions to be discussed. No more than 5 team members may attend such meetings.

Site visits of the HRSD JRTP will be on May 28, 2020 at 8:30 a.m. or 1:00 p.m. To reinforce the Commonwealth's response to COVID-19 and in furtherance of Governor's Executive Order 55 (Temporary Stay at Home Order) minimizing in-person gatherings, site visits will be limited to 9 individuals from each Proposers team. Please refer to paragraph "Pre-Bid & Pre-Proposal Conferences, Site Visits, and other related meetings" in Attachment 1 – Copy of ERP Notification for the Centers for Disease Control and Prevention (CDC) guidelines. Please contact the Contract Specialist, identified in Article 6.01.A, to schedule a site visit. Times will be scheduled as requested on a first come basis. Site visits will be limited to a 4-hour duration from the scheduled start time. There will be no other site visits during the RFP process.

Interviews shall be held with each short-listed Proposer, which will be held virtually on August 19, 2020 with HRSD and its Owner's Consultant and is expected to last no longer than 2 hours. The initial 45 minutes of the interviews will be available for presentations by the Proposers. Presentations should be limited to items directly related to this Project with emphasis on qualifications, proposed services, relevant experience, and details of the Technical Proposal. The remainder of the time will be used for questions by the Committee.

Please submit your response online only:

Organization **HRSD**
Purchaser **Rice, Shannon**
Phone **(757) 460-7005**
Email **srice@hrsd.com**

Responses shall only be accepted online through Hampton Roads Sanitation District 's (HRSD) Oracle ERP system "iSupplier Portal" by the due date and time specified. Late responses and other types of responses shall not be accepted.

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1 Header Information

1.1 General Information

Title **JR SWIFT Facility (GN016360) and JRTP Advanced NRI (JR013400)**

Description **The Hampton Roads Sanitation District (HRSD) desires to contract with an experienced Design-Builder for the design, construction, and commission of 2 capital projects: JAMES RIVER SWIFT FACILITY (GN016360) and JAMES RIVER TREATMENT PLANT ADVANCED NUTRIENT REDUCTION IMPROVEMENTS (JR013400) (Project).**

HRSD (Owner) has reviewed Statement of Qualifications (SOQ) submitted in response to the RFQ issued on February 9, 2020 and is inviting only Design-Builders short-listed under the RFQ to submit Technical and Price Proposals in response to this RFP. Only Technical and Price Proposals from Design-Builders short-listed under the RFQ will be accepted. HRSD's Online Oracle Enterprise Resource Planning (ERP) system will not accept Technical and Price Proposals from any other Proposer.

A separate solicitation will be issued for the submission of Price Proposals.

Proposer must be aware of the Virginia Clean Water Revolving Loan Fund (VCWRLF) and the Water Infrastructure Finance and Innovation Act (WIFIA) and various Contract inserts in Volume 1 and statements have been added to the RFP.

Proposer must be certain to comply with the MBE/WBE requirements as stated in Article 22 of the RFP, other documents in Volume 1, and show proof of advertisement or contacts.

Amendment Date **26-JUN-2020 13:46:27**

Amendment Description **Miscellaneous updates to Volumes 1, 2, and 3.**

Due Date **30-JUL-2020 11:00:00** Award Date **Not Specified**

Purchaser **Rice, Shannon**

Email **srice@hrsd.com**

This is a Two-Step IFB and all responses will be evaluated in two stages - Technical and Price.

Note All Proposers are encouraged to attend a virtual pre-proposal conference, which will be held online on April 29, 2020 at 10:00 a.m. local time. Attendance at the pre-proposal conference shall not be mandatory for Proposers to submit a Technical Proposal or Price Proposal. The pre-proposal conference will include a review of the Project. A link to the virtual pre-proposal conference will be sent through HRSD's Online Oracle ERP system as an online discussion.

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The purpose of the Proprietary meetings is to give each Proposer, in a confidential setting, an opportunity to ask questions and discuss concerns related to the Project, details of the Project scope, administrative procedures and for the Proposer to discuss any proposed deviations to the RFP. The meetings are also intended to enable HRSD to express, among other things, whether the Proposer is pursuing an approach that will not meet the RFP Documents or is otherwise unacceptable to HRSD. At least 5 calendar

days before each meeting the Proposer shall submit to the Contract Specialist, identified in Article 6.01.A, via email the names and functions of each of its attendees and the issues and questions to be discussed. No more than 5 team members may attend such meetings.

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Interviews shall be held with each short-listed Proposer, which will be held virtually on August 19, 2020 with HRSD and its Owner's Consultant and is expected to last no longer than 2 hours. The initial 45 minutes of the interviews will be available for presentations by the Proposers. Presentations should be limited to items directly related to this Project with emphasis on qualifications, proposed services, relevant experience, and details of the Technical Proposal. The remainder of the time will be used for questions by the Committee.

1.2 Terms

Ship-To Address	**Design-Const SWIFT** **1434 Air Rail Avenue** **Virginia Beach, VA 23455** **United States**	Bill-To Address	**Accounts Payable** **PO BOX 5915** **Virginia Beach, VA 23471-0915** **United States**
Payment Terms	**Net 30**	Carrier	**Best Way**
FOB	**Destination**	Freight Terms	**No Freight Terms Apply**

1.3 Requirements

Proposer Certification	**Solicitation Step - Technical**
By the submission of this online Proposal, the Proposer is duly authorized to bind the company and is familiar with all requirements detailed in the Proposal Documents. ..... Circle one from the response values below: YES NO	
Proposer's Acknowledgements	**Solicitation Step - Technical**
Proposer agrees, if this Technical Proposal is accepted and the Proposer is selected to enter into an Agreement with HRSD in the form included in the RFP, subject to modification after negotiation. ..... Circle one from the response values below: Yes No	
Proposer is aware of the Virginia Clean Water Revolving Loan Fund (VCWRLF) Program Requirements. ..... Circle one from the response values below: Yes No	
Proposer is aware of the Water Infrastructure Finance and Innovation Act (WIFIA) Program Requirements. ..... Circle one from the response values below:	

Proposer's Acknowledgements	Solicitation Step - Technical
Yes No	
Proposer is aware of the Water Quality Improvement Fund (WQIF) Grant Program Requirements. ..... Circle one from the response values below: YES NO	

1.4 Attachments

Name	Data Type	Description
Addendum #3: Attachment A	File	Figure 01 50 00-3 Proposed Location of Laydown and Staging on City Property
Addendum #3: Attachment B	File	Section 01 31 13 Project Coordination
Addendum #3: Attachment C	File	Appendix J JRTP Effluent Data Summary
Addendum #3: Attachment D	File	Basis of Design Drawings
Addendum #3: Attachment E	File	Reference Document 1
Addendum #3: Attachment F	File	Reference Document 22
Addendum #3: Attachment G	File	Reference Document 32
JR SWIFT Facility & JRTP Advanced NRI Volume 1 of 3	File	Volume 1 of 3
JR SWIFT Facility & JRTP Advanced NRI Volume 2 of 3	File	Volume 2 of 3
JR SWIFT Facility & JRTP Advanced NRI Volume 3 of 3	File	Volume 3 of 3
JR SWIFT Facility & JRTP Advanced NRI Agreement for Transfer of Digital Model Fi	File	Agreement for Transfer of Digital Model Files
Baseline GHG Assessment Carbon Footprint Tool	File	Baseline GHG Assessment Carbon Footprint Tool
Addendum #1	File	Updates to the RFP - Proprietary Meeting Minutes due date (match RFQ language) and Interviews are now virtual.
Addendum #2: Attachment A	File	BODR Sections 2.4.4.1 Background and Treatment Objections and 2.4.4.2 Design Criteria
Addendum #2: Attachment B	File	James River Treatment Plant Dominion Power Billing Information
Addendum #2: Attachment C	File	Basis of Design Drawings
Addendum #2: Attachment D	File	James River Treatment Plant I/O list for existing DCU-1
Addendum #2: Attachment E	File	Existing James River Treatment Plant arc flash study
Addendum #2: Attachment F	File	James River Treatment Plant list of predefined two-digit UP designations for the entire project
Addendum #2: Attachment G	File	F&R CPT-03 output
Addendum #2: Attachment H	File	F&R CPT-01 output
Addendum #2: Attachment I	File	F&R CPT-02 output
Addendum #2: Attachment J	File	X0110-DWG.R1 F&R Drawing No. 2 update
Addendum #2	File	Miscellaneous updates to Volumes 2 & 3 and

Name	Data Type	Description
		Clarifications
Addendum #2: Attachment K	File	PMI Survey – Geotech Relocation markup
Addendum #2: Attachment L	File	On-Plant recharge Well electrical loads
Addendum #2: Attachment M	File	JRTP SWIFT electrical load list
Addendum #2: Attachment N	File	Off-plant recharge well electrical loads
Addendum #2: Attachment O	File	JRTP total plant electrical load calculation
Addendum 3	File	Miscellaneous updates to Volumes 1, 2, and 3.
Addendum #3: Attachment H	File	Reference Document 33
Addendum #3: Attachment I	File	Riverview Farm Park topographic survey information

2 Price Schedule

2.1 Line Information

Retainage

Retainage Attributes	Negotiable
Maximum Retainage Amount	No
Retainage Rate (%)	No

Line	Item, Rev	Target Quantity (N/A)	Unit	Unit Price	Amount	Promised Date
1 For the purposes of submitting the Technical Proposal, Proposers must enter $1. A separate solicitation will be issued for the Price Proposal.						

2.2 Line Details

2.2.1 Line 1 For the purposes of submitting the Technical Proposal, Proposers must enter $1. A separate solicitation will be issued for the Price Proposal.

Need-By Date **Not Specified**

NIGP Code (CURRENCY_CODE=USD) **Not Specified**

Ship-To Address **Eng**
1434 Air Rail Avenue
Virginia Beach, VA
23455
United States