

APPENDICES

APPENDIX A

Limited Lead Paint Inspection and Testing Report

ENVIRONMENTAL MAINTENANCE CONTRACTORS, INC.

Environmental Consulting, Testing and Reporting Services

December 31, 2019

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LIMITED LEAD PAINT INSPECTION & TESTING REPORT FOR ROCKLAND COUNTY SEWER DISTRICT NO.1 LOCATED AT 4 ROUTE 340, ORANGEBURG, NY 10962 MAIN INFLUENT PUMP STATION

Environmental Maintenance Contractors, Inc. (EMC) has completed the Limited Lead Paint Inspection and Testing services required for the project. The Limited Lead Paint Inspection and Testing of readily accessible painted surfaces was performed within the Interior and Exterior of the Main Influent Pump Station (hereafter referred to as the Target Areas) of the Rockland County Sewer District No.1 located at 4 Route 340, Orangeburg, NY 10962. The Limited Lead Paint Inspection and Testing was performed on November 21, 2019.

CREDENTIALS

EMC's New York State Department of Labor, Division of Radiological Safety and Health Operators License is # 3179-4412. EMC's Inspectors/Assessors/XRF Analyzer Operators have been trained in the proper use and handling of this instrument. Each operator has completed the XRF Analyzer Users Training Course and uses the instrument in accordance with all manufacturers' directives and methods.

XRF ANALYZER INSTRUMENTATION CREDENTIALS

Reference checks of the XRF Analyzer against a test validation block (pre- and post-) at the time of testing indicated proper functioning of the instrument.

Calibration of the XRF Analyzer is performed by Thermo Fisher Scientific at time of a source change or repair. Swab tests to determine leakage are performed biannually and at a time of source change or repair and recent testing has determined that leakage of radiation from the instrument was either non detected or below detectable levels, and therefore safe for usage in areas occupied by human life.

LEAD PAINT TESTING METHODS AND REPORTING

EMC performed the Limited Lead Paint Inspection and Testing of readily accessible painted surfaces within the Target Areas of the Rockland County Sewer District No.1 utilizing a portable XRF Analyzer to directly read milligrams (one thousandth of a gram) of Lead (or "Pb" as the chemical symbol) per square centimeter (mg/cm²) of the tested surface area.

EMC's definition of LBP in the context of this report is consistent with the following limits established by HUD as follows (used in this report for guidance purposes only):

Positive:	$\geq 1.0 \text{ mg/cm}^2$ (Lead-Based Paint (LBP)).
Negative:	0.01 to 0.99 mg/cm^2 (reported as "Negative" or contain Pb concentrations below HUD regulated standards but still classified as "Pb-containing Paint").

The XRF Analyzer eliminates the inconclusive range by analyzing a surface until either a positive or negative result is achieved at a 95% confidence limit.

Current state-of-the-art methods for inspecting for LBP are described by the U.S. Department of Housing and Urban Development (HUD) in "**Guidelines for the Evaluation and Control of LBP Hazards in Housing, June 1995**", referred to as the "HUD Guidelines". The HUD Guidelines are applicable to federally financed housing projects and it is understood that it is not applicable to the subject project. EMC's Pb testing methods follow those described in the Guidelines only to the extent applicable as determined in the field.

INTERPRETATIONS OF XRF DATA

Pb testing or XRF Analyzer readings are provided on the attached XRF Analyzer Data Sheets. As expectable for this analytical methodology, XRF Analyzer values can vary slightly for Pb detected in the same painted surface.

SCOPE OF SERVICES AND XRF TESTING METHODOLOGY

EMC was retained to perform a non-destructive Limited Lead Paint Inspection and Testing of readily accessible painted surfaces within the Target Areas of the Rockland County Sewer District No.1. No penetrations or exploratory demolition was performed during the Lead Paint Inspection and Testing to test painted surfaces including but not necessarily limited to concealed building surfaces or separate layers of painted surfaces i.e. sheetrock over wall plaster or concrete, etc.

Following client's/site representative's directives and pursuant to and following the HUD Guidelines, EMC tested painted surfaces for the purpose of determining the presence of Pb-containing paint and/or LBP.

For the testing of paint, the threshold value used for guidance purposes was 1.0 milligrams of Pb in dried paint film per square centimeter of painted surface (mg/cm^2). This is the concentration established and implemented by HUD as LBP (used for guideline purposes only).

Representative surfaces were tested accordingly with the XRF Analyzer in K & L shell mode. If the results from the either the K or L shell reading for Pb were less than 1.0 mg/cm^2 , the surface was recorded as having an concentration of Pb below the HUD Guidelines.

Please note that although some painted surfaces contain concentrations of Pb below the HUD regulatory standards of 1.0 mg/cm^2 and are reported as "Negative" on the attached XRF Data Sheet, these are still classified as Pb-containing paint. The result of this measurement can be considered accurate to the stated +/- range as determined by the length of sampling until a confidence level of 95% is achieved.

If the results from either the K or L shell reading for Pb were equal to or greater than 1.0 mg/cm², the surface was recorded as having an elevated concentration Pb or LBP. The result of this measurement can be considered accurate to the stated +/- range as determined by the length of sampling until a confidence level of 95% is achieved.

The XRF Analyzer analyzes a surface for Pb until a positive or negative result is achieved with a 95% confidence limit.

In addition to K & L shell readings the downloaded data reports a "Combined" reading column. This reading represents a "best fit" of either the K or L shell reading, thereby presenting to the inspector the most reliable testing data.

Results based upon the on-site measurements were then recorded by the instrument and downloaded to a desktop computer with all the pertinent information encoded into the instrument.

DATA TABLE SPECIFICS

The XRF Analyzer Data Sheet accompanying this report list the components, substrates, areas/sides of the area(s)/rooms(s) inspected, conditions, colors and the XRF data results.

FINDINGS

The painted surfaces tested were found to have lead (Pb) concentrations equal to or that exceeded the "REGULATORY STANDARDS" as established by the HUD.

- Pump Electric Box
- Columns

Please note that although some painted surfaces contain concentrations of Pb below the HUD regulatory standards of 1.0 mg/cm² and are reported as "Negative" on the attached XRF Data Sheet, these are still classified as Pb-containing paint and could still create Pb dust hazards or elevated airborne concentrations of lead (Pb) dust when disturbed, based on the work practices that will be employed (i.e. burning abrasion, scraping or sanding of painted surface, etc.). OSHA Rules and Regulations must be followed.

See data XRF Analyzer Data Sheet for exact details of surfaces and results.

INACCESSIBLE AREAS

N/A

DISCLAIMER

This report is for your exclusive use and is only to be used as a guide in determining the presence and condition of the Pb-containing paint and/or LBP at the building premises during the time of inspection and testing.

This report is based solely upon a visual inspection of the premises, during the time Limited Lead Paint Inspection and Testing, and does not make any determinations with respect to portions of the premises which were not tested or inspected.

EMC, Inc. makes no representation of warranty with respect to your compliance with Local, State, or Federal Statutes, Regulations, or Rules. This report sets forth relevant excerpts from manuals published by HUD.

However, EMC, Inc. assumes no responsibility for the accuracy and adequacy of said excerpted material or future modifications of it.

Any and all liability on the part of EMC, Inc. shall be limited solely to the cost of this testing report. EMC, Inc. shall have no liability for any other damages, whether consequential, compensatory, punitive, or special, arising out of, incidental to, or as a result of this testing and/or report. EMC, Inc. assumes no liability for the use of this testing and/or report by any other person or entity than the customer for whom it has been prepared.

CONCLUSIONS AND RECOMMENDATIONS

The Limited Lead Paint Inspection and Testing **did** identify accessible Pb-containing paint and/or LBP within the Target Areas of the Rockland County Sewer District No.1 located at 4 Route 340, Orangeburg, NY 10962. Please find attached the XRF Analyzer Data Sheet and drawings for your review.

Please note that although some painted surfaces contain concentrations of Pb below the HUD regulatory standards of 1.0 mg/cm² and are reported as “Negative” on the attached XRF Analyzer Data Sheet, these are still classified as Pb-containing paint and could still create Pb dust hazards or elevated airborne concentrations of lead (Pb) dust when disturbed, based on the work practices that will be employed (i.e. burning abrasion, scraping or sanding of painted surface, etc.).

In the event that Pb-containing paint and/or LBP paint is present in the paint HUD and OSHA regulations will apply. All work that would disturb the Pb-containing paint and/or LBP should be performed by an EPA certified contractor utilizing appropriately certified and/or trained Supervision and Labor, as applicable.

Prior to disposal, all waste generated must be analyzed using EPA Method 1311 - Toxicity Characteristic Leachate Procedure (TCLP) - Lead by Atomic Absorption Spectrophotometry (AAS) for waste classification purposes. Waste found to have a leachability greater than or equal to 5 ppm of lead (Pb) must be disposed of as hazardous waste, and waste with a leachability of less than 5 ppm can be disposed of as a solid waste. Any painted surfaces not tested as detailed in this report shall be treated as Pb-containing and/or LBP until tested to confirm otherwise.

Sincerely,

Environmental Maintenance Contractors, Inc.

Allan Ciriaco, Vice-President of Operations

Serial # XLp300A-9069NR7213

XRF ANALYZER DATA SHEETS

Location: Main Influent Pump Station - Rockland County Swer District No.1

Inspection Date: NOVEMBER 21, 2019

Ranges (NEG<NULL<POS): Device PCS

Units: mg / cm ^2

Reading No	Time	Component	Substrate	Side	Condition	Color	Floor	Results	PbC
1	11/21/2019 11:20			ShutterCal					0.31
2	11/21/2019 11:25			Calibrate				Negative	0
3	11/21/2019 11:25			Calibrate				Negative	0
4	11/21/2019 11:26			Calibrate				Negative	0
5	11/21/2019 11:27			Calibrate				Positive	1
6	11/21/2019 11:28			Calibrate				Positive	1
7	11/21/2019 11:29			Calibrate				Positive	1.1
8	11/21/2019 11:30	WALL	METAL	A				Negative	0
9	11/21/2019 11:32	PUMP 1	METAL	A	FAIR	GREY	FIRST	Negative	0
10	11/21/2019 11:33	PUMP 2	METAL	A	FAIR	GREY	FIRST	Negative	0
11	11/21/2019 11:34	PUMP 3	METAL	A	FAIR	GREY	FIRST	Negative	0
12	11/21/2019 11:36	PUMP 4	METAL	A	FAIR	GREY	FIRST	Negative	0
13	11/21/2019 11:37	PUMP 5	METAL	A	FAIR	GREY	FIRST	Negative	0
14	11/21/2019 11:38	PUMP 6	METAL	A	FAIR	GREY	FIRST	Negative	0
15	11/21/2019 11:40	PUMP 1 ELEC BOX	METAL	A	FAIR	GREY	FIRST	Negative	0
16	11/21/2019 11:41	PUMP 5 ELEC BOX	METAL	A	FAIR	GREY	FIRST	Positive	2.9
17	11/21/2019 11:43	PUMP 2 ELEC BOX	METAL	A	FAIR	GREY	FIRST	Negative	0
18	11/21/2019 11:44	PUMP 3 ELEC BOX	METAL	A	FAIR	GREY	FIRST	Negative	0
19	11/21/2019 11:44	PUMP 4 ELEC BOX	METAL	A	FAIR	GREY	FIRST	Negative	0
20	11/21/2019 11:45	PUMP 6 ELEC BOX	METAL	A	FAIR	GREY	FIRST	Negative	0
21	11/21/2019 11:46	AIR HANDLER	METAL	A	FAIR	BLUE	FIRST	Negative	0.02
22	11/21/2019 11:49	DUCT WORK	FIBERGLASS	A	FAIR	BLUE	FIRST	Negative	0
23	11/21/2019 11:54	VFD	FIBERGLASS	A	FAIR	BLUE	FIRST	Negative	0
24	11/21/2019 11:56	DOOR	METAL	A	FAIR	RED	FIRST	Negative	0.7
25	11/21/2019 12:05	DOOR FRAME	METAL	A	FAIR	RED	FIRST	Negative	0.05
26	11/21/2019 12:06	DOOR	METAL	A	FAIR	RED	FIRST	Negative	0

Reading No	Time	Component	Substrate	Side	Condition	Color	Floor	Results	PbC
27	11/21/2019 12:06	DOOR	METAL	A	FAIR	RED	FIRST	Negative	0.07
28	11/21/2019 12:07	RAILING	METAL	A	FAIR	GREY	FIRST	Negative	0.09
29	11/21/2019 12:09	FLOOR	CONCRETE	A	POOR	GREY	FIRST	Negative	-0.6
30	11/21/2019 12:10	WALL	CONCRETE	A	POOR	GREY	MIDDLE	Negative	0
31	11/21/2019 12:11	WALL	CONCRETE	B	POOR	GREY	MIDDLE	Negative	0
32	11/21/2019 12:12	PIPE	METAL		POOR	GREY	MIDDLE	Negative	0
33	11/21/2019 12:13	PIPE	METAL		POOR	GREY	MIDDLE	Negative	0
34	11/21/2019 12:14	COLUMN	METAL		POOR	GREY	MIDDLE	Positive	2.7
35	11/21/2019 12:16	PIPE	METAL		POOR	GREY	MIDDLE	Negative	0.02
36	11/21/2019 12:17	PIPE	METAL		POOR	GREY	MIDDLE	Negative	0.01
37	11/21/2019 12:18	PIPE	METAL		POOR	GREY	MIDDLE	Negative	0.03
38	11/21/2019 12:19	PF 2060	METAL		POOR	GREY	FIRST	Negative	0
39	11/21/2019 12:21	PF 2060	METAL		POOR	GREY	FIRST	Negative	0
40	11/21/2019 12:21	PF 2060	METAL		POOR	GREY	FIRST	Negative	0
41	11/21/2019 12:21	PF 2060	METAL		POOR	GREY	FIRST	Negative	0
42	11/21/2019 12:22	PF 2060	METAL		POOR	GREY	FIRST	Negative	0
43	11/21/2019 12:23	PIPE (BIG)	METAL		POOR	GREY	BASEMENT	Negative	0.02
44	11/21/2019 12:26	FAN	METAL		POOR	GREY	BASEMENT	Negative	0
45	11/21/2019 12:27	FAN	METAL		POOR	GREY	BASEMENT	Negative	0
46	11/21/2019 12:29	WALL	CONCRETE	A	POOR	WHITE	BASEMENT	Null	0
47	11/21/2019 12:30	WALL	CONCRETE	A	POOR	WHITE	BASEMENT	Negative	0
48	11/21/2019 12:31	WALL	CONCRETE	B	POOR	WHITE	BASEMENT	Negative	0
49	11/21/2019 12:32	WALL	CONCRETE	C	POOR	WHITE	BASEMENT	Negative	0
50	11/21/2019 12:33	CEILING	CONCRETE		POOR	WHITE	BASEMENT	Negative	0
51	11/21/2019 12:34	TREAD	METAL		POOR	WHITE	BASEMENT	Negative	0.15
52	11/21/2019 12:35	CEILING	PLASTER		POOR	WHITE	FIRST	Negative	0
53	11/21/2019 12:41			Calibrate				Negative	0
54	11/21/2019 12:42			Calibrate				Negative	0
55	11/21/2019 12:43			Calibrate				Negative	0
56	11/21/2019 12:45			Calibrate				Positive	1
57	11/21/2019 12:47			Calibrate				Positive	1
58	11/21/2019 12:48			Calibrate				Positive	1

APPENDIX B

Limited Asbestos Inspection and Testing Report

ENVIRONMENTAL MAINTENANCE CONTRACTORS, INC.

Environmental Consulting, Testing, Reporting and Remedial / Abatement Services

December 12, 2019

Charles Prior, PE
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LIMITED ASBESTOS INSPECTION & TESTING REPORT FOR ROCKLAND COUNTY SEWER DISTRICT NO.1 LOCATED AT 4 ROUTE 340, ORANGEBURG, NY 10962 MAIN INFLUENT PUMP STATION

SUBJECT PROPERTY

The subject property is the Main Influent Pump Station of the Rockland County Sewer District No.1 located at 4 Route 340, Orangeburg, NY 10962.

TARGET AREAS

The target areas include the interior and exterior subject **Main Influent Pump Station**.

INSPECTION RATIONALE

Environmental Maintenance Contractors, Inc. (EMC) was retained to perform a non-destructive limited inspection of the target areas including sample collection of readily accessible suspect Asbestos Containing Materials (ACM). No penetrations or exploratory demolition was performed to collect any suspect ACM samples during the asbestos survey, including but not necessarily limited to areas above, behind or under ceilings, walls and floor cavities.

INSPECTION AND BULK SAMPLE COLLECTION

The target areas were inspected for suspect ACM on November 21, 2019.

All accessible areas/rooms within the target areas were visually inspected and representative sampling collected, as appropriate. The inspection was performed by Jeff Marc Galura and Allan Ciriaco, representing EMC. Mr. Galura (Cert. # 06-16787) and Mr. Ciriaco (07-00037) are a NYSDOL Certified Asbestos Inspectors.

INSPECTION PROTOCOL

The purpose of the inspection was to identify readily accessible ACM within the target areas. For the purpose of performing this inspection, EMC's inspector visited all accessible areas within the target areas and collected samples of representative suspect ACM.

INACCESSIBLE AREAS

All areas were accessible during the time of the inspection.

LABORATORY

Following collection of bulk samples, the samples were submitted to ATC Group Services LLC (ATC) located at 104 East 25th Street, New York, NY 10010. ATC is a laboratory accredited by the New York State Department of Health (NYS DOH) Environmental Laboratory Approval Program (ELAP), National Voluntary Laboratory Accreditation Program (NVLAP) and by the AIHA Laboratory Accreditation Programs, LLC for analysis for total asbestos content.

Friable materials (Brick & Mortar, Plaster, Etc.) and Non-Friable-Organically Bound (NOB) materials (Tar, Caulking, Clothes, Etc.) were both analyzed by Polarized Light Microscopy (PLM).

Any NOB sample found to be negative for asbestos via PLM analysis were analyzed via Transmission Electron Microscopy (TEM) for confirmatory purposes, as per NYS requirements. The NYS DOH requires TEM analysis to conclusively state that a cellulose-containing ceiling tile and/or NOB sample is not ACM.

SAMPLED MATERIALS

The following is a listing of the suspect ACM collected from the target area and submitted for analysis for the purpose of this report:

INTERIOR:

- Plaster (Brown & White) Ceiling - Main Level (001)
- Vibration Dampener Cloth - Main Level (001)
- Pipe Gasket – Intermediate Level
- Front Motor Gasket – Intermediate Level

EXTERIOR:

- Window Caulking
- Louver Caulking
- Door Caulking
- Brick & Mortar
- Roof Tar (Bottom)
- Roof Board (Insulation)
- Roof Membrane
- Roof Seam Tar (Top)
- Flashing Tar and Flashing

RESULTS AND QUANTITIES (ACM ONLY)

Sample analysis indicates that the following materials were found to contain asbestos in concentrations greater than one percent (>1%) and are therefore deemed ACM, including:

ACM Type	Location	Approximate Quantity
Flashing Tar and Flashings	Entire Roof	TBD

Note: All quantities are currently To be determined (TBD). Field verification is necessary to confirm site conditions, locations and quantities of ACM's identified.

CONCLUSIONS

The limited asbestos survey **did** identify accessible ACM within the target areas of Interior and Exterior of Rockland County Sewer District no.1 located at 4 route 340, Orangeburg, NY 10962 Main Influent Pump Station. Please find attached the laboratory data report for samples that were collected.

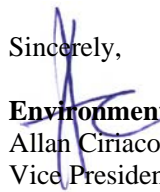
Based on the nature of this inspection, it is possible that unidentified materials may be uncovered and/or encountered during the demolition activities. If additional suspect ACM are encountered during demolition, work should cease within that area of work, the area should be isolated from unauthorized entry, and the materials should be sampled for analysis to determine total asbestos content. Only through further sampling by properly certified personnel and analyzed in an accredited laboratory can a suspect material be identified as non-ACM. Additionally, if any identified ACM are encountered, they should be treated as ACM.

As per applicable Federal, State, and City regulations all ACM identified that would be disturbed as part of the project must be properly abated by a NYS DOL Licensed Asbestos Contractor utilizing NYSDOL Certified personnel prior to any repair/renovation activities. Any penetrations to the ACM or impact to the intact ACM matrix would be considered a disturbance. Please note that any non-asbestos contractor performing any work that may impact the building materials must be informed of the presence and location of the ACM, and that disturbance is prohibited. In addition, the non-asbestos contractor personnel performing any work on or around ACM must have current OSHA Asbestos Awareness Training.

Should you have any questions or require additional information, please do not hesitate to contact me at (914) 232-7355.

Should you have any questions or require additional information, please do not hesitate to contact me at (914) 232-7355.

Sincerely,


Environmental Maintenance Contractors, Inc.
Allan Ciriaco
Vice President of Operations

Attachment(s): Laboratory Sample Results, Licenses and Certifications



ATC Group Services LLC

104 E. 25th Street, 8th Floor
New York, NY 10010
Tel. 212-353-8280
Fax: 212-353-8306

Client: ENVIRONMENTAL MAINTENANCE CONTRACTORS
5 ANDERSON LANE
GOLDENS BRIDGE, NY 10526

Fax: (914) 232-7357 **Phone:** (914) 232-7355

Project: EDR

Sample Date: 11/21/2019

Date Received : 11/22/2019

Date Analyzed : 11/25/2019

ATC Batch # 48791

Methods: ELAP 198.1, 198.6, 198.4

Location: Rockland County Sewer District Main PS 4 NY 340 Orangeburg, NY

Bulk Asbestos Analysis Results

Sample #	Location	Type of Material	Method	<u>Non-Asbestos</u>		<u>NOB</u>	<u>Asbestos</u>
				% Fibrous	% Non-Fibrous	% Type	% Type
1	Roof	Roof Tar	NOB-TEM			74.1% Organic 12.1% Residue 13.8% Carbonate	NONE DETECTED
48791 -1					0.0% Vermiculite		
Analyzed By: Amr Fata		Color: Black Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive				
2	Roof	Roof Tar	NOB-TEM			67.3% Organic 17.8% Residue 14.9% Carbonate	NONE DETECTED
48791 -2					0.0% Vermiculite		
Analyzed By: Amr Fata		Color: Black Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive				
12	Roof	Flashing Tar	NOB-PLM			59.5% Organic 24.3% Residue 11.9% Carbonate	4.3% Chrysotile
48791 -3					0.0% Vermiculite		
Analyzed By: Amr Fata		Color: Black Second Analyst: Mei Wang					
						Total Asbestos: 4.3 %	
13	Roof	Flashing Tar	NOB-PREP			61.2% Organic 32.6% Residue 6.2% Carbonate	NOT ANALYZED
48791 -4							
Analyzed By: Amr Fata		Color: Black	Comments: Not analyzed by NOB PLM, positive stop, see #12				
16	Exterior - 001	Window Caulking	NOB-TEM			47.3% Organic 7.8% Residue 44.9% Carbonate	NONE DETECTED
48791 -5					0.0% Vermiculite		
Analyzed By: Amr Fata		Color: Gray Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive				
17	Exterior - 001	Window Caulking	NOB-TEM			51.2% Organic 2.8% Residue 46% Carbonate	NONE DETECTED
48791 -6					0.0% Vermiculite		
Analyzed By: Amr Fata		Color: Gray Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive				
18	Exterior - 001	Louver Caulking	NOB-TEM			53% Organic 6.4% Residue 40.6% Carbonate	NONE DETECTED
48791 -7					0.0% Vermiculite		
Analyzed By: Amr Fata		Color: Gray Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive				



ATC Group Services LLC

104 E. 25th Street, 8th Floor
New York, NY 10010
Tel. 212-353-8280
Fax: 212-353-8306

Sample #	Location	Type of Material	Method	<u>Non-Asbestos</u>		<u>NOB</u>	<u>Asbestos</u>
				% Fibrous	% Non-Fibrous	% Type	% Type
19	Exterior - 001	Louver Caulking	NOB-TEM			55.9% Organic 2.2% Residue 41.9% Carbonate	NONE DETECTED
48791 -8					0.0% Vermiculite		
Analyzed By: Amr Fata		Color: Gray Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive				
20	Exterior - 001	Door Caulking	NOB-TEM			44.7% Organic 13.7% Residue 41.6% Carbonate	NONE DETECTED
48791 -9					0.0% Vermiculite		
Analyzed By: Amr Fata		Color: Gray Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive				
21	Exterior - 001	Door Caulking	NOB-TEM			50.4% Organic 7.8% Residue 41.8% Carbonate	NONE DETECTED
48791 -10					0.0% Vermiculite		
Analyzed By: Amr Fata		Color: Gray Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive				
22	Exterior - 001	Brick	PLM		100% Mineral Filler		
48791 -11					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: Beige					
23	Exterior - 001	Brick	PLM		100% Mineral Filler		
48791 -12					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: Beige					
24	Exterior - 001	Brick Mortar	PLM	Trace% Cellulose	100% Mineral Filler		
48791 -13					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: Gray					
25	Exterior - 001	Brick Mortar	PLM	Trace% Cellulose	100% Mineral Filler		
48791 -14					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: Gray					
26	Interior - 001 - Ceiling	Plaster Brown	PLM		100% Mineral Filler		
48791 -15					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: Brown					
27	Interior - 001 - Ceiling	Plaster White	PLM		100% Mineral Filler		
48791 -16					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: White					
28	Interior - 001 - Ceiling	Plaster Brown	PLM		100% Mineral Filler		
48791 -17					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: Brown					



ATC Group Services LLC

104 E. 25th Street, 8th Floor

New York, NY 10010

Tel. 212-353-8280

Fax: 212-353-8306

Sample #	Location	Type of Material	Method	Non-Asbestos		NOB % Type	Asbestos % Type
				% Fibrous	% Non-Fibrous		
29	Interior - 001 - Ceiling	Plaster White	PLM		100% Mineral Filler		
48791 -18					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: White					
30	Interior - 001 - Ceiling	Plaster Brown	PLM		100% Mineral Filler		
48791 -19					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: Brown					
31	Interior - 001 - Ceiling	Plaster White	PLM		100% Mineral Filler		
48791 -20					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: White					
32	Interior - 001 - Ceiling	Plaster Brown	PLM		100% Mineral Filler		
48791 -21					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: Brown					
33	Interior - 001 - Ceiling	Plaster White	PLM		100% Mineral Filler		
48791 -22					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: White					
34	Interior - 001 - Ceiling	Plaster Brown	PLM		100% Mineral Filler		
48791 -23					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: Brown					
35	Interior - 001 - Ceiling	Plaster White	PLM		100% Mineral Filler		
48791 -24					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: White					
36	Interior - 001 - Vibration Dampener	Vibration Dampener Cloth	NOB-TEM			29.6% Organic 58.8% Residue 11.6% Carbonate	
48791 -25					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: Black					
		Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive				
37	Interior - 001 - Vibration Dampener	Vibration Dampener Cloth	NOB-TEM			30.4% Organic 56.7% Residue 12.9% Carbonate	
48791 -26					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: Black					
		Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive				
38	Interior - Intermediate Level - Pipes	Pipe Gasket	NOB-TEM			33.1% Organic 25.8% Residue 41.1% Carbonate	
48791 -27					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: Black					
		Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive				



ATC Group Services LLC

104 E. 25th Street, 8th Floor

New York, NY 10010

Tel. 212-353-8280

Fax: 212-353-8306

Sample #	Location	Type of Material	Method	<u>Non-Asbestos</u>		<u>NOB</u>	<u>Asbestos</u>
				% Fibrous	% Non-Fibrous	% Type	% Type
39	Interior - Intermediate Level - Pipes	Pipe Gasket	NOB-TEM			34.9% Organic 25.5% Residue 39.6% Carbonate	NONE DETECTED
48791 -28					0.0% Vermiculite		
Analyzed By: Amr Fata		Color: Black	Second Analyst: Roman Peysakhov	Comments: NOB PLM inconclusive			
40	Interior - Lower Level - Front Motor	Front Motor Gasket	PLM	98% Cellulose	2% Mineral Filler		
48791 -29					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: Brown					
41	Interior - Lower Level - Front Motor	Front Motor Gasket	PLM	97% Cellulose	3% Mineral Filler		
48791 -30					0.0% Vermiculite		NONE DETECTED
Analyzed By: Amr Fata		Color: Brown					



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Sample #	Location	Type of Material	Method	Non-Asbestos		NOB	Asbestos
				% Fibrous	% Non-Fibrous	% Type	% Type

NOTES:

- 1) The Limit of Detection is the same as the Reporting Limit for these results.
- 2) The Reporting Limit (RL) is the Limit of Quantitation. For point counts the limit of quantitation of 0.25%; based on one asbestos point counter over 400 non-empty points.
- 3) Asbestos Containing Material (ACM) Definition: > 1% asbestos by weight is considered an ACM
- 4) Disclaimer: The laboratory is not responsible for sample collection. Please refer to enclosed letter. This report may not be reproduced, except in full, without written approval by ATC Group Services. This report may not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government. This report relates only to the samples reported above as described in the chain of custody. Quality control data is available upon request.
- 5) Accredited by NVLAP #101187-0 and by NY State ELAP #10879
- 6) Confidentiality Notice: The document(s) contained herein are confidential and privileged information, intended for the exclusive use of the individual or entity named above.
- 7) Liability Notice: ATC Group Services and its personnel shall not be liable for any misinformation provided to us by the client regarding these samples. This report relates only to samples submitted and analyzed.
- 8) Asbestos results are reliable to 2 significant figures.
- 9) The condition of all samples was acceptable upon receipt.
- 10) The laboratory certifies that the test results meet all requirements of NELAC.
- 11) Supplement to test report batch # _____, Amendments: _____, Amendment Dates: _____, Amended by: _____
- 12) PLM Letter is attached on this report.
- 13) TRACE: The result is reported as Trace when No points are counted and asbestos is identified. For ELAP Trace is < 1%.
- 14) ATC Group Services certifies that this report is an accurate and authentic report of the results obtained from the laboratory analysis
- 15) The uncertainty for these test results is available upon request.
- 16) ELAP requires method ELAP 198.1 for the analysis of samples containing $\leq 10\%$ vermiculite. For samples containing > 10% vermiculite ELAP requires methods ELAP 198.1 followed by ELAP 198.6. "This method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite."

Amr Fata

Analyst:

Mei Wang

Analyst:

Roman Peysakhov

Analyst:

Mei Wang

Approved by

Quality Manager:

$$\frac{1}{48791}$$

Field #	Group	Sample Description	Location	Friable Y/N	Asbestos Content	Notes
1	1	ROOF TAR	ROOF	N		STOP ON FIRST POSITIVE OF EACH GROUP JEN & R. BERSKUN Dec 11/25/19 12:30 Drawing/Sketch (Required)
2	1	ROOF TAR	ROOF	N		
			ROOF	S		
			ROOF	S		
			ROOF	N		
			ROOF	N		
			ROOF	N		Drawing/Sketch (Required)
			ROOF	N		
			ROOF	N		
			ROOF	N		
			ROOF	N		
			ROOF	N		
			ROOF	N		
12	2	FLASHING TAR	ROOF	N		Drawing/Sketch (Required) Analyzed by: Ann Holt A-J-E 11/22/19
13	2	FLASHING TAR	ROOF	N		
14	2		ROOF	N		
15	2		ROOF	N		
Sampled By: (Signature)		Date	Relinquished By: (Signature)	Date		
(1) [Signature]		11-21-19	(3) [Signature]			
Printed Name: JEFF GALLURA		Time	Printed Name:	Time		
			MURRAY	12:50pm		
Relinquished By: (Signature)		Date	Received By: (Signature)	Date		
(2) [Signature]			[Signature]	11/22/18		
Printed Name:		Time	Printed Name:	Time		

Asbestos Bulk Sample Analysis - Chain of Custody

Client: EDR
 Site Location: Rockland County Sewer District Main PS 4 Ny 340 Orangeburg, Ny
 Project: Date Sampled: 11/21/2019
 Technician: JEFF GALURA Cert#(s): 128154 Exp: 07/22/2021
 Inspection Start/End Time: 830am - 12pm

DATA DELIVERY
 Phone: (914) 232-7355
 Fax: (914) 232-7357
 Email: admin@enviromain.com

Lab#: _____
 Rush 12hr 24hr 48hr 72hr
 Other: _____

Field #	Group	Sample Description	Location	Friable Y/N	Asbestos Content	Notes
16	3	WINDOW CAULKING	EXTERIOR - 001	N		STOP ON FIRST POSITIVE OF EACH GROUP
17	3	WINDOW CAULKING	EXTERIOR - 001	N		
18	4	LOUVER CAULKING	EXTERIOR - 001	N		
19	4	LOUVER CAULKING	EXTERIOR - 001	N		
20	5	DOOR CAULKING	EXTERIOR - 001	N		
21	5	DOOR CAULKING	EXTERIOR - 001	N		STOP ON FIRST POSITIVE OF EACH GROUP
22	6	BRICK	EXTERIOR - 001	Y		
23	6	BRICK	EXTERIOR - 001	Y		
24	7	BRICK MORTAR	EXTERIOR - 001	Y		
25	7	BRICK MORTAR	EXTERIOR - 001	Y		
26	7	PLASTER BROWN	INTERIOR - 001 - CEILING	Y		STOP ON FIRST POSITIVE OF EACH GROUP
27	7	PLASTER WHITE	INTERIOR - 001 - CEILING	Y		
28	7	PLASTER BROWN	INTERIOR - 001 - CEILING	Y		
29	7	PLASTER WHITE	INTERIOR - 001 - CEILING	Y		
30	7	PLASTER BROWN	INTERIOR - 001 - CEILING	Y		
Sampled By: (Signature)		Date	Relinquished By: (Signature)	Date	Drawing/Sketch (Required)	
Printed Name: JEFF GALURA		Time	Printed Name:	Time		
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Printed Name:		Time	Printed Name:	Time	Drawing/Sketch (Required)	
Relinquished By: (Signature)		Date	Received By: (Signature)	Date		
Printed Name:		Time	Printed Name:	Time		
Relinquished By: (Signature)		Date	Received By: (Signature)	Date		
Printed Name:		Time	Printed Name:	Time	Drawing/Sketch (Required)	
Relinquished By: (Signature)		Date	Received By: (Signature)	Date		
Printed Name:		Time	Printed Name:	Time		
Relinquished By: (Signature)		Date	Received By: (Signature)	Date		
Printed Name:		Time	Printed Name:	Time	Drawing/Sketch (Required)	
Relinquished By: (Signature)		Date	Received By: (Signature)	Date		
Printed Name:		Time	Printed Name:	Time		
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Printed Name:		Time	Printed Name:	Time	Drawing/Sketch (Required)	
Relinquished By: (Signature)		Date	Received By: (Signature)	Date		
Printed Name:		Time	Printed Name:	Time		
Relinquished By: (Signature)		Date	Received By: (Signature)	Date		
Printed Name:		Time	Printed Name:	Time	Drawing/Sketch (Required)	
Relinquished By: (Signature)						

STOP ON FIRST POSITIVE
OF EACH GROUP

STOP ON FIRST POSITIVE
OF EACH GROUP

STOP ON FIRST POSITIVE
OF EACH GROUP

STOP ON FIRST POSITIVE
OF EACH GROUP

STOP ON FIRST POSITIVE
OF EACH GROUP

Asbestos Bulk Sample Analysis - Chain of Custody

Client: EDR

Site Location: Rockland County Sewer District Main PS 4 Ny 340 Orangeburg, Ny

Project: Date Sampled: 11/21/2019

Inspection Start/End Time: 830am - 12pm

Technician: JEFF GALURA Cert#(s): 128154 Exp: 07/22/2021

DATA DELIVERY

Phone: (914) 232-7355

Fax: (914) 232-7357

Email: admin@enviromain.com

Turn Around Time
Rush 12hr 24hr 48hr 72hr

Other:

Lab#:

1/8/2019

Field #	Group	Sample Description	Location	Enable Y/N	Asbestos Content	Notes
31	8	PLASTER WHITE	INTERIOR - 001 - CEILING	Y		STOP ON FIRST POSITIVE OF EACH GROUP
32	8	PLASTER BROWN	INTERIOR - 001 - CEILING	Y		
33	8	PLASTER WHITE	INTERIOR - 001 - CEILING	Y		
34	8	PLASTER BROWN	INTERIOR - 001 - CEILING	Y		
35	8	PLASTER WHITE	INTERIOR - 001 - CEILING	Y		
36	9	VIBRATION DAMPENER CLOTH	INTERIOR - 001 - VIBRATION DAMPENER	N		NEW & RECOVERED After 11/21/19, 12:30
37	9	VIBRATION DAMPENER CLOTH	INTERIOR - 001 - VIBRATION DAMPENER	N		
38	10	PIPE GASKET	INTERIOR - INTERMEDIATE LEVEL - PIPES	N		
39	10	PIPE GASKET	INTERIOR - INTERMEDIATE LEVEL - PIPES	N		
40	11	FRONT MOTOR GASKET	INTERIOR - LOWER LEVEL - FRONT MOTOR	N		
41	11	FRONT MOTOR GASKET	INTERIOR - LOWER LEVEL - FRONT MOTOR	N		Drawing/Sketch (Required)
Sampled By: (Signature)		Date	Relinquished By: (Signature)		Date	<p>Submitted by:</p> <p>for desk</p> <p>11/22/19</p> <p>6:30 PM</p> <p>11/17/19</p> <p>11/17/19</p>
Printed Name: JEFF GALURA		Time	Printed Name:		Time	
Relinquished By: (Signature)		Date	Received By: (Signature)		Date	
Printed Name:		Time	Printed Name:		Time	
Printed Name:		Time	Printed Name:		Time	



ATC Group Services LLC

104 E. 25th Street, 8th Floor
New York, NY 10010
Tel. 212-353-8280
Fax: 212-353-8306

Client: ENVIRONMENTAL MAINTENANCE CONTRACTORS
5 ANDERSON LANE
GOLDENS BRIDGE, NY 10526

Fax: (914) 232-7357 **Phone:** (914) 232-7355

Project: EDR

Sample Date: 11/21/2019

Date Received : 12/5/2019

Date Analyzed : 12/9/2019

ATC Batch # 48876

Methods: ELAP 198.1, 198.6, 198.4

Location: Rockland Country Sewer District Main PS 4 NY / 340 Orangeburg, NY

Bulk Asbestos Analysis Results

Sample #	Location	Type of Material	Method	<u>Non-Asbestos</u>		<u>NOB</u>	<u>Asbestos</u>
				% Fibrous	% Non-Fibrous	% Type	% Type
3	Roof	Roof Board	PLM	90% Cellulose 2% FiberGlass	8% Mineral Filler 0.0% Vermiculite		NONE DETECTED
48876 -1							
Analyzed By: Amr Fata				Color: Brown			
4	Roof	Roof Board	PLM	93% Cellulose 2% FiberGlass	5% Mineral Filler 0.0% Vermiculite		NONE DETECTED
48876 -2							
Analyzed By: Amr Fata				Color: Brown			
5	Roof	Roof Membrane	NOB-TEM			71.2% Organic 8% Residue 20.8% Carbonate	NONE DETECTED
48876 -3					0.0% Vermiculite		
Analyzed By: Amr Fata				Color: Black Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive		
6	Roof	Roof Membrane	NOB-TEM			67.2% Organic 11.4% Residue 21.4% Carbonate	NONE DETECTED
48876 -4					0.0% Vermiculite		
Analyzed By: Amr Fata				Color: Black Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive		
7	Roof	Roof Membrane	NOB-TEM			54.5% Organic 13% Residue 32.5% Carbonate	NONE DETECTED
48876 -5					0.0% Vermiculite		
Analyzed By: Amr Fata				Color: Black Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive		
8	Roof	Roof Membrane	NOB-TEM			71.4% Organic 11.2% Residue 17.4% Carbonate	NONE DETECTED
48876 -6					0.0% Vermiculite		
Analyzed By: Amr Fata				Color: Black Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive		
9	Roof	Roof Membrane	NOB-TEM			89.7% Organic 1.8% Residue 8.5% Carbonate	NONE DETECTED
48876 -7					0.0% Vermiculite		
Analyzed By: Amr Fata				Color: Black Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive		



ATC Group Services LLC

104 E. 25th Street, 8th Floor

New York, NY 10010

Tel. 212-353-8280

Fax: 212-353-8306

Sample #	Location	Type of Material	Method	Non-Asbestos		NOB	Asbestos
				% Fibrous	% Non-Fibrous	% Type	% Type
10	Roof	Roof Seam Tar	NOB-TEM			34.7% Organic 29.3% Residue 36% Carbonate	NONE DETECTED
48876 -8					0.0% Vermiculite		
Analyzed By: Amr Fata		Color: Black Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive				
11	Roof	Roof Seam Tar	NOB-TEM			26.2% Organic 35.2% Residue 38.6% Carbonate	NONE DETECTED
48876 -9					0.0% Vermiculite		
Analyzed By: Amr Fata		Color: Black Second Analyst: Roman Peysakhov	Comments: NOB PLM Inconclusive				

NOTES:

- 1) The Limit of Detection is the same as the Reporting Limit for these results.
- 2) The Reporting Limit (RL) is the Limit of Quantitation. For point counts the limit of quantitation of 0.25%; based on one asbestos point counter over 400 non-empty points.
- 3) Asbestos Containing Material (ACM) Definition: > 1% asbestos by weight is considered an ACM
- 4) Disclaimer: The laboratory is not responsible for sample collection. Please refer to enclosed letter. This report may not be reproduced, except in full, without written approval by ATC Group Services. This report may not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government. This report relates only to the samples reported above as described in the chain of custody. Quality control data is available upon request.
- 5) Accredited by NVLAP #101187-0 and by NY State ELAP #10879
- 6) Confidentiality Notice: The document(s) contained herein are confidential and privileged information, intended for the exclusive use of the individual or entity named above.
- 7) Liability Notice: ATC Group Services and its personnel shall not be liable for any misinformation provided to us by the client regarding these samples. This report relates only to samples submitted and anal
- 8) Asbestos results are reliable to 2 significant figures.
- 9) The condition of all samples was acceptable upon receipt.
- 10) The laboratory certifies that the test results meet all requirements of NELAC.
- 11) Supplement to test report batch # _____. Amendments: _____. Amendment Dates: _____. Amended by: _____
- 12) PLM Letter is attached on this report.
- 13) TRACE: The result is reported as Trace when No points are counted and asbestos is identified. For ELAP Trace is < 1%.
- 14) ATC Group Services certifies that this report is an accurate and authentic report of the results obtained from the laboratory analysis
- 15) The uncertainty for these test results is available upon request.
- 16) ELAP requires method ELAP 198.1 for the analysis of samples containing ≤ 10% vermiculite. For samples containing > 10% vermiculite ELAP requires methods ELAP 198.1 followed by ELAP 198.6. "This method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite."

Amr Fata

Analyst:

Roman Peysakhov

Analyst:

Mei Wang

Approved by

Quality Manager:



ELAP BULK ASBESTOS ANALYSIS RESULTS

PLM Analysis Methodology

The samples were analyzed by industry accepted methods in accordance with ELAP¹ using Polarized Light Microscopy (PLM) with dispersion staining in conjunction with stereoscopic analysis. Point counts are performed on samples regulated by this agency. The Environmental Laboratory Approval Program (ELAP) has determined that analysis of non-friable organically bound materials (i.e. floor tile, roofing, etc.) and ceiling tiles with cellulose is not reliable when performed by Polarized Light Microscopy (PLM) method. Therefore, if this analysis included that of non-friable materials or ceiling tiles with cellulose under PLM and the results were negative, ATC must add this disclaimer to maintain ELAP accreditation:

"Polarized light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative Transmission Electron Microscopy is currently the only method that can be used to determine if this material can be considered or treated as non-asbestos containing".

Non-friable samples that contained *Trace* or *No* PLM detectable asbestos are classified as Inconclusive. Layered samples should be separated and analyzed individually and the analysis of each layer should be reported. Joint compound is the only exception.

ELAP requires method ELAP 198.1 for the analysis of samples containing $\leq 10\%$ vermiculite with the exception of surfacing material containing vermiculite (SM-V). For samples containing $>10\%$ vermiculite ELAP requires methods ELAP 198.1 followed by ELAP 198.6. This method has limitations for identification and quantification of vermiculite. "This method does not remove vermiculite and may underestimate the level of asbestos present in a sample containing greater than 10% vermiculite."

Surfacing material that contains vermiculite (SM-V) are analyzed by ELAP method 198.8. Sample results for SM-V tested by other methods upon client requests are inconclusive.

ATC has the capability of performing TEM confirmation if so desired.

Bulk sample reports are checked and reviewed two times. Unused portions of samples are archived for two months unless client requests special handling. This report must not be used by the client to claim product endorsement by NIST or any agency of the U.S. government.

ATC is not responsible for sample collection and analytical procedures not performed by our laboratory. This report may not be reproduced in part without the laboratory permission.

ATC will not be liable for analytical results from samples that are not prepared according to the standard methods used by the laboratory (e.g. composite samples from different locations, samples with insufficient volumes, straight TEM samples without gravimetric procedures, dust samples, non-friable samples by PLM only).

Laboratory Equipment

Laboratory analyses were accomplished utilizing Olympus BH-2 Microscopes for PLM analyses and the JEOL Model JEM-100CXII-2 for TEM analyses.

Quality Control

ATC is accredited by NY State DOH ELAP (Lab ID 10879) for bulk and air fiber analyses. ATC participates in the Bulk Asbestos Sample Quality Assurance Programs for ELAP and maintains an in-house QC/QA program for bulk samples whereby 10% of all submitted samples are reanalyzed and results are documented. ATC also participates in a quarterly round robin QC/QA program for bulk samples with several accredited laboratories throughout the United States. Current and past QC/QA program results are available in the laboratory for inspection.

Accuracy and Precision

The phase abundances provided by point count may be considered within the limits of variability inherent in the method employed. For point counts the detection limit of 0.25% is based on one asbestos point counted over 400 non-empty points. If no points are counted and asbestos is identified, the result will be reported as trace. For ELAP trace is $< 1\%$.

The analyses were supervised by Milena Bonezzi, Director of Laboratory Services, who has extensive experience in asbestos analysis by PLM and other methods. Please contact me regarding any questions relating to these materials at 212-353-8280.

Methods

1. ELAP 4088 Items 198.1 and 198.4 and 198.6 and 198.8

Sincerely,

Milena Bonezzi
ATC Group Services LLC
Director of Laboratory Services

DATA DELIVERY

	<i>Fansprml Ca</i>
Drawing/Sketch (Required)	<p>- Sketches by:</p> <p><i>Amr Jaf</i></p> <p><i>Ajmer 12/6/19</i></p> <p><i>Zispr 2/20</i></p> <p>- NOB-pl:</p> <p><i>Amr Jaf</i></p> <p><i>Arif m/c</i></p>
TCM & Shaukat Ali	
Date 12/9/19 09:10a	

STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE



ALLAN F CIRIACO
CLASS(EXPIRES)
D INSP(07/20) E MGPL(07/20)
I PD (07/20)

CERT# 07-00037
DMV# 340777334

MUST BE CARRIED ON ASBESTOS PROJECTS





01213 005232270 88

EYES BRO
HAIR BLK
HGT 5' 07"

IF FOUND RETURN TO:
NYSOL - L&C UNIT
ROOM 161A BUILDING 12
STATE OFFICE CAMPUS
ALBANY NY 12240

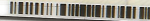
STATE OF NEW YORK - DEPARTMENT OF LABOR
ASBESTOS CERTIFICATE



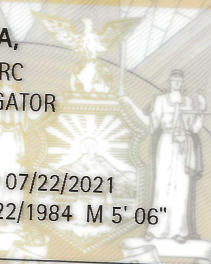

JEFF M GALURA
CLASS(EXPIRES)
C ATEC(07/20) D INSP(07/20)
G SUPR(07/20) H PM (07/20)

CERT# 06-16787
DMV# 802919116

MUST BE CARRIED ON ASBESTOS PROJECTS



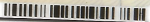
NYC DEP ASBESTOS CONTROL PROGRAM
ASBESTOS CERTIFICATE



GALURA,
JEFF MARC
INVESTIGATOR
128154

EXPIRES: 07/22/2021
DOB: 07/22/1984 M 5' 06"

MUST BE CARRIED ON ALL ASBESTOS PROJECTS



New York State – Department of Labor

Division of Safety and Health
License and Certificate Unit
State Campus, Building 12
Albany, NY 12240

EXPIRATION:

May 31, 2020

ASBESTOS HANDLING LICENSE

Environmental Maintenance Contractors, Inc.

5 Anderson Lane

Goldens Bridge, NY 10526

FILE NUMBER: 05-0348

LICENSE NUMBER: 28535

LICENSE CLASS: FULL

DATE OF ISSUE: 05/21/2019

EXPIRATION DATE: 05/31/2020

Duly Authorized Representative – Richard Stumbo:

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.



Eileen M. Franko, Director
For the Commissioner of Labor

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2020
Issued April 01, 2019

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. MILENA BONEZZI
ATC GROUP SERVICES LLC
104 EAST 25TH STREET 8TH FLOOR
NEW YORK, NY 10010

NY Lab Id No: 10879

is hereby **APPROVED** as an *Environmental Laboratory* in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2003) for the category
ENVIRONMENTAL ANALYSES POTABLE WATER
All approved analytes are listed below:

Miscellaneous

Asbestos

EPA 100.2



Department
of Health

Serial No.: 59464

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.



NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2020
Issued April 01, 2019

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

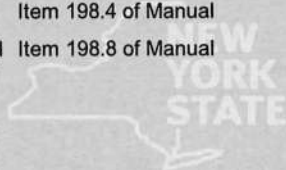
MS. MILENA BONEZZI
ATC GROUP SERVICES LLC
104 EAST 25TH STREET 8TH FLOOR
NEW YORK, NY 10010

NY Lab Id No: 10879

*is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved subcategories and/or analytes are listed below:*

Miscellaneous

Asbestos in Friable Material	Item 198.1 of Manual EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual
Asbestos-Vermiculite-Containing Material	Item 198.8 of Manual



Department
of Health

Serial No.: 59465

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NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2020
Issued April 01, 2019

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. MILENA BONEZZI
ATC GROUP SERVICES LLC
104 EAST 25TH STREET 8TH FLOOR
NEW YORK, NY 10010

NY Lab Id No: 10879

*is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES AIR AND EMISSIONS
All approved subcategories and/or analytes are listed below:*

Miscellaneous

Asbestos

40 CFR 763 APX A No. III

NIOSH 7402

Fibers

NIOSH 7400 A RULES

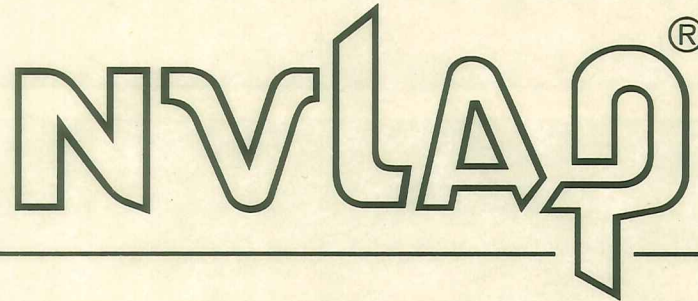


Department
of Health

Serial No.: 59466

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United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101187-0

ATC Group Services LLC
New York, NY

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

Asbestos Fiber Analysis

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2018-07-01 through 2019-06-30

Effective Dates



[Signature]
For the National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

ATC Group Services LLC

104 E. 25th Street 8th Floor

New York, NY 10010

Ms. Milena Bonezzi

Phone: 212-353-8280 x247 Fax: 212-353-8306

Email: milena.bonezzi@atcassociates.com

ASBESTOS FIBER ANALYSIS

NVLAP LAB CODE 101187-0

Bulk Asbestos Analysis

Code

Description

18/A01

EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples

18/A03

EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

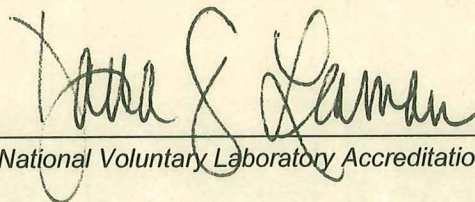
Airborne Asbestos Analysis

Code

Description

18/A02

U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.



For the National Voluntary Laboratory Accreditation Program



AIHA Laboratory Accreditation Programs, LLC

acknowledges that

ATC Group Services LLC

104 East 25th St 8th Flr, New York, NY 10010

Laboratory ID: 100229

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC accreditation to the ISO/IEC 17025:2005 international standard, *General Requirements for the Competence of Testing and Calibration Laboratories* in the following:

LABORATORY ACCREDITATION PROGRAMS

- ☒ **INDUSTRIAL HYGIENE**
- ☐ **ENVIRONMENTAL LEAD**
- ☐ **ENVIRONMENTAL MICROBIOLOGY**
- ☐ **FOOD**
- ☐ **UNIQUE SCOPES**

Accreditation Expires: November 01, 2019

Accreditation Expires:

Accreditation Expires:

Accreditation Expires:

Accreditation Expires:

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached **Scope of Accreditation**. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2005 and AIHA-LAP, LLC requirements. This certificate is not valid without the attached **Scope of Accreditation**. Please review the AIHA-LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

William Walsh, CIH
Chairperson, Analytical Accreditation Board

Cheryl O. Morton
Managing Director, AIHA Laboratory Accreditation Programs, LLC

Revision 15: 03/30/2016

Date Issued: 10/31/2017



AIHA Laboratory Accreditation Programs, LLC

SCOPE OF ACCREDITATION

ATC Group Services LLC

104 East 25th St 8th Flr, New York, NY 10010

Laboratory ID: **100229**

Issue Date: 10/31/2017

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

Industrial Hygiene Laboratory Accreditation Program (IHLAP)

Initial Accreditation Date: 06/12/1995

IHLAP Scope Category	Field of Testing (FoT) (FoTs cover all relevant IH matrices)	Technology sub-type/ Detector	Published Reference Method/Title of In-house Method	Method Description or Analyte <i>(for internal methods only)</i>
Asbestos/Fiber Microscopy Core	Phase Contrast Microscopy (PCM)		NIOSH 7400 Modified	

A complete listing of currently accredited Industrial Hygiene laboratories is available on the AIHA-LAP, LLC website at:
<http://www.aihaaccreditedlabs.org>

PROJECT LABOR AGREEMENT
Covering Construction Performed on Behalf
of the County of Rockland and Rockland
County Sewer District No. 1 and Rockland
County Building & Construction Trades
Council

Rockland County Sewer District No. 1
Main Pump Station Upgrade Project:
Contract RFB-RC-SWR-CIP-2020-02

County of Rockland Contract No. RFB-RC-SWR-CIP-2020-02

April 2021

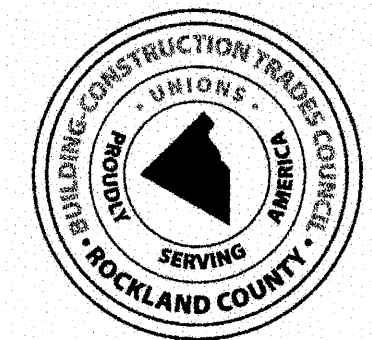


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INTRODUCTION

WHEREAS, The County of Rockland and Rockland County Sewer District No.1 (County) acting as its own Construction Manager, desires to provide for the cost efficient, safe, quality and timely completion of a construction project for Main Pump Station Upgrades in a manner designed to afford the lowest costs to the County and the Public it represents and the advancement of permissible public policy objectives;

WHEREAS, this Project Labor Agreement shall foster the achievement of these goals, inter alia, by:

1. avoiding the costly delays of potential strikes, slowdowns, walkouts, picketing and other disruptions arising from work disputes and promote labor harmony and peace for the duration of the Project;
2. standardizing the terms and conditions governing the employment of labor on the Project;
3. permitting wide flexibility in work scheduling and shift hours and times;
4. receiving negotiated adjustments as to work rules and staffing requirements from those which otherwise might obtain;
5. providing comprehensive and standardized mechanisms for the settlement of work disputes, including those relating to jurisdiction;
6. ensuring a reliable source of skilled and experienced labor;
7. furthering public policy objectives as to improved employment opportunities for minorities, women and the economically disadvantaged in the construction industry;
8. minimizing potential losses of revenues;
9. expediting the construction process and otherwise minimizing the inconveniences to the citizens of the County of Rockland; and

WHEREAS, the parties desire to maximize Project safety conditions for both workers and the public;
NOW, THEREFORE, the Parties enter into this Agreement:

PARTIES TO THE AGREEMENT

This is a Project Labor Agreement (AGREEMENT) entered into by and between the County of Rockland and Rockland County Sewer District No.1 and its successors and assigns (COUNTY) for Main Pump Station Upgrades project and by the Rockland County Building and Construction Trades Council, AFL-CIO (COUNCIL) (on behalf of itself and its affiliated Local Unions and their members) (LOCAL UNIONS).

The Council and Local Unions warrant and represent that it has been duly authorized to enter into this Agreement.

1.0 GENERAL CONDITIONS

1.1 DEFINITIONS

Throughout this Agreement, the Council and the signatory Local Unions are referred to singularly and collectively as "Union(s)". Where specific reference is made to "Local Unions" that phrase is sometimes used; the term "Contractor(s)" shall include and all signatory Contractors and their subcontractors of whatever tier, engaged in on-site Project construction work within the contractors and their subcontractors of whatever tier, engaged in on-site Project construction work within the scope of this Agreement as defined in Section 2.0; the Rockland County Building and Construction Trades Council, AFL-CIO is referred as the "Council" and the work covered by this Agreement (as defined in Section 2.0) is referred to as the "Project Work". The term "Employees" shall include the workers employed by the contractor.

1.2 CONDITIONS FOR AGREEMENT TO BECOME EFFECTIVE

This Agreement shall not become effective unless each of the following conditions are met:

1. the Agreement is approved and signed by the Council, and the Local Unions having jurisdiction over the Project work;
2. the Agreement is approved and signed by the County.

1.3 ENTITIES BOUND AND ADMINISTRATION OF AGREEMENT

This Agreement shall be binding on all signatory Unions and the County and all signatory Contractors performing on-site Project work, including site preparation and staging areas, as defined in Section 2.0. The Contractors shall include in any subcontract that they let for performance during the term of this Agreement a requirement that their subcontractors, of whatever tier, become a signatory to the Letter of Assent (Appendix B) and are bound by this Agreement with respect to subcontracted work performed within the scope of Section 2.0. This Agreement shall be administered by the County on behalf of all Contractors.

1.4 SUPREMACY CLAUSE

This Agreement, together with the Collective Bargaining Agreements of the Local Unions incorporated by reference herein represents the complete understanding of all signatories and supersedes any national agreement, local agreement or other collective bargaining agreement of any type which would otherwise apply to this Project, in whole or in part. Where a subject covered by the provisions, explicit or implicit, of this Agreement is also covered by a Collective Bargaining Agreement of a Local Union the provisions of this Agreement shall prevail. It is further understood that no Contractor shall be required to sign any other

agreement as a condition of performing work on this Project. No practice, understanding or agreement between a Contractor and a Local Union, which is, not explicitly set forth in this Agreement shall be binding on this Project unless endorsed in writing by the County.

1.5 LIABILITY

The liability of any Contractor and the liability of any Union under this Agreement shall be severed and not joint. The County and any Contractor shall not be liable for any violations of this Agreement by any other Contractor; and the Council and Local Unions shall not be liable for any violations of this Agreement by any other Union.

1.6 COUNTY OF ROCKLAND – CONSTRUCTION REPRESENTATIVE

The County shall require in its bid specifications for all work within the scope of Section 2.0 that all successful bidders and their subcontractors of whatever tier, become bound by and signatory to, this Agreement. It is understood that nothing in this Agreement shall be construed as limiting the sole discretion of the County in determining which Contractors shall be awarded contracts for Project work. It is further understood that the County shall have sole discretion at any time to terminate, delay or suspend the Project work, in whole or in part.

1.7 AVAILABILITY AND APPLICABILITY TO ALL SUCCESSFUL BIDDERS

The Unions agree that this Agreement shall be made available to and shall fully apply to any successful bidder for Project Work who becomes signatory thereto, without regard to whether that successful bidder performs work at other sites on either a union or non-union basis and without regard to whether employees of such successful bidder are, or are not, members of any unions. This Agreement shall not apply to the work of any Contractor which is performed at any location other than the Project site as defined in Section 2.1.

2.0 SCOPE OF THIS AGREEMENT

The Project work covered by this Agreement shall be as defined and limited by the following sections of this Section.

2.1 THE WORK

This Agreement shall only apply to the following on-site construction work performed at the Rockland County Sewer District No.1, contract RFB-RC-SWR-CIP 2020-02 in Orangeburg, NY including any amendments or modifications thereto (Contract Documents). "On site" construction work in connection with the above shall be defined to include Project Work performed at preparation and staging areas located within 15 miles of the Project site provided such work is covered by a Collective Bargaining Agreement.

2.2 TIME LIMITATIONS

This Agreement shall be further limited to Project Work performed under Project No. RFB-RC-SWR-CIP-2020-02. It is further understood that this Agreement, together with all of its provisions, shall remain in effect for the duration of all Project Work.

2.3 EXCLUDED EMPLOYEES

The following persons (excluding drivers) are not subject to the provisions of this Agreement, even though performing work on the Project:

1. Superintendents, supervisors (excluding general and forepersons specifically covered by a craft's Schedule A), engineers, inspectors and testers, quality control/assurance personnel, timekeepers, mail carriers, clerks, office workers, messengers, guards, technicians (for startup and testing and not for installation), non-manual employees, and all professional (excluding surveyors), architectural, engineering, administrative and management persons;
2. Employees of the County, or of any State agency, authority or entity or employees of any municipality or other public employer.
3. Employees and entities engaged in off-site (farther than 15 miles from the Project site as set forth in Section 2.1) manufacture, modifications, repair, maintenance, assembly, painting, handling or fabrication of project components, materials, equipment or machinery (unless specifically covered by a craft's Schedule A) or involved in deliveries to and from the Project site, excepting local deliveries of all major construction materials including fill, ready mix, asphalt and Item 4 which are covered by this Agreement;
4. Employees engaged in on-site equipment warranty work;
5. Employees engaged in laboratory or specialty testing or inspections;
6. Employees of companies engaged in ancillary Project work performed by third parties such as electric utilities, water utilities, gas utilities, telephone operating companies, railroads and cross connection termination of existing lines belonging to the County for data and telephone. However, contractors and subcontractors engaged by third parties to perform such work are subject to and shall be a signatory to this Agreement.
7. The work of the Contractor that is normally performed under the terms of a National Specialty Agreement including, but not limited to, the National Tank Manufacturing Agreement, the Stack Liner Agreement, the Rubber Liner Agreement, or any other National Specialty Agreement.

2.4 NON-APPLICATION TO CERTAIN ENTITIES

This Agreement shall not apply to the parents, affiliates, subsidiaries, or other joint or sole ventures of any Contractor, which do not perform work at this Project. It is agreed, for the purposes of this Agreement only, that this Agreement does not have the effect of creating any joint employment, single employer or alter ego status among the County and/or any Contractor. The Agreement shall further not apply to the County or any other county or state agency, authority or other municipal or public entity and nothing contained herein shall be construed to prohibit or restrict the County or its employees or any other county or state authority, agency or entity and its employees from performing on or off-site work related to the Project. As the contracts which comprise the Project work are completed and accepted, the Agreement shall not have further force or effect on such items or areas except where inspections, additions, repairs, modifications, check-out and/or warranty work are assigned in writing (copy to Local Union involved) by the County for performance under the terms of this Agreement.

3.0 UNION RECOGNITION AND EMPLOYMENT

3.1 PRE-HIRE RECONGNITION

The Contractors recognize the signatory Unions as the sole and exclusive bargaining representatives of all craft employees who are performing on-site Project work within the scope of this Agreement as defined in Section 2.0. The parties stipulate that this Agreement and all Collective Bargaining Agreements governed herein are "pre-hire agreements" as defined by Section 8(f) of the National Labor Relations Act.

3.2 UNION REFERRAL

- A. The Contractors agree to hire craft employees of the Local Unions covered by this Agreement through the job referral system and hiring halls (where the referrals meet the qualifications set forth in Item's 1, 2 and 4 of subparagraph B) established in the Local Union's area Collective Bargaining Agreements (attached as Schedule A to this Agreement). Notwithstanding this *requirement*, the Contractors shall have sole right to determine the competency of all referrals; the number of employees required; the selection of employees to be laid off (except as provided in Section 4.3); and the sole right to reject any applicant referred by a Local Union, subject to the show-up payments required in the applicable Schedule A. In the event that a Local Union is unable to fill any request for qualified employees within a 48 hour period after such requisition is made by the Contractor (Saturdays, Sundays and Holidays excepted), the Contractor may employ qualified applicants from any other available source. In the event that the Local Union does not have a job referral system, the Contractor shall give the Local Union first preference to refer applicants, subject to the other provisions of this Section. The Contractor shall notify the Local Union of employees hired within its jurisdiction from any source other than referral by the Union.

B. A Contractor may request by name, and the Local Union will honor, referral of persons who have applied to the Local Union for Project Work and who meet the following qualifications:

- (1) possess any license required by New York State law for the Project Work to be performed;
- (2) Have worked a total of at least 1000 hours in the construction craft during the prior two years, and
- (3) Were on the Contractor's active payroll for at least 60 out of the 180 calendar days prior to the contract award.
- (4) Have the ability to safely perform the basic functions of the applicable trade.
- (5) Have not committed a felony or misdemeanor, or other violation that would render such person unfit to work on school district property.

C. No more than twelve percent (12%) per centum of the employees covered by this Agreement, per Contractor by craft, shall be hired through the special provisions above (any fraction shall be rounded to the next highest whole number). The twelve percent (12%) per centum provision only applies after the Contractor hires its first employee from the appropriate Local Union.

3.3 NON-DISCRIMINATION IN REFERRALS

The Local Unions represent that their hiring halls and referral systems shall be operated in a non-discriminatory manner and in full compliance with all applicable federal, state and local laws and regulations which require equal employment opportunities. Referrals shall not be affected in any way by the rules, regulations, bylaws, constitutional provisions or any other aspects or obligations of union membership, policies or requirements and shall be subject to such other conditions as are established in this Section. No employment applicant shall be discriminated against by the referral system or hiring hall because of the applicant's union membership, or lack thereof.

3.4 MINORITY AND FEMALE REFERRALS

In the event a Local Union either fails, or is unable, to refer qualified minority or female applicants in percentages equaling Project affirmative action goals as set forth in the County's bid specifications, the Contractor may employ qualified minority or female applicants from any other available source.

3.5 CROSS AND QUALIFIED REFERRALS

The Local Union shall not knowingly refer to a Contractor an employee then employed by another Contractor working under this Agreement. The Local Unions shall exert their utmost efforts to recruit sufficient numbers of skilled and qualified craft employees to fulfill the requirements of the Contractor.

3.6 UNION DUES

All employees covered by this Agreement shall be subject to the union security provisions contained in the applicable Schedule A Collective Bargaining Agreements, as amended from time to time, but only for the period of time during which they are performing on-site Project work and only to the extent of rendering payment of the applicable monthly union dues uniformly required for union membership in the Local Unions, signatory to this Agreement, which represents the craft in which the employee is performing Project work. No employee shall be discriminated against at the Project site because of the employee's union membership or lack thereof. In the case of unaffiliated employees, the dues payment will be received by the Unions as an agency shop fee.

3.7 CRAFT FOREPERSONS AND GENERAL FOREPERSONS

The selection of craft forepersons and/or general forepersons and the number of forepersons required shall be solely the responsibility of the Contractor except where otherwise provided by specific provisions of an applicable Schedule A. All forepersons shall take orders exclusively from the designated Contractor representatives. Craft forepersons shall be designated as working forepersons at the request of the Contractor, except when an existing local Collective Bargaining Agreement prohibits a foreperson from working when the craftsman he is leading exceeds a specified number.

4.0 UNION REPRESENTATION

4.1 LOCAL UNION REPRESENTATIVE

Each Local Union representing on-site Project employees shall be entitled to designated writing (copy to Contractor involved and County) representative and/or the Business Manager, who shall be afforded access to the Project.

4.2 STEWARDS OR LEAD ENGINEER

- A. Each Local Union shall have the right to designate a working journeyman as a Steward and an alternate and shall notify the Contractor and County of the identity of the designated Steward (and alternate) prior to the assumption of such duties. Stewards shall not exercise supervisory functions and shall receive the regular rate of pay for their craft classifications. There shall be no non-working Stewards on the Project.
- B. In addition to their work as an employee, the Steward shall have the right to receive complaints or grievances and to discuss and assist in their adjustment with the Contractor's appropriate supervisor. Each Steward shall be concerned with the employees of the Steward's Contract and if applicable, subcontractors of the Contractor, but not with the employees of any other Contractor. The Contractor shall not discriminate against the Steward in the proper performance of Union duties.

- C. The Stewards shall not have the right to determine when overtime shall be worked, or who shall work overtime except pursuant to a Schedule A provision providing procedures for the equitable distribution of overtime.

4.3 LAYOFF OF A STEWARD

Contractors agree to notify the appropriate Union 24 hours prior to the layoff of a Steward, except in cases of discipline or discharge for just cause. If a Steward is protected against layoff by Schedule A, such provisions shall be recognized to the extent the Steward possesses the necessary qualifications to perform the work required. In any case in which a Steward is discharged or disciplined for just cause, the Local Union involved shall be notified immediately by the Contractor.

5.0 MANAGEMENT RIGHTS

5.1 RESERVATION OF RIGHTS

Except as expressly limited by a specific provision of this Agreement, Contractors retain full and exclusive authority for the management of their Project operations including, but not limited to: the right to direct the work force, including determination as to the number to be hired and the qualifications therefore; the promotion, transfer, layoff of its employees; or the discipline or discharge for just cause of its employees; the assignment and schedule of work; the promulgation of reasonable Project work rules; and the requirement, timing and number of employees to be utilized for overtime work. No rules, customs or practices which limit or restrict productivity or efficiency of the individual, as determined by the Contractor or County and/or joint working efforts with other employees shall be permitted or observed.

5.2 MATERIALS, METHODS AND EQUIPMENT

There shall be no limitation or restriction unless specified in the Contract Documents, upon the Contractor's choice of materials, techniques, methods, technology or design, or regardless of source or location, upon the use and installation of equipment, machinery, package units, precast, pre-fabricated, pre-finished, or pre-assembled materials, tools or other labor-saving devices. Contractors may, without restriction, install or use materials, supplies or equipment regardless of their source. The on-site installation or application of such items shall be performed by the craft having jurisdiction over such work; (re-bar will be fabricated and installed as per the requirements of Schedule A) provided, however, it is recognized that other personnel having special qualifications may participate, in a supervisory capacity, in the installation, check-off or testing of specialized or unusual equipment or facilities as designated by the Contractor. There shall be no restrictions as to work, which is performed off-site for the Project.

6.0 WORK STOPPAGES AND LOCKOUTS

6.1 NO STRIKES – NO LOCKOUTS

There shall be no strikes, sympathy strikes, picketing, work stoppages, slowdowns, hand billing, demonstrations or other disruptive activity at the Project for any reason by any Union or employee against any Contractor or employer while performing work at the Project. There shall be no other Union, or concerted or employee activity which disrupts or interferes with the operation of the County. Failure of any Union or employee to cross any picket line established by any Union, signatory or non-signatory to this Agreement, or the picket or demonstration line of any other organization, at or in proximity to the Project site is a violation of this Section. There shall be no lockout at the Project by any signatory Contractor. Contractors and Unions shall take all steps necessary to ensure compliance with this Section 6.1 and to ensure uninterrupted construction for the duration of this Agreement.

6.2 DISCHARGE FOR VIOLATION

A Contractor may discharge any employee violating Section 6.1, above, and any such employee shall not be eligible thereafter for referral under this Agreement for a period of one hundred (100) calendar days.

6.3 NOTIFICATION

If a Contractor contends with any Union has violated this Section, it shall notify the Council advising of such fact, with copies of the notification to the Local Union. The Council shall instruct, order and otherwise use its best efforts to cause the employees and/or the Local Unions to immediately cease and desist from any violation of this Section. The Council, complying with these obligations shall not be liable for the unauthorized acts of a Local Union or its members.

6.4 EXPEDITED ARBITRATION

Any Contractor or Union alleging a violation of Section 6.1 of this Section may utilize the expedited procedure set forth below (in lieu of, or in addition to, any actions at law or equity) that may be brought.

1. A party invoking this procedure shall notify the AAA arbitrator selected who shall act as Arbitrator under this expedited arbitration procedure. Copies of such notification shall be simultaneously sent to the alleged violator and if a Local Union is alleged to be in violation, the Council and the County.
2. The Arbitration shall thereupon, after notice as to time and place to the Contractor, the Local Union involved, the Council and the County a hearing within 48 hours of receipt for the notice invoking the procedure if it is contended that the violation still exists. The hearing shall not, however, be scheduled for less than 24 hours after the notice to the Council required by Section 6.3, above.

3. All notices pursuant to this Section may be by telephone, telegraph, hand delivery, or fax, confirmed by overnight delivery, to the Arbitrator, Contractor or Union involved. The hearing may be held on any day including Saturdays or Sundays. The hearing shall be completed in one (1) session, which shall not exceed eight (8) hours duration (no more than four (4) hours being allowed to either side to present their case and conduct their cross examination) unless otherwise agreed. A failure of any Union or Contractor to attend the hearing shall not delay the hearing of evidence by those present or the issuance of an award by the Arbitrator.
4. The sole issue at the hearing shall be whether a violation of Section 6.1, above, occurred. If a violation is found to have occurred, the Arbitrator shall issue a Cease and Desist Award restraining such violation and serve copies on the Contractor and the Union involved. The Arbitrator shall have no authority to consider any matter in justification, explanation or mitigation of such violation or to award damages, which issue is reserved solely for court proceedings, if any. The Award shall be issued in writing within three (3) hours after the close of the hearing and may be issued without an Opinion. If any involved party desires an Opinion, one shall be issued within fifteen (15) calendar days, but its issuance shall not delay compliance with or enforcement of the Award.
5. An Award issued under this procedure may be enforced by any court of competent jurisdiction upon the filing of this Agreement together with the Award. Notice of the filing of such enforcement proceedings shall be given to the Union or Contractor involved. In any court proceeding to obtain a temporary or preliminary order enforcing the Arbitrator's award as issued under this expedited procedure, the involved Union and Contractor waive their right to a hearing and agree that such proceedings may be ex parte, provided notice is given to opposing counsel. Such agreement shall not waive any party's right to participate in a hearing for a final court order of enforcement in any contempt proceeding.
6. Any rights created by statute or law governing arbitration proceedings which are inconsistent with the procedure set forth in this Section, or which interfere with compliance thereto, are hereby waived by the Contractors and Unions to whom they accrue.
7. The fees, expenses and all advance deposits required by the AAA of the Arbitrator shall be borne equally between the involved Contractor and Local Union.

6.5 ARBITRATION OF DISCHARGES FOR VIOLATION

Procedures contained in Section 8.0 shall not be applicable to any alleged violation of this Section, with the single exception that an employee discharged for violation of Section 6.1, above, may have recourse to the procedures of Section 8.0 to determine only if the employee did, in fact, violate the provisions of Section 6.1; but not for the purpose of modifying the discipline imposed where a violation is found to have occurred.

7.0 LABOR MANAGEMENT COMMITTEE

7.1 SUBJECTS

The Project Labor Management Committee shall meet on a regular basis to:

1. promote harmonious relations among the Contractors and Unions;
2. enhance safety awareness, cost effectiveness and productivity of construction operations;
3. protect the public interests;
4. discuss matters relating to staffing and scheduling with safety and productivity as considerations;
and
5. review Affirmative Action and equal employment opportunity matters pertaining to the Project.

7.2 COMPOSITION

The Committee shall be jointly chaired by designees of the President of the Council and the County of Rockland Sewer District No.1, Construction Representative and representatives of the Local Unions and Contractors involved in the issues being discussed. The Committee may conduct business through mutually agreed sub-committees.

8.0 GRIEVANCE AND ARBITRATION PROCEDURE

8.1 PROCEDURE FOR RESOLUTION OF GRIEVANCES

Any question, dispute or claim arising out of, or involving the interpretation or application of this Agreement (other than jurisdictional disputes or alleged violations of Section 6.1) shall be considered a grievance and shall be resolved pursuant to the exclusive procedure of the steps described below; provided, in all cases, that the question, dispute or claim arose during the term of this Agreement.

8.1.1 Step One

- A. When any Employee covered by this Agreement feels aggrieved by a claimed violation of this Agreement, the employee shall, through the Local Union business representative or job Steward give notice of the claimed violation to the work site representative of the involved Contractor. To be timely, such notice of the grievance must be within fourteen (14) calendar days after the act, occurrence or event given rise to the grievance. The business representative of the Local Union or the job Steward and the work site representative of the involved Contractor shall meet and endeavor to adjust the matter within fourteen (14) calendar days after a timely notice has been given. If they fail to resolve the matter within the prescribed period, the grieving party, may, within fourteen (14) calendar days thereafter, pursue Step Two of the grievance procedure by serving the involved Contractor and the County with written copies of the grievance occurred and the

provisions of the Agreement alleged to have been violated. Grievances and disputes settled at Step One are non-precedential except as to the specific Local Union, employee and Contractor directly involved unless the settlement is accepted in writing by the County as creating a precedent.

- B. Should any signatory to this Agreement have a dispute (excepting jurisdictional disputes or alleged violations of Section 6.1) with any other signatory to this Agreement and after conferring, a settlement is not reached within fourteen (14) calendar days, the dispute shall be reduced to writing and proceed to Step Two in the same manner as outlined in subparagraph (a) for the adjustment of employee grievances.

8.1.2 Step Two

- A. The Business Manager or designee of the involved Local Union, together with representatives of the Council, the involved Contractor and the County Construction Representative shall meet in Step Two within fourteen (14) calendar days of service of the written grievance to arrive at a satisfactory settlement.

8.1.3 Step Three

- A. If the grievance shall have been submitted but not resolved in Step Two, any of the participating Step 2 entities may, within twenty-one (21) calendar days after the initial Step Two meeting, submit the grievance in writing (copies to other participants) to the Arbitrators under this procedure. The Labor Arbitration Rules of the American Arbitration Association shall govern the conduct of the arbitration hearing, at which all Step Two participants shall be parties. The decision of the Arbitrator shall be final and binding on the involved Contractor, Local Union and employees, and the fees, expenses and all advanced deposits required by the AAA of such arbitration shall be borne equally by the involved Contractor and Local Union.
- B. Failure of the grieving party to adhere to the time limits set forth in this Section shall render the grievance null and void. These time limits may be extended only by written consent of the County involved Contractor and involved Local Union at the particular step where the extension is agreed upon. The Arbitrator shall have authority to make decisions only on the issue presented to him and shall not have the authority to change, add to, delete or modify any provision of this Agreement.

8.2 LIMITATIONS AS TO RETROACTIVITY

No arbitration decision or award may provide retroactivity of any kind exceeding sixty (60) calendar days prior to the date of service of the written grievance on the County and the involved Contractor or Local Union.

8.3 PARTICIPATION BY COUNTY OF ROCKLAND CONSTRUCTION REPRESENTATIVE

The County Construction Representative shall be notified by the involved Contractor of all actions at Steps Two and Three and at its election, may participate in full all proceedings at these Steps, including Step Three arbitration.

9.0 JURISDICTIONAL DISPUTES

9.1 NO DISRUPTIONS

There shall be no strikes, sympathy strikes, work stoppages, slowdowns, picketing or other disruptive activity of any kind arising out of any jurisdictional dispute. Pending the resolution of the dispute, the work shall continue uninterrupted and as assigned by the Contractor. No jurisdictional dispute shall excuse a violation of Section 6.0.

9.2 ASSIGNMENT

All project construction work assignments shall be made pursuant to law.

9.3 PROCEDURE FOR SETTLEMENT OF DISPUTES :

- A. Any Union having a jurisdictional dispute with respect to Project work assigned to another Union shall submit the dispute in writing to the Construction Representative, Plan for the Settlement of Jurisdictional Disputes in the Construction Industry ("The Plan") within seventy-two (72) hours and send a copy of the letter to the other Union involved, the Contractor involved, County and the Council. Upon receipt of a dispute letter from any union, the Construction Representative will invoke the procedures set forth in the plan to resolve the jurisdictional dispute. The jurisdictional dispute letter shall contain the information described in Section 3.0 of the Plan.
- B. Within five (5) calendar days of receipt of the dispute letter, there shall be a meeting of the Contractor involved, the County, the Local Unions involved and designees of the Council involved for the purpose of resolving the jurisdictional dispute.
- C. If the dispute remains unresolved after this meeting, the parties shall proceed to final and binding arbitration in accordance with the principles and procedures set forth in the rules of the "Plan for the Settlement of Jurisdictional Disputes in the Construction Industry."
- D. The Arbitrator appointed under this Section shall render a short-form decision within five (5) days of the hearing based upon the evidence submitted at the hearing, with a written decision to follow within thirty (30) days of the close of the hearing.
- E. This Jurisdictional Dispute Resolution Procedure will only apply to work performed by Local Unions at the Project.

- F. Any Local Union involved in a jurisdictional dispute on this Project shall continue working in accordance with Section 9.2 above and without disruption of any kind.

9.4 AWARD

Any jurisdictional award pursuant to Section 9.3 shall be final and binding on the disputing Local Unions and the involved Contractor on this Project only and may be enforced by the Supreme Court of New York, County of Rockland in any court of Rockland County. Such award or resolution shall not establish a precedent on any other construction work not covered by this Agreement. In all disputes under this Section, the County of Rockland and the involved Contractors shall be considered parties in interest.

9.5 LIMITATIONS

The Arbitrator appointed under this Section shall have no authority to assign work to a double crew, that is, to more employees than the minimum required by the Contractor to perform the work involved; nor to assign the work to employees who are not qualified to perform work involved; nor to assign work being performed by non-union employees to union employees. This does not prohibit the establishment, with the agreement of the involved Contractor, of composite crews where more than one (1) employee is needed for the job. The aforesaid determinations shall decide only to whom the disputed work belongs.

9.6 NO INTERFERENCE WITH WORK

There shall be no interference or interruption of any kind with the work of the Project while any jurisdictional dispute is being resolved. The work shall proceed as assigned by the Contractor until finally resolved under the applicable procedure of this Section.

The award shall be confirmed in writing to the involved parties. There shall be no strike, work stoppage, or interruption in protest of any such award.

10.0 WAGES AND BENEFITS

10.1 CLASSIFICATION AND BASE HOURLY RATE

All employees covered by this Agreement shall be classified in accordance with the work performed and paid the base hourly wage rates for those classifications as specified in the attached Schedule A, New York State Wage Rates included in the contract specifications, as amended during this Agreement. Recognizing, however, that special conditions may exist or occur on the Project, the parties, by mutual agreement may establish rates and/or hours for one or more classifications which may differ from Schedule A. Parties to such agreements shall be the County, the Contractor and the Local Unions.

10.2 EMPLOYEE BENEFIT FUNDS

- A. The Contractors agree to pay contributions on behalf of all employees covered by this Agreement to the established employee benefit funds in the amount designated in the appropriate Schedule

A; provided, however, that the Contractor and the Union agree that only such bona fide employee benefits as are explicitly required under Section 220 of the New York State Labor Law shall be included in this requirement and paid by the Contractor on this Project. Bona fide jointly trusted fringe benefit plans established or negotiated through collective bargaining during the life of this Agreement may be added if similarly protected under Section 220. Contractors shall not be required to contribute to non-Section 220 benefits, trusts or plans.

- B. The Contractor agrees to be bound by the written terms of the legally-established Trust Agreements specifying the detailed basis on which payments are to be paid into and benefits paid out of, such Trust Funds but only with regard to work done on this Project and only for those employees to whom this Agreement requires such benefit payments.
- C. In the event that the Contractor becomes delinquent on the foregoing obligations and upon notification of at least fifteen (15) days from the date of a default from any affiliated Local Union that a signatory employer has become delinquent in the payment of Fund contributions due in connection with the work on this Project, the Contractor authorizes the County to immediately stop payment on all monies due or which may become due to the delinquent Contractor up to the amount alleged to be owed from this Project and to pay all such funds directly to the complaining Local Union to be applied against the amounts owed by the defaulting Contractor in order to ensure the full and timely remittance of all union dues, IAF, PAC and fringe benefit funds, including but not limited to Health and Welfare, Pension, Annuity, Legal Service, Education and Training, S.U.B., Apprenticeship (hereafter "Funds" or "Fund") due the affiliated Local Unions as provided for in all applicable collective bargaining agreements between the Local Unions and signatory employers which have contracted to perform work on the subject construction Project. Before such payment is made, the County shall first advise the defaulting Contractor in writing of the complaint made by the Local Union and the amounts claimed and shall allow the defaulting Contractor a period of ten (10) days from the date of notification to produce a written letter signed by the Business Manager of the complaining Local Union that the amount in default has been paid in full and the Contractor is current in the remittance of Funds or a bona-fide explanation acceptable to the complaining Local Union of why in the Contractor's opinion the amounts are not due as alleged. In the event of such a bona-fide dispute, the County shall use its best effort to act as an initial arbiter and take action it then deems appropriate.
- D. No monies, however, shall be paid to the delinquent employer who may request arbitration of the dispute in accordance with Section 8.0 herein. In the event such request in writing is not delivered to the County of Rockland, Construction Representative, within ten (10) days from the date of notification to the defaulting Contractor, the County shall immediately pay over to the Fund Administrator of the complaining Local Union all monies due the defaulting Contractor to the extent necessary to satisfy the amounts payable to the Contractor by the County for the Project.

None of the foregoing is to be construed as having created a debt on the part of the County to the Local Union. Both the Contractor and the complaining Local Union agree that there shall be no strike, work stoppage or disruption pending resolution of the dispute.

- E. Notwithstanding any other provisions of this Agreement, including any provisions to arbitrate disputes, the members of a Local Union can elect to refuse to perform services for a delinquent employer anytime after a Benefit Fund delinquency exceeds forty-five (45) days, on five (5) calendar day's written notice the President of the Council and the County. The provisions of Section 10.2 shall remain in full force and effect with respect to all other Local Union members working on the Project. If a Contractor fails to contribute to a Local Union's Benefit Funds because of the Contractor's inability to collect payment from the County for work performed on the Project, the County agrees that the Contractor shall not be removed from the job for non-performance which results from a Local Union's members refusing to perform services as set forth in this Section.

11.0 HOURS OF WORK, PREMIUM PAYMENTS, SHIFTS AND HOLIDAYS

11.1 WORK WEEK AND WORK DAY

- A. The standard work week shall consist of forty (40) hours of work at straight time rates of the following schedule:
 - 1. Five (5) Day Work Week: Monday through Friday – five (5) days, eight (8) hours plus half (½) hour unpaid lunch period each day.
 - 2. Four-tens: notwithstanding any other provision of the Agreement, when working a four-day work week, the work shall consist of 4 days, Monday through Thursday, ten hours per day plus 1/2 hour unpaid lunch period at the straight time rate. The starting time for four-tens shall be 6:00 a.m. 6:30 a.m. 7:00 a.m. A three-day minimal notice shall be required for four-tens to the respective involved unions.
 - 3. On a 5-day work week, Saturday may be used as a make-up day at straight time to fulfill the 40-hour work week due to inclement weather. On a 4-day work week, Friday maybe used as a make-up day at straight time to fulfill the 40-hour work week. Make-up days shall be scheduled for a minimum of 8 hours, except in the case of inclement weather in which Section 11.5 shall apply. Make-up days shall not be mandatory and no discipline shall be taken against employees electing not to work the make-up day. This shall also apply when more than one shift or multiple shifts are worked.

- B. The Day shift shall commence between the hours of 7:00 am and 8:00 am and shall end between the hours of 3:30 pm and 4:30 pm. Starting and quitting times shall occur at the staging areas as may be designated by the Contractor.
- C. Contractors shall provide not less than five (5) days prior notice to the Local Union involved as to the work week and work hours schedules to be worked or such lesser notice as may be mutually agreed upon.
- D. The changing of the regular starting time from a 5-day and 4-day work week shall be a 4 week minimum.

11.2 OVERTIME

Overtime pay for hours outside of the standard work week and work day, described in paragraph 11.1.A above, shall be paid at time and one half the hourly rate and benefits will be paid on straight time. All work on Sundays shall be paid at two time the hourly rate and benefits will be paid at straight time. There will be no restriction upon the Contractor scheduling of overtime or the non-discriminatory designation of employees who shall be worked.

11.3 SHIFTS

- A. Flexible Schedules:
Scheduling of shift work shall remain flexible in order to meet Project schedules and existing Project conditions including the minimization of interference with traffic. It is not necessary to work a day shift in order to schedule a second shift. Shifts must be worked a minimum of five (5) consecutive work days, must have prior approval of the Construction Project Manager and must be scheduled with not less than five (5) work days notice to the Local Union.
- B. Second/Shift:
The second shift (starting between 3:30 pm and 4:30 pm) shall consist of eight (8) hours work for and equal number of hours pay at the straight time rate plus 10% in lieu of overtime and exclusive of a ½ hour unpaid lunch period.
- C. Flexible Starting Times:
Shift starting times shall be adjusted by the Contractor as necessary to fulfill Project requirements subject to the notice requirements of paragraph A.

11.4 HOLIDAYS

A. Schedule:

There shall be 8 recognized holidays on the Project:

New Year's Day	Veterans Day
Memorial Day	Thanksgiving Day
Fourth of July	Day after Thanksgiving
Labor Day	Christmas Day

All said holidays shall be observed on the dates designated by New York State Law. In the absence of such designation, they shall be observed on the calendar date except those holidays which occur on Saturday shall be observed on the Previous Friday, those holidays which occur on Sunday shall be observed on the following Monday.

B. Payment:

Regular holiday pay, if any, and/or premium pay for work performed on such a recognized holiday shall be in accordance with the Holidays set forth in Section 11.4.A.

C. Exclusivity:

No holidays other than those listed in Section 11.4.A above shall be recognized nor observed.

11.5 REPORTING PAY

A. Employees who report to the work location pursuant to the regular schedule and who are not provided with work or whose work is terminated early be a Contractor, for whatever reason, shall receive minimum, reporting pay in accordance with the applicable Schedule A.

B. When an employee, who has completed their scheduled shift and left the Project site, is "called out" to perform special work of a casual, incidental or irregular nature, the employee shall receive pay for actual hours worked with a minimum guarantee, as may be required by the applicable Schedule A, at the employee's straight time rate.

C. When an employee leaves the job or work location of their own volition or is discharged for cause or is not working as a result of the Contractor's invocation of Section 11.7 below, they shall be paid only for the actual time worked.

D. Except as specifically set forth in this Section, there shall be no premiums, bonuses, high time or other special payment of any kind.

E. There shall be no pay for time not actually worked except as specifically set forth in this Section and except where an applicable Schedule A requires a full weeks' pay.

11.6 PAYMENT OF WAGES

A. Payday:

Payment shall be made by check, drawn on a New York State bank with branches located within commuting distance of the job site. Paychecks shall be issued by the Contractor at the job site by 10 am on Thursdays. In the event that the following Friday is a bank holiday, paychecks shall be issued on Wednesday of that week. Not more than three (3) days wages shall be held back in any pay period. Paycheck stubs shall contain the name and business address of the Contractor, together with an itemization of deductions from gross wages.

B. Termination:

Employees who are laid off or discharged for cause shall be paid in full for that which is due them at the time of termination. The Contractor shall also provide the employee with a written statement setting forth the date of lay off or discharge.

11.7 EMERGENCY WORK SUSPENSION

- A. Contractor may, if considered necessary for the protection of life and/or safety of employees or others, suspend all or a portion of Project work. In such instances, employees shall be paid for actual time worked; provided, however, that when a Contractor requests that employees remain at the job site available for work, be paid for "stand by" time at their hourly rate of pay.

11.8 INJURY – DISABILITY

An employee who, after commencing work, suffers a work-related injury or disability while performing work duties; shall receive no less than 8 hours wages for that day. Further, the employee shall be rehired at such time as able to return to duties provided there is still work available on the Project for which the employee is qualified and able to perform.

11.9 TIME KEEPING

A Contractor may utilize brassing or other systems to check employees in and out. Each employee must check in and out. The Contractor shall provide adequate facilities for checking in and out in an expeditious manner.

11.10 MEAL PERIOD

A Contractor shall schedule an unpaid period of not more than 1/2-hour duration at the work location between the 3rd and 5th hour of the scheduled shift. A Contractor may, for efficiency of operation, establish a schedule, which coordinates the meal periods of two or more crafts. If an employee is required to work through the meal period, the employee shall be compensated in a manner established in the applicable Schedule A.

11.11 BREAK PERIODS

There shall be no rest periods, organized coffee breaks or other non-working time established during working hours. Individual coffee containers will be permitted at the employee's work location.

12.0 APPRENTICES

12.1 RATIOS

Recognizing the need to maintain continuing supportive programs designed to develop adequate numbers of competent workers in the construction industry and to provide craft entry opportunities for minorities, women and economically disadvantaged non-minority males, Contractors will employ apprentices in their respective crafts to perform such work as is within their capabilities and which is customarily performed by the craft in which they are indentured. Contractors may utilize apprentices and such other appropriate classifications as are contained in the applicable Schedule A in a ratio not to exceed 25% of the work force by craft (without regard to whether a lesser ratio is set forth in Schedule A), unless the applicable Schedules A provide for a higher percentage. Apprentices and such other classifications as are appropriate shall be employed in a manner consistent with the provisions of the appropriate Schedule A.

12.2 DEPARTMENT OF LABOR

To assist the Contractors in attaining a maximum effort on this Project, the Unions agree to work in close cooperation with, and accept monitoring by, the New York State Department of Labor to ensure that minorities and women are afforded every opportunity to participate in apprenticeship programs which result in the placement of apprentices on this Project. To further ensure that this Contractor effort is attained, up to 50% of the apprentices placed on this Project shall be first year, minority, women or economically disadvantaged apprentices as shall be 60% of the apprentice equivalents, placed on the Project, who do not necessarily meet all of the age or entrance requirements for the apprentice program or have necessarily passed the entrance examination. The Local Unions will cooperate with the Contractor requests for minority, women or economically disadvantaged referrals to meet this Contractor effort.

13.0 SAFETY PROTECTION OF PERSON AND PROPERTY

13.1 SAFETY REQUIREMENTS

Each Contractor shall ensure that applicable OSHA requirements are at all times maintained on the Project and the employees and Unions agree to cooperate fully with these efforts. Contractors shall ensure that employees perform their work at all times in a safe manner and protect themselves and the property of the Contractor and County from injury or harm. Failure of the employee to do so shall be grounds for discipline, including discharge.

13.2 CONTRACTOR RULES

Employees covered by this Agreement shall at all times be bound by the reasonable safety, security, and visitor rules as established by the Contractors and County for this Project. Such rules shall be published and posted in conspicuous places throughout the Project.

13.3 INSPECTIONS

The Contractors and County, Construction Representative retain the right to inspect incoming shipments of equipment, apparatus, machinery and construction materials of every kind.

14.0 NO DISCRIMINATION

14.1 COOPERATIVE EFFORTS

The Contractors and Unions agree that they shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin or age in any manner prohibited by law or regulation. It is recognized that special procedures may be established by Contractors and Local Unions and the New York State Department of Labor for the training and employment of persons who have not previously qualified to be employed on construction projects of the type covered by this Agreement. The parties to this Agreement shall assist in such programs and to agree to use their best efforts to ensure that the goals for female and minority employment are met on this Project.

14.2 LANGUAGE OF AGREEMENT

The use of the masculine or feminine gender in this Agreement shall be construed as including both genders.

15.0 GENERAL TERMS

15.1 PROJECT RULES

The County, Construction Representative and the Contractors shall establish such reasonable Project rules as are appropriate for the good order of the Project. These rules shall be explained at the pre-job conference and posted at the Project site and may be amended thereafter as necessary. Failure of an employee to observe these rules and regulations shall be grounds for discipline, including discharge. The fact that no order was posted prohibiting a certain type of misconduct shall not be a defense to an employee disciplined or discharged for such misconduct when the action taken is for cause.

15.2 TOOLS OF THE TRADE

The welding/cutting torch and chain fall are tools of the trade having jurisdiction over the work performed. Employees using these tools shall perform any of the work of the trade. There shall be no restrictions on

the emergency use of any tools or equipment by any qualified employee or on the use of any tools or equipment for the performance of work within the employee's jurisdictions.

15.3 SUPERVISION

Employees shall work under the supervision of the craft foreperson or general foreperson.

15.4 TRAVEL ALLOWANCES

There shall be no payments for travel expenses, travel time, subsistence allowance or other such reimbursements or special pay except as expressly set forth in this Agreement.

15.5 FULL WORK DAY

Employees shall be at their staging area at the starting time established by the Contractor and shall be returned to their staging area by quitting time after performing their assigned functions under the supervision of the Contractor. The signatories reaffirm their policy of a fair day's work for a fair day's wage.

15.6 COOPERATION

The County, Construction Representative and the Unions shall cooperate in seeking any New York State Department of Labor approvals that may be required for implementation of any terms of this Agreement.

16.0 SAVINGS AND SEPARABILITY

16.1 THIS AGREEMENT

In the event that the application of any provision of this Agreement is enjoined, on either an interlocutory or permanent basis, or otherwise found in violation of law, the provision involved shall be rendered, temporarily or permanently, null and void but the remainder of the Agreement shall remain in full force and effect. In such event, the Agreement shall remain in effect for contracts already bid and awarded or in construction where the Contractor voluntarily accepts the Agreement. The parties to this Agreement shall enter into negotiations for a substitute provision in conformity with the law the intent of the parties for contracts to be let in the future.

16.2 THE BID SPECIFICATIONS

In the event that the County bid specifications, or other action, requiring that a successful bidder become signatory to this Agreement is enjoined, on either an interlocutory or permanent basis, or otherwise found in violation of law such requirement shall be rendered, temporarily or permanently, null and void but the Agreement shall remain in full force and effect to the extent allowed by law. In such event, the Agreement shall remain in effect for contracts already bid and awarded or in construction where the Contractor voluntarily accepts the Agreement. The parties shall enter into negotiations as to

modifications to the Agreement to reflect the court action taken and the intent of the parties for contracts to be let in the future.

16.3 NON-LIABILITY

In the event of an occurrence referenced in Section 16.1 or 16.2, neither the County, Construction Representative, or any or any Contractor, or any signatory Union shall be liable, directly or indirectly, for any action taken, or not taken, to comply with any court order, injunction or determination. Project bid specifications shall be issued in conformance with court orders then in effect and no retroactive payments or other action shall be required if the original court determination is ultimately reversed.

16.4 NON-WAIVER

Nothing in this Section shall be construed as waiving the prohibitions of Section 6.0 as to signatory Contractors and signatory Unions.

17.0 FUTURE CHANGES IN COLLECTIVE BARGAINING AGREEMENTS

17.1 CHANGES TO AGREEMENTS

- A. The Collective Bargaining Agreement incorporated herein shall continue in full force and effect until the Contractor and/or Unions to the Collective Bargaining Agreements notify the County in writing of the mutually agreed upon changes in provisions of such agreements which are applicable to the Project, and their effective dates.
- B. It is agreed that any provisions negotiated into the Collective Bargaining Agreements incorporated by reference herein shall not apply to work on this Project if such provisions are less favorable to this Project than those uniformly required of contractors for construction work normally covered by those agreements; nor shall any provision be recognized or applied on this Project if it may be construed to apply exclusively, or predominantly, to work covered by this Agreement.
- C. Any disagreement between signatories to this Agreement over the incorporation into provisions agreed upon in the renegotiation of a Collective Bargaining Agreements incorporated by reference herein shall be resolved in accordance with the procedure set forth in Section 8.0 of this Agreement.

17.2 LABOR DISPUTES DURING LOCAL CONTRACT NEGOTIATIONS

The Unions agree that there shall be no strikes, work stoppages, sympathy actions, picketing, slowdowns or other disruptive activity or other violations of Section 6.0 affecting the Project by any Local Union involved in the renegotiation of Local Collective Bargaining Agreements nor shall there be any lock-out on this Project affecting a Local Union during the course of such renegotiations.

APPENDIX A
Listing of Local Collective Bargaining Agreements

1. Bricklayers and Allied Crafts, Local #1, New York.
2. Agreement between International Brotherhood of Electrical Workers, Local Union #363 and Hudson Valley Chapter National Electrical Contractors Association.
3. Agreement between Fabricators and Erectors Association, Inc., and Local Union 417 of the International Association of Bridge, Structural, Ornamental and Reinforcing Ironworkers.
4. Heavy, Highway and Utility Agreement between the Contractors Association of Rockland County, Inc. and the Eastern New York Laborers' International District Council and its Affiliate Laborers' Local 754.
5. Building Agreement between the Construction Contractors Association of the Hudson Valley, Inc. and the Eastern New York Laborers' International District Council and its Affiliate Laborers' Local 754.
6. Agreement by and between International Union of Operating Engineers affiliated with AFL-CIO, Local Union No. 825, 825-A, 825-B, 825-C, 825-D, 825-R, 825-RH.
7. Agreement between Mechanical Contractors Association of Rockland County and Vicinity, New York and Local Union No. 373, United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada.
8. Agreement between Sheet Metal Workers International Association, Local 38 and SMCNA Southeastern New York & The Associated Sheet Metal and Roofing Contractors of Connecticut, Inc.
9. Agreement between the Boiler Makers Association of Greater New York and Boilermakers Local Lodge No. 5 of the International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers, AFL-CIO.
10. Agreement between Industrial Insulation Contractors of Southern New York and The International Association of Heat and Frost Insulators and Asbestos Workers Local #91.
11. Teamsters Local #445, New York.
12. Agreement between Independent Resilient Floor Coverers and The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America, AFL-CIO.
13. Operative Plasterers' and Cement Masons Local 530.
14. United Cement Masons Local 780.
15. Metallic Lathers Local 46
16. Painters Local 155
17. Millwrights Local 740

APPENDIX A (Continued)

18. Tri-State Marble BAC Local 7 and Local 7 Tile, Marble & Terrazzo
19. Road Sprinkler Fitters Local 669
20. District Council 9 Local 1281 Glaziers
21. Dockbuilders Local 1556
22. Northeast Regional Council of Carpenters Local 279

APPENDIX B Letter of Assent

Pursuant to the Introduction and Sections 1.0 and 2.0 of the Project Labor Agreement (PLA) negotiated by the County of Rockland and Rockland County Sewer District No.1 for and on behalf of all contractors and subcontractors (at any tier) to be engaged in the construction of the Project as defined in the Introduction and Section 2.0 of the PLA, the undersigned authorized representative of the *Contractor* hereby agrees to comply with and be bound by all of the terms and conditions of the PLA and any amendments or addenda thereto. By signing this Letter of Assent (LOA), the undersigned acknowledges the PLA as the singular binding Agreement for the defined Project. The PLA, including the applicable Schedule A and this LOA shall only apply to the Project defined in the PLA and Appendix A and to no other project(s).

The LOA shall remain in effect for the duration of all work performed under the PLA, by the undersigned Employer, at the defined Project site of construction, after which this LOA and any collective bargaining relationship established therein for this Project, will terminate, without notice, and shall have no further force or effect.

FOR THE CONTRACTOR

Name of Employer: _____

License or Registration Number: _____

Are you signatory to a local or national Building Trades labor agreement: ☐ NO or ☐ YES

Specify the details of your company's union affiliation(s): _____

Contractor Address: _____

Telephone: _____ Fax: _____

Authorized Representative (Print): _____

Title: _____ Cell Phone: _____

Authorized Representative (Signature): _____

Date: _____ Witness: _____

Company Seal: _____ Notary: _____

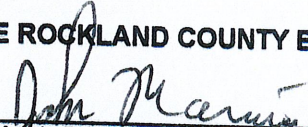
SIGNATURES

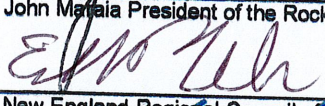
IN WITNESS WHEREOF the parties have caused the Agreement to be executed and effective as the _____ day of _____ 2021.

FOR THE COUNTY OF ROCKLAND:

Ed Day County Executive

FOR THE ROCKLAND COUNTY BUILDING TRADES COUNCIL:

By: 
John Marala President of the Rockland County Building & Construction Trades Council

By:  Business Representative/President
New England Regional Council of Carpenters Local 279 NORTH ATLANTIC STATE ECC.

By: 
Ironworkers Local 417

By: 
Laborers Local 754

By: _____
Bricklayers & Allied Craftworkers Local 1

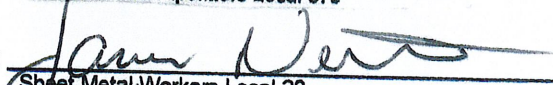
By: _____
Operating Engineers Local 825

By: 
Teamsters Local 445

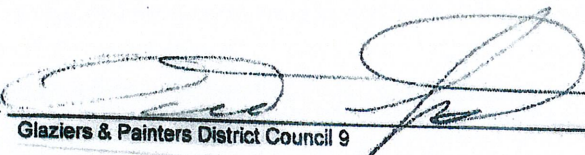
By:  PEE M. CAVANAUGH
Resilient & Floor Coverers Local 2287

By: 
International Brotherhood of Electrical Workers Local 363

By: 
Plumbers and Pipefitters Local 373

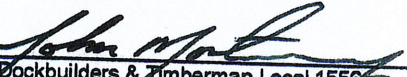
By: 
Sheet Metal Workers Local 38

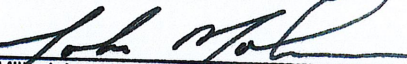
By: 
Asbestos Workers Local 91


By: 
Glaziers & Painters District Council 9


By: 
Boilermakers Local 5

By: _____
Metallic Lathers & Reinforcing Ironworkers Local 46

By:  Per M.C.
Dockbuilders & Timberman Local 1558

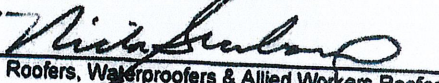
By:  Per M.C.
Millwrights Local 740

By: 
Tri-State Tile, Marble & Terrazzo BAC Local 7 of NY & NJ

By:  Business Agent
Road Sprinkler Fitters Local 609

By: _____
OPCMIA Local 262

By: _____
United Cement Masons Local 780

By:  B.M.
Roofers, Waterproofers & Allied Workers Roofers Local 8

Nick Siciliano 6/10/21

SIGNATURES

IN WITNESS WHEREOF the parties have caused the Agreement to be executed and effective as the _____ day of _____ 2021.

FOR THE COUNTY OF ROCKLAND:

Ed Day County Executive

FOR THE ROCKLAND COUNTY BUILDING TRADES COUNCIL:

By: _____
John Maraia President of the Rockland County Building & Construction Trades Council

By: _____
New England Regional Council of Carpenters Local 279

By: _____
Ironworkers Local 417

By: _____
Laborers Local 754

By: _____
Bricklayers & Allied Craftworkers Local 1

By:  _____
Operating Engineers Local 825

By: _____
Teamsters Local 445

By: _____
Resilient & Floor Coverers Local 2287

By: _____
International Brotherhood of Electrical Workers Local 363

By: _____
Plumbers and Pipefitters Local 373

By: _____
Sheet Metal Workers Local 38

By: _____
Asbestos Workers Local 91

SIGNATURES

IN WITNESS WHEREOF the parties have caused the Agreement to be executed and effective as the _____ day of _____, 2021.

FOR THE COUNTY OF ROCKLAND:

Ed Day County Executive

FOR THE ROCKLAND COUNTY BUILDING TRADES COUNCIL:

By: _____
John Maraia President of the Rockland County Building & Construction Trades Council

By: _____
New England Regional Council of Carpenters Local 279

By: _____
Ironworkers Local 417

By: _____
Laborers Local 754

By: Michael J. Clifford 6/14/21
Bricklayers & Allied Craftworkers Local 1

By: _____
Operating Engineers Local 825

By: _____
Teamsters Local 445

By: _____
Resilient & Floor Coverers Local 2287

By: _____
International Brotherhood of Electrical Workers Local 363

By: _____
Plumbers and Pipefitters Local 373

By: _____
Sheet Metal Workers Local 38

By: _____
Asbestos Workers Local 91

APPENDIX D

**New York State Department of Labor
Prevailing Wage Schedule**



Andrew M. Cuomo, Governor

Roberta Reardon, Commissioner

Rockland County

Charles Prior, Associate Principal
4 Route 340
Orangeburg NY 10962

Schedule Year 2020 through 2021
Date Requested 06/11/2021
PRC# 2021005961

Location Orangeburg, NY
Project ID# RFB-RC-SWR-CIP
Project Type Improvements to the RCSD No. 1 Main Influent Pump Station

PREVAILING WAGE SCHEDULE FOR ARTICLE 8 PUBLIC WORK PROJECT

Attached is the current schedule(s) of the prevailing wage rates and prevailing hourly supplements for the project referenced above. A unique Prevailing Wage Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2020 through June 2021. All updates, corrections, posted on the 1st business day of each month, and future copies of the annual determination are available on the Department's website www.labor.ny.gov. Updated PDF copies of your schedule can be accessed by entering your assigned PRC# at the proper location on the website.

It is the responsibility of the contracting agency or its agent to annex and make part, the attached schedule, to the specifications for this project, when it is advertised for bids and /or to forward said schedules to the successful bidder(s), immediately upon receipt, in order to insure the proper payment of wages.

Please refer to the "General Provisions of Laws Covering Workers on Public Work Contracts" provided with this schedule, for the specific details relating to other responsibilities of the Department of Jurisdiction.

Upon completion or cancellation of this project, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

NOTICE OF COMPLETION / CANCELLATION OF PROJECT

Date Completed: _____ Date Cancelled: _____

Name & Title of Representative: _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

General Provisions of Laws Covering Workers on Article 8 Public Work Contracts

Introduction

The Labor Law requires public work contractors and subcontractors to pay laborers, workers, or mechanics employed in the performance of a public work contract not less than the prevailing rate of wage and supplements (fringe benefits) in the locality where the work is performed.

Responsibilities of the Department of Jurisdiction

A Department of Jurisdiction (Contracting Agency) includes a state department, agency, board or commission; a county, city, town or village; a school district, board of education or board of cooperative educational services; a sewer, water, fire, improvement and other district corporation; a public benefit corporation; and a public authority awarding a public work contract.

The Department of Jurisdiction (Contracting Agency) awarding a public work contract MUST obtain a Prevailing Rate Schedule listing the hourly rates of wages and supplements due the workers to be employed on a public work project. This schedule may be obtained by completing and forwarding a "Request for wage and Supplement Information" form (PW 39) to the Bureau of Public Work. The Prevailing Rate Schedule MUST be included in the specifications for the contract to be awarded and is deemed part of the public work contract.

Upon the awarding of the contract, the law requires that the Department of Jurisdiction (Contracting Agency) furnish the following information to the Bureau: the name and address of the contractor, the date the contract was let and the approximate dollar value of the contract. To facilitate compliance with this provision of the Labor Law, a copy of the Department's "Notice of Contract Award" form (PW 16) is provided with the original Prevailing Rate Schedule.

The Department of Jurisdiction (Contracting Agency) is required to notify the Bureau of the completion or cancellation of any public work project. The Department's PW 200 form is provided for that purpose.

Both the PW 16 and PW 200 forms are available for completion [online](#).

Hours

No laborer, worker, or mechanic in the employ of a contractor or subcontractor engaged in the performance of any public work project shall be permitted to work more than eight hours in any day or more than five days in any week, except in cases of extraordinary emergency. The contractor and the Department of Jurisdiction (Contracting Agency) may apply to the Bureau of Public Work for a dispensation permitting workers to work additional hours or days per week on a particular public work project.

There are very few exceptions to this rule. Complete information regarding these exceptions is available on the ["Request for a dispensation to work overtime" form \(PW30\)](#) and ["4 Day / 10 Hour Work Schedule" form \(PW 30.1\)](#).

Wages and Supplements

The wages and supplements to be paid and/or provided to laborers, workers, and mechanics employed on a public work project shall be not less than those listed in the current Prevailing Rate Schedule for the locality where the work is performed. If a prime contractor on a public work project has not been provided with a Prevailing Rate Schedule, the contractor must notify the Department of Jurisdiction (Contracting Agency) who in turn must request an original Prevailing Rate Schedule from the Bureau of Public Work. Requests may be submitted by: mail to NYSDOL, Bureau of Public Work, State Office Bldg. Campus, Bldg. 12, Rm. 130, Albany, NY 12240; Fax to Bureau of Public Work (518) 485-1870; or electronically at the NYSDOL website www.labor.ny.gov.

Upon receiving the original schedule, the Department of Jurisdiction (Contracting Agency) is REQUIRED to provide complete copies to all prime contractors who in turn MUST, by law, provide copies of all applicable county schedules to each subcontractor and obtain from each subcontractor, an affidavit certifying such schedules were received. If the original schedule expired, the contractor may obtain a copy of the new annual determination from the NYSDOL website www.labor.ny.gov.

The Commissioner of Labor makes an annual determination of the prevailing rates. This determination is in effect from July 1st through June 30th of the following year. The annual determination is available on the NYSDOL website www.labor.ny.gov.

Payrolls and Payroll Records

Every contractor and subcontractor MUST keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. As per Article 6 of the Labor law, contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemporaneous, true, and accurate payroll records. At a minimum, payrolls must show the following information for each person employed on a public work project: Name, Address, Last 4 Digits of Social Security Number, Classification(s) in which the worker was employed, Hourly wage rate(s) paid, Supplements paid

or provided, and Daily and weekly number of hours worked in each classification.

The filing of payrolls to the Department of Jurisdiction is a condition of payment. Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury. The Department of Jurisdiction (Contracting Agency) shall collect, review for facial validity, and maintain such payrolls.

In addition, the Commissioner of Labor may require contractors to furnish, with ten (10) days of a request, payroll records sworn to as their validity and accuracy for public work and private work. Payroll records include, but are not limited to time cards, work description sheets, proof that supplements were provided, cancelled payroll checks and payrolls. Failure to provide the requested information within the allotted ten (10) days will result in the withholding of up to 25% of the contract, not to exceed \$100,000.00. If the contractor or subcontractor does not maintain a place of business in New York State and the amount of the contract exceeds \$25,000.00, payroll records and certifications must be kept on the project worksite.

The prime contractor is responsible for any underpayments of prevailing wages or supplements by any subcontractor.

All contractors or their subcontractors shall provide to their subcontractors a copy of the Prevailing Rate Schedule specified in the public work contract as well as any subsequently issued schedules. A failure to provide these schedules by a contractor or subcontractor is a violation of Article 8, Section 220-a of the Labor Law.

All subcontractors engaged by a public work project contractor or its subcontractor, upon receipt of the original schedule and any subsequently issued schedules, shall provide to such contractor a verified statement attesting that the subcontractor has received the Prevailing Rate Schedule and will pay or provide the applicable rates of wages and supplements specified therein. (See NYS Labor Laws, Article 8 . Section 220-a).

Determination of Prevailing Wage and Supplement Rate Updates Applicable to All Counties

The wages and supplements contained in the annual determination become effective July 1st whether or not the new determination has been received by a given contractor. Care should be taken to review the rates for obvious errors. Any corrections should be brought to the Department's attention immediately. It is the responsibility of the public work contractor to use the proper rates. If there is a question on the proper classification to be used, please call the district office located nearest the project. Any errors in the annual determination will be corrected and posted to the NYSDOL website on the first business day of each month. Contractors are responsible for paying these updated rates as well, retroactive to July 1st.

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. To the extent possible, the Department posts rates in its possession that cover periods of time beyond the July 1st to June 30th time frame covered by a particular annual determination. Rates that extend beyond that instant time period are informational ONLY and may be updated in future annual determinations that actually cover the then appropriate July 1st to June 30th time period.

Withholding of Payments

When a complaint is filed with the Commissioner of Labor alleging the failure of a contractor or subcontractor to pay or provide the prevailing wages or supplements, or when the Commissioner of Labor believes that unpaid wages or supplements may be due, payments on the public work contract shall be withheld from the prime contractor in a sufficient amount to satisfy the alleged unpaid wages and supplements, including interest and civil penalty, pending a final determination.

When the Bureau of Public Work finds that a contractor or subcontractor on a public work project failed to pay or provide the requisite prevailing wages or supplements, the Bureau is authorized by Sections 220-b and 235.2 of the Labor Law to so notify the financial officer of the Department of Jurisdiction (Contracting Agency) that awarded the public work contract. Such officer MUST then withhold or cause to be withheld from any payment due the prime contractor on account of such contract the amount indicated by the Bureau as sufficient to satisfy the unpaid wages and supplements, including interest and any civil penalty that may be assessed by the Commissioner of Labor. The withholding continues until there is a final determination of the underpayment by the Commissioner of Labor or by the court in the event a legal proceeding is instituted for review of the determination of the Commissioner of Labor.

The Department of Jurisdiction (Contracting Agency) shall comply with this order of the Commissioner of Labor or of the court with respect to the release of the funds so withheld.

Summary of Notice Posting Requirements

The current Prevailing Rate Schedule must be posted in a prominent and accessible place on the site of the public work project. The prevailing wage schedule must be encased in, or constructed of, materials capable of withstanding adverse weather conditions and be titled "PREVAILING RATE OF WAGES" in letters no smaller than two (2) inches by two (2) inches.

The "Public Work Project" notice must be posted at the beginning of the performance of every public work contract, on each job site.

Every employer providing workers' compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Every employer subject to the NYS Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers, notices furnished by the State Division of Human Rights.

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the NYS Department of Labor.

Apprentices

Employees cannot be paid apprentice rates unless they are individually registered in a program registered with the NYS Commissioner of Labor. The allowable ratio of apprentices to journeymen in any craft classification can be no greater than the statewide building trade ratios promulgated by the Department of Labor and included with the Prevailing Rate Schedule. An employee listed on a payroll as an apprentice who is not registered as above or is performing work outside the classification of work for which the apprentice is indentured, must be paid the prevailing journeyman's wage rate for the classification of work the employee is actually performing.

NYSDOL Labor Law, Article 8, Section 220-3, require that only apprentices individually registered with the NYS Department of Labor may be paid apprenticeship rates on a public work project. No other Federal or State Agency of office registers apprentices in New York State.

Persons wishing to verify the apprentice registration of any person must do so in writing by mail, to the NYSDOL Office of Employability Development / Apprenticeship Training, State Office Bldg. Campus, Bldg. 12, Albany, NY 12240 or by Fax to NYSDOL Apprenticeship Training (518) 457-7154. All requests for verification must include the name and social security number of the person for whom the information is requested.

The only conclusive proof of individual apprentice registration is written verification from the NYSDOL Apprenticeship Training Albany Central office. Neither Federal nor State Apprenticeship Training offices outside of Albany can provide conclusive registration information.

It should be noted that the existence of a registered apprenticeship program is not conclusive proof that any person is registered in that program. Furthermore, the existence or possession of wallet cards, identification cards, or copies of state forms is not conclusive proof of the registration of any person as an apprentice.

Interest and Penalties

In the event that an underpayment of wages and/or supplements is found:

- Interest shall be assessed at the rate then in effect as prescribed by the Superintendent of Banks pursuant to section 14-a of the Banking Law, per annum from the date of underpayment to the date restitution is made.
- A Civil Penalty may also be assessed, not to exceed 25% of the total of wages, supplements, and interest due.

Debarment

Any contractor or subcontractor and/or its successor shall be ineligible to submit a bid on or be awarded any public work contract or subcontract with any state, municipal corporation or public body for a period of five (5) years when:

- Two (2) willful determinations have been rendered against that contractor or subcontractor and/or its successor within any consecutive six (6) year period.
- There is any willful determination that involves the falsification of payroll records or the kickback of wages or supplements.

Criminal Sanctions

Willful violations of the Prevailing Wage Law (Article 8 of the Labor Law) may be a felony punishable by fine or imprisonment of up to 15 years, or both.

Discrimination

No employee or applicant for employment may be discriminated against on account of age, race, creed, color, national origin, sex, disability or marital status.

No contractor, subcontractor nor any person acting on its behalf, shall by reason of race, creed, color, disability, sex or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the work to which the employment relates (NYS Labor Law, Article 8, Section 220-e(a)).

No contractor, subcontractor, nor any person acting on its behalf, shall in any manner, discriminate against or intimidate any employee on account of race, creed, color, disability, sex, or national origin (NYS Labor Law, Article 8, Section 220-e(b)).

The Human Rights Law also prohibits discrimination in employment because of age, marital status, or religion.

There may be deducted from the amount payable to the contractor under the contract a penalty of \$50.00 for each calendar day during which such person was discriminated against or intimidated in violation of the provision of the contract (NYS Labor Law, Article 8, Section 220-e(c)).

The contract may be cancelled or terminated by the State or municipality. All monies due or to become due thereunder may be forfeited for a second or any subsequent violation of the terms or conditions of the anti-discrimination sections of the contract (NYS Labor Law, Article 8, Section 220-e(d)).

Every employer subject to the New York State Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers notices furnished by the State Division of Human Rights.

Workers' Compensation

In accordance with Section 142 of the State Finance Law, the contractor shall maintain coverage during the life of the contract for the benefit of such employees as required by the provisions of the New York State Workers' Compensation Law.

A contractor who is awarded a public work contract must provide proof of workers' compensation coverage prior to being allowed to begin work.

The insurance policy must be issued by a company authorized to provide workers' compensation coverage in New York State. Proof of coverage must be on form C-105.2 (Certificate of Workers' Compensation Insurance) and must name this agency as a certificate holder.

If New York State coverage is added to an existing out-of-state policy, it can only be added to a policy from a company authorized to write workers' compensation coverage in this state. The coverage must be listed under item 3A of the information page.

The contractor must maintain proof that subcontractors doing work covered under this contract secured and maintained a workers' compensation policy for all employees working in New York State.

Every employer providing worker's compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Unemployment Insurance

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the New York State Department of Labor.



Andrew M. Cuomo, Governor

Roberta Reardon, Commissioner

Rockland County

Charles Prior, Associate Principal
4 Route 340
Orangeburg NY 10962

Schedule Year 2020 through 2021
Date Requested 06/11/2021
PRC# 2021005961

Location Orangeburg, NY
Project ID# RFB-RC-SWR-CIP
Project Type Improvements to the RCSD No. 1 Main Influent Pump Station

Notice of Contract Award

New York State Labor Law, Article 8, Section 220.3a requires that certain information regarding the awarding of public work contracts, be furnished to the Commissioner of Labor. One "Notice of Contract Award" (PW 16, which may be photocopied), **MUST** be completed for **EACH** prime contractor on the above referenced project.

Upon notifying the successful bidder(s) of this contract, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

Contractor Information

All information must be supplied

Federal Employer Identification Number: _____		
Name: _____		
Address: _____ _____		
City: _____	State: _____	Zip: _____
Amount of Contract: \$ _____	Contract Type:	
Approximate Starting Date: ____/____/____	<input type="checkbox"/> (01) General Construction	
Approximate Completion Date: ____/____/____	<input type="checkbox"/> (02) Heating/Ventilation	
	<input type="checkbox"/> (03) Electrical	
	<input type="checkbox"/> (04) Plumbing	
	<input type="checkbox"/> (05) Other : _____	

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

Social Security Numbers on Certified Payrolls:

The Department of Labor is cognizant of the concerns of the potential for misuse or inadvertent disclosure of social security numbers. Identity theft is a growing problem and we are sympathetic to contractors' concern regarding inclusion of this information on payrolls if another identifier will suffice.

For these reasons, the substitution of the use of the last four digits of the social security number on certified payrolls submitted to contracting agencies on public work projects is now acceptable to the Department of Labor. This change does not affect the Department's ability to request and receive the entire social security number from employers during its public work/ prevailing wage investigations.

Construction Industry Fair Play Act: Required Posting for Labor Law Article 25-B § 861-d

Construction industry employers must post the "Construction Industry Fair Play Act" notice in a prominent and accessible place on the job site. Failure to post the notice can result in penalties of up to \$1,500 for a first offense and up to \$5,000 for a second offense. The posting is included as part of this wage schedule. Additional copies may be obtained from the NYS DOL website, www.labor.ny.gov. <https://labor.ny.gov/formsdocs/ui/IA999.pdf>

If you have any questions concerning the Fair Play Act, please call the State Labor Department toll-free at 1-866-435-1499 or email us at: dol.misclassified@labor.ny.gov.

Worker Notification: (Labor Law §220, paragraph a of subdivision 3-a)

Effective June 23, 2020

This provision is an addition to the existing wage rate law, Labor Law §220, paragraph a of subdivision 3-a. It requires contractors and subcontractors to provide written notice to all laborers, workers or mechanics of the *prevailing wage and supplement rate* for their particular job classification *on each pay stub**. It also requires contractors and subcontractors to *post a notice* at the beginning of the performance of every public work contract *on each job site* that includes the telephone number and address for the Department of Labor and a statement informing laborers, workers or mechanics of their right to contact the Department of Labor if he/she is not receiving the proper prevailing rate of wages and/or supplements for his/her job classification. The required notification will be provided with each wage schedule, may be downloaded from our website www.labor.ny.gov or be made available upon request by contacting the Bureau of Public Work at 518-457-5589. *In the event the required information will not fit on the pay stub, an accompanying sheet or attachment of the information will suffice.

**To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND**

Budget Policy & Reporting Manual

B-610

Public Work Enforcement Fund

effective date December 7, 2005

1. Purpose and Scope:

This Item describes the Public Work Enforcement Fund (the Fund, PWEF) and its relevance to State agencies and public benefit corporations engaged in construction or reconstruction contracts, maintenance and repair, and announces the recently-enacted increase to the percentage of the dollar value of such contracts that must be deposited into the Fund. This item also describes the roles of the following entities with respect to the Fund:

- New York State Department of Labor (DOL),
- The Office of the State of Comptroller (OSC), and
- State agencies and public benefit corporations.

2. Background and Statutory References:

DOL uses the Fund to enforce the State's Labor Law as it relates to contracts for construction or reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law. State agencies and public benefit corporations participating in such contracts are required to make payments to the Fund.

Chapter 511 of the Laws of 1995 (as amended by Chapter 513 of the Laws of 1997, Chapter 655 of the Laws of 1999, Chapter 376 of the Laws of 2003 and Chapter 407 of the Laws of 2005) established the Fund.

3. Procedures and Agency Responsibilities:

The Fund is supported by transfers and deposits based on the value of contracts for construction and reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law, into which all State agencies and public benefit corporations enter.

Chapter 407 of the Laws of 2005 increased the amount required to be provided to this fund to .10 of one-percent of the total cost of each such contract, to be calculated at the time agencies or public benefit corporations enter into a new contract or if a contract is amended. The provisions of this bill became effective August 2, 2005.

To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND

OSC will report to DOL on all construction-related ("D") contracts approved during the month, including contract amendments, and then DOL will bill agencies the appropriate assessment monthly. An agency may then make a determination if any of the billed contracts are exempt and so note on the bill submitted back to DOL. For any instance where an agency is unsure if a contract is or is not exempt, they can call the Bureau of Public Work at the number noted below for a determination. Payment by check or journal voucher is due to DOL within thirty days from the date of the billing. DOL will verify the amounts and forward them to OSC for processing.

For those contracts which are not approved or administered by the Comptroller, monthly reports and payments for deposit into the Public Work Enforcement Fund must be provided to the Administrative Finance Bureau at the DOL within 30 days of the end of each month or on a payment schedule mutually agreed upon with DOL.

Reports should contain the following information:

- Name and billing address of State agency or public benefit corporation;
- State agency or public benefit corporation contact and phone number;
- Name and address of contractor receiving the award;
- Contract number and effective dates;
- Contract amount and PWEF assessment charge (if contract amount has been amended, reflect increase or decrease to original contract and the adjustment in the PWEF charge); and
- Brief description of the work to be performed under each contract.

Checks and Journal Vouchers, payable to the "New York State Department of Labor" should be sent to:

Department of Labor
Administrative Finance Bureau-PWEF Unit
Building 12, Room 464
State Office Campus
Albany, NY 12240

Any questions regarding billing should be directed to NYSDOL's Administrative Finance Bureau-PWEF Unit at (518) 457-3624 and any questions regarding Public Work Contracts should be directed to the Bureau of Public Work at (518) 457-5589.



Required Notice under Article 25-B of the Labor Law

**Attention All Employees, Contractors and Subcontractors:
You are Covered by the Construction Industry Fair Play Act**

The law says that you are an employee unless:

- You are free from direction and control in performing your job, **and**
- You perform work that is not part of the usual work done by the business that hired you, **and**
- You have an independently established business.

Your employer cannot consider you to be an independent contractor unless all three of these facts apply to your work.

It is against the law for an employer to misclassify employees as independent contractors or pay employees off the books.

Employee Rights: If you are an employee, you are entitled to state and federal worker protections. These include:

- Unemployment Insurance benefits, if you are unemployed through no fault of your own, able to work, and otherwise qualified,
- Workers' compensation benefits for on-the-job injuries,
- Payment for wages earned, minimum wage, and overtime (under certain conditions),
- Prevailing wages on public work projects,
- The provisions of the National Labor Relations Act, and
- A safe work environment.

It is a violation of this law for employers to retaliate against anyone who asserts their rights under the law. Retaliation subjects an employer to civil penalties, a private lawsuit or both.

Independent Contractors: If you are an independent contractor, **you must pay all taxes and Unemployment Insurance contributions required by New York State and Federal Law.**

Penalties for paying workers off the books or improperly treating employees as independent contractors:

- **Civil Penalty**
 - First offense: Up to \$2,500 per employee
 - Subsequent offense(s): Up to \$5,000 per employee
- **Criminal Penalty**
 - First offense: Misdemeanor - up to 30 days in jail, up to a \$25,000 fine and debarment from performing public work for up to one year.
 - Subsequent offense(s): Misdemeanor - up to 60 days in jail or up to a \$50,000 fine and debarment from performing public work for up to 5 years.

If you have questions about your employment status or believe that your employer may have violated your rights and you want to file a complaint, call the Department of Labor at (866) 435-1499 or send an email to dol.misclassified@labor.ny.gov. All complaints of fraud and violations are taken seriously. You can remain anonymous.

Employer Name:

IA 999 (09/16)

Attention Employees

THIS IS A: **PUBLIC WORK PROJECT**

If you are employed on this project as a **worker, laborer, or mechanic** you are entitled to receive the **prevailing wage and supplements rate** for the classification at which you are working.

Chapter 629 of
the Labor Laws
of 2007:

**These wages are set by law and must be posted
at the work site. They can also be found at:**
www.labor.ny.gov

If you feel that you have not received proper wages or benefits,
please call our nearest office.*

Albany	(518) 457-2744	Patchogue	(631) 687-4882
Binghamton	(607) 721-8005	Rochester	(585) 258-4505
Buffalo	(716) 847-7159	Syracuse	(315) 428-4056
Garden City	(516) 228-3915	Utica	(315) 793-2314
New York City	(212) 932-2419	White Plains	(914) 997-9507
Newburgh	(845) 568-5156		

* For New York City government agency construction projects, please
contact the Office of the NYC Comptroller at (212) 669-4443, or
www.comptroller.nyc.gov – click on Bureau of Labor Law.

Contractor Name: _____

Project Location: _____

Requirements for OSHA 10 Compliance

Article 8 §220-h requires that when the advertised specifications, for every contract for public work, is \$250,000.00 or more the contract must contain a provision requiring that every worker employed in the performance of a public work contract shall be certified as having completed an OSHA 10 safety training course. The clear intent of this provision is to require that all employees of public work contractors, required to be paid prevailing rates, receive such training "prior to the performing any work on the project."

The Bureau will enforce the statute as follows:

All contractors and sub contractors must attach a copy of proof of completion of the OSHA 10 course to the first certified payroll submitted to the contracting agency and on each succeeding payroll where any new or additional employee is first listed.

Proof of completion may include but is not limited to:

- Copies of bona fide course completion card (*Note: Completion cards do not have an expiration date.*)
- Training roster, attendance record or other documentation from the certified trainer pending the issuance of the card.
- Other valid proof

**A certification by the employer attesting that all employees have completed such a course is not sufficient proof that the course has been completed.

Any questions regarding this statute may be directed to the New York State Department of Labor, Bureau of Public Work at 518-457-5589.

WICKS

Public work projects are subject to the Wicks Law requiring separate specifications and bidding for the plumbing, heating and electrical work, when the total project's threshold is \$3 million in Bronx, Kings, New York, Queens and, Richmond counties; \$1.5 million in Nassau, Suffolk and Westchester counties; and \$500,000 in all other counties.

For projects below the monetary threshold, bidders must submit a sealed list naming each subcontractor for the plumbing, HVAC and electrical and the amount to be paid to each. The list may not be changed unless the public owner finds a legitimate construction need, including a change in specifications or costs or the use of a Project Labor Agreement (PLA), and must be open to public inspection.

Allows the state and local agencies and authorities to waive the Wicks Law and use a PLA if it will provide the best work at the lowest possible price. If a PLA is used, all contractors shall participate in apprentice training programs in the trades of work it employs that have been approved by the Department of Labor (DOL) for not less than three years. They shall also have at least one graduate in the last three years and use affirmative efforts to retain minority apprentices. PLA's would be exempt from Wicks, but deemed to be public work subject to prevailing wage enforcement.

The Commissioner of Labor shall have the power to enforce separate specification requirements on projects, and may issue stop-bid orders against public owners for non-compliance.

Other new monetary thresholds, and similar sealed bidding for non-Wicks projects, would apply to certain public authorities including municipal housing authorities, NYC Construction Fund, Yonkers Educational Construction Fund, NYC Municipal Water Finance Authority, Buffalo Municipal Water Finance Authority, Westchester County Health Care Association, Nassau County Health Care Corp., Clifton-Fine Health Care Corp., Erie County Medical Center Corp., NYC Solid Waste Management Facilities, and the Dormitory Authority.

Contractors must pay subcontractors within a 7 days period.

(07.19)

Introduction to the Prevailing Rate Schedule

Information About Prevailing Rate Schedule

This information is provided to assist you in the interpretation of particular requirements for each classification of worker contained in the attached Schedule of Prevailing Rates.

Classification

It is the duty of the Commissioner of Labor to make the proper classification of workers taking into account whether the work is heavy and highway, building, sewer and water, tunnel work, or residential, and to make a determination of wages and supplements to be paid or provided. It is the responsibility of the public work contractor to use the proper rate. If there is a question on the proper classification to be used, please call the district office located nearest the project. District office locations and phone numbers are listed below.

Prevailing Wage Schedules are issued separately for "General Construction Projects" and "Residential Construction Projects" on a county-by-county basis.

General Construction Rates apply to projects such as: Buildings, Heavy & Highway, and Tunnel and Water & Sewer rates.

Residential Construction Rates generally apply to construction, reconstruction, repair, alteration, or demolition of one family, two family, row housing, or rental type units intended for residential use.

Some rates listed in the Residential Construction Rate Schedule have a very limited applicability listed along with the rate. Rates for occupations or locations not shown on the residential schedule must be obtained from the General Construction Rate Schedule. Please contact the local Bureau of Public Work office before using Residential Rate Schedules, to ensure that the project meets the required criteria.

Payrolls and Payroll Records

Contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemporaneous, true, and accurate payroll records.

Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury.

Paid Holidays

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

Overtime

At a minimum, all work performed on a public work project in excess of eight hours in any one day or more than five days in any workweek is overtime. However, the specific overtime requirements for each trade or occupation on a public work project may differ. Specific overtime requirements for each trade or occupation are contained in the prevailing rate schedules.

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays.

The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Supplemental Benefits

Particular attention should be given to the supplemental benefit requirements. Although in most cases the payment or provision of supplements is straight time for all hours worked, some classifications require the payment or provision of supplements, or a portion of the supplements, to be paid or provided at a premium rate for premium hours worked. Supplements may also be required to be paid or provided on paid holidays, regardless of whether the day is worked. The Overtime Codes and Notes listed on the particular wage classification will indicate these conditions as required.

Effective Dates

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. The rate listed is valid until the next effective rate change or until the new annual determination which takes effect on July 1 of each year. All contractors and subcontractors are required to pay the current prevailing rates of wages and supplements. If you have any questions please contact the Bureau of Public Work or visit the New York State Department of Labor website (www.labor.ny.gov) for current wage rate information.

Apprentice Training Ratios

The following are the allowable ratios of registered Apprentices to Journey-workers.

For example, the ratio 1:1,1:3 indicates the allowable initial ratio is one Apprentice to one Journeyworker. The Journeyworker must be in place on the project before an Apprentice is allowed. Then three additional Journeyworkers are needed before a second Apprentice is allowed. The last ratio repeats indefinitely. Therefore, three more Journeyworkers must be present before a third Apprentice can be hired, and so on.

Please call Apprentice Training Central Office at (518) 457-6820 if you have any questions.

Title (Trade)	Ratio
Boilermaker (Construction)	1:1,1:4
Boilermaker (Shop)	1:1,1:3
Carpenter (Bldg.,H&H, Pile Driver/Dockbuilder)	1:1,1:4
Carpenter (Residential)	1:1,1:3
Electrical (Outside) Lineman	1:1,1:2
Electrician (Inside)	1:1,1:3
Elevator/Escalator Construction & Modernizer	1:1,1:2
Glazier	1:1,1:3
Insulation & Asbestos Worker	1:1,1:3
Iron Worker	1:1,1:4
Laborer	1:1,1:3
Mason	1:1,1:4
Millwright	1:1,1:4
Op Engineer	1:1,1:5
Painter	1:1,1:3
Plumber & Steamfitter	1:1,1:3
Roofer	1:1,1:2
Sheet Metal Worker	1:1,1:3
Sprinkler Fitter	1:1,1:2

If you have any questions concerning the attached schedule or would like additional information, please contact the nearest BUREAU of PUBLIC WORK District Office or write to:

New York State Department of Labor
Bureau of Public Work
State Office Campus, Bldg. 12
Albany, NY 12240

District Office Locations:	Telephone #	FAX #
Bureau of Public Work - Albany	518-457-2744	518-485-0240
Bureau of Public Work - Binghamton	607-721-8005	607-721-8004
Bureau of Public Work - Buffalo	716-847-7159	716-847-7650
Bureau of Public Work - Garden City	516-228-3915	516-794-3518
Bureau of Public Work - Newburgh	845-568-5287	845-568-5332
Bureau of Public Work - New York City	212-932-2419	212-775-3579
Bureau of Public Work - Patchogue	631-687-4882	631-687-4902
Bureau of Public Work - Rochester	585-258-4505	585-258-4708
Bureau of Public Work - Syracuse	315-428-4056	315-428-4671
Bureau of Public Work - Utica	315-793-2314	315-793-2514
Bureau of Public Work - White Plains	914-997-9507	914-997-9523
Bureau of Public Work - Central Office	518-457-5589	518-485-1870

Rockland County General Construction

Boilermaker	06/01/2021
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JOB DESCRIPTION Boilermaker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Per Hour: 07/01/2020 01/01/2021

Boilermaker	\$ 61.24	\$63.38
Repairs & Renovations	61.24	63.38

SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2020 01/01/2021

Boilermaker	32% of hourly	32% of hourly
Repair \$ Renovations	Wage Paid	Wage Paid
	+ \$ 25.35	+ TBA

NOTE: "Hourly Wage Paid" shall include any and all premium(s) pay.

Repairs & Renovation Includes replacement of parts and repairs & renovation of existing unit.

OVERTIME PAY

See (D, O) on OVERTIME PAGE

Repairs & Renovation see (B,E,Q)

HOLIDAY

Paid: See (8, 16, 23, 24) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 12, 15, 16, 22, 23, 24, 25) on HOLIDAY PAGE

NOTE: *Employee must work in pay week to receive Holiday Pay.

**Employee gets 4 times the hourly wage rate for working Labor Day.

REGISTERED APPRENTICES

Wage per hour:

(1/2) Year Terms at the following percentage of Boilermaker's Wage

1st	2nd	3rd	4th	5th	6th	7th
65%	70%	75%	80%	85%	90%	95%

Supplemental Benefits Per Hour:

	07/01/2020	01/01/2021
Apprentice(s)	32% of Hourly	32% of Hourly
	Wage Paid Plus	Wage Paid Plus
	Amount Below	Amount Below

1st Term	\$ 19.38	\$ TBA
2nd Term	20.24	TBA
3rd Term	21.08	TBA
4th Term	21.94	TBA
5th Term	22.79	TBA
6th Term	23.65	TBA
7th Term	24.48	TBA

NOTE: "Hourly Wage Paid" shall include any and all premium(s)

4-5

Carpenter	06/01/2021
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JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2020

Piledriver	\$ 55.93
Dockbuilder	\$ 55.93

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker \$ 52.44

OVERTIME PAY

See (B, E2, O) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE.

Paid: for 1st & 2nd yr.

Apprentices See (5,6,11,13,25)

Overtime: See (5,6,11,13,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wages per hour

(1)year terms:

1st	2nd	3rd	4th
\$22.37	\$27.97	\$36.35	\$44.74

Supplemental benefits per hour:

All Terms: \$ 34.34

8-1556 Db

Carpenter

06/01/2021

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2020

Carpet/Resilient

Floor Coverer \$ 54.00

INCLUDES HANDLING & INSTALLATION OF ARTIFICIAL TURF AND SIMILAR TURF INDOORS/OUTDOORS.

SUPPLEMENTAL BENEFITS

Per hour:

\$ 46.99

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (18, 19) on HOLIDAY PAGE.

Paid for 1st & 2nd yr.

Apprentices See (5,6,11,13,16,18,19,25)

Overtime: See (5,6,11,13,16,18,19,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wage per hour - (1) year terms:

1st	2nd	3rd	4th
\$24.20	\$27.20	\$31.45	\$39.33

Supplemental benefits per hour:

1st	2nd	3rd	4th
\$16.06	\$17.56	\$21.16	\$23.16

8-2287

Carpenter

06/01/2021

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per Hour: 07/01/2020

Marine Construction:

Marine Diver	\$ 70.80
Marine Tender	50.34

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker \$ 52.34

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (18, 19) on HOLIDAY PAGE

Overtime: See (5, 6, 10, 11, 13, 16, 18, 19) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

One (1) year terms.

1st year	\$ 22.37
2nd year	27.97
3rd year	36.35
4th year	44.74

Supplemental Benefits

Per Hour:

All terms \$ 34.34

8-1456MC

Carpenter

06/01/2021

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2020

Building	
Millwright	\$ 55.70

SUPPLEMENTAL BENEFITS

Per hour:

Millwright \$ 54.16

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (18,19) on HOLIDAY PAGE.

Overtime See (5,6,8,11,13,18,19,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wages per hour:

One (1) year terms:

1st.	2nd.	3rd.	4th.
\$29.99	\$35.44	\$40.89	\$51.79

Supplemental benefits per hour:

One (1) year terms:

1st.	2nd.	3rd.	4th.
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8-740.1

06/01/2021

DISTRICT 8

8-1536-CoreDriller

06/01/2021

DISTRICT 11

Page 23

HEAVY&HIGHWAY/TUNNEL:

See (B, E, P, *R, **T, X) on OVERTIME PAGE.

*R applies to Heavy&Highway/Tunnel Overtime Holiday Code 25 with benefits at straight time rate.

**T applies to Heavy&Highway/Tunnel Overtime Holiday Codes 5 & 6 with benefits at straight time rate.

HOLIDAY

BUILDING:

Paid: See (1) on HOLIDAY PAGE.

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE.

Holidays that fall on Sunday will be observed Monday.

HEAVY&HIGHWAY/TUNNEL:

Paid: See (5, 6, 25) on HOLIDAY PAGE including benefits.

Overtime: See (5, 6, 25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

1 year terms at the following wage rates:

Indentured before July 1 2016

1st	2nd	3rd	4th
\$ 18.85	\$ 22.61	\$ 26.38	\$ 30.15
+3.55*	+3.55*	+3.55*	+3.55*

Indentured after July 1 2016

1st	2nd	3rd	4th	5th
\$ 18.85	\$ 22.61	\$ 24.50	\$ 26.38	\$ 30.15
+3.55*	+3.55*	+3.55*	+3.55*	+3.55*

*For all hours paid straight or premium

SUPPLEMENTAL BENEFITS per hour:

All terms \$ 16.28

11-279.1B/HH

Electrician

06/01/2021

JOB DESCRIPTION Electrician

DISTRICT 11

ENTIRE COUNTIES

Orange, Putnam, Rockland

PARTIAL COUNTIES

Dutchess: Towns of Fishkill, East Fishkill, and Beacon.

WAGES

Per hour:

	07/01/2020	04/01/2021
Electrician Wireman/Technician	\$ 46.00	\$ 47.00
	+7.00*	+7.00*

SHIFT DIFFERENTIAL: On Public Work in New York State when shift work is mandated either in the job specifications or by the contracting agency, the following rates apply:

Shift worked between 4:30pm & 12:30am	\$ 53.97	\$ 55.15
	+7.00*	+7.00*
Shift worked between 12:30am & 8:30am	\$ 60.46	\$ 61.77
	+7.00*	+7.00*

*For all hours paid straight or premium.

NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW (subject to overtime premiums):

- On jobs where employees are required to work from boatswain chairs, swinging scaffolds, etc., forty (40) feet or more above the ground, or under compressed air, using Scottair packs, gas masks or in shafts or tunnels, they shall receive an additional \$2.00 per hour above the regular straight time rate.

- Journeyman Wireman when performing welding or cable splicing: \$2.00 above the Journeyman Wireman rate of pay.

- Journeyman Wireman required to have a NYS Asbestos Certificate: \$2.00 above the Journeyman Wireman rate of pay.

- Journeyman Wireman required to have a CDL: \$2.00 above the Journeyman Wireman rate of pay.

SUPPLEMENTAL BENEFITS

Per hour:

	07/01/2020	04/01/2021
Journeyman	\$ 25.38 plus 3% of straight or premium wage	\$ 26.69 plus 3% of straight or premium wage

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 13, 15, 16, 25) on HOLIDAY PAGE

When the holiday falls on a Saturday it is observed the Friday before. When the holiday falls on a Sunday it is observed on the Monday after.

REGISTERED APPRENTICES

WAGES:

(1)year terms at the following rates

07/01/2020	1st	2nd	3rd	4th	5th	6th
1st Shift	\$ 13.20	\$ 17.60	\$ 22.00	\$ 26.40	\$ 30.80	\$ 33.00
	+.50*	+.50*	+1.00*	+1.50*	+2.00*	+2.00*
2nd Shift	15.49	20.65	25.81	30.98	36.14	38.72
	+.50*	+.50*	+1.00*	+1.50*	+2.00*	+2.00*
3rd Shift	17.35	23.13	28.91	34.70	40.48	43.47
	+.50*	+.50*	+1.00*	+1.50*	+2.00*	+2.00*
04/01/2021	1st	2nd	3rd	4th	5th	6th
1st Shift	\$ 13.50	\$ 18.00	\$ 22.50	\$ 27.00	\$ 31.50	\$ 33.75
	+.50*	+.50*	+1.00*	+1.50*	+2.00*	+2.00*
2nd Shift	15.84	21.12	26.40	31.68	36.96	39.60
	+.50*	+.50*	+1.00*	+1.50*	+2.00*	+2.00*
3rd Shift	17.74	23.66	29.57	35.48	41.40	44.36
	+.50*	+.50*	+1.00*	+1.50*	+2.00*	+2.00*

*For all hours paid straight or premium.

SUPPLEMENTAL BENEFITS per hour:

07/01/2020

1st term	\$ 14.42 plus 3% of straight or premium wage
2nd term	\$ 15.92 plus 3% of straight or premium wage
3rd term	\$ 17.42 plus 3% of straight or premium wage
4th term	\$ 18.42 plus 3% of straight or premium wage
5th & 6th term	\$ 19.92 plus 3% of straight or premium wage

09/01/2020

1st term	\$ 15.31 plus 3% of straight or premium wage
2nd term	\$ 15.81 plus 3% of straight or premium wage
3rd term	\$ 17.31 plus 3% of straight or premium wage
4th term	\$ 18.31 plus 3% of straight or premium wage
5th term	\$ 19.81 plus 3% of straight or premium wage
6th term	\$ 20.31 plus 3% of straight or premium wage

11-363/1

Elevator Constructor

06/01/2021

JOB DESCRIPTION Elevator Constructor

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

PARTIAL COUNTIES

Rockland: Entire County except for the Township of Stony Point

Westchester: Entire County except for the Townships of Bedford, Lewisboro, Cortland, Mt. Kisco, North Salem, Pound Ridge, Somers and Yorktown.

WAGES

Per hour:

	07/01/2019	03/17/2021
Elevator Constructor	\$ 69.56	\$ 72.29

Modernization &

Service/Repair	\$ 54.56	\$ 56.77
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SUPPLEMENTAL BENEFITS

Per Hour:

Elevator Constructor	\$ 41.92	\$ 42.92
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Modernization & Service/Repairs	\$ 40.86	\$ 41.82
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OVERTIME PAY

Constructor See (D, M, T) on OVERTIME PAGE.

Modern/Service See (B, F, S) on OVERTIME PAGE.

HOLIDAY

Paid: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

WAGES PER HOUR:

*Note: 1st Term is based on Average wage of Constructor & Modernization.

Terms 2 thru 4 Based on Journeymans wage of classification Working in.

1 YEAR TERMS:

1st Term*	2nd Term	3rd Term	4th Term
50%	55%	65%	75%

SUPPLEMENTAL BENEFITS

Elevator Constructor		
1st Term	\$ 33.38	\$ 34.05
2nd Term	34.20	34.91
3rd Term	35.55	36.30
4th Term	36.89	37.70

Modernization & Service/Repair		
1st Term	\$ 33.33	\$ 34.00
2nd Term	33.82	34.50
3rd Term	35.09	35.83
4th Term	36.36	37.15

4-1

Elevator Constructor

06/01/2021

JOB DESCRIPTION Elevator Constructor

DISTRICT 1

ENTIRE COUNTIES

Columbia, Dutchess, Greene, Orange, Putnam, Sullivan, Ulster

PARTIAL COUNTIES

Delaware: Towns of Andes, Bovina, Colchester, Davenport, Delhi, Harpersfield, Hemdon, Kortright, Meredith, Middletown, Roxbury, Hancock & Stamford

Rockland: Only the Township of Stony Point.

Westchester: Only the Townships of Bedford, Lewisboro, Cortland, Mt. Kisco, North Salem, Pound Ridge, Somers and Yorktown.

WAGES

Per Hour	07/01/2020	01/01/2021
Mechanic	\$ 60.49	\$62.51
Helper	70% of Mechanic Wage Rate	70% of Mechanic Wage Rate

Four (4), ten (10) hour days may be worked for New Construction and Modernization Work at straight time during a week, Monday thru Thursday or Tuesday thru Friday.

***Four (4), ten (10) hour days are not permitted for Contract Work/Repair Work

NOTE - In order to use the '4 Day/10 Hour Work Schedule' as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule', form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour	07/01/2020	01/01/2021
Journeyman/Helper	\$ 34.765*	\$ 35.825*

(*)Plus 6% of regular hourly if less than 5 years of service. Plus 8% of regular hourly rate if more than 5 years of service.

OVERTIME PAY

See (D, O) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 15, 16) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE

Note: When a paid holiday falls on Saturday, it shall be observed on Friday. When a paid holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES

Wages per hour:

0-6 mo*	6-12 mo	2nd yr	3rd yr	4th yr
50 %	55 %	65 %	70 %	80 %

(*)Plus 6% of the hourly rate, no additional supplemental benefits.

Supplemental Benefits per hour worked:

Same as Journeyman/Helper

1-138

Glazier

06/01/2021

JOB DESCRIPTION Glazier

DISTRICT 8

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Per hour:	7/01/2020	5/01/2021
Glazier	\$ 57.55	\$ 58.60
*Scaffolding	58.55	59.55
Glass Tinting & Window Film	29.17	29.60
**Repair & Maintenance	29.17	29.60

*Scaffolding includes swing scaffold, mechanical equipment, scissor jacks, man lifts, booms & buckets 24' or more, but not pipe scaffolding.

**Repair & Maintenance- All repair & maintenance work on a particular building, whenever performed, where the total cumulative contract value is under \$148,837. All Glass tinting, window film, regardless of material or intended use, and all affixing of decals to windows or glass.

SUPPLEMENTAL BENEFITS

Per hour:	7/01/2020	5/01/2021
Journeyworker	\$ 34.59	\$ 36.04
Glass tinting & Window Film	20.29	21.19
Repair & Maintenance	20.29	21.19

OVERTIME PAY

See (B,H,V) on OVERTIME PAGE.

For 'Repair & Maintenance' and 'Glass Tinting & Window Film' see (B, B2, I, S) on overtime page.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (4, 6, 16, 25) on HOLIDAY PAGE

For 'Repair & Maintenance' and 'Glass Tinting & Window Film' Only

Paid: See(5, 6, 16, 25)

Overtime: See(5, 6, 16, 25)

REGISTERED APPRENTICES

Wage per hour:

(1) year terms at the following wage rates:

	7/01/2020	5/01/2021
1st term	\$ 20.14	\$ 20.72
2nd term	28.21	28.66
3rd term	34.10	34.67
4th term	45.80	46.62
Supplemental Benefits:		
(Per hour)		
1st term	\$ 16.16	\$ 16.58
2nd term	22.76	23.57
3rd term	25.16	26.09
4th term	29.73	30.91

8-1087 (DC9 NYC)

Insulator - Heat & Frost

06/01/2021

JOB DESCRIPTION Insulator - Heat & Frost

DISTRICT 8

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Westchester

WAGES

Per hour:	07/01/2020	05/31/2021
Insulator	\$ 55.00	\$ 2.00
Discomfort & Additional Training**	57.96	
Fire Stop Work*	29.44	

* Applies on all exclusive Fire Stop Work (When contract is for Fire Stop work only). No apprentices on these contracts only.

**Applies to work requiring: garb or equipment worn against the body not customarily worn by insulators; psychological evaluation; special training, including but not limited to "Yellow Badge" radiation training

Note: Additional \$0.50 per hour for work 30 feet or more above floor or ground level.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker	\$ 34.35
Discomfort & Additional Training	36.30
Fire Stop Work: Journeyworker	17.52

OVERTIME PAY

See (B, E, E2, Q, *T) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Note: Last working day preceding Christmas and New Years day, workers shall work no later than 12:00 noon and shall receive 8 hrs pay.

Overtime: See (2*, 4, 6, 16, 25) on HOLIDAY PAGE.

*Note: Labor Day triple time if worked.

REGISTERED APPRENTICES

(1) year terms:

Insulator Apprentices:

1st	2nd	3rd	4th
\$ 29.44	\$ 34.55	\$ 39.66	\$ 44.78

Discomfort & Additional Training Apprentices:

1st	2nd	3rd	4th
\$ 30.99	\$ 36.41	\$ 41.83	\$ 47.26

Supplemental Benefits paid per hour:

Insulator Apprentices:	
1st term	\$ 17.52
2nd term	20.89
3rd term	24.25
4th term	27.61

Discomfort & Additional Training Apprentices:	
1st term	\$ 18.50
2nd term	22.06
3rd term	25.62
4th term	29.18

8-91

Ironworker

06/01/2021

JOB DESCRIPTION Ironworker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

PARTIAL COUNTIES

Rockland: Southern section - south of Convent Road and east of Blue Hills Road.

WAGES

Per hour: 07/01/2020

Reinforcing &
Metal Lathing \$ 56.25

"Base" Wage \$ 54.70
plus \$ 1.55

"Base" Wage is used to calculate overtime hours only.

SUPPLEMENTAL BENEFITS

Per hour:

Reinforcing &
Metal Lathing \$ 38.30

OVERTIME PAY

See (B, E, Q, *X) on OVERTIME PAGE

*Only \$22.00 per Hour for non worked hours

Supplemental Benefit Premiums for Overtime Hours worked:

Time & One Half \$ 45.08
Double Time \$ 51.33

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 13, 18, 19, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year terms at the following wage rates:

1st term	2nd term	3rd term	4th Term
Wage Per Hour:			
\$ 22.55	\$ 28.38	\$ 34.68	\$ 37.18
"Base" Wage			
\$ 21.00	\$ 26.80	\$ 33.10	\$ 35.60
plus \$1.55	plus \$1.58	plus \$1.58	plus \$1.58

"Base" Wage is used to calculate overtime hours ONLY.

SUPPLEMENTAL BENIFITS

Per Hour:

1st term	2nd term	3rd term	4th Term
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\$ 18.17 \$ 21.34 \$ 22.00 \$ 20.50

4-46Reinf

Ironworker

06/01/2021

JOB DESCRIPTION Ironworker

DISTRICT 11

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster

WAGES

Per hour:

07/01/2020

Structural	\$ 48.98
Reinforcing*	48.98
Ornamental	48.98
Chain Link Fence	48.98

*NOTE: For Reinforcing classification ONLY, Ironworker 4-46Reinf rates apply in Rockland County's southern section (south of Convent Road and east of Blue Hills Road).

On Government Mandated Irregular Work Days or Shift Work, the following wage will be paid:

1st Shift	\$ 48.98
2nd Shift	62.38
3rd Shift	66.85

**Note- Any shift that works past 12:00 midnight shall receive the 3rd shift differential.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 40.35
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OVERTIME PAY

See (B1, Q, V) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16) on HOLIDAY PAGE

If a holiday falls on Saturday, it will be observed Friday. If a holiday falls on Sunday, it will be observed Monday.

REGISTERED APPRENTICES

Wages:

(1) year terms at the following wage:

	1st yr	2nd yr	3rd yr	4th yr
1st Shift	\$ 24.49	\$ 29.39	\$ 34.29	\$ 39.18
2nd Shift	33.35	39.16	44.97	50.76
3rd Shift	36.31	42.42	48.53	54.63

Supplemental Benefits per hour:

1st year	\$ 34.60
2nd year	35.75
3rd year	36.90
4th year	38.05

11-417

Laborer - Building

06/01/2021

JOB DESCRIPTION Laborer - Building

DISTRICT 11

ENTIRE COUNTIES

Rockland

WAGES

GROUP C: Liners, joint setters.

GROUP D: Air track operators.

GROUP E: Sealers, power buggy operators, mixer men, brush king, jack hammer, pavement breakers, vibrator men, powder men, torchmen, cement spray men.

GROUP F: Hazardous Waste Handler, Asbestos Removal, Mold Removal, Lead Removal and Bio Remediation where protective gear is needed.

GROUP H: Mason tender, rip rap and dry stone layers, concrete laborer, pipe layers, signal men, gabion basket assemblers, asphalt men, wrecking and demolition men.

GROUP I: Landscaping, flagmen, pitmen, dump men, temporary heat, building laborer (clean up).

WAGES: (per hour)	07/01/2020	05/01/2021	05/01/2022 Additional \$ 2.10
GROUP C	\$ 41.05	\$ 43.10	
GROUP D	41.60	43.65	
GROUP E	40.75	42.80	
GROUP F	42.75	44.80	
GROUP H	40.51	42.56	
GROUP I	37.50	39.55	

SHIFT DIFFERENTIAL: On all Governmental mandated or irregular or off shift work, an additional 20% of the wage will be paid hourly.

NOTE: All work five feet or more outside the building foundation line shall be deemed Heavy & Highway

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyman \$ 26.13

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE.

Overtime: See (5, 6, 15, 25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

(1000) hour terms at the following wages.

1st	2nd	3rd	4th
\$ 20.77	\$ 24.37	\$ 26.96	\$ 31.56

Supplemental Benefits per hour:

All Terms \$ 21.75

11-754B

Laborer - Heavy&Highway

06/01/2021

JOB DESCRIPTION Laborer - Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Rockland

WAGES

GROUP A: Certified Traffic Control

GROUP B: Blaster, Screed Men

GROUP C: Air track, joy drill

GROUP D: Asbestos, Hazardous Waste and lead abatement, bio remediation, phyto remediation where protective gear is required

GROUP E: Drill helper, concrete laborer, nipper, power buggy, mixer (machine or hand), brush king, jack hammer, wagon drill, job rig, pavement breaker, vibrator man, bit grinder, powder man, rip rap & dry stone layer, cement spray man, gunite nozzle man, spray & nozzle men on mulching & seeding machine, concrete saw, mason tender, pipe layer, gabion basket assembler, scalers, asphalt men, demolition men, bar man & helper, landscape men, ax man, pit and dump men, asbestos removal and hazardous waste removal where no protective gear is required

GROUP F: Flag person

WAGES: (per hour) 07/01/2020

GROUP A \$ 45.00

GROUP B	47.00
GROUP C	43.50
GROUP D	43.50
GROUP E	41.75
GROUP F	38.20

SHIFT DIFFERENTIAL: On all NYS DOT or other Governmental mandated, irregular or offshift work, an additional 15% of the wage rate will be paid hourly

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 26.03

OVERTIME PAY

See (B, *G, P, V, X) on OVERTIME PAGE

*If Holiday falls on a Sunday double time is applicable

HOLIDAY

HOLIDAY:

Paid: See (5, 6, 15, 25) on HOLIDAY PAGE.

Overtime: See (5, 6) on HOLIDAY PAGE.

REGISTERED APPRENTICES

(1000) hour terms at the following wages.

1st	2nd	3rd	4th
\$ 20.77	\$ 24.37	\$ 26.96	\$31.56

Supplemental Benefits per hour:

All Terms \$ 21.75

11-754H/H

Laborer - Tunnel

06/01/2021

JOB DESCRIPTION Laborer - Tunnel

DISTRICT 11

ENTIRE COUNTIES

Columbia, Dutchess, Greene, Orange, Otsego, Putnam, Rockland, Sullivan, Ulster, Westchester

PARTIAL COUNTIES

Chenango: Townships of Columbus, Sherburne and New Berlin.

Delaware: Townships of Andes, Bovina, Middletown, Roxbury, Franklin, Hamden, Stamford, Delhi, Kortright, Harpersfield, Merideth and Davenport.

WAGES

Class 1: All support laborers/sandhogs working above the shaft or tunnel.

Class 2: All laborers/sandhogs working in the shaft or tunnel.

Class 4: Safety Miners

Class 5: Site work related to Shaft/Tunnel

WAGES: (per hour)

	07/01/2020	07/01/2021	07/01/2022
Class 1	\$ 50.45	\$ 51.95	\$ 53.45
Class 2	52.60	54.10	55.60
Class 4	59.00	60.50	62.00
Class 5	42.25	43.50	44.80

Toxic and hazardous waste, lead abatement and asbestos abatement work will be paid an additional \$ 3.00 an hour.

SHIFT DIFFERENTIAL...On all Government mandated irregular shift work:

- Employee shall be paid at time and one half the regular rate Monday through Friday.
- Saturday shall be paid at 1.65 times the regular rate.
- Sunday shall be paid at 2.15 times the regular rate.

SUPPLEMENTAL BENEFITS

Per hour:

Benefit 1	\$ 32.15	\$ 33.25	\$ 34.45
Benefit 2	48.15	49.80	51.60
Benefit 3	64.15	66.35	68.75

Benefit 1 applies to straight time hours, paid holidays not worked.

Benefit 2 applies to over 8 hours in a day (M-F), irregular shift work hours worked, and Saturday hours worked.

Benefit 3 applies to Sunday and Holiday hours worked.

OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16, 25) on HOLIDAY PAGE

When a recognized Holidays falls on Saturday or Sunday, holidays falling on Saturday shall be recognized or observed on Friday and holidays falling on Sunday shall be recognized or observed on Monday. Employees ordered to work on the Saturday or Sunday of the holiday or on the recognized or the observed Friday or Monday for those holidays falling on Saturday or Sunday shall receive double time the established rate and benefits for the holiday.

REGISTERED APPRENTICES

FOR APPRENTICE RATES, refer to the appropriate Laborer Heavy & Highway wage rate contained in the wage schedule for the County and location where the work is to be performed.

11-17/60/235/754Tun

Lineman Electrician

06/01/2021

JOB DESCRIPTION Lineman Electrician

DISTRICT 6

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

WAGES

Per hour:

NOTE: Includes Teledata Work within ten (10) feet of High Voltage Transmission Lines

Below rates applicable on all overhead and underground distribution and maintenance work, and all overhead and underground transmission line work and the installation of fiber optic cable where no other construction trades are or have been involved. (Ref #14.01.01)

07/01/2020

Lineman, Technician	\$ 53.50
Crane, Crawler Backhoe	53.50
Welder, Cable Splicer	53.50
Digging Mach. Operator	48.15
Tractor Trailer Driver	45.48
Groundman, Truck Driver	42.80
Equipment Mechanic	42.80
Flagman	32.10

Additional \$1.00 per hour for entire crew when a helicopter is used.

Below rates applicable on all electrical sub-stations, switching structures, fiber optic cable and all other work not defined as "Utility outside electrical work". (Ref #14.02.01-A)

Lineman, Technician	\$ 53.50
Crane, Crawler Backhoe	53.50
Cable Splicer	58.85
Certified Welder -	
Pipe Type Cable	56.18
Digging Mach. Operator	48.15
Tractor Trailer Driver	45.48
Groundman, Truck Driver	42.80
Equipment Mechanic	42.80
Flagman	32.10

Additional \$1.00 per hour for entire crew when a helicopter is used.

Below rates apply on switching structures, maintenance projects, railroad catenary install/maintenance third rail installation, bonding of rails and pipe type cable and installation of fiber optic cable. (Ref #14.02.01-B)

Lineman, Tech, Welder	\$ 54.82
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Crane, Crawler Backhoe	54.82
Cable Splicer	60.30
Certified Welder -	
Pipe Type Cable	57.56
Digging Mach. Operator	49.34
Tractor Trailer Driver	46.60
Groundman, Truck Driver	43.86
Equipment Mechanic	43.86
Flagman	32.89

Additional \$1.00 per hour for entire crew when a helicopter is used.

Below rates applicable on all overhead and underground transmission line work & fiber optic cable where other construction trades are or have been involved. This applies to transmission line work only, not other construction. (Ref #14.03.01)

Lineman, Tech, Welder	\$ 56.01
Crane, Crawler Backhoe	56.01
Cable Splicer	56.01
Digging Mach. Operator	50.41
Tractor Trailer Driver	47.61
Groundman, Truck Driver	44.81
Equipment Mechanic	44.81
Flagman	33.61

Additional \$1.00 per hour for entire crew when a helicopter is used.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM to 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM to 1:00 AM REGULAR RATE PLUS 17.3 %
3RD SHIFT	12:30 AM to 9:00 AM REGULAR RATE PLUS 31.4 %

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour worked (also required on non-worked holidays):

The following SUPPLEMENTAL BENEFITS apply to all classification categories of CONSTRUCTION, TRANSMISSION and DISTRIBUTION.

Journeyman	\$ 24.90
	*plus 6.75% of hourly wage

*The 6.75% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY

See (B, E, Q,) on OVERTIME PAGE. *Note* Double time for all emergency work designated by the Dept. of Jurisdiction.

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid	See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.
Overtime	See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES

WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyman Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour: Same as Journeyman

6-1249a

Lineman Electrician - Teledata

06/01/2021

JOB DESCRIPTION Lineman Electrician - Teledata

DISTRICT 6

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

Per hour:

For outside work, stopping at first point of attachment (demarcation).

	07/01/2020	01/01/2021
Cable Splicer	\$ 33.77	\$ 34.78
Installer, Repairman	\$ 32.05	\$ 33.01
Teledata Lineman	\$ 32.05	\$ 33.01
Tech., Equip. Operator	\$ 32.05	\$ 33.01
Groundman	\$ 16.99	\$ 17.50

NOTE: EXCLUDES Teledata work within ten (10) feet of High Voltage (600 volts and over) transmission lines. For this work please see LINEMAN.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED:

1ST SHIFT	REGULAR RATE
2ND SHIFT	REGULAR RATE PLUS 10%
3RD SHIFT	REGULAR RATE PLUS 15%

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 5.06	\$ 5.06
	*plus 3% of wage paid	*plus 3% of wage paid

*The 3% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16) on HOLIDAY PAGE

6-1249LT - Teledata

Lineman Electrician - Traffic Signal, Lighting

06/01/2021

JOB DESCRIPTION Lineman Electrician - Traffic Signal, Lighting

DISTRICT 6

ENTIRE COUNTIES

Columbia, Dutchess, Orange, Putnam, Rockland, Ulster

WAGES

Lineman/Technician shall perform all overhead aerial work. A Lineman/Technician on the ground will install all electrical panels, connect all grounds, install and connect all electrical conductors which includes, but is not limited to road loop wires; conduit and plastic or other type pipes that carry conductors, flex cables and connectors, and to oversee the encasement or burial of such conduits or pipes.

A Groundman/Groundman Truck Driver shall: Build and set concrete forms, handle steel mesh, set footer cages, transport concrete in a wheelbarrow, hand or machine concrete vibrator, finish concrete footers, mix mortar, grout pole bases, cover and maintain footers while curing in cold weather, operate jack hammer, operate hand pavement breaker, tamper, concrete and other motorized saws, as a drill helper, operate and maintain generators, water pumps, chainsaws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator equipment operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a groundman/truck driver may assist in installing conduit, pipe, cables and equipment.

A flagger's duties shall consist of traffic control only.
(Ref #14.01.02)

Per hour: 07/01/2020

Lineman, Technician	\$ 47.48
Crane, Crawler Backhoe	47.48
Certified Welder	49.85
Digging Machine	42.73
Tractor Trailer Driver	40.36
Groundman, Truck Driver	37.98
Equipment Mechanic	37.98
Flagman	28.49

Above rates are applicable for installation, testing, operation, maintenance and repair on all Traffic Control (Signal) and Illumination (Lighting) projects, Traffic Monitoring Systems, and Road Weather Information Systems. Includes digging of holes for poles, anchors, footer foundations for electrical equipment; assembly of all electrical materials or raceway; placing of fish wire; pulling of cables, wires or fiber optic cable through such raceways; splicing of conductors; dismantling of such structures, lines or equipment.

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM TO 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM TO 1:00 AM REGULAR RATE PLUS 17.3%
3RD SHIFT	12:30 AM TO 9:00 AM REGULAR RATE PLUS 31.4%

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day.

NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour worked (but also required on non-worked holidays):

Journeyman	\$ 24.90
	*plus 6.75% of hourly wage

* The 6.75% is based on the hourly wage paid, straight time rate or premium rate.

Supplements paid at STRAIGHT TIME rate for holidays.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE. *Note* Double time for all emergency work designated by the Dept. of Jurisdiction.

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked.

Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid: See (5, 6, 8, 13, 25) on HOLIDAY PAGE and Governor of NYS Election Day.

Overtime: See (5, 6, 8, 13, 25) on HOLIDAY PAGE and Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES

WAGES per hour: 1000 hour terms.

	07/01/2020
1st term	\$ 28.49
2nd term	30.86
3rd term	33.24
4th term	35.61

5th term	37.98
6th term	40.36
7th term	42.73

SUPPLEMENTAL BENEFITS per hour: Same as Journeyman

6-1249aReg8LT

Lineman Electrician - Tree Trimmer

06/01/2021

JOB DESCRIPTION Lineman Electrician - Tree Trimmer

DISTRICT 6

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

WAGES

Applies to line clearance, tree work and right-of-way preparation on all new or existing energized overhead or underground electrical, telephone and CATV lines. This also would include stump removal near underground energized electrical lines, including telephone and CATV lines.

Per hour:	07/01/2020	01/03/21	01/02/22	01/01/23
Tree Trimmer	\$ 26.56	\$ 27.36	\$ 28.25	\$ 29.59
Equipment Operator	23.49	24.19	24.98	26.17
Equipment Mechanic	23.49	24.19	24.98	26.17
Truck Driver	19.56	20.15	20.80	21.79
Groundman	16.11	16.59	17.13	17.94
Flag person	11.80	12.50*	12.50	12.94

*RATE GOES INTO EFFECT 12/31/2020

SUPPLEMENTAL BENEFITS

Per hour worked (but also required on non-worked holidays):

Journeyman	\$ 9.98 *plus 3% of hourly wage	\$ 9.98 *plus 3% of hourly wage	\$ 10.23 *plus 3% of hourly wage	\$ 10.48 *plus 3% of hourly wage
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* The 3% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked.

Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid: See (5, 6, 8, 15, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 16, 25) on HOLIDAY PAGE

NOTE: All paid holidays falling on a Saturday shall be observed on the preceding Friday.

All paid holidays falling on a Sunday shall be observed on the following Monday.

6-1249TT

Mason - Building

06/01/2021

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Nassau, Rockland, Suffolk, Westchester

WAGES

Per hour:	07/01/2020	12/07/2020
Tile Finisher	\$ 46.21	\$ 46.69

SUPPLEMENTAL BENEFITS

Per Hour:	\$ 21.56* + \$9.65	\$ 21.91 + \$9.55
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*This portion of benefits subject to same premium rate as shown for overtime wages

OVERTIME PAY

See (B, E, Q, *V) on OVERTIME PAGE

Work beyond 10 hours on a Saturday shall be paid at double the hourly wage rate.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

9-7/88A-tf

Mason - Building

06/01/2021

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Nassau, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2020 12/07/2020

Tile Setters \$ 60.09 \$ 60.86

SUPPLEMENTAL BENEFITS

Per Hour: \$ 24.81* \$ 24.91*
+ \$9.72 + \$9.73

* This portion of benefits subject to same premium rate as shown for overtime wages.

OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

Work beyond 10 hours on Saturday shall be paid at double the hourly wage rate.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage per hour:

Tile Setters:

(750 hour) term at the following wage rate:

Term:	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
	1-750	751-1500	1501-2250	2251-3000	3001-3750	3751-4500	4501-5250	5251-6000	6001-6750	6501-7000
07/01/2020	\$20.35	\$25.11	\$32.09	\$36.83	\$40.25	\$43.50	\$46.95	\$51.69	\$54.34	\$58.19

Supplemental Benefits per hour:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$12.55*	\$12.55*	\$15.06*	\$15.06*	\$16.06*	\$17.56*	\$18.56*	\$18.56*	\$16.56*	\$21.81*
+\$.66	+\$.70	+\$.80	+\$.85	+\$ 1.23	+\$ 1.27	+\$ 1.62	+\$ 1.67	+\$ 5.82	+\$ 6.31

* This portion of benefits subject to same premium rate as shown for overtime wages.

9-7/52A

Mason - Building

06/01/2021

JOB DESCRIPTION Mason - Building

DISTRICT 11

ENTIRE COUNTIES

Putnam, Rockland, Westchester

PARTIAL COUNTIES

Orange: Only the Township of Tuxedo.

WAGES

Per hour: 07/01/2020

Bricklayer \$ 42.09
Cement Mason 42.09
Plasterer/Stone Mason 42.09

Pointer/Caulker 42.09

Additional \$1.00 per hour for power saw work
Additional \$0.50 per hour for swing scaffold or staging work

SHIFT WORK: When shift work or an irregular work day is mandated or required by state, federal, county, local or other governmental agency contracts, the following premiums apply:

Irregular work day requires 15% premium
Second shift an additional 15% of wage plus benefits to be paid
Third shift an additional 25% of wage plus benefits to be paid

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 35.00

OVERTIME PAY

OVERTIME:

Cement Mason See (B, E, Q, W) on OVERTIME PAGE.

All Others See (B, E, Q) on OVERTIME PAGE.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

REGISTERED APPRENTICES

Wages per hour:

750 hour terms at the following percentage of Journeyman's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Supplemental Benefits per hour

750 hour terms at the following percentage of journeyman supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices indentured before June 1st, 2011 receive full journeyman benefits

11-5wp-b

Mason - Building

06/01/2021

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Wages:	07/01/2020	01/14/2021
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Marble Cutters & Setters	\$ 60.35	\$ 60.89
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SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker	\$ 37.24	\$ 37.65
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OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage Per Hour:

750 hour terms at the following wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
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1- 750	751- 1500	1501- 2250	2251- 3000	3001- 3750	3751- 4500	4501- 5250	5251- 6000	6001- 6751	6751- 7500
07/01/2020									
\$24.15	\$27.15	\$30.16	\$33.19	\$36.20	\$39.20	\$42.15	\$45.26	\$51.28	\$57.34
01/14/2021									
\$24.36	\$27.38	\$30.43	\$33.48	\$36.53	\$39.56	\$42.61	\$45.66	\$51.74	\$57.83

Supplemental Benefits per hour:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
07/01/2020									
\$20.14	\$21.58	\$23.02	\$24.42	\$25.85	\$27.29	\$28.72	\$30.12	\$32.98	\$35.81
01/14/2021									
\$20.31	\$21.77	\$23.22	\$24.66	\$26.09	\$27.55	\$28.99	\$30.44	\$33.33	\$36.22

9-7/4

Mason - Heavy&Highway

06/01/2021

JOB DESCRIPTION Mason - Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Putnam, Rockland, Westchester

PARTIAL COUNTIES

Orange: Only the Township of Tuxedo.

WAGES

Per hour:

07/01/2020

Bricklayer	\$ 42.60
Cement Mason	42.60
Marble/Stone Mason	42.60
Plasterer	42.60
Pointer/Caulker	42.60

Additional \$1.00 per hour for power saw work

Additional \$0.50 per hour for swing scaffold or staging work

SHIFT WORK: When shift work or an irregular work day is mandated or required by state, federal, county, local or other governmental contracts, the following rates apply:

Irregular work day requires 15% premium

Second shift an additional 15% of wage plus benefits to be paid

Third shift an additional 25% of wage plus benefits to be paid

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 34.99
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OVERTIME PAY

Cement Mason See (B, E, Q, W, X)

All Others See (B, E, Q, X)

HOLIDAY

Paid: See (5, 6, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 25) on HOLIDAY PAGE

Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

REGISTERED APPRENTICES

Wages per hour:

750 hour terms at the following percentage of Journeyman's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Supplemental Benefits per hour

750 hour terms at the following percentage of journeyman supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices indentured before June 1st, 2011 receive full journeyman benefits

11-5WP-H/H

Operating Engineer - Building / Heavy&Highway

06/01/2021

JOB DESCRIPTION Operating Engineer - Building / Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Delaware, Orange, Rockland, Sullivan, Ulster

WAGES

CLASS A5: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes, with 140ft boom and over.

CLASS A4: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes, with 100ft to 139ft boom.

CLASS A3: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes with a boom under 100ft.

CLASS A2: Cranes, Derricks and Pile Drivers less than 100 tons with 140ft boom and over.

CLASS A1: Cranes, Derricks and Piler Drivers less than 100 tons with a 100ft to 139ft boom.

CLASS A: Cranes, Derricks and Pile Drivers less than 100 tons with a boom under 100ft.; Autograde Comb. Subgrader, Base Material Spreader and Base Trimmer (CMI and Similar Types); Autograde Pavement profiler (CMI and Similar Types); Autograde Pavement Profiler and Recycle type (CMI and Similar Type); Autograde Placer-Trimmed-Spreader Comb. (CMI & Similar types); Autograde Slipform Paver (CMI & Similar Types); Central Power Plants (all types); Chief of Party; Concrete Paving Machines; Drill (Baur, AMI and Similar Types); Drillmaster, Quarrymaster (Down the Hole Drill), Rotary Drill, Self-Propelled Hydraulic Drill, Self-Powered Drill; Draglines; Elevator Graders; Excavator; Front End Loaders (5 yds. and over); Gradalls; Grader-Rago; Helicopters (Co-Pilot); Helicopters (Communications Engineer); Juntann Pile Driver; Locomotive (Large); Mucking Machines; Pavement & Concrete Breaker, i.e., Superhammer & Hoe Ram; Roadway Surface Grinder; Prentice Truck; Scooper (Loader and Shovel); Shovels; Tree Chopper with Boom; Trench Machines (Cable Plow); Tunnel Boring Machine; Vacuum Truck

CLASS B: "A" Frame; Backhoe (Combination); Boom Attachment on Loaders (Rate based on size of Bucket) not applicable to Pipehook; Boring and Drilling Machines; Brush Chopper, Shredder and Tree Shredder, Tree Shearer; Bulldozer (Fine Grade); Cableways; Carryalls; Concrete Pump; Concrete Pumping System, Pump Concrete and Similar Types; Conveyors (125 ft. and over); Drill Doctor (duties incl. Dust Collector Maintenance); Front End Loaders (2 yds. but less than 5 yds.); Graders (Finish); Groove Cutting Machine (Ride on Type); Heater Planer; Hoists (all type Hoists, shall also include Steam, Gas, Diesel, Electric, Air Hydraulic, Single and Double Drum, Concrete, Brick Shaft Caisson, Snorkel Roof, and/or any other Similar Type Hoisting Machines, portable or stationary, except Chicago Boom Type); Long Boom Rate to be applied if Hoist is "Outside Material Tower Hoist"; Hydraulic Cranes-10 tons and under; Hydraulic Dredge; Hydro-Axe; Hydro Blaster; Jacks-Screw Air Hydraulic Power Operated Unit or Console Type (not hand Jack or Pile Load Test Type); Log Skidder; Pans; Pavers (all) concrete; Plate and Frame Filter Press; Pumpcrete Machines, Squeeze-crete & Concrete Pumping (regardless of size); Scrapers; Side Booms; "Straddle" Carrier-Ross and similar types; Winch Trucks (Hoisting); Whip Hammer

CLASS C: Asphalt Curbing Machine; Asphalt Plant Engineer; Asphalt Spreader; Autograde Tube Finisher and Texturing Machine (CMI & Similar types); Autograde Curecrete Machine (CMI & Similar Types); Autograde Curb Trimmer & Sidewalk, Shoulder, Slipform (CMI & Similar Types); Bar Bending Machines (Power); Batchers, Batching Plant and Crusher on Site; Belt Conveyor Systems; Boom Type Skimmer Machines; Bridge Deck Finisher; Bulldozer (except fine grade); Car Dumpers (Railroad); Compressor and Blower Type Units (used independently or mounted on dual purpose Trucks, on Job Site or in conjunction with jobsite, in Loading and Unloading of Concrete, Cement, Fly Ash, Instacrete, or Similar Type Materials); Compressors (2 or 3 in Battery); Concrete Finishing Machines; Concrete cleaning decontamination machine operator; Concrete Saws and Cutters (Ride-on type); Concrete Spreaders (Hetzl, Rexomatic and Similar Types); Concrete Vibrators; Conveyors (under 125 feet); Crushing Machines; Directional Boring Machines; Ditching Machine-small (Ditch-witch, Vermeer, or Similar type); Dope Pots (Mechanical with or without pump); Dumpsters; Elevator; Fireman; Fork Lifts (Economobile, Lull and Similar Types of Equipment); Front End Loaders (1 yd. and over but under 2 yds.); Generators (2 or 3 in Battery); Giraffe Grinders; Grout Pump; Gunnite Machines (excluding nozzle); Hammer Vibrator (in conjunction with Generator); Heavy Equipment Robotics Operator Technician; Hoists-Roof, Tugger, Aerial Platform Hoist & House Cars; Hoppers; Hopper Doors (power operated); Hydro Blaster; Hydraulic Jacking Trailer; Ladders (motorized); Laddervator; Locomotive-dinky type; Maintenance -Utility Man; Master Environmental Maintenance Technician; Mechanics; Mixers (Excepting Paving Mixers); Motor Patrols; Pavement Breakers (small self propelled ride on type-also maintains compressor hydraulic unit); Pavement Breaker-truck mounted; Pipe Bending Machine (Power); Pitch Pump; Plaster Pump (regardless of size); Post Hole Digger (Post Pounder & Auger); Rod Bending Machines (Power); Roller-Black Top; Scales (Power); Seaman pulverizing mixer; Shoulder widener; Silos; Skidsteer (all attachments); Skimmer Machines (boom-type); Steel Cutting Machine (service & maintain); Tam Rock Drill; Tractors; Transfer Machine; Captain (Power Boats); Tug Master (powerboats); Ultra High Pressure Waterjet Cutting Tool System operator/maintenance technician; Vacuum Blasting Machine; Vibrating Plants (used in conjunction with unloading); Welder and Repair Mechanics

CLASS D: Brooms and Sweepers; Chippers; Compressor (single); Concrete Spreaders (small type); Conveyor Loaders (not including Elevator Graders); Engines-large diesel (1620 HP) and Staging Pump; Farm Tractors; Fertilizing Equipment (Operation & Maint. of); Fine Grade Machine (small type); Form Line Graders (small type); Front End Loader (under 1 yard); Generator (single); Grease, Gas, Fuel and Oil supply trucks; Heaters (Nelson or other type incl. Propane, Natural Gas or Flowtype Units); Lights, Portable Generating Light Plants; Mixers (Concrete, small); Mulching Equipment (Operation and Maintenance of); Pumps (2 or less than 4 inch suction); Pumps (4 inch suction and over incl. submersible pumps); Pumps (Diesel Engine and Hydraulic-immaterial of power); Road Finishing Machines (small type); Rollers-grade, fill or stone base; Seeding Equip. (Operation and Maintenance of); Sprinkler & Water Pump Trucks (used on jobsite or in conjunction with jobsite); Steam Jennies and Boilers-irrespective of use; Stone Spreader; Tamping Machines, Vibrating Ride-on; Temporary Heating Plant (Nelson or other type, incl. Propane, Natural Gas or Flow Type Units); Water & Sprinkler Trucks (used on or in conjunction with jobsite); Welding Machines (Gas, Diesel, and/or Electric Converters of any type, single, two, or three in a battery); Wellpoint Systems (including installation by Bull Gang and Maintenance of)

CLASS E: Assistant Engineer/Oiler; Drillers Helper; Maintenance Apprentice (Deck Hand); Maintenance Apprentice (Oiler); Mechanics' Helper; Tire Repair and Maintenance; Transit/Instrument Man

WAGES:(per hour)

	07/01/2020	07/01/2021 Additional	07/01/2022 Additional
Class A5	\$ 61.32	\$ 2.30	\$ 2.25
Class A4	60.32		
Class A3	59.32		
Class A2	56.82		
Class A1	55.82		
Class A	54.82		
Class B	53.23		
Class C	51.32		
Class D	49.69		
Class E	47.98		
Safety Engineer	55.56		

**Outside Material Hoist (Class B) receives \$ 1.00 per hour on 110 feet up to 199 feet total height, \$ 2.00 per hour on 200 feet and over total height.

Helicopter:

Pilot/Engineer	56.64
Co Pilot	54.82
Communications Engineer	54.82

Surveying:

Chief of Party	54.82
Transit/Instrument Man	47.98
Rod/Chainman	45.40

Additional \$0.75 for Survey work Tunnel under compressed air.

Additional \$0.50 for Hydrographic work.

- SHIFT WORK: On all Government mandated irregular or off shift work, an additional 15% on straight time hours.

- On HAZARDOUS WASTE REMOVAL or ASBESTOS REMOVAL work, or any state or federally DESIGNATED HAZARDOUS WASTE SITE:

For projects bid on or before April 1, 2020...Where the Operating Engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin and eye protection, the Operating Engineer shall receive the hourly wage plus an additional twenty percent (20%) of that wage for the entire shift.

For projects bid after April 1, 2020...On hazardous waste removal work of any kind, including state or federally designated site where the operating engineer is required to wear level A, B, or C personal protection the operating engineer shall receive an hourly wage rate of his regular hourly wage plus \$5.00 per hour. An operating engineer working at a hazardous waste removal project or site at a task requiring hazardous waste related certification, but who is not working in a zone requiring level A, B, or C personal protection, shall receive an hourly wage rate of his regular rate plus \$ 1.00 per hour. This shall also apply to sites where the level D personal protection is required.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 34.35
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SHIFT WORK: On all Government mandated irregular or off shift work, an additional 15% on straight time hours.

OVERTIME PAY

See (B, E, Q, *V, X) on OVERTIME PAGE

*15% premium is also required on shift work benefits

HOLIDAY

Paid: See (5, 6, 10, 13, 15) on HOLIDAY PAGE
Overtime: See (5, 6, 10, 13, 15) on HOLIDAY PAGE
Holidays falling on Sunday will be celebrated on Monday.

REGISTERED APPRENTICES

(1) year terms at the following percentage of journeyman's wage.

1st	2nd	3rd	4th
60%	70%	80%	90%

Supplemental Benefits per hour:

Apprentices \$ 34.35

11-825

Operating Engineer - Marine Dredging

06/01/2021

JOB DESCRIPTION Operating Engineer - Marine Dredging

DISTRICT 4

ENTIRE COUNTIES

Albany, Bronx, Cayuga, Chautauqua, Clinton, Columbia, Dutchess, Erie, Essex, Franklin, Greene, Jefferson, Kings, Monroe, Nassau, New York, Niagara, Orange, Orleans, Oswego, Putnam, Queens, Rensselaer, Richmond, Rockland, St. Lawrence, Suffolk, Ulster, Washington, Wayne, Westchester

WAGES

These wages do not apply to Operating Engineers on land based construction projects. For those projects, please see the Operating Engineer Heavy/Highway Rates. The wage rates below for all equipment and operators are only for marine dredging work in navigable waters found in the counties listed above.

Per Hour:	07/01/2020	10/01/2020
CLASS A1 Deck Captain, Leverman Mechanical Dredge Operator Licensed Tug Operator 1000HP or more.	\$ 40.31	\$ 41.42
CLASS A2 Crane Operator (360 swing)	35.92	36.91
CLASS B Dozer, Front Loader Operator on Land	To conform to Operating Engineer Prevailing Wage in locality where work is being performed including benefits.	
CLASS B1 Derrick Operator (180 swing) Spider/Spill Barge Operator Operator II, Fill Placer, Engineer, Chief Mate, Electrician, Chief Welder, Maintenance Engineer Licensed Boat, Crew Boat Operator	34.86	35.82
CLASS B2 Certified Welder	32.82	33.72
CLASS C1 Drag Barge Operator, Steward, Mate, Assistant Fill Placer	31.92	32.80
CLASS C2 Boat Operator	30.89	31.74
CLASS D Shoreman, Deckhand, Oiler, Rodman, Scowman, Cook, Messman, Porter/Janitor	25.66	26.37

SUPPLEMENTAL BENEFITS

Per Hour:

THE FOLLOWING SUPPLEMENTAL BENEFITS APPLY TO ALL CATEGORIES

All Classes A & B	07/01/2020 \$11.58 plus 7.5% of straight time wage, Overtime hours add \$ 0.63	10/01/2020 \$11.98 plus 8% of straight time wage, Overtime hours add \$ 0.63
All Class C	\$11.28 plus 7.5% of straight time wage, Overtime hours add \$ 0.48	11.68 plus 8% of straight time wage, Overtime hours add \$ 0.48
All Class D	\$10.98 plus 7.5% of straight time wage, Overtime hours add \$ 0.33	11.38 plus 8% of straight time wage, Overtime hours add \$ 0.33

OVERTIME PAY

See (B2, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 26) on HOLIDAY PAGE

4-25a-MarDredge

Operating Engineer - Steel Erectors

06/01/2021

JOB DESCRIPTION Operating Engineer - Steel Erectors

DISTRICT 11

ENTIRE COUNTIES

Delaware, Orange, Rockland, Sullivan, Ulster

WAGES

CLASS A3: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes, with a 140 ft. boom and over.

CLASS A2: Cranes, Derricks and Pile Drivers 100 tons or more and Tower Cranes, with up to a 139 ft. boom and under.

CLASS A1: Cranes, Derricks and Pile Drivers less than 100 tons with a 140 ft. boom and over.

CLASS A: Cranes, Derricks and Pile Drivers less than 100 tons with up to a 139 ft. boom and under.

CLASS B: "A" Frame; Cherry Pickers(10 tons and under); Hoists (all type Hoists, shall also include Steam, Gas, Diesel, Electric, Air Hydraulic, Single and Double Drum, Concrete, Brick Shaft Caisson, Snorkel Roof, and/or any other Similar Type Hoisting Machines, portable or stationary, except Chicago Boom Type); Jacks-Screw Air Hydraulic Power Operated Unit or Console Type (not hand Jack or Pile Load Test Type); Side Booms; Straddle Carrier

CLASS C: Aerial Platform used as Hoist; Compressors (2 or 3 in Battery); Concrete cleaning/ decontamination machine operator; Directional Boring Machines; Elevator or House Cars; Conveyers and Tugger Hoists; Fireman; Fork Lifts; Generators (2 or 3 in Battery); Heavy Equipment Robotics Operator/Technician; Master Environmental Maintenance Technician; Maintenance -Utility Man; Rod Bending Machines (Power); Captain(powerboat); Tug Master; Ultra High Pressure Waterjet Cutting Tool System; Vacuum Blasting Machine; Welding Machines(gas or electric,2 or 3 in battery, including diesels); Transfer Machine; Apprentice Engineer/Oiler with either one compressor or one welding machine when used for decontamination and remediation

CLASS D: Compressor (single); Welding Machines (Gas, Diesel, and/or Electric Converters of any type); Welding System Multiple (Rectifier Transformer type)

CLASS E: Assistant Engineer/Oiler; Maintenance Apprentice (Deck Hand);Drillers Helper; Maintenance Apprentice (Oiler); Mechanics' Helper; Transit/Instrument Man

WAGES:(per hour)

	07/01/2020	07/01/2021 Additional	07/01/2022 Additional
Class A3	\$ 63.34	\$ 2.30	\$ 2.25
Class A2	61.68		
Class A1	58.84		
Class A	57.18		
Class B	54.39		

Class C	51.73
Class D	50.20
Class E	48.44
Vacuum Truck	55.15
Safety Engineer	56.01

Helicopter:	
Pilot/Engineer	58.84
Co Pilot	58.45
Communications Engineer	58.45

Surveying:	
Chief of Party	55.15
Transit/Instrument man	48.44
Rod/Chainman	45.40
Additional \$0.75 for Survey work Tunnels under compressed air.	
Additional \$0.50 for Hydrographic work.	

- SHIFT WORK: On all Government mandated irregular or off shift work, an additional 15% on straight time hours.
- On HAZARDOUS WASTE REMOVAL or ASBESTOS REMOVAL work, or any state or federally DESIGNATED HAZARDOUS WASTE SITE:

For projects bid on or before April 1, 2020...Where the Operating Engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin and eye protection, the Operating Engineer shall receive the hourly wage plus an additional twenty percent (20%) of that wage for the entire shift.

For projects bid after April 1, 2020...On hazardous waste removal work of any kind, including state or federally designated site where the operating engineer is required to wear level A, B, or C personal protection the operating engineer shall receive an hourly wage rate of his regular hourly wage plus \$5.00 per hour. An operating engineer working at a hazardous waste removal project or site at a task requiring hazardous waste related certification, but who is not working in a zone requiring level A, B, or C personal protection, shall receive an hourly wage rate of his regular rate plus \$ 1.00 per hour. This shall also apply to sites where the level D personal protection is required.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 34.35
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OVERTIME PAY

See (B, E, Q, *V, X) on OVERTIME PAGE

*15% premium is also required on shift work benefits

HOLIDAY

Paid: See (5, 6, 10, 13, 15) on HOLIDAY PAGE

Overtime: See (5, 6, 10, 13, 15) on HOLIDAY PAGE

Holidays falling on Sunday will be celebrated on Monday.

REGISTERED APPRENTICES

(1) year terms at the following percentage of journeyman's wage.

1st	2nd	3rd	4th
60%	70%	80%	90%

Supplemental Benefits per hour:

Apprentices	\$ 34.45
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11-825SE

Painter

06/01/2021

JOB DESCRIPTION Painter

DISTRICT 1

ENTIRE COUNTIES

Rockland

WAGES

Wages per hour

07/01/2020

Brush/Paper Hanger	\$ 38.34
Dry Wall finisher	38.34
Sandblaster-Painter	38.34
Lead Abatement	38.34

Spray Rate 39.34

See Bridge Painters rates for the following work:

Structural Steel, all work performed on tanks, ALL BRIDGES, towers, smoke stacks, flag poles. Rate shall apply to all of said areas from the ground up.

SUPPLEMENTAL BENEFITS

Per hour

Journey person \$ 24.04

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED SHIFT(S) OR SINGULAR IRREGULAR SHIFT OF AT LEAST A FIVE (5) DAY DURATION (MONDAY THROUGH FRIDAY), WHEN THE SHIFT STARTS BETWEEN THE HOURS LISTED BELOW:

4:00 PM to 6:30 AM REGULAR RATE PLUS 15%**

OVERTIME ON MULTIPLE SHIFT WORK AND SINGULAR IRREGULAR SHIFT THE SHIFT RATE IS THE BASE RATE

**SHIFT RATE STOPS AFTER 6:30AM

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour

Six (6) month terms at the following percentage of Journey person's wage

1st	2nd	3rd	4th	5th	6th
40%	50%	60%	70%	80%	90%

Supplemental Benefits per hour worked

1st term	\$ 10.64
All others	\$ 24.04

1-155ROC

Painter - Bridge & Structural Steel

06/01/2021

JOB DESCRIPTION Painter - Bridge & Structural Steel

DISTRICT 8

ENTIRE COUNTIES

Albany, Bronx, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Kings, Montgomery, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

WAGES

Per Hour:

STEEL:

Bridge Painting:	07/01/2020	10/01/2020	10/01/2021
	\$ 50.25	\$ 51.50	\$ 53.00
	+ 7.88*	+ 8.63*	+ 9.63*

ADDITIONAL \$6.00 per hour for POWER TOOL/SPRAY, whether straight time or overtime.

NOTE: All premium wages are to be calculated on base rate per hour only.

* For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (no cap).

NOTE: Generally, for Bridge Painting Contracts, ALL WORKERS on and off the bridge (including Flagmen) are to be paid Painter's Rate; the contract must be ONLY for Bridge Painting.

SHIFT WORK:

When directly specified in public agency or authority contract documents for an employer to work a second shift and works the second shift with employees other than from the first shift, all employees who work the second shift will be paid 10% of the base wage shift differential in lieu of overtime for the first eight (8) hours worked after which the employees shall be paid at time and one half of the regular wage rate. When a single irregular work shift is mandated in the job specifications or by the contracting agency, wages shall be paid at time and one half for single shifts between the hours of 3pm-11pm or 11pm-7am.

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker:	07/01/2020	10/01/2020	10/01/2021
	\$ 10.20	\$ 10.90	\$ 10.90
	+ 29.65*	+ 30.00*	+ 30.60*

* For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (no cap).

OVERTIME PAY

See (B, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (4, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage - Per hour:

Apprentices: (1) year terms

	07/01/2020	10/01/2020	10/01/2021
1st year	\$ 20.10 + 3.15*	\$ 20.60 + 3.45*	\$ 21.20 + 3.86*
2nd year	\$ 30.15 + 4.73*	\$ 30.90 + 5.18*	\$ 31.80 + 5.78*
3rd year	\$ 40.20 + 6.30*	\$ 41.20 + 6.90*	\$ 42.40 + 7.71*
Supplemental Benefits - Per hour:			
1st year	\$.25 + 11.86*	\$.25 + 12.00*	\$.25 + 12.24*
2nd year	\$ 10.20 + 17.79*	\$ 10.90 + 18.00*	\$ 10.90 + 18.36*
3rd year	\$ 10.20 + 23.72*	\$ 10.90 + 24.00*	\$ 10.90 + 24.48*

NOTE: All premium wages are to be calculated on base rate per hour only.

8-DC-9/806/155-BrSS

Painter - Line Striping

06/01/2021

JOB DESCRIPTION Painter - Line Striping

DISTRICT 8

ENTIRE COUNTIES

Albany, Bronx, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Kings, Montgomery, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

WAGES

Per hour:

Painter (Striping-Highway):	07/01/2020	07/01/2021	07/01/2022
Striping-Machine Operator*	\$ 30.10	\$ 30.32	\$ 31.53
Linerman Thermoplastic	\$ 36.53	\$ 36.93	\$ 38.34

Note: * Includes but is not limited to: Positioning of cones and directing of traffic using hand held devices. Excludes the Driver/Operator of equipment used in the maintenance and protection of traffic safety.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.

NOTE - In order to use the '4 Day/10 Hour Work Schedule,' as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

SUPPLEMENTAL BENEFITS

Per hour paid: 07/01/2020 07/01/2021 07/01/2022

Journeyworker:

Striping Machine Operator: \$ 9.16 \$ 10.03 \$ 10.03

Linerman Thermoplastic: \$ 9.16 \$ 10.03 \$ 10.03

OVERTIME PAY

See (B, B2, E2, F, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 20) on HOLIDAY PAGE

Overtime: See (5, 20) on HOLIDAY PAGE

REGISTERED APPRENTICES

One (1) year terms at the following wage rates:

	07/01/2020	12/31/2020
1st Term:	\$ 12.04	\$ 12.50
2nd Term:	\$ 18.06	\$ 18.19
3rd Term:	\$ 24.08	\$ 24.26

Supplemental Benefits per hour:

1st term:	\$ 9.16	\$ 10.03
2nd Term:	\$ 9.16	\$ 10.03
3rd Term:	\$ 9.16	\$ 10.03

8-1456-LS

Painter - Metal Polisher

06/01/2021

JOB DESCRIPTION Painter - Metal Polisher

DISTRICT 8

ENTIRE COUNTIES

Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schoharie, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

	07/01/2020
Metal Polisher	\$ 36.33
Metal Polisher*	37.43
Metal Polisher**	40.33

*Note: Applies on New Construction & complete renovation

** Note: Applies when working on scaffolds over 34 feet.

SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2020

Journeyworker:

All classification \$ 9.94

OVERTIME PAY

See (B, E, P, T) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE

Overtime: See (5, 6, 9, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

One (1) year term at the following wage rates:

07/01/2020

1st year	\$ 16.00
2nd year	17.00
3rd year	18.00

1st year*	\$ 16.39
2nd year*	17.44
3rd year*	18.54

1st year**	\$ 18.50
2nd year**	19.50
3rd year**	20.50

*Note: Applies on New Construction & complete renovation

** Note: Applies when working on scaffolds over 34 feet.

Supplemental benefits:

Per hour:

1st year	\$ 6.69
2nd year	6.69
3rd year	6.69

8-8A/28A-MP

Plumber

06/01/2021

JOB DESCRIPTION Plumber

DISTRICT 11

ENTIRE COUNTIES

Orange, Rockland, Sullivan

PARTIAL COUNTIES

Ulster: Only the Townships of Plattekill, Marlboro, Wawarsing, and Shawangunk (except for Wallkill and Shawangunk Prisons).

WAGES

REFRIGERATION: For commercial and industrial refrigeration which means service, maintenance, and installation work where the combined compressor tonnage does not exceed 40 tons.

AIR CONDITIONING: Air conditioning to be installed that is water cooled shall not exceed 25 tons. This will include the piping of the component system and erection of water tower. Air conditioning that is air cooled shall not exceed 50 tons.

WAGES: (per hour)

	07/01/2020	05/01/2021
Plumber	\$ 34.59	Additional \$ 2.00

Star Certification: an additional \$ 1.00 per hour over scale will be paid to all those who have Star Certification.

Shift Differential: When mandated by the governmental agency, an additional 15% premium will be paid for irregular work day or for 2nd and 3rd shift.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman

\$ 33.07*

*For overtime or shift differential work, \$0.10 is paid at straight time, the remaining balance is paid at the same premium as the wages.

OVERTIME PAY

See (B, G, P, *V) on OVERTIME PAGE

* A portion of the benefit amount is subject to the V code for overtime and shift differential work.

HOLIDAY

Paid: See (5, 6, 13, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 13, 15, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1)year terms at the following wage.

	07/01/2020	01/01/2021
1st term	\$ 12.11	\$ 13.84
2nd term	15.57	15.57

3rd term	19.03	19.03
4th term	22.49	22.49
5th term	27.68	27.68

Supplemental Benefits per hour:
Apprentices

1st term	\$ 11.66*	\$ 13.30*
2nd term	14.96*	14.96*
3rd term	18.25*	18.25*
4th term	21.55*	21.55*
5th term	26.49*	26.49*

*For overtime or shift differential work, \$0.10 is paid at straight time, the remaining balance is paid at the same premium as the wages.
11-373 Refrig

Plumber **06/01/2021**

JOB DESCRIPTION Plumber

DISTRICT 11

ENTIRE COUNTIES

Orange, Rockland, Sullivan

PARTIAL COUNTIES

Ulster: Only the Townships of Plattekill, Marlboro, Wawarsing, and Shawangunk (except for Wallkill and Shawangunk Prisons).

WAGES

WAGES:(per hour)	07/01/2020	05/01/2021
		Additional
Plumber/Steamfitter	\$ 46.70	\$ 2.50

Note: For all work 40-60 feet above ground add \$ 0.25 per hour, over 60 feet add \$ 0.50 per hour.

Shift Differential: When mandated by the governmental agency, an additional 15% premium will be paid for irregular work day or for 2nd and 3rd shift.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 40.82*
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*For overtime or shift differential work, \$0.10 is paid at straight time, the remaining balance is paid at the same premium as the wages.

OVERTIME PAY

See (B, E, Q, *V) on OVERTIME PAGE

* A portion of the benefit amount is subject to the V code for overtime and shift differential work.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE

When a holiday falls on a Saturday, the day prior shall be considered and recognized as the holiday. When a holiday falls on a Sunday, the day proceeding shall be considered and recognized as the holiday to be observed.

REGISTERED APPRENTICES

(1) year terms at the following wages.

	07/01/2020
1st term	\$ 16.35
2nd term	21.02
3rd term	25.69
4th term	30.36
5th term	37.36

Supplemental Benefits per hour:

1st term	\$ 14.37*
2nd term	18.44*
3rd term	22.50*
4th term	26.58*
5th term	32.67*

*For overtime or shift differential work, \$0.10 is paid at straight time, the remaining balance is paid at the same premium as the wages.
11-373 SF

Roofer	06/01/2021
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JOB DESCRIPTION Roofer

DISTRICT 9

ENTIRE COUNTIES

Bronx, Dutchess, Kings, New York, Orange, Putnam, Queens, Richmond, Rockland, Sullivan, Ulster, Westchester

WAGES

Per Hour: 07/01/2020

Roofer/Waterproofer \$ 44.25
+ \$7.00*

* This portion is not subject to overtime premiums.

Note: Abatement/Removal of Asbestos containing roofs and roofing material is classified as Roofer.

SUPPLEMENTAL BENEFITS

Per Hour: \$ 27.87

OVERTIME PAY

See (B, H) on OVERTIME PAGE

Note: An observed holiday that falls on a Sunday will be observed the following Monday.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year term

1st	2nd	3rd	4th
\$ 15.49	\$ 22.13	\$ 26.55	\$ 33.19
	+ 3.00*	+ 4.20*	+ 5.26*

Supplements:

1st	2nd	3rd	4th
\$ 3.57	\$ 14.10	\$ 16.85	\$ 20.98

9-8R

Sheetmetal Worker	06/01/2021
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JOB DESCRIPTION Sheetmetal Worker

DISTRICT 8

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES

07/01/2020

SheetMetal Worker \$ 43.65
+ 3.27*

*This portion is not subject to overtime premiums.

SHIFT WORK

For all NYS D.O.T. and other Governmental mandated off-shift work:

10% increase for additional shifts for a minimum of five (5) days

SUPPLEMENTAL BENEFITS

Journeyworker \$ 42.55

OVERTIME PAY

OVERTIME: See (B, E, Q,) on OVERTIME PAGE.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 16, 23) on HOLIDAY PAGE

REGISTERED APPRENTICES

1st	2nd	3rd	4th	5th	6th	7th	8th
\$ 16.16	\$ 18.18	\$ 20.21	\$ 22.23	\$ 24.24	\$ 26.27	\$ 28.77	\$ 31.27
+ 1.31*	+ 1.47*	+ 1.64*	+ 1.80*	+ 1.96*	+ 2.13*	+ 2.29*	+ 2.45*

*This portion is not subject to overtime premiums.

Supplemental Benefits per hour:

Apprentices

1st term	\$ 18.31
2nd term	20.60
3rd term	22.88
4th term	25.19
5th term	27.47
6th term	29.75
7th term	31.56
8th term	33.39

8-38

Sheetmetal Worker

06/01/2021

JOB DESCRIPTION Sheetmetal Worker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per Hour:	07/01/2020	8/01/2020
Sign Erector	\$ 50.79	\$ 52.29

NOTE: Structurally Supported Overhead Highway Signs(See STRUCTURAL IRON WORKER CLASS)

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2020	8/01/2020
Sign Erector	\$ 49.82	\$ 51.26

OVERTIME PAY

See (A, F, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 10, 11, 12, 16, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 10, 11, 12, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Per Hour:
6 month Terms at the following percentage of Sign Erectors wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
35%	40%	45%	50%	55%	60%	65%	70%	75%	80%

SUPPLEMENTAL BENEFITS

Per Hour:

07/01/2020

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 13.96	\$ 15.81	\$ 17.68	\$ 19.56	\$ 27.26	\$ 29.65	\$ 32.80	\$ 35.26	\$ 37.71	\$ 40.15

8/01/2020

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 14.34	\$ 16.26	\$ 18.17	\$ 20.10	\$ 28.02	\$ 30.47	\$ 33.72	\$ 36.27	\$ 38.77	\$ 41.29

4-137-SE

Sprinkler Fitter

06/01/2021

JOB DESCRIPTION Sprinkler Fitter

DISTRICT 1

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES

Per hour	07/01/2020
Sprinkler Fitter	\$ 45.52

SUPPLEMENTAL BENEFITS

Per hour

Journey person \$ 27.57

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

Note: When a holiday falls on Sunday, the following Monday shall be considered a holiday and all work performed on either day shall be at the double time rate. When a holiday falls on Saturday, the preceding Friday shall be considered a holiday and all work performed on either day shall be at the double time rate.

REGISTERED APPRENTICES

Wages per hour

One Half Year terms at the following percentage of journey person's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 21.97	\$ 24.41	\$ 26.59	\$ 29.02	\$ 31.45	\$ 33.88	\$ 36.31	\$ 38.74	\$ 41.17	\$ 43.60

Supplemental Benefits per hour

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 8.27	\$ 8.27	\$ 18.70	\$ 18.70	\$ 18.95	\$ 18.95	\$ 18.95	\$ 18.95	\$ 18.95	\$ 18.95
									1-669.2

Teamster - Building / Heavy&Highway

06/01/2021

JOB DESCRIPTION Teamster - Building / Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Dutchess, Orange, Rockland, Sullivan, Ulster

WAGES

GROUP 1: LeTourneau Tractors, Double Barrel Euclids, Athney Wagons and similar equipment (except when hooked to scrapers), I-Beam and Pole Trailers, Tire Trucks, Tractor and Trailers with 5 axles and over, Articulated Back Dumps and Road Oil Distributors, Articulated Water Trucks and Fuel Trucks/Trailers, positions requiring a HAZMAT CDL endorsement.

GROUP 1A: Drivers on detachable Gooseneck Low Bed Trailers rated over 35 tons.

GROUP 2: All equipment 25 yards and up to and including 30 yard bodies and cable Dump Trailers and Powder and Dynamite Trucks.

GROUP 3: All Equipment up to and including 24-yard bodies, Mixer Trucks, Dump Crete Trucks and similar types of equipment, Fuel Trucks, Batch Trucks and all other Tractor Trailers, Hi-Rail Truck.

GROUP 4: Tri-Axles, Ten Wheelers, Grease Trucks, Tillerman, Pattern Trucks, Attenuator Trucks. Water Trucks, Bus.

GROUP 5: Straight Trucks.

GROUP 6: Pick-up Trucks for hauling materials and parts, and Escort Man over-the-road.

WAGES: (per hour) 07/01/2020

GROUP 1	\$ 33.25
GROUP 1A	34.39
GROUP 2	32.69
GROUP 3	32.47
GROUP 4	32.36
GROUP 5	32.24
GROUP 6	32.24

NOTE ADDITIONAL PREMIUMS:

- On projects requiring an irregular shift a premium of 10% will be paid on wages. The premium will be paid for off-shift or irregular shift work when mandated by Governmental Agency.

- Employees engaged in hazardous/toxic waste removal, on a State or Federally designated hazardous/toxic waste site, where the employee comes in contact with hazardous/toxic waste material and when personal protective equipment is required for respiratory, skin, or eye protection, the employee shall receive an additional 20% premium above the hourly wage.

SUPPLEMENTAL BENEFITS

Per hour:

First 40 hours	\$ 35.55
Over 40 hours	28.75

OVERTIME PAY

See (*B, E, **P, X) on OVERTIME PAGE

*Holidays worked Monday through Friday receive Double Time (2x) after 8 hours.

**Sunday Holidays are paid at a rate of double time and one half (2.5x) for all hours worked.

HOLIDAY

Paid: See (5, 6, 15, 25) on HOLIDAY PAGE
Overtime: See (*1) on HOLIDAY PAGE

*See OVERTIME PAY section for when additional premium is applicable on Holiday hours worked.

11-445B/HH

Overtime Codes

Following is an explanation of the code(s) listed in the OVERTIME section of each classification contained in the attached schedule. Additional requirements may also be listed in the HOLIDAY section.

NOTE: Supplemental Benefits are 'Per hour worked' (for each hour worked) unless otherwise noted

- (AA) Time and one half of the hourly rate after 7 and one half hours per day
- (A) Time and one half of the hourly rate after 7 hours per day
- (B) Time and one half of the hourly rate after 8 hours per day
- (B1) Time and one half of the hourly rate for the 9th & 10th hours week days and the 1st 8 hours on Saturday.
Double the hourly rate for all additional hours
- (B2) Time and one half of the hourly rate after 40 hours per week
- (C) Double the hourly rate after 7 hours per day
- (C1) Double the hourly rate after 7 and one half hours per day
- (D) Double the hourly rate after 8 hours per day
- (D1) Double the hourly rate after 9 hours per day
- (E) Time and one half of the hourly rate on Saturday
- (E1) Time and one half 1st 4 hours on Saturday; Double the hourly rate all additional Saturday hours
- (E2) Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
- (E3) Between November 1st and March 3rd Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather, provided a given employee has worked between 16 and 32 hours that week
- (E4) Saturday and Sunday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
- (E5) Double time after 8 hours on Saturdays
- (F) Time and one half of the hourly rate on Saturday and Sunday
- (G) Time and one half of the hourly rate on Saturday and Holidays
- (H) Time and one half of the hourly rate on Saturday, Sunday, and Holidays
- (I) Time and one half of the hourly rate on Sunday
- (J) Time and one half of the hourly rate on Sunday and Holidays
- (K) Time and one half of the hourly rate on Holidays
- (L) Double the hourly rate on Saturday
- (M) Double the hourly rate on Saturday and Sunday
- (N) Double the hourly rate on Saturday and Holidays
- (O) Double the hourly rate on Saturday, Sunday, and Holidays
- (P) Double the hourly rate on Sunday
- (Q) Double the hourly rate on Sunday and Holidays
- (R) Double the hourly rate on Holidays
- (S) Two and one half times the hourly rate for Holidays

- (S1) Two and one half times the hourly rate the first 8 hours on Sunday or Holidays One and one half times the hourly rate all additional hours.
- (T) Triple the hourly rate for Holidays
- (U) Four times the hourly rate for Holidays
- (V) Including benefits at SAME PREMIUM as shown for overtime
- (W) Time and one half for benefits on all overtime hours.
- (X) Benefits payable on Paid Holiday at straight time. If worked, additional benefit amount will be required for worked hours. (Refer to other codes listed.)

Holiday Codes

PAID Holidays:

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

OVERTIME Holiday Pay:

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays. The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Following is an explanation of the code(s) listed in the HOLIDAY section of each classification contained in the attached schedule. The Holidays as listed below are to be paid at the wage rates at which the employee is normally classified.

- (1) None
- (2) Labor Day
- (3) Memorial Day and Labor Day
- (4) Memorial Day and July 4th
- (5) Memorial Day, July 4th, and Labor Day
- (6) New Year's, Thanksgiving, and Christmas
- (7) Lincoln's Birthday, Washington's Birthday, and Veterans Day
- (8) Good Friday
- (9) Lincoln's Birthday
- (10) Washington's Birthday
- (11) Columbus Day
- (12) Election Day
- (13) Presidential Election Day
- (14) 1/2 Day on Presidential Election Day
- (15) Veterans Day
- (16) Day after Thanksgiving
- (17) July 4th
- (18) 1/2 Day before Christmas
- (19) 1/2 Day before New Years
- (20) Thanksgiving
- (21) New Year's Day
- (22) Christmas
- (23) Day before Christmas
- (24) Day before New Year's
- (25) Presidents' Day
- (26) Martin Luther King, Jr. Day
- (27) Memorial Day
- (28) Easter Sunday



New York State Department of Labor - Bureau of Public Work
State Office Building Campus
Building 12 - Room 130
Albany, New York 12240

REQUEST FOR WAGE AND SUPPLEMENT INFORMATION

As Required by Articles 8 and 9 of the NYS Labor Law

Fax (518) 485-1870 or mail this form for new schedules or for determination for additional occupations.

This Form Must Be Typed

Submitted By:

(Check Only One)

☐

Contracting Agency

☐

Architect or Engineering Firm

☐

Public Work District Office

Date:

A. Public Work Contract to be let by: (Enter Data Pertaining to Contracting/Public Agency)

1. Name and complete address ☐ (Check if new or change)

Telephone: ()

Fax: ()

E-Mail:

2. NY State Units (see Item 5)

☐ 01 DOT

☐ 02 OGS

☐ 03 Dormitory Authority

☐ 04 State University
Construction Fund

☐ 05 Mental Hygiene
Facilities Corp.

☐ 06 OTHER N.Y. STATE UNIT

☐ 07 City

☐ 08 Local School District

☐ 09 Special Local District, i.e.,
Fire, Sewer, Water District

☐ 10 Village

☐ 11 Town

☐ 12 County

☐ 13 Other Non-N.Y. State
(Describe)

3. SEND REPLY TO ☐ (check if new or change)
Name and complete address:

Telephone:()

Fax: ()

E-Mail:

4. SERVICE REQUIRED. Check appropriate box and provide project information.

☐ New Schedule of Wages and Supplements.

APPROXIMATE BID DATE :

☐ Additional Occupation and/or Redetermination

PRC NUMBER ISSUED PREVIOUSLY FOR
THIS PROJECT :

OFFICE USE ONLY

B. PROJECT PARTICULARS

5. Project Title _____

Description of Work _____

Contract Identification Number _____

Note: For NYS units, the OSC Contract No. _____

6. Location of Project:
Location on Site _____

Route No/Street Address _____

Village or City _____

Town _____

County _____

7. Nature of Project - Check One:

- ☐ 1. New Building
- ☐ 2. Addition to Existing Structure
- ☐ 3. Heavy and Highway Construction (New and Repair)
- ☐ 4. New Sewer or Waterline
- ☐ 5. Other New Construction (Explain)
- ☐ 6. Other Reconstruction, Maintenance, Repair or Alteration
- ☐ 7. Demolition
- ☐ 8. Building Service Contract

8. OCCUPATION FOR PROJECT :

- ☐ Construction (Building, Heavy Highway/Sewer/Water)
- ☐ Tunnel
- ☐ Residential
- ☐ Landscape Maintenance
- ☐ Elevator maintenance
- ☐ Exterminators, Fumigators
- ☐ Fire Safety Director, NYC Only
- ☐ Guards, Watchmen
- ☐ Janitors, Porters, Cleaners, Elevator Operators
- ☐ Moving furniture and equipment
- ☐ Trash and refuse removal
- ☐ Window cleaners
- ☐ Other (Describe)

9. Has this project been reviewed for compliance with the Wicks Law involving separate bidding?

YES ☐ NO ☐

10. Name and Title of Requester

Signature



NEW YORK STATE DEPARTMENT OF LABOR
Bureau of Public Work - Debarment List

**LIST OF EMPLOYERS INELIGIBLE TO BID ON OR BE
AWARDED ANY PUBLIC WORK CONTRACT**

Under Article 8 and Article 9 of the NYS Labor Law, a contractor, sub-contractor and/or its successor shall be debarred and ineligible to submit a bid on or be awarded any public work or public building service contract/sub-contract with the state, any municipal corporation or public body for a period of five (5) years from the date of debarment when:

- Two (2) final determinations have been rendered within any consecutive six-year (6) period determining that such contractor, sub-contractor and/or its successor has WILLFULLY failed to pay the prevailing wage and/or supplements;
- One (1) final determination involves falsification of payroll records or the kickback of wages and/or supplements.

The agency issuing the determination and providing the information, is denoted under the heading 'Fiscal Officer'. DOL = New York State Department of Labor; NYC = New York City Comptroller's Office; AG = New York State Attorney General's Office; DA = County District Attorney's Office.

Debarment Database: To search for contractors, sub-contractors and/or their successors debarred from bidding or being awarded any public work contract or subcontract under NYS Labor Law Articles 8 and 9, or under NYS Workers' Compensation Law Section 141-b, access the database at this link: <https://applications.labor.ny.gov/EDList/searchPage.do>

For inquiries where WCB is listed as the "Agency", please call 1-866-546-9322

NYSDOL Bureau of Public Work Debarment List 05/24/2021

Article 8

AGENCY	Fiscal Officer	FEIN	EMPLOYER NAME	EMPLOYER DBA NAME	ADDRESS	DEBARMENT START DATE	DEBARMENT END DATE
DOL	NYC	*****9839	A.J.S. PROJECT MANAGEMENT, INC.		149 FIFTH AVENUE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL	*****4018	ADIRONDACK BUILDING RESTORATION INC.		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	AG	*****1812	ADVANCED BUILDERS & LAND DEVELOPMENT, INC.		400 OSER AVE #2300HAUPPAUGE NY 11788	09/11/2019	09/11/2024
DOL	DOL	*****1687	ADVANCED SAFETY SPRINKLER INC		261 MILL ROAD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	NYC	*****6775	ADVENTURE MASONRY CORP.		1535 RICHMOND AVENUE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	NYC		AGOSTINHO TOME		405 BARRETTO ST BRONX NY 10474	05/31/2018	05/31/2023
DOL	DOL		AJ TORCHIA		10153 ROBERTS RD SAUQUOIT NY 13456	08/09/2016	08/09/2021
DOL	DOL		AMADEO J TORCHIA	TORCHIA'S HOME IMPROVEMENT	10153 ROBERTS RD SAUQUOIT NY 13456	08/09/2016	08/09/2021
DOL	NYC		AMJAD NAZIR		2366 61ST ST BROOKLYN NY 11204	12/15/2016	12/15/2021
DOL	NYC		AMJED PARVEZ		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL		ANITA SALERNO		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	NYC		ANTHONY J SCLAFANI		149 FIFTH AVE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL		ANTHONY PERGOLA		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10323	01/23/2017	01/23/2022
DOL	DOL		ANTONIO ESTIVEZ		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		ARNOLD A. PAOLINI		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	NYC		ARSHAD MEHMOOD		168-42 88TH AVENUE JAMAICA NY 11432	11/20/2019	11/20/2024
DOL	DOL		ARVINDER ATWAL		65 KENNETH PLACE NEW HYDE PARK NY 11040	07/19/2017	07/19/2022
DOL	NYC	*****6683	ATLAS RESTORATION CORP.		35-12 19TH AVENUE ASTORIA NY 11105	08/02/2017	08/02/2022
DOL	NYC	*****5532	ATWAL MECHANICALS, INC		65 KENNETH PLACE NEW HYDE PARK NY 11040	07/19/2017	07/19/2022
DOL	NYC	*****2591	AVI 212 INC.		260 CROPEY AVENUE APT 11GBROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	NYC		AZIDABEGUM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	NYC		BALWINDER SINGH		421 HUDSON ST SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	NYC	*****8416	BEAM CONSTRUCTION, INC.		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	NYC	*****2113	BHW CONTRACTING, INC.		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		BIAGIO CANTISANI			06/12/2018	06/12/2023
DOL	DOL	*****4512	BOB BRUNO EXCAVATING, INC		5 MORNINGSIDE DR AUBURN NY 13021	05/28/2019	05/28/2024
DOL	DOL		BOGDAN MARKOVSKI		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL	*****8551	BRANDY'S MASONRY		216 WESTBROOK STREET P O BOX 304SAYRE PA 18840	08/09/2016	08/09/2021
DOL	DOL	*****1449	BRRESTORATION NY INC		140 ARCADIA AVENUE OSWEGO NY 13126	09/12/2016	09/12/2021
DOL	DOL		BRUCE P. NASH JR.		5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	DOL	*****0225	C&D LAFACE CONSTRUCTION, INC.		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	*****8809	C.B.E. CONTRACTING CORPORATION		310 MCGUINNESS BLVD GREENPOINT NY 11222	03/07/2017	03/07/2022

NYSDOL Bureau of Public Work Debarment List 05/24/2021

Article 8

DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	NYC		CALVIN WALTERS		465 EAST THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL		CANTISANI & ASSOCIATES LTD		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CANTISANI HOLDING LLC			06/12/2018	06/12/2023
DOL	DOL		CARMEN RACHETTA		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	02/03/2025
DOL	DOL		CARMENA RACHETTA		8531 OSWEGO ROAD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	*****3812	CARMODY "2" INC			06/12/2018	06/12/2023
DOL	DOL	*****1143	CARMODY BUILDING CORP	CARMODY CONTRACTING AND CARMODY CONTRACTING CORP.	442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY CONCRETE CORPORATION			06/12/2018	06/12/2023
DOL	DOL		CARMODY ENTERPRISES, LTD.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY INC		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****3812	CARMODY INDUSTRIES INC			06/12/2018	06/12/2023
DOL	DOL		CARMODY MAINTENANCE CORPORATION		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY MASONRY CORP		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****8809	CBE CONTRACTING CORP		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	AG		CESAR J. AGUDELO		81-06 34TH AVENUE APT. 6EJACKSON HEIGHTS NY 11372	02/07/2018	02/07/2023
DOL	DOL		CHARLES ZIMMER JR		216 WESTBROOK STREET P O BOX 304SAYRE PA 18840	08/09/2016	08/09/2021
DOL	DOL		CHRISTOPHER J MAINI		19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL		CHRISTOPHER PAPASTEFANO A/K/A CHRIS PAPASTEFANO		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	*****1927	CONSTRUCTION PARTS WAREHOUSE, INC.	CPW	5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	DOL	*****2524	CSI ELECTRICAL & MECHANICAL INC		42-32 235TH ST DOUGLSTON NY 11363	01/14/2019	01/14/2024
DOL	NYC		DALJIT KAUR BOPARAI		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	DOL		DANICA IVANOSKI		61 WILLETT ST. PASSAIC NJ 07503	10/26/2016	10/26/2021
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	NYC		DAVID WEINER		14 NEW DROP LANE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	DOL		DEBBIE STURDEVANT		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	AG		DEBRA MARTINEZ		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		DELPHI PAINTING & DECORATING CO INC		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL		DENNIS SCHWANDTNER		C/O YES SERVICE AND REPAIR 145 LODGE AVEHUNTINGTON STATION NY 11476	08/09/2016	08/09/2021
DOL	DOL		DF CONTRACTORS OF ROCHESTER, INC.		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	DOL		DF CONTRACTORS, INC.		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	NYC		DIMITRIOS TSOUHAS		35-12 19TH AVENUE ASTORIA NY 11105	08/02/2017	08/02/2022

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DOL	DOL		DOMENICO LAFACE		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	*****3242	DONALD R. FORSAY	DF LAWN SERVICE	1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	DOL		DONALD R. FORSAY		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	NYC		DUARTE LOPES		66-05 WOODHAVEN BLVD. STE 2REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	DOL	*****5175	EAGLE MECHANICAL AND GENERAL CONSTRUCTION LLC		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL		EAST COAST PAVING		2238 BAKER RD GILLET PA 16923	03/12/2018	03/12/2023
DOL	NYC	*****4269	EAST PORT EXCAVATION & UTILITIES		601 PORTION RD RONKONKOMA NY 11779	11/18/2016	11/18/2021
DOL	DOL	*****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002
DOL	NYC	*****5917	EPOCH ELECTRICAL, INC		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2024
DOL	DOL	*****7403	F & B PAINTING CONTRACTING INC		2 PARKVIEW AVENUE HARRISON NY 10604	09/26/2016	09/26/2021
DOL	DOL		FAIGY LOWINGER		11 MOUNTAIN RD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL		FRANK BENEDETTO		19 CATLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL		FRANK BENEDETTO		C/O F & B PAINTING CONTRA 2 PARKVIEW AVENUEHARRISON NY 10604	09/26/2016	09/26/2021
DOL	DOL	*****4722	FRANK BENEDETTO AND CHRISTOPHER J MAINI	B & M CONCRETE	19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	NYC		FRANK MAINI		1766 FRONT ST YORKTOWN HEIGHTS NY 10598	01/17/2018	01/17/2023
DOL	NYC	*****6616	G & G MECHANICAL ENTERPRISES, LLC.		1936 HEMPSTEAD TURNPIKE EAST MEDOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		GABRIEL FRASSETTI			04/10/2019	04/10/2024
DOL	DOL		GALINDA ROTENBERG		C/O GMDV TRANS INC 67-48 182ND STREETFRESH MEADOWS NY 11365	06/24/2016	06/24/2021
DOL	DOL		GEOFF CORLETT		415 FLAGGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	DOL		GIGI SCHNECKENBURGER		261 MILL RD EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		GIOVANNI LAFACE		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	NYC	*****3164	GLOBE GATES INC	GLOBAL OVERHEAD DOORS	405 BARRETTO ST BRONX NY 10474	05/31/2018	05/31/2023
DOL	DOL	*****5674	GMDV TRANS INC		67-48 182ND STREET FRESH MEADOWS NY 11365	06/24/2016	06/24/2021
DOL	NYC		GREAT ESTATE CONSTRUCTION, INC.		327 STAGG ST BROOKLYN NY 11206	10/10/2017	10/10/2022
DOL	DOL		GREGORY S. OLSON		P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		HANS RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC	*****3228	HEIGHTS ELEVATOR CORP.		1766 FRONT ST YORKTOWN HEIGHTS NY 10598	01/17/2018	01/17/2023
DOL	DOL	*****5131	INTEGRITY MASONRY, INC.	M&R CONCRETE	722 8TH AVE WATERVLIET NY 12189	06/05/2018	06/05/2023
DOL	DOL		IRENE KASELIS		32 PENNINGTON AVE WALDWICK NJ 07463	05/30/2019	05/30/2024
DOL	DOL	*****9211	J. WASE CONSTRUCTION CORP.		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		J.A. HIRES CADWALLADER		P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		JAMES C. DELGIACCO		722 8TH AVE WATERVLIET NY 12189	06/05/2018	06/05/2023

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DOL	DOL		JAMES LIACONE		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		JAMES RACHEL		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL	*****5368	JCH MASONRY & LANDSCAPING INC.		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	NYC		JENNIFER GUERRERO		1936 HEMPSTEAD TURNPIKE EAST MEADOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		JESSICA WHITESIDE		C/O BRRESTORATION NY INC 140 ARCADIA AVENUEOSWEGO NY 13126	09/12/2016	09/12/2021
DOL	AG		JOHN ANTHONY MASSINO		36-49 204TH STREET BAYSIDE NY 11372	02/07/2018	02/07/2023
DOL	DOL		JOHN F. CADWALLADER		200 LATTABROOK PARK HORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	*****4612	JOHN F. CADWALLADER, INC.	THE GLASS COMPANY	P.O BOX 100 200 LATTABROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		JOHN GOCEK		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		JOHN WASE		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	AG	*****0600	JOHNCO CONTRACTING, INC.		36-49 204TH STREET BAYSIDE NY 11372	02/07/2018	02/07/2023
DOL	DOL		JON E DEYOUNG		261 MILL RD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		JORI PEDERSEN		415 FLAGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DOL		JOSE CHUCHUCA		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	NYC		JOSEPH FOLEY		66-05 WOODHAVEN BLVD. STE 2REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	DOL	*****9273	JOSEPH M LOVETRO		P O BOX 812 BUFFALO NY 14220	08/09/2016	08/09/2021
DOL	NYC		JOSEPH MARTINO		1535 RICHMOND AVENUE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	DOL		JOY MARTIN		2404 DELAWARE AVE NIGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/3002
DOL	DOL	*****5062	K R F SITE DEVELOPMENT INC		375 LAKE SHORE DRIVE PUTNAM VALLEY NY 10579	01/23/2017	01/23/2022
DOL	NYC		K.S. CONTRACTING CORP.		29 PHILLIP DRIVE PARSIPPANY NJ 07054	02/13/2017	02/13/2022
DOL	DOL		KARIN MANGIN		796 PHELPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	DOL		KATE E. CONNOR		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KATIE BURDICK		2238 BAKER RD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL	*****2959	KELC DEVELOPMENT, INC		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KENNETH FIORENTINO		375 LAKE SHORE DRIVE PUTNAM VALLEY NY 10579	01/23/2017	01/23/2022
DOL	DOL	*****3490	L & M CONSTRUCTION/DRYWALL INC.		1079 YONKERS AVE YONKERS NY 10704	08/07/2018	08/07/2023
DOL	DA	*****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL	*****4505	LARAPINTA ASSOCIATES INC		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	DOL		LAVERN GLAVE		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	06/24/2016	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	06/24/2016	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	01/17/2017	09/19/2022

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DOL	DOL	****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	08/14/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	08/14/2017	08/14/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	01/17/2017	09/19/2022
DOL	DA	****4460	LONG ISLAND GLASS & STOREFRONTS, LLC		4 MANHASSET TRL RIDGE NY 11961	09/06/2018	09/06/2023
DOL	AG	****4216	LOTUS-C CORP.		81-06 34TH AVENUE APT. 6EJACKSON HEIGHTS NY 11372	02/07/2018	02/07/2023
DOL	NYC		LUBOMIR PETER SVOBODA		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	NYC		M & L STEEL & ORNAMENTAL IRON CORP.		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	DOL		M ANVER BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL		M. ANVER BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL	****1784	MADISON AVE CONSTRUCTION CORP		39 PENNY STREET WEST ISLIP NY 11795	11/02/2016	11/02/2021
DOL	DOL	****2196	MAINSTREAM SPECIALTIES, INC.		11 OLD TOWN RD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DA		MANUEL P TOBIO		150 KINGS STREET BROOKLYN NY 14444	08/19/1998	08/19/2998
DOL	DA		MANUEL TOBIO		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	NYC		MAREK FABIJANOWSKI		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	NYC		MARTINE ALTER		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	DOL		MARVIN A STURDEVANT		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	DOL		MASONRY CONSTRUCTION, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	****3333	MASONRY INDUSTRIES, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	NYC		MATINA KARAGIANNIS		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2023
DOL	DOL		MATTHEW P. KILGORE		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	DOL		MAURICE GAWENO		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	****6416	MCCALL MASONRY		P O BOX 304 SAYRE PA 18840	08/09/2016	08/09/2021
DOL	DOL		MCLEAN "MIKKI BEANE"		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MCLEAN "MIKKI" DRAKE		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MCLEAN M DRAKE-BEANE		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL	****9445	MCLEAN M WALSH	ELITE PROFESSION AL PAINTING OF CNY	1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL	****9445	MCLEAN M WALSH	ELITE PROFESSION AL PAINTING OF CNY	1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MICHAEL LENIHAN		1079 YONKERS AVE UNIT 4YONKERS NY 10704	08/07/2018	08/07/2023
DOL	AG		MICHAEL RIGLIETTI		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023

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DOL	DOL	****4829	MILESTONE ENVIRONMENTAL CORPORATION		704 GINESI DRIVE SUITE 29MORGANVILLE NJ 07751	04/10/2019	04/10/2024
DOL	NYC	****9926	MILLENNIUM FIRE PROTECTION, LLC		325 W. 38TH STREET SUITE 204NEW YORK NY 10018	11/14/2019	11/14/2024
DOL	NYC	****0627	MILLENNIUM FIRE SERVICES, LLC		14 NEW DROP LNE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	NYC	****3826	MOVING MAVEN OF NY, INC.		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	NYC	****3550	MOVING MAVEN, INC		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	AG		MSR ELECTRICAL CONSTRUCTION CORP.		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		MUHAMMAD BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL		MUHAMMAD BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	NYC		MUHAMMED A. HASHEM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DA	****9786	NATIONAL INSULATION & GC CORP		180 MILLER PLACE HICKSVILLE NY 11801	12/12/2018	12/12/2023
DOL	NYC		NICHOLAS FILIPAKIS		7113 FORT HAMILTON PARKWA BROOKLYN NY 11228	12/09/2016	12/09/2021
DOL	DOL	****7429	NICOLAE I. BARBIR	BESTUCCO CONSTRUCTION, INC.	444 SCHANTZ ROAD ALLENTOWN PA 18104	09/17/2020	09/17/2025
DOL	DOL	****6966	NORTH COUNTRY DRYWALL AND PAINT		23167 COUNTY ROUTE 59 DEXTER NY 13634	10/24/2016	10/24/2021
DOL	DOL	****0065	NORTHEAST LANDSCAPE AND MASONRY ASSOC		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10523	01/23/2017	01/23/2022
DOL	DOL	****1845	OC ERECTERS, LLC A/K/A OC ERECTERS OF NY INC.		1207 SW 48TH TERRACE DEERFIELD BEACH FL 33442	01/16/2018	01/16/2023
DOL	NYC	****0818	ONE TEN RESTORATION, INC.		2366 61ST ST BROOKLYN NY 11204	12/15/2016	12/15/2021
DOL	NYC		PARESH SHAH		29 PHILLIP DRIVE PARSIPPANY NJ 07054	02/13/2017	02/13/2022
DOL	DOL		PAULINE CHAHALES		935 S LAKE BLVD MAHOPAC NY 10541	03/02/2021	03/02/2026
DOL	NYC	****9422	PELIUM CONSTRUCTION, INC.		22-33 35TH ST. ASTORIA NY 11105	12/30/2016	12/30/2021
DOL	DOL		PETER M PERGOLA		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10523	01/23/2017	01/23/2022
DOL	DOL		PETER STEVENS		11 OLD TOWN ROAD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DOL		PIERRE LAPORT		224 COUNTY HIGHWAY 138 BROADALBIN NY 12025	03/07/2017	03/07/2022
DOL	DOL	****1543	PJ LAPORT FLOORING INC		224 COUNTY HIGHWAY 138 BROADALBIN NY 12025	03/07/2017	03/07/2022
DOL	NYC	****5771	PMJ ELECTRICAL CORP		7113 FORT HAMILTON PARKWA BROOKLYN NY 11228	12/09/2016	12/09/2021
DOL	DOL	****0466	PRECISION BUILT FENCES, INC.		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	NYC	****4532	PROFESSIONAL PAVERS CORP.		66-05 WOODHAVEN BLVD. REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	DA	****6817	QUADRANT METAL BUILDINGS LLC		2740 SW MARTIN DOWNS BLVD PALM CITY FL 34990	08/25/2016	08/25/2021
DOL	NYC		RASHEL CONSTRUCTION CORP		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DOL	****1068	RATH MECHANICAL CONTRACTORS, INC.		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL	****2633	RAW POWER ELECTRIC CORP		3 PARK CIRCLE MIDDLETOWN NY 10940	01/30/2018	01/30/2023
DOL	AG	****7015	RCM PAINTING INC.		69-06 GRAND AVENUE 2ND FLOORMASPETH NY 11378	02/07/2018	02/07/2023
DOL	DOL		REGINALD WARREN		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DA		RIANN MULLER		2740 SW MARTIN DOWNS BLVD PALM CITY FL 34990	08/25/2016	08/25/2021

NYSDOL Bureau of Public Work Debarment List 05/24/2021

Article 8

DOL	DOL	****9148	RICH T CONSTRUCTION		107 WILLOW WOOD LANE CAMILLUS NY 13031	11/13/2018	11/13/2023
DOL	DOL		RICHARD MACONE		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023
DOL	DOL		RICHARD REGGIO		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	DOL	****9148	RICHARD TIMIAN	RICH T CONSTRUCTI ON	108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	11/13/2018	11/13/2023
DOL	DOL		ROBBYE BISSEsar		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003
DOL	DOL		ROBERT A. VALERINO		3841 LANYARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		ROBERT BRUNO		3 GAYLORD ST AUBURN NY 13021	11/15/2016	11/15/2021
DOL	DOL		ROBERT BRUNO		5 MORNINGSIDE DRIVE AUBURN NY 13021	05/28/2019	05/28/2024
DOL	NYC		ROBERT HOHMAN		149 FIFTH AVE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL		RODERICK PUGH		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	DOL	****4880	RODERICK PUGH CONSTRUCTION INC.		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL		RONALD MESSEN		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		ROSEANNE CANTISANI			06/12/2018	06/12/2023
DOL	DOL		RYAN ALBIE		21 S HOWELLS POINT ROAD BELLPORT NY 11713	02/21/2017	02/21/2022
DOL	DOL	****3347	RYAN ALBIE CONTRACTING INC		21 S HOWELLS POINT ROAD BELLPORT NY 11713	02/21/2017	02/21/2022
DOL	DOL	****1365	S & L PAINTING, INC.		11 MOUNTAIN ROAD P.O BOX 408MONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	****7730	S C MARTIN GROUP INC.		2404 DELAWARE AVE NIAGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL		SALVATORE A FRESINA			08/26/2016	08/26/2021
DOL	DOL		SAM FRESINA			08/26/2016	08/26/2021
DOL	NYC	****0349	SAM WATERPROOFING INC		168-42 88TH AVENUE APT.1 AJAMAICA NY 11432	11/20/2019	11/20/2024
DOL	NYC		SANDEEP BOPARAI		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	DOL	****9751	SCW CONSTRUCTION		544 OLD ROUTE 23 ACRE NY 12405	02/14/2017	02/14/2022
DOL	NYC	****6597	SHAIRA CONSTRUCTION CORP.		421 HUDSON STREET SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	DOL	****1961	SHANE BURDICK	CENTRAL TRAFFIC CONTROL, LLC.	2238 BAKER ROAD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL		SHANE BURDICK		2238 BAKER ROAD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL		SHANE NOLAN		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		SHULEM LOWINGER		11 MOUNTAIN ROAD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	****0816	SOLAR ARRAY SOLUTIONS, LLC		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL	****2221	SOUTH BUFFALO ELECTRIC, INC.		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	DOL	****3496	STAR INTERNATIONAL INC		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	08/11/2003	08/11/3003
DOL	DOL	****6844	STEAM PLANT AND CHX SYSTEMS INC.		14B COMMERCIAL AVENUE ALBANY NY 12065	11/14/2019	11/14/2024

NYSDOL Bureau of Public Work Debarment List 05/24/2021

Article 8

DOL	DOL	*****9933	STEED GENERAL CONTRACTORS, INC.		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL		STEFANOS PAPASTEFANOU, JR. A/K/A STEVE PAPASTEFANOU, JR.		256 WEST SADDLE RIVER RD UPPER SADDLE RIVER NJ 07458	05/30/2019	05/30/2024
DOL	DOL	*****9751	STEPHEN C WAGAR		544 OLD ROUTE 23 ACRE NY 12405	02/14/2017	02/14/2022
DOL	DOL		STEVE TATE		415 FLAGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	NYC		STEVEN GOVERNALE		601 PORTION RD RONKONKOMA NY 11779	11/18/2016	11/18/2021
DOL	DOL		STEVEN MARTIN		2404 DELWARE AVE NIAGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL		STEVEN P SUCATO		15-68 208TH STREET BAYSIDE NY 11360	06/23/2016	06/23/2021
DOL	DOL		STEVEN TESTA		50 SALEM STREET - BLDG B LYNNFIELD MA 01940	01/23/2017	01/23/2022
DOL	NYC	*****5863	SUKHMANY CONSTRUCTION, INC.		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	DOL	*****1060	SUNN ENTERPRISES GROUP, LLC		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL	*****8209	SYRACUSE SCALES, INC.		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	DOL		TALAILA OCAMPA		1207 SW 48TH TERRACE DEERFIELD BEACH FL 33442	01/16/2018	01/16/2023
DOL	DOL		TERRY THOMPSON		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL		TEST		P.O BOX 123 ALBANY NY 12204	05/20/2020	05/20/2025
DOL	DOL	*****5570	TESTA CORP		50 SALEM STREET - BLDG B LYNNFIELD MA 01940	01/23/2017	01/23/2022
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATION	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATION	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL	*****3453	TORCHIA'S HOME IMPROVEMENT		10153 ROBERTS RD SAUQUOIT NY 13456	08/09/2016	08/09/2021
DOL	DOL	*****8311	TRIPLE B FABRICATING, INC.		61 WILLETT ST. PASSAIC NJ 07503	10/26/2016	10/26/2021
DOL	DOL	*****9407	TURBO GROUP INC		15-68 208TH STREET BAYSIDE NY 11360	06/23/2016	06/23/2021
DOL	DOL	*****6392	V.M.K CORP.		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023
DOL	DOL	*****6418	VALHALLA CONSTRUCTION, LLC.		796 PHLEPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	NYC	*****7361	VIABLE HOLDINGS, INC.	MOVING MAVEN	1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	DOL		VICTOR ALICANTI		42-32 235TH ST DOUGLSTON NY 11363	01/14/2019	01/14/2024
DOL	DOL		VICTOR ROTENBERG		C/O GMDV TRANS INC 67048 182ND STREETFRESH MEADOWS NY 11365	06/24/2016	06/24/2021
DOL	NYC		VIKTAR PATONICH		2630 CROPSEY AVE BROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	DOL		VIKTORIA RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC		VITO GARGANO		1535 RICHMOND AVE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	NYC	*****3673	WALTERS AND WALTERS, INC.		465 EAST AND THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL		WAYNE LIVINGSTON JR	NORTH COUNTRY DRYWALL AND PAINT	23167 COUNTY ROUTE 59 DEXTER NY 13634	10/24/2016	10/24/2021
DOL	DOL	*****3296	WESTERN NEW YORK CONTRACTORS, INC.		3841 LAYNARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		WHITE PLAINS CARPENTRY CORP		442 ARMONK RD	06/12/2018	06/12/2023
DOL	DOL		WILLIAM C WATKINS		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022

NYSDOL Bureau of Public Work Debarment List 05/24/2021

Article 8

DOL	DOL		WILLIAM DEAK		C/O MADISON AVE CONSTR CO 39 PENNY STREETWEST ISLIP NY 11795	11/02/2016	11/02/2021
DOL	DOL	*****4043	WINDSHIELD INSTALLATION NETWORK, INC.		200 LATTA BROOK PARK HORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	*****4730	XGD SYSTEMS, LLC	TDI GOLF	415 GLAGE AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DOL	*****7345	YES SERVICE AND REPAIRS CORPORATION		145 LODGE AVE HUNTINGTON STATION NY 11476	08/09/2016	08/09/2021
DOL	NYC		ZAKIR NASEEM		30 MEADOW ST BROOKLYN NY 11206	10/10/2017	10/10/2022
DOL	NYC	*****8277	ZHN CONTRACTING CORP		30 MEADOW ST BROOKLYN NY 11206	10/10/2017	10/10/2022

APPENDIX E

Federal Davis Bacon Wage Rates

"General Decision Number: NY20210001 01/01/2021

Superseded General Decision Number: NY20200001

State: New York

Construction Type: Heavy Dredging

Counties: New York Statewide.
STATEWIDE

New York

All dredging, except self-propelled hopper dredges, on the Atlantic Coast and tributary waters emptying into the Atlantic Ocean.

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/01/2021

* ENGI0025-001 10/01/2020

STATEWIDE

	Rates	Fringes
Dredging:		
CLASS A1.....	\$ 41.42	18.86+a+b
CLASS A2.....	\$ 36.91	18.86+a+b
CLASS B1.....	\$ 35.82	18.86+a+b
CLASS B2.....	\$ 33.72	18.86+a+b
CLASS C1.....	\$ 32.80	18.86+a+b
CLASS C2.....	\$ 31.74	18.86+a+b
CLASS D.....	\$ 26.37	18.86+a+b

CLASSIFICATIONS:

CLASS A1: Deck Captain; Mechanical Dredge Operator, Leverman, Licensed Tug Operator over 1000 HP.

CLASS A2: Crane Operator (360 swing).

CLASS B1: Derrick Operator (180 swing), Spider/Spill Barge Operator, Engineer, Electrician, Chief Welder, Chief Mate, Fill Placer, Operator II, Maintenance Engineer, Licensed Boat Operator, Licensed Crew Boat Operator.

CLASS B2: Certified Welder.

CLASS C1: Mate, Drag Barge Operator, Assistant Fill Placer, Welder, Steward.

CLASS C2: Boat Operator.

CLASS D: Oiler, Deckhand, Shoreman, Rodman, Scowman, Cook, Messman, Porter/Janitor.

INCENTIVE PAY: (Add to Hourly Rate)

Operator (NCCCO License/Certification) \$1.80 Licensed Tug Operator over 1000 HP (Assigned as Master) (USCG licensed Master of Towing Vessels (MOTV) \$1.80; Licensed Boat Operator (Assigned as lead boat captain) USCG licensed boat operator \$1.30; Engineer (QMED and Tankerman endorsement or licensed engineer (USCG) \$1.80 Oiler (QMED and Tankerman endorsement (USCG) \$1.80; All classifications (Tankerman endorsement only) USCG \$1.55; Deckhand or Mate (AB with Lifeboatman endorsement (USCG) \$1.80; All classifications (lifeboatman endorsement only (USCG) \$1.55; Welder (ABS certification) \$1.55

FOOTNOTES APPLICABLE TO ABOVE CRAFTS:

- a. PAID HOLIDAYS: New Year's Day, Martin Luther King, Jr.'s Birthday, Memorial Day, Good Friday, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day
- b. VACATION: Eight percent (8%) of the straight time rate, multiplied by the total hours worked.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of

each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

"

"General Decision Number: NY20210020 05/21/2021

Superseded General Decision Number: NY20200020

State: New York

Construction Types: Building, Heavy, Highway and Residential

County: Rockland County in New York.

BUILDING; HEAVY; HIGHWAY; AND RESIDENTIAL CONSTRUCTION PROJECTS
(Includes single family homes and apartments up to and
including 4 stories)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/01/2021
1	03/12/2021
2	04/02/2021
3	04/16/2021
4	05/21/2021

ASBE0091-001 06/01/2020

	Rates	Fringes
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HAZARDOUS MATERIAL HANDLER (Duties limited to preparation, wetting, stripping, removal, scraping, vacuuming, bagging and disposing of all insulation materials whether they contain asbestos or not from mechanical systems).....\$ 43.12	42.35
Insulator/asbestos worker (Includes application of all insulating materials,	

protective coverings,
coatings, and finishes to all
types of mechanical systems).....\$ 43.12 42.35

BOIL0005-001 01/01/2017

	Rates	Fringes
BOILERMAKER.....	\$ 55.23	33%+24.12+a

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Thanksgiving Day, Memorial Day, Independence Day, Labor Day and Good Friday, Friday after Thanksgiving, Christmas Eve Day and New Year's Eve

BRNY0005-005 06/01/2019

	Rates	Fringes
BRICKLAYER BUILDING/RESIDENTIAL CONSTRUCTION Bricklayers, Cement Masons, Plasterers, Stone Masons.....	\$ 42.09	34.50
HEAVY & HIGHWAY CONSTRUCTION Bricklayers, Cement Masons, Plasterers, Stone Masons, Pointers, Caulkers & Cleaners.....	\$ 41.96	33.38

CARP0279-004 07/01/2019

	Rates	Fringes
Carpenters : Building and Heavy & Highway Construction.....	\$ 45.30	30.55
Residential.....	\$ 36.23	24.47

CARP0740-001 07/01/2020

	Rates	Fringes
MILLWRIGHT.....	\$ 55.70	53.61

CARP1556-006 07/01/2020

	Rates	Fringes
Dock Builder & Piledrivermen.....	\$ 55.93	51.79

CARP1556-007 07/01/2020

	Rates	Fringes
Diver Tender.....	\$ 50.34	51.79
Diver.....	\$ 70.80	51.79

CARP1556-010 07/01/2019

	Rates	Fringes
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Pipe Bending Machine Operator....\$ 54.63 50.98

ELEC0363-006 04/01/2021

Rates Fringes

Electricians:

BUILDING, HEAVY & HIGHWAY

CONSTRUCTION.....\$ 47.00 3%+33.67+a

RESIDENTIAL CONSTRUCTION....\$ 47.00 3%+33.67+a

FOOTNOTE:

a. Paid Holidays: New Year's Day, President's Day, Memorial Day, Fourth of July, Labor Day, Presidential Election Day, Veteran's Day, Thanksgiving Day, Day after Thanksgiving, Christmas Day

ELEC1249-002 05/04/2020

Rates Fringes

ELECTRICIAN (LINE
CONSTRUCTION-LIGHTING AND
TRAFFIC SIGNAL INCLUDING ANY
AND ALL FIBER OPTIC CABLE
NECESSARY FOR THE TRAFFIC
SIGNAL SYSTEMS, AND TRAFFIC
MONITORING SYSTEMS, ROAD
WEATHER INFORMATION SYSTEMS)

Flagman.....\$ 28.49 6.75%+33.90

Groundman (Digging Machine
Operator).....\$ 42.73 6.75%+33.90

Groundman (Truck Driver)....\$ 37.98 6.75%+33.90

Groundman Truck Driver
(Tractor Trailer Unit).....\$ 40.36 6.75%+33.90

Lineman and Technician.....\$ 47.48 6.75%+33.90

Mechanic.....\$ 37.98 6.75%+33.90

PAID HOLIDAYS:

a. Memorial Day, New Year's Day, President's Day, Good Friday, Decoration Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, and Election Day for the President of the United States and Election Day for the Governor of New York State, provided the employee works two days before or two days after the holiday.

ELEC1249-004 05/04/2020

Rates Fringes

ELECTRICIAN (Line
Construction)

Overhead and underground
distribution and
maintenance work and all
overhead and underground
transmission line work
including any and all
fiber optic ground wire,
fiber optic shield wire or
any other like product by

any other name
manufactured for the dual
purpose of ground fault
protection and fiber optic
capabilities :

Flagman.....	\$ 32.10	6.75%+33.90
Groundman digging machine operator.....	\$ 48.15	6.75%+33.90
Groundman truck driver (tractor trailer unit).....	\$ 45.48	6.75%+33.90
Groundman Truck driver.....	\$ 42.80	6.75%+33.90
Lineman and Technician.....	\$ 53.50	6.75%+33.90
Mechanic.....	\$ 42.80	6.75%+33.90

Substation:

Cable Splicer.....	\$ 58.85	6.75%+33.90
Flagman.....	\$ 32.10	6.75%+33.90
Ground man truck driver....	\$ 42.80	6.75%+33.90
Groundman digging machine operator.....	\$ 48.15	6.75%+33.90
Groundman truck driver (tractor trailer unit).....	\$ 45.48	6.75%+33.90
Lineman & Technician.....	\$ 53.50	6.75%+33.90
Mechanic.....	\$ 42.80	6.75%+33.90

Switching structures;
railroad catenary
installation and
maintenance, third rail
type underground fluid or
gas filled transmission
conduit and cable
installations (including
any and all fiber optic
ground product by any
other name manufactured
for the dual purpose of
ground fault protection
and fiber optic
capabilities), pipetype
cable installation and
maintenance jobs or
projects, and maintenance
bonding of rails; Pipetype
cable installation

Cable Splicer.....	\$ 60.30	6.75%+33.90
Flagman.....	\$ 32.89	6.75%+33.90
Groundman Digging Machine Operator.....	\$ 49.34	6.75%+33.90
Groundman Truck Driver (tractor-trailer unit).....	\$ 46.60	6.75%+33.90
Groundman Truck Driver.....	\$ 43.86	6.75%+33.90
Lineman & Technician.....	\$ 54.82	6.75%+33.90
Mechanic.....	\$ 43.86	6.75%+33.90

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, Good Friday, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, and Election Day for the President of the United States and Election Day for the Governor of New York State, provided the employee works two days before or two days after the holiday.

ELEC1249-008 01/03/2021

	Rates	Fringes
--	-------	---------

ELECTRICIAN (Line
Construction)TELEPHONE, CATV
FIBEROPTICS CABLE AND
EQUIPMENT

Cable splicer.....	\$ 34.78	3%+5.14
Groundman.....	\$ 17.50	3%+5.14
Installer Repairman- Teledata Lineman/Technician- Equipment Operator.....	\$ 33.01	3%+5.14
Tree Trimmer.....	\$ 27.36	3%+9.98

a. New Year's Day, President's Day, Good Friday, Decoration
Day, Independence Day, Labor Day, Veteran's Day,
Thanksgiving Day, Day after Thanksgiving, Christmas Day.

ELEV0001-002 03/17/2018

	Rates	Fringes
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ELEVATOR MECHANIC

Elevator Constructor.....	\$ 64.48	36.21+a+b
Modernization and Repair....	\$ 50.49	40.399+a+b

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Good Friday, President's
Day, Memorial Day, Independence Day, Labor Day, Columbus
Day, Veteran's Day, Thanksgiving Day, Friday after
Thanksgiving, and Christmas Day.

b. PAID VACATION: An employee who has worked less than 5
years shall receive vacation pay credit on the basis of 4%
of his hourly rate for all hours worked; an employee who
has worked 5 to 15 years shall receive vacation pay credit
on the basis of 6% of his hourly rate for all hours worked;
an employee who has worked 15 or more years shall receive
vacation pay credit on the basis of 8% of his hourly rate
for all hours worked.

ELEV0138-002 01/01/2020

THE TOWN OF STONY POINT

	Rates	Fringes
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ELEVATOR MECHANIC.....	\$ 60.49	34.765+a+b
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FOOTNOTE:

a. Vacation: 6%/under 5 years based on regular hourly rate for
all hours worked. 8%/over 5 years based on regular hourly
rate for all hours worked.

b. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence
Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday
after Thanksgiving Day; and Christmas Day.

ENGI0825-012 01/01/2018

BUILDING HEAVY AND HIGHWAY, ROAD AND STREET CONSTRUCTION

	Rates	Fringes
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Power equipment operators:

GROUP 1.....	\$ 50.57	30.30
GROUP 2.....	\$ 48.98	30.30
GROUP 3.....	\$ 47.07	30.30
GROUP 4.....	\$ 45.44	30.30
GROUP 5.....	\$ 43.73	30.30
GROUP 6.....	\$ 52.39	30.30

NOTES:

Hazmat Premium 20 percent
 Hydrographic Premium .50

FOOTNOTE:

a. New Years Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, Christmas Day, Washington's Birthday, Election Day, and Veterans Day provided the employee works one day during the calendar week in which the holiday occurs.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Autograde-Pavement-Profiler (CMI and Similar Types); Autograde Slipform Paver (CMI and Similar Types); Backhoe; Central Power Plants (all types); Concrete Paving Machine (s-240 and Similar Types); Cranes (All Types, Including Overhead And Straddle Traveling Type); Cranes, Gantry; Derricks (Land, Floating or Chicago Boom Type) Drillmaster/Quarrymaster (Down the Hole Drill) Rotary Drill; Self-Propelled, Hydraulic Drill, Self-Powered Drill Draglines, Elevator Graders, Front End Loaders (5 yds. and over), Gradalls, Grader: Rago, Helicopters (Copilot), Helicopters, (Communication Engineer), Locomotive (large), Mucking Machines, Pavement and Concrete Breaker (Superhammer, Hoe Ram, Brokk 250 and Similar Types), Pile Driver (length of Boom Including Length of Leads Shall Determine Premium Rate Applicable), Pile Driver (length of boom including length of leads shall determine rate applicable), Roadway Surface Grinder Scooper (loader and shovel), Shovels, Tree Chopper with Boom, Trench Machines, Tunnel Boring Machines.

GROUP 2: ""A"" Frame; Backhoe (Combination); Boom Attachment on Loaders (Rate Based On Size Of Bucket) Not Applicable To Pipehook) Boring and Drilling Machines, Brush Chopper, Shredder and Tree Shredder Tree Shearer, Cableways, Carryalls, Concrete Pump, Concrete Pumping System, Pumpcrete and Similar Types, Conveyors, 125 ft and over; Drill Doctor (duties include dust collector, maintenance), Front End Loader (22 yds. but less than 5 yds.), Graders (Finish); Groove Cutting Machine (ride on type), Heater Planing; Hoists: (all type hoists, Shall Also Include Steam, Gas, Diesel, Electric, Air Hydraulic, Single and Double Drum, Concrete, Brick Shaft,Caisson, Snorkel Roof, and or any other similar type Hoisting Machines, Portable or Stationary, Except Chicago Boom Type). Long Boom Rate to Be Applied if Hoist"" Hydraulic Cranes-10tons and Under; Hydro-Axe; Hydro- Blaster; Jacket (Screw Air Hydraulic Power Operated Unit or Console Type: Not Hand Jack or Pile Load Test Type), Log Skidder; Pans, Pavers (all) Concrete; Plate and Frame Filter Press; Pumpcrete Machines; Squeeze Crete and Concrete Pumping (regardless of size); Scrapers;

Sidebooms; ""straddle"" Carrier, Ross and Similar Types;
Vacuum Truck; Whip Hammer; Winch Trucks(Hoisting).

GROUP 3: Asphalt Crubing Machine, Asphalt Plant Engineer, Asphalt Spreader;Autograde Tube Finisher & Texturing Machine (CMI and Similar types) Autograde Curecrete Machine (CMI and Similar Types); Bar Bending Machine (power), Batchers, Batching Plant and Crusher on Site; Belt Conveyor System; Boom Type Skimmer Machines; Bridge Deck Finisher; Bulldozers (all); Car Dumpers (Railroad); Chief of Party; Compressor and Blower Type Units (used) Independently or Mounted On Dual Purpose Trucks, On Job Site or In Conduction with Job Site, In Loading and Unloading of Concrete, Cement, Fly Ash, Instantcrete, or Similar Type Materials); Compressor 92 or 3 in Battery); Concrete Finishing Machines; Concrete Saws and Cutters (ride on type); Concrete Spreaders, Hetzel, Rexomatic and Similar types; Concrete Vibrators; Conveyors, Under 125 ft), Crushing Machines, Ditching Machine, Small (ditchwitch, Vermeer or Similar type); Dope Dots (mechanical with or without pump), dumpsters; Elevator; Fireman; Forklifts (economy, lull, and similar types of equipment); Front End Loaders (1 yd. and over but less than 2 yds.); Generators (2 or 3 in Battery/ within 100 ft); Giraffe Grinders, Graders and Motor Patrols; Grout Pump; Gunnite Machines (excluding nozzle); Hammer Vibratory (in conjunction with generators); Hoists (Roof, Tuggeaerial Platform Hoist and House Cars), Hoppers, Hoppers Doors (power operated); Hydro-Blaster (where required); Ladders (Motorized); Laddervator; Locomotive, Dinky type; Maintenance, Utility Man; Mechanics; Mixers (Excepting Paving Mixers); Motor Patrols and Graders; Pavement Breakers, Small, Self-Propelled ride on type (also Maintains Compressor or Hydraulic Unit); Pavement Breaker, Truck Mounted; Pipe Bending Machine (power); Pitch Pump; Plaster Pump (regardless of size); Post Hold Digger (post pounder and auger); Rod Bending Machines (power); Roller, Black Top; Scales, (power); Seaman Pulverizing Mixer; Shoulder Widener; Silos; Skimmer Machines (Boom Type); Steel Cutting Machine, Services and Maintains; Tamrock Drill; Tractors; Tug Captain; Vibrating Plants (used in conjunction with unloading); welder and Repair Mechanics; Concrete cleaning/decontamination machine operator; Directional boring machine; Heavy equipment robotics operator; Master environmental maintenance operator, Ultra high pressure waterjet cutting tool system operator; Vacuum blasting machine operator

GROUP 4: Brooms and Sweepers; Chippers; Compressors (single); Concrete Spreaders (small type); Conveyor Loaders (not including Elevator Graders); Engines, Large Diesel (1620 h.p.) and Staging Pump; Farm Tractors; Fertilizing Equipment (Operator and Maintenance of); Fine Grade Machine (small type); Form Line Graders (small type); Front End Loader (under 1 yd); Generator (single); Grease, Gas, Fuel and Oil Supply Trucks; Heaters (Nelson or Other Type Including Propane, Natural Gas or Flowtype Units); Lights, Portable Generating Light Plants; Mixers, Concrete Small; Mulching Equipment (Operation and Maintenance of); Pumps (2 of Less Than 4 Inch Suction); Pumps 94 Inch Suction and Over Including Submersible Pumps); Pumps (Diesel Engine and Hydraulic); Immaterial of Power; Road Finishing Machines (Small Type); Rollers, Grade, Fill Or Stone Base; Seeding Equipment (Operation and maintenance of); Sprinkler and Water Pump Trucks (Used on job Site or in conduction with Job

Site); Steam Jennies and Boilers, Irrespective of Use; Stone Spreader; Tamping Machines, Vibrating Ride On; Temporary Heating Plant (welson or Other Type, Including Propane, Natural Gas or Flow Type Units); Water and Sprinkler Trucks (Used On Job Site In Conduction with Job Site); Welding Machines-Within 100 ft (Gas, and /or Electric Converters of Any type, single, two or three in a battery). welding system, multiple (rectifier transformer type) well point systems (including installation by bull gang and maintenance of); Off Road back dumps.

GROUP 5: Oiler, tire repair

GROUP 6: Helicopter pilots

ENGI0825-013 01/01/2018

	Rates	Fringes
Power equipment operators:		
BUILDING CONSTRUCTION		
STEEL ERECTION		
GROUP 1.....	\$ 59.09	30.30
GROUP 2.....	\$ 57.43	30.30
GROUP 3.....	\$ 50.14	30.30
GROUP 4.....	\$ 47.48	30.30
GROUP 5.....	\$ 45.95	30.30
GROUP 6.....	\$ 44.19	30.30
GROUP 7.....	\$ 53.70	30.30
BUILDING CONSTRUCTION TANK		
ERECTION		
GROUP 1.....	\$ 58.81	30.30
GROUP 2.....	\$ 57.22	30.30
GROUP 3.....	\$ 53.70	30.30
GROUP 4.....	\$ 50.13	30.30
GROUP 5.....	\$ 44.92	30.30
OILSTATIC MAINLINES AND		
TRANSPORTATION PIPE LINES		
GROUP 1.....	\$ 51.20	30.30
GROUP 2.....	\$ 49.55	30.30
GROUP 3.....	\$ 47.41	30.30
GROUP 4.....	\$ 45.91	30.30
GROUP 5.....	\$ 44.19	30.30
GROUP 6.....	\$ 53.13	30.30
RESIDENTIAL CONSTRUCTION		
ALL JOB CLASSIFICATION.....	\$ 11.49	7.75

NOTES:

Hydrographic Premium	.50
Hazmat Premium	20 percent
Tunnel Premium	.75

FOOTNOTE:

a. PAID HOLIDAYS: New Years Day, Independence Day, Memorial Day, Labor Day Thanksgiving Day, Christmas Day, Washington's Birthday, November Election Day, Veterans Day, Decoration Day provided the employee works one day in the calendar week during which the holiday occurs

POWER EQUIPMENT OPERATORS: STEEL ERECTION CLASSIFICATIONS

GROUP 1: Cranes (All Cranes, Land or Floating with Booms

Including Jib 140 ft and over, Above Ground); Derricks, Land, Floating or Chicago Boom Type with Booms including Jib 140 ft and over above ground).

GROUP 2: Cranes (All Cranes, Land or Floating with Booms Including Jib Less Than 140 ft Above Ground); Derricks, Land, Floating or Chicago Boom Type with Booms Including Jib Less Than 140 ft above Ground).

GROUP 3: ""A"" Frame, Cherry Pickers 10 tons and under, Hoists Shall Also Include Steam, Gas, Desel, Electric, Air Hydraulic, Single and Double Drum Concrete, Brick Shaft Caisson, or Any Other Similar Type Hoisting Machines, Portable or Stationary, Except Chicago Boom Type; Jacks: Screw Air Hydraulic Power Operated unit or Console Type (not hand Jack or Pile Load Test Type); Side Booms.

GROUP 4: Aerial Platform used as Hoist; Compressor: 2 or 3 in Battery; Elevators or House Cars; Conveyors and Tugger Hosits; Chief of Party; Fireman; Forklift; Generators (2 or 3); Maintenance (Utility Man); Rod Bending Machine (power); Welding Machines (Gas or Electric, 2 or 3 in Battery, Including Diesels); Captain: Power Boats: Tug Master: Power Boats.

GROUP 5: Compressor, Single; Welding Machine, Single, Gas, Diesel, and Electric Converters of any Type: Welding System Multiple (Rectifier Transformer Type); Generator, Single.

GROUP 6: Oiler, staddle carrier

GROUP 7: Helicopter Pilot

For BUILDING CONSTRUCTION TANK ERECTION

NOTES:

Tunnel Premium	.75
Hazmat Premium	20 %
Hydrographic Premium	.50

FOOTNOTE:

a. PAID HOLIDAYS: New Years Day, Independence Day, Memorial Day, Labor Day, Thanksgiving Day, Christmas Day, Washington's Birthday, November Election Day, Veterans Day, Decoration Day provided the employee works one day in the calendar week during which the holiday occurs

POWER EQUIPMENT OPERATORS: TANK ERECTION CLASSIFICATIONS

GROUP 1: Operating Engineers on all Cranes, Derricks, etc with Booms Including Jib 140 ft or More Above Ground.

GROUP 2: Operating Engineer on all Equipment, Including Cranes, Derricks, etc with Booms Including Jib, Less Than 140 ft above the ground.

GROUP 3: Helicopter Pilot

GROUP 4: Air Compressors, Welding Machines and Generators are Covered and are Defined as Cover: Gas, Diesel, or Electric Driven Equipment and Sources of Power from a Permanent Plant: ie: Steam, Compressed Air, Hydraulic or Other Power, For The Operating of any Machine or Automatic Tools, Used

In The Erection, Alteration, Repair and Dismantling of Tanks and Any and All ""Dual Purpose"" Trucks Used On The Construction Job Site, or in the Loading and Unloading of Materials, at the Construction Job Site or in Conjunction with the Job Site.

GROUP 5: Oiler

For OILOSTATIC MAINLINES AND TRANSPORTATION PIPE LINES NOTES:

Hydrographic Premium	.50
Hazmat Premium	20%
Tunnel Premium	.75

FOOTNOTE:

a. PAID HOLIDAYS: New Years Day, Independence Day, Memorial Day, Labor Day, Thanksgivings Day, Christmas Day, Washington's Birthday, November Election Day, Veterans Day and Decoration Day provided the employee works one day in calendar week during which the holiday occurs.

OILSTATIC MAINLINES AND TRANSPORTATION PIPE LINES CLASSIFICATIONS

GROUP 1: Backhoe; Cranes (all types); Draglines, Front End Loaders (5yds. and over), Gradalls, Helicopters (co-pilot), Helicopters (Communication Engineer); Scooper (Loader and Shovel) Koehring; Trench Machines.

GROUP 2: ""A"" Frame; Backhoe (Combination Hoe Loader); Boring and Drilling Machines; Ditching Machines, Small, Ditchwitch, Vermeer or Similar type; Forklifts; Front End Loaders 92 yds. and over but less than 5 yds.); Graders, Finish (fine); Hydraulic Cranes 10 tons and under (over 10 tons) Cranes Rate Applies); Side Booms: Winch Trucks (Hoisting).

GROUP 3: Backfiller; Brooms and Sweepers; Bulldozers; Compressor (2 or 3 in battery); Chief of Party; Front End Loaders (under 2 yds); Generators; Giraffe Grinders; Graders and Motor Patrols; Machanic; Pipe Bending Machine (power); Tractors; Water and Sprinkler Trucks used on Job Site or in Conduction with Job Site); Welder and Repair Mechanic; Captain (power boats); Tug Master (power boats).

GROUP 4: Compressor (single); Dope Pots (Mechanical with or without Pump); Dust Collectors; Pumps (4 inch suction and over); Pumps (2 of less than 4 inch suction); Pumps, Diesel Engine and Hydraulic (immaterial of power); Welding Machines, Gas or Electric Converters of any type- 2 or 3 in Battery Multiple Welders; Well Point Systems (including installation and Maintenance); Farm Tractors.

GROUP 5: Oiler, grease, gas, fuel and oil supply trucks; Tire repair and maintenance

GROUP 6: Helicopter Pilot

IRON0417-001 07/01/2020

	Rates	Fringes
IRONWORKER.....	\$ 40.48	46.45+a

a) Paid Holidays: New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Day after Thanksgiving (unpaid), Christmas Day.

LAB00754-001 04/01/2018

	Rates	Fringes
LABORER		
BUILDING & RESIDENTIAL CONSTRUCTION		
Hazardous Waste Handler.....	\$ 39.05	21.95+a
BUILDING & RESIDENTIAL CONSTRUCTION		
Air track operators, joy drill operators.....	\$ 37.90	21.95+a
All types of landscaping, pit men, dump men, building laborers (clean up), Flag Persons.....	\$ 33.80	21.95+a
Blasters.....	\$ 37.05	21.95+a
Bull float man, stud or riveting gunman, all scalars, power buggy operators (all types), mixer men, (by machine or hand), power saw (all types), brush king, jackhammer, jib rig operators, pavement breakers, vibrator men, powder men, ramset operators, torchmen, cement spray men, gunite nozzle men, sandblasting, all other machine or semi-skilled and asbestos and hazardous waste removal;...	\$ 37.05	21.95+a
Form setter, liners, joint setters, top concrete men.....	\$ 37.35	21.95+a
Hod carriers, scaffold and runway men, steel rod carriers, rip rap and dry stone layers, concrete laborer, mason tenders, pisplayers, (all types), signal men, rail and fence men (all types), core drillers, wrecking and demolition men;.....	\$ 36.81	21.95+a
HEAVY & HIGHWAY CONSTRUCTION		
Hazardous Waste Handler Category A:.....	\$ 41.50	23.30+a
Category B:.....	\$ 41.50	23.30+a
Category C:.....	\$ 41.50	23.30+a
Category D:.....	\$ 41.50	23.30+a
HEAVY & HIGHWAY		

CONSTRUCTION

GROUP 1.....	\$ 45.00	23.30+a
GROUP 2.....	\$ 41.50	23.30+a
GROUP 3.....	\$ 39.75	23.30+a
GROUP 4.....	\$ 36.20	23.30+a

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving day; Christmas Day, President's Election Day; Non-Presidential Election day; and Veterans Day, provided the employee works two days or reported to work two days in the work week and was unable to work.

For HEAVY & HIGHWAY CONSTRUCTION

FOOTNOTE:

a. PAID HOLIDAYS: New Years Day, Independence Day, Memorial Day, Labor Day, Thanksgiving Day, Christmas Day, President's Birthday, Presidential Election Day, Veterans Day provided the employee works one day in the calendar week during which the holiday occurs.

LABORERS HEAVY/HIGHWAY CLASSIFICATIONS

GROUP 1: Blasters

GROUP 2: Track Operator; Joy Drill Operator

GROUP 3: Nipper, Power Buggy Operator; Plaster Tender; Mixer Man (by Machine or hand); Scaffold Runway Man; Power Saw; Brush King; Steel Rod Carrier; Jack Hammer; Wagon Driller; Jib Rig Operator; Pavement Breaker; Vibrator Man; Bit Grinder; Powder Man; Ramset Operator; Rip Rap and Dry Stone Layer; Cement Spray Man; Gunnite Nozzle Man; Spray and Nozzle Man on Mulching and Seeding Machine; Sand Blaster; Concrete Saw; All other Machine or Semi-Skilled Men; Asbestos and Hazardous Waste Removal; Concrete Laborer; Building Laborer; Mason Tender; Carpenter Tender; Pipe Layer (all types); Signal Man; Gabion Basket Assembler; Bull Float Man; Form Setter; Liner; Joint Setter; Sheeter; Tip Concrete Man; Stud or Riveting Gun Man; All Scalpers; Asphalt Men (all types); Rail and Fence (all types); Core Driller; Wrecking and Demolition Man; Bar Man; Seeder; Planter; Landscape Men (all types), Ax Man; Pit and Dump Men; Road Laborer

GROUP 4: Flag Person

PAIN0009-010 05/01/2020

	Rates	Fringes
GLAZIER.....	\$ 46.55	44.77

PAIN0155-004 05/01/2018

	Rates	Fringes
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Painters:

Drywall Finisher.....	\$ 36.19	22.76
Lead Abatement Work.....	\$ 36.19	22.76

Painter/Paperhanger.....	\$ 36.19	22.76
Spray Rate.....	\$ 37.19	22.76

PAIN0806-001 10/01/2020

	Rates	Fringes
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Painters:

Structural Steel and Bridge.	\$ 51.50	49.63
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PLUM0373-001 05/01/2019

	Rates	Fringes
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PLUMBER

PLUMBERS AND STEAMFITTERS...	\$ 46.92	39.72
REFRIGERATION.....	\$ 32.49	23.87
SINGLE FAMILY DWELLINGS.....	\$ 16.60	4.95

* SFNY0669-002 04/01/2021

	Rates	Fringes
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SPRINKLER FITTER.....	\$ 47.19	28.09
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SHEE0038-001 07/01/2020

	Rates	Fringes
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Sheet metal worker.....	\$ 46.92	42.55
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TEAM0445-001 05/01/2019

	Rates	Fringes
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Truck drivers:

GROUP 1.....	\$ 33.25	35.55+a
GROUP 1A.....	\$ 34.39	35.55+a
GROUP 2.....	\$ 32.69	35.55+a
GROUP 3.....	\$ 32.47	35.55+a
GROUP 4.....	\$ 32.36	35.55+a
GROUP 5.....	\$ 32.24	35.55+a

FOOTNOTE:

a. PAID HOLIDAYS: New Year's Day, Labor Day, President's Day, Presidential Election Day, Veterans Day, Decoration Day, Independence Day, Thanksgiving Day and Christmas Day provided the employee works two days in any calendar week during which the holidays occurs.

TRUCK DRIVER CLASSIFICATIONS

GROUP 1: Drivers on Letourneau tractors, double barrel euclids, Athey wagons and similar equipment (except when hooked to scrapers), I-beam and pole trailers, drivers of road oil distributors, tire trucks and tractors and trailers with 5 axles and over, Articulated Back Dumps and Articulated Water Trucks.

GROUP 1A: Drivers on detachable Gooseneck Low bed Trailers rated over 35 tons.

GROUP 2: Drivers on all equipment 25 yards and over, up to and including 30 yard bodies and cable dump trailers and

powder and dynamite trucks.

GROUP 3: Drivers on all equipment up to and including 24 yard bodies, mixer trucks, dump crete trucks and similar types of equipment, fuel trucks, batch trucks and all other tractor trailers.

GROUP 4: Drivers on tri axles, ten-wheelers, grease trucks and tillermen.

GROUP 5: Drivers on pick-up trucks used for materials & parts, drivers on escort man over-the-road and drivers on straight trucks.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this

classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests

for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

APPENDIX F

**Program Requirements and Bid Packet for Contracts Funded
with the NYS Clean Water State Revolving Fund (SRF)
or Drinking Water State Revolving Fund**



Program Requirements and Bid Packet for Contracts Funded with the NYS Clean Water State Revolving Fund or Drinking Water State Revolving Fund

Recipient to Identify Contract Type:

☐ **Construction**

☐ **Treatment Works and Drinking Water Projects**

☐ **Non-Treatment Works**

☐ **Non-Construction**

Effective October 1, 2020

New York State Environmental Facilities Corporation
625 Broadway, Albany, NY 12207-2997
P: (518) 402-6924 F: (518) 402-7456
www.efc.ny.gov

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PART 1: HOW TO USE THIS DOCUMENT

The New York State Environmental Facilities Corporation (“EFC”) implements the New York State Revolving Fund (“SRF”) for both Clean Water and Drinking Water projects.

This Program Requirements and Bid Packet for Contracts document contains (1) a brief description of New York State and federal program requirements for Contracts and Subcontracts funded in whole or part by the New York State Clean Water and Drinking Water SRFs, (2) required language for such Contracts and Subcontracts to satisfy the SRF program requirements, including required forms, and (3) guidance materials to assist entities in complying with these requirements.

PROGRAM REQUIREMENTS

The following requirements apply projects funded with the NYS Clean Water State Revolving Fund or Drinking Water State Revolving Fund:

- Participation of Minority- and Women-Owned Business Enterprises (“MWBE”) and Equal Employment Opportunities (“EEO”) pursuant to New York State Executive Law, Article 15-A and New York Code of Rules and Regulations, Title 5 (5 NYCRR) Parts 140-145 (Regulations of the Commissioner of Economic Development);
- Equal Employment Opportunities pursuant to Titles VI and VII of the Civil Rights Act of 1964, 40 CFR Part 7, and 41 CFR Part 60-1 Subpart A;
- Affirmative Action requirements pursuant to 41 CFR Part 60-4;
- Non-discrimination requirements pursuant to Section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972;
- Encouragement of participation of Service-Disabled Veteran-Owned Business Enterprises (“SDVOB”) in accordance with New York State Executive Law, Article 17-B and 9 NYCRR Part 252;
- American Iron and Steel (“AIS”) pursuant to P.L. 113-76, Consolidated Appropriates Act, 2014; WRRDA Section 608 of the Federal Water Pollution Control Act, as revised;
- Davis Bacon Related Acts (“DBRA”) consisting of the following: The Davis Bacon Act; Copeland Act (40 U.S.C. § 3145); Reorganization Plan No. 14; Department of Labor 29 CFR Parts 1, 3, and 5; Contract Work Hours and Safety Standards Act;
- Applicable State and/or local prevailing wage requirements;
- Requirements regarding suspension and debarment pursuant to 2 CFR Part 180, 2 CFR Part 1532, 29 CFR § 5.12, Executive Order 11246, State Labor Law § 220-b, and State Executive Law § 316; and,
- Restrictions on Lobbying pursuant to 40 CFR Part 34.

EFC or its authorized representatives, and other governmental entities as applicable, reserve the right to conduct occasional site inspections to monitor compliance with SRF program requirements.

This document is not intended to be inclusive of all applicable legal requirements and there may be other legal requirements that need to be included in a particular Contract or Subcontract that are not set forth here. Accordingly, EFC recommends that Recipients, Contractors, Subcontractors, and any other involved entities consult their legal counsel for advice on compliance with all applicable laws, including but not limited to local laws. This document is not intended to be legal advice.

Refer to the EFC website at www.efc.ny.gov for the latest version of the bid packet to ensure that the most recent forms and contract language are being used.

REQUIRED CONTRACT LANGUAGE

Part 2 of this document is the Required Contract Language. All of the language in Part 2 must be inserted into all Contracts and Subcontracts funded in whole or in part with SRF funds, in order for SRF Recipients, Contractors, and Subcontractors to comply with the above-listed SRF program requirements.

GUIDANCE MATERIALS

Part 3 of this document sets forth Guidance Materials intended to assist SRF Recipients, Contractors, and Subcontractors in complying with the foregoing SRF program requirements, as applicable.

The Guidance Materials are for informational purposes only and are not intended to be used as contractual language. Please do not incorporate the Guidance Materials into any Contracts or Subcontracts.

COMMONLY USED TERMS

The following commonly used terms are defined herein as follows:

“Contract” means an agreement between a Recipient and a Contractor.

“Contractor” means all bidders, prime contractors, Service Providers, and consultants as hereinafter defined, unless specifically referred to otherwise.

“Service Provider” means any individual or business enterprise that provides one or more of the following: legal, engineering, financial advisory, technical, or other professional services, supplies, commodities, equipment, materials, or travel.

“Subcontract” means an agreement between a Contractor and a Subcontractor.

“Subcontractor” means any individual or business enterprise that has an agreement, purchase order, or any other contractual arrangement with a Contractor.

“Recipient” means the party, other than EFC, to a grant agreement or a project finance agreement with EFC through which funds for the payment of amounts due thereunder are being paid in whole or in part.

“State” means the State of New York.

“Treatment Works” is defined in Clean Water Act (CWA) Section 212.

“Nonpoint Source Projects” and **“Green Infrastructure Projects”** are defined in CWA Section 319.

“Estuary Management Program Project” is defined in CWA Section 320.

PART 2: REQUIRED CONTRACT LANGUAGE

Recipient to Identify Contract Type:

☐ **Construction**

- ☐ **Treatment Works and Drinking Water Projects**
- ☐ **Non-Treatment Works**

☐ **Non-Construction**

SECTION 1 REQUIREMENTS AND PROCEDURES FOR BUSINESS PARTICIPATION OPPORTUNITIES FOR NEW YORK STATE CERTIFIED MINORITY- AND WOMEN-OWNED BUSINESS ENTERPRISES AND EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITY GROUP MEMBERS AND WOMEN

For purposes of this section:

“Non-Construction” shall mean Contracts for labor, services (including, but not limited to, legal, financial, and other professional services), supplies, equipment, materials, or any combination of the foregoing.

“Contracts Meeting Article 15-A Thresholds” shall mean Contracts or Subcontracts meeting the thresholds under New York State Executive Law Article 15-A as follows:

- (a) Non-Construction Contracts greater than \$25,000;
- (b) Non-Construction Contracts, that are initially under \$25,000 but subsequent change orders or contract amendments increase the Contract value to above \$25,000;
- (c) Construction Contracts greater than \$100,000; and,
- (d) Construction Contracts that are initially under \$100,000 but subsequent change orders or contract amendments increase the Contract value to above \$100,000.

The Equal Employment Opportunities requirements of this section apply to all Contracts and Subcontracts, with the exception of:

- (1) the requirements under Title VII of the Civil Rights Act of 1964 and 41 CFR Part 60-1 Subpart A which apply only to construction Contracts and Subcontracts;
- (2) the Federal Affirmative Action Regulations requirements which apply only to construction Contracts and Subcontracts greater than \$10,000.

The Minority- and Women- Owned Business Enterprises (“MWBE”) participation requirements of this section apply to the Contracts Meeting Article 15-A Thresholds.

Disregard this section if it does not apply to this Contract or Subcontract.

I. General Provisions

- A. Contractors and Subcontractors are required to comply with the following provisions:
1. New York State Executive Law Article 15-A and 5 NYCRR Parts 140-145 ("MWBE Regulations") for all State Contracts as defined therein, with a value (1) in excess of \$25,000 for labor, services (including, but not limited to, legal, financial, and other professional services), supplies, equipment, materials, or any combination of the foregoing, or (2) in excess of \$100,000 for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon.
 2. Title VI of the Civil Rights Act of 1964 and 40 CFR Part 7 ("Title VI") for any program or activity receiving federal financial assistance, as those terms are defined therein.
 3. Title VII of the Civil Rights Act of 1964 and 41 CFR Part 60-1 Subpart A ("Title VII") for construction Contracts related to any government programs providing federal financial assistance, as those terms are defined therein.
 4. 41 CFR Part 60-4 ("Federal Affirmative Action Regulations") for federal or federally assisted construction Contracts in excess of \$10,000, as those terms are defined therein.
 5. Section 504 of the Rehabilitation Act of 1973 ("Section 504") for any program or activity receiving federal financial assistance, as those terms are defined therein.
 6. The Age Discrimination Act of 1975 ("Age Discrimination Act") for any program or activity receiving federal financial assistance, as those terms are defined therein.
 7. Section 13 of the Federal Water Pollution Control Act ("Clean Water Act") Amendments of 1972 ("Section 13") for any program or activity receiving federal financial assistance under the Clean Water Act, as those terms are defined therein.
- B. Failure to comply with all of the requirements herein may result in a finding by the Recipient that the Contractor is non-responsive, non-responsible, and/or has breached the Contract, leading to the withholding of funds or such other actions, liquidated damages pursuant to subsection III(F) of this section, or enforcement proceedings as allowed by the Contract.
- C. If any terms or provisions herein conflict with Executive Law Article 15-A, the MWBE Regulations, Title VI, Title VII, or Federal Affirmative Action Regulations, such law and regulations shall supersede these requirements.
- D. Upon request from the Recipient's Minority Business Officer ("MBO") and/or EFC, Contractor will provide complete responses to inquiries and all MWBE and EEO records available within a reasonable time. For purposes of this section, MBO means the duly authorized representative of the SRF Recipient for MWBE and EEO purposes.

II. Equal Employment Opportunities (EEO)

Applicable to all Contracts and Subcontracts unless otherwise noted

- A. Each Contractor and Subcontractor performing work on the Contract shall undertake or continue existing EEO programs to ensure that minority group members and women are afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status. For these purposes, EEO shall apply in the areas of recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff, or termination and rates of pay or other forms of compensation.
- B. The Contractor shall comply with the provisions of the Human Rights Law (Executive Law Article 15), Title VI, Title VII, the Federal Affirmative Action Regulations, Section 504, Age Discrimination Act, Section 13, and all other State and Federal statutory and constitutional non-discrimination provisions. The Contractor and Subcontractors shall not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.

- C. Contractors and Subcontractors shall have instituted grievance procedures to assure the prompt and fair resolution of complaints when a violation of Title VI of the Civil Rights Act of 1964 or Title 40 CFR Part 7 is alleged.
- D. Pursuant to 40 CFR § 7.95, the Contractor shall display a copy of the EEO notice at the project site in a visible location. The notice shall accommodate individuals with impaired vision or hearing and should be provided in languages other than English where appropriate. The notice must also identify the employee responsible for its EEO compliance. A copy of the EEO notice ("EEO Poster") can be found at:
<https://www.dol.gov/ofccp/regs/compliance/posters/pdf/eeopost.pdf> .

The Contractor will include the provisions of Subdivisions II(A) and II(C) in every Subcontract in such a manner that the requirements of these subdivisions will be binding upon each Subcontractor as to work in connection with the Contract.

Applicable to all construction Contracts

- E. The Contractor and Subcontractor will comply with the requirements of 41 CFR § 60-1.4(b) and (c), and such provisions are hereby incorporated by reference. These provisions require, in part, that the Contractor and Subcontractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor and Subcontractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

Applicable to construction Contracts greater than \$10,000

- F. The Contractor and Subcontractor will comply with the Affirmative Action Regulations and such provisions are hereby incorporated by reference. These provisions require, in part, that the Contractor and Subcontractor place affirmative action goals on Contracts and Subcontracts, as established by the United States Department of Labor. Affirmative action goals for minorities and women by geographic region can be found here:
<https://www.dol.gov/sites/dolgov/files/ofccp/ParticipationGoals.pdf> .

G. Required EEO Forms

Pursuant to 41 CFR Section 60-1.7 for federally assisted construction Contracts, Contractor and Subcontractor will annually file an EEO-1 Report with the Joint Reporting Committee for the Office of Federal Contract Compliance Programs (OFCCP) and the Equal Employment Opportunity Commission (EEOC) according to the instructions provided at <https://www.eeoc.gov/employers/eo-1-survey/eo-1-instruction-booklet> , if Contractor or Subcontractor:

1. Is not exempt from compliance pursuant to 41 CFR § 60-1.5;
2. Has 50 or more employees;
3. Is a prime Contractor or first tier Subcontractor; or Subcontractor below the first tier which performs construction work at the site of construction; and
4. Has a Contract, Subcontract, or purchase order amounting to \$50,000 or more.

III. Business Participation Opportunities for MWBEs

Applicable to Contracts Meeting Article 15-A Thresholds

A. Contract Goals

1. For purposes of this Contract, EFC establishes the following goals for New York State certified MWBE participation based on the current availability of qualified MBEs and WBEs.

Program	MWBE Contract Goal*
CWSRF, DWSRF, & Green Innovation Grant Program	20%
NYS Water Infrastructure Improvement Act Grants (also receiving EFC loan)	Clean Water project 23% Drinking Water project 26%
NYS Intermunicipal Grants (also receiving EFC loan)	Clean Water project 24% Drinking Water project 24%

*May be any combination of MBE and/or WBE participation

2. For purposes of providing meaningful participation by MWBEs on the Contract and achieving the MWBE Contract Goals established in Section III-A hereof, the Contractor should reference the directory of New York State Certified MWBEs found at the following internet address: <https://ny.newnycontracts.com>.
3. The Contractor understands that only sums paid to MWBEs for the performance of a commercially useful function, as that term is defined in 5 NYCRR § 140.1, may be applied towards achievement of applicable MWBE participation goals.
 - a. For construction and construction-related services Contracts or Subcontracts, the portion of the Contract or Subcontract with an MWBE serving as a supplier, and so designated in ESD's Directory, that shall be deemed to represent the commercially useful function performed by the MWBE shall be 60% of the total value of the Contract or Subcontract. The portion of a Contract or Subcontract with an MWBE serving as a broker, as denoted by NAICS code 425120, that shall be deemed to represent the commercially useful function performed by the MWBE shall be the monetary value for fees, or the markup percentage, charged by the MWBE.
 - b. For non-construction Contracts or Subcontracts, the portion of a Contract or Subcontract with an MWBE serving as a broker that shall be deemed to represent the commercially useful function performed by the MWBE shall be 25% of the total value of the contract
4. Where MWBE Contract Goals have been established herein, pursuant to 5 NYCRR § 142.8, the Contractor must document "good faith efforts" to provide meaningful participation by MWBEs as Subcontractors or suppliers in the performance of the Contract.
5. In accordance with Section 316-a of Article 15-A and 5 NYCRR § 142.13, the Contractor acknowledges that if it is found to have willfully and intentionally failed to comply with the MWBE participation goals set forth in the Contract, such a finding constitutes a breach of Contract and the Contractor shall be liable to the Recipient for liquidated or other appropriate damages, as set forth herein.

B. MWBE Utilization Plan

1. The Contractor represents and warrants that Contractor has submitted an MWBE Utilization Plan to the Recipient prior to the execution of this Contract.
2. The Contractor agrees to use such MWBE Utilization Plan for the performance of MWBEs on the Contract pursuant to the prescribed MWBE goals set forth in Section III-A of this section.

3. The Contractor further agrees that a failure to submit and/or use such MWBE Utilization Plan shall constitute a material breach of the terms of the Contract. Upon the occurrence of such a material breach, the Recipient shall be entitled to any remedy provided herein, including but not limited to, a finding that the Contractor is not responsive.
4. Contractor must report any changes to the Utilization Plan after Contract award and during the term of the Contract to the Recipient's MBO. Contractor shall indicate the changes to the MBO in the next Monthly MWBE Contractor Compliance Report after the changes occurred. At EFC's discretion, an updated MWBE Utilization Plan form and good faith effort documentation may be required to be submitted. When a Utilization Plan is revised due to execution of a change order, the change order should be submitted to the MBO with the Monthly MWBE Contractor Compliance Report or revised Utilization Plan.
5. The Contractor shall submit copies of all fully executed Subcontracts, agreements, and purchase orders that are referred to in the MWBE Utilization Plan to the MBO within 30 days of their execution.

C. Requests for Waiver

1. If the Contractor, after making good faith efforts, is unable to comply with MWBE goals, the Contractor may submit a Request for Waiver to the Recipient documenting good faith efforts by the Contractor to meet such goals. If the documentation included with the waiver request is complete, the Recipient shall forward the request to EFC for evaluation, and EFC will issue a written notice of acceptance or denial within twenty (20) days of receipt.
2. If the Recipient, upon review of the MWBE Utilization Plan and updated Quarterly MWBE Contractor Compliance Reports determines that the Contractor is failing or refusing to comply with the MWBE Contract Goals and no waiver has been issued in regards to such non-compliance, the Recipient may issue a notice of deficiency to the Contractor. The Contractor must respond to the notice of deficiency within seven (7) business days of receipt. Such response may include a request for partial or total waiver of MWBE Contract Goals.

D. Monthly MWBE Contractor Compliance Report ("Monthly MWBE Report")

The Contractor agrees to submit a report to the Recipient by the third business day following the end of each month over the term of this Contract documenting the payments made and the progress towards achievement of the MWBE goals of the Contract. The Monthly MWBE Report must be supplemented with proof of payment by the Contractor to its Subcontractors (e.g., copies of both sides of a cancelled check) and proof that Subcontractors have been paid within 30 days of receipt of payment from the Recipient. The final Monthly MWBE Report must reflect all Utilization Plan revisions and change orders.

E. Liquidated Damages - MWBE Participation

In accordance with Section 316-a of Article 15-A and 5 NYCRR §142.13, if it has been determined by the Recipient or EFC that the Contractor has willfully and intentionally failed to comply with the MWBE participation goals, the Contractor shall be obligated to pay to Recipient liquidated damages or other appropriate damages, as specified herein and as determined by the Recipient or EFC.

Liquidated damages shall be calculated as an amount not to exceed the difference between:

1. All sums identified for payment to MWBEs had the Contractor achieved the approved MWBE participation goals; and,
2. All sums actually paid to MWBEs for work performed or materials supplied under this Contract.

The Recipient and EFC reserve the right to impose a lesser amount of liquidated damages than the amount calculated above based on the circumstances surrounding the Contractor's non-compliance.

In the event a determination has been made by the Recipient or EFC which requires the payment of damages identified herein and such identified sums have not been withheld, Contractor shall pay such damages to the Recipient within sixty (60) days after they are assessed unless prior to the expiration of such sixtieth day, the Contractor has filed a complaint with the Empire State Development Corporation – Division of Minority and Women’s Business Development (“ESD”) pursuant to Subdivision 8 of Section 313 of the Executive Law in which event the damages shall be payable if the Director of ESD renders a decision in favor of the Recipient.

SECTION 2 PARTICIPATION OPPORTUNITIES FOR NEW YORK STATE CERTIFIED SERVICE-DISABLED VETERAN-OWNED BUSINESSES

New York State Executive Law Article 17-B and 9 NYCRR Part 252 provide for more meaningful participation in public procurement by certified Service-Disabled Veteran-Owned Businesses (“SDVOBs”), thereby further integrating such businesses into New York State’s economy. EFC recognizes the need to promote the employment of service-disabled veterans and to ensure that certified service-disabled veteran-owned businesses have opportunities for maximum feasible participation in the performance of EFC Contracts.

In recognition of the service and sacrifices made by service-disabled veterans and in recognition of their economic activity in doing business in New York State, Contractors are strongly encouraged and expected to consider SDVOBs in the fulfillment of the requirements of the Contract. Such participation may be as Subcontractors or suppliers, as protégés, or in other partnering or supporting roles.

Contractor is encouraged to make good faith efforts to promote and assist in the participation of SDVOBs on the Contract for the provision of services and materials. The directory of New York State Certified SDVOBs can be viewed at: <http://ogs.ny.gov/Core/SDVOBA.asp>.

Contractor is encouraged to contact the Office of General Services’ Division of Service-Disabled Veteran’s Business Development at 518-474-2015 or VeteransDevelopment@ogs.ny.gov to discuss methods of maximizing participation by SDVOBs on the Contract.

SECTION 3 AMERICAN IRON AND STEEL (AIS) REQUIREMENT

The requirements of this section apply to (1) all construction Contracts and Subcontracts for DWSRF projects and CWSRF treatment works projects and (2) all Contracts for the purchase of iron and steel products for a DWSRF project or CWSRF treatment works project. Disregard this section if it does not apply to this Contract or Subcontract.

The Contractor acknowledges to and for the benefit of the Recipient of the Clean Water State Revolving Fund (“CWSRF”) or the Drinking Water State Revolving Fund (“DWSRF”) financial assistance that the Contractor understands the goods and services under this Agreement are being funded with monies made available by the New York State Environmental Facilities Corporation (“EFC”) through the CWSRF or the DWSRF and that such funding is subject to certain statutory restrictions requiring that certain iron and steel products used in the project be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contractor pursuant to this Agreement.

The Contractor hereby represents and warrants that:

- (a) the Contractor has reviewed and understands the American Iron and Steel Requirement,
- (b) all of the iron and steel products covered by the American Iron and Steel Requirement used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and
- (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Recipient.

Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Recipient to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Recipient resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the EFC or any damages owed to the EFC by the Recipient). While the Contractor has no direct contractual privity with the EFC, as a lender to the Recipient for the funding of this project, the Recipient and the Contractor agree that the EFC is a third-party beneficiary and neither this paragraph, nor any other provision of this Agreement necessary to give this paragraph force or effect, shall be amended or waived without the prior written consent of the EFC.

SECTION 4 DAVIS-BACON (DB) PREVAILING WAGE REQUIREMENTS

The requirements of this section apply to all construction Contracts and Subcontracts greater than \$2,000 for either DWSRF projects or CWSRF treatment works projects. Disregard this section if it does not apply to this Contract or Subcontract.

For Contracts in Excess of \$2,000:

1. Minimum Wages

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the Contractor and its Subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. The Davis-Bacon poster (WH-1321) can be found at <https://www.dol.gov/whd/regs/compliance/posters/davis.htm> . Wage determinations may be obtained from the US Department of Labor's website, <http://www.beta.sam.gov> .

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the Contract shall be classified in conformance with the wage determination. The contracting officer shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

1. The work to be performed by the classification requested is not performed by a classification in the wage determination;
2. The classification is utilized in the area by the construction industry; and,
3. The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (1) (ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this Contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the Contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program *provided* that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding. The Recipient shall upon its own action or upon written request of the EPA Award Official or an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this Contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any Subcontractor the full amount of wages required by the Contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the Contract, the Recipient may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR § 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B)

of the Davis–Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The Contractor shall submit weekly for each week in which any Contract work is performed a copy of all payrolls to the Recipient. Such documentation shall be available on request of EFC or EPA. As to each payroll copy received, the Recipient shall provide written confirmation in a form satisfactory to EFC indicating whether or not the project is in compliance with the requirements of 29 CFR § 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR § 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at <https://www.dol.gov/agencies/whd/government-contracts/construction/forms> or its successor site. The prime Contractor is responsible for the submission of copies of payrolls by all Subcontractors. Contractors and Subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Recipient, for transmission to EFC, EPA if requested by EPA, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime Contractor to require a Subcontractor to provide addresses and social security numbers to the prime Contractor for its own records, without weekly submission to the Recipient (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a “Statement of Compliance,” signed by the Contractor or Subcontractor or his or her agent who pays or supervises the payment of the persons employed under the Contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR § 5.5(a)(3)(i), and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the Contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the Contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the “Statement of Compliance” required by paragraph (3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the Contractor or Subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The Contractor or Subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the Recipient, EFC, EPA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the Contractor or Subcontractor fails to submit the

required records or to make them available, the Recipient, EFC, or EPA may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR § 5.12.

4. Apprentices and trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a Contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or Subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR § 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

5. Compliance with Copeland Act Requirements. The Contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this Contract.

6. Subcontracts. The Contractor or Subcontractor shall insert in any Subcontracts the clauses contained in 29 CFR § 5.5(a)(1) through (10) and such other clauses as the Recipient may by appropriate instructions require, and also a clause requiring the Subcontractors to include these clauses in any lower tier Subcontracts. The prime Contractor shall be responsible for the compliance by any Subcontractor or lower tier subcontractor with all the Contract clauses in 29 CFR § 5.5.

7. Contract Termination: Debarment. A breach of the contract clauses in 29 CFR § 5.5 may be grounds for termination of the Contract, and for debarment as a Contractor and a Subcontractor as provided in 29 CFR § 5.12.

8. Compliance with Davis–Bacon and Related Act requirements. All rulings and interpretations of the Davis–Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this Contract.

9. Disputes Concerning Labor Standards. Disputes arising out of the labor standards provisions of this Contract shall not be subject to the general disputes clause of this Contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its Subcontractors) and the Recipient, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

(i) By entering into this Contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government Contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this Contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. § 1001.

For Contracts in Excess of \$100,000:

1. Overtime requirements. No Contractor or Subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1) of this section the Contractor and any Subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and Subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this section, in the sum of \$25 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.

3. Withholding for unpaid wages and liquidated damages. The Recipient shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of work performed by the Contractor or Subcontractor under any such Contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or Subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.

4. Subcontracts. The Contractor or Subcontractor shall insert in any Subcontracts the clauses set forth in paragraphs (1) through (4) of this section and also a clause requiring the Subcontractors to include these clauses in any lower tier Subcontracts. The prime Contractor shall be responsible for compliance by any Subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this section.

5. In any Contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR § 5.1, the Contractor or Subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the Contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the records to be maintained under this paragraph shall be made available by the Contractor or Subcontractor for inspection, copying, or transcription by authorized representatives of the Recipient and the Department of Labor, and the Contractor or Subcontractor will permit such representatives to interview employees during working hours on the job.

SECTION 5 REQUIREMENTS REGARDING SUSPENSION AND DEBARMENT

The requirements of this section apply to all Contracts and Subcontracts.

Contractor and any Subcontractors shall comply with, Subpart C of 2 CFR Part 180 as implemented and supplemented by 2 CFR Part 1532. The Contractor is not a debarred or suspended party under 2 CFR Part 180 or 2 CFR Part 1532, or 29 CFR § 5.12. Neither the Contractor nor any of its Subcontractors have contracted with, or will contract with, any debarred or suspended party under the foregoing regulations.

The Contractor and any Subcontractor have not been debarred from or deemed ineligible for Government Contracts or federally assisted construction Contracts pursuant to Executive Order 11246.

The Contractor and any Subcontractors have not been deemed ineligible to submit a bid on or be awarded a public contract or subcontract pursuant to Article 8 of the State Labor Law, specifically Labor Law § 220-b. In addition, neither the Contractor nor any Subcontractors have contracted with, or will contract with, any party that has been deemed ineligible to submit a bid on or be awarded a public contract or subcontract under Labor Law § 220-b.

In addition, the Contractor and any Subcontractors have not been deemed ineligible to submit a bid and have not contracted with and will not contract with any party that has been deemed ineligible to submit a bid under Executive Law § 316.

SECTION 6 RESTRICTIONS ON LOBBYING

The requirements of this section apply to all Contracts and Subcontracts greater than \$100,000. Disregard this section if it does not apply to this Contract or Subcontract.

The Contractor and any Subcontractor executing a Contract or Subcontract in excess of \$100,000 agree to provide to the Recipient an executed Certification Regarding Lobbying pursuant to 40 CFR Part 34 ("Lobbying Certification") in the form attached hereto as Attachment 9, consistent with the prescribed form provided in Appendix A to 40 CFR Part 34.

PART 3: GUIDANCE MATERIALS

APPLICABILITY OF PROGRAM REQUIREMENTS

This table contains a breakdown of the applicable program requirements based on contract type and its value. For further details pertaining to each requirement, refer to the section identified in the heading. The relevant section number is the same in both Part 2 and Part 3 of this document.

Type of Contract	MWBE Section 1	EEO¹ Section 1	Title VII Section 1	AIS Section 3	Davis Bacon Section 4	FAAR² Section 1	Suspension & Debarment Section 6	Restrictions on Lobbying Section 7
Construction: Treatment Works & Drinking Water Projects								
All		X	X	X			X	
If greater than:								
\$2,000		X	X	X	X		X	
\$10,000		X	X	X	X	X	X	
\$100,000	X	X	X	X	X	X	X	X
Construction: Non-Treatment Works								
All		X	X				X	
If greater than:								
\$10,000		X	X			X	X	
\$100,000	X	X	X			X	X	X
Non-Construction								
All		X		X				
If greater than:								
\$25,000	X	X		X				
\$100,000	X	X		X				X

¹ For purposes of this table, "EEO" includes the following: EEO requirements under 40 CFR Part 33, Title VI, Section 504, Age Discrimination Act, and Section 13.

² For purposes of this table, "FAAR" means the Federal Affirmative Action Regulations.

SECTION 1 GUIDANCE FOR THE REQUIREMENTS AND PROCEDURES FOR BUSINESS PARTICIPATION OPPORTUNITIES FOR FEDERAL DISADVANTAGED BUSINESS ENTERPRISES AND NEW YORK STATE CERTIFIED MINORITY- AND WOMEN-OWNED BUSINESS ENTERPRISES AND EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITY GROUP MEMBERS AND WOMEN

I. Summary of EEO and MWBE forms

A. Forms to be Submitted Prior to Contract Execution

Applicable to Contracts Meeting Article 15-A Thresholds

1. **MWBE Utilization Plan**

To be submitted by the Contractor to the MBO after the bid opening, but in no case more than ten (10) business days after the Contractor receives notice from the Recipient that the Contractor has submitted a low bid. For Contracts that are not bid, it is to be submitted prior to the Contract execution date. This form is attached hereto as Attachment 4. See Required Contract Language, Section 1(III)(B).

B. Forms to be Submitted During the Term of the Contract

Applicable to Contracts Meeting Article 15-A Thresholds

1. **Request for Partial or Total MWBE Waiver**

If applicable, to be submitted by the Contractor to the MBO at any time during the term of the Contract, but prior to the submission of a request for final payment on the Contract. This form is attached hereto as Attachment 5. See Required Contract Language, Section 1(III)(C).

2. **Monthly MWBE Contractor Compliance Report ("Monthly MWBE Report")**

To be submitted by the Contractor to the MBO by the third business day following the end of each month over the term of the Contract. This form is attached hereto as Attachment 3. See Required Contract Language, Section 1(III)(D).

Applicable to all construction Contracts

3. **EEO-1 Report**

To be submitted by the Contractor and Subcontractor, as applicable, annually during the term of the Contract or Subcontract. A sample EEO-1 Report can be found here:

https://www.eeoc.gov/sites/default/files/migrated_files/employers/eeo1survey/eeo1-2-2.pdf

Instructions for how to submit the EEO-1 Report online can be found here:

<https://www.eeoc.gov/employers/eeo-1-survey/eeo-1-instruction-booklet> . See Section 1(II)(D), Required Contract Language.

II. Equal Employment Opportunities (EEO)

A. EEO Poster

Applicable to all construction Contracts

Attachment 1, *EEO Poster*, is the notice provided by the United States Department of Labor, with a place added to identify the employee responsible for EEO compliance, as required by 40 CFR § 7.95.

B. EEO Goals

Applicable to construction Contracts greater than \$10,000

Pursuant to 41 CFR Part 60-4, the United States Department of Labor has established EEO goals for the employment of minorities and women. For federal and federally assisted construction Contractors, goals for minorities and females are established as a percentage participation rate. These goals are applicable to all of a Contractor's construction work sites (whether or not these sites are also the result of a federal Contract or are federally assisted). The goals are applicable

to each nonexempt Contractor's total onsite construction workforce, regardless of whether or not part of that workforce is performing work on a federal, federally assisted or non-federally related project Contract or Subcontract. Contractors should apply to each work site the goal for the geographical area that each particular work site is located in. These goals, and further information, are available at: <https://www.dol.gov/sites/dolgov/files/ofccp/ParticipationGoals.pdf> .

III. Business Participation Opportunities for MWBEs

Applicable to Contracts Meeting Article 15-A Thresholds

A. Contract Goals

The goals provided herein (Required Contract Language, Section 1(III)(A)) are effective as of October 1, 2020. MWBE participation goals for a contract will be based on the goals in place at the time of the execution date of each respective contract, unless otherwise specified.

Please contact EFC if you have any questions about the applicable MWBE participation goals for your contract.

B. Good Faith Efforts

The Contractor must make good faith efforts to develop an adequate MWBE Utilization Plan and must continue such good faith efforts to meet applicable MWBE participation goals. The Contractor shall maintain documentation of good faith efforts to solicit participation of MWBE firms for SRF-funded projects. If a Contractor is unable to meet contract MWBE participation goals, and submits a Request for Waiver, documentation of such good faith efforts must accompany the request. See Required Contract Language, Section 1(III)(C).

Contractor should also continue good faith efforts to seek opportunities for MWBE participation during the life of the contract even if proposed goals have been achieved.

Examples of documentation of good faith efforts are set forth below:

- Information on the scope of work related to the contract, such as a copy of the schedule of values from the bid submission, and specific steps taken to reasonably structure the scope of work to break out tasks or equipment needs for the purpose of providing opportunities for subcontracting with, or obtaining supplies or services from, MBEs or WBEs.
- Printed screenshots of the directory of Certified Minority- and Women- Owned Business Enterprises ("MWBE directory") on ESD's website for certified MWBEs that provide the services or equipment necessary for the contract. Contact the MBO for assistance in performing a proper search including identifying a sufficient number of solicitations to show that good faith effort was made.
- Copies of timely solicitations and documentation (e.g., faxes and emails) that the Contractor offered relevant plans, specifications, or other related materials to MBE and WBE firms on ESD's MWBE directory to participate in the work, with the responses.
- A log prepared by the Contractor in a sortable spreadsheet documenting the Contractor's solicitation of MBEs and WBEs for participation as Subcontractors or suppliers pursuant to a contract. The log should consist of the list of MBE and WBE firms solicited, their contact information, the type of work they were solicited to perform (or equipment to provide), how the solicitation was made (fax, phone, email) and the contact information, the contacts name and the outcome. If a bid was received, the bid price should also be included in the log. See a sample log format below:

Date	M/WBE Type	Company	Scope of work	Contact Name	Phone/ Email	Solicitation Format	MWBE Response	Negotiation Required?	Selected? If not, Explain

If no response was received to an initial solicitation, at least one follow-up solicitation should be made in a different format than the first, e.g. fax followed by phone call. Any winning bids received from non-MWBE firms for the same areas MWBEs were solicited should also be tracked on the log.

- Copies of any advertisements of sufficient duration to effectively seek participation of certified MBE and WBEs timely published in appropriate general circulation, trade and MWBE oriented publications, together with listing and dates of publication of such advertisements. EFC recommends the use of the NYS Contract Reporter that is free to all Contractors - <https://www.nyscr.ny.gov> .
- Documents demonstrating that insufficient MBEs or WBEs are reasonably available to perform the work.
- A written demonstration that the Contractor offered to make up any inability to meet the project MWBE participation goals in other Contracts and/or agreements performed by the Contractor on another SRF funded project.
- The date of pre-bid, pre-award, or other meetings scheduled by the Recipient, if any, and the contact information of any MBEs and WBEs who attended and are capable of performing work on the project.
- Any other information or documentation that demonstrates the Contractor conducted good faith efforts to provide opportunities for MWBE participation in their work. For instance, Prime Contractors and MBOs should develop a list of MWBE firms that have expressed interest in working on SRF-funded projects.

EFC reserves the right to request additional information and/or documentation to support the adequacy of the MWBE Utilization Plan and/or waiver request.

C. Review of the MWBE Utilization Plan

The MBO will evaluate a completed MWBE Utilization Plan. If the MBO finds the Utilization Plan sufficient, it will be forwarded to EFC for review. If the MBO finds the Utilization Plan insufficient, the MBO will work with the Contractor to address deficiencies before submitting to EFC for review. A written notice of acceptance or deficiency will be issued by EFC within 20 business days of receipt of the Utilization Plan. Upon receipt of a notice of deficiency from either the MBO or EFC, the Contractor shall respond with a written remedy to such notice within seven (7) business days of receipt.

D. Eligibility for MWBE Participation Credit

1. To receive MWBE participation credit, Contractors or Subcontractors performing work that have been identified in an approved MWBE Utilization Plan must be certified as an MBE or WBE by ESD.
 - a. A Contractor, who is a certified MBE or WBE, will be credited for up to 100% of the category of their certification. However, good faith efforts to seek participation in the other category are also required.
2. Prime Contractors may also include second or lower tier Subcontractors (Subcontractors hired by Subcontractors) on their MWBE Utilization Plan.
3. Credit for MWBE participation shall be granted only for MWBE firms performing a commercially useful business function according to custom and practice in the industry. An MWBE does not perform a commercially useful function if its role adds no substantive value and is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of participation.
 - a. "Commercially useful functions" normally include:

- i. Providing technical assistance to a purchaser prior to a purchase, during installation, and after the supplies or equipment are placed in service;
 - ii. Manufacturing or being the first tier below the manufacturer of supplies or equipment;
 - iii. Providing functions other than merely accepting and referring requests for supplies or equipment to another party for direct shipment to a Contractor; or,
 - iv. Being responsible for ordering, negotiating price, and determining quality and quantity of materials and supplies.
- b. For construction Contracts or Subcontracts, the following rules apply when calculating MWBE utilization:
 - i. The portion of a Contract or Subcontract with an MWBE serving as a manufacturer that shall be deemed to represent the commercially useful function performed by the MWBE shall be 100% of the total value of the Contract or Subcontract.
 - ii. the portion of a Contract or Subcontract with an MWBE serving as a supplier (as denoted by a NAICS code beginning with 423 or 424, or a NIGP code that does not begin with the number 9), and so designated in ESD's Directory, that shall be deemed to represent the commercially useful function performed by the MWBE shall be 60% of the total value of the Contract or Subcontract.
 - iii. the portion of a Contract or Subcontract with an MWBE serving as a broker (as denoted by NAICS code 425120) that shall be deemed to represent the commercially useful function performed by the MWBE shall be the monetary value for fees, or the markup percentage, charged by the MWBE.
- c. For non-construction Contracts or Subcontracts, the following rules apply when calculating MWBE utilization:
 - i. the portion of a Contract or Subcontract with an MWBE serving as a broker that shall be deemed to represent the commercially useful function performed by the MWBE shall be 25% of the total value of the contract. Any firms that are listed as brokers or manufacturers' representatives (NAICS code 425120) and not specifically as suppliers fall in this category.
- d. No credit will be granted for MWBEs that do not perform a commercially useful function.

E. Requests for Waiver

1. If the Contractor's application of good faith efforts does not result in the utilization of MWBE firms to achieve the aforementioned goals or a specialty equipment/service waiver is requested, the Contractor may request a full or partial waiver of MWBE participation goals by completing a Request for Waiver form, attaching appropriate documentation of good faith efforts, and submitting same to the MBO. See also Required Contract Language, Section 1(III)(C). Even if an MWBE waiver is granted, EEO information must still be submitted.
2. The MBO and EFC will review each waiver request based on the good faith effort criteria presented above and the documentation submitted with the waiver request. EFC will not issue any automatic waivers from MWBE responsibilities.
3. Specialty Equipment/Service Exclusion: A specialty equipment/service exclusion may be granted in cases where:
 - a. equipment is made by only one non-MWBE manufacturer,
 - b. the technical specifications call for equipment that is not available through an MWBE supplier;
 - c. the equipment is constructed on site by specially trained non-MWBE labor;
 - d. the service is not available through an MWBE (such as work done by National Grid);
 - e. the service is proprietary in nature (such as use of certain computer software necessary for control systems); or,

- f. the service cannot be subcontracted (such as litigation services).

If the contract includes specialty equipment or services, and documentation is submitted demonstrating that there are no MWBE firms capable of completing this portion of the contract, the specialty amount of the contract may be deducted from the total contract amount to determine the MWBE Eligible Amount and the goals will be applied to the MWBE Eligible Amount. This determination is made at the discretion of the MBO and EFC.

Example:

$$\begin{array}{rcl} \$200,000 & - & \$50,000 \\ \text{(Contract)} & \text{(Specialty equipment/service)} & \\ \hline & & = \$150,000 \\ & & \text{(MWBE Eligible Amount)} \end{array}$$

The MWBE goal is applied to the MWBE Eligible Amount.

A request for this specialty equipment/service deduction can be completed by filling out a Request for Waiver form and submitting it to the MBO. The request must include a copy of the page from the contract where the equipment/ service is described, an ESD search result for the manufacturer or manufacturer's representative, and documentation of the cost of each item. For construction Contracts, the schedule of values or bid tabulation sheet should also be submitted. Additional documentation may be requested by the MBO or EFC.

IV. Subcontractor's Responsibilities

Subcontractors should:

1. Maintain their MWBE certifications and notify the Contractor and MBO of any change in their certification status.
2. Notify the Contractor of any MWBE Subcontractors they hire so they may be included on the Contractor's Utilization Plan.
3. Respond promptly to solicitation requests by completing and submitting bid information in a timely manner.
4. Maintain business records that should include, but not be limited to, Contracts/agreements, records of receipts, correspondence, purchase orders, and canceled checks.
5. Ensure that a required EEO Policy Statement and applicable MWBE requirements are included in each subcontract.
6. Notify the MBO and EFC when contract problems arise, such as non-payment for services or when the Subcontractor is not employed as described in the MWBE Utilization Plan.

V. Protests/Complaints

Contractors or Subcontractors who have any concerns, issues, or complaints regarding the implementation of the SRF MWBE & EEO Program or wish to protest should do so in writing to the MBO and EFC. The MBO, in consultation with EFC, will review the circumstances described in the submission, investigate to develop additional information, if warranted, and determine whether action is required. If the Contractor or Subcontractor believes the issue has not been resolved to their satisfaction, they may appeal in writing to EFC for consideration.

VI. Waste, Fraud and Abuse

Subcontractors, Contractors, or Recipients who know of or suspect any instances of waste, fraud, or abuse within the MWBE & EEO Program should notify the project MBO and EFC immediately. Additionally, suspected fraud activity should be reported to the USEPA – Office of Inspector General Hotline at (888) 546-8740, the New York State Office of Inspector General at (800) 367-4448, or the ESD Compliance Office at (212) 803-3266.

SECTION 2 GUIDANCE FOR NEW YORK STATE CERTIFIED SERVICE-DISABLED VETERAN-OWNED BUSINESS ENTERPRISES (“SDVOB”) PARTICIPATION OPPORTUNITIES

Contractor may contact the Office of General Services’ Division of Service-Disabled Veteran’s Business Development at 518-474-2015 or VeteransDevelopment@ogs.ny.gov to discuss methods of maximizing participation by SDVOBs on the Contract. The directory of New York State Certified SDVOBs can be viewed at: <http://ogs.ny.gov/Core/SDVOBA.asp> .

Please contact EFC if you have any questions about utilizing SDVOBs on the Contract.

SECTION 3 GUIDANCE FOR AMERICAN IRON AND STEEL (“AIS”) REQUIREMENT

Since 2014, if a Recipient uses CWSRF or DWSRF financial assistance to fund all or a part of the construction, alteration, maintenance or repair a public water system or treatment works, the Recipient must use iron and steel products that are produced in the United States for the whole project.

The AIS requirement does not apply to:

1. a project for which engineering plans and specifications were submitted for review by the responsible State agency before January 17, 2014 and approved by that agency before April 15, 2014; or
2. a project funded by a financial assistance agreement with EFC that was signed before January 17, 2014.

The term “iron and steel products” means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, construction materials. For one of the listed products to be considered subject to the AIS requirement, it must be made of greater than 50% iron and steel, measured by material cost (with the exception of reinforced precast concrete products).

The term “produced in the United States” means that all manufacturing processes of the iron or steel, including application of coatings, take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement and the material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

The EPA may waive the AIS requirement for a treatment works project if:

1. applying the requirement would be inconsistent with the public interest;
2. iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

A request for a waiver to use foreign iron or steel products must include adequate information for EPA’s evaluation of the request, including:

1. A description of the foreign and domestic iron, steel, and/or manufactured goods;
2. Unit of measure;
3. Quantity;

4. Cost;
5. Time of delivery or availability;
6. Location of the project;
7. Name and address of the proposed supplier; and,
8. A detailed justification for use of foreign iron or steel products.

Requests for AIS waivers are to be submitted to EFC. Upon review, EFC will submit AIS waiver requests to EPA. When EPA receives a request for a waiver, EPA will publish the request and any accompanying material on EPA's official public Internet site, allowing informal public input on the request for at least 15 days before granting or denying the waiver request.

Additionally, EPA has the authority to issue waivers that are national in scope. National waivers may be for specific products or in the public's interest. These waivers can be found at EPA's website at: <https://www.epa.gov/cwsrf/american-iron-and-steel-requirement-approved-national-waivers-0>. The "De Minimis Waiver" is noteworthy. The waiver permits the use of iron and steel products when they occur in de minimis incidental components of DWSRF or CWSRF projects, as long as:

1. the funds used for the de minimis incidental components cumulatively comprise no more than 5% of the total cost of the materials used in a project; and,
2. the cost of an individual item does not exceed 1% of the total cost of the materials used in the project.

Items covered by the de minimis waiver are:

1. essential, but incidental to the construction;
2. incorporated into the physical structure of the project; and,
3. often low-cost and bought in bulk.

Examples of "de minimis" items include: washers, screws, nuts, bolts, fasteners, miscellaneous wire, corner bead, ancillary tubing, etc.

Examples of items that are NOT incidental and therefore are not considered "de minimis" include: process fittings, tees, elbows, flanges, brackets, valves, sewer or water pipes for distribution, treatment or storage tanks, large structural support systems, etc.

To use the de minimis waiver, Contractors should prepare a record in spreadsheet form that tracks the cost of all materials incorporated into the project. This spreadsheet can be either project specific or contract specific. If it is contract specific, a material tracking record for each construction contract should be prepared and items that are subject to the AIS de minimis waiver should be highlighted. There should be a clear calculation available to indicate that the cost of the de minimis iron and steel items is 5% or less of the total cost of all materials.

Additional information, guidance and Questions and Answers about the State Revolving Fund American Iron and Steel (AIS) requirement can be found at EPA's website: <https://www.epa.gov/cwsrf/state-revolving-fund-american-iron-and-steel-ais-requirement>.

SECTION 4 GUIDANCE FOR APPLICABLE LABOR STANDARDS

I. Davis-Bacon Act

The Davis-Bacon Act requires Contractors and Subcontractors performing construction, alteration and repair work under Contracts in excess of \$2,000 funded from SRF monies, to pay their laborers and mechanics not less than the prevailing wage and fringe benefits for the geographic location.

For purposes of this section, "State Recipient" means EFC.

A. Requirements for Recipients.

This guidance describes how Recipients assist EPA in meeting its Davis-Bacon (DB) responsibilities when DB applies to EPA awards of financial assistance under the Water Resources Reform and

Development Act of 2014 (WRRDA) with respect to State Recipients and Recipients. Recipients with questions about when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring should contact the State Recipient. Recipients can also obtain guidance from DOL's web site at <http://www.dol.gov/whd>.

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements. Under the Water Resources Reform and Development Act of 2014 (WRRDA), DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund. If a Recipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the Recipient must discuss the situation with the State Recipient before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Recipients must obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting Contracts (solicitation) for activities subject to DB. These wage determinations must be incorporated into solicitations and any subsequent Contracts. Prime Contracts must contain a provision requiring that Subcontractors follow the wage determination incorporated into the prime Contract.

(i) While the solicitation remains open, the Recipient must monitor <https://beta.sam.gov> weekly to ensure that the wage determination contained in the solicitation remains current. Recipients must amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the Recipient may request a finding from the State Recipient that there is not a reasonable time to notify interested Contractors of the modification of the wage determination. The State Recipient will provide a report of its findings to the Recipient.

(ii) If the Recipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersessions DOL makes to the wage determination contained in the solicitation shall be effective unless the State Recipient, at the request of the Recipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The Recipient shall monitor <https://beta.sam.gov> on a weekly basis if it does not award the Contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(b) If the Recipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing Contractor (ordering instrument) rather than by publishing a solicitation, the Recipient must insert the appropriate DOL wage determination from <https://beta.sam.gov> into the ordering instrument.

(c) Recipients must review all Subcontracts subject to DB entered into by prime Contractors to verify that the prime Contractor has required its Subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a Recipient's Contract after the award of a Contract or the issuance of an ordering instrument if DOL determines that the Recipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the Contract or ordering instrument. If this occurs, the Recipient must either terminate the Contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the Contract or ordering instrument by change order. The Recipient's Contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

B. Additional requirements for Recipients that are not governmental entities

Recipients that are not governmental entities must submit their proposed DB wage determinations to the State Recipient for approval prior to including the wage determinations in

any solicitation, Contract or issuing task orders, work assignments, or similar instruments to existing Contractors, as well as ordering instruments unless subsequently directed otherwise by the State Recipient award official as identified below.

Recipients must obtain proposed wage determinations for specific localities at <https://beta.sam.gov> . After the Recipient obtains its proposed wage determination, it must submit the wage determination to the State Recipient award official at: Timothy Burns, P.E., Director, Engineering and Program Management, New York State Environmental Facilities Corporation, at 518-402-7396 or at the following email address: Timothy.Burns@efc.ny.gov.

C. Compliance Verification

(a) The Recipient must periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that Contractors or Subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The Recipient must use Standard Form 1445 or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The Recipient must establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by Contractors or Subcontractors and the duration of the Contract or Subcontract. Recipients must increase the frequency of the interviews if the initial interviews or other information indicates that there is a risk that the Contractor or Subcontractor is not complying with DB. Recipients must immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews must be conducted in confidence.

(c) The Recipient must periodically conduct spot checks of a representative sample of weekly payroll data to verify that Contractors or Subcontractors are paying the appropriate wage rates. The Recipient must establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by Contractors or Subcontractors and the duration of the Contract or Subcontract. At a minimum, the Recipient must spot check payroll data within two weeks of each Contractor or Subcontractor's submission of its initial payroll data and two weeks prior to the completion date the Contract or Subcontract. Recipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the Contractor or Subcontractor is not complying with DB. In addition, during the examinations the Recipient must verify evidence of fringe benefit plans and payments thereunder by Contractors and Subcontractors who claim credit for fringe benefit contributions.

(d) The Recipient must periodically review Contractors' and Subcontractors' use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that Contractors and Subcontractors are not using disproportionate numbers of laborers, trainees and apprentices. These reviews must be conducted in accordance with the schedules for spot checks and interviews described in Item (b) and (c) immediately above.

(e) Upon the request of EFC, the Recipient must provide EFC with a written certification indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies from Contractors/Subcontractors for the specified week.

(f) Recipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at <https://beta.sam.gov> .

II. Responsibilities of Contractors and Subcontractors

After execution of any SRF eligible Contracts, the Contractor and Subcontractor have the following responsibilities:

1. Post Davis Bacon Wage Poster and applicable federal, state, and local wages in a visible area at the construction site. This poster may be found on the EFC website under the

- Resource Library. (Refer to the attached required forms)
2. Make your employees available for wage interviews if necessary. Wage interviews must be conducted confidentially and using Labor Standard Interview Form (SF-1445). (Refer to the attached required forms)
 3. Use federal payroll form WH-347 and complete the certifications on the back. If another form is being used, inform the Recipient and obtain a determination that the form is equivalent to the federal form. (Refer to the attached required forms)
 4. Pay the higher of applicable prevailing federal, state, or local wages, including benefits (fringe & holidays), to each trade and overtime not less than one and one-half times the basic rate of pay for hours in excess of forty hours on Contracts in excess of \$100,000. The wage rates apply to Subcontractor trades as well.
 5. Maintain proof of apprentice and trainee ratios for both Contractor and Subcontractor and certifications onsite.
 6. Pay wages to your employees and your Subcontractors on a weekly basis. Ensure that your Subcontractors are paying their employees weekly.
 7. Ensure that the Subcontracts contain the Davis Bacon contract language, the applicable federal, state, or local wage determinations and equal employment opportunity language. This language is provided in the Part 2: Required Contract Language. Federal wage determinations are available at <https://beta.sam.gov>.
 8. Provide payroll forms and apprentice and trainee certifications to the Recipient for their records.
 9. Report potential waste, fraud and abuse violations to the EPA Davis Bacon Contact and DOL Wages and Hours District Office found on their website. <https://beta.sam.gov>. Any violations in payroll reporting or unpaid wages are subject to a daily monetary penalty.

SECTION 5 GUIDANCE FOR STATE AND/OR LOCAL PREVAILING WAGE REQUIREMENTS

Contractors and Subcontractors working under a public works contract are subject to labor standards under State Labor Law, including but not limited to prevailing wage requirements, and may be subject to additional labor requirements under applicable local laws. When preparing the bid for an SRF project, the Contractor, and any Subcontractors, must use the higher of the applicable prevailing federal, State, or local wage rates paid to each trade.

SECTION 6 GUIDANCE FOR REQUIREMENTS REGARDING SUSPENSION AND DEBARMENT

A list of debarred and suspended contractors, pursuant to 2 CFR Parts 180 and 1532, 29 CFR § 5.12, and Executive Order 11246 is available on the US Department of Labor's website at <https://www.sam.gov/portal/public/SAM>.

A list of contractors and subcontractors deemed ineligible to submit a bid on or be awarded a public contract or subcontract, pursuant to Article 8 of the State Labor Law, is available on the New York State Department of Labor's website at <http://labor.ny.gov/workerprotection/publicwork/PDFs/debarred.pdf>

A list of contractors deemed ineligible to submit a bid is maintained by Empire State Development's Division of Minority and Women's Business Development.

SECTION 7 GUIDANCE FOR RESTRICTIONS ON LOBBYING

Each Contractor and any Subcontractor that has a Contract or Subcontract exceeding \$100,000 shall provide to the Recipient a completed Certification Regarding Lobbying pursuant to 40 CFR Part 34 ("Lobbying Certification") in the form attached hereto as Attachment 9 consistent with the prescribed form provided in Appendix A to 40 CFR Part 34. The form provides a certification that the Contractor or Subcontractor will not expend appropriated federal funds to pay any person for influencing or attempting to influence an officer or employee of any agency, Member of Congress, officer or employee of Congress or any employee of any Member of Congress in accordance with the provisions of 40 CFR Part 34, and to maintain such certification for their own records.

SECTION 8 SUMMARY OF CONTRACTOR REQUIREMENTS FOR SRF-FUNDED PROJECTS

Forms can be found as attachments to this document or online at www.efc.ny.gov

Forms should be submitted electronically via email or through EFC's [dropbox](#)

To be submitted with this bid:

- ☐ Lobbying Certification
- ☐ AIS Contractor's Certification

**Refer to Part 3
Guidance Section**
Section 7
Section 3

To be submitted prior to or upon Contract award:

- ☐ Executed Contracts, Subcontracts, agreements, and purchase orders
- ☐ MWBE Utilization Plan and/or Waiver Request

Section 1

Tasks for construction start:

- ☐ Ensure that all Subcontracts contain Part 2: Required Contract Language
- ☐ Post EEO Poster
- ☐ Pay the higher of prevailing federal, state, or local wages including benefits
- ☐ Post Davis Bacon Wage Poster AND Wage Rates
- ☐ Use Federal Payroll Form (WH-347)
- ☐ Obtain apprentice and trainee certifications
- ☐ Obtain AIS Manufacturer's Certifications for all iron & steel products

Section 1

Section 4

Section 4

Section 4

Section 4

Section 3

Ongoing documentation & tasks:

- ☐ Submit EEO-1 Report, online
- ☐ Submit Monthly MWBE Reports to MBO
- ☐ Maintain weekly certified payrolls for all Prime & Subcontractors
- ☐ Maintain proof of payments for MWBE Subcontractors
- ☐ Maintain AIS Manufacturer's Certifications

Section 1

Section 1

Section 4

Section 1

Section 3

ATTACHMENTS (Required Forms)

Attachment 1 – Monthly MWBE Contractor Compliance Report

New York State Environmental Facilities Corporation
Monthly Minority- & Women- Owned Business Enterprise (MWBE) Contractor Compliance Report
("Monthly MWBE-SDVOB Report")

Instructions:

- Contractors are to complete the report in Word version and email to the Recipient's Minority Business Officer ("MBO") on a monthly basis.
- If you require additional pages, you may find them on EFC's website at www.efc.ny.gov.
- All** MWBE Subcontractors for this contract **MUST** be listed on the form regardless of whether they were paid this month.
- Please save Report as "*MReport – (Project No). – (Municipality) – (Firm Name) – (Date)*" and send the Word version of this document.
- Proofs of payment in the amounts shown below must be transmitted to the MBO with the report.

Municipality:		County:		Contract ID:		Month:	Year:	
Project No.:		GIGP/EPG No:		Registration No. (NYC only):				
Prime Contractor/Service Provider:				Award Date:		Start Date:		
Date all MWBE / SDVOB subs paid in full:								
Signature of Contractor: <input type="checkbox"/> I certify that the information submitted herein is true, accurate and complete to the best of my knowledge and belief. Date:								
Last Month's Contract Amt: \$ Revised Contract Amt: \$ Change Order Amt: \$	MWBE Eligible Amt: \$ (Goals are applied to this amount and includes eligible change orders, amendments & waivers)		EFC MWBE Goals			Total Paid to Prime		
			MBE: % WBE: % Total: %	MBE Amt: \$ WBE Amt: \$ Total Amt: \$		Total Paid this Month: \$ Total Paid to Date: \$		
			EFC SDVOB Goals					
	SDVOB Eligible Amount \$		SDVOB 6 %	SDVOB Amt: \$				
NYS Certified MWBE / SDVOB Contractor & Subcontractor		Please Specify Any Revisions this Month.		Subcontractor Total Amount		Payments this Month	Previous Payments	Total Payments Made to Date
				Original Revised				
Name: Fed. Employer ID#: Choose all that apply: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: MWBE Only - Select Only One: <input type="checkbox"/> Broker ____% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A		<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED						
Name: Fed. Employer ID#: Choose all that apply: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: MWBE Only - Select Only One: <input type="checkbox"/> Broker ____% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A		<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED						

New York State Environmental Facilities Corporation
Monthly Minority- & Women- Owned Business Enterprise (MWBE) Contractor Compliance Report
("Monthly MWBE-SDVOB Report")

NYS Certified M/WBE / SDVOB Contractor & Subcontractor	Please Specify Any Revisions this Month.	Subcontractor Contract Amount		Payments this Month	Previous Payments	Total Payments Made to Date
		Original	Revised			
Name: Fed. Employer ID#: <u>Choose all that apply:</u> <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: <u>MWBE Only - Select Only One:</u> <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED					
Name: Fed. Employer ID#: <u>Choose all that apply:</u> <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: <u>MWBE Only - Select Only One:</u> <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED					
Name: Fed. Employer ID#: <u>Choose all that apply:</u> <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: <u>MWBE Only - Select Only One:</u> <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED					
Name: Fed. Employer ID#: <u>Choose all that apply:</u> <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: <u>MWBE Only - Select Only One:</u> <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED					
Name: Fed. Employer ID#: <u>Choose all that apply:</u> <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: <u>MWBE Only - Select Only One:</u> <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED					

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NYS Certified M/WBE / SDVOB Contractor & Subcontractor	Please Specify Any Revisions this Month.	Subcontractor Total Amount		Payments this Month	Previous Payments	Total Payments Made to Date
		Original	Revised			
Name: Fed. Employer ID#: <u>Choose all that apply:</u> <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: <u>MWBE Only - Select Only One:</u> <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED					
Name: Fed. Employer ID#: <u>Choose all that apply:</u> <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: <u>MWBE Only - Select Only One:</u> <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED					
Name: Fed. Employer ID#: <u>Choose all that apply:</u> <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: <u>MWBE Only - Select Only One:</u> <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED					
Name: Fed. Employer ID#: <u>Choose all that apply:</u> <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: <u>MWBE Only - Select Only One:</u> <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED					
Name: Fed. Employer ID#: <u>Choose all that apply:</u> <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: <u>MWBE Only - Select Only One:</u> <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED					

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("Monthly MWBE-SDVOB Report")

NYS Certified M/WBE / SDVOB Contractor & Subcontractor	Please Specify Any Revisions this Month.	Subcontractor Total Amount		Payments this Month	Previous Payments	Total Payments Made to Date
		Original	Revised			
Name: Fed. Employer ID#: Choose all that apply: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: MWBE Only - Select Only One: <input type="checkbox"/> Broker __% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED					
Name: Fed. Employer ID#: Choose all that apply: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: MWBE Only - Select Only One: <input type="checkbox"/> Broker __% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED					
Name: Fed. Employer ID#: Choose all that apply: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: MWBE Only - Select Only One: <input type="checkbox"/> Broker __% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED					
Name: Fed. Employer ID#: Choose all that apply: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> SDVOB <input type="checkbox"/> DSDVBD Control #: MWBE Only - Select Only One: <input type="checkbox"/> Broker __% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	<input type="checkbox"/> Subcontractor is REMOVED <input type="checkbox"/> NEW Subcontractor <input type="checkbox"/> Subcontract Amt. INCREASED <input type="checkbox"/> Subcontract Amt. DECREASED					
Additional Pages can be found at www.efc.ny.gov TOTAL						
Please explain any revisions and note the scope of work that new subcontractors will be providing. Please note that change orders over \$25K may require that good faith efforts be made to obtain additional participation:						

Attachment 2 – MWBE Utilization Plan

**NYS Environmental Facilities Corporation
Minority- & Women- Owned Business Enterprise (MWBE) Utilization Plan**

Instructions for Contractors & Service Providers:

Contractors and Service Providers must complete Sections 2 and 3. **Submit the completed, signed (electronic signature box checked and dated) form in Microsoft Word format to the Recipient's designated Minority Business Officer (MBO) no later than the date of contract execution.** Incomplete forms will be found deficient. If more than 10 subcontractors are used, additional pages for Section 3 can be found on EFC's website.

If the prime contract is being performed by the parties to a Joint Venture, Teaming Agreement, or Mentor-Protégé Agreement that includes a certified MWBE, please contact EFC for assistance.

MWBE firms must be certified by the NYS Empire State Development Corporation (ESD) in order to be counted towards satisfaction of MWBE participation goals. The utilization of certified MWBEs for non-commercially useful functions may not be counted towards utilization of certified MWBEs in the Utilization Plan. Please note whether a firm is serving as a broker or supplier on the contract. A broker is denoted by NAICS code 425120 and is designated as a broker in ESD's MWBE Directory. A supplier is denoted by a NAICS code beginning with 423 or 424, or a NIGP code that does not begin with the number 9, and is designated as a supplier in ESD's MWBE Directory. If a firm is serving as a broker, please additionally provide the percentage of the broker's commission on the contract.

See the Bid Packet at www.efc.ny.gov or consult your designated MBO for further guidance.

Instructions for Minority Business Officers (MBO):

The MBO must complete Section 1. The MBO may designate an Authorized Representative to complete and submit quarterly payment reports on its behalf, and, if so designated, the MBO's Authorized Representative must also complete Section 1. The Authorized Representative may only submit quarterly payment reports on behalf of the MBO and may not submit any other required forms or reports for the MBO. The MBO must complete Section 1 even if designating an Authorized Representative. **Submit the completed, signed (electronic signature box checked and dated) form in Microsoft Word format via e-mail to your EFC MWBE Representative.**

The subject heading of the e-mail to the EFC MWBE Representative should follow the format "UP, Project Number, Contractor." EFC will review the Utilization Plan and notify the MBO via e-mail of its acceptance or denial.

**NYS Environmental Facilities Corporation
Minority- & Women- Owned Business Enterprise (MWBE) Utilization Plan**

SECTION 1: MUNICIPAL INFORMATION			
Recipient/Municipality:		County:	
Project No.:	GIGP/EPG No.:	Contract ID:	Registration No. (NYC only):
Minority Business Officer:		Email:	Phone #:
Address of MBO:			
Electronic Signature of MBO: <input type="checkbox"/> I certify that the information submitted herein is true, accurate and complete to the best of my knowledge and belief.			Date:
<i>Complete if applicable:</i>			
Authorized Representative:		Title:	
Authorized Rep. Company:		Email:	Phone #:
Electronic Signature of Authorized Rep.: <input type="checkbox"/> I certify that the information submitted herein is true, accurate and complete to the best of my knowledge and belief.			Date:

SECTION 2: PRIME CONTRACTOR / SERVICE PROVIDER INFORMATION				
Firm Name:			Contract Type: <input type="checkbox"/> Construction <input type="checkbox"/> Other Services	
Prime Firm is Certified as: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> N/A <input type="checkbox"/> Other: Please repeat information in the Utilization Plan below (Section 3). If dual certified, you must select either MBE or WBE.				
Address:		Phone #:		Fed. Employer ID #:
Description of Work:				
Award Date:	Start Date:	Completion Date:	MWBE GOAL Total	PROPOSED MWBE Participation
Total Contract Amount: \$ MWBE Eligible Contract Amount: \$ (MWBE Goals are applied to this amount and includes all change orders, amendments, & waivers)			MBE: % \$	MBE: % \$
			WBE: % \$	WBE: % \$
			Total: % \$	Total: % \$

**NYS Environmental Facilities Corporation
Minority- & Women- Owned Business Enterprise (MWBE) Utilization Plan**

SECTION 3: MWBE SUBCONTRACTOR INFORMATION				
This Submittal is:	<input type="checkbox"/> The First/Original Utilization Plan <input type="checkbox"/> Revised Utilization Plan #:			
NYS Certified M/WBE Subcontractor Info		Contract Amount:		For EFC Use:
		MBE (\$)	WBE (\$)	
Name:	Fed. Employer ID#:			
Address:	Phone #:			
Scope of Work:	Email:			
Select Only One: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> Other:	Start Date:			
Select Only One: <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	Completion Date:			
Full Contract Amount: \$				
Name:	Fed. Employer ID#:			
Address:	Phone #:			
Scope of Work:	Email:			
Select Only One: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> Other:	Start Date:			
Select Only One: <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	Completion Date:			
Full Contract Amount: \$				
Name:	Fed. Employer ID#:			
Address:	Phone #:			
Scope of Work:	Email:			
Select Only One: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> Other:	Start Date:			
Select Only One: <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	Completion Date:			
Full Contract Amount: \$				
Name:	Fed. Employer ID#:			
Address:	Phone #:			
Scope of Work:	Email:			
Select Only One: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> Other:	Start Date:			
Select Only One: <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	Completion Date:			
Full Contract Amount: \$				

**NYS Environmental Facilities Corporation
Minority- & Women- Owned Business Enterprise (MWBE) Utilization Plan**

SECTION 3: M/WBE SUBCONTRACTOR INFORMATION continued				
Name:	Fed. Employer ID#:			
Address:	Phone #:			
Scope of Work:	Email:			
Select Only One: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> Other:	Start Date:			
Select Only One: <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	Completion Date:			
Full Contract Amount: \$				
Name:	Fed. Employer ID#:			
Address:	Phone #:			
Scope of Work:	Email:			
Select Only One: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> Other:	Start Date:			
Select Only One: <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	Completion Date:			
Full Contract Amount: \$				
Name:	Fed. Employer ID#:			
Address:	Phone #:			
Scope of Work:	Email:			
Select Only One: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> Other:	Start Date:			
Select Only One: <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	Completion Date:			
Full Contract Amount: \$				
Name:	Fed. Employer ID#:			
Address:	Phone #:			
Scope of Work:	Email:			
Select Only One: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> Other:	Start Date:			
Select Only One: <input type="checkbox"/> Broker ___% <input type="checkbox"/> Supplier <input type="checkbox"/> N/A	Completion Date:			
Full Contract Amount: \$				
SIGNATURE				
Electronic Signature of Contractor: <input type="checkbox"/> I certify that the information submitted herein is true, accurate and complete to the best of my knowledge and that all MWBE subcontractors will perform a commercially useful function. Name (Please Type):				Date:

Attachment 3 – MWBE Waiver Request

**New York State Environmental Facilities Corporation
Minority & Women Owned Business Enterprise (MWBE) Waiver Request Form**

Instructions for Contractors & Service Providers:

Contractors and Service Providers must complete Sections 2, 3, and 4. **Submit the completed, signed (electronic signature box checked and dated) form in Microsoft Word format to the Recipient's designated Minority Business Officer (MBO).** Incomplete forms will be found deficient.

See the Bid Packet at www.efc.ny.gov or consult your designated MBO for further guidance.

Instructions for Minority Business Officers (MBO):

The MBO must complete Section 1. **Submit the completed, signed (electronic signature box checked and dated) form in Microsoft Word format via e-mail to your EFC MWBE Representative.** The subject heading of the e-mail to the EFC MWBE Representative should follow the format "Waiver Request, Project Number, Contractor." EFC will review and notify the MBO via e-mail of its acceptance or denial.

If a partial MWBE waiver is requested, an MWBE Utilization Plan must also be submitted for the amount of proposed MWBE participation.

SECTION 1: MUNICIPAL INFORMATION				
Recipient/Municipality:			County:	
Project No.:	GIGP/EPG No.:	Contract ID:	Registration No. (NYC only):	
Minority Business Officer (MBO):		Email:	Phone #:	
Address of MBO:				
Signature of MBO: <input type="checkbox"/> I certify that the information submitted herein is true, accurate and complete to the best of my knowledge and belief.				Date:

SECTION 2: PRIME CONTRACTOR / SERVICE PROVIDER INFORMATION				
Firm Name:			Contract Type: <input type="checkbox"/> Construction <input type="checkbox"/> Other Services	
Prime Firm is Certified as: <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> N/A <input type="checkbox"/> Other:				
Address:		Phone #:	Fed. Employer ID #:	
Contact Information of Firm Representative Authorized to Discuss Waiver Request:				
Name:	Title:	Phone #:	E-mail:	
Description of Work:			EFC MWBE GOAL Total	
Award Date:	Start Date:	Completion Date:	MBE:	% \$
Total Contract Amount: \$ MWBE Eligible Contract Amount: \$ (MWBE Goals are applied to this amount and includes all change orders, amendments, & waivers)			WBE:	% \$
			Total:	% \$

**New York State Environmental Facilities Corporation
Minority & Women Owned Business Enterprise (MWBE) Waiver Request Form**

SECTION 3: TYPE OF MWBE WAIVER REQUESTED

1. ☐ **Full Waiver** (No MWBE participation)
2. ☐ **Partial Waiver** (Less than the MWBE goals; indicate below the proposed MWBE participation)

PROPOSED MWBE Participation

MBE: % \$

WBE: % \$

Total: % \$

3. ☐ **Specialty Equipment/Services Exclusion** (Must be of SIGNIFICANT cost - list of equipment and cost must be attached in addition to the supporting documentation outlined below)

SECTION 4: SUPPORTING DOCUMENTATION

To be considered, the Request for Waiver Form must be accompanied by the documentation requested in items 1 – 9, as listed below. If a Specialty Equipment Exclusion is requested, it must be accompanied by the documentation requested in items 1 - 13. If a Specialty Services Exclusion is requested, it must be accompanied by the items requested in items 1 – 9 and item 14. Copies of the following information and all relevant supporting documentation must be submitted along with the request. Please contact EFC for assistance, including sample documentation.

1. A letter of explanation setting forth your basis for requesting a partial or total waiver and detailing the good faith efforts that were made.
2. Copies of advertisements in any general circulation, trade association, and minority- and women-oriented publications in which you solicited MWBEs for the purposes of complying with your participation goals, with the dates of publication.
3. Screenshots of search results (by business description or commodity code) from Empire State Development Corporation's (ESD) MWBE Directory of all certified MWBEs that were solicited for purposes of complying with your MWBE participation goals.
4. Copies of faxes, letters, or e-mails sent to MWBE firms to solicit participation and their responses.
5. A log of solicitation results, consisting of the list of MWBE firms solicited for the contract and the outcome of the solicitations. The log should be broken out into separate areas for each task that is solicited (e.g., trucking, materials, electricians) and clearly provide a rationale for firms included on the completed Utilization Plan as well as for those not chosen. The log should show: that each MWBE firm was contacted twice by two different methods (e.g., fax and phone); who was spoken to; what was said; and the final outcome of the solicitation.
6. A description of any contract documents, plans, or specifications made available to MWBEs for purposes of soliciting their bids and the date and manner in which these documents were made available. Specifically, include information on the scope of work in the contract and a breakout of tasks or equipment, such as

**New York State Environmental Facilities Corporation
Minority & Women Owned Business Enterprise (MWBE) Waiver Request Form**

a schedule of values for a construction contract or a proposal or excerpt from a professional services agreement.

7. Documentation of any negotiations between you, the Contractor, and the MWBEs undertaken for purposes of complying with your MWBE participation goals.
8. Any other information you deem relevant which may help us in evaluating your request for a waiver. Examples may include sign-in sheets from any pre-bid meetings where MWBE firms were invited, attendance at MWBE forums, etc.
9. EFC and the MBO reserve the right to request additional information and/or documentation.

Additional Documentation for Requests for Specialty Equipment Exclusions:

10. Copies of the appropriate pages of the technical specification related to the equipment showing the choices for manufacturers or other information that limits the choice of vendor.
11. Letter, e-mail or screenshot of website from the manufacturer listing their distributors in NYS and the locations.
12. Screenshots of ESD's MWBE Directory searches for the manufacturer and distributor showing that they are not found in the Directory.
13. An invoice or executed purchase order showing the value of the equipment.

Additional Documentation for Requests for Specialty Service Exclusions:

14. A letter of explanation containing information about the scope of work and why no MWBE firms could be subcontracted to provide that service.

Note: Unless a Total Waiver has been granted, Firms will be required to submit all reports and documents pursuant to the provisions set forth in the procurement and/or contract, as deemed appropriate by EFC, to determine MWBE compliance. In cases where EFC accepts a full or partial waiver of MWBE participation goals, the waiver request will be posted to EFC's website.

SIGNATURE

Electronic Signature of Contractor:

☐ I certify that the information submitted herein is true, accurate and complete to the best of my knowledge.

Name: (Please Type):

Date:

Attachment 4 – Lobbying Certification



Environmental Facilities Corporation

**New York State Environmental Facilities Corporation
CERTIFICATION REGARDING LOBBYING
FOR
CONTRACTS, GRANTS, LOANS, AND
COOPERATIVE AGREEMENTS
40 CFR Part 34**

SRF Project No.: _____

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Signature: _____

Name: _____

Title: _____

Company Name: _____

Date: _____

Contract ID: _____

Attachment 5 – AIS Contractor’s Certification



Environmental Facilities Corporation

AIS CONTRACTOR CERTIFICATION
FOR CONSTRUCTION CONTRACTS PAID FOR WITH FUNDS FROM
THE NYS CLEAN WATER STATE REVOLVING FUND OR
THE NYS DRINKING WATER STATE REVOLVING FUND VIA THE
NYS ENVIRONMENTAL FACILITIES CORPORATION

Project Title: _____

Contractor's Name: _____

Contract ID: _____

SRF Project #: _____

SRF Recipient Name: _____

I certify that the iron and steel products that will be permanently incorporated into the public water system or wastewater treatment works project under this construction contract will have been produced in the United States, in accordance with the requirements of the US Environmental Protection Agency. I will also develop and maintain at the project location the necessary documentation to demonstrate that the iron and steel products incorporated into the project were produced in the United States, and make such documentation available to The NYS Environmental Facilities Corporation or their authorized representatives, upon request.

Signature: _____

Name (print): _____

Title: _____

Date: _____

Attachment 6 – AIS Manufacturer’s Certification

1. The following information is provided as a manufacturer's sample letter of **step** certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxx

2. Xxx

3. Xxx

Such process took place at the following location: _____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

[Signed by company representative]

2. The following information is provided as a manufacturer's sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxx

2. Xxx

3. Xxx

Such process took place at the following location: _____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

[Signed by company representative]

Attachment 7 – Federal Payroll Form (WH-347)

NAME OF CONTRACTOR		OR SUBCONTRACTOR		ADDRESS		OMB No.: 1235-0008 Expires: 02/28/2018	
--------------------	--	------------------	--	---------	--	---	--

PAYROLL NO.		FOR WEEK ENDING		PROJECT AND LOCATION		PROJECT OR CONTRACT NO.	
-------------	--	-----------------	--	----------------------	--	-------------------------	--

(1) NAME AND INDIVIDUAL IDENTIFYING NUMBER (e.g., LAST FOUR DIGITS OF SOCIAL SECURITY NUMBER) OF WORKER	(2) NO. OF WITHHOLDING EXEMPTIONS	(3) WORK CLASSIFICATION	OT. OR ST.	(4) DAY AND DATE							(5) TOTAL HOURS	(6) RATE OF PAY	(7) GROSS AMOUNT EARNED	(8) DEDUCTIONS					(9) NET WAGES PAID FOR WEEK		
				HOURS WORKED EACH DAY										FICA	WITH- HOLDING TAX			OTHER		TOTAL DEDUCTIONS	
			O																		
			S																		
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While completion of Form WH-347 is optional, it is mandatory for covered contractors and subcontractors performing work on Federally financed or assisted construction contracts to respond to the information collection contained in 29 C.F.R. §§ 3.3, 5.5(a). The Copeland Act (40 U.S.C. § 3145) contractors and subcontractors performing work on Federally financed or assisted construction contracts to "furnish weekly a statement with respect to the wages paid each employee during the preceding week." U.S. Department of Labor (DOL) regulations at 29 C.F.R. § 5.5(a)(3)(ii) require contractors to submit weekly a copy of all payrolls to the Federal agency contracting for or financing the construction project, accompanied by a signed "Statement of Compliance" indicating that the payrolls are correct and complete and that each laborer or mechanic has been paid not less than the proper Davis-Bacon prevailing wage rate for the work performed. DOL and federal contracting agencies receiving this information review the information to determine that employees have received legally required wages and fringe benefits.

Date _____

I, _____
(Name of Signatory Party) (Title)

do hereby state:

(1) That I pay or supervise the payment of the persons employed by _____ on the _____
(Contractor or Subcontractor)
_____ ; that during the payroll period commencing on the _____
(Building or Work)
_____ day of _____, _____, and ending the _____ day of _____, _____,
all persons employed on said project have been paid the full weekly wages earned, that no rebates have
been or will be made either directly or indirectly to or on behalf of said
_____ from the full
(Contractor or Subcontractor)
weekly wages earned by any person and that no deductions have been made either directly or indirectly
from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part
3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948,
63 Stat. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145), and described below:

(2) That any payrolls otherwise under this contract required to be submitted for the above period are
correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the
applicable wage rates contained in any wage determination incorporated into the contract; that the classifications
set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship
program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and
Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered
with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:
(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

- in addition to the basic hourly wage rates paid to each laborer or mechanic listed in
the above referenced payroll, payments of fringe benefits as listed in the contract
have been or will be made to appropriate programs for the benefit of such employees,
except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

- Each laborer or mechanic listed in the above referenced payroll has been paid,
as indicated on the payroll, an amount not less than the sum of the applicable
basic hourly wage rate plus the amount of the required fringe benefits as listed
in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARKS:

NAME AND TITLE	SIGNATURE

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR
SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE
31 OF THE UNITED STATES CODE.

Attachment 8 – EEO Poster

**Employee Contact
For EEO Compliance:**

Equal Employment Opportunity is **THE LAW**

Private Employers, State and Local Governments, Educational Institutions, Employment Agencies and Labor Organizations

Applicants to and employees of most private employers, state and local governments, educational institutions, employment agencies and labor organizations are protected under Federal law from discrimination on the following bases:

RACE, COLOR, RELIGION, SEX, NATIONAL ORIGIN

Title VII of the Civil Rights Act of 1964, as amended, protects applicants and employees from discrimination in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment, on the basis of race, color, religion, sex (including pregnancy), or national origin. Religious discrimination includes failing to reasonably accommodate an employee's religious practices where the accommodation does not impose undue hardship.

DISABILITY

Title I and Title V of the Americans with Disabilities Act of 1990, as amended, protect qualified individuals from discrimination on the basis of disability in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment. Disability discrimination includes not making reasonable accommodation to the known physical or mental limitations of an otherwise qualified individual with a disability who is an applicant or employee, barring undue hardship.

AGE

The Age Discrimination in Employment Act of 1967, as amended, protects applicants and employees 40 years of age or older from discrimination based on age in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment.

SEX (WAGES)

In addition to sex discrimination prohibited by Title VII of the Civil Rights Act, as amended, the Equal Pay Act of 1963, as amended, prohibits sex discrimination in the payment of wages to women and men performing substantially equal work, in jobs that require equal skill, effort, and responsibility, under similar working conditions, in the same establishment.

GENETICS

Title II of the Genetic Information Nondiscrimination Act of 2008 protects applicants and employees from discrimination based on genetic information in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment. GINA also restricts employers' acquisition of genetic information and strictly limits disclosure of genetic information. Genetic information includes information about genetic tests of applicants, employees, or their family members; the manifestation of diseases or disorders in family members (family medical history); and requests for or receipt of genetic services by applicants, employees, or their family members.

RETALIATION

All of these Federal laws prohibit covered entities from retaliating against a person who files a charge of discrimination, participates in a discrimination proceeding, or otherwise opposes an unlawful employment practice.

WHAT TO DO IF YOU BELIEVE DISCRIMINATION HAS OCCURRED

There are strict time limits for filing charges of employment discrimination. To preserve the ability of EEOC to act on your behalf and to protect your right to file a private lawsuit, should you ultimately need to, you should contact EEOC promptly when discrimination is suspected:

The U.S. Equal Employment Opportunity Commission (EEOC), 1-800-669-4000 (toll-free) or 1-800-669-6820 (toll-free TTY number for individuals with hearing impairments). EEOC field office information is available at www.eeoc.gov or in most telephone directories in the U.S. Government or Federal Government section. Additional information about EEOC, including information about charge filing, is available at www.eeoc.gov.

Employers Holding Federal Contracts or Subcontracts

Applicants to and employees of companies with a Federal government contract or subcontract are protected under Federal law from discrimination on the following bases:

RACE, COLOR, RELIGION, SEX, NATIONAL ORIGIN

Executive Order 11246, as amended, prohibits job discrimination on the basis of race, color, religion, sex or national origin, and requires affirmative action to ensure equality of opportunity in all aspects of employment.

INDIVIDUALS WITH DISABILITIES

Section 503 of the Rehabilitation Act of 1973, as amended, protects qualified individuals from discrimination on the basis of disability in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment. Disability discrimination includes not making reasonable accommodation to the known physical or mental limitations of an otherwise qualified individual with a disability who is an applicant or employee, barring undue hardship. Section 503 also requires that Federal contractors take affirmative action to employ and advance in employment qualified individuals with disabilities at all levels of employment, including the executive level.

DISABLED, RECENTLY SEPARATED, OTHER PROTECTED, AND ARMED FORCES SERVICE MEDAL VETERANS

The Vietnam Era Veterans' Readjustment Assistance Act of 1974, as amended, 38 U.S.C. 4212, prohibits job discrimination and requires affirmative action to employ and advance in employment disabled veterans, recently separated veterans (within

three years of discharge or release from active duty), other protected veterans (veterans who served during a war or in a campaign or expedition for which a campaign badge has been authorized), and Armed Forces service medal veterans (veterans who, while on active duty, participated in a U.S. military operation for which an Armed Forces service medal was awarded).

RETALIATION

Retaliation is prohibited against a person who files a complaint of discrimination, participates in an OFCCP proceeding, or otherwise opposes discrimination under these Federal laws.

Any person who believes a contractor has violated its nondiscrimination or affirmative action obligations under the authorities above should contact immediately:

The Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, 200 Constitution Avenue, N.W., Washington, D.C. 20210, 1-800-397-6251 (toll-free) or (202) 693-1337 (TTY). OFCCP may also be contacted by e-mail at OFCCP-Public@dol.gov, or by calling an OFCCP regional or district office, listed in most telephone directories under U.S. Government, Department of Labor.

Programs or Activities Receiving Federal Financial Assistance

RACE, COLOR, NATIONAL ORIGIN, SEX

In addition to the protections of Title VII of the Civil Rights Act of 1964, as amended, Title VI of the Civil Rights Act of 1964, as amended, prohibits discrimination on the basis of race, color or national origin in programs or activities receiving Federal financial assistance. Employment discrimination is covered by Title VI if the primary objective of the financial assistance is provision of employment, or where employment discrimination causes or may cause discrimination in providing services under such programs. Title IX of the Education Amendments of 1972 prohibits employment discrimination on the basis of sex in educational programs or activities which receive Federal financial assistance.

INDIVIDUALS WITH DISABILITIES

Section 504 of the Rehabilitation Act of 1973, as amended, prohibits employment discrimination on the basis of disability in any program or activity which receives Federal financial assistance. Discrimination is prohibited in all aspects of employment against persons with disabilities who, with or without reasonable accommodation, can perform the essential functions of the job.

If you believe you have been discriminated against in a program of any institution which receives Federal financial assistance, you should immediately contact the Federal agency providing such assistance.

APPENDIX G

ARC Flash Study

ARC FLASH STUDY
FOR THE
ROCKLAND COUNTY SEWER DISTRICT No. 1
WASTE WATER TREATMENT PLANT
ORANGEBURG, NEW YORK

Prepared Advanced Testing Systems, Inc.
by: 15 Trowbridge Drive
Bethel, CT 06801

Date: June 25, 2020

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SUMMARY

Advanced Testing Systems, Inc. (ATS) has performed an arc flash hazard study covering the electric distribution system at the Rockland County Waste Water Treatment Plant. This study calculates short circuit current, performs device evaluation and evaluates coordination for a portion of the facility impacted by the installation of distributed generation. Additionally, an Arc Flash Risk Assessment has been performed to determine the incident energy level at the devices modeled in this study. Fault calculations have been performed as they are required to evaluate equipment ratings, coordination and arc flash hazards. The coordination of protective devices has been reviewed and evaluated and setting recommendations are provided to maximize coordination.

Fault current calculations have been performed to determine the expected fault current. Based on these calculations, the electrical equipment can be subjected to a maximum fault current of 4.4 kA on the 13.2 kV system and of 43.9 kA on the 480V system. Appendix A includes a summary of the fault current at the various locations and the details of the system model.

All protective devices evaluated in this study have the required interrupting rating to meet the maximum expected fault current as determined in this study. A complete device evaluation summary can be found in Appendix B.

Recommended protective device settings are summarized in Appendix C of this report. Where adjustable settings are available on low voltage protective devices, these settings have been chosen to provide the optimal compromise between component protection and system selectivity based on the equipment identified. (Recommended settings changes have been highlighted). It is Recommended these settings be applied. Coordination between the various protective devices is graphically illustrated in the plots included in Appendix D.

The coordination between the medium voltage overcurrent relays has been evaluated so protective device setting recommendations could be provided. No specific settings changes have been recommended for medium voltage relaying; however, there are some conditions where coordination could be improved and mis-coordination has been identified in the Specific Power System analysis section of this report.

At some locations, the operation of two protective devices may cause the loss of the same loads; however, the operation of the upstream device may lead to confusion during fault locating. In other instances, the lack of coordination may cause the unnecessary disconnection of other loads that should not have been affected. This potential loss of load unnecessarily should be addressed. These conditions are further described in the analysis section of this report.

Incident energy levels have been calculated for the equipment at the facility using the recommended protective device settings. Should these settings not be applied, the results of this analysis may not be valid. The tables in Appendix E show results of the Arc Flash Evaluation Report. It should be noted, arc flash calculations using IEEE 1584 are only performed on three phase system. For each of the device locations listed, the report provides the available fault current for a bolted and arcing fault, arc flash boundary, working distance, and required personal protective equipment (PPE). To minimize the available arc flash energy, it is recommended protective devices be set to clear a fault as quickly as possible, which is in contrast to allowing for some time delay so coordination can be maintained. To serve these two somewhat contradictory concepts, protective device setting recommendations in this facility attempt to limit arc flash energy to 8 cal/cm². An attempt has been made to keep the Personal Protective Equipment (PPE) to category 2; however, this is not possible at all locations. Labels should be applied to equipment only after all devices have been set as identified. Any changes may impact the results of this study. Two scenarios have been developed to determine the maximum arc flash hazard. In Scenario 1, typical operating conditions have been modeled. In Scenario 2, Substations 2 and 4 are operated on backup generator as protective devices may operate slower due to decrease levels of fault current.

PURPOSE

The purpose of this power system study was to determine the maximum available fault current at the various electrical buses in the facility, evaluate the coordination between the various protective devices and review the application of the protective equipment. Incident energy exposure level at the workers distance from the energized electrical equipment installed throughout the facility has been calculated in accordance with IEEE 1584 standard so the arc flash boundary can be determined and proper procedures can be applied should work on energized equipment be required. This study has been completed in accordance with the recommendations of the National Fire Protection Association (NFPA) 70E, "Standard for Electrical Safety in the Workplace®", which was developed to aid in fulfilling OSHA requirements.

With the model of the electric system, as determined by available documentation, a comprehensive fault analysis program was used to determine the expected fault duty at the buses modeled in the report. These fault levels are used to ensure specific electrical equipment included in the study will safely interrupt the maximum expected fault. Protective device used in an electric system should be applied within the limits of the values calculated in this study and in accordance with the manufacturer's instructions and listing requirements.

Also, protective device settings have been reviewed and recommendations have been provided where appropriate so coordination can be maximized. Proper

protective device settings will limit the effect an electrical fault will have on the electric system. In a radial system, only the device closest to the fault should operate to isolate the fault from the remainder of the network; and upstream protective devices will serve as backup. Where multiple sources supply a system, coordination of the various protective devices may be affected due to the operating conditions and must be considered in their application.

Arcing faults can cause extreme damage to equipment and severe injury to personnel. NFPA 70E requires an Arc Flash Risk Assessment be performed if work is to be performed on or around energized electrical equipment operating at 50 volts or greater. An electrical hazard analysis should include both a shock hazard analysis and an arc flash hazard analysis. This study includes both a shock and arc flash risk assessment. Additionally, NFPA 70E outlines methods and procedures to minimize the risk of personal injury when working on or near energized electrical equipment. The arc flash risk assessment must be completed so that the appropriate personal protective equipment can be used when qualified personnel are performing work on energized equipment, and to identify the limited approach or arc flash boundary to protect unqualified persons.

DEVELOPMENT OF THE SYSTEM MODEL

In order to determine the fault duty at various electrical buses throughout the facility, evaluate protective devices, review coordination between various protective devices and perform an arc flash risk assessment, it is necessary to model the electric system. Using SKM Power Tools, "DAPPER" computer program, the electric system was modeled to determine the available short circuit current. *"DAPPER" is a software program used to perform traditional fault analysis of Three-Phase Power Systems.* The fault duties of the electric distribution system have been calculated in accordance with applicable ANSI and IEEE standards, particularly C37.13 and IEEE Standard 242.

The electrical system was modeled based on field survey and the following drawings:

Drawing Name	Dwg. No.	Rev	Date
Rockland County Contract CIP 2008-02 Drawings	E-103	1	December 2011
Rockland County Contract CIP 2008-02 Drawings	E-101	1	December 2011

Short circuit current available at the 69 kV O&R Feeder kV has been modeled as 5,000 A, with an X/R ratio of 6.0. Short circuit current available at the 13.2 kV alternate O&R Feeder kV has been modeled as 5,696 A, with an X/R ratio of 6.0. This data was taken from the previous ATS study performed in 2009.

Electrical equipment such as transformers and generators are modeled based on available data. Where impedances are not available, typical impedance values are used to represent this equipment. Switchgear, switchboard and panelboards are modeled as buses and the associated protective devices determine short circuit rating, unless otherwise noted.

Unavailable data was estimated based on the NEC, ANSI/IEEE standards and sound engineering principals. Specifically, motor contributions to system faults were based on ANSI C37.13-1990, section 10.1.4.2:

“The part of symmetrical short circuit current due to motor contributions should be calculated based as follows: Induction and synchronous motors connected to the bus, act as generators, and at 1/2 cycle after the short-circuit occurs, contribute current that may be calculated from the sub-transient reactance of the motor plus the interconnecting cable. Where the impedances for the installation are not known, it should be assumed that the induction motors contribute 3.6 times their full load current and synchronous motors 4.8 times their full load current.

For the purpose of developing this study, motors were modeled in accordance with the ANSI C37.13 standard. A lumped motor equivalent circuit was included based on the service size. Standard manufacturer data was used to determine the motor sub-transient impedance, or the ANSI standard was applied. Other electrical equipment such as transformers and generators are modeled based on

available data. Where impedances are not available, typical impedance values are used to represent this equipment. Switchgear, switchboard and panelboards are modeled as buses and the associated protective devices determine short circuit rating, unless otherwise noted.

Cable sizes are based on available data including field survey and drawings.

Where cable sizes are not indicated, cable size and type are based on overcurrent protective device longtime pickup. Cable impedance data used in this study is based on values indicated in IEEE Standard 141-Red Book.

Ampacities for cables are based on the applicable tables in NEC Article 310.

Cable lengths used in the study were based on estimated values.

The cable and conduit system modeled is based on the following:

1. The cables installed in each conduit complete a three-phase circuit and are sufficiently spaced from other conduits so their heating affects do not require any derating of the cable.
2. All cables have an insulation rated for their application.
3. All cables and conduits are as shown in Appendix A of this report.

ATS warrants all findings and recommendations have been made with professional competence. It will correct any portion of this study not found to be in accordance with the actual system data at the time the study was completed, if notified in writing within one year of issuance of this report. ATS does not assume responsibility for the accuracy of specific operating results derived from this report. In no event shall the Company be liable for special or consequential damages.

PROTECTIVE DEVICE RATING SELECTION

All protective devices must be able to interrupt the maximum available short circuit current. To ensure this criterion is met, equipment interrupting ratings are selected so their rating will exceed the available short circuit current. Protective devices are based on short circuits having a limited asymmetry (offset). This asymmetry is defined by the short circuit power factor, which is directly related to the circuit X/R ratio. The table below is a summary of limits of the short circuit power factor to which a protective device can safely interrupt faults at its rated (short circuit) current. If a particular protective device is subjected to a condition where it must interrupt a fault having an X/R ratio exceeding the value listed in the table below, it must be de-rated.

Asymmetrical Factors		
Protective Device	Rated X/R Ratio	Short Circuit Power Factor
Molded Case Circuit breaker: 10,000 Amps or less	1.7	50%
10,001-20,000 Amps	3.2	30%
Over 20,000 Amps	4.9	20%
Power Circuit Breaker (Fused)	4.9	20%
Power Circuit Breaker (Un-fused)	6.6	15%
Current Limiting Fuse	6.6	15%
Medium Voltage Circuit Breaker	17	5.9%

IEEE Standard C37.010 is used to provide guidance for the application of high-voltage circuit breakers; one key element is to determine the required short circuit current rating of a high voltage circuit breaker. Within this Standard, different methods can be used to calculate fault current and some estimates used in these methods will yield a more conservative result. Simple analysis can

be used when the calculated fault current is less than 80%; however, further analysis is required as the calculated fault current approaches the circuit breaker rating. The use of a software program to perform traditional fault analysis will provide more exact results.

When an X/R ratio of a fault exceeds the rated short circuit power factor of the protective device, the interrupting rating of the protective device must be de-rated. To determine if the protective device exceeds its application, the fault current must be calculated and the X/R ratio is determined. If it is determined the X/R ratio exceeds the rating of the particular device, the appropriate de-rating factor must be applied. ANSI/IEEE Standard C37.010 should be referred to when the X/R value of a medium voltage fault exceeds 17 to determine appropriate multiplication factors. In most cases, the protective device should not have to be de-rated by more than 70%; however, it is theoretically possible for a fault to have a short circuit power factor that would require further reduction. By using the appropriate factor, the interrupting rating of a protective device at a specific short circuit current can be determined.

In some applications, delaying the circuit breaker operating time may allow for acceptable application of an otherwise under rated circuit breaker.

Busing associated with panelboard, switchboard and switchgear need to be able to withstand the fault current to which it may be exposed. Unless otherwise

indicated, this study assumes bracing associated with the specific equipment is rated to that of the protective device installed.

Another method used to meet the fault interrupting criterion is by a series-connected rating. In a series-connected rating, a protective device with a lower rating than that of the maximum expected fault current can be applied. This is possible because the combination of the upstream breaker and the breaker applied has been tested by UL to interrupt a higher level of current. Only a specific series-connected combination, which have been tested by UL – and listed as such, should be applied to meet the interrupting requirements as determined by the short circuit model.

PRINCIPLES OF COORDINATION APPLIED TO THIS STUDY

A coordination study should be performed to determine if protective devices can be set to limit the effects of an electrical fault to the smallest portion of the electric distribution system. If coordination is achieved, only the protective device nearest the fault will operate. The next upstream protective device should serve as a backup to the first and provide primary protection to the electrical system between the two protective devices. While a fault should be cleared as quickly as possible, sufficient time should be introduced to the fault clearing device to ensure that the proper protective device operates.

With the model of the electric system developed using SKM Power Tools using DAPPER, CAPTOR was used to evaluate coordination, CAPTOR is a software program used to evaluate coordination between the various protective devices and equipment modeled in this study.

On medium voltage systems, overcurrent relays are primarily used to provide circuit protection. The pickup level of overcurrent protection may be set to provide only short circuit protection. This methodology requires other protective devices closer to the load to be installed to ensure overloads are not possible. Where possible, medium voltage relay settings may provide overload protection, but in order to achieve coordination, the level of overload protection provided may be reduced. Coordination can be achieved by slowing down the operating time of the relay, changing the pickup value of the relay, or modifying the

operating characteristics relay. Numerical relays are available with various operating characteristics; but their electro-mechanical predecessors were only available with a single characteristic.

Current transformers (CT) are used to reproduce the primary current to safe levels in a secondary instrument, such as a relay or meter. When applying CTs, the design must consider the following factors:

1. Secondary burden
2. Primary current
3. Remanent Flux in the CT core
4. Asymmetry in the primary current

Ideally, the CT is selected based on expected load current; however, the calculated fault current must be evaluated. The maximum load should never exceed the thermal rating of the CT, and the minimum load should be no less than 10% of the primary value. Also, the fault current should not exceed 20 times the rating. When these extreme conditions cannot be met, a compromise must be obtained. The CT secondary will remain accurate as long as its secondary burden does not exceed the rating of the CT at the X/R ratio of the fault, or maximum operating point. The use of numerical relays reduces the secondary burden on the CT relative to an electro-mechanical relay, but the CT can still become saturated if care is not exercised when selecting the CT class. Once a CT saturates, it can no longer be expected to properly reproduce the primary current until it has been demagnetized. The X/R, which is determined by the asymmetry in the primary current, ratio will impact this level of current. To

prevent CT saturation, it is recommended the product of the per unit fault current, the CT burden and asymmetry factor $(1+X/R)$ be less than or equal to 20. This condition is expressed in the formula below:

$$20 \geq \left| \frac{X}{R} \right| + 1 \times I_F \times Z_B$$

Where: I_F = Per Unit Fault Current
 Z_B = Per Unit Burden of the CT
 X/R = X/R ratio if the primary fault circuit

As an example, if the X/R ratio of the fault is included, the fault current identified in the above example is reduced to less than 3 times the CT secondary rating if the X/R ratio is 6. Alternatively, the burden would have to be reduced to 0.14 per unit to allow for 20 times rated current. This study assumes the CT selection was appropriate and the CT output can be expected to accurately reproduce the primary current so the protection scheme can operate as desired.

Overcurrent relays are applied on medium voltage systems to clear faults based on the magnitude of fault current. Instantaneous overcurrent relays find application where a known value of current will flow and always represent a fault, requiring immediate clearing. Application of an instantaneous relay prevents coordinated tripping, unless the value of current between devices is sufficiently different so that pickup can discriminate between the fault current levels. The pickup of an overcurrent relay must incorporate the relay overreach characteristics. A Time-Overcurrent (TOC) relay is applied where the value of fault current will vary depending on the location and type of fault, as well as other

factors such as system conditions. Time characteristics allow for delay so a relay operates with a time that is inversely proportional to the current. A change in time delay is introduced so coordination between devices can be provided. TOC relays are available with different types of characteristics, which are applied to match the characteristics of the load being protected and to aid the coordination of protective devices. To further aid in coordination when relays are placed in series, the downstream relay can be installed with a steeper characteristic than the upstream device. The pickup of a TOC must be set above normally expected operating current, but may be set higher for coordination purposes.

Directional overcurrent relays are applied to allow for overcurrent protection in one direction; but not in the opposite direction. The use of directional overcurrent relays allows for a relay to be more sensitive if the current in one direction is much less than the current flowing in the other direction. Where a strong source is operating in parallel with a weak source, a directional overcurrent relay can be applied to clear a fault by discriminating on the magnitude of the fault current, which would be lower due to the weaker source.

On low voltage systems, the long-time phase overcurrent protection is generally independent of fault current, and based only on load current or conductor size. A low voltage incoming breaker should be set to ensure the distribution bus and its equipment is not overloaded. Low voltage feeder breakers are set to provide overload protection to the load they supply. Long time delays should be

coordinated so the maximum clearing time of the feeder breaker is faster than the operating time of the incoming protective device. Ideally, the feeder breaker should operate at a maximum of 75% of the time it would take for the incoming breaker to operate for the same level of current. At higher fault currents, the minimum coordinating time can however be as short as 0.1 seconds. As the incoming breaker supplies more than one feeder breaker, it must coordinate with the sum of the current of all feeder breakers during normal and abnormal operating conditions.

Where two devices in series supply the same load, often full selective coordination cannot be obtained because the characteristics of the devices are similar. Often, this condition is considered to be acceptable because the same load will be disconnected. One draw-back to this operation may occur when a fault occurs and the upstream device operates, which may lead to the assumption that the fault exists between the first and the second overcurrent protective device. This assumption may be misleading and may cause troubleshooting to be misdirected.

Unless there is considerable impedance between protective devices, causing the fault currents to be appreciably different, instantaneous tripping should be limited to the last breaker in a string of series breakers. Typically, coordination is not possible when two instantaneous tripping devices are in series and the fault current is high enough for both devices to operate. The application of two

instantaneous trip devices in series will generally lead to mis-coordination, which typically prevents an outage from being limited to the smallest portion of the electric distribution system.

One method used to improve coordination while maintaining instantaneous operation is known as Zone Selective Interlocking (ZSI). The basic principle behind ZSI is that an upstream circuit breaker short time delay element timer is reduce to zero if a downstream breaker does not send a signal indicating fault current has passed through that point. If fault current passes through a downstream series device, the upstream breaker must not operate if coordination is to be provided. With ZSI, effectively a communication path is established to indicate whether or not the fault is in the upstream breaker's primary zone of protection. Wiring between the devices is required to provide this communication.

ARC FLASH HAZARD PRINCIPLES

In accordance with 29 CFR 1910.333.a.2, the Occupational Safety and Health Administration (OSHA) requires safety-related work practices to be used to protect employees who may be exposed to electrical hazards when working near energized electrical equipment. NFPA 70E, “Standard for Electrical Safety in the Workplace”, was developed to assist workers to identify these safety-related practices. The latest edition of NFPA 70E, 2018 Edition, requires an arc flash risk assessment be performed as part of developing plans for qualified electrical workers to work on or near exposed energized electrical equipment. This study uses SKM Power Tools Arc Flash Evaluation software to calculate the arc flash boundary, arc flash energy and personal protective equipment (PPE) based on NFPA-70E and IEEE 1584.

Statistics indicate approximately 62% of electrical injuries are due to electrical shock, while the remaining 38% are due to electrical burns. A Shock Risk Assessment is required to minimize the hazard to the electrical worker due to contact and the Arc Flash Risk Assessment is performed to minimize the hazard due to burns. The arc flash boundary is defined as the distance from an energized electrical component to where an arc could cause a second degree burn if no protective clothing is worn. Once the arc flash level is identified at a point where the worker will likely be working, the proper personal protective equipment (PPE) can be selected to minimize the electrical hazard due to electrical burns. It should be noted, a worker’s arms and hands are excluded

from this boundary. Also, there are some conditions where no level of PPE can be donned to provide adequate protection to the qualified electrical worker.

When performing a short circuit study for equipment evaluation, the maximum available short circuit current must be calculated. To calculate the maximum fault current, the arcing short circuit impedance, or arc resistance is considered zero. Personal protection requires the calculation of arc current and its heat energy to ensure personnel are protected during the worst arc condition. Arcing faults do not necessarily have their maximum energy when the fault current is at its maximum. When a fault contains an arc, the heat released can damage equipment and cause personal injury. The heat exposure due to an arc can burn bare skin or protective clothing. During an arcing fault, the arc duration will have a direct impact on the arc fault energy. The power dissipated in the arc radiates to the surrounding surfaces; but, as the distance from the arc source is increased, the energy received per unit area is decreased. An important assumption in the calculation of incident energy is that the worker is stationary during the entire arc flash incident (constant working distance).

Various methods are available to estimate the available energy in a fault. IEEE-1584, which uses empirical equations based on test results to provide an estimate of the energy during a three-phase fault is perhaps the mostly widely used method to calculate incident energy and the arc flash boundary. The formulae used in this Standard are limited to three-phase systems having an

operating voltage between 0.208 and 15 kV, having an available fault current between 0.7 and 106 kA. Several conditions are evaluated to determine the worst-case condition to predict the arcing current. The first case estimates the arcing fault based on the maximum fault current, the voltage and the gap between the conductor. A second estimate is based on 85% of the initial arc fault current level. The greater incident energy determined using the first or second estimate is reported in the results. Specific protective device operating characteristics must be known to determine the operating time at the estimated arcing currents. In all calculations, the maximum operating time is selected as two seconds, because it is assumed the worker will move away from the arc within this time. Should two seconds not be adequate time due to the work being performed or site conditions, the arc flash hazard should be re-evaluated.

Obviously, any arcing fault can be hazardous. Short-circuit arc resistance varies non-linearly with the arc current. As the current increases, the ionized area also increases and the resistance decreases. The voltage across the arc varies non-linearly, and is directly related to the length and current of the arc. Arcing faults on low-voltage systems (<1000 Volt) are more affected by arc resistance than are medium voltage systems. Arc resistance causes short-circuit currents to be reduced, relative to bolted faults.

An arc flash risk assessment should determine the following:

- Arc Flash Boundary

- ☐ Incident Energy at the Work Distance
- ☐ Personal Protective Equipment (PPE) for those entering the arc flash boundary

The arc flash boundary on low voltage systems is the location where the energy in an arc fault is reduced to below 1.2 cal/cm^2 . Working distance is based on the type of equipment, and is the distance from the energized equipment the electrical worker is expected to perform the required work. This analysis only identifies the PPE required for those hazards due to electrical faults; additional PPE may be required for other hazards, which are not addressed in this study.

A sign placed on electrical equipment leading to the proper selection of personal protective equipment and identifying the arc flash boundary is now required to be installed so the safety hazard is identified. Warning of Arc Flash Hazard is a requirement of the National Electrical Code, Article 110.16. Section 130 of NFPA 70E-2015 identifies methods to develop safe work conditions when work involves electrical hazards and part of this section includes determining the appropriate Personal Protection Equipment (PPE). In addition to burns, other exposure risks to arcing faults include:

- ☐ Electrical shorts due to contact with energized conductors.
- ☐ Arc blasts due to expanding gases.
- ☐ Exposure to arc plasma, which can result in temporary or permanent blindness.
- ☐ Arc plasma or heat, which can result in a fire.
- ☐ Metal vaporization may condense on cooler materials.

The latest edition of NFPA 70E requires the equipment label to minimally include:

- Nominal System Voltage
- Arc Flash Boundary
- At least of one of the following:
 - ☐ Available incident energy and the corresponding working distance
 - ☐ Arc flash category in appropriate table
 - ☐ Minimum arc rating of clothing
 - ☐ Site-Specific level of PPE

Work on energized equipment should only be performed if the need for this work can clearly be demonstrated. When it is demonstrated that the work must be performed while the equipment is energized, the proper personal protective equipment (PPE) must be donned. NFPA 70E requires PPE to be selected based on the available incident energy at a specific working distance, so the energy of the specific location must be calculated. Tables are available within NFPA 70E to identify PPE to perform specific tasks, obviating the need to calculate arc flash energy levels; however, certain limitations apply to these tables, which must be clearly understood before applying these tables. Work cannot be performed at certain locations unless the arc flash boundary is calculated.

Definitions:

Arc Flash Boundary	When an arc flash hazard exists, an approach limit at a distance from a prospective arc source within which a person could receive a second degree burn if an electrical arc flash were to occur.
Limited Approach Boundary	An approach limit at a distance from an exposed energized electrical conductor or circuit part within which a shock hazard exists.

Restricted Approach Boundary	An approach limit at a distance from an exposed energized electrical conductor or circuit part within which there is an increased likelihood of electric shock, due to electrical arc-over combined with inadvertent movement, for personnel working in close proximity to the energized electrical conductor or circuit part.
Working Distance	Closest distance a worker's body, excluding arms and hands, would be exposed to the arc.
Incident Energy	The amount of thermal energy impressed on a surface, a certain distance from the source, generated during an electrical arc event; typically expressed in calories per centimeter squared (cal/cm ²).
Arc Rating	The value attributed to materials that describes their performance to exposure to an electrical arc discharge; expressed in cal/cm ²
Qualified Person	One who has demonstrated skills and knowledge related to the construction and operation of electrical equipment and installations and has received safety training to identify and avoid the hazards involved.

Personal protective equipment includes, but is not limited to, many items, that provide head, face and neck protection, body protection, hand and arm protection. Additional personal protective equipment includes a hard hat, safety glasses, hearing protection and work shoes. All safety equipment must meet all appropriate standards. Of primary importance in Arc Flash Risk Assessment is the avoidance of potentially lethal burns to the body. The head and chest areas are the most critical area of the body. While burns on the person's limbs are serious, they are not likely to cause death. For example, when working on electrical equipment, gloves are voltage rated to protect from electrical shock while fire retardant overalls have only a thermal rating. Gloves do provide some level of thermal protection.

Table 1 is a summary of the various risk categories identified in NFPA 70E for personal protective equipment (PPE). Where used, outdoor PPE must have a rating equivalent to the category.

Table 1 – NFPA – 70E Flash Hazard Risk Categories

Flash Hazard Risk Category	Range of Calculated Incident Energy		Min. Clothing Arc Rating		Required PPE
1	0 - 4	cal/cm ²	4	cal/cm ²	Arc-rated face shield or arc flash suit hood, hard hat, safety glasses or safety goggles, hearing protection, heavy duty leather gloves, leather foot wear.
2	4 - 8	cal/cm ²	8	cal/cm ²	Arc-rated face shield or arc flash suit hood, hard hat, safety glasses or safety goggles, hearing protection, heavy duty leather gloves, leather foot wear and arc-rated balaclava.
3	8 - 25	cal/cm ²	25	cal/cm ²	Arc-rated face shield or arc flash suit hood, hard hat, safety glasses or safety goggles, hearing protection, heavy duty leather gloves, leather foot wear and flash suit hood.
4	25 - 40	cal/cm ²	40	cal/cm ²	Arc-rated face shield or arc flash suit hood, hard hat, safety glasses or safety goggles, hearing protection, heavy duty leather gloves, leather foot wear and flash suit hood.

Table 1 is a summary of the PPE requirements of NFPA 70E. This summary does not fully explain the requirements of NFPA 70E and a complete understanding of its requirements.

Rubber insulating gloves with leather protectors are required to be worn for shock protection and must be selected based on the operating voltage. Table 2 identifies the voltage capabilities of gloves up to 40 kV.

Table 2 – Glove Classes

Glove Class	Use Voltage (kV)	Max. Test Voltage (kV)
00	0.5	2.5
0	1.0	5.0
1	7.5	10
2	17.5	20
3	26.5	30
4	36.0	40

When it is determined live work must be performed, it is recommended protective devices be set to clear a fault as quickly as possible to minimize the available arc flash energy, which is in contrast to allowing for some time delay so coordination can be maintained. To serve these two somewhat contradictory concepts, an attempt is made to provide protective device settings in this facility to limit arc flash energy to 8 cal/cm². Any electrical worker working on or near live electrical equipment must follow appropriate procedures and be adequately protected against hazard.

To reduce incident energy levels, various methods can be identified through design or operating methods. The best method to reduce the incident energy level is to perform all work when equipment is placed in an electrically safe position. Designs can incorporate differential relaying or zone interlocking, where all protective devices communicate fault conditions to determine fault location in an attempt to decrease fault clearing time. Reducing protective device clearing time (below 2 seconds) directly reduces the incident energy level. Another

method available to reduce incident energy levels would be to temporarily reduce protective device settings to decrease the level of pickup or the time delay, or both, when electrical workers are exposed to increased hazard while working on or near exposed energized electrical equipment.

SPECIFIC POWER SYSTEM ANALYSIS

This study calculates the available fault current and incident energy, reviews protective device settings and determines if the protective devices are capable of withstanding the available fault current at this facility. Ideally, the feeder breakers should only operate for a fault on the circuit ahead of downstream protective devices, allowing those downstream devices to clear faults that pass through their location. To determine if selective breaker operation can be provided, it is only necessary to look at the slowest operating device on the circuit. It is important to remember each protective device can only safely interrupt a particular level of fault current.

This facility is supplied by 69kV feeder from O&R that is stepped down via a 7500kVA transformer to 13.2kV and supplies the preferred source switchgear at Substation 1. A second O&R feeder supplies the alternate source switchgear at Substation 1 directly at 13.2kV. Switchgear 1 is protected by numerical Siemens relays, which provide overcurrent, under/over voltage, under/over frequency and full bus differential protection. The step-down transformer in the 69kV switchyard is also provided with differential protection and a Westinghouse CO-11 also provides overcurrent protection on the low side of the step-down transformer. The Substation 1 preferred and alternate switchgear supply double ended low voltage switchgear (Substations 2, 4, 5) through medium voltage feeders. A step-down transformer is provided at each end of Substation 2, 4, and 5 to allow for connection to the preferred and alternate medium voltage feeders at either

end of the switchgear. Substation 2, 4, 5 supply various loads and motor control centers (MCCs) throughout the facility.

Backup generation is provided at Substation 2 and 4 and can be connected to the system through an automatic transfer switch. A 693 kW Cogen unit is also connected to Substation 5 and can be operated in parallel with the utility. MCC-SB also provides a means to connect Substation 4 to Substation 5. Circuit breakers are interlocked to prevent incidental connection of two MV feeders.

In Appendix A of this report, the details to the circuit model have been provided, along with the calculated short circuit current. Appendix B includes a summary of each protective device modeled and identifies if it can interrupt the calculated fault current. Overcurrent protective device settings used for evaluating coordination and determining incident energy are summarized in Appendix C. The protective device settings characteristics have been plotted to show if coordination can be provided between protective devices, these plots are included in Appendix D.

A review of the coordination plots is performed to ensure the downstream devices will operate faster than the upstream device in all cases. To evaluate the operating characteristic of the protective device, select a fixed level of current, and compare the operating times of each protective device. (This method only applies if there is no infeed between the two devices.) If the upstream device

operates slower than the downstream, the devices coordinate. If the devices coordinate over the entire range of current the devices are said to be selective, and selective coordination is provided. When certain ranges of current flow through the upstream device cause it to operate, and it operates faster than the downstream device, selective coordination is not provided. In all cases where the fault current levels are high enough for the instantaneous element to operate coordination cannot be provided because the same level of current will cause both devices to operate. Remember, because there is a range of operating time, there is a condition where it is impossible to predetermine which device will operate first or if both devices may operate.

It is a review of the Time Current Coordination (TCC) plots that allows you to determine if selective coordination is provided. As determined from reviewing the Time Current Coordination plots, several upstream protective devices do not coordinate with downstream protective devices. Where protective devices have instantaneous trip characteristics, as is the case with these circuits, full selective coordination is not possible when the fault current at the downstream protective device exceeds the pickup point of the upstream device. This problem is somewhat reduced by the nature of fault conditions. While this study identifies the maximum available fault current, electrical faults do not usually produce this highest level because of fault impedance.

The following tables provide a summary of the TCC plots included in this study. Its purpose is to describe the recommended coordination provided by the various protective devices in the electric system, the coordination between devices and potential operating problems and resolutions.

Summary of Time Current Coordination Plots		
TCC No.	Circuit Description	Summary of Recommended Coordination
01	Substation 1	<p>This Time Current Coordination (TCC) plot shows the coordination associated with the Substation 1 relaying supplied from the O&R 69 kV Feeder. Plotted are the phase time and instantaneous overcurrent elements for the overcurrent relay supplied by the 69 kV switchyard (50/51), the Substation 1A incoming relay (51-1A) and the slowest feeder relay (1-1AF4), which supplies Substation 4. It can be seen from the TCC plot that the slowest feeder relay will coordinate with the upstream relaying in the time overcurrent region; however, the instantaneous element of the 69kV switchyard relay may overreach. Since the 50/51 relay is installed on the 13.2kV side of the step-down transformer, there is no appreciable impedance difference between any of the three relays plotted. It should also be noted, that Substation 1 switchgear is provided with full bus differential relaying and the 69kV-13.2 kV stepdown transformer is also provided with differential relaying. Consideration should be given to removing the instantaneous element on the 69 kV switchyard relay or upgrading the relay to an electronic relay that could provide instantaneous protection with a time delay. Coordination is the same for the alternate Sub1 Switchgear, supplied by a 13.2 kV O&R feeder; however, the upstream protection on the O&R feeder is unknown.</p>

02	Substation 2	<p>This TCC plot evaluates the coordination of Substation 2 when supplied through the alternate feeder and the low voltage tie circuit breaker. Plotted are the feeder relay (51-1BF2), the Sub2 high side transformer fuse (89-2A), the ATS disconnect (52-2A ATS N), the substation main circuit breaker (52-2A Main), the low voltage tie breaker (52-2 Tie), and a typical feeder breaker (52-Grit Bldg). Also plotted are the substation stepdown transformer inrush and thermal characteristics. It can be seen from this plot that coordination is not provided between the feeder relay, transformer high side fuse, ATS disconnect, and substation main circuit breaker. However, all of these loads are connected in series so this miscoordination can be tolerated. The combination of these series devices allows for the energization of the substation transformer and also protects the transformer from overloads. These devices also coordinate with the tie breaker and downstream feeders, except for the instantaneous region.</p>
03	Substation 4	<p>This TCC plot evaluates the coordination of Substation 4 when supplied through the preferred feeder and the low voltage tie circuit breaker. Plotted are the feeder relay (51-1AF4), the Sub4 high side transformer fuse (89-4A), the substation main circuit breaker (52-4A Main), the low voltage tie breaker (52-T4), and the largest feeder breaker (52-MP2A-B). Also plotted is the Sub4 stepdown transformer inrush and thermal characteristics. It can be seen from this plot that coordination is not provided between the feeder relay, transformer high side fuse, and substation main circuit breaker. However, all of these loads are connected in series so this miscoordination can be tolerated. The combination of these series devices allows for the energization of the substation transformer and also protects the transformer from overloads. These devices also coordinate with the downstream feeders, except for the instantaneous region. Coordination is not provided between the incoming protection and the low voltage tie breaker, except for in the long-time region. In the case of an overload, feeders fed through the tie are expected to be disconnected.</p>

04	Substation 5	<p>This TCC plot evaluates the coordination of Substation 5 when supplied through the preferred feeder and the low voltage tie circuit breaker. Plotted are the feeder relay (51-1AF5), the Sub5 high side transformer fuse (89-5A), the substation main circuit breaker (52-5A Main), the low voltage tie breaker (52-T5), and the largest feeder breaker (52-SD2-B). Also plotted is Substation 5 stepdown transformer inrush and thermal characteristics. It can be seen from this plot that coordination is not provided between the feeder relay, transformer high side fuse, and substation main circuit breaker. However, all of these loads are connected in series so this miscoordination can be tolerated. The combination of these series devices allows for the energization of the substation transformer and also protects the transformer from overloads. These devices also coordinate with the downstream feeders, except for the instantaneous region. Coordination is not provided between the incoming protection and the low voltage tie breaker.</p>
05	Cogen	<p>This TCC plot identifies the coordination associated with infeed from the 693 kW Cogen Unit connected to Substation 5. Curve Cogen-1 identifies the maximum output current from the generator over time. Also plotted are the Cogen Circuit breaker (52-Cogen) and the Sub 5 Cogen Intertie breaker (52-IT) as well as the largest feeder breaker on Sub5. It can be seen from the TCC plot that the two Cogen circuit breakers will not fully coordinate with the Cogen output. The internal protection provided with the generator typically matches the maximum output of the generator, so protection of the generator is provided internally. It is expected that the cogen unit will typically operate in parallel with the utility, so infeed from the Cogen and the utility sources will improve coordination of the Sub 5 feeder breakers with upstream protection.</p>
06	MV Neutral	<p>This Time Current Coordination (TCC) plot shows the coordination associated with the Substation 1 neutral overcurrent relaying supplied from the O&R 69 kV Feeder. Plotted are the neutral time overcurrent and instantaneous neutral overcurrent elements for the overcurrent relay in the 69 kV switchyard (50/51-</p>

		<p>Neutral), the Substation 1A incoming relay (51-1A Main - Neutral) and the slowest feeder relay (1-1AF4 - Neutral), which supplies Substation 4. Also plotted is the Substation 4 high side fuse. It can be seen from the TCC plot that the 69kV switchyard relay is set to operate faster than the Substation 1 incoming relay. The instantaneous element of the 69kV switchyard relay may also overreach the feeder relaying. The feeder neutral relaying is set to operate faster than the transformer high side fuse, which provides a fuse saving scheme and also prevents single phase operation of the fuse. Consideration should be given to adjusting 69 kV switchyard relay or upgrading the relay to an electronic relay that could provide instantaneous protection with a time delay. Coordination is the same for the alternate Sub1 Switchgear, supplied by a 13.2 kV O&R feeder; however, the upstream protection on the O&R feeder is unknown. Since substations 2, 4, and 5 all employ delta-wye transformers to step down voltage to 480V, zero sequence current cannot pass from the 13.2 kV to the 480V system and therefore, neutral/ground coordination is not required.</p>
07-09	LV GND	<p>These TCCs show the coordination associate with the ground fault protection on substations 2, 4, and 5. Plotted are the main circuit breaker, tie circuit breaker and largest feeder breaker ground elements. It can be from the plot that coordination is provided.</p>
10	Sub 4 Gen	<p>This TCC plot identifies the coordination associated with Substation 4 when running on generator. Curve Gen-0001 identifies the maximum output current from the generator over time. Also plotted is the generator circuit breaker and the Substation main breaker. Because the available current from the generator is much less than that from the utility, protective device operation will be delayed in backup operation in many cases if operation is possible. The operating time can be determined by reviewing the protective device characteristics with the generator capability curve. It can be seen from the TCC plot that the generator breaker does not coordinate with the substation main circuit breaker; however, these devices supply the same load so this miscoordination can be tolerated.</p>

11	Sub 2 Gen	<p>This TCC plot identifies the coordination associated with Substation 2 when running on generator. Curve Gen-0004 identifies the maximum output current from the generator over time. Also plotted is the generator circuit breaker and the Substation main breaker as well as a typical feeder breaker for Substation 2. Because the available current from the generator is much less than that from the utility, protective device operation will be delayed in backup operation in many cases if operation is possible. The operating time can be determined by reviewing the protective device characteristics with the generator capability curve. It can be seen from the TCC plot that the generator breaker does not coordinate with the substation main circuit breaker or the downstream feeder breakers.</p>
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RECOMMENDATIONS

This study has been developed based on submittal data. It is recommended this report be reviewed to ensure equipment arrangement is as indicated in this model; any discrepancies should be evaluated. Known problem areas should be reviewed to determine if an appropriate solution has been developed. The one-line included with this study identifies the bus names used in this study to aid in understanding the model.

Protective device coordination has been evaluated and setting recommendations have been developed to maximize coordination based on the specific equipment included in the submittal. Protective device settings have been developed to maximize coordination and isolate the fault to the smallest portion of the electric system. Protective device setting recommendations have been provided in Appendix C, it is recommended these protective device settings be applied.

Incident energy levels have been calculated in this report. These calculations are based on the recommended protective device settings. Labels for electrical equipment modeled in this study have been generated and are included as part of this report in Appendix F. It is recommended these labels be applied to the specific equipment to identify the working hazard only after recommended protective device settings are applied and verified. Work methods should be developed to ensure appropriate safety procedures are in place prior to the start of work.

Consideration should be given to modifying settings on the existing medium voltage relaying. Specifically, the Westinghouse CO-11 in the 69kV switchyard should be reviewed. Typically, a minimum coordination margin of 0.25 seconds is desired between medium voltage relays. Relay settings can be changed by changing the pickup, time dial or characteristic curve. The new numerical relay characteristics can be changed; however, the existing switchgear relays would have to be changed if it is necessary to change the characteristic curve.

Since the WL circuit breakers installed in Substation 2 are cable of providing zone selective interlocking (ZSI), its implementation should be considered to improve both coordination and incident energy levels.

SEL 700G relays are also installed on the two main breakers for Substation 5 to provide under/over voltage, under/over frequency and directional overcurrent protection in the event of a fault or utility outage. The protection associated with these relays has not been reviewed as it doesn't impact coordination. This protection should be reviewed to ensure appropriate generator protection is provided.

Proper maintenance should be performed in accordance with manufacturers' recommendations. Periodic maintenance allows for continued operation of

equipment and identifies problem areas. It is recommended a maintenance program be established.

Electrical equipment should be confined to qualified personnel, where possible. Electrical equipment should have clearances and when live work is performed, only qualified personnel should be allowed to enter into the limited approach boundary. It is recommended these clearances be developed using applicable codes and the results of this study; selected clearances should be the more restrictive of the two. Electric rooms should not be used for storage and only qualified personnel should have access to these room.

INTERPRETING THE RESULTS OF THE FAULT STUDY

This study has been developed to calculate the short circuit current at various locations throughout the electric system. To determine the fault current, a model of the electric system is developed. Since fault current is dependent on the source of electric power and the limiting impedances of the system, these items are identified as various electric components. In reviewing Appendix A, these components of source and source limiting devices are identified. Sources may include available fault current from the utility, on-site generators or motors. Electrical components limiting fault current include cables, transformers and reactors.

The first section of the study identifies the branch impedance between each of the interconnecting buses. These values are shown in ohmic and per unit value of the element. Also, all calculations are based on a conductor temperature of 40° C during fault conditions.

The first portion of the study details the input data used in the study. As indicated, the first set of data identifies the feeder cables used in the study. Within this section the cables details of each cable section are listed, including the cable name; each entry on cable data includes the buses to where it is connected, the number of conductors per phase, its operating voltage, the cable length and the conductor material. Additionally, the duct material is identified as well as the cable insulation type and class. The results of this input are

summarized as positive, negative and zero sequence impedances. These impedance values are represented in the Ohmic value/1000' for a single set of conductors and the actual per unit impedance based on the input length (L) and number of conductors/phase (c). These values are related using the following equation:

$$Z_{pu} = Z_{ohm/1000'} \times \frac{MVA}{kV^2} \times \frac{L}{1000} \times \frac{1}{c}$$

The fault current provided by the utility to the facility is based on the construction of the electrical grid to the point of service to the customer and is represented as a Thevenin equivalent circuit to the facility. This source data is included after the feeder data. The short circuit impedance representing the utility is presented in several methods on the page listed as 'utility' source. Both the real and reactive components are identified at the incoming service voltage. These values are presented in both an Ohmic and Per Unit value. The Ohmic and Per Unit value are related by the study base VA, which is identified on the first page of the study results. Per Unit values allow for an easier means to perform calculations, particularly where multiple voltages are involved in the study. Per Unit and Ohmic values are related as identified in the following equation:

$$Z_{pu} = Z_{ohm} \times \frac{MVA}{kV^2}$$

The short circuit X/R ratio is also identified; three-phase and line to ground currents are identified separately. On site generator contributions are included along with the utility contribution data.

In addition to the utility and on-site generation, running motors will also contribute to a fault. The motor summary identifies the motor name, its voltage and equivalent kVA with an associated sub-transient reactance and its equivalent source is presented as a Per Unit equivalent, based on the system power base. Motors having a VFD will have limited impact on the current provided during a fault and are listed separately. The VFD typically limits the available source to slightly more than the full load capability; however, the table shows the impact if the VFD is in by-pass.

The last section summarizes the fault current at every bus modeled in this study.

The output data is presented in the following order:

- Three phase fault report (low voltage)
- Unbalanced fault report (low voltage)
- Fault study summary (low voltage)

In the “Three Phase Fault Report” the short circuit calculations are identified for each bus modeled in the study. These results are shown in current (as a vector), MVA with associated X/R ratio and the pre-fault voltage of the bus. The short circuit impedance of the bus is also included in complex form. The summary also

identifies the appropriate interrupting rating based on X/R ratio and the type of overcurrent protective device that may be applied to the bus. The split of source current is also identified where multiple sources are connected to the bus.

Following the Three Phase Fault Report are the results of the unbalanced fault report, which identifies single line to ground fault current magnitudes. The equivalent fault impedance is identified for the positive, negative and zero sequence. These values are presented to evaluate the application of low voltage circuit breakers.

After the unbalance report, a summary page follows for the low voltage buses and displays the calculated fault current and X/R ratio for three-phase and single line to ground faults. The results of the study also include the momentary duty, and interrupting duty. This data is only required for medium voltage applications. When provided, it summarizes the symmetrical fault information and the values at 1.6 and 2.7 times the symmetrical value. These points are used to identify the maximum interrupting current and the make and latch current required for medium voltage applications.

To determine the fault current at a particular time, select the time at which is of interest and identify the bus of particular interest and find the appropriate column.

REFERENCES

C37.010 IEEE Application Guide for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis, (New York: Institute of Electrical and Electronic Engineers)

C37.101 IEEE Guide for Generator Ground Protection, (New York: Institute of Electrical and Electronic Engineers)

C37.102 IEEE Guide for AC Generator Protection, (New York: Institute of Electrical and Electronic Engineers)

IEEE Standard 141 IEEE Recommended Practice for Electric Power Distribution in Industrial Plants, (New York: Institute of Electrical and Electronic Engineers)

IEEE Standard 241 IEEE Recommended Practice for Electric Power Systems in Commercial Buildings, (New York: Institute of Electrical and Electronic Engineers)

IEEE Standard 242 IEEE Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems, (New York: Institute of Electrical and Electronic Engineers)

National Fire Protection Association, 70 National Electrical Code

Fink and Beaty, Standard Handbook for Electrical Engineers, 12th ed., (New York: McGraw-Hill, 1987)

Appendix A1:

Short Circuit Study Input and Output Data

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.

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INPUT DATA REPORT
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ALL PU VALUES ARE EXPRESSED ON A 100 MVA BASE.

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	FEEDER TYPE	
CBL-0001	BUS-0001	BUS-0002	1	69000	50.0 FEET	4/0	Copper	
	Duct Material:	Non-Magnetic		Insulation Type:		EPR	Insulation Class:	HV
	+/- Impedance:	0.0710 + J 0.0890		Ohms/1000 ft		0.00007 + J 0.00009	PU	
	Z0 Impedance:	0.3370 + J 0.1990		Ohms/1000 ft		0.00035 + J 0.00021	PU	
CBL-0002	BUS-0114	69kV Feed MDP-	1	13200	30.0 FEET	500	Copper	
	Duct Material:	Magnetic		Insulation Type:		XLP	Insulation Class:	
	+/- Impedance:	0.0300 + J 0.0526		Ohms/1000 ft		0.00052 + J 0.00091	PU	
	Z0 Impedance:	0.0945 + J 0.1295		Ohms/1000 ft		0.0016 + J 0.0022	PU	
CBL-0003	BUS-0005	69kV Feed MDP-	1	13200	50.0 FEET	4/0	Copper	
	Duct Material:	Magnetic		Insulation Type:		XLP	Insulation Class:	
	+/- Impedance:	0.0650 + J 0.0583		Ohms/1000 ft		0.0019 + J 0.0017	PU	
	Z0 Impedance:	0.2049 + J 0.1436		Ohms/1000 ft		0.0059 + J 0.0041	PU	
CBL-0004	69kV Feed MDP-	Sub 4 Main SW	1	13200	950.0 FEET	350	Copper	
	Duct Material:	Magnetic		Insulation Type:		XLP	Insulation Class:	
	+/- Impedance:	0.0386 + J 0.0562		Ohms/1000 ft		0.0210 + J 0.0306	PU	
	Z0 Impedance:	0.1217 + J 0.1384		Ohms/1000 ft		0.0663 + J 0.0755	PU	
CBL-0005	69kV Feed MDP-	Sub 4 Main SW	1	13200	970.0 FEET	350	Copper	
	Duct Material:	Magnetic		Insulation Type:		XLP	Insulation Class:	
	+/- Impedance:	0.0386 + J 0.0562		Ohms/1000 ft		0.0215 + J 0.0313	PU	
	Z0 Impedance:	0.1217 + J 0.1384		Ohms/1000 ft		0.0677 + J 0.0771	PU	
CBL-0008	BUS-0014	Substation 4A	6	480	20.0 FEET	750	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J 0.0326		Ohms/1000 ft		0.0313 + J 0.0472	PU	
	Z0 Impedance:	0.0680 + J 0.0802		Ohms/1000 ft		0.0984 + J 0.1160	PU	
CBL-0012	Substation 4A	Substation 4B	1	480	2.0 FEET	4000	Copper	
	Duct Material:	Busway		Insulation Type:		Epoxy	Insulation Class:	Class B
	+/- Impedance:	0.0033 + J 0.0019		Ohms/1000 ft		0.0029 + J 0.0016	PU	
	Z0 Impedance:	0.0196 + J 0.0101		Ohms/1000 ft		0.0170 + J 0.0088	PU	
CBL-0013	Substation 4A	MCC SC-A	3	480	850.0 FEET	750	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J 0.0326		Ohms/1000 ft		2.66 + J 4.01	PU	
	Z0 Impedance:	0.0680 + J 0.0802		Ohms/1000 ft		8.36 + J 9.86	PU	
CBL-0015	Substation 4B	BUS-0047	3	480	850.0 FEET	750	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J 0.0326		Ohms/1000 ft		2.66 + J 4.01	PU	
	Z0 Impedance:	0.0680 + J 0.0802		Ohms/1000 ft		8.36 + J 9.86	PU	

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	FEEDER TYPE	
CBL-0017	Substation 4B	BUS-0109	4	480	650.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		2.07 + J	2.46 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		6.53 + J	6.06 PU	
CBL-0018	Substation 4A	BUS-0108	4	480	650.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		2.07 + J	2.46 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		6.53 + J	6.06 PU	
CBL-0020	Substation 4B	MCC GB2-B	2	480	50.0 FEET	250	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0552 + J	0.0495	Ohms/1000 ft		0.5990 + J	0.5371 PU	
	Z0 Impedance:	0.1739 + J	0.1219	Ohms/1000 ft		1.89 + J	1.32 PU	
CBL-0021	Substation 4A	MCC GB2-A	2	480	50.0 FEET	250	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0552 + J	0.0495	Ohms/1000 ft		0.5990 + J	0.5371 PU	
	Z0 Impedance:	0.1739 + J	0.1219	Ohms/1000 ft		1.89 + J	1.32 PU	
CBL-0022	Substation 4A	MCC PST2-A	3	480	160.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0466	Ohms/1000 ft		0.6806 + J	1.08 PU	
	Z0 Impedance:	0.0926 + J	0.1147	Ohms/1000 ft		2.14 + J	2.66 PU	
CBL-0023	Substation 4A	BUS-0100	3	480	600.0 FEET	750	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J	0.0326	Ohms/1000 ft		1.88 + J	2.83 PU	
	Z0 Impedance:	0.0680 + J	0.0802	Ohms/1000 ft		5.90 + J	6.96 PU	
CBL-0024	Substation 4A	MCC SST2-A	2	480	650.0 FEET	250	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0552 + J	0.0379	Ohms/1000 ft		7.79 + J	5.35 PU	
	Z0 Impedance:	0.1739 + J	0.0933	Ohms/1000 ft		24.53 + J	13.16 PU	
CBL-0025	Substation 4B	MCC SST2-B	2	480	650.0 FEET	250	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0552 + J	0.0379	Ohms/1000 ft		7.79 + J	5.35 PU	
	Z0 Impedance:	0.1739 + J	0.0933	Ohms/1000 ft		24.53 + J	13.16 PU	
CBL-0026	Substation 4B	BUS-0103	3	480	600.0 FEET	750	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J	0.0326	Ohms/1000 ft		1.88 + J	2.83 PU	
	Z0 Impedance:	0.0680 + J	0.0802	Ohms/1000 ft		5.90 + J	6.96 PU	

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	FEEDER TYPE	
CBL-0027	Substation 4B	MCC PST2-B	3	480	160.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0466	Ohms/1000 ft		0.6806 + J	1.08 PU	
	Z0 Impedance:	0.0926 + J	0.1147	Ohms/1000 ft		2.14 + J	2.66 PU	
CBL-0031	BUS-0033	Substation 5A	3	480	25.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		0.1063 + J	0.1262 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		0.3349 + J	0.3107 PU	
CBL-0032	Substation 5A	Substation 5B	1	480	2.0 FEET	3000	Copper	
	Duct Material:	Busway			Insulation Type:	Epoxy	Insulation Class:	Class B
	+/- Impedance:	0.0046 + J	0.0026	Ohms/1000 ft		0.0040 + J	0.0023 PU	
	Z0 Impedance:	0.0273 + J	0.0139	Ohms/1000 ft		0.0237 + J	0.0121 PU	
CBL-0037	69kV Feed MDP-	Sub 5 Main SW	1	13200	970.0 FEET	350	Copper	
	Duct Material:	Magnetic			Insulation Type:	XLP	Insulation Class:	
	+/- Impedance:	0.0386 + J	0.0562	Ohms/1000 ft		0.0215 + J	0.0313 PU	
	Z0 Impedance:	0.1217 + J	0.1384	Ohms/1000 ft		0.0677 + J	0.0771 PU	
CBL-0038	69kV Feed MDP-	Sub 5 Main SW	1	13200	960.0 FEET	350	Copper	
	Duct Material:	Magnetic			Insulation Type:	XLP	Insulation Class:	
	+/- Impedance:	0.0386 + J	0.0562	Ohms/1000 ft		0.0213 + J	0.0310 PU	
	Z0 Impedance:	0.1217 + J	0.1384	Ohms/1000 ft		0.0670 + J	0.0763 PU	
CBL-0039	Substation 5A	MCC SD2-A	2	480	175.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		1.12 + J	1.33 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		3.52 + J	3.26 PU	
CBL-0040	Substation 5B	MCC SD2-B	2	480	175.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		1.12 + J	1.33 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		3.52 + J	3.26 PU	
CBL-0042	Substation 5A	Centrifuge #2	2	480	300.0 FEET	4/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0640 + J	0.0381	Ohms/1000 ft		4.17 + J	2.48 PU	
	Z0 Impedance:	0.2017 + J	0.0938	Ohms/1000 ft		13.13 + J	6.11 PU	
CBL-0043	Substation 5B	Centrifuge #1	2	480	300.0 FEET	4/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0640 + J	0.0381	Ohms/1000 ft		4.17 + J	2.48 PU	
	Z0 Impedance:	0.2017 + J	0.0938	Ohms/1000 ft		13.13 + J	6.11 PU	

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	FEEDER TYPE	
CBL-0044	Substation 5B	Centrifuge #3	2	480	300.0 FEET	4/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0640 + J	0.0381	Ohms/1000 ft		4.17 + J	2.48 PU	
	Z0 Impedance:	0.2017 + J	0.0938	Ohms/1000 ft		13.13 + J	6.11 PU	
CBL-0045	Substation 5B	MPP-G2	1	480	675.0 FEET	4/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0640 + J	0.0381	Ohms/1000 ft		18.75 + J	11.16 PU	
	Z0 Impedance:	0.2017 + J	0.0938	Ohms/1000 ft		59.09 + J	27.48 PU	
CBL-0046	BUS-0047	MCC- SC-B	1	480	2.0 FEET	1200	Copper	
	Duct Material:	Busway			Insulation Type:	Epoxy	Insulation Class:	Class B
	+/- Impedance:	0.0111 + J	0.0052	Ohms/1000 ft		0.0096 + J	0.0045 PU	
	Z0 Impedance:	0.0660 + J	0.0278	Ohms/1000 ft		0.0573 + J	0.0241 PU	
CBL-0050	BUS-0078	Substation 2B	4	480	25.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		0.0798 + J	0.0947 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		0.2512 + J	0.2330 PU	
CBL-0051	Substation 2B	Grit Bldg (MCC	2	480	275.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		1.75 + J	2.08 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		5.53 + J	5.13 PU	
CBL-0052	Substation 2B	Digester Bldg	2	480	200.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		1.28 + J	1.51 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		4.02 + J	3.73 PU	
CBL-0053	Substation 2B	MCC PST (A-1)	2	480	85.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		0.5423 + J	0.6438 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		1.71 + J	1.58 PU	
CBL-0054	Substation 5B	Cogen Breaker	3	480	100.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		0.4253 + J	0.5049 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		1.34 + J	1.24 PU	
CBL-0055	Cogen Breaker	BUS-0057	1	480	25.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		0.3190 + J	0.3787 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		1.00 + J	0.9321 PU	

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	FEEDER TYPE	
CBL-0056	Substation 2B	MCC S02	2	480	225.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		1.44 + J	1.70 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		4.52 + J	4.19 PU	
CBL-0057	MCC RBC2-A	BUS-0059	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	
CBL-0059	MCC GB2-B	BUS-0061	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	
CBL-0060	MCC GB2-A	BUS-0062	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	
CBL-0061	MCC PST2-A	BUS-0063	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	
CBL-0062	MCC PST2-B	BUS-0064	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	
CBL-0063	MCC MP2B-B	BUS-0065	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	
CBL-0064	MCC MP2A-A	BUS-0066	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	
CBL-0065	MCC SST2-A	BUS-0067	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	FEEDER TYPE	
CBL-0066	MCC SST2-B	BUS-0068	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	
CBL-0067	Digester Bldg	BUS-0069	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	
CBL-0068	Grit Bldg (MCC	BUS-0070	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	
CBL-0069	MCC PST (A-1)	BUS-0071	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	
CBL-0070	MCC SO2	BUS-0073	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	
CBL-0072	Sub 2 Main SW	BUS-0077	1	13200	10.0 FEET	600	Copper	
	Duct Material:	Busway			Insulation Type:	Epoxy	Insulation Class:	Class B
	+/- Impedance:	0.0119 + J	0.0619	Ohms/1000 ft		0.00007 + J	0.00036 PU	
	Z0 Impedance:	0.0710 + J	0.3314	Ohms/1000 ft		0.00041 + J	0.0019 PU	
CBL-0074	Sub 2 Main SW	BUS-0080	1	13200	10.0 FEET	600	Copper	
	Duct Material:	Busway			Insulation Type:	Epoxy	Insulation Class:	Class B
	+/- Impedance:	0.0119 + J	0.0619	Ohms/1000 ft		0.00007 + J	0.00036 PU	
	Z0 Impedance:	0.0710 + J	0.3314	Ohms/1000 ft		0.00041 + J	0.0019 PU	
CBL-0076	69kV Feed MDP-	Sub 2 Main SW	1	13200	570.0 FEET	1/0	Copper	
	Duct Material:	-			Insulation Type:	XLPE	Insulation Class:	100%/133%
	+/- Impedance:	0.1278 + J	0.0984	Ohms/1000 ft		0.0418 + J	0.0322 PU	
	Z0 Impedance:	0.4318 + J	0.2794	Ohms/1000 ft		0.1413 + J	0.0914 PU	
CBL-0077	MCC MP2B-A	BUS-0072	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	FEEDER TYPE	
CBL-0078	69kV Feed MDP-	Sub 2 Main SW	1	13200	600.0 FEET	1/0	Copper	
	Duct Material:	-		Insulation Type:		XLPE	Insulation Class:	100%/133%
	+/- Impedance:	0.1278 + J 0.0984		Ohms/1000 ft		0.0440 + J 0.0339	PU	
	Z0 Impedance:	0.4318 + J 0.2794		Ohms/1000 ft		0.1487 + J 0.0962	PU	
CBL-0080	Grit Bldg (MCC	MCC-EG2	2	480	25.0 FEET	500	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J 0.0466		Ohms/1000 ft		0.1595 + J 0.2528	PU	
	Z0 Impedance:	0.0926 + J 0.1147		Ohms/1000 ft		0.5024 + J 0.6223	PU	
CBL-0081	MCC S02	MCC-S0	1	480	50.0 FEET	500	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J 0.0466		Ohms/1000 ft		0.6380 + J 1.01	PU	
	Z0 Impedance:	0.0926 + J 0.1147		Ohms/1000 ft		2.01 + J 2.49	PU	
CBL-0089	BUS-0100	BUS-0101	3	480	25.0 FEET	750	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J 0.0326		Ohms/1000 ft		0.0781 + J 0.1179	PU	
	Z0 Impedance:	0.0680 + J 0.0802		Ohms/1000 ft		0.2459 + J 0.2901	PU	
CBL-0090	BUS-0103	BUS-0102	3	480	25.0 FEET	750	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J 0.0326		Ohms/1000 ft		0.0781 + J 0.1179	PU	
	Z0 Impedance:	0.0680 + J 0.0802		Ohms/1000 ft		0.2459 + J 0.2901	PU	
CBL-0094	BUS-0100	MCC MP2B-A	3	480	10.0 FEET	750	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J 0.0326		Ohms/1000 ft		0.0313 + J 0.0472	PU	
	Z0 Impedance:	0.0680 + J 0.0802		Ohms/1000 ft		0.0984 + J 0.1160	PU	
CBL-0095	BUS-0103	MCC MP2B-B	3	480	10.0 FEET	750	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J 0.0326		Ohms/1000 ft		0.0313 + J 0.0472	PU	
	Z0 Impedance:	0.0680 + J 0.0802		Ohms/1000 ft		0.0984 + J 0.1160	PU	
CBL-0096	MCC RBC2-A	MCC-RBC	3	480	30.0 FEET	500	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J 0.0466		Ohms/1000 ft		0.1276 + J 0.2023	PU	
	Z0 Impedance:	0.0926 + J 0.1147		Ohms/1000 ft		0.4019 + J 0.4978	PU	
CBL-0097	MCC SC-A	MCC-SC2	4	480	15.0 FEET	600	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0257 + J 0.0463		Ohms/1000 ft		0.0418 + J 0.0754	PU	
	Z0 Impedance:	0.0809 + J 0.1140		Ohms/1000 ft		0.1317 + J 0.1855	PU	

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	FEEDER TYPE	
CBL-0099	MCC-SC2	MCC-CH2C	1	480	325.0 FEET	4/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0640 + J	0.0497	Ohms/1000 ft		9.03 + J	7.01 PU	
	Z0 Impedance:	0.2017 + J	0.1224	Ohms/1000 ft		28.45 + J	17.27 PU	
CBL-0100	MCC-SC2	MCC-A3	1	480	225.0 FEET	1/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1280 + J	0.0540	Ohms/1000 ft		12.50 + J	5.27 PU	
	Z0 Impedance:	0.4034 + J	0.1329	Ohms/1000 ft		39.39 + J	12.98 PU	

TRANSFORMER INPUT DATA

TRANSFORMER NAME	PRIMARY RECORD NO NAME	VOLTS L-L	* SECONDARY RECORD NO NAME	VOLTS L-L	FULL-LOAD KVA	NOMINAL KVA
T2-A	BUS-0080 D	13200.0	BUS-0082 YG	480.00	1500.00	1500.00
	Pos. Seq. Z%:	0.816 + J	5.34 (Zpu	0.544 + j	3.56)	Shell Type
	Zero Seq. Z%:	0.816 + J	5.34 (Sec	0.544 + j	3.56 Pri	Open)
	Taps Pri. 0.000 %	Sec. 0.000 %	Phase Shift (Pri. Leading Sec.): 30.00 Deg.			
T2-B	BUS-0077 D	13200.0	BUS-0079 YG	480.00	1500.00	1500.00
	Pos. Seq. Z%:	0.816 + J	5.34 (Zpu	0.544 + j	3.56)	Shell Type
	Zero Seq. Z%:	0.816 + J	5.34 (Sec	0.544 + j	3.56 Pri	Open)
	Taps Pri. 0.000 %	Sec. 0.000 %	Phase Shift (Pri. Leading Sec.): 30.00 Deg.			
T4-A	Sub 4 Main SW D	13200.0	BUS-0010 YG	480.00	2500.00	2500.00
	Pos. Seq. Z%:	0.534 + J	5.59 (Zpu	0.213 + j	2.24)	Shell Type
	Zero Seq. Z%:	0.534 + J	5.59 (Sec	0.213 + j	2.24 Pri	Open)
	Taps Pri. 0.000 %	Sec. 0.000 %	Phase Shift (Pri. Leading Sec.): 30.00 Deg.			
T4-B	Sub 4 Main SW D	13200.0	BUS-0018 YG	480.00	2500.00	2500.00
	Pos. Seq. Z%:	0.537 + J	5.62 (Zpu	0.214 + j	2.25)	Shell Type
	Zero Seq. Z%:	0.537 + J	5.62 (Sec	0.214 + j	2.25 Pri	Open)
	Taps Pri. 0.000 %	Sec. 0.000 %	Phase Shift (Pri. Leading Sec.): 30.00 Deg.			
T5- A	Sub 5 Main SW D	13200.0	BUS-0033 YG	480.00	750.00	750.00
	Pos. Seq. Z%:	1.10 + J	5.76 (Zpu	1.46 + j	7.67)	Shell Type
	Zero Seq. Z%:	1.10 + J	5.76 (Sec	1.46 + j	7.67 Pri	Open)
	Taps Pri. 0.000 %	Sec. 0.000 %	Phase Shift (Pri. Leading Sec.): 30.00 Deg.			
T5-B	Sub 5 Main SW D	13200.0	BUS-0035 YG	480.00	750.00	750.00
	Pos. Seq. Z%:	1.10 + J	5.77 (Zpu	1.47 + j	7.69)	Shell Type
	Zero Seq. Z%:	1.10 + J	5.77 (Sec	1.47 + j	7.69 Pri	Open)
	Taps Pri. 0.000 %	Sec. 0.000 %	Phase Shift (Pri. Leading Sec.): 30.00 Deg.			

TRANSFORMER INPUT DATA

TRANSFORMER NAME	PRIMARY RECORD NO NAME	VOLTS L-L	* SECONDARY RECORD NO NAME	VOLTS L-L	FULL-LOAD KVA	NOMINAL KVA
XF2-0001	BUS-0002 D	69000.0	BUS-0114 YG	13200.0	7500.00	7500.00
	Pos. Seq. Z%:	0.476 + J 7.04	(Zpu 0.063 + j 0.939)			Shell Type
	Zero Seq. Z%:	0.476 + J 7.04	(Sec 0.063 + j 0.939 Pri Open)			
	Taps Pri. 0.000 % Sec. 0.000 % Phase Shift (Pri. Leading Sec.): 30.00 Deg.					

GENERATION CONTRIBUTION DATA

BUS NAME	CONTRIBUTION NAME	VOLTAGE L-L	MVA	X"d	X/R
BUS-0001	O & R 69kV Fee	69000.0	597.56		
	Three Phase		Contribution:	5000.00 AMPS	6.00
	Single Line to Ground		Contribution:	5000.00 AMPS	6.00
	Pos Sequence Impedance (100 MVA Base)			0.0275 + J	0.1651 PU
	Zero Sequence Impedance (100 MVA Base)			0.0275 + J	0.1651 PU
BUS-0005	O & R 13.2kV F	13200.0	130.23		
	Three Phase		Contribution:	5696.00 AMPS	6.00
	Single Line to Ground		Contribution:	5696.00 AMPS	6.00
	Pos Sequence Impedance (100 MVA Base)			0.1262 + J	0.7574 PU
	Zero Sequence Impedance (100 MVA Base)			0.1262 + J	0.7574 PU
BUS-0057	Cogen 1	480.00	0.770	0.1500	20.00
	KG: 0.9386	xdsat: 1.60	Excitation Limit:	1.30	Ik - ON
	Pos Sequence Impedance (100 MVA Base)			0.9732 + J	19.46 PU

MOTOR CONTRIBUTION DATA

BUS NAME	CONTRIBUTION NAME	VOLTAGE L-L	BASE kVA	X"d	X/R	Motor Number
BUS-0059	MTRI-0001	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0061	MTRI-0003	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0062	MTRI-0004	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0063	MTRI-0005	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0064	MTRI-0006	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0065	MTRI-0007	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0066	MTRI-0008	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0067	MTRI-0009	480	100.27	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			16.87 + j		168.70 PU
BUS-0068	MTRI-0010	480	100.27	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			16.87 + j		168.70 PU
BUS-0069	MTRI-0011	480	100.27	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			16.87 + j		168.70 PU

MOTOR CONTRIBUTION DATA

BUS NAME	CONTRIBUTION NAME	VOLTAGE L-L	BASE kVA	X"d	X/R	Motor Number
BUS-0070	MTRI-0012	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0071	MTRI-0013	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0072	MTRI-0014	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0073	MTRI-0015	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU

Rockland County WTP

Jun 25, 2020 13:35:16

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SKM POWER*TOOLS FOR WINDOWS
A_FAULT SHORT CIRCUIT ANALYSIS REPORT
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THREE PHASE FAULT REPORT
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)
PRE FAULT VOLTAGE: 1.0000
MODEL TRANSFORMER TAPS: NO

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=====
Centrifuge #1  3P Duty: 11.944 KA AT -59.31 DEG ( 9.93 MVA) X/R: 1.72
                VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0118 + J 0.0200 OHMS
                LOW VOLTAGE POWER CIRCUIT BREAKER 11.944 KA
                MOLDED CASE CIRCUIT BREAKER < 20KA 11.944 KA
                MOLDED CASE CIRCUIT BREAKER > 20KA 11.944 KA
                CBL-0043 Substation 5B 11.944 KA ANG: -59.31

Centrifuge #2  3P Duty: 11.945 KA AT -59.31 DEG ( 9.93 MVA) X/R: 1.72
                VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0118 + J 0.0200 OHMS
                LOW VOLTAGE POWER CIRCUIT BREAKER 11.945 KA
                MOLDED CASE CIRCUIT BREAKER < 20KA 11.945 KA
                MOLDED CASE CIRCUIT BREAKER > 20KA 11.945 KA
                CBL-0042 Substation 5A 11.945 KA ANG: -59.31

Centrifuge #3  3P Duty: 11.944 KA AT -59.31 DEG ( 9.93 MVA) X/R: 1.72
                VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0118 + J 0.0200 OHMS
                LOW VOLTAGE POWER CIRCUIT BREAKER 11.944 KA
                MOLDED CASE CIRCUIT BREAKER < 20KA 11.944 KA
                MOLDED CASE CIRCUIT BREAKER > 20KA 11.944 KA
                CBL-0044 Substation 5B 11.944 KA ANG: -59.31

Cogen Breaker  3P Duty: 18.548 KA AT -80.21 DEG ( 15.42 MVA) X/R: 7.93
                VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0025 + J 0.0147 OHMS
                LOW VOLTAGE POWER CIRCUIT BREAKER 19.144 KA
                MOLDED CASE CIRCUIT BREAKER > 20KA 20.326 KA
                CBL-0055 BUS-0057 6.049 KA ANG: 93.73
                CBL-0054 Substation 5B 12.549 KA ANG: -77.29

Digester Bldg  3P Duty: 20.456 KA AT -71.79 DEG ( 17.01 MVA) X/R: 3.17
                VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0042 + J 0.0129 OHMS
                LOW VOLTAGE POWER CIRCUIT BREAKER 20.456 KA
                MOLDED CASE CIRCUIT BREAKER > 20KA 20.456 KA
                CBL-0067 BUS-0069 0.705 KA ANG: 96.42
                CBL-0052 Substation 2B 19.767 KA ANG: -71.37

Grit Bldg (MCC 3P Duty: 18.524 KA AT -69.79 DEG ( 15.40 MVA) X/R: 2.90
                VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0052 + J 0.0140 OHMS
                LOW VOLTAGE POWER CIRCUIT BREAKER 18.524 KA
                MOLDED CASE CIRCUIT BREAKER < 20KA 18.524 KA
                MOLDED CASE CIRCUIT BREAKER > 20KA 18.524 KA
                CBL-0068 BUS-0070 0.880 KA ANG: 96.60
                CBL-0051 Substation 2B 17.670 KA ANG: -69.12
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THREE PHASE FAULT REPORT
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)
PRE FAULT VOLTAGE: 1.0000
MODEL TRANSFORMER TAPS: NO

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=====
MCC GB2-A  3P Duty: 35.893 KA AT -74.93 DEG ( 29.84 MVA) X/R: 3.79
            VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0020 + J 0.0075 OHMS
            LOW VOLTAGE POWER CIRCUIT BREAKER 35.893 KA
            MOLDED CASE CIRCUIT BREAKER > 20KA 35.893 KA
            CBL-0060 BUS-0062 0.880 KA ANG: -83.40
            CBL-0021 Substation 4A 35.024 KA ANG: -254.72

MCC GB2-B  3P Duty: 35.874 KA AT -74.90 DEG ( 29.83 MVA) X/R: 3.78
            VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0020 + J 0.0075 OHMS
            LOW VOLTAGE POWER CIRCUIT BREAKER 35.874 KA
            MOLDED CASE CIRCUIT BREAKER > 20KA 35.874 KA
            CBL-0059 BUS-0061 0.880 KA ANG: -83.40
            CBL-0020 Substation 4B 35.004 KA ANG: -254.69

MCC MP2A-A 3P Duty: 21.050 KA AT -69.77 DEG ( 17.50 MVA) X/R: 3.01
            VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0046 + J 0.0124 OHMS
            LOW VOLTAGE POWER CIRCUIT BREAKER 21.050 KA
            MOLDED CASE CIRCUIT BREAKER > 20KA 21.050 KA
            CBL-0064 BUS-0066 0.880 KA ANG: -83.40
            AUTO-0007 BUS-0102 20.196 KA ANG: -249.18

MCC MP2B-A 3P Duty: 20.670 KA AT -69.25 DEG ( 17.18 MVA) X/R: 2.80
            VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0048 + J 0.0125 OHMS
            LOW VOLTAGE POWER CIRCUIT BREAKER 20.670 KA
            MOLDED CASE CIRCUIT BREAKER > 20KA 20.670 KA
            CBL-0077 BUS-0072 0.880 KA ANG: -83.40
            CBL-0094 BUS-0100 19.818 KA ANG: -68.63

MCC MP2B-B 3P Duty: 21.334 KA AT -69.94 DEG ( 17.74 MVA) X/R: 3.04
            VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0045 + J 0.0122 OHMS
            LOW VOLTAGE POWER CIRCUIT BREAKER 21.334 KA
            MOLDED CASE CIRCUIT BREAKER > 20KA 21.334 KA
            CBL-0063 BUS-0065 0.880 KA ANG: -83.40
            CBL-0095 BUS-0103 20.480 KA ANG: -69.36

MCC PST (A-1) 3P Duty: 24.597 KA AT -76.39 DEG ( 20.45 MVA) X/R: 4.22
            VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0027 + J 0.0110 OHMS
            LOW VOLTAGE POWER CIRCUIT BREAKER 24.597 KA
            MOLDED CASE CIRCUIT BREAKER > 20KA 24.597 KA
            CBL-0069 BUS-0071 0.880 KA ANG: 96.60
            CBL-0053 Substation 2B 23.724 KA ANG: -76.13

MCC PST2-A 3P Duty: 31.104 KA AT -75.86 DEG ( 25.86 MVA) X/R: 4.05
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THREE PHASE FAULT REPORT
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

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	VOLTAGE:	480.	EQUIV. IMPEDANCE=	0.0022 + J 0.0086	OHMS
	LOW VOLTAGE POWER CIRCUIT BREAKER	31.104 KA			
	MOLDED CASE CIRCUIT BREAKER > 20KA	31.104 KA			
	CBL-0061	BUS-0063	0.880 KA	ANG:	-83.40
	CBL-0022	Substation 4A	30.232 KA	ANG:	-255.64
MCC PST2-B	3P Duty:	31.090 KA AT -75.84 DEG (	25.85 MVA)	X/R:	4.04
	VOLTAGE:	480.	EQUIV. IMPEDANCE=	0.0022 + J 0.0086	OHMS
	LOW VOLTAGE POWER CIRCUIT BREAKER	31.090 KA			
	MOLDED CASE CIRCUIT BREAKER > 20KA	31.090 KA			
	CBL-0062	BUS-0064	0.880 KA	ANG:	-83.40
	CBL-0027	Substation 4B	30.218 KA	ANG:	-255.62
MCC RBC2-A	3P Duty:	21.744 KA AT -66.26 DEG (	18.08 MVA)	X/R:	2.44
	VOLTAGE:	480.	EQUIV. IMPEDANCE=	0.0051 + J 0.0117	OHMS
	LOW VOLTAGE POWER CIRCUIT BREAKER	21.744 KA			
	MOLDED CASE CIRCUIT BREAKER > 20KA	21.744 KA			
	CBL-0057	BUS-0059	0.880 KA	ANG:	-83.40
	AUTO-0008	BUS-0109	20.905 KA	ANG:	-245.55
MCC SC-A	3P Duty:	16.364 KA AT -66.28 DEG (	13.60 MVA)	X/R:	2.28
	VOLTAGE:	480.	EQUIV. IMPEDANCE=	0.0068 + J 0.0155	OHMS
	LOW VOLTAGE POWER CIRCUIT BREAKER	16.364 KA			
	MOLDED CASE CIRCUIT BREAKER < 20KA	16.364 KA			
	MOLDED CASE CIRCUIT BREAKER > 20KA	16.364 KA			
	CBL-0013	Substation 4A	16.364 KA	ANG:	113.72
MCC SD2-A	3P Duty:	15.442 KA AT -74.44 DEG (	12.84 MVA)	X/R:	3.81
	VOLTAGE:	480.	EQUIV. IMPEDANCE=	0.0048 + J 0.0173	OHMS
	LOW VOLTAGE POWER CIRCUIT BREAKER	15.442 KA			
	MOLDED CASE CIRCUIT BREAKER < 20KA	16.184 KA			
	MOLDED CASE CIRCUIT BREAKER > 20KA	15.442 KA			
	CBL-0039	Substation 5A	15.442 KA	ANG:	-74.44
MCC SD2-B	3P Duty:	15.439 KA AT -74.43 DEG (	12.84 MVA)	X/R:	3.81
	VOLTAGE:	480.	EQUIV. IMPEDANCE=	0.0048 + J 0.0173	OHMS
	LOW VOLTAGE POWER CIRCUIT BREAKER	15.439 KA			
	MOLDED CASE CIRCUIT BREAKER < 20KA	16.182 KA			
	MOLDED CASE CIRCUIT BREAKER > 20KA	15.439 KA			
	CBL-0040	Substation 5B	15.439 KA	ANG:	-74.43
MCC SQ2	3P Duty:	19.825 KA AT -71.15 DEG (	16.48 MVA)	X/R:	3.09
	VOLTAGE:	480.	EQUIV. IMPEDANCE=	0.0045 + J 0.0132	OHMS

THREE PHASE FAULT REPORT
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)
PRE FAULT VOLTAGE: 1.0000
MODEL TRANSFORMER TAPS: NO

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	LOW VOLTAGE POWER CIRCUIT BREAKER	19.825 KA		
	MOLDED CASE CIRCUIT BREAKER < 20KA	19.825 KA		
	MOLDED CASE CIRCUIT BREAKER > 20KA	19.825 KA		
	CBL-0070 BUS-0073	0.880 KA	ANG:	-83.40
	CBL-0056 Substation 2B	18.966 KA	ANG:	-70.59
MCC SST2-A	3P Duty: 11.061 KA AT -47.34 DEG (9.20 MVA) X/R:	1.36		
	VOLTAGE: 480. EQUIV. IMPEDANCE=	0.0170 + J 0.0184	OHMS	
	LOW VOLTAGE POWER CIRCUIT BREAKER	11.061 KA		
	MOLDED CASE CIRCUIT BREAKER < 20KA	11.061 KA		
	MOLDED CASE CIRCUIT BREAKER > 20KA	11.061 KA		
	CBL-0065 BUS-0067	0.705 KA	ANG:	-83.58
	CBL-0024 Substation 4A	10.501 KA	ANG:	-225.07
MCC SST2-B	3P Duty: 11.059 KA AT -47.34 DEG (9.19 MVA) X/R:	1.36		
	VOLTAGE: 480. EQUIV. IMPEDANCE=	0.0170 + J 0.0184	OHMS	
	LOW VOLTAGE POWER CIRCUIT BREAKER	11.059 KA		
	MOLDED CASE CIRCUIT BREAKER < 20KA	11.059 KA		
	MOLDED CASE CIRCUIT BREAKER > 20KA	11.059 KA		
	CBL-0066 BUS-0068	0.705 KA	ANG:	-83.58
	CBL-0025 Substation 4B	10.498 KA	ANG:	-225.07
MCC- SC-B	3P Duty: 16.342 KA AT -66.21 DEG (13.59 MVA) X/R:	2.27		
	VOLTAGE: 480. EQUIV. IMPEDANCE=	0.0068 + J 0.0155	OHMS	
	LOW VOLTAGE POWER CIRCUIT BREAKER	16.342 KA		
	MOLDED CASE CIRCUIT BREAKER < 20KA	16.342 KA		
	MOLDED CASE CIRCUIT BREAKER > 20KA	16.342 KA		
	CBL-0046 BUS-0047	16.342 KA	ANG:	-66.21
MCC-A3	3P Duty: 6.121 KA AT -37.93 DEG (5.09 MVA) X/R:	0.78		
	VOLTAGE: 480. EQUIV. IMPEDANCE=	0.0357 + J 0.0278	OHMS	
	LOW VOLTAGE POWER CIRCUIT BREAKER	6.121 KA		
	MOLDED CASE CIRCUIT BREAKER < 10KA	6.121 KA		
	MOLDED CASE CIRCUIT BREAKER < 20KA	6.121 KA		
	MOLDED CASE CIRCUIT BREAKER > 20KA	6.121 KA		
	CBL-0100 MCC-SC2	6.121 KA	ANG:	-37.93
MCC-CH2C	3P Duty: 6.567 KA AT -48.96 DEG (5.46 MVA) X/R:	1.15		
	VOLTAGE: 480. EQUIV. IMPEDANCE=	0.0277 + J 0.0318	OHMS	
	LOW VOLTAGE POWER CIRCUIT BREAKER	6.567 KA		
	MOLDED CASE CIRCUIT BREAKER < 10KA	6.567 KA		
	MOLDED CASE CIRCUIT BREAKER < 20KA	6.567 KA		
	MOLDED CASE CIRCUIT BREAKER > 20KA	6.567 KA		
	CBL-0099 MCC-SC2	6.567 KA	ANG:	-48.96

THREE PHASE FAULT REPORT
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

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=====
MCC-EG2      3P Duty: 17.725 KA AT -69.26 DEG ( 14.74 MVA) X/R: 2.80
              VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0055 + J 0.0146 OHMS
              LOW VOLTAGE POWER CIRCUIT BREAKER 17.725 KA
              MOLDED CASE CIRCUIT BREAKER < 20KA 17.725 KA
              MOLDED CASE CIRCUIT BREAKER > 20KA 17.725 KA
              CBL-0080 Grit Bldg (MCC 17.725 KA ANG: -69.26

MCC-RBC      3P Duty: 20.852 KA AT -65.91 DEG ( 17.34 MVA) X/R: 2.39
              VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0054 + J 0.0121 OHMS
              LOW VOLTAGE POWER CIRCUIT BREAKER 20.852 KA
              MOLDED CASE CIRCUIT BREAKER > 20KA 20.852 KA
              CBL-0096 MCC RBC2-A 20.852 KA ANG: -65.91

MCC-SC2      3P Duty: 16.175 KA AT -66.22 DEG ( 13.45 MVA) X/R: 2.27
              VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0069 + J 0.0157 OHMS
              LOW VOLTAGE POWER CIRCUIT BREAKER 16.175 KA
              MOLDED CASE CIRCUIT BREAKER < 20KA 16.175 KA
              MOLDED CASE CIRCUIT BREAKER > 20KA 16.175 KA
              CBL-0097 MCC SC-A 16.175 KA ANG: -66.22

MCC-SO       3P Duty: 16.623 KA AT -68.96 DEG ( 13.82 MVA) X/R: 2.70
              VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0060 + J 0.0156 OHMS
              LOW VOLTAGE POWER CIRCUIT BREAKER 16.623 KA
              MOLDED CASE CIRCUIT BREAKER < 20KA 16.623 KA
              MOLDED CASE CIRCUIT BREAKER > 20KA 16.623 KA
              CBL-0081 MCC SO2 16.623 KA ANG: -68.96

MPP-G2       3P Duty: 4.580 KA AT -41.32 DEG ( 3.81 MVA) X/R: 0.88
              VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0454 + J 0.0400 OHMS
              LOW VOLTAGE POWER CIRCUIT BREAKER 4.580 KA
              MOLDED CASE CIRCUIT BREAKER < 10KA 4.580 KA
              MOLDED CASE CIRCUIT BREAKER < 20KA 4.580 KA
              MOLDED CASE CIRCUIT BREAKER > 20KA 4.580 KA
              CBL-0045 Substation 5B 4.580 KA ANG: -41.32

Substation 5A 3P Duty: 19.231 KA AT -81.05 DEG ( 15.99 MVA) X/R: 7.25
              VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0022 + J 0.0142 OHMS
              LOW VOLTAGE POWER CIRCUIT BREAKER 19.558 KA
              MOLDED CASE CIRCUIT BREAKER > 20KA 20.766 KA
              CBL-0031 BUS-0033 13.363 KA ANG: -79.24
              CBL-0032 Substation 5B 5.890 KA ANG: 94.84

Substation 2B 3P Duty: 28.647 KA AT -81.12 DEG ( 23.82 MVA) X/R: 6.46
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THREE PHASE FAULT REPORT
 (FOR APPLICATION OF LOW VOLTAGE BREAKERS)
 PRE FAULT VOLTAGE: 1.0000
 MODEL TRANSFORMER TAPS: NO

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=====
VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0015 + J 0.0096 OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER 28.647 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 30.302 KA
CBL-0053 MCC PST (A-1) 0.875 KA ANG: 96.79
CBL-0052 Digester Bldg 0.698 KA ANG: 96.79
CBL-0050 BUS-0078 25.343 KA ANG: -260.88
CBL-0056 MCC SO2 0.868 KA ANG: 97.11
CBL-0051 Grit Bldg (MCC 0.865 KA ANG: 97.22

Substation 4A 3P Duty: 43.947 KA AT -83.70 DEG ( 36.54 MVA) X/R: 9.15
VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0007 + J 0.0063 OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER 46.343 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 49.204 KA
CBL-0024 MCC SST2-A 0.680 KA ANG: -81.27
CBL-0021 MCC GB2-A 0.876 KA ANG: -83.18
CBL-0022 MCC PST2-A 0.872 KA ANG: -83.17
CBL-0008 BUS-0014 35.689 KA ANG: -83.96
CBL-0023 BUS-0100 0.860 KA ANG: -262.76
CBL-0012 Substation 4B 4.973 KA ANG: -82.48

Substation 4B 3P Duty: 43.923 KA AT -83.66 DEG ( 36.52 MVA) X/R: 9.08
VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0007 + J 0.0063 OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER 46.269 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 49.126 KA
CBL-0017 BUS-0109 0.863 KA ANG: -262.67
CBL-0020 MCC GB2-B 0.876 KA ANG: -83.18
CBL-0025 MCC SST2-B 0.680 KA ANG: -81.27
CBL-0027 MCC PST2-B 0.872 KA ANG: -83.17
CBL-0026 BUS-0103 1.683 KA ANG: -262.15
CBL-0012 Substation 4A 38.951 KA ANG: 96.19

Substation 5B 3P Duty: 19.227 KA AT -81.04 DEG ( 15.99 MVA) X/R: 7.25
VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0022 + J 0.0142 OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER 19.555 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 20.762 KA
CBL-0054 Cogen Breaker 5.890 KA ANG: 94.82
CBL-0032 Substation 5A 13.359 KA ANG: -79.22
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UNBALANCED FAULT REPORT
 (FOR APPLICATION OF LOW VOLTAGE BREAKERS)
 PRE FAULT VOLTAGE: 1.0000
 MODEL TRANSFORMER TAPS: NO

LOCATION VOLTAGE	FAULT DUTIES	KA (RMS)	X/R	EQUIVALENT (PU) FAULT IMPEDANCE	ASYM. KA AT * MAX. RMS	0.5 CYCLES AVG. RMS *
Centrifuge #1	3P Duty:	11.944	1.72	Z1= 10.0708	12.251	12.098
	SLG DUTY:	9.433	1.20	Z2= 10.0708	9.483	
480. VOLTS	LN/LN:	10.343		Z0= 18.6711		
	LN/LN/GND:	11.952	(7.685	GND RETURN KA)		
Centrifuge #2	3P Duty:	11.945	1.72	Z1= 10.0692	12.253	12.100
	SLG DUTY:	9.437	1.20	Z2= 10.0692	9.487	
480. VOLTS	LN/LN:	10.345		Z0= 18.6591		
	LN/LN/GND:	11.955	(7.689	GND RETURN KA)		
Centrifuge #3	3P Duty:	11.944	1.72	Z1= 10.0708	12.251	12.098
	SLG DUTY:	9.433	1.20	Z2= 10.0708	9.483	
480. VOLTS	LN/LN:	10.343		Z0= 18.6711		
	LN/LN/GND:	11.952	(7.685	GND RETURN KA)		
Cogen Breaker	3P Duty:	18.548	7.93	Z1= 6.4849	25.606	22.229
	SLG DUTY:	18.403	6.76	Z2= 6.4849	24.621	
480. VOLTS	LN/LN:	16.063		Z0= 6.6537		
	LN/LN/GND:	18.914	(18.246	GND RETURN KA)		
Digester Bldg	3P Duty:	20.456	3.17	Z1= 5.8800	23.100	21.799
	SLG DUTY:	17.578	2.24	Z2= 5.8800	18.611	
480. VOLTS	LN/LN:	17.716		Z0= 8.9291		
	LN/LN/GND:	20.575	(15.291	GND RETURN KA)		
Grit Bldg (MCC	3P Duty:	18.524	2.90	Z1= 6.4933	20.530	19.540
	SLG DUTY:	15.218	2.00	Z2= 6.4933	15.865	
480. VOLTS	LN/LN:	16.042		Z0= 10.9314		
	LN/LN/GND:	18.436	(12.804	GND RETURN KA)		
MCC GB2-A	3P Duty:	35.893	3.79	Z1= 3.3511	42.185	39.105
	SLG DUTY:	33.145	2.60	Z2= 3.3511	35.975	
480. VOLTS	LN/LN:	31.084		Z0= 4.2840		
	LN/LN/GND:	37.232	(30.509	GND RETURN KA)		
MCC GB2-B	3P Duty:	35.874	3.78	Z1= 3.3529	42.142	39.073
	SLG DUTY:	33.090	2.59	Z2= 3.3529	35.887	
480. VOLTS	LN/LN:	31.068		Z0= 4.3003		
	LN/LN/GND:	37.211	(30.424	GND RETURN KA)		

UNBALANCED FAULT REPORT
 (FOR APPLICATION OF LOW VOLTAGE BREAKERS)
 PRE FAULT VOLTAGE: 1.0000
 MODEL TRANSFORMER TAPS: NO

LOCATION VOLTAGE	FAULT DUTIES	KA (RMS)	X/R	EQUIVALENT (PU) FAULT IMPEDANCE	ASYM. KA AT * MAX. RMS	0.5 CYCLES AVG. RMS *
MCC MP2A-A	3P Duty:	21.050	3.01	Z1= 5.7142	23.518	22.301
	SLG DUTY:	15.788	2.02	Z2= 5.7142	16.481	
480. VOLTS	LN/LN:	18.229		Z0= 11.5932		
	LN/LN/GND:	20.382	(12.543	GND RETURN KA)		
MCC MP2B-A	3P Duty:	20.670	2.80	Z1= 5.8191	22.759	21.727
	SLG DUTY:	15.799	1.99	Z2= 5.8191	16.459	
480. VOLTS	LN/LN:	17.901		Z0= 11.3496		
	LN/LN/GND:	20.046	(12.706	GND RETURN KA)		
MCC MP2B-B	3P Duty:	21.334	3.04	Z1= 5.6379	23.878	22.625
	SLG DUTY:	16.053	2.04	Z2= 5.6379	16.773	
480. VOLTS	LN/LN:	18.476		Z0= 11.3664		
	LN/LN/GND:	20.675	(12.778	GND RETURN KA)		
MCC PST (A-1)	3P Duty:	24.597	4.22	Z1= 4.8901	29.638	27.179
	SLG DUTY:	23.074	3.13	Z2= 4.8901	25.990	
480. VOLTS	LN/LN:	21.302		Z0= 5.9305		
	LN/LN/GND:	25.203	(21.629	GND RETURN KA)		
MCC PST2-A	3P Duty:	31.104	4.05	Z1= 3.8670	37.114	34.178
	SLG DUTY:	27.250	2.90	Z2= 3.8670	30.219	
480. VOLTS	LN/LN:	26.937		Z0= 5.5785		
	LN/LN/GND:	31.170	(24.118	GND RETURN KA)		
MCC PST2-B	3P Duty:	31.090	4.04	Z1= 3.8688	37.080	34.154
	SLG DUTY:	27.214	2.89	Z2= 3.8688	30.154	
480. VOLTS	LN/LN:	26.925		Z0= 5.5939		
	LN/LN/GND:	31.159	(24.068	GND RETURN KA)		
MCC RBC2-A	3P Duty:	21.744	2.44	Z1= 5.5317	23.343	22.551
	SLG DUTY:	16.608	1.68	Z2= 5.5317	17.001	
480. VOLTS	LN/LN:	18.831		Z0= 10.8617		
	LN/LN/GND:	21.270	(13.317	GND RETURN KA)		
MCC SC-A	3P Duty:	16.364	2.28	Z1= 7.3503	17.371	16.871
	SLG DUTY:	12.220	1.76	Z2= 7.3503	12.559	
480. VOLTS	LN/LN:	14.172		Z0= 14.9828		
	LN/LN/GND:	15.708	(9.702	GND RETURN KA)		

UNBALANCED FAULT REPORT
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)
PRE FAULT VOLTAGE: 1.0000
MODEL TRANSFORMER TAPS: NO

LOCATION VOLTAGE	FAULT DUTIES	KA (RMS)	X/R	EQUIVALENT (PU) FAULT IMPEDANCE	ASYM. KA AT * MAX. RMS	0.5 CYCLES AVG. RMS *
MCC SD2-A	3P Duty:	15.442	3.81	Z1= 7.7892	18.168	16.834
	SLG DUTY:	14.041	2.79	Z2= 7.7892	15.451	
480. VOLTS	LN/LN:	13.373		Z0= 10.2522		
	LN/LN/GND:	15.667	(12.808	GND RETURN KA)		
MCC SD2-B	3P Duty:	15.439	3.81	Z1= 7.7906	18.165	16.831
	SLG DUTY:	14.035	2.79	Z2= 7.7906	15.442	
480. VOLTS	LN/LN:	13.371		Z0= 10.2625		
	LN/LN/GND:	15.664	(12.798	GND RETURN KA)		
MCC SO2	3P Duty:	19.825	3.09	Z1= 6.0673	22.267	21.064
	SLG DUTY:	16.745	2.15	Z2= 6.0673	17.627	
480. VOLTS	LN/LN:	17.169		Z0= 9.5940		
	LN/LN/GND:	19.865	(14.375	GND RETURN KA)		
MCC SST2-A	3P Duty:	11.061	1.36	Z1= 10.8744	11.170	11.116
	SLG DUTY:	7.133	0.86	Z2= 10.8744	7.137	
480. VOLTS	LN/LN:	9.579		Z0= 29.2889		
	LN/LN/GND:	10.478	(5.220	GND RETURN KA)		
MCC SST2-B	3P Duty:	11.059	1.36	Z1= 10.8767	11.168	11.113
	SLG DUTY:	7.129	0.86	Z2= 10.8767	7.134	
480. VOLTS	LN/LN:	9.577		Z0= 29.3080		
	LN/LN/GND:	10.476	(5.217	GND RETURN KA)		
MCC- SC-B	3P Duty:	16.342	2.27	Z1= 7.3604	17.339	16.844
	SLG DUTY:	12.184	1.75	Z2= 7.3604	12.517	
480. VOLTS	LN/LN:	14.152		Z0= 15.0527		
	LN/LN/GND:	15.687	(9.663	GND RETURN KA)		
MCC-A3	3P Duty:	6.121	0.78	Z1= 19.6491	6.123	6.122
	SLG DUTY:	3.863	0.63	Z2= 19.6491	3.863	
480. VOLTS	LN/LN:	5.301		Z0= 54.4744		
	LN/LN/GND:	5.684	(2.812	GND RETURN KA)		
MCC-CH2C	3P Duty:	6.567	1.15	Z1= 18.3166	6.594	6.581
	SLG DUTY:	4.300	0.93	Z2= 18.3166	4.305	
480. VOLTS	LN/LN:	5.687		Z0= 47.6266		
	LN/LN/GND:	6.135	(3.184	GND RETURN KA)		

UNBALANCED FAULT REPORT
 (FOR APPLICATION OF LOW VOLTAGE BREAKERS)
 PRE FAULT VOLTAGE: 1.0000
 MODEL TRANSFORMER TAPS: NO

LOCATION VOLTAGE	FAULT DUTIES	KA (RMS)	X/R	EQUIVALENT (PU) FAULT IMPEDANCE	ASYM. KA AT * MAX. RMS	0.5 CYCLES AVG. RMS *
MCC-EG2	3P Duty:	17.725	2.80	Z1= 6.7859	19.518	18.633
	SLG DUTY:	14.381	1.96	Z2= 6.7859	14.951	
480. VOLTS	LN/LN:	15.350		Z0= 11.7297		
	LN/LN/GND:	17.562	(12.000	GND RETURN KA)		
MCC-RBC	3P Duty:	20.852	2.39	Z1= 5.7684	22.308	21.586
	SLG DUTY:	15.799	1.67	Z2= 5.7684	16.159	
480. VOLTS	LN/LN:	18.058		Z0= 11.5015		
	LN/LN/GND:	20.333	(12.611	GND RETURN KA)		
MCC-SC2	3P Duty:	16.175	2.27	Z1= 7.4361	17.163	16.673
	SLG DUTY:	12.057	1.76	Z2= 7.4361	12.390	
480. VOLTS	LN/LN:	14.008		Z0= 15.2104		
	LN/LN/GND:	15.518	(9.563	GND RETURN KA)		
MCC-SO	3P Duty:	16.623	2.70	Z1= 7.2358	18.178	17.409
	SLG DUTY:	13.338	1.95	Z2= 7.2358	13.856	
480. VOLTS	LN/LN:	14.396		Z0= 12.7830		
	LN/LN/GND:	16.365	(11.057	GND RETURN KA)		
MPP-G2	3P Duty:	4.580	0.88	Z1= 26.2635	4.584	4.582
	SLG DUTY:	2.989	0.68	Z2= 26.2635	2.989	
480. VOLTS	LN/LN:	3.966		Z0= 68.9002		
	LN/LN/GND:	4.305	(2.206	GND RETURN KA)		
Substation 5A	3P Duty:	19.231	7.25	Z1= 6.2545	26.093	22.802
	SLG DUTY:	19.541	6.33	Z2= 6.2545	25.784	
480. VOLTS	LN/LN:	16.655		Z0= 5.9619		
	LN/LN/GND:	19.650	(19.855	GND RETURN KA)		
Substation 2B	3P Duty:	28.647	6.46	Z1= 4.1988	37.961	33.478
	SLG DUTY:	29.413	5.81	Z2= 4.1988	38.106	
480. VOLTS	LN/LN:	24.809		Z0= 3.8742		
	LN/LN/GND:	29.477	(30.213	GND RETURN KA)		
Substation 4A	3P Duty:	43.947	9.15	Z1= 2.7370	62.245	53.524
	SLG DUTY:	45.979	8.59	Z2= 2.7370	64.415	
480. VOLTS	LN/LN:	38.059		Z0= 2.3745		
	LN/LN/GND:	45.330	(48.206	GND RETURN KA)		

UNBALANCED FAULT REPORT
 (FOR APPLICATION OF LOW VOLTAGE BREAKERS)
 PRE FAULT VOLTAGE: 1.0000
 MODEL TRANSFORMER TAPS: NO

LOCATION VOLTAGE	FAULT DUTIES	KA (RMS)	X/R	EQUIVALENT (PU) FAULT IMPEDANCE	ASYM. KA AT 0.5 CYCLES * MAX. RMS	AVG. RMS *
Substation 4B	3P Duty:	43.923	9.08	Z1= 2.7385	62.132	53.452
	SLG DUTY:	45.898	8.41	Z2= 2.7385	64.046	
480. VOLTS	LN/LN:	38.038		Z0= 2.3855		
	LN/LN/GND:	45.347	(48.057	GND RETURN KA)		
Substation 5B	3P Duty:	19.227	7.25	Z1= 6.2557	26.089	22.798
	SLG DUTY:	19.530	6.32	Z2= 6.2557	25.759	
480. VOLTS	LN/LN:	16.651		Z0= 5.9700		
	LN/LN/GND:	19.649	(19.836	GND RETURN KA)		

F A U L T S T U D Y S U M M A R Y
 (FOR APPLICATION OF LOW VOLTAGE BREAKERS)

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

BUS RECORD NO NAME	VOLTAGE L-L	A V A I L A B L E 3 PHASE	F A U L T X/R	D U T I E S (KA) LINE/GRND	X/R
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Centrifuge #1	480.	11.944	1.72	9.433	1.20
Centrifuge #2	480.	11.945	1.72	9.437	1.20
Centrifuge #3	480.	11.944	1.72	9.433	1.20
Cogen Breaker	480.	18.548	7.93	18.403	6.76
Digester Bldg	480.	20.456	3.17	17.578	2.24
Grit Bldg (MCC	480.	18.524	2.90	15.218	2.00
MCC GB2-A	480.	35.893	3.79	33.145	2.60
MCC GB2-B	480.	35.874	3.78	33.090	2.59
MCC MP2A-A	480.	21.050	3.01	15.788	2.02
MCC MP2B-A	480.	20.670	2.80	15.799	1.99
MCC MP2B-B	480.	21.334	3.04	16.053	2.04
MCC PST (A-1)	480.	24.597	4.22	23.074	3.13
MCC PST2-A	480.	31.104	4.05	27.250	2.90
MCC PST2-B	480.	31.090	4.04	27.214	2.89
MCC RBC2-A	480.	21.744	2.44	16.608	1.68
MCC SC-A	480.	16.364	2.28	12.220	1.76
MCC SD2-A	480.	15.442	3.81	14.041	2.79
MCC SD2-B	480.	15.439	3.81	14.035	2.79
MCC SO2	480.	19.825	3.09	16.745	2.15
MCC SST2-A	480.	11.061	1.36	7.133	0.86
MCC SST2-B	480.	11.059	1.36	7.129	0.86
MCC- SC-B	480.	16.342	2.27	12.184	1.75
MCC-A3	480.	6.121	0.78	3.863	0.63
MCC-CH2C	480.	6.567	1.15	4.300	0.93
MCC-EG2	480.	17.725	2.80	14.381	1.96
MCC-RBC	480.	20.852	2.39	15.799	1.67
MCC-SC2	480.	16.175	2.27	12.057	1.76
MCC-SO	480.	16.623	2.70	13.338	1.95
MPP-G2	480.	4.580	0.88	2.989	0.68
Substation 5A	480.	19.231	7.25	19.541	6.33
Substation 2B	480.	28.647	6.46	29.413	5.81
Substation 4A	480.	43.947	9.15	45.979	8.59
Substation 4B	480.	43.923	9.08	45.898	8.41
Substation 5B	480.	19.227	7.25	19.530	6.32

66 FAULTED BUSES, 95 BRANCHES, 17 CONTRIBUTIONS
 UNBALANCED FAULTS REQUESTED

*** SHORT CIRCUIT STUDY COMPLETE ***

THREE PHASE MOMENTARY DUTY REPORT

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

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69kV Feed MDP-	E/Z:	4.098 KA AT	-85.19 DEG (93.69 MVA)	X/R:	11.93
	SYM*1.6:	6.557 KA	MOMENTARY BASED ON X/R:			6.052 KA
	SYM*2.7:	11.064 KA	CREST BASED ON X/R:			10.248 KA
	VOLTAGE:	13200.	EQUIV. IMPEDANCE=			0.1561 + J 1.8532 OHMS
CBL-0004		Sub 4 Main SW	0.000 KA		ANG:	-262.96
CBL-0038		Sub 5 Main SW	0.154 KA		ANG:	-263.29
CBL-0002		BUS-0114	3.944 KA		ANG:	94.74

69kV Feed MDP-	E/Z:	5.682 KA AT	-80.42 DEG (	129.90 MVA)	X/R:	5.93
	SYM*1.6:	9.090 KA	MOMENTARY BASED ON X/R:			7.392 KA
	SYM*2.7:	15.340 KA	CREST BASED ON X/R:			12.763 KA
	VOLTAGE:	13200.	EQUIV. IMPEDANCE=			0.2232 + J 1.3227 OHMS
CBL-0003		BUS-0005	5.682 KA		ANG:	-80.42

Centrifuge #1 VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Centrifuge #2 VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Centrifuge #3 VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Cogen Breaker VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Digester Bldg VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Grit Bldg (MCC VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

MCC GB2-A VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

MCC GB2-B VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

THREE PHASE MOMENTARY DUTY REPORT

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

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MCC MP2A-A    VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC MP2B-A    VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC MP2B-B    VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC PST (A-1) VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC PST2-A    VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC PST2-B    VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC RBC2-A    VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC SC-A      VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC SD2-A     VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC SD2-B     VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC SO2       VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC SST2-A    VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC SST2-B    VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC- SC-B     VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC-A3        VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC-CH2C      VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC-EG2       VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC-RBC       VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC-SC2       VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MCC-SO        VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )
MPP-G2        VOLTAGE:    480. ( SEE LOW VOLTAGE REPORT )

Sub 2 Main SW E/Z:      5.390 KA AT -77.75 DEG ( 123.24 MVA) X/R:    4.61
SYM*1.6:      8.624 KA      MOMENTARY BASED ON X/R:    6.627 KA
SYM*2.7:     14.553 KA      CREST BASED ON X/R:    11.478 KA
VOLTAGE:     13200.  EQUIV. IMPEDANCE= 0.2999 + J 1.3817 OHMS
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THREE PHASE MOMENTARY DUTY REPORT

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

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CONTRIBUTIONS TO Sub 2 Main SW (CONTINUED)
CBL-0074      BUS-0080      0.000 KA      ANG: -32.75
CBL-0078      69kV Feed MDP-    5.390 KA      ANG: 102.25

Sub 2 Main SW E/Z:      3.963 KA AT -83.16 DEG ( 90.61 MVA) X/R: 8.36
SYM*1.6:      6.341 KA      MOMENTARY BASED ON X/R: 5.525 KA
SYM*2.7:      10.701 KA      CREST BASED ON X/R: 9.455 KA
VOLTAGE:      13200. EQUIV. IMPEDANCE= 0.2289 + J 1.9093 OHMS
CBL-0072      BUS-0077      0.000 KA      ANG: -237.46
CBL-0076      69kV Feed MDP-    3.963 KA      ANG: -83.16

Sub 4 Main SW E/Z:      5.437 KA AT -79.28 DEG ( 124.31 MVA) X/R: 5.28
SYM*1.6:      8.700 KA      MOMENTARY BASED ON X/R: 6.897 KA
SYM*2.7:      14.681 KA      CREST BASED ON X/R: 11.932 KA
VOLTAGE:      13200. EQUIV. IMPEDANCE= 0.2607 + J 1.3772 OHMS
T4-B          BUS-0018      0.000 KA      ANG: -34.28
CBL-0005      69kV Feed MDP-    5.437 KA      ANG: -259.28

Sub 4 Main SW E/Z:      3.977 KA AT -84.23 DEG ( 90.92 MVA) X/R: 9.93
SYM*1.6:      6.363 KA      MOMENTARY BASED ON X/R: 5.711 KA
SYM*2.7:      10.738 KA      CREST BASED ON X/R: 9.723 KA
VOLTAGE:      13200. EQUIV. IMPEDANCE= 0.1927 + J 1.9066 OHMS
T4-A          BUS-0010      0.000 KA      ANG: -262.94
CBL-0004      69kV Feed MDP-    3.977 KA      ANG: -84.23

Sub 5 Main SW E/Z:      3.985 KA AT -84.29 DEG ( 91.11 MVA) X/R: 10.00
SYM*1.6:      6.376 KA      MOMENTARY BASED ON X/R: 5.729 KA
SYM*2.7:      10.759 KA      CREST BASED ON X/R: 9.752 KA
VOLTAGE:      13200. EQUIV. IMPEDANCE= 0.1904 + J 1.9030 OHMS
CBL-0038      69kV Feed MDP-    3.831 KA      ANG: -84.32
T5- A         BUS-0033      0.154 KA      ANG: -83.33

Sub 5 Main SW E/Z:      5.437 KA AT -79.28 DEG ( 124.31 MVA) X/R: 5.28
SYM*1.6:      8.700 KA      MOMENTARY BASED ON X/R: 6.897 KA
SYM*2.7:      14.681 KA      CREST BASED ON X/R: 11.932 KA
VOLTAGE:      13200. EQUIV. IMPEDANCE= 0.2607 + J 1.3772 OHMS
T5-B          BUS-0035      0.000 KA      ANG: -34.28
CBL-0037      69kV Feed MDP-    5.437 KA      ANG: -259.28

Substation 5A VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
Substation 2B VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
Substation 4A VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
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T H R E E P H A S E M O M E N T A R Y D U T Y R E P O R T

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

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Substation 4B VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Substation 5B VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

UNBALANCED MOMENTARY DUTY REPORT

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

LOCATION VOLTAGE	FAULT TYPE	E/Z KA	X/R	EQUIVALENT IMPEDANCE (PU)	MOMENTARY FAULT DUTIES E/Z * 1.6 @ 0.5 CYCLE	
=====						
69kV Feed MDP- 13200.	3P Duty:	4.10	11.9	Z1= 1.0674	6.56	6.05
	SLG DUTY:	4.26	12.6	Z2= 1.0674	6.82	6.34
	VOLTS LN/LN:	3.55		Z0= 0.9437		
	LN/LN/GND:	4.17 (	4.44	GND RETURN KA)		
69kV Feed MDP- 13200.	3P Duty:	5.68	5.9	Z1= 0.7698	9.09	7.39
	SLG DUTY:	5.67	5.9	Z2= 0.7698	9.08	7.37
	VOLTS LN/LN:	4.92		Z0= 0.7729		
	LN/LN/GND:	5.69 (	5.67	GND RETURN KA)		
Sub 2 Main SW 13200.	3P Duty:	5.39	4.6	Z1= 0.8115	8.62	6.63
	SLG DUTY:	5.20	3.9	Z2= 0.8115	8.32	6.16
	VOLTS LN/LN:	4.67		Z0= 0.9026		
	LN/LN/GND:	5.45 (	5.02	GND RETURN KA)		
Sub 2 Main SW 13200.	3P Duty:	3.96	8.4	Z1= 1.1036	6.34	5.53
	SLG DUTY:	4.03	6.9	Z2= 1.1036	6.44	5.41
	VOLTS LN/LN:	3.43		Z0= 1.0532		
	LN/LN/GND:	4.08 (	4.09	GND RETURN KA)		
Sub 4 Main SW 13200.	3P Duty:	5.44	5.3	Z1= 0.8044	8.70	6.90
	SLG DUTY:	5.31	4.8	Z2= 0.8044	8.50	6.61
	VOLTS LN/LN:	4.71		Z0= 0.8621		
	LN/LN/GND:	5.45 (	5.19	GND RETURN KA)		
Sub 4 Main SW 13200.	3P Duty:	3.98	9.9	Z1= 1.0998	6.36	5.71
	SLG DUTY:	4.07	9.1	Z2= 1.0998	6.51	5.76
	VOLTS LN/LN:	3.44		Z0= 1.0253		
	LN/LN/GND:	4.06 (	4.17	GND RETURN KA)		
Sub 5 Main SW 13200.	3P Duty:	3.98	10.0	Z1= 1.0976	6.38	5.73
	SLG DUTY:	4.07	9.1	Z2= 1.0976	6.52	5.77
	VOLTS LN/LN:	3.45		Z0= 1.0262		
	LN/LN/GND:	4.07 (	4.17	GND RETURN KA)		
Sub 5 Main SW 13200.	3P Duty:	5.44	5.3	Z1= 0.8044	8.70	6.90
	SLG DUTY:	5.31	4.8	Z2= 0.8044	8.50	6.61
	VOLTS LN/LN:	4.71		Z0= 0.8621		
	LN/LN/GND:	5.45 (	5.19	GND RETURN KA)		

M O M E N T A R Y D U T Y S U M M A R Y R E P O R T

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

SOLUTION METHOD : E/Z

=====					
BUS RECORD	VOLTAGE	* 3	P H A S E *	* * *	SLG * * *
NO NAME	L-L		KA X/R	KA	X/R
=====					
69kV Feed MDP-	13200.	6.052	11.93	6.343	12.60
69kV Feed MDP-	13200.	7.392	5.93	7.367	5.87
Sub 2 Main SW	13200.	6.627	4.61	6.157	3.91
Sub 2 Main SW	13200.	5.525	8.36	5.407	6.88
Sub 4 Main SW	13200.	6.897	5.28	6.607	4.85
Sub 4 Main SW	13200.	5.711	9.93	5.759	9.11
Sub 5 Main SW	13200.	5.729	10.00	5.769	9.13
Sub 5 Main SW	13200.	6.897	5.28	6.607	4.85

14 FAULTED BUSES, 95 BRANCHES, 17 CONTRIBUTIONS
UNBALANCED FAULTS REQUESTED

*** SHORT CIRCUIT STUDY COMPLETE ***

THREE PHASE INTERRUPTING DUTY REPORT

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

NACD OPTION: INTERPOLATED

=====

69kV Feed MDP- E/Z: 4.098 KA AT -85.19 DEG (93.69 MVA) X/R: 11.93
VOLTAGE: 13200. EQUIV. IMPEDANCE= 0.1561 + J 1.8532 OHMS
CONTRIBUTIONS: Sub 5 Main SW 0.154 KA ANG: -263.29
CBL-0002 BUS-0114 3.944 KA ANG: 94.74

GENERATOR NAME -- AT BUS -- KA VOLTS PU LOCAL/REMOTE
O & R 69kV Fee 3.944 0.85 R
Cogen 1 0.154 0.32 L
TOTAL REMOTE: 3.944 KA NACD RATIO: 0.9624

	SYM2	SYM3	SYM5	SYM8
MULT. FACT:	1.000	1.000	1.000	1.018
DUTY (KA) :	4.098	4.098	4.098	4.173

	TOT2	TOT3	TOT5	TOT8
MULT. FACT:	1.259	1.093	1.029	1.000
DUTY (KA) :	5.157	4.480	4.217	4.098

69kV Feed MDP- E/Z: 5.682 KA AT -80.42 DEG (129.90 MVA) X/R: 5.93
VOLTAGE: 13200. EQUIV. IMPEDANCE= 0.2232 + J 1.3227 OHMS
CBL-0003 BUS-0005 5.682 KA ANG: -80.42

GENERATOR NAME -- AT BUS -- KA VOLTS PU LOCAL/REMOTE
O & R 13.2kV F 5.682 0.00 R
TOTAL REMOTE: 5.682 KA NACD RATIO: 1.0000

	SYM2	SYM3	SYM5	SYM8
MULT. FACT:	1.000	1.000	1.000	1.000
DUTY (KA) :	5.682	5.682	5.682	5.682

	TOT2	TOT3	TOT5	TOT8
MULT. FACT:	1.082	1.000	1.000	1.000
DUTY (KA) :	6.148	5.682	5.682	5.682

Centrifuge #1 VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Centrifuge #2 VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Centrifuge #3 VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

THREE PHASE INTERRUPTING DUTY REPORT

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

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=====
Cogen Breaker VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
Digester Bldg VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
Grit Bldg (MCC VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC GB2-A VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC GB2-B VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC MP2A-A VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC MP2B-A VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC MP2B-B VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC PST (A-1) VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC PST2-A VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC PST2-B VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC RBC2-A VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC SC-A VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC SD2-A VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC SD2-B VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC S02 VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC SST2-A VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC SST2-B VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC- SC-B VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC-A3 VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC-CH2C VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
MCC-EG2 VOLTAGE: 480. ( SEE LOW VOLTAGE REPORT )
```

THREE PHASE INTERRUPTING DUTY REPORT

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

MCC-RBC VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

MCC-SC2 VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

MCC-SO VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

MPP-G2 VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Sub 2 Main SW E/Z: 5.390 KA AT -77.75 DEG (123.24 MVA) X/R: 4.61
VOLTAGE: 13200. EQUIV. IMPEDANCE= 0.2999 + J 1.3817 OHMS
CONTRIBUTIONS: 69kV Feed MDP- 5.390 KA ANG: 102.25

GENERATOR NAME -- AT BUS -- KA VOLTS PU LOCAL/REMOTE
O & R 13.2kV F 5.390 0.07 R
TOTAL REMOTE: 5.390 KA NACD RATIO: 1.0000

	SYM2	SYM3	SYM5	SYM8
MULT. FACT:	1.000	1.000	1.000	1.000
DUTY (KA) :	5.390	5.390	5.390	5.390

	TOT2	TOT3	TOT5	TOT8
MULT. FACT:	1.048	1.000	1.000	1.000
DUTY (KA) :	5.649	5.390	5.390	5.390

Sub 2 Main SW E/Z: 3.963 KA AT -83.16 DEG (90.61 MVA) X/R: 8.36
VOLTAGE: 13200. EQUIV. IMPEDANCE= 0.2289 + J 1.9093 OHMS
CONTRIBUTIONS: 69kV Feed MDP- 3.963 KA ANG: -83.16

GENERATOR NAME -- AT BUS -- KA VOLTS PU LOCAL/REMOTE
O & R 69kV Fee 3.814 0.85 R
Cogen 1 0.149 0.35 L
TOTAL REMOTE: 3.814 KA NACD RATIO: 0.9624

	SYM2	SYM3	SYM5	SYM8
MULT. FACT:	1.000	1.000	1.000	1.001
DUTY (KA) :	3.963	3.963	3.963	3.968

	TOT2	TOT3	TOT5	TOT8
MULT. FACT:	1.159	1.029	1.000	1.000
DUTY (KA) :	4.592	4.077	3.963	3.963

THREE PHASE INTERRUPTING DUTY REPORT

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

NACD OPTION: INTERPOLATED

=====

Sub 4 Main SW E/Z: 5.437 KA AT -79.28 DEG (124.31 MVA) X/R: 5.28
VOLTAGE: 13200. EQUIV. IMPEDANCE= 0.2607 + J 1.3772 OHMS
CONTRIBUTIONS: 69kV Feed MDP- 5.437 KA ANG: -259.28

GENERATOR NAME -- AT BUS -- KA VOLTS PU LOCAL/REMOTE
O & R 13.2kV F 5.437 0.05 R
TOTAL REMOTE: 5.437 KA NACD RATIO: 1.0000

	SYM2	SYM3	SYM5	SYM8
MULT. FACT:	1.000	1.000	1.000	1.000
DUTY (KA) :	5.437	5.437	5.437	5.437

	TOT2	TOT3	TOT5	TOT8
MULT. FACT:	1.062	1.000	1.000	1.000
DUTY (KA) :	5.774	5.437	5.437	5.437

Sub 4 Main SW E/Z: 3.977 KA AT -84.23 DEG (90.92 MVA) X/R: 9.93
VOLTAGE: 13200. EQUIV. IMPEDANCE= 0.1927 + J 1.9066 OHMS
CONTRIBUTIONS: 69kV Feed MDP- 3.977 KA ANG: -84.23

GENERATOR NAME -- AT BUS -- KA VOLTS PU LOCAL/REMOTE
O & R 69kV Fee 3.827 0.85 R
Cogen 1 0.150 0.34 L
TOTAL REMOTE: 3.827 KA NACD RATIO: 0.9624

	SYM2	SYM3	SYM5	SYM8
MULT. FACT:	1.000	1.000	1.000	1.004
DUTY (KA) :	3.977	3.977	3.977	3.992

	TOT2	TOT3	TOT5	TOT8
MULT. FACT:	1.209	1.053	1.006	1.000
DUTY (KA) :	4.806	4.187	4.002	3.977

Sub 5 Main SW E/Z: 3.985 KA AT -84.29 DEG (91.11 MVA) X/R: 10.00
VOLTAGE: 13200. EQUIV. IMPEDANCE= 0.1904 + J 1.9030 OHMS
CBL-0038 69kV Feed MDP- 3.831 KA ANG: -84.32
T5- A BUS-0033 0.154 KA ANG: -83.33

GENERATOR NAME -- AT BUS -- KA VOLTS PU LOCAL/REMOTE
O & R 69kV Fee 3.831 0.85 R
Cogen 1 0.154 0.32 L
TOTAL REMOTE: 3.831 KA NACD RATIO: 0.9613

	SYM2	SYM3	SYM5	SYM8
MULT. FACT:	1.000	1.000	1.000	1.004
DUTY (KA) :	3.985	3.985	3.985	4.000

THREE PHASE INTERRUPTING DUTY REPORT

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

NACD OPTION: INTERPOLATED

=====

	TOT2	TOT3	TOT5	TOT8
MULT. FACT:	1.211	1.054	1.007	1.000
DUTY (KA) :	4.826	4.201	4.012	3.985

Sub 5 Main SW E/Z: 5.437 KA AT -79.28 DEG (124.31 MVA) X/R: 5.28
VOLTAGE: 13200. EQUIV. IMPEDANCE= 0.2607 + J 1.3772 OHMS
CONTRIBUTIONS: 69kV Feed MDP- 5.437 KA ANG: -259.28

GENERATOR NAME -- AT BUS -- KA VOLTS PU LOCAL/REMOTE
O & R 13.2kV F 5.437 0.05 R
TOTAL REMOTE: 5.437 KA NACD RATIO: 1.0000

	SYM2	SYM3	SYM5	SYM8
MULT. FACT:	1.000	1.000	1.000	1.000
DUTY (KA) :	5.437	5.437	5.437	5.437

	TOT2	TOT3	TOT5	TOT8
MULT. FACT:	1.062	1.000	1.000	1.000
DUTY (KA) :	5.774	5.437	5.437	5.437

Substation 5A VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Substation 2B VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Substation 4A VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Substation 4B VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Substation 5B VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

UNBALANCED INTERRUPTING DUTY REPORT

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

NACD OPTION: INTERPOLATED

LOCATION	FAULT TYPE	E/Z KA	X/R	ANSI DECREMENT 3 PHASE	AC/DC FACT. SLG	INTERRUPTING DUTIES (KA) 3 PHASE	SLG
69kV Feed MDP- 3P Duty:		4.10	11.9	SYM2:	1.00	1.00	4.10 4.26
VOLTS: 13200.0	SLG:	4.26	12.6	SYM3:	1.00	1.00	4.10 4.26
NACD: 0.962	LN/LN:	3.55		SYM5:	1.00	1.00	4.10 4.26
	LN/LN/GND:	4.20		SYM8:	1.02	1.02	4.17 4.36
	GND RETURN:	4.44		TOT2:	1.26	1.28	5.16 5.44
	Z1(PU):	1.06736		TOT3:	1.09	1.11	4.48 4.72
	Z2(PU):	1.06736		TOT5:	1.03	1.04	4.22 4.42
	Z0(PU):	0.94367		TOT8:	1.00	1.00	4.10 4.26
69kV Feed MDP- 3P Duty:		5.68	5.9	SYM2:	1.00	1.00	5.68 5.67
VOLTS: 13200.0	SLG:	5.67	5.9	SYM3:	1.00	1.00	5.68 5.67
NACD: 1.000	LN/LN:	4.92		SYM5:	1.00	1.00	5.68 5.67
	LN/LN/GND:	5.69		SYM8:	1.00	1.00	5.68 5.67
	GND RETURN:	5.67		TOT2:	1.08	1.08	6.15 6.13
	Z1(PU):	0.76984		TOT3:	1.00	1.00	5.68 5.67
	Z2(PU):	0.76984		TOT5:	1.00	1.00	5.68 5.67
	Z0(PU):	0.77293		TOT8:	1.00	1.00	5.68 5.67
Sub 2 Main SW 3P Duty:		5.39	4.6	SYM2:	1.00	1.00	5.39 5.20
VOLTS: 13200.0	SLG:	5.20	3.9	SYM3:	1.00	1.00	5.39 5.20
NACD: 1.000	LN/LN:	4.67		SYM5:	1.00	1.00	5.39 5.20
	LN/LN/GND:	5.45		SYM8:	1.00	1.00	5.39 5.20
	GND RETURN:	5.02		TOT2:	1.05	1.04	5.65 5.41
	Z1(PU):	0.81146		TOT3:	1.00	1.00	5.39 5.20
	Z2(PU):	0.81146		TOT5:	1.00	1.00	5.39 5.20
	Z0(PU):	0.90256		TOT8:	1.00	1.00	5.39 5.20
Sub 2 Main SW 3P Duty:		3.96	8.4	SYM2:	1.00	1.00	3.96 4.03
VOLTS: 13200.0	SLG:	4.03	6.9	SYM3:	1.00	1.00	3.96 4.03
NACD: 0.962	LN/LN:	3.43		SYM5:	1.00	1.00	3.96 4.03
	LN/LN/GND:	4.08		SYM8:	1.00	1.00	3.97 4.03
	GND RETURN:	4.09		TOT2:	1.16	1.11	4.59 4.48
	Z1(PU):	1.10363		TOT3:	1.03	1.01	4.08 4.05
	Z2(PU):	1.10363		TOT5:	1.00	1.00	3.96 4.03
	Z0(PU):	1.05325		TOT8:	1.00	1.00	3.96 4.03

UNBALANCED INTERRUPTING DUTY REPORT

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

NACD OPTION: INTERPOLATED

LOCATION	FAULT TYPE	E/Z KA	X/R	ANSI DECREMENT 3 PHASE	AC/DC FACT. SLG	INTERRUPTING DUTIES (KA) 3 PHASE SLG	
Sub 4 Main SW	3P Duty:	5.44	5.3	SYM2:	1.00	1.00	5.44 5.31
VOLTS:	13200.0	SLG:	5.31	4.8	SYM3:	1.00	1.00 5.44 5.31
NACD:	1.000	LN/LN:	4.71	SYM5:	1.00	1.00	5.44 5.31
	LN/LN/GND:	5.45	SYM8:	1.00	1.00	5.44	5.31
	GND RETURN:	5.19	TOT2:	1.06	1.05	5.77	5.58
	Z1(PU):	0.80443	TOT3:	1.00	1.00	5.44	5.31
	Z2(PU):	0.80443	TOT5:	1.00	1.00	5.44	5.31
	Z0(PU):	0.86209	TOT8:	1.00	1.00	5.44	5.31
Sub 4 Main SW	3P Duty:	3.98	9.9	SYM2:	1.00	1.00	3.98 4.07
VOLTS:	13200.0	SLG:	4.07	9.1	SYM3:	1.00	1.00 3.98 4.07
NACD:	0.962	LN/LN:	3.44	SYM5:	1.00	1.00	3.98 4.07
	LN/LN/GND:	4.06	SYM8:	1.00	1.00	3.99	4.08
	GND RETURN:	4.17	TOT2:	1.21	1.18	4.81	4.81
	Z1(PU):	1.09981	TOT3:	1.05	1.04	4.19	4.23
	Z2(PU):	1.09981	TOT5:	1.01	1.00	4.00	4.08
	Z0(PU):	1.02535	TOT8:	1.00	1.00	3.98	4.07
Sub 5 Main SW	3P Duty:	3.98	10.0	SYM2:	1.00	1.00	3.98 4.07
VOLTS:	13200.0	SLG:	4.07	9.1	SYM3:	1.00	1.00 3.98 4.07
NACD:	0.961	LN/LN:	3.45	SYM5:	1.00	1.00	3.98 4.07
	LN/LN/GND:	4.07	SYM8:	1.00	1.00	4.00	4.08
	GND RETURN:	4.17	TOT2:	1.21	1.18	4.83	4.82
	Z1(PU):	1.09761	TOT3:	1.05	1.04	4.20	4.24
	Z2(PU):	1.09761	TOT5:	1.01	1.00	4.01	4.09
	Z0(PU):	1.02623	TOT8:	1.00	1.00	3.98	4.07
Sub 5 Main SW	3P Duty:	5.44	5.3	SYM2:	1.00	1.00	5.44 5.31
VOLTS:	13200.0	SLG:	5.31	4.8	SYM3:	1.00	1.00 5.44 5.31
NACD:	1.000	LN/LN:	4.71	SYM5:	1.00	1.00	5.44 5.31
	LN/LN/GND:	5.45	SYM8:	1.00	1.00	5.44	5.31
	GND RETURN:	5.19	TOT2:	1.06	1.05	5.77	5.58
	Z1(PU):	0.80443	TOT3:	1.00	1.00	5.44	5.31
	Z2(PU):	0.80443	TOT5:	1.00	1.00	5.44	5.31
	Z0(PU):	0.86209	TOT8:	1.00	1.00	5.44	5.31

I N T E R R U P T I N G D U T Y S U M M A R Y R E P O R T

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

NACD OPTION: INTERPOLATED

BUS RECORD NO NAME	VOLTAGE L-L	NACD RATIO	* 3 P H A S E * E/Z KA X/R	* * * S L G * * * E/Z KA X/R
69kV Feed MDP-	13200.	0.962	4.098 11.93	4.263 12.60
69kV Feed MDP-	13200.	1.000	5.682 5.93	5.674 5.87
Sub 2 Main SW	13200.	1.000	5.390 4.61	5.202 3.91
Sub 2 Main SW	13200.	0.962	3.963 8.36	4.027 6.88
Sub 4 Main SW	13200.	1.000	5.437 5.28	5.312 4.85
Sub 4 Main SW	13200.	0.962	3.977 9.93	4.069 9.11
Sub 5 Main SW	13200.	0.961	3.985 10.00	4.074 9.13
Sub 5 Main SW	13200.	1.000	5.437 5.28	5.312 4.85

14 FAULTED BUSES, 95 BRANCHES, 17 CONTRIBUTIONS
UNBALANCED FAULTS REQUESTED

*** SHORT CIRCUIT STUDY COMPLETE ***

Appendix A2:

Short Circuit Study Input and Output Data

ALL INFORMATION PRESENTED IS FOR REVIEW, APPROVAL
INTERPRETATION AND APPLICATION BY A REGISTERED ENGINEER ONLY
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INPUT DATA REPORT
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FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	FEEDER TYPE	
CBL-0001	BUS-0001	BUS-0002	1	69000	50.0 FEET	4/0	Copper	
	Duct Material: Non-Magnetic	Insulation Type: EPR					Insulation Class: HV	
	+/- Impedance: 0.0710 + J	0.0890 Ohms/1000 ft				0.00007 + J	0.00009 PU	
	Z0 Impedance: 0.3370 + J	0.1990 Ohms/1000 ft				0.00035 + J	0.00021 PU	
CBL-0006	BUS-0089	BUS-0011	8	480	25.0 FEET	500	Copper	
	Duct Material: Magnetic	Insulation Type: PVC					Insulation Class: THHN	
	+/- Impedance: 0.0294 + J	0.0466 Ohms/1000 ft				0.0399 + J	0.0632 PU	
	Z0 Impedance: 0.0926 + J	0.1147 Ohms/1000 ft				0.1256 + J	0.1556 PU	
CBL-0007	BUS-0011	BUS-0013	6	480	20.0 FEET	750	Copper	
	Duct Material: Magnetic	Insulation Type: PVC					Insulation Class: THHN	
	+/- Impedance: 0.0216 + J	0.0326 Ohms/1000 ft				0.0313 + J	0.0472 PU	
	Z0 Impedance: 0.0680 + J	0.0802 Ohms/1000 ft				0.0984 + J	0.1160 PU	
CBL-0008	BUS-0014	Substation 4A	6	480	20.0 FEET	750	Copper	
	Duct Material: Magnetic	Insulation Type: PVC					Insulation Class: THHN	
	+/- Impedance: 0.0216 + J	0.0326 Ohms/1000 ft				0.0313 + J	0.0472 PU	
	Z0 Impedance: 0.0680 + J	0.0802 Ohms/1000 ft				0.0984 + J	0.1160 PU	
CBL-0010	BUS-0011	BUS-0020	6	480	20.0 FEET	750	Copper	
	Duct Material: Magnetic	Insulation Type: PVC					Insulation Class: THHN	
	+/- Impedance: 0.0216 + J	0.0326 Ohms/1000 ft				0.0313 + J	0.0472 PU	
	Z0 Impedance: 0.0680 + J	0.0802 Ohms/1000 ft				0.0984 + J	0.1160 PU	
CBL-0012	Substation 4A	Substation 4B	1	480	2.0 FEET	4000	Copper	
	Duct Material: Busway	Insulation Type: Epoxy					Insulation Class: Class B	
	+/- Impedance: 0.0033 + J	0.0019 Ohms/1000 ft				0.0029 + J	0.0016 PU	
	Z0 Impedance: 0.0196 + J	0.0101 Ohms/1000 ft				0.0170 + J	0.0088 PU	
CBL-0013	Substation 4A	MCC SC-A	3	480	850.0 FEET	750	Copper	
	Duct Material: Magnetic	Insulation Type: PVC					Insulation Class: THHN	
	+/- Impedance: 0.0216 + J	0.0326 Ohms/1000 ft				2.66 + J	4.01 PU	
	Z0 Impedance: 0.0680 + J	0.0802 Ohms/1000 ft				8.36 + J	9.86 PU	
CBL-0015	Substation 4B	BUS-0047	3	480	850.0 FEET	750	Copper	
	Duct Material: Magnetic	Insulation Type: PVC					Insulation Class: THHN	
	+/- Impedance: 0.0216 + J	0.0326 Ohms/1000 ft				2.66 + J	4.01 PU	
	Z0 Impedance: 0.0680 + J	0.0802 Ohms/1000 ft				8.36 + J	9.86 PU	
CBL-0017	Substation 4B	BUS-0109	4	480	650.0 FEET	500	Copper	
	Duct Material: Magnetic	Insulation Type: PVC					Insulation Class: THHN	
	+/- Impedance: 0.0294 + J	0.0349 Ohms/1000 ft				2.07 + J	2.46 PU	
	Z0 Impedance: 0.0926 + J	0.0859 Ohms/1000 ft				6.53 + J	6.06 PU	

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	FEEDER TYPE	
CBL-0018	Substation 4A	BUS-0108	4	480	650.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		2.07 + J	2.46 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		6.53 + J	6.06 PU	
CBL-0020	Substation 4B	MCC GB2-B	2	480	50.0 FEET	250	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0552 + J	0.0495	Ohms/1000 ft		0.5990 + J	0.5371 PU	
	Z0 Impedance:	0.1739 + J	0.1219	Ohms/1000 ft		1.89 + J	1.32 PU	
CBL-0021	Substation 4A	MCC GB2-A	2	480	50.0 FEET	250	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0552 + J	0.0495	Ohms/1000 ft		0.5990 + J	0.5371 PU	
	Z0 Impedance:	0.1739 + J	0.1219	Ohms/1000 ft		1.89 + J	1.32 PU	
CBL-0022	Substation 4A	MCC PST2-A	3	480	160.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0466	Ohms/1000 ft		0.6806 + J	1.08 PU	
	Z0 Impedance:	0.0926 + J	0.1147	Ohms/1000 ft		2.14 + J	2.66 PU	
CBL-0023	Substation 4A	BUS-0100	3	480	600.0 FEET	750	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J	0.0326	Ohms/1000 ft		1.88 + J	2.83 PU	
	Z0 Impedance:	0.0680 + J	0.0802	Ohms/1000 ft		5.90 + J	6.96 PU	
CBL-0024	Substation 4A	MCC SST2-A	2	480	650.0 FEET	250	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0552 + J	0.0379	Ohms/1000 ft		7.79 + J	5.35 PU	
	Z0 Impedance:	0.1739 + J	0.0933	Ohms/1000 ft		24.53 + J	13.16 PU	
CBL-0025	Substation 4B	MCC SST2-B	2	480	650.0 FEET	250	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0552 + J	0.0379	Ohms/1000 ft		7.79 + J	5.35 PU	
	Z0 Impedance:	0.1739 + J	0.0933	Ohms/1000 ft		24.53 + J	13.16 PU	
CBL-0026	Substation 4B	BUS-0103	3	480	600.0 FEET	750	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J	0.0326	Ohms/1000 ft		1.88 + J	2.83 PU	
	Z0 Impedance:	0.0680 + J	0.0802	Ohms/1000 ft		5.90 + J	6.96 PU	
CBL-0027	Substation 4B	MCC PST2-B	3	480	160.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0466	Ohms/1000 ft		0.6806 + J	1.08 PU	
	Z0 Impedance:	0.0926 + J	0.1147	Ohms/1000 ft		2.14 + J	2.66 PU	

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	FEEDER TYPE	
CBL-0046	BUS-0047	MCC- SC-B	1	480	2.0 FEET	1200	Copper	
	Duct Material:	Busway		Insulation Type:		Epoxy	Insulation Class:	Class B
	+/- Impedance:	0.0111 + J	0.0052	Ohms/1000 ft		0.0096 + J	0.0045 PU	
	Z0 Impedance:	0.0660 + J	0.0278	Ohms/1000 ft		0.0573 + J	0.0241 PU	
CBL-0050	BUS-0078	Substation 2B	4	480	25.0 FEET	500	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		0.0798 + J	0.0947 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		0.2512 + J	0.2330 PU	
CBL-0051	Substation 2B	Grit Bldg (MCC	2	480	275.0 FEET	500	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		1.75 + J	2.08 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		5.53 + J	5.13 PU	
CBL-0052	Substation 2B	Digester Bldg	2	480	200.0 FEET	500	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		1.28 + J	1.51 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		4.02 + J	3.73 PU	
CBL-0053	Substation 2B	MCC PST (A-1)	2	480	85.0 FEET	500	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		0.5423 + J	0.6438 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		1.71 + J	1.58 PU	
CBL-0056	Substation 2B	MCC SO2	2	480	225.0 FEET	500	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0349	Ohms/1000 ft		1.44 + J	1.70 PU	
	Z0 Impedance:	0.0926 + J	0.0859	Ohms/1000 ft		4.52 + J	4.19 PU	
CBL-0057	MCC RBC2-A	BUS-0059	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	
CBL-0059	MCC GB2-B	BUS-0061	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	
CBL-0060	MCC GB2-A	BUS-0062	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic		Insulation Type:		PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407	Ohms/1000 ft		2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002	Ohms/1000 ft		6.97 + J	2.17 PU	

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	FEEDER TYPE	
CBL-0061	MCC PST2-A	BUS-0063	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407		Ohms/1000 ft	2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002		Ohms/1000 ft	6.97 + J	2.17 PU	
CBL-0062	MCC PST2-B	BUS-0064	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407		Ohms/1000 ft	2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002		Ohms/1000 ft	6.97 + J	2.17 PU	
CBL-0063	MCC MP2B-B	BUS-0065	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407		Ohms/1000 ft	2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002		Ohms/1000 ft	6.97 + J	2.17 PU	
CBL-0064	MCC MP2A-A	BUS-0066	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407		Ohms/1000 ft	2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002		Ohms/1000 ft	6.97 + J	2.17 PU	
CBL-0065	MCC SST2-A	BUS-0067	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407		Ohms/1000 ft	2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002		Ohms/1000 ft	6.97 + J	2.17 PU	
CBL-0066	MCC SST2-B	BUS-0068	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407		Ohms/1000 ft	2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002		Ohms/1000 ft	6.97 + J	2.17 PU	
CBL-0067	Digester Bldg	BUS-0069	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407		Ohms/1000 ft	2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002		Ohms/1000 ft	6.97 + J	2.17 PU	
CBL-0068	Grit Bldg (MCC	BUS-0070	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407		Ohms/1000 ft	2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002		Ohms/1000 ft	6.97 + J	2.17 PU	
CBL-0069	MCC PST (A-1)	BUS-0071	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407		Ohms/1000 ft	2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002		Ohms/1000 ft	6.97 + J	2.17 PU	

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	FEEDER TYPE	
CBL-0070	MCC SQ2	BUS-0073	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407		Ohms/1000 ft	2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002		Ohms/1000 ft	6.97 + J	2.17 PU	
CBL-0077	MCC MP2B-A	BUS-0072	1	480	50.0 FEET	2/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1020 + J	0.0407		Ohms/1000 ft	2.21 + J	0.8832 PU	
	Z0 Impedance:	0.3214 + J	0.1002		Ohms/1000 ft	6.97 + J	2.17 PU	
CBL-0079	BUS-0086	BUS-0087	2	480	35.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0466		Ohms/1000 ft	0.2233 + J	0.3539 PU	
	Z0 Impedance:	0.0926 + J	0.1147		Ohms/1000 ft	0.7033 + J	0.8712 PU	
CBL-0080	Grit Bldg (MCC	MCC-EG2	2	480	25.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0466		Ohms/1000 ft	0.1595 + J	0.2528 PU	
	Z0 Impedance:	0.0926 + J	0.1147		Ohms/1000 ft	0.5024 + J	0.6223 PU	
CBL-0081	MCC SQ2	MCC-SQ	1	480	50.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0466		Ohms/1000 ft	0.6380 + J	1.01 PU	
	Z0 Impedance:	0.0926 + J	0.1147		Ohms/1000 ft	2.01 + J	2.49 PU	
CBL-0089	BUS-0100	BUS-0101	3	480	25.0 FEET	750	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J	0.0326		Ohms/1000 ft	0.0781 + J	0.1179 PU	
	Z0 Impedance:	0.0680 + J	0.0802		Ohms/1000 ft	0.2459 + J	0.2901 PU	
CBL-0090	BUS-0103	BUS-0102	3	480	25.0 FEET	750	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J	0.0326		Ohms/1000 ft	0.0781 + J	0.1179 PU	
	Z0 Impedance:	0.0680 + J	0.0802		Ohms/1000 ft	0.2459 + J	0.2901 PU	
CBL-0094	BUS-0100	MCC MP2B-A	3	480	10.0 FEET	750	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J	0.0326		Ohms/1000 ft	0.0313 + J	0.0472 PU	
	Z0 Impedance:	0.0680 + J	0.0802		Ohms/1000 ft	0.0984 + J	0.1160 PU	
CBL-0095	BUS-0103	MCC MP2B-B	3	480	10.0 FEET	750	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0216 + J	0.0326		Ohms/1000 ft	0.0313 + J	0.0472 PU	
	Z0 Impedance:	0.0680 + J	0.0802		Ohms/1000 ft	0.0984 + J	0.1160 PU	

FEEDER INPUT DATA

CABLE NAME	FEEDER FROM NAME	FEEDER TO NAME	QTY /PH	VOLTS L-L	LENGTH	FEEDER SIZE	FEEDER TYPE	
CBL-0096	MCC RBC2-A	MCC-RBC	3	480	30.0 FEET	500	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0294 + J	0.0466	Ohms/1000 ft		0.1276 + J	0.2023 PU	
	Z0 Impedance:	0.0926 + J	0.1147	Ohms/1000 ft		0.4019 + J	0.4978 PU	
CBL-0097	MCC SC-A	MCC-SC2	4	480	15.0 FEET	600	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0257 + J	0.0463	Ohms/1000 ft		0.0418 + J	0.0754 PU	
	Z0 Impedance:	0.0809 + J	0.1140	Ohms/1000 ft		0.1317 + J	0.1855 PU	
CBL-0099	MCC-SC2	MCC-CH2C	1	480	325.0 FEET	4/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.0640 + J	0.0497	Ohms/1000 ft		9.03 + J	7.01 PU	
	Z0 Impedance:	0.2017 + J	0.1224	Ohms/1000 ft		28.45 + J	17.27 PU	
CBL-0100	MCC-SC2	MCC-A3	1	480	225.0 FEET	1/0	Copper	
	Duct Material:	Magnetic			Insulation Type:	PVC	Insulation Class:	THHN
	+/- Impedance:	0.1280 + J	0.0540	Ohms/1000 ft		12.50 + J	5.27 PU	
	Z0 Impedance:	0.4034 + J	0.1329	Ohms/1000 ft		39.39 + J	12.98 PU	

TRANSFORMER INPUT DATA

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TRANSFORMER  PRIMARY RECORD      VOLTS  * SECONDARY RECORD  VOLTS  FULL-LOAD  NOMINAL
NAME          NO NAME            L-L      NO NAME            L-L      KVA        KVA
=====
XF2-0001      BUS-0002      D 69000.0  BUS-0114      YG 13200.0 7500.00    7500.00
Pos. Seq. Z%: 0.476 + J 7.04 (Zpu 0.063 + j 0.939 ) Shell Type
Zero Seq. Z%: 0.476 + J 7.04 (Sec 0.063 + j 0.939 Pri Open)
Taps Pri. 0.000 % Sec. 0.000 % Phase Shift (Pri. Leading Sec.): 30.00 Deg.
    
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GENERATION CONTRIBUTION DATA

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BUS	CONTRIBUTION	VOLTAGE				
NAME	NAME	L-L	MVA	X"d	X/R	
=====						
BUS-0001	O & R 69kV Fee	69000.0	597.56			
	Three Phase		Contribution:	5000.00	AMPS	6.00
	Single Line to Ground		Contribution:	5000.00	AMPS	6.00
	Pos Sequence Impedance (100 MVA Base)			0.0275 + J		0.1651 PU
	Zero Sequence Impedance (100 MVA Base)			0.0275 + J		0.1651 PU
BUS-0086	GEN-0004	480.00	0.637	0.1500	20.00	
	KG: 0.9174 xdsat:	1.60	Excitation Limit:	1.30	Ik -	ON
	Pos Sequence Impedance (100 MVA Base)			1.18 + J		23.53 PU
BUS-0089	GEN-0001	480.00	2.00	0.1500	20.00	
	KG: 0.9174 xdsat:	1.60	Excitation Limit:	1.30	Ik -	ON
	Pos Sequence Impedance (100 MVA Base)			0.3750 + J		7.50 PU

MOTOR CONTRIBUTION DATA

BUS NAME	CONTRIBUTION NAME	VOLTAGE L-L	BASE kVA	X"d	X/R	Motor Number
BUS-0059	MTRI-0001	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0061	MTRI-0003	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0062	MTRI-0004	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0063	MTRI-0005	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0064	MTRI-0006	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0065	MTRI-0007	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0066	MTRI-0008	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0067	MTRI-0009	480	100.27	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			16.87 + j		168.70 PU
BUS-0068	MTRI-0010	480	100.27	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			16.87 + j		168.70 PU
BUS-0069	MTRI-0011	480	100.27	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			16.87 + j		168.70 PU

MOTOR CONTRIBUTION DATA

BUS NAME	CONTRIBUTION NAME	VOLTAGE L-L	BASE kVA	X"d	X/R	Motor Number
BUS-0070	MTRI-0012	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0071	MTRI-0013	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0072	MTRI-0014	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU
BUS-0073	MTRI-0015	480	125.34	0.1692	10.0	1.00
	Pos Sequence Impedance (100 MVA Base)			13.50 + j		134.96 PU

Jun 21, 2020 14:04:36

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A_FAULT SHORT CIRCUIT ANALYSIS REPORT
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THREE PHASE FAULT REPORT
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)
PRE FAULT VOLTAGE: 1.0000
MODEL TRANSFORMER TAPS: NO

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BUS-0011	3P Duty: 24.066 KA AT -85.33 DEG (20.01 MVA) X/R: 14.56 VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0009 + J 0.0115 OHMS LOW VOLTAGE POWER CIRCUIT BREAKER 26.813 KA MOLDED CASE CIRCUIT BREAKER > 20KA 28.469 KA CBL-0006 BUS-0089 15.880 KA ANG: 93.14 CBL-0007 BUS-0013 8.203 KA ANG: -262.36
BUS-0100	3P Duty: 15.268 KA AT -74.47 DEG (12.69 MVA) X/R: 3.83 VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0049 + J 0.0175 OHMS LOW VOLTAGE POWER CIRCUIT BREAKER 15.268 KA MOLDED CASE CIRCUIT BREAKER < 20KA 16.021 KA MOLDED CASE CIRCUIT BREAKER > 20KA 15.268 KA CBL-0094 MCC MP2B-A 0.879 KA ANG: 96.61 CBL-0023 Substation 4A 14.400 KA ANG: -73.92
BUS-0103	3P Duty: 15.821 KA AT -75.26 DEG (13.15 MVA) X/R: 4.15 VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0045 + J 0.0169 OHMS LOW VOLTAGE POWER CIRCUIT BREAKER 15.821 KA MOLDED CASE CIRCUIT BREAKER < 20KA 16.940 KA MOLDED CASE CIRCUIT BREAKER > 20KA 15.821 KA CBL-0090 BUS-0102 0.879 KA ANG: -83.38 CBL-0095 MCC MP2B-B 0.879 KA ANG: 96.61 CBL-0026 Substation 4B 14.083 KA ANG: -74.25
Digester Bldg	3P Duty: 7.595 KA AT -81.69 DEG (6.31 MVA) X/R: 7.22 VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0053 + J 0.0361 OHMS LOW VOLTAGE POWER CIRCUIT BREAKER 7.718 KA MOLDED CASE CIRCUIT BREAKER < 20KA 9.116 KA MOLDED CASE CIRCUIT BREAKER > 20KA 8.194 KA CBL-0067 BUS-0069 0.705 KA ANG: 96.42 CBL-0052 Substation 2B 6.891 KA ANG: -81.50
Grit Bldg (MCC	3P Duty: 7.401 KA AT -80.80 DEG (6.15 MVA) X/R: 6.48 VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0060 + J 0.0370 OHMS LOW VOLTAGE POWER CIRCUIT BREAKER 7.401 KA MOLDED CASE CIRCUIT BREAKER < 20KA 8.713 KA MOLDED CASE CIRCUIT BREAKER > 20KA 7.832 KA CBL-0068 BUS-0070 0.880 KA ANG: 96.60 CBL-0051 Substation 2B 6.522 KA ANG: -80.45
MCC GB2-A	3P Duty: 21.509 KA AT -79.89 DEG (17.88 MVA) X/R: 5.91 VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0023 + J 0.0127 OHMS

THREE PHASE FAULT REPORT
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)
PRE FAULT VOLTAGE: 1.0000
MODEL TRANSFORMER TAPS: NO

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LOW VOLTAGE POWER CIRCUIT BREAKER 21.509 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 22.372 KA
CBL-0060 BUS-0062 0.880 KA ANG: -83.40
CBL-0021 Substation 4A 20.631 KA ANG: -259.74

MCC GB2-B 3P Duty: 21.504 KA AT -79.87 DEG ( 17.88 MVA) X/R: 5.90
VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0023 + J 0.0127 OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER 21.504 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 22.358 KA
CBL-0059 BUS-0061 0.880 KA ANG: -83.40
CBL-0020 Substation 4B 20.626 KA ANG: -259.72

MCC MP2A-A 3P Duty: 15.575 KA AT -74.98 DEG ( 12.95 MVA) X/R: 4.07
VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0046 + J 0.0172 OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER 15.575 KA
MOLDED CASE CIRCUIT BREAKER < 20KA 16.599 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 15.575 KA
CBL-0064 BUS-0066 0.880 KA ANG: -83.40
AUTO-0007 BUS-0102 14.706 KA ANG: -254.47

MCC MP2B-A 3P Duty: 15.175 KA AT -74.36 DEG ( 12.62 MVA) X/R: 3.80
VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0049 + J 0.0176 OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER 15.175 KA
MOLDED CASE CIRCUIT BREAKER < 20KA 15.899 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 15.175 KA
CBL-0077 BUS-0072 0.880 KA ANG: -83.40
CBL-0094 BUS-0100 14.307 KA ANG: -73.81

MCC MP2B-B 3P Duty: 15.722 KA AT -75.15 DEG ( 13.07 MVA) X/R: 4.12
VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0045 + J 0.0170 OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER 15.722 KA
MOLDED CASE CIRCUIT BREAKER < 20KA 16.802 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 15.722 KA
CBL-0063 BUS-0065 0.880 KA ANG: -83.40
CBL-0095 BUS-0103 14.852 KA ANG: -74.66

MCC PST (A-1) 3P Duty: 8.009 KA AT -83.63 DEG ( 6.66 MVA) X/R: 9.56
VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0038 + J 0.0344 OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER 8.498 KA
MOLDED CASE CIRCUIT BREAKER < 20KA 10.038 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 9.023 KA
CBL-0069 BUS-0071 0.880 KA ANG: -263.40
CBL-0053 Substation 2B 7.129 KA ANG: -83.66
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THREE PHASE FAULT REPORT
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)
PRE FAULT VOLTAGE: 1.0000
MODEL TRANSFORMER TAPS: NO

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MCC PST2-A	3P Duty: 19.740 KA AT -80.04 DEG (16.41 MVA) X/R: 5.98 VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0024 + J 0.0138 OHMS LOW VOLTAGE POWER CIRCUIT BREAKER 19.740 KA MOLDED CASE CIRCUIT BREAKER > 20KA 20.580 KA CBL-0061 BUS-0063 0.880 KA ANG: -83.40 CBL-0022 Substation 4A 18.862 KA ANG: -259.88
MCC PST2-B	3P Duty: 19.736 KA AT -80.03 DEG (16.41 MVA) X/R: 5.97 VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0024 + J 0.0138 OHMS LOW VOLTAGE POWER CIRCUIT BREAKER 19.736 KA MOLDED CASE CIRCUIT BREAKER > 20KA 20.569 KA CBL-0062 BUS-0064 0.880 KA ANG: -83.40 CBL-0027 Substation 4B 18.858 KA ANG: -259.87
MCC RBC2-A	3P Duty: 15.784 KA AT -72.47 DEG (13.12 MVA) X/R: 3.40 VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0053 + J 0.0167 OHMS LOW VOLTAGE POWER CIRCUIT BREAKER 15.784 KA MOLDED CASE CIRCUIT BREAKER < 20KA 16.068 KA MOLDED CASE CIRCUIT BREAKER > 20KA 15.784 KA CBL-0057 BUS-0059 0.880 KA ANG: -83.40 AUTO-0008 BUS-0109 14.921 KA ANG: -251.83
MCC SC-A	3P Duty: 12.619 KA AT -71.11 DEG (10.49 MVA) X/R: 2.97 VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0071 + J 0.0208 OHMS LOW VOLTAGE POWER CIRCUIT BREAKER 12.619 KA MOLDED CASE CIRCUIT BREAKER < 20KA 12.619 KA MOLDED CASE CIRCUIT BREAKER > 20KA 12.619 KA CBL-0013 Substation 4A 12.619 KA ANG: 108.89
MCC SO2	3P Duty: 7.553 KA AT -81.49 DEG (6.28 MVA) X/R: 7.01 VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0054 + J 0.0363 OHMS LOW VOLTAGE POWER CIRCUIT BREAKER 7.636 KA MOLDED CASE CIRCUIT BREAKER < 20KA 9.019 KA MOLDED CASE CIRCUIT BREAKER > 20KA 8.107 KA CBL-0070 BUS-0073 0.880 KA ANG: -83.40 CBL-0056 Substation 2B 6.674 KA ANG: -81.24
MCC SST2-A	3P Duty: 9.627 KA AT -54.15 DEG (8.00 MVA) X/R: 1.73 VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0169 + J 0.0233 OHMS LOW VOLTAGE POWER CIRCUIT BREAKER 9.627 KA MOLDED CASE CIRCUIT BREAKER < 10KA 9.627 KA MOLDED CASE CIRCUIT BREAKER < 20KA 9.627 KA MOLDED CASE CIRCUIT BREAKER > 20KA 9.627 KA

THREE PHASE FAULT REPORT
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)
PRE FAULT VOLTAGE: 1.0000
MODEL TRANSFORMER TAPS: NO

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	CONTRIBUTIONS TO MCC SST2-A (CONTINUED)			
	CBL-0065	BUS-0067	0.705 KA	ANG: -83.58
	CBL-0024	Substation 4A	9.019 KA	ANG: -231.95
MCC SST2-B	3P Duty: 9.625 KA AT -54.15 DEG (8.00 MVA) X/R: 1.73			
	VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0169 + J 0.0233 OHMS			
	LOW VOLTAGE POWER CIRCUIT BREAKER 9.625 KA			
	MOLDED CASE CIRCUIT BREAKER < 10KA 9.625 KA			
	MOLDED CASE CIRCUIT BREAKER < 20KA 9.625 KA			
	MOLDED CASE CIRCUIT BREAKER > 20KA 9.625 KA			
	CBL-0066	BUS-0068	0.705 KA	ANG: -83.58
	CBL-0025	Substation 4B	9.018 KA	ANG: -231.95
MCC- SC-B	3P Duty: 12.608 KA AT -71.05 DEG (10.48 MVA) X/R: 2.96			
	VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0071 + J 0.0208 OHMS			
	LOW VOLTAGE POWER CIRCUIT BREAKER 12.608 KA			
	MOLDED CASE CIRCUIT BREAKER < 20KA 12.608 KA			
	MOLDED CASE CIRCUIT BREAKER > 20KA 12.608 KA			
	CBL-0046	BUS-0047	12.608 KA	ANG: -71.05
MCC-A3	3P Duty: 5.666 KA AT -42.59 DEG (4.71 MVA) X/R: 0.92			
	VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0360 + J 0.0331 OHMS			
	LOW VOLTAGE POWER CIRCUIT BREAKER 5.666 KA			
	MOLDED CASE CIRCUIT BREAKER < 10KA 5.666 KA			
	MOLDED CASE CIRCUIT BREAKER < 20KA 5.666 KA			
	MOLDED CASE CIRCUIT BREAKER > 20KA 5.666 KA			
	CBL-0100	MCC-SC2	5.666 KA	ANG: -42.59
MCC-CH2C	3P Duty: 5.961 KA AT -52.95 DEG (4.96 MVA) X/R: 1.33			
	VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0280 + J 0.0371 OHMS			
	LOW VOLTAGE POWER CIRCUIT BREAKER 5.961 KA			
	MOLDED CASE CIRCUIT BREAKER < 10KA 5.961 KA			
	MOLDED CASE CIRCUIT BREAKER < 20KA 5.961 KA			
	MOLDED CASE CIRCUIT BREAKER > 20KA 5.961 KA			
	CBL-0099	MCC-SC2	5.961 KA	ANG: -52.95
MCC-EG2	3P Duty: 7.277 KA AT -80.39 DEG (6.05 MVA) X/R: 6.18			
	VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0064 + J 0.0375 OHMS			
	LOW VOLTAGE POWER CIRCUIT BREAKER 7.277 KA			
	MOLDED CASE CIRCUIT BREAKER < 20KA 8.493 KA			
	MOLDED CASE CIRCUIT BREAKER > 20KA 7.634 KA			
	CBL-0080	Grit Bldg (MCC	7.277 KA	ANG: -80.39
MCC-RBC	3P Duty: 15.318 KA AT -72.03 DEG (12.74 MVA) X/R: 3.30			

THREE PHASE FAULT REPORT
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

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VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0056 + J 0.0172 OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER 15.318 KA
MOLDED CASE CIRCUIT BREAKER < 20KA 15.469 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 15.318 KA
CBL-0096 MCC RBC2-A 15.318 KA ANG: -72.03

MCC-SC2 3P Duty: 12.508 KA AT -71.02 DEG ( 10.40 MVA) X/R: 2.95
VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0072 + J 0.0210 OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER 12.508 KA
MOLDED CASE CIRCUIT BREAKER < 20KA 12.508 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 12.508 KA
CBL-0097 MCC SC-A 12.508 KA ANG: -71.02

MCC-SO 3P Duty: 7.064 KA AT -79.87 DEG ( 5.87 MVA) X/R: 5.81
VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0069 + J 0.0386 OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER 7.064 KA
MOLDED CASE CIRCUIT BREAKER < 10KA 9.610 KA
MOLDED CASE CIRCUIT BREAKER < 20KA 8.144 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 7.321 KA
CBL-0081 MCC SO2 7.064 KA ANG: -79.87

Substation 2B 3P Duty: 8.309 KA AT -85.10 DEG ( 6.91 MVA) X/R: 13.00
VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0029 + J 0.0332 OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER 9.152 KA
MOLDED CASE CIRCUIT BREAKER < 20KA 10.810 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 9.717 KA
CBL-0053 MCC PST (A-1) 0.875 KA ANG: -263.21
CBL-0052 Digester Bldg 0.698 KA ANG: -263.21
CBL-0050 BUS-0078 5.007 KA ANG: 93.53
CBL-0056 MCC SO2 0.868 KA ANG: -262.89
CBL-0051 Grit Bldg (MCC 0.865 KA ANG: -262.78

Substation 4A 3P Duty: 23.925 KA AT -85.09 DEG ( 19.89 MVA) X/R: 13.15
VOLTAGE: 480. EQUIV. IMPEDANCE= 0.0010 + J 0.0115 OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER 26.385 KA
MOLDED CASE CIRCUIT BREAKER > 20KA 28.014 KA
CBL-0024 MCC SST2-A 0.680 KA ANG: -81.27
CBL-0021 MCC GB2-A 0.876 KA ANG: -83.18
CBL-0022 MCC PST2-A 0.872 KA ANG: -83.17
CBL-0008 BUS-0014 15.677 KA ANG: -86.43
CBL-0023 BUS-0100 0.860 KA ANG: -262.76
CBL-0012 Substation 4B 4.973 KA ANG: -82.48

Substation 4B 3P Duty: 23.920 KA AT -85.08 DEG ( 19.89 MVA) X/R: 13.08
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THREE PHASE FAULT REPORT
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)
PRE FAULT VOLTAGE: 1.0000
MODEL TRANSFORMER TAPS: NO

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VOLTAGE:      480.   EQUIV. IMPEDANCE=  0.0010 + J  0.0115  OHMS
LOW VOLTAGE POWER CIRCUIT BREAKER  26.364 KA
MOLDED CASE CIRCUIT BREAKER > 20KA  27.992 KA
CBL-0017      BUS-0109      0.863 KA      ANG:  -262.67
CBL-0020      MCC GB2-B     0.876 KA      ANG:  -83.18
CBL-0025      MCC SST2-B    0.680 KA      ANG:  -81.27
CBL-0027      MCC PST2-B    0.872 KA      ANG:  -83.17
CBL-0026      BUS-0103     1.683 KA      ANG:  -262.15
CBL-0012      Substation 4A  18.953 KA      ANG:   94.24
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U N B A L A N C E D F A U L T R E P O R T
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

LOCATION VOLTAGE	FAULT DUTIES	KA (RMS)	X/R	EQUIVALENT (PU) FAULT IMPEDANCE	ASYM. KA AT 0.5 CYCLES * MAX. RMS	AVG. RMS *
BUS-0011	3P Duty:	24.066	14.56	Z1= 4.9981	36.490	30.629
	SLG DUTY:	20.424	14.87	Z2= 4.9981	31.047	
480. VOLTS	LN/LN:	20.841		Z0= 7.6719		
	LN/LN/GND:	22.750	(17.739	GND RETURN KA)		
BUS-0100	3P Duty:	15.268	3.83	Z1= 7.8780	17.983	16.654
	SLG DUTY:	11.305	2.84	Z2= 7.8780	12.482	
480. VOLTS	LN/LN:	13.222		Z0= 16.2502		
	LN/LN/GND:	14.452	(8.952	GND RETURN KA)		
BUS-0103	3P Duty:	15.821	4.15	Z1= 7.6026	18.990	17.443
	SLG DUTY:	11.504	2.91	Z2= 7.6026	12.762	
480. VOLTS	LN/LN:	13.701		Z0= 16.2651		
	LN/LN/GND:	14.972	(9.009	GND RETURN KA)		
Digester Bldg	3P Duty:	7.595	7.22	Z1= 15.8362	10.295	9.000
	SLG DUTY:	5.949	5.69	Z2= 15.8362	7.671	
480. VOLTS	LN/LN:	6.578		Z0= 29.0211		
	LN/LN/GND:	7.139	(4.886	GND RETURN KA)		
Grit Bldg (MCC	3P Duty:	7.401	6.48	Z1= 16.2527	9.813	8.652
	SLG DUTY:	5.712	4.90	Z2= 16.2527	7.124	
480. VOLTS	LN/LN:	6.409		Z0= 30.7294		
	LN/LN/GND:	6.973	(4.647	GND RETURN KA)		
MCC GB2-A	3P Duty:	21.509	5.91	Z1= 5.5922	27.971	24.852
	SLG DUTY:	17.410	4.55	Z2= 5.5922	21.339	
480. VOLTS	LN/LN:	18.627		Z0= 9.5660		
	LN/LN/GND:	20.512	(14.607	GND RETURN KA)		
MCC GB2-B	3P Duty:	21.504	5.90	Z1= 5.5934	27.953	24.841
	SLG DUTY:	17.398	4.53	Z2= 5.5934	21.303	
480. VOLTS	LN/LN:	18.623		Z0= 9.5791		
	LN/LN/GND:	20.511	(14.591	GND RETURN KA)		
MCC MP2A-A	3P Duty:	15.575	4.07	Z1= 7.7225	18.612	17.129
	SLG DUTY:	11.287	2.86	Z2= 7.7225	12.475	
480. VOLTS	LN/LN:	13.489		Z0= 16.6305		
	LN/LN/GND:	14.735	(8.823	GND RETURN KA)		

U N B A L A N C E D F A U L T R E P O R T
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

LOCATION VOLTAGE	FAULT DUTIES	KA (RMS)	X/R	EQUIVALENT (PU) FAULT IMPEDANCE	ASYM. KA AT 0.5 CYCLES * MAX. RMS	AVG. RMS *
MCC MP2B-A	3P Duty:	15.175	3.80	Z1= 7.9260	17.848	16.540
	SLG DUTY:	11.220	2.82	Z2= 7.9260	12.371	
480. VOLTS	LN/LN:	13.142		Z0= 16.3962		
	LN/LN/GND:	14.363	(8.877	GND RETURN KA)		
MCC MP2B-B	3P Duty:	15.722	4.12	Z1= 7.6505	18.837	17.316
	SLG DUTY:	11.416	2.89	Z2= 7.6505	12.645	
480. VOLTS	LN/LN:	13.616		Z0= 16.4112		
	LN/LN/GND:	14.877	(8.934	GND RETURN KA)		
MCC PST (A-1)	3P Duty:	8.009	9.56	Z1= 15.0185	11.430	9.801
	SLG DUTY:	6.384	8.05	Z2= 15.0185	8.838	
480. VOLTS	LN/LN:	6.936		Z0= 26.4978		
	LN/LN/GND:	7.492	(5.306	GND RETURN KA)		
MCC PST2-A	3P Duty:	19.740	5.98	Z1= 6.0933	25.738	22.844
	SLG DUTY:	15.633	4.65	Z2= 6.0933	19.261	
480. VOLTS	LN/LN:	17.095		Z0= 10.9188		
	LN/LN/GND:	18.694	(12.928	GND RETURN KA)		
MCC PST2-B	3P Duty:	19.736	5.97	Z1= 6.0945	25.723	22.834
	SLG DUTY:	15.623	4.63	Z2= 6.0945	19.232	
480. VOLTS	LN/LN:	17.092		Z0= 10.9317		
	LN/LN/GND:	18.693	(12.916	GND RETURN KA)		
MCC RBC2-A	3P Duty:	15.784	3.40	Z1= 7.6206	18.102	16.963
	SLG DUTY:	11.697	2.47	Z2= 7.6206	12.585	
480. VOLTS	LN/LN:	13.669		Z0= 15.7237		
	LN/LN/GND:	15.028	(9.258	GND RETURN KA)		
MCC SC-A	3P Duty:	12.619	2.97	Z1= 9.5315	14.057	13.348
	SLG DUTY:	9.278	2.36	Z2= 9.5315	9.907	
480. VOLTS	LN/LN:	10.929		Z0= 19.9285		
	LN/LN/GND:	11.916	(7.318	GND RETURN KA)		
MCC SO2	3P Duty:	7.553	7.01	Z1= 15.9257	10.177	8.917
	SLG DUTY:	5.878	5.41	Z2= 15.9257	7.496	
480. VOLTS	LN/LN:	6.541		Z0= 29.5856		
	LN/LN/GND:	7.106	(4.808	GND RETURN KA)		

U N B A L A N C E D F A U L T R E P O R T
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

LOCATION VOLTAGE	FAULT DUTIES	KA (RMS)	X/R	EQUIVALENT (PU) FAULT IMPEDANCE	ASYM. KA AT 0.5 CYCLES * MAX. RMS	AVG. RMS *
MCC SST2-A	3P Duty:	9.627	1.73	Z1= 12.4946	9.877	9.752
	SLG DUTY:	6.286	1.11	Z2= 12.4946	6.308	
480. VOLTS	LN/LN:	8.337		Z0= 32.8552		
	LN/LN/GND:	9.107	(4.633	GND RETURN KA)		
MCC SST2-B	3P Duty:	9.625	1.73	Z1= 12.4963	9.875	9.751
	SLG DUTY:	6.284	1.11	Z2= 12.4963	6.306	
480. VOLTS	LN/LN:	8.336		Z0= 32.8739		
	LN/LN/GND:	9.105	(4.631	GND RETURN KA)		
MCC- SC-B	3P Duty:	12.608	2.96	Z1= 9.5403	14.034	13.331
	SLG DUTY:	9.259	2.35	Z2= 9.5403	9.879	
480. VOLTS	LN/LN:	10.919		Z0= 19.9917		
	LN/LN/GND:	11.907	(7.298	GND RETURN KA)		
MCC-A3	3P Duty:	5.666	0.92	Z1= 21.2283	5.672	5.669
	SLG DUTY:	3.621	0.75	Z2= 21.2283	3.621	
480. VOLTS	LN/LN:	4.907		Z0= 57.5871		
	LN/LN/GND:	5.270	(2.651	GND RETURN KA)		
MCC-CH2C	3P Duty:	5.961	1.33	Z1= 20.1768	6.014	5.988
	SLG DUTY:	3.941	1.09	Z2= 20.1768	3.954	
480. VOLTS	LN/LN:	5.163		Z0= 51.5376		
	LN/LN/GND:	5.566	(2.934	GND RETURN KA)		
MCC-EG2	3P Duty:	7.277	6.18	Z1= 16.5282	9.554	8.457
	SLG DUTY:	5.599	4.69	Z2= 16.5282	6.911	
480. VOLTS	LN/LN:	6.302		Z0= 31.4590		
	LN/LN/GND:	6.858	(4.545	GND RETURN KA)		
MCC-RBC	3P Duty:	15.318	3.30	Z1= 7.8521	17.450	16.402
	SLG DUTY:	11.299	2.41	Z2= 7.8521	12.106	
480. VOLTS	LN/LN:	13.266		Z0= 16.3512		
	LN/LN/GND:	14.572	(8.919	GND RETURN KA)		
MCC-SC2	3P Duty:	12.508	2.95	Z1= 9.6164	13.917	13.222
	SLG DUTY:	9.185	2.35	Z2= 9.6164	9.800	
480. VOLTS	LN/LN:	10.832		Z0= 20.1537		
	LN/LN/GND:	11.808	(7.239	GND RETURN KA)		

U N B A L A N C E D F A U L T R E P O R T
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)
PRE FAULT VOLTAGE: 1.0000
MODEL TRANSFORMER TAPS: NO

LOCATION VOLTAGE	FAULT DUTIES	KA (RMS)	X/R	EQUIVALENT (PU) FAULT IMPEDANCE	ASYM. KA AT 0.5 CYCLES * MAX. RMS	AVG. RMS *
MCC-SO	3P Duty:	7.064	5.81	Z1= 17.0271	9.150	8.143
	SLG DUTY:	5.428	4.49	Z2= 17.0271	6.634	
480. VOLTS	LN/LN:	6.118		Z0= 32.4930		
	LN/LN/GND:	6.653	(4.403	GND RETURN KA)		
Substation 2B	3P Duty:	8.309	13.00	Z1= 14.4757	12.418	10.476
	SLG DUTY:	6.723	12.29	Z2= 14.4757	9.970	
480. VOLTS	LN/LN:	7.196		Z0= 24.7256		
	LN/LN/GND:	7.731	(5.645	GND RETURN KA)		
Substation 4A	3P Duty:	23.925	13.15	Z1= 5.0275	35.811	30.193
	SLG DUTY:	20.077	12.27	Z2= 5.0275	29.769	
480. VOLTS	LN/LN:	20.719		Z0= 7.9184		
	LN/LN/GND:	22.467	(17.295	GND RETURN KA)		
Substation 4B	3P Duty:	23.920	13.08	Z1= 5.0285	35.778	30.173
	SLG DUTY:	20.063	12.10	Z2= 5.0285	29.691	
480. VOLTS	LN/LN:	20.715		Z0= 7.9287		
	LN/LN/GND:	22.470	(17.277	GND RETURN KA)		

F A U L T S T U D Y S U M M A R Y
(FOR APPLICATION OF LOW VOLTAGE BREAKERS)

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

BUS RECORD NO NAME	VOLTAGE L-L	A V A I L A B L E 3 PHASE	F A U L T X/R	D U T I E S (KA) LINE/GRND	X/R
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BUS-0011	480.	24.066	14.56	20.424	14.87
BUS-0100	480.	15.268	3.83	11.305	2.84
BUS-0103	480.	15.821	4.15	11.504	2.91
Digester Bldg	480.	7.595	7.22	5.949	5.69
Grit Bldg (MCC)	480.	7.401	6.48	5.712	4.90
MCC GB2-A	480.	21.509	5.91	17.410	4.55
MCC GB2-B	480.	21.504	5.90	17.398	4.53
MCC MP2A-A	480.	15.575	4.07	11.287	2.86
MCC MP2B-A	480.	15.175	3.80	11.220	2.82
MCC MP2B-B	480.	15.722	4.12	11.416	2.89
MCC PST (A-1)	480.	8.009	9.56	6.384	8.05
MCC PST2-A	480.	19.740	5.98	15.633	4.65
MCC PST2-B	480.	19.736	5.97	15.623	4.63
MCC RBC2-A	480.	15.784	3.40	11.697	2.47
MCC SC-A	480.	12.619	2.97	9.278	2.36
MCC SO2	480.	7.553	7.01	5.878	5.41
MCC SST2-A	480.	9.627	1.73	6.286	1.11
MCC SST2-B	480.	9.625	1.73	6.284	1.11
MCC- SC-B	480.	12.608	2.96	9.259	2.35
MCC-A3	480.	5.666	0.92	3.621	0.75
MCC-CH2C	480.	5.961	1.33	3.941	1.09
MCC-EG2	480.	7.277	6.18	5.599	4.69
MCC-RBC	480.	15.318	3.30	11.299	2.41
MCC-SC2	480.	12.508	2.95	9.185	2.35
MCC-SO	480.	7.064	5.81	5.428	4.49
Substation 2B	480.	8.309	13.00	6.723	12.29
Substation 4A	480.	23.925	13.15	20.077	12.27
Substation 4B	480.	23.920	13.08	20.063	12.10

58 FAULTED BUSES, 72 BRANCHES, 17 CONTRIBUTIONS
UNBALANCED FAULTS REQUESTED

*** SHORT CIRCUIT STUDY COMPLETE ***

T H R E E P H A S E M O M E N T A R Y D U T Y R E P O R T

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

=====

BUS-0011	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
BUS-0100	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
BUS-0103	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
Digester Bldg	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
Grit Bldg (MCC	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC GB2-A	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC GB2-B	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC MP2A-A	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC MP2B-A	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC MP2B-B	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC PST (A-1)	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC PST2-A	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC PST2-B	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC RBC2-A	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC SC-A	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC SO2	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC SST2-A	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC SST2-B	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC- SC-B	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC-A3	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)

T H R E E P H A S E M O M E N T A R Y D U T Y R E P O R T

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

=====

MCC-CH2C VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

MCC-EG2 VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

MCC-RBC VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

MCC-SC2 VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

MCC-SO VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Substation 2B VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Substation 4A VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Substation 4B VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

M O M E N T A R Y D U T Y S U M M A R Y R E P O R T

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

SOLUTION METHOD : E/Z

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=====
BUS RECORD      VOLTAGE      * 3 P H A S E *      * * * SLG * * *
NO NAME          L-L              KA      X/R          KA      X/R
=====
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3 FAULTED BUSES, 72 BRANCHES, 17 CONTRIBUTIONS
UNBALANCED FAULTS REQUESTED

*** SHORT CIRCUIT STUDY COMPLETE ***

THREE PHASE INTERRUPTING DUTY REPORT

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

NACD OPTION: INTERPOLATED

=====

BUS-0011	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
BUS-0100	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
BUS-0103	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
Digester Bldg	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
Grit Bldg (MCC	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC GB2-A	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC GB2-B	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC MP2A-A	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC MP2B-A	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC MP2B-B	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC PST (A-1)	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC PST2-A	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC PST2-B	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC RBC2-A	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC SC-A	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC SO2	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC SST2-A	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC SST2-B	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC- SC-B	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC-A3	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC-CH2C	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)
MCC-EG2	VOLTAGE:	480.	(SEE LOW VOLTAGE REPORT)

T H R E E P H A S E I N T E R R U P T I N G D U T Y R E P O R T

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

=====

MCC-RBC VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

MCC-SC2 VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

MCC-SO VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Substation 2B VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Substation 4A VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

Substation 4B VOLTAGE: 480. (SEE LOW VOLTAGE REPORT)

I N T E R R U P T I N G D U T Y S U M M A R Y R E P O R T

PRE FAULT VOLTAGE: 1.0000

MODEL TRANSFORMER TAPS: NO

NACD OPTION: INTERPOLATED

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=====
BUS RECORD      VOLTAGE  NACD      * 3 P H A S E *      * * * S L G * * *
NO NAME         L-L      RATIO     E/Z KA      X/R      E/Z KA      X/R
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3 FAULTED BUSES, 72 BRANCHES, 17 CONTRIBUTIONS
UNBALANCED FAULTS REQUESTED

*** SHORT CIRCUIT STUDY COMPLETE ***

Appendix B:

Protective Device Evaluation

All Protection Devices - Equipment Evaluation Report Based on ANSI Fault Analysis

	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%	K	PartingTime Speed Cycles	X/R
	CB2B (SUB2)	Passed	GMSG	13200	4.20	6.34	1.30	3.0	12.44
	69kV Feed MDP		1200-3000A	15000	42.05 (*N2)	77.00		5.0	
	SIEMENS		15-GMSG-1000	88.00	10.00	8.24			
	CB4A (SUB4)	Passed	GMSG	13200	4.20	6.34	1.30	3.0	12.44
	69kV Feed MDP		1200-3000A	15000	42.05 (*N2)	77.00		5.0	
	SIEMENS		15-GMSG-1000	88.00	10.00	8.24			
	CB5A (SUB5)	Passed	GMSG	13200	4.20	6.34	1.30	3.0	12.44
	69kV Feed MDP		1200-3000A	15000	42.05 (*N2)	77.00		5.0	
	SIEMENS		15-GMSG-1000	88.00	10.00	8.24			
	Sub1A Main	Passed	GMSG	13200	4.20	6.34	1.30	3.0	12.44
	69kV Feed MDP		1200-3000A	15000	42.05 (*N2)	77.00		5.0	
	SIEMENS		15-GMSG-1000	88.00	10.00	8.24			
	CB2A (SUB2)	Passed	GMSG	13200	5.69	7.39	1.30	3.0	5.92
	69kV Feed MDP0		1200-3000A	15000	42.05 (*N2)	77.00		5.0	
	SIEMENS		15-GMSG-1000	88.00	13.52	9.60			
	CB4B (SUB4)	Passed	GMSG	13200	5.69	7.39	1.30	3.0	5.92
	69kV Feed MDP0		1200-3000A	15000	42.05 (*N2)	77.00		5.0	
	SIEMENS		15-GMSG-1000	88.00	13.52	9.60			
	CB5B (SUB5)	Passed	GMSG	13200	5.69	7.39	1.30	3.0	5.92
	69kV Feed MDP0		1200-3000A	15000	42.05 (*N2)	77.00		5.0	
	SIEMENS		15-GMSG-1000	88.00	13.52	9.60			
	Sub1B Main	Passed	GMSG	13200	5.69	7.39	1.30	3.0	5.92
	69kV Feed MDP0		1200-3000A	15000	42.05 (*N2)	77.00		5.0	
	SIEMENS		15-GMSG-1000	88.00	13.52	9.60			

All Protection Devices - Equipment Evaluation Report Based on ANSI Fault Analysis

	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%	K	PartingTime Speed Cycles	X/R
	52-4A-N	Passed	Powerpact R-Frame, 5.0 & 6.0 A/P/H	480	53.13 (*N1)				9.98
	BUS-0010		LSI, 250-3000A	480	65.00				
	SQUARE D		RJ	100.00	81.74				
	52-4B-N	Passed	Powerpact R-Frame, 5.0 & 6.0 A/P/H	480	48.14 (*N1)				8.86
	BUS-0018		LSI, 250-3000A	480	65.00				
	SQUARE D		RJ	100.00	74.06				
	PD-0058	Passed	HND, RMS 310	480	16.32				2.28
	BUS-0047		LSI, 400-1200A Fixed Plug	480	65.00				
	CUTLER-HAMMER		HND	100.00	25.11				
	89-2B	Passed	CS-3, 15.5kV E-Rated	13200	4.08	5.60			7.30
	BUS-0077		65E-200E	15500	50.00	80.00			
	GOULD SHAWMUT		CS-3, 150E	85.16	8.16	7.01			
	52-2B ATS N	Passed	Powerpact R-Frame, 5.0 & 6.0 A/P/H	480	29.87 (*N1)				6.75
	BUS-0079		LSI, 250-3000A	480	65.00				
	SQUARE D		RJ	100.00	45.96				
	89-2A	Passed	CS-3, 15.5kV E-Rated	13200	5.45	6.62			4.29
	BUS-0080		65E-200E	15500	50.00	80.00			
	GOULD SHAWMUT		CS-3, 150E	85.16	10.90	8.28			
	52-2A ATS N	Passed	Powerpact R-Frame, 5.0 & 6.0 A/P/H	480	33.18 (*N1)				6.36
	BUS-0082		LSI, 250-3000A	480	65.00				
	SQUARE D		RJ	100.00	51.05				
	52-Gen2	Passed	TKMA	480	6.20 (*N1)				20.00
	BUS-0086		300-1200A	480	30.00				

All Protection Devices - Equipment Evaluation Report Based on ANSI Fault Analysis

	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%	K	PartingTime Speed Cycles	X/R
	GE		TKMA	100.00	20.68				
	52-MP2A-A Main	Passed	HND, RMS 310	480	20.31				2.77
	BUS-0101		LSI, 400-1200A Fixed Plug	480	65.00				
	CUTLER-HAMMER		HND	100.00	31.24				
	52-MP2A-B Main	Passed	HNC Seltronic	480	20.99				3.02
	BUS-0102		LS, 800-1200A	480	50.00				
	WESTINGHOUSE		HNC	100.00	41.98				
	52-RBC2-A Main	Passed	PB	480	21.04				2.19
	BUS-0108		600-3000A	480	100.00				
	CUTLER-HAMMER		PB	100.00	21.04				
	52-RBC2-B Main	Passed	PB	480	21.68				2.45
	BUS-0109		600-3000A	600	100.00				
	CUTLER-HAMMER		PB	80.00	21.68				
	PD-0052	Passed	Masterpact, STR 58UP	480	11.94				1.52
	Centrifuge #1		LSI, 250-800A Sensors	480	65.00				
	MERLIN GERIN		MC08H1	100.00	18.37				
	PD-0050	Passed	Masterpact, STR 58UP	480	11.95				1.52
	Centrifuge #2		LSI, 250-800A Sensors	480	65.00				
	MERLIN GERIN		MC08H1	100.00	18.38				
	PD-0054	Passed	Masterpact, STR 58UP	480	11.94				1.52
	Centrifuge #3		LSI, 250-800A Sensors	480	65.00				
	MERLIN GERIN		MC08H1	100.00	18.37				
	52-IT	Passed	EMAX, PR122	480	20.29 (*N1)				7.95

All Protection Devices - Equipment Evaluation Report Based on ANSI Fault Analysis

	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%	K	PartingTime Speed Cycles	X/R
	Cogen Breaker		LSI, 800-5000AF, UL	480	65.00				
	ABB		E2S-A	100.00	31.22				
	MCC D2 Main	Passed	NB	480	20.97				2.99
	Digester Bldg (MCC D2)		400A	480	200.00				
	WESTINGHOUSE		NB	100.00	10.48				
	MCC EG Main	Passed	NB	480	18.92				2.76
	Grit Bldg (MCC EG)		800A	480	200.00				
	WESTINGHOUSE		NB	100.00	9.46				
	52-GB2-A Main	Passed	NB	480	37.08				3.17
	MCC GB2-A		500A	480	200.00				
	WESTINGHOUSE		NB	100.00	18.54				
	52-GB2-B Main	Passed	NB	480	37.06				3.16
	MCC GB2-B		500A	480	200.00				
	WESTINGHOUSE		NB	100.00	18.53				
	52-MP2B-A MAIN	Passed	RD SELTRNC	480	20.61				2.81
	MCC MP2B-A		I2T 800-2K	480	65.00				
	WESTINGHOUSE		RD	100.00	31.71				
	52-MP2B-B Main	Passed	RD SELTRNC	480	21.28				3.05
	MCC MP2B-B		I2T 800-2K	480	65.00				
	WESTINGHOUSE		RD	100.00	32.73				
	MCC PST Main	Passed	NB	480	25.80				3.36
	MCC PST (A-1)		800A	480	200.00				
	WESTINGHOUSE		NB	100.00	12.90				

All Protection Devices - Equipment Evaluation Report Based on ANSI Fault Analysis

	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%	K	PartingTime Speed Cycles	X/R
	52-PST2-A Main	Passed	HNC Seltronic	480	31.06				3.51
	MCC PST2-A		LS, 800-1200A	480	50.00				
	WESTINGHOUSE		HNC	100.00	62.11				
	52-PST2-B Main	Passed	HNC Seltronic	480	31.04				3.50
	MCC PST2-B		LS, 800-1200A	480	50.00				
	WESTINGHOUSE		HNC	100.00	62.09				
	52-RBC	Passed	PB	480	21.68				2.45
	MCC RBC2-A		600-3000A	480	100.00				
	CUTLER-HAMMER		PB	100.00	21.68				
	52-SC-A Main	Passed	HND, RMS 310	480	16.33				2.28
	MCC SC-A		LSI, 400-1200A Fixed Plug	480	65.00				
	CUTLER-HAMMER		HND	100.00	25.12				
	52-SC2-A Main	Passed	HND, RMS 310	480	16.33				2.28
	MCC SC-A		LSI, 400-1200A Fixed Plug	480	65.00				
	CUTLER-HAMMER		HND	100.00	25.12				
	52-SD2A Main	Passed	NZM	480	15.65				3.19
	MCC SD2-A		NZM12/ZM12	660	43.00				
	KLOCKNER		NZM12	72.73	36.39				
	52-SD2B Main	Passed	NZM	480	15.65				3.19
	MCC SD2-B		NZM12/ZM12	660	43.00				
	KLOCKNER		NZM12	72.73	36.38				
	MCC SO2 Main	Passed	NB	480	20.29				2.93
	MCC SO2		800A	480	200.00				
	WESTINGHOUSE		NB	100.00	10.15				

All Protection Devices - Equipment Evaluation Report Based on ANSI Fault Analysis

	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%	K	PartingTime Speed Cycles	X/R
	52-SST2-A Main	Passed	NB	480	11.05				1.37
	MCC SST2-A		500A	480	200.00				
	WESTINGHOUSE		NB	100.00	5.52				
	52-SST2-B Main	Passed	NB	480	11.05				1.37
	MCC SST2-B		500A	480	200.00				
	WESTINGHOUSE		NB	100.00	5.52				
	52-SC-B Main	Passed	HND, RMS 310	480	16.30				2.28
	MCC- SC-B		LSI, 400-1200A Fixed Plug	480	65.00				
	CUTLER-HAMMER		HND	100.00	25.08				
	MCC-A3 MAIN	Passed	LAB, LA	480	6.12				0.78
	MCC-A3		125-600A	480	30.00				
	WESTINGHOUSE		LA	100.00	20.39				
	MCC-CH2C MAIN	Passed	LAB, LA	480	6.56				1.15
	MCC-CH2C		125-600A	480	30.00				
	WESTINGHOUSE		LA	100.00	21.87				
	52-MCC-A3	Passed	FB	480	16.14				2.28
	MCC-SC2		15-150A	480	14.00/200.00				
	WESTINGHOUSE		FB	100.00	8.07				
	52-MCC-CH2C	Passed	LAB, LA	480	16.14				2.28
	MCC-SC2		125-600A	480	30.00				
	WESTINGHOUSE		LA	100.00	53.79				
	PD-0056	Passed	HJD	480	4.58				0.88
	MPP-G2		70-250A	480	65.00				

All Protection Devices - Equipment Evaluation Report Based on ANSI Fault Analysis

	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%	K	PartingTime Speed Cycles	X/R
	WESTINGHOUSE		HJD	100.00	7.04				
	89-4B	Passed	SM-5, 14.4kV E-Rated	13200	5.45	6.90			5.08
	Sub 4 Main SW (Alternate A)		3E- 2-400E Standard Speed	13200	25.00	40.00			
	S&C		SM-5, 125E	100.00	21.80	17.24			
	89-4A	Passed	SM-5, 14.4kV E-Rated	13200	4.07	5.79			9.00
	Sub 4 Main SW (Preferred B)		3E- 2-400E Standard Speed	13200	25.00	40.00			
	S&C		SM-5, 125E	100.00	16.28	14.47			
	89-5B	Passed	SM-5, 14.4kV E-Rated	13200	5.45	6.90			5.08
	Sub 5 Main SW (Alternate B)		3E- 2-400E Standard Speed	13200	25.00	40.00			
	S&C		SM-5, 40E	100.00	21.80	17.24			
	89-5A	Passed	SM-5, 14.4kV E-Rated	13200	4.07	5.80			8.95
	Sub 5 Main SW (Preferred A)		3E- 2-400E Standard Speed	13200	25.00	40.00			
	S&C		SM-5, 50E	100.00	16.29	14.51			
	52-5A Main	Passed	DS	480	19.62				6.05
	Substation 5A		AMPTECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	39.24				
	52-Centrifuge 2	Passed	DS DIGITRP	480	19.62				6.05
	Substation 5A		LSI 100-4K	480	30.00				
	WESTINGHOUSE		DS-206	100.00	65.40				
	52-SD2-A	Passed	DS	480	19.62				6.05
	Substation 5A		AMPTECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	39.24				
	52-T5	Passed	DS	480	19.62				6.05

All Protection Devices - Equipment Evaluation Report Based on ANSI Fault Analysis

	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%	K	PartingTime Speed Cycles	X/R
	Substation 5A		AMPTECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	39.24				
	52-2 TIE	Passed	WL, ETU745, Size II	480	30.42				5.59
	Substation 2A		LSI, 200-3000AP, UL	480	65.00				
	SIEMENS		WLS, Size II	100.00	46.80				
	52-2A Main	Passed	WL, ETU745, Size II	480	30.42				5.59
	Substation 2A		LSI, 200-3000AP, UL	480	65.00				
	SIEMENS		WLS, Size II	100.00	46.80				
	52-A-1	Passed	WL, ETU745, Size I	480	30.45				5.27
	Substation 2B		LSI, 200-1200AP, UL	480	65.00				
	SIEMENS		WLS, Size I	100.00	46.85				
	52-Digester Bldg	Passed	WL, ETU745, Size I	480	30.45				5.27
	Substation 2B		LSI, 200-1200AP, UL	480	65.00				
	SIEMENS		WLS, Size I	100.00	46.85				
	52-Grit Bldg	Passed	WL, ETU745, Size I	480	30.45				5.27
	Substation 2B		LSI, 200-1200AP, UL	480	65.00				
	SIEMENS		WLS, Size I	100.00	46.85				
	52-SO2	Passed	WL, ETU745, Size I	480	30.45				5.27
	Substation 2B		LSI, 200-1200AP, UL	480	65.00				
	SIEMENS		WLS, Size I	100.00	46.85				
	52-4A Main	Passed	DS	480	47.83 (*N1)				8.61
	Substation 4A		AMPTECT IA	480	65.00				
	WESTINGHOUSE		DS-632	100.00	73.59				

All Protection Devices - Equipment Evaluation Report Based on ANSI Fault Analysis

	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%	K	PartingTime Speed Cycles	X/R
	52-GB2-A	Marginal	DS	480	*47.83 (*N1)				8.61
	Substation 4A		AMPTECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	*95.66				
	52-MP2A-A	Marginal	DS	480	*47.83 (*N1)				8.61
	Substation 4A		AMPTECT IA	480	50.00				
	WESTINGHOUSE		DS-420	100.00	*95.66				
	52-PST2-A	Marginal	DS	480	*47.83 (*N1)				8.61
	Substation 4A		AMPTECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	*95.66				
	52-RCB2-A	Marginal	DS	480	*47.83 (*N1)				8.61
	Substation 4A		AMPTECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	*95.66				
	52-SC-A	Marginal	DS	480	*47.83 (*N1)				8.61
	Substation 4A		AMPTECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	*95.66				
	52-SST2-A	Marginal	DS	480	*47.83 (*N1)				8.61
	Substation 4A		AMPTECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	*95.66				
	52-T4	Passed	DS	480	47.83 (*N1)				8.61
	Substation 4A		AMPTECT IA	480	65.00				
	WESTINGHOUSE		DS-632	100.00	73.59				
	52-GB2-B	Marginal	DS	480	*47.59 (*N1)				8.43
	Substation 4B		AMPTECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	*95.18				

All Protection Devices - Equipment Evaluation Report Based on ANSI Fault Analysis

	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%	K	PartingTime Speed Cycles	X/R
	52-MP2A-B	Marginal	DS	480	*47.59 (*N1)				8.43
	Substation 4B		AMPTRECT IA	480	50.00				
	WESTINGHOUSE		DS-420	100.00	*95.18				
	52-PST2-B	Marginal	DS	480	*47.59 (*N1)				8.43
	Substation 4B		AMPTRECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	*95.18				
	52-RCB2-B	Marginal	DS	480	*47.59 (*N1)				8.43
	Substation 4B		AMPTRECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	*95.18				
	52-SC-B	Marginal	DS	480	*47.59 (*N1)				8.43
	Substation 4B		AMPTRECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	*95.18				
	52-SST2-B	Marginal	DS	480	*47.59 (*N1)				8.43
	Substation 4B		AMPTRECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	*95.18				
	52-Centrifuge 1	Passed	DS DIGITRP	480	19.62				6.04
	Substation 5B		LSI 100-4K	480	30.00				
	WESTINGHOUSE		DS-206	100.00	65.39				
	52-Centrifuge 3	Passed	DS DIGITRP	480	19.62				6.04
	Substation 5B		LSI 100-4K	480	30.00				
	WESTINGHOUSE		DS-206	100.00	65.39				
	52-Cogen	Passed	DS	480	19.62				6.04
	Substation 5B		AMPTRECT IA	480	50.00				

All Protection Devices - Equipment Evaluation Report Based on ANSI Fault Analysis

	Device/Bus Manufacturer	Status	Description	Voltage (V) Bus/Device/ Rating%	INT kA Calc/Dev/Series Rating%	C-L kA Calc/Dev/ Rating%	K	PartingTime Speed Cycles	X/R
	WESTINGHOUSE		DS-416	100.00	39.24				
	52-MPP-G2	Passed	DS	480	19.62				6.04
	Substation 5B		AMPTRECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	39.24				
	52-SD2-B	Passed	DS	480	19.62				6.04
	Substation 5B		AMPTRECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	39.24				
	MCC-SC-TIE	Passed	DS	480	19.62				6.04
	Substation 5B		AMPTRECT IA	480	50.00				
	WESTINGHOUSE		DS-416	100.00	39.24				
	(*N1) System X/R higher than Test X/R, Calc INT kA modified based on low voltage factor.								
	(*N2) Dev Isc kA modified based on Max Rating Voltage and K Factor.								
	(*Calc INT kA) Device did not pass. Device is either Marginal (95%) or Failed (100%) of device library interrupting rating.								

Appendix C:

Recommended Protective Device Settings

Project: Rockland County WTP 2020
Base Project

All Relays

Prot Dev	Func Name	Connected Bus	Manufacturer	Class Desc.	CT Ratio	Segments													
50/51	Phase	69kV Feed MDP	WESTINGHOUSE	CO-11	600 : 5	Tap (4-12A)	5		Time Dial (0.5-11)	2.0	INST (20-80A)	50.00							
50/51	Neutral	69kV Feed MDP	WESTINGHOUSE	CO-11	600 : 5	Tap (0.5-2.5A)	1		Time Dial (0.5-11)	1.0	INST (10-40A)	10							
51-1A MAIN	Phase	69kV Feed MDP	SIEMENS	7SJ62X	600 : 5	51 (0.5-20.0 x CTR)	3.28	ANSI Extremely Inv.	0.80	50-1 (0.5-175 x CTR)	5.70	50-1 Delay (0-60 Sec)	0.80						
51-1A MAIN	Neutral	69kV Feed MDP	SIEMENS	7SJ62X	600 : 5	51N (0.25-20.0 x CTR)	1.97	ANSI Very Inverse	2.00										
51-1AF2	Phase	69kV Feed MDP	SIEMENS	7SJ62X	150 : 5	51 (0.5-20.0 x CTR)	2.63	ANSI Extremely Inv.	7.00	50-1 (0.5-175 x CTR)	17.50	50-1 Delay (0-60 Sec)	0.15	50-2 (0.5-175 x CTR)	60.00				
51-1AF2	Neutral	69kV Feed MDP	SIEMENS	7SJ62X	150 : 5	51N (0.25-20.0 x CTR)	1	ANSI Very Inverse	1.00	50N-1 (0.25-175 x CTR)	20.00								
51-1AF4	Phase	69kV Feed MDP	SIEMENS	7SJ62X	150 : 5	51 (0.5-20.0 x CTR)	4.40	ANSI Extremely Inv.	12.00	50-1 (0.5-175 x CTR)	17.00	50-1 Delay (0-60 Sec)	0.52	50-2 (0.5-175 x CTR)	90.00				
51-1AF4	Neutral	69kV Feed MDP	SIEMENS	7SJ62X	150 : 5	51N (0.25-20.0 x CTR)	1	ANSI Very Inverse	1.00	50N-1 (0.25-175 x CTR)	20.00								
51-1AF5	Phase	69kV Feed MDP	SIEMENS	7SJ62X	150 : 5	51 (0.5-20.0 x CTR)	1.64	ANSI Extremely Inv.	12.00	50-1 (0.5-175 x CTR)	22.00	50-1 Delay (0-60 Sec)	0.12	50-2 (0.5-175 x CTR)	33.00				
51-1AF5	Neutral	69kV Feed MDP	SIEMENS	7SJ62X	150 : 5	51N (0.25-20.0 x CTR)	1	ANSI Very Inverse	1.00	50N-1 (0.25-175 x CTR)	20.00								
51-1B MAIN	Phase	69kV Feed MDP0	SIEMENS	7SJ62X	600 : 5	51 (0.5-20.0 x CTR)	3.28	ANSI Extremely Inv.	0.80	50-1 (0.5-175 x CTR)	5.70	50-1 Delay (0-60 Sec)	0.80						
51-1B MAIN	Neutral	69kV Feed MDP0	SIEMENS	7SJ62X	600 : 5	51N (0.25-20.0 x CTR)	1.97	ANSI Very Inverse	2.00										
51-1BF2	Phase	69kV Feed MDP0	SIEMENS	7SJ62X	150 : 5	51 (0.5-20.0 x CTR)	2.63	ANSI Extremely Inv.	7.00	50-1 (0.5-175 x CTR)	17.50	50-1 Delay (0-60 Sec)	0.15	50-2 (0.5-175 x CTR)	60.00				
51-1BF2	Neutral	69kV Feed MDP0	SIEMENS	7SJ62X	150 : 5	51N (0.25-20.0 x CTR)	1	ANSI Very Inverse	1.00	50N-1 (0.25-175 x CTR)	20.00								
51-1BF4	Phase	69kV Feed MDP0	SIEMENS	7SJ62X	150 : 5	51 (0.5-20.0 x CTR)	4.40	ANSI Extremely Inv.	12.00	50-1 (0.5-175 x CTR)	17.00	50-1 Delay (0-60 Sec)	0.52	50-2 (0.5-175 x CTR)	90.00				
51-1BF4	Neutral	69kV Feed MDP0	SIEMENS	7SJ62X	150 : 5	51N (0.25-20.0 x CTR)	1	ANSI Very Inverse	1.00	50N-1 (0.25-175 x CTR)	20.00								
51-1BF5	Phase	69kV Feed MDP0	SIEMENS	7SJ62X	150 : 5	51 (0.5-20.0 x CTR)	1.64	ANSI Extremely Inv.	12.00	50-1 (0.5-175 x CTR)	22.00	50-1 Delay (0-60 Sec)	0.12	50-2 (0.5-175 x CTR)	33.00				
51-1BF5	Neutral	69kV Feed MDP0	SIEMENS	7SJ62X	150 : 5	51N (0.25-20.0 x CTR)	1	ANSI Very Inverse	1.00	50N-1 (0.25-175 x CTR)	20.00								

Project: Rockland County WTP 2020
Base Project

ADJUSTABLE LOW VOLTAGE CIRCUIT BREAKER SETTINGS

DESIGNATION						TRIP UNIT								
Location/Name	Function	Frame Amps	AIC kA	MFR	TYPE MODEL	Amps Sensor/Plug	Description TYPE/MODEL	SETTINGS						
								L.T. P.U.	L.D. TIME	S.D. P.U.	S.D. TIME (I ² s T Off)	INST P.U.	GFPV	GFD
BUS-0010, 52-4A-N	Phase	3,000	65	SQUARE D	RJ	3,000 3,000	LSI, 250-3000A Powerpact R-Frame, 5.0 & 6.0 A/P/H	1 (3000A)	8	4 (12000A)	0.4 (I ² s T Off)	15 (45000A)		
BUS-0011, 52-4A-E	Phase	3,000	65	SQUARE D	RJ	3,000 3,000	LSI, 250-3000A Powerpact R-Frame, 5.0 & 6.0 A/P/H	1 (3000A)	8	4 (12000A)	0.4 (I ² s T Off)	15 (45000A)		
BUS-0011, 52-4B-E	Phase	3,000	65	SQUARE D	RJ	3,000 3,000	LSI, 250-3000A Powerpact R-Frame, 5.0 & 6.0 A/P/H	1 (3000A)	8	4 (12000A)	0.4 (I ² s T Off)	15 (45000A)		
BUS-0018, 52-4B-N	Phase	3,000	65	SQUARE D	RJ	3,000 3,000	LSI, 250-3000A Powerpact R-Frame, 5.0 & 6.0 A/P/H	1 (3000A)	8	4 (12000A)	0.4 (I ² s T Off)	15 (45000A)		
BUS-0047, PD-0058	Phase	1,200	65	CUTLER-H AMMER	HND	1,200 1,200	LSI, 400-1200A Fixed Plug HND, RMS 310	Fixed (1200A)	Fixed	2 (2400A)	100 ms (I ² s T On)	Fixed (14000A)		
BUS-0079, 52-2B ATS N	Phase	3,000	65	SQUARE D	RJ	2,000 2,000	LSI, 250-3000A Powerpact R-Frame, 5.0 & 6.0 A/P/H	1 (2000A)	8	5 (10000A)	0.4 (I ² s T Off)	15 (30000A)		

DESIGNATION					TRIP UNIT									
Location/Name	Function	Frame Amps	AIC kA	MFR	TYPE MODEL	Amps Sensor/Plug	Description TYPE/MODEL	SETTINGS						
								L.T. P.U.	L.D. TIME	S.D. P.U.	S.D. TIME (I [^] s T)	INST P.U.	GFPU	GFD
BUS-0082, 52-2A ATSN	Phase	3,000	65	SQUARE D	RJ	2,000 2,000	LSI, 250-3000A Powerpact R-Frame, 5.0 & 6.0 A/P/H	1 (2000A)	8	5 (10000A)	0.4 (I [^] s T Off)	15 (30000A)		
BUS-0101, 52-MP2A-A Main	Phase	1,200	65	CUTLER-HAMMER	HND	1,200 1,000	LSI, 400-1200A Fixed Plug HND, RMS 310	Fixed (1000A)	Fixed	2 (2000A)	100 ms (I [^] s T On)	Fixed (14000A)		
BUS-0102, 52-MP2A-B Main	Phase	1,000	50	WESTINGHOUSE	HNC	1,000 1,000	LS, 800-1200A HNC Seltronic	1.0 (1000A)	Fixed	8.0 (8000A)	Fixed (I [^] s T On)			
Centrifuge #1, PD-0052	Phase	800	65	MERLINGERIN	MC08H1	400 400	LSI, 250-800A Sensors Masterpact, STR 58UP	1 (400A)	120	10 (4000A)	0 (I [^] s T On)	8 (3200A)		
Centrifuge #2, PD-0050	Phase	800	65	MERLINGERIN	MC08H1	400 400	LSI, 250-800A Sensors Masterpact, STR 58UP	1 (400A)	120	10 (4000A)	0 (I [^] s T On)	8 (3200A)		
Centrifuge #3, PD-0054	Phase	800	65	MERLINGERIN	MC08H1	400 400	LSI, 250-800A Sensors Masterpact, STR 58UP	1 (400A)	120	10 (4000A)	0 (I [^] s T On)	8 (3200A)		
Cogen Breaker, 52-IT	Phase	1,200	65	ABB	E2S-A	1,200 1,200	LSI, 800-5000AF, UL EMAX, PR122	1 (1200A)	12	5 (6000A)	0.4 (I [^] s T On)	4 (4800A)		
MCC MP2B-A, 52-MP2B-A MAIN	Phase	2,000	65	WESTINGHOUSE	RD	2,000 2,000	I2T 800-2K RD SELTRNC	1.0 (2000A)	LTD	2.0 (4000A)	STD (I [^] s T On)			
MCC MP2B-A, PD-0039	Phase	2,000	65	WESTINGHOUSE	RD	2,000 2,000	I2T 800-2K RD SELTRNC	1.0 (2000A)	LTD	2.0 (4000A)	STD (I [^] s T On)			

DESIGNATION						TRIP UNIT									
Location/Name	Function	Frame Amps	AIC kA	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	SETTINGS						
									L.T. P.U.	L.D. TIME	S.D. P.U.	S.D. TIME	(I^s T On)	INST P.U.	GFPU	GFD
MCC MP2B-B, 52-MP2B-B Main	Phase	2,000	65	WESTINGH OUSE	RD	2,000 2,000	I2T 800-2K RD SELTRNC		1.0 (2000A)	LTD	2.0 (4000A)	STD (I^s T On)			
MCC PST2-A, 52-PST2-A Main	Phase	1,000	50	WESTINGH OUSE	HNC	1,000 1,000	LS, 800-1200A HNC Seltronic		1.0 (1000A)	Fixed	8.0 (8000A)	Fixed (I^s T On)			
MCC PST2-A, PD-0038	Phase	1,000	50	WESTINGH OUSE	HNC	1,000 1,000	LS, 800-1200A HNC Seltronic		1.0 (1000A)	Fixed	8.0 (8000A)	Fixed (I^s T On)			
MCC PST2-B, 52-PST2-B Main	Phase	1,000	50	WESTINGH OUSE	HNC	1,000 1,000	LS, 800-1200A HNC Seltronic		1.0 (1000A)	Fixed	8.0 (8000A)	Fixed (I^s T On)			
MCC SC-A, 52-SC-A Main	Phase	1,200	65	CUTLER-H AMMER	HND	1,200 1,200	LSI, 400-1200A Fixed Plug HND, RMS 310		Fixed (1200A)	Fixed	2 (2400A)	100 ms (I^s T On)	Fixed (14000A)		
MCC SC-A, 52-SC2-A Main	Phase	1,200	65	CUTLER-H AMMER	HND	1,200 1,200	LSI, 400-1200A Fixed Plug HND, RMS 310		Fixed (1200A)	Fixed	2 (2400A)	100 ms (I^s T On)	Fixed (14000A)		
MCC SC-A, PD-0016	Phase	1,200	65	CUTLER-H AMMER	HND	1,200 1,200	LSI, 400-1200A Fixed Plug HND, RMS 310		Fixed (1200A)	Fixed	2 (2400A)	100 ms (I^s T On)	Fixed (14000A)		
MCC- SC-B, 52-SC-B Main	Phase	1,200	65	CUTLER-H AMMER	HND	1,200 1,200	LSI, 400-1200A Fixed Plug HND, RMS 310		Fixed (1200A)	Fixed	2 (2400A)	100 ms (I^s T On)	Fixed (14000A)		
MCC- SC-B, 52-SC2-B Main	Phase	1,200	65	CUTLER-H AMMER	HND	1,200 1,200	LSI, 400-1200A Fixed Plug HND, RMS 310		Fixed (1200A)	Fixed	2 (2400A)	100 ms (I^s T On)	Fixed (14000A)		

DESIGNATION						TRIP UNIT									
Location/Name	Function	Frame Amps	AIC kA	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	SETTINGS						
									L.T. P.U.	L.D. TIME	S.D. P.U.	S.D. TIME (I ^Δ s T)	INST P.U.	GFPU	GFD
Substation 5A, 52-5A Main	Phase	1,600	50	WESTINGHOUSE	DS-416	1,600 1,600	AMPTECT IA DS		1.0 (1600A)	4.0	10.0 (16000A)	0.5	10.0 (16000A)		
Substation 5A, 52-5A Main	Ground	1,600	9,999	WESTINGHOUSE	DS	1,600 1,600	1600A DIGITRIP 510-810							D (640A)	0.5 (I ^Δ s T On)
Substation 5A, 52-Centrifuge 2	Phase	800	30	WESTINGHOUSE	DS-206	300 300	LSI 100-4K DS DIGITRP		1.0 (300A)	4.0	2.0 (600A)	0.2 (I ^Δ s T On)	8.0 (2400A)		
Substation 5A, 52-Centrifuge 2	Neutral	800	9,999	WESTINGHOUSE	DS	300 300	100-1200A DIGITRIP 510-810							A (75A)	0.3 (I ^Δ s T On)
Substation 5A, 52-SD2-A	Phase	1,600	50	WESTINGHOUSE	DS-416	800 800	AMPTECT IA DS		1.25 (1000A)	4.0	4.0 (3200A)	0.18	12.0 (9600A)		
Substation 5A, 52-T5	Phase	1,600	50	WESTINGHOUSE	DS-416	1,600 1,600	AMPTECT IA DS		0.9 (1440A)	4.0	10.0 (16000A)	0.5	8.0 (12800A)		
Substation 5A, 52-T5	Ground	1,600	9,999	WESTINGHOUSE	DS	1,600 1,600	1600A DIGITRIP 510-810							B (480A)	0.3 (I ^Δ s T On)
Substation 2A, 52-2 TIE	Phase	2,000	65	SIEMENS	WLS, Size II	2,000 2,000	LSI, 200-3000AP, UL WL, ETU745, Size II		0.8 (1600A)	2	3 (6000A)	0.2 (I ^Δ s T Off)	10 (20000A)		
Substation 2A, 52-2 TIE	Neutral	2,000	65	SIEMENS	WLS, Size II	2,000 2,000	GF, 200-3200AP WL, ETU745, Size II							D (900A)	0.2 (I ^Δ s T On)

DESIGNATION						TRIP UNIT									
Location/Name	Function	Frame Amps	AIC kA	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	SETTINGS						
									L.T. P.U.	L.D. TIME	S.D. P.U.	S.D. TIME (I^s T)	INST P.U.	GFPU	GFD
Substation 2A, 52-2A Main	Phase	2,000	65	SIEMENS	WLS, Size II	2,000 2,000	LSI, 200-3000AP, UL WL, ETU745, Size II		1 (2000A)	8	4 (8000A)	0.3 (I^s T Off)	12 (24000A)		
Substation 2A, 52-2A Main	Neutral	2,000	65	SIEMENS	WLS, Size II	2,000 2,000	GF, 200-3200AP WL, ETU745, Size II							E (1200A)	0.3 (I^s T On)
Substation 2B, 52-2B Main	Phase	2,000	65	SIEMENS	WLS, Size II	2,000 2,000	LSI, 200-3000AP, UL WL, ETU745, Size II		1 (2000A)	8	4 (8000A)	0.3 (I^s T Off)	12 (24000A)		
Substation 2B, 52-2B Main	Neutral	2,000	65	SIEMENS	WLS, Size II	2,000 2,000	GF, 200-3200AP WL, ETU745, Size II							E (1200A)	0.3 (I^s T On)
Substation 2B, 52-A-1	Phase	800	65	SIEMENS	WLS, Size I	800 800	LSI, 200-1200AP, UL WL, ETU745, Size I		1 (800A)	2	6 (4800A)	0.1 (I^s T Off)	12 (9600A)		
Substation 2B, 52-A-1	Neutral	800	65	SIEMENS	WLS, Size II	800 800	GF, 200-3200AP WL, ETU745, Size II							C (600A)	0.1 (I^s T Off)
Substation 2B, 52-Digester Bldg	Phase	800	65	SIEMENS	WLS, Size I	800 800	LSI, 200-1200AP, UL WL, ETU745, Size I		1 (800A)	2	6 (4800A)	0.1 (I^s T Off)	12 (9600A)		
Substation 2B, 52-Digester Bldg	Neutral	800	65	SIEMENS	WLS, Size II	800 800	GF, 200-3200AP WL, ETU745, Size II							C (600A)	0.1 (I^s T Off)
Substation 2B, 52-Grit Bldg	Phase	800	65	SIEMENS	WLS, Size I	800 800	LSI, 200-1200AP, UL WL, ETU745, Size I		1 (800A)	2	6 (4800A)	0.1 (I^s T Off)	12 (9600A)		

DESIGNATION						TRIP UNIT									
Location/Name	Function	Frame Amps	AIC kA	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	SETTINGS						
									L.T. P.U.	L.D. TIME	S.D. P.U.	S.D. TIME (I^s T)	INST P.U.	GFPU	GFD
Substation 2B, 52-Grit Bldg	Neutral	800	65	SIEMENS	WLS, Size II	800 800	GF, 200-3200AP WL, ETU745, Size II							C (600A)	0.1 (I^s T On)
Substation 2B, 52-SO2	Phase	800	65	SIEMENS	WLS, Size I	800 800	LSI, 200-1200AP, UL WL, ETU745, Size I		1 (800A)	2	6 (4800A)	0.1 (I^s T Off)	12 (9600A)		
Substation 2B, 52-SO2	Neutral	800	65	SIEMENS	WLS, Size II	800 800	GF, 200-3200AP WL, ETU745, Size II							C (600A)	0.1 (I^s T Off)
Substation 4A, 52-4A Main	Phase	3,200	65	WESTINGH OUSE	DS-632	3,200 3,200	AMPTECT IA DS		1.0 (3200A)	12.0	4.0 (12800A)	0.5	12.0 (38400A)		
Substation 4A, 52-4A Main	Neutral	3,200	9,999	WESTINGH OUSE	DS	3,200 3,200	3200A DIGITRIP 510-810							F (1200A)	0.5 (I^s T On)
Substation 4A, 52-GB2-A	Phase	1,600	50	WESTINGH OUSE	DS-416	800 800	AMPTECT IA DS		1.25 (1000A)	4.0	4.0 (3200A)	0.18	6.0 (4800A)		
Substation 4A, 52-GB2-A	Neutral	1,600	9,999	WESTINGH OUSE	DS	800 800	100-1200A DIGITRIP 510-810							A (200A)	0.3 (I^s T On)
Substation 4A, 52-MP2A-A	Phase	2,000	50	WESTINGH OUSE	DS-420	2,000 2,000	AMPTECT IA DS		1.0 (2000A)	4.0	4.0 (8000A)	0.18	8.0 (16000A)		
Substation 4A, 52-MP2A-A	Neutral	2,000	9,999	WESTINGH OUSE	DS	2,000 2,000	2000A DIGITRIP 510-810							A (500A)	0.3 (I^s T On)

DESIGNATION						TRIP UNIT									
Location/Name	Function	Frame Amps	AIC kA	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	SETTINGS						
									L.T. P.U.	L.D. TIME	S.D. P.U.	S.D. TIME	(I^s T)	INST P.U.	GFPU	GFD
Substation 4A, 52-PST2-A	Phase	1,600	50	WESTINGHOUSE	DS-416	1,600 1,600	AMPTECT IA DS		1.0 (1600A)	4.0	4.0 (6400A)	0.18	12.0 (19200A)		
Substation 4A, 52-PST2-A	Neutral	1,600	9,999	WESTINGHOUSE	DS	1,600 1,600	1600A DIGITRIP 510-810							A (400A)	0.3 (I^s T On)
Substation 4A, 52-RCB2-A	Phase	1,600	50	WESTINGHOUSE	DS-416	1,600 1,600	AMPTECT IA DS		1.0 (1600A)	4.0	4.0 (6400A)	0.18	12.0 (19200A)		
Substation 4A, 52-RCB2-A	Neutral	1,600	9,999	WESTINGHOUSE	DS	1,600 1,600	1600A DIGITRIP 510-810							A (400A)	0.3 (I^s T On)
Substation 4A, 52-SC-A	Phase	1,600	50	WESTINGHOUSE	DS-416	1,200 1,200	AMPTECT IA DS		1.0 (1200A)	4.0	4.0 (4800A)	0.18	10.0 (12000A)		
Substation 4A, 52-SC-A	Neutral	1,600	9,999	WESTINGHOUSE	DS	1,200 1,200	100-1200A DIGITRIP 510-810							A (300A)	0.3 (I^s T On)
Substation 4A, 52-SST2-A	Phase	1,600	50	WESTINGHOUSE	DS-416	1,200 1,200	AMPTECT IA DS		0.7 (840A)	4.0	4.0 (4800A)	0.18	4.0 (4800A)		
Substation 4A, 52-SST2-A	Neutral	1,600	9,999	WESTINGHOUSE	DS	1,200 1,200	100-1200A DIGITRIP 510-810							A (300A)	0.3 (I^s T On)
Substation 4A, 52-T4	Phase	3,200	65	WESTINGHOUSE	DS-632	3,200 3,200	AMPTECT IA DS		0.9 (2880A)	4.0	4.0 (12800A)	0.33	12.0 (38400A)		

DESIGNATION						TRIP UNIT									
Location/Name	Function	Frame Amps	AIC kA	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	SETTINGS						
									L.T. P.U.	L.D. TIME	S.D. P.U.	S.D. TIME (I ² s T)	INST P.U.	GFPU	GFD
Substation 4A, 52-T4	Neutral	3,200	9,999	WESTINGHOUSE	DS	3,200 3,200	3200A DIGITRIP 510-810							B (960A)	0.3 (I ² s T On)
Substation 4B, 52-4B Main	Phase	3,200	65	WESTINGHOUSE	DS-632	3,200 3,200	AMPTECT IA DS		1.0 (3200A)	12.0	4.0 (12800A)	0.5	12.0 (38400A)		
Substation 4B, 52-4B Main	Neutral	3,200	9,999	WESTINGHOUSE	DS	3,200 3,200	3200A DIGITRIP 510-810							F (1200A)	0.5 (I ² s T On)
Substation 4B, 52-GB2-B	Phase	1,600	50	WESTINGHOUSE	DS-416	800 800	AMPTECT IA DS		1.25 (1000A)	4.0	4.0 (3200A)	0.18	6.0 (4800A)		
Substation 4B, 52-GB2-B	Neutral	1,600	9,999	WESTINGHOUSE	DS	800 800	100-1200A DIGITRIP 510-810							A (200A)	0.3 (I ² s T On)
Substation 4B, 52-MP2A-B	Phase	2,000	50	WESTINGHOUSE	DS-420	2,000 2,000	AMPTECT IA DS		1.0 (2000A)	4.0	4.0 (8000A)	0.18	8.0 (16000A)		
Substation 4B, 52-MP2A-B	Neutral	2,000	9,999	WESTINGHOUSE	DS	2,000 2,000	2000A DIGITRIP 510-810							C (700A)	0.1 (I ² s T On)
Substation 4B, 52-PST2-B	Phase	1,600	50	WESTINGHOUSE	DS-416	1,600 1,600	AMPTECT IA DS		1.0 (1600A)	4.0	4.0 (6400A)	0.18	12.0 (19200A)		
Substation 4B, 52-PST2-B	Neutral	1,600	9,999	WESTINGHOUSE	DS	1,600 1,600	1600A DIGITRIP 510-810							A (400A)	0.3 (I ² s T On)

DESIGNATION						TRIP UNIT									
Location/Name	Function	Frame Amps	AIC kA	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	SETTINGS						
									L.T. P.U.	L.D. TIME	S.D. P.U.	S.D. TIME (I^s T)	INST P.U.	GFPU	GFD
Substation 4B, 52-RCB2-B	Phase	1,600	50	WESTINGHOUSE	DS-416	1,600 1,600	AMPTECT IA DS		1.0 (1600A)	4.0	4.0 (6400A)	0.18	12.0 (19200A)		
Substation 4B, 52-RCB2-B	Neutral	1,600	9,999	WESTINGHOUSE	DS	1,600 1,600	1600A DIGITRIP 510-810							A (400A)	0.3 (I^s T On)
Substation 4B, 52-SC-B	Phase	1,600	50	WESTINGHOUSE	DS-416	1,200 1,200	AMPTECT IA DS		1.0 (1200A)	4.0	4.0 (4800A)	0.18	10.0 (12000A)		
Substation 4B, 52-SC-B	Neutral	1,600	9,999	WESTINGHOUSE	DS	1,200 1,200	100-1200A DIGITRIP 510-810							A (300A)	0.3 (I^s T On)
Substation 4B, 52-SST2-B	Phase	1,600	50	WESTINGHOUSE	DS-416	1,200 1,200	AMPTECT IA DS		0.7 (840A)	4.0	4.0 (4800A)	0.18	4.0 (4800A)		
Substation 4B, 52-SST2-B	Neutral	1,600	9,999	WESTINGHOUSE	DS	1,200 1,200	100-1200A DIGITRIP 510-810							A (300A)	0.3 (I^s T On)
Substation 5B, 52-5B Main	Phase	1,600	50	WESTINGHOUSE	DS-416	1,600 1,600	AMPTECT IA DS		1.0 (1600A)	4.0	10.0 (16000A)	0.5	10.0 (16000A)		
Substation 5B, 52-5B Main	Ground	1,600	9,999	WESTINGHOUSE	DS	1,600 1,600	1600A DIGITRIP 510-810							D (640A)	0.5 (I^s T On)
Substation 5B, 52-Centrifuge 1	Phase	800	30	WESTINGHOUSE	DS-206	300 300	LSI 100-4K DS DIGITRP		1.0 (300A)	24.0	4.0 (1200A)	0.3 (I^s T On)	6.0 (1800A)		

DESIGNATION						TRIP UNIT											
Location/Name	Function	Frame Amps	AIC kA	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	SETTINGS							GFPU	GFD
									L.T. P.U.	L.D. TIME	S.D. P.U.	S.D. TIME	(I^s T)	INST P.U.			
Substation 5B, 52-Centrifuge 1	Neutral	800	9,999	WESTINGHOUSE	DS	300 300	100-1200A DIGITRIP 510-810							A (75A)	0.3 (I^s T On)		
Substation 5B, 52-Centrifuge 3	Phase	800	30	WESTINGHOUSE	DS-206	300 300	LSI 100-4K DS DIGITRIP	1.0 (300A)	24.0	4.0 (1200A)	0.3 (I^s T On)	6.0 (1800A)					
Substation 5B, 52-Centrifuge 3	Neutral	800	9,999	WESTINGHOUSE	DS	300 300	100-1200A DIGITRIP 510-810							A (75A)	0.3 (I^s T On)		
Substation 5B, 52-Cogen	Phase	1,600	50	WESTINGHOUSE	DS-416	1,600 1,600	AMPTECT IA DS	1.0 (1600A)	4.0	4.0 (6400A)	0.18	4.0 (6400A)					
Substation 5B, 52-MPP-G2	Phase	1,600	50	WESTINGHOUSE	DS-416	800 800	AMPTECT IA DS	0.5 (400A)	4.0	4.0 (3200A)	0.18	4.0 (3200A)					
Substation 5B, 52-MPP-G2	Neutral	800	9,999	WESTINGHOUSE	DS	800 800	100-1200A DIGITRIP 510-810							A (200A)	0.3 (I^s T On)		
Substation 5B, 52-SD2-B	Phase	1,600	50	WESTINGHOUSE	DS-416	800 800	AMPTECT IA DS	1.25 (1000A)	4.0	4.0 (3200A)	0.18	12.0 (9600A)					
Substation 5B, MCC-SC-TIE	Phase	1,600	50	WESTINGHOUSE	DS-416	800 800	AMPTECT IA DS	1.0 (800A)	4.0	10.0 (8000A)	0.18	4.0 (3200A)					
Substation 5B, MCC-SC-TIE	Neutral	800	9,999	WESTINGHOUSE	DS	800 800	100-1200A DIGITRIP 510-810							A (200A)	0.3 (I^s T On)		

Project: Rockland County WTP 2020
Base Project

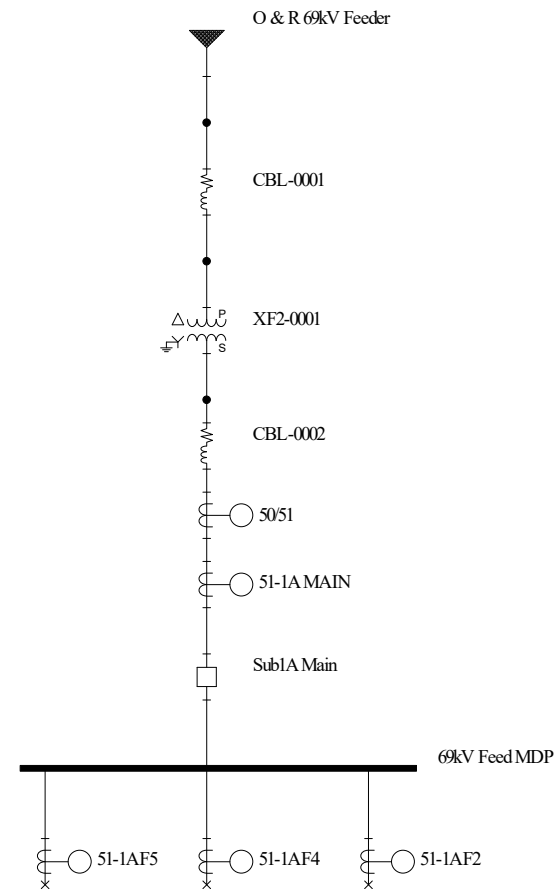
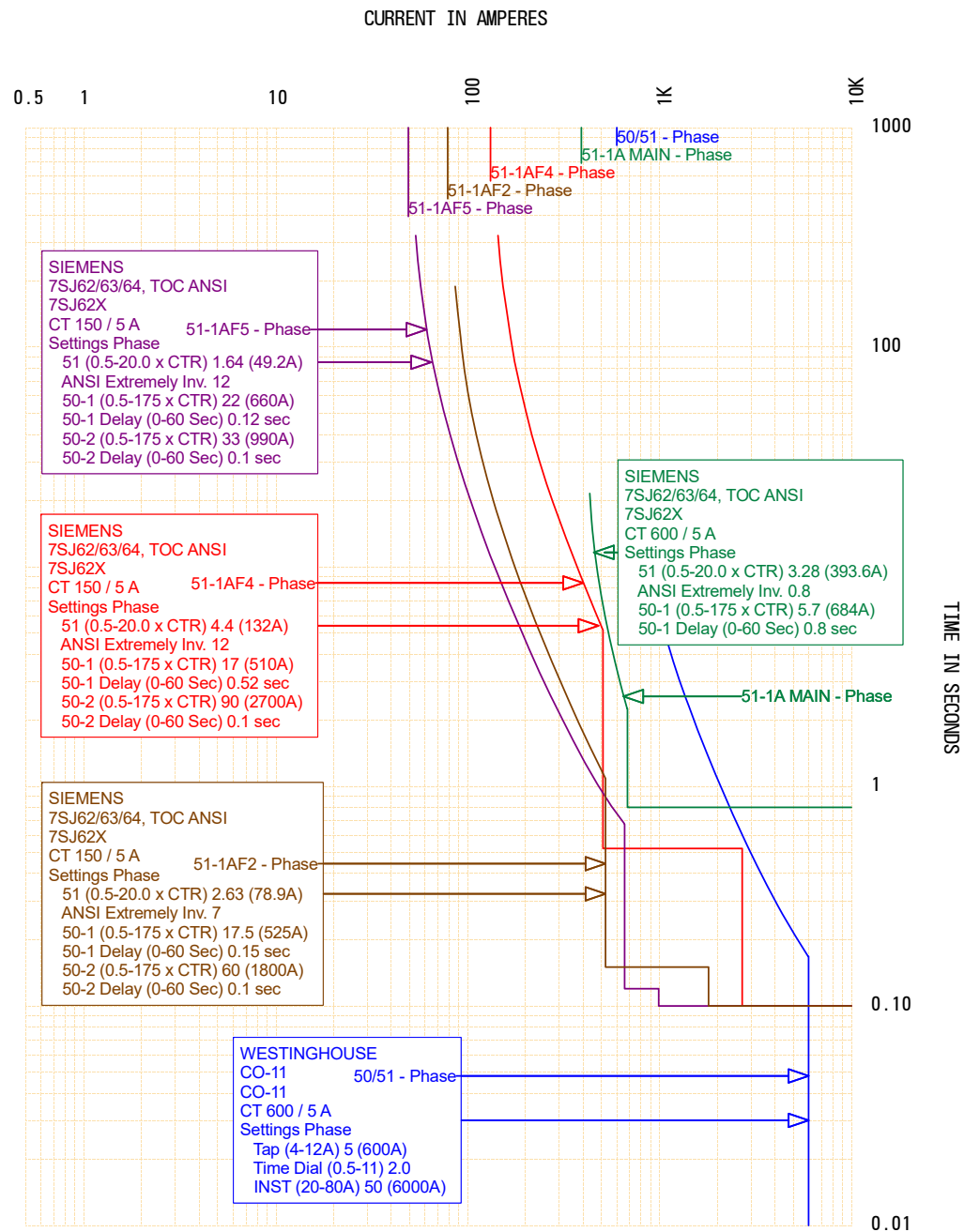
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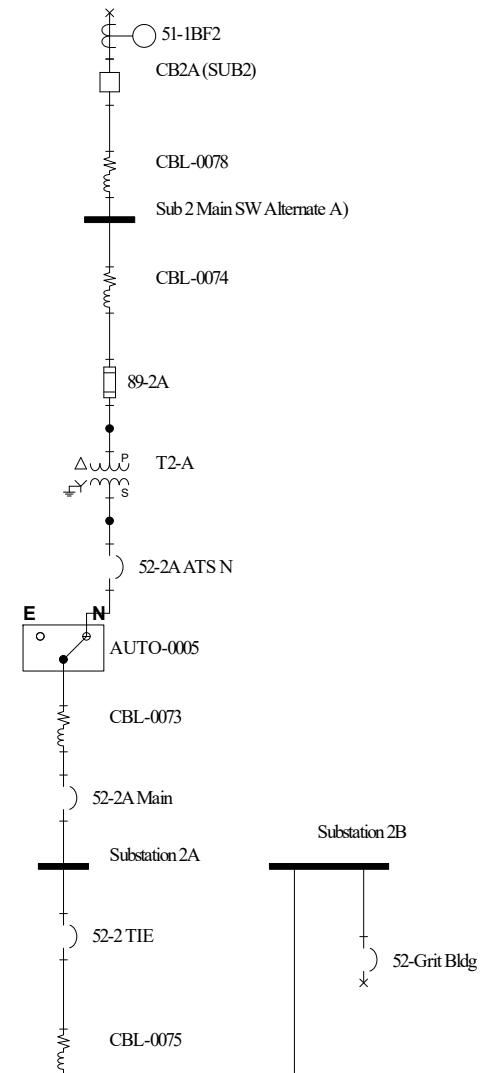
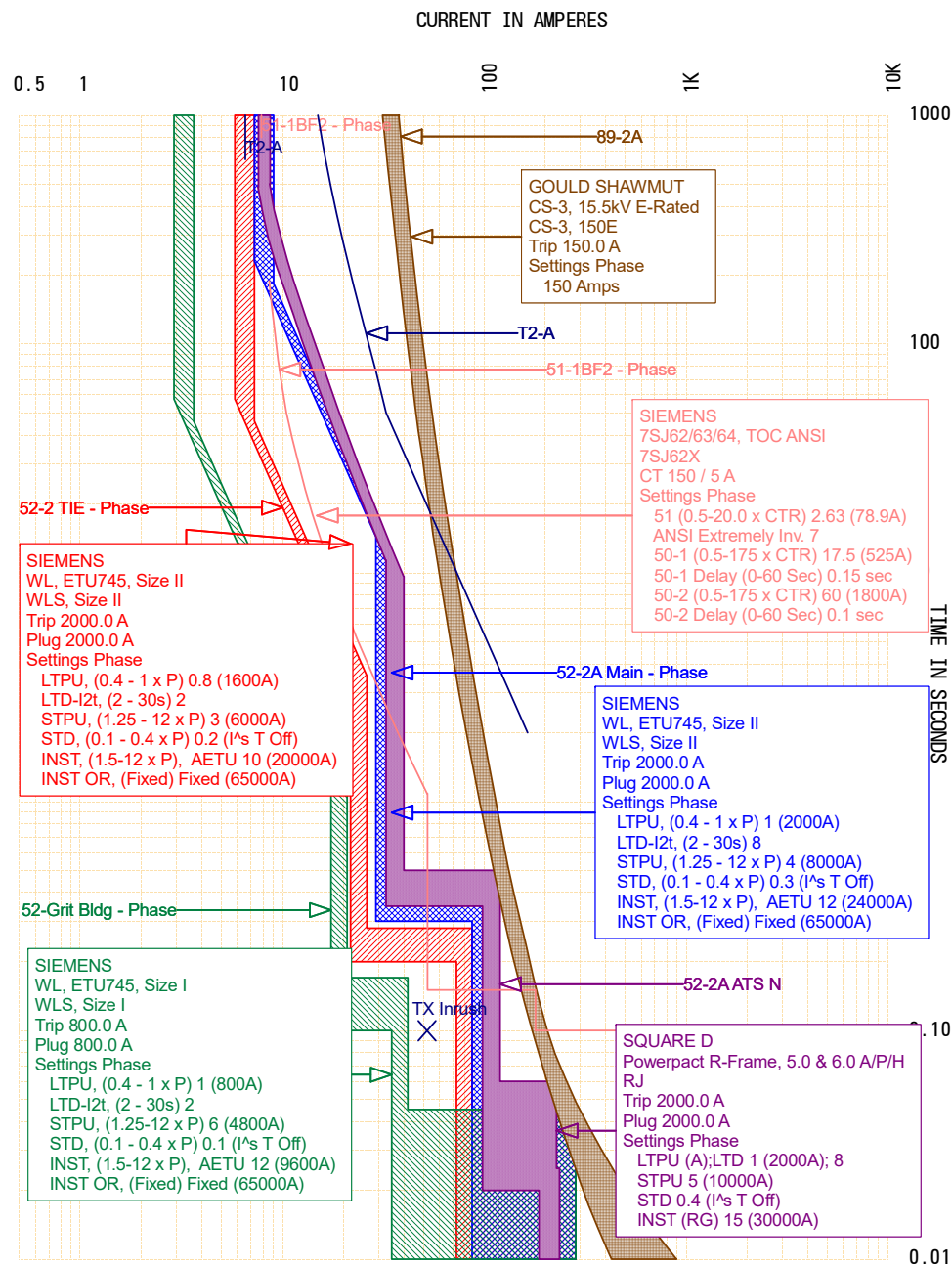
DESIGNATION		FRAME		TRIP UNIT				
Location/Name	Amps Frame	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	LT SETTING	INST SETTING
MCC GB2-A 52-GB2-A Main	500	WESTINGHO USE	NB	500 500	500A	NB	LTD	INST 10.0
MCC GB2-B 52-GB2-B Main	500	WESTINGHO USE	NB	500 500	500A	NB	LTD	INST 10.0
BUS-0086 52-Gen2	800	GE	TKMA	800 800	300-1200A	TKMA	Thermal Curve (Fixed)	INST (3-8 x Trip) LO
MCC-SC2 52-MCC-A3	150	WESTINGHO USE	FB	150 150	15-150A	FB	Opening Clearing Curve	
MCC-SC2 52-MCC-CH2C	225	WESTINGHO USE	LA	225 225	125-600A	LAB, LA	LTD	INST 5.0
MCC RBC2-A 52-RBC	1,000	CUTLER-HA MMER	PB	1,000 1,000	600-3000A	PB	Thermal Curve (Fixed)	INST (1500-5000A) 1500
BUS-0108 52-RBC2-A Main	1,600	CUTLER-HA MMER	PB	1,600 1,600	600-3000A	PB	Thermal Curve (Fixed)	INST (3000-8000A) 8000
BUS-0109 52-RBC2-B Main	1,600	CUTLER-HA MMER	PB	1,600 1,600	600-3000A	PB	Thermal Curve (Fixed)	INST (3000-8000A) 8000
MCC SD2-A 52-SD2A Main	630	KLOCKNER	NZM12	630 630	NZM12/ZM12	NZM	LTD	INST 3.0
MCC SD2-B 52-SD2B Main	630	KLOCKNER	NZM12	630 630	NZM12/ZM12	NZM	LTD	INST 3.0
MCC SST2-A 52-SST2-A Main	500	WESTINGHO USE	NB	500 500	500A	NB	LTD	INST 10.0
MCC SST2-B 52-SST2-B Main	500	WESTINGHO USE	NB	500 500	500A	NB	LTD	INST 10.0

DESIGNATION		FRAME		TRIP UNIT				
Location/Name	Amps Frame	MFR	TYPE MODEL	Amps Sensor/Plug	Description	TYPE/MODEL	LT SETTING	INST SETTING
Digester Bldg (MCC D2) MCC D2 Main	400	WESTINGHO USE	NB	400 400	400A	NB	LTD	INST 10.0
Grit Bldg (MCC EG) MCC EG Main	800	WESTINGHO USE	NB	800 800	800A	NB	LTD	INST 6.0
MCC PST (A-1) MCC PST Main	800	WESTINGHO USE	NB	800 800	800A	NB	LTD	INST 6.0
MCC-A3 MCC-A3 MAIN	225	WESTINGHO USE	LA	150 150	125-600A	LAB, LA	LTD	INST 5.0
MCC-CH2C MCC-CH2C MAIN	225	WESTINGHO USE	LA	225 225	125-600A	LAB, LA	LTD	INST 5.0
MCC GB2-A PD-0025	300	WESTINGHO USE	NB	300 300	300A	NB	LTD	INST 9.6
MCC SST2-A PD-0036	500	WESTINGHO USE	NB	500 500	500A	NB	LTD	INST 10.0
MPP-G2 PD-0056	250	WESTINGHO USE	HJD	225 225	70-250A	HJD	LTD	INST 5.0

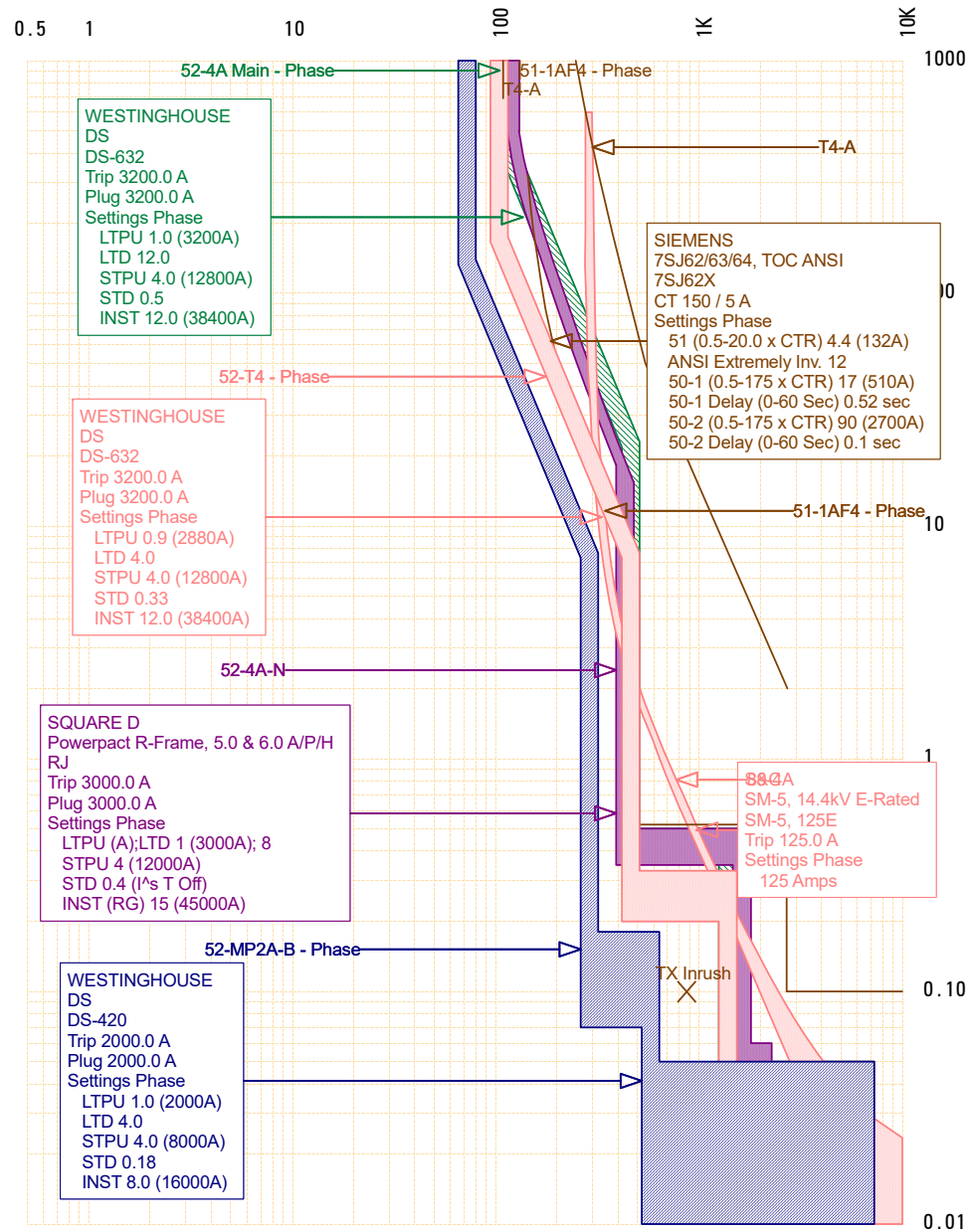
Appendix D:

Time Current Coordination Plots

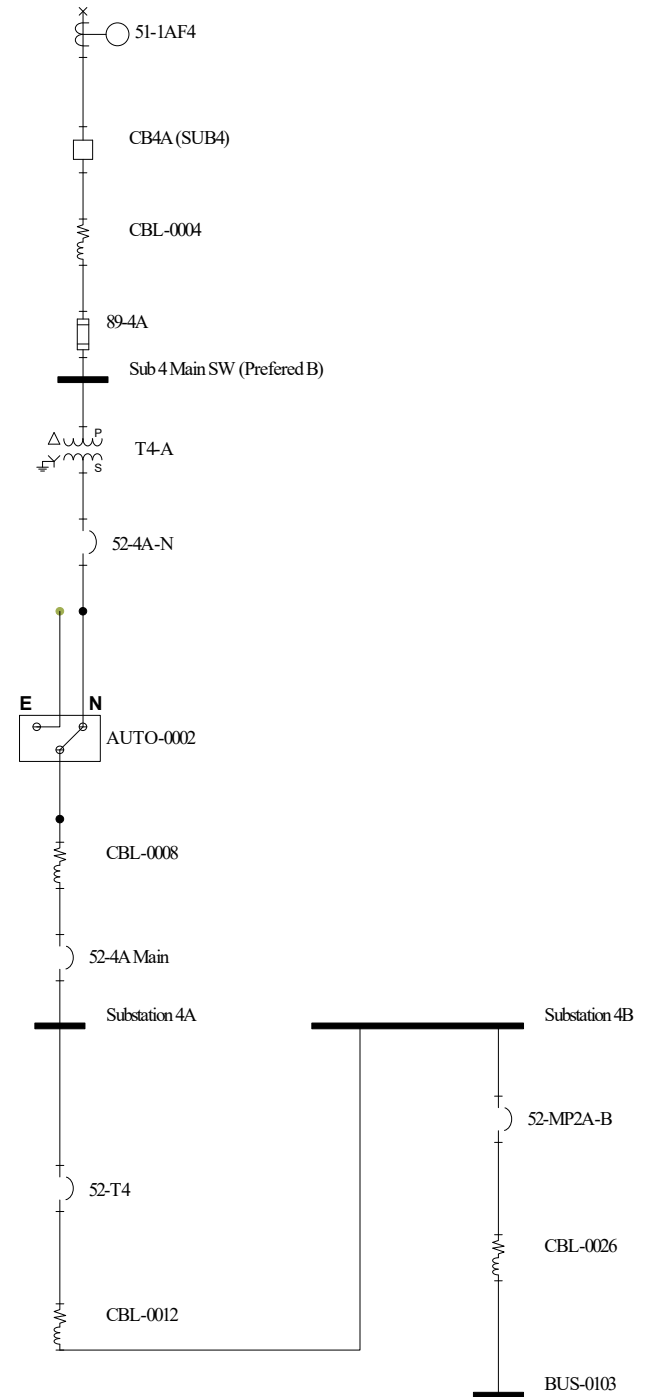




CURRENT IN AMPERES



TIME IN SECONDS

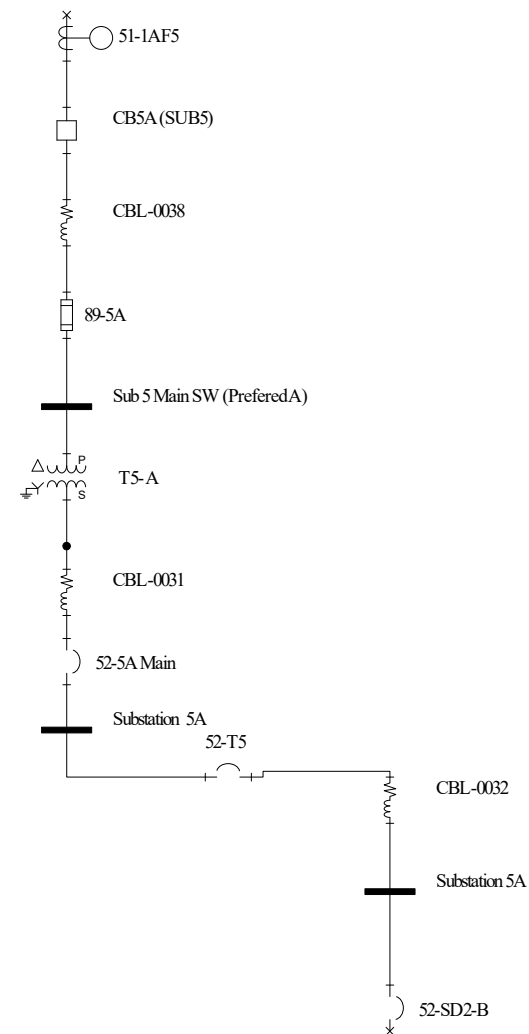
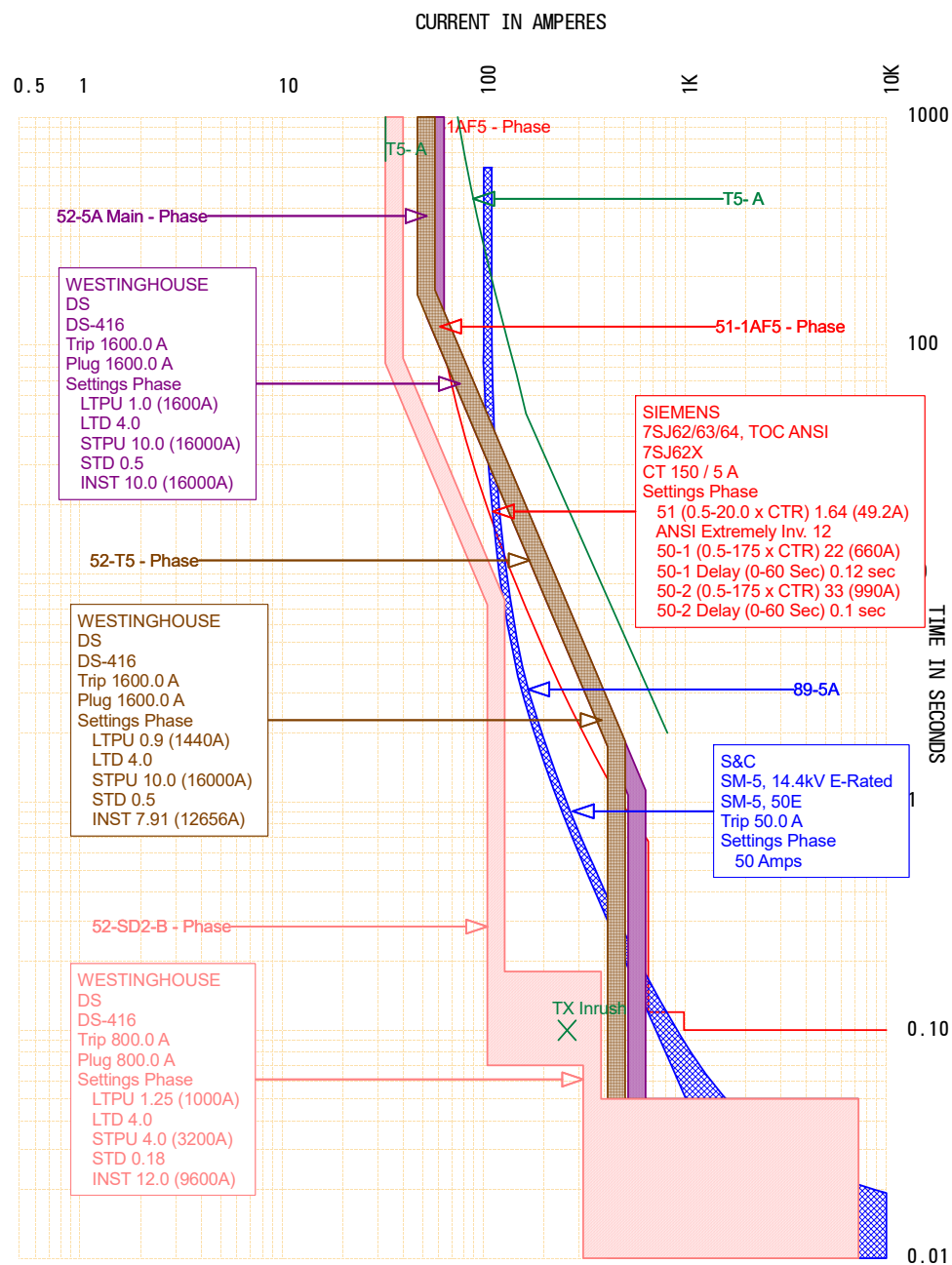


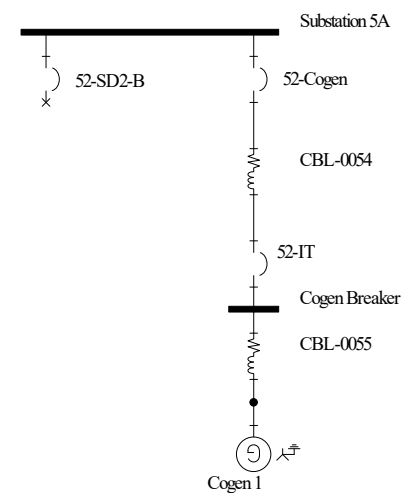
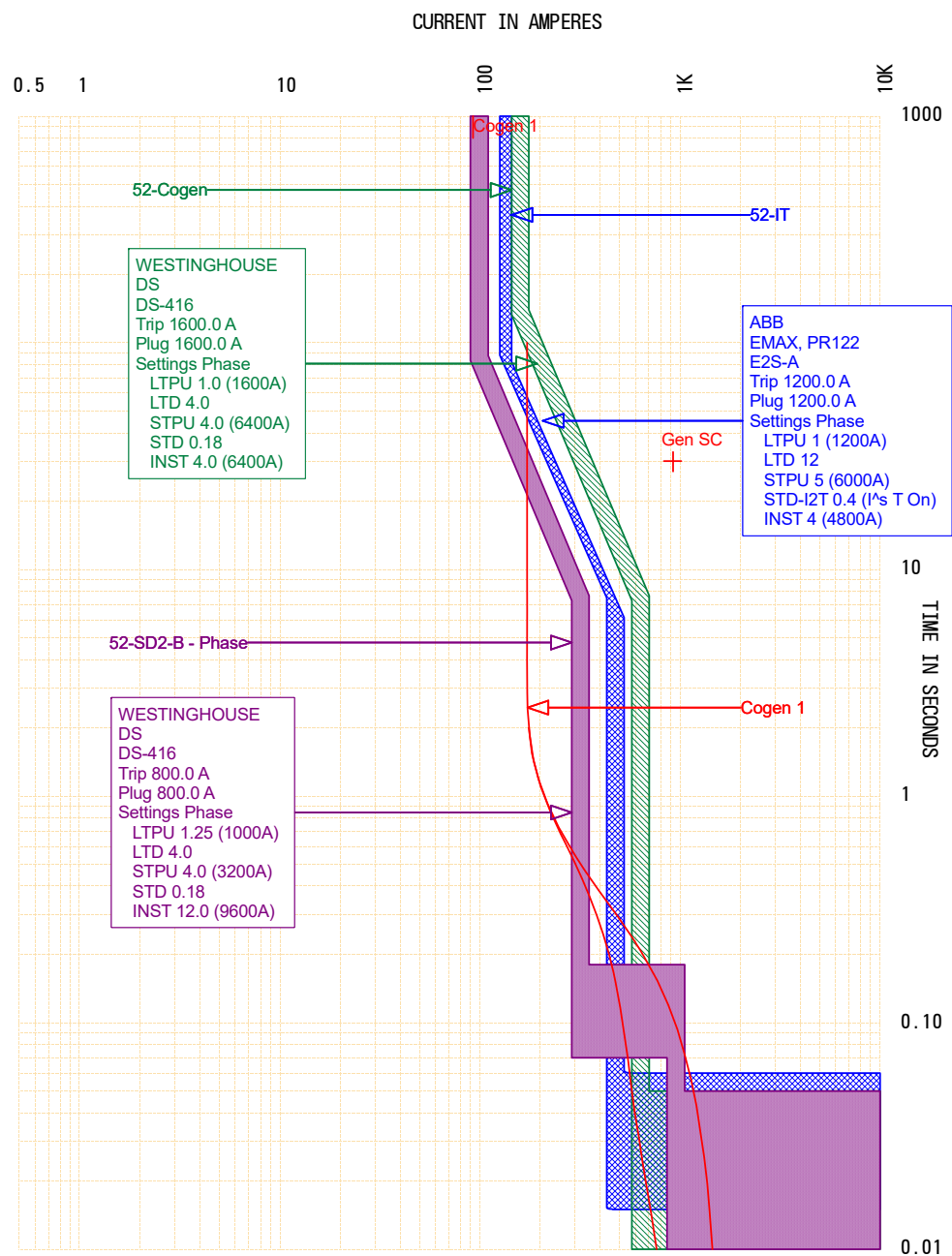
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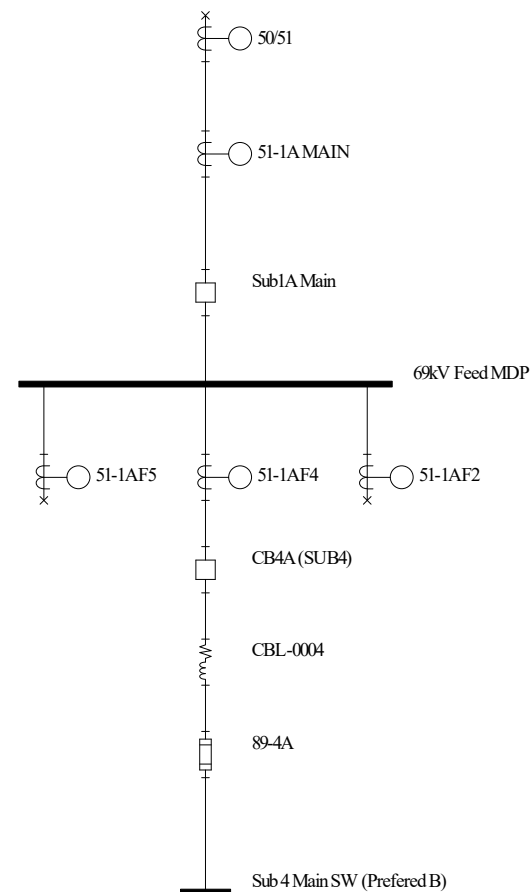
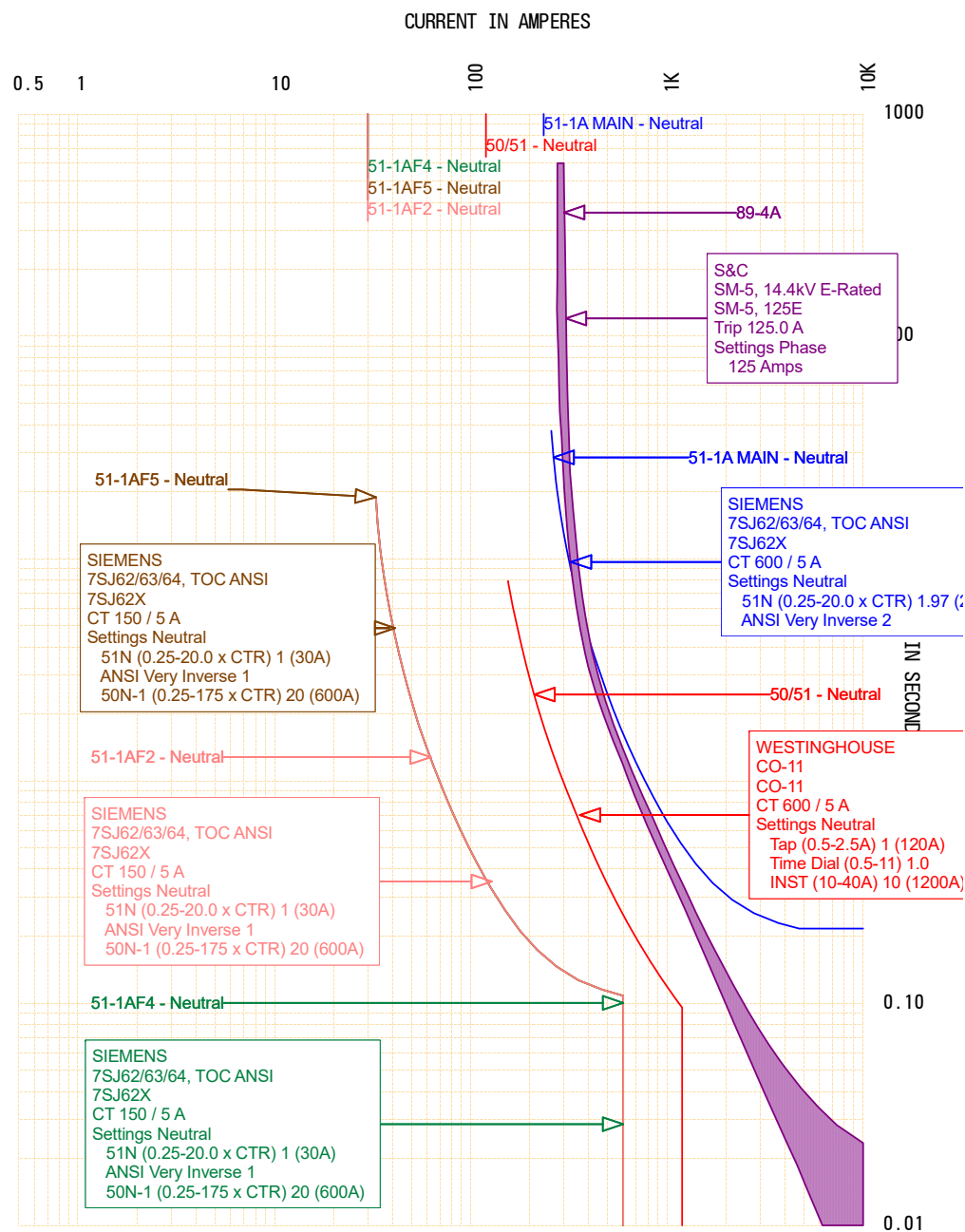
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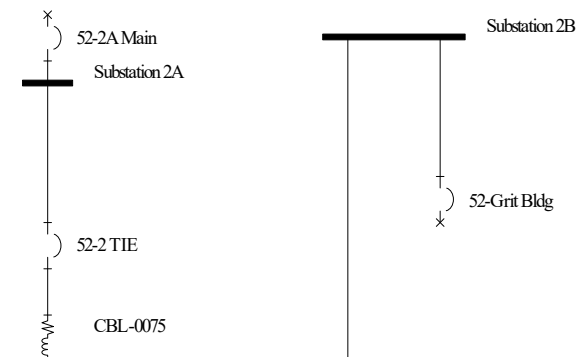
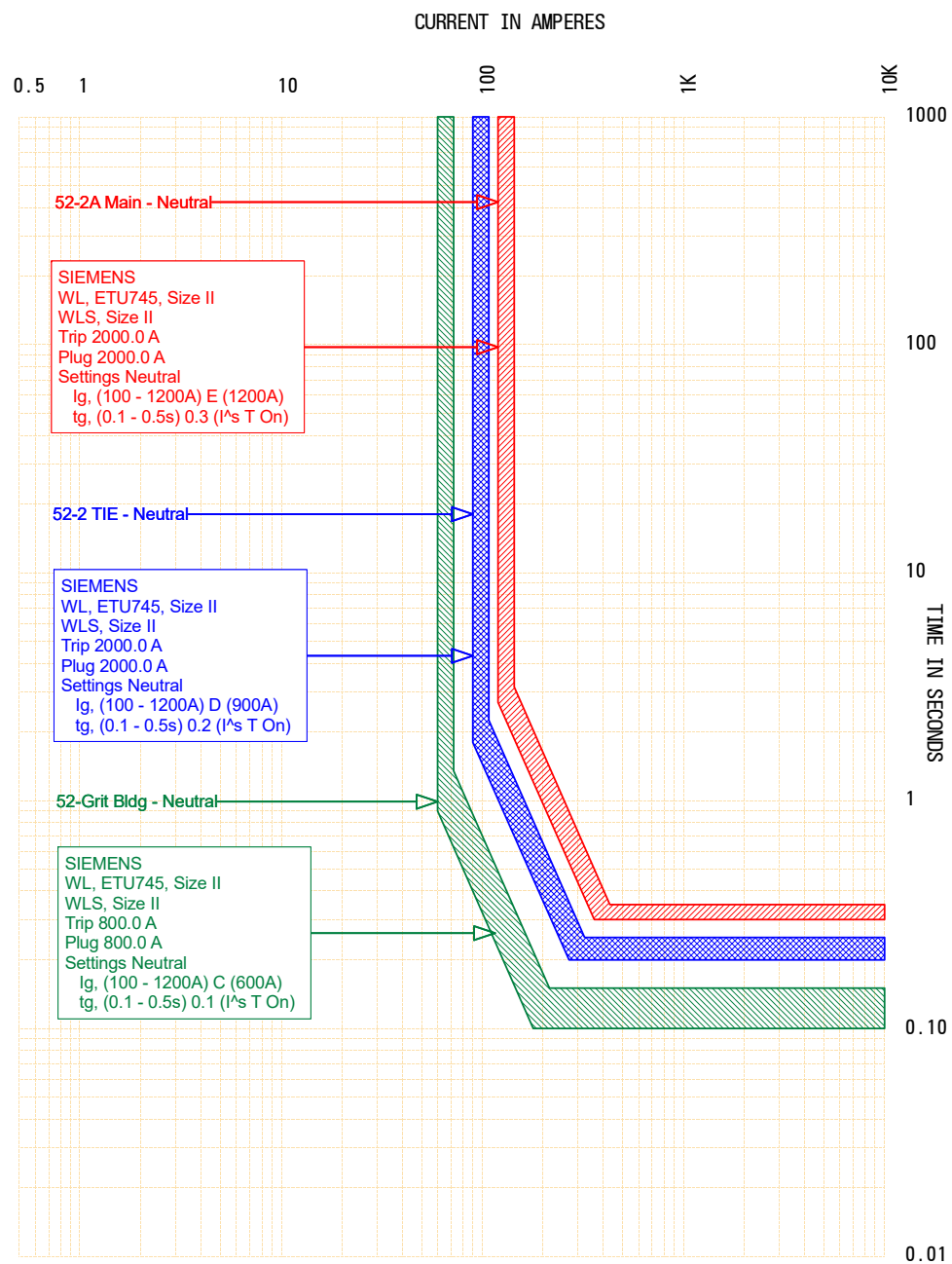
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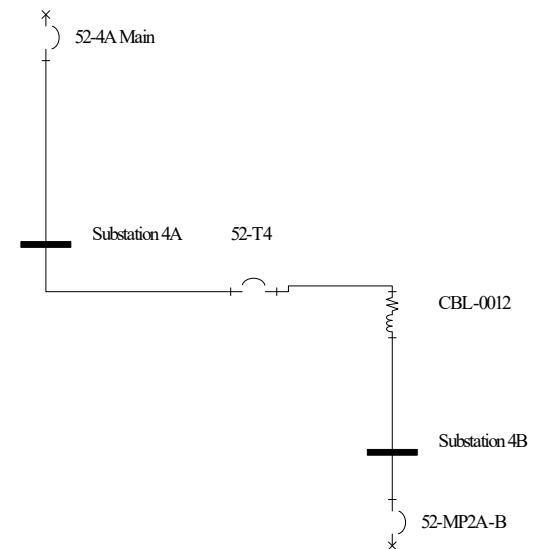
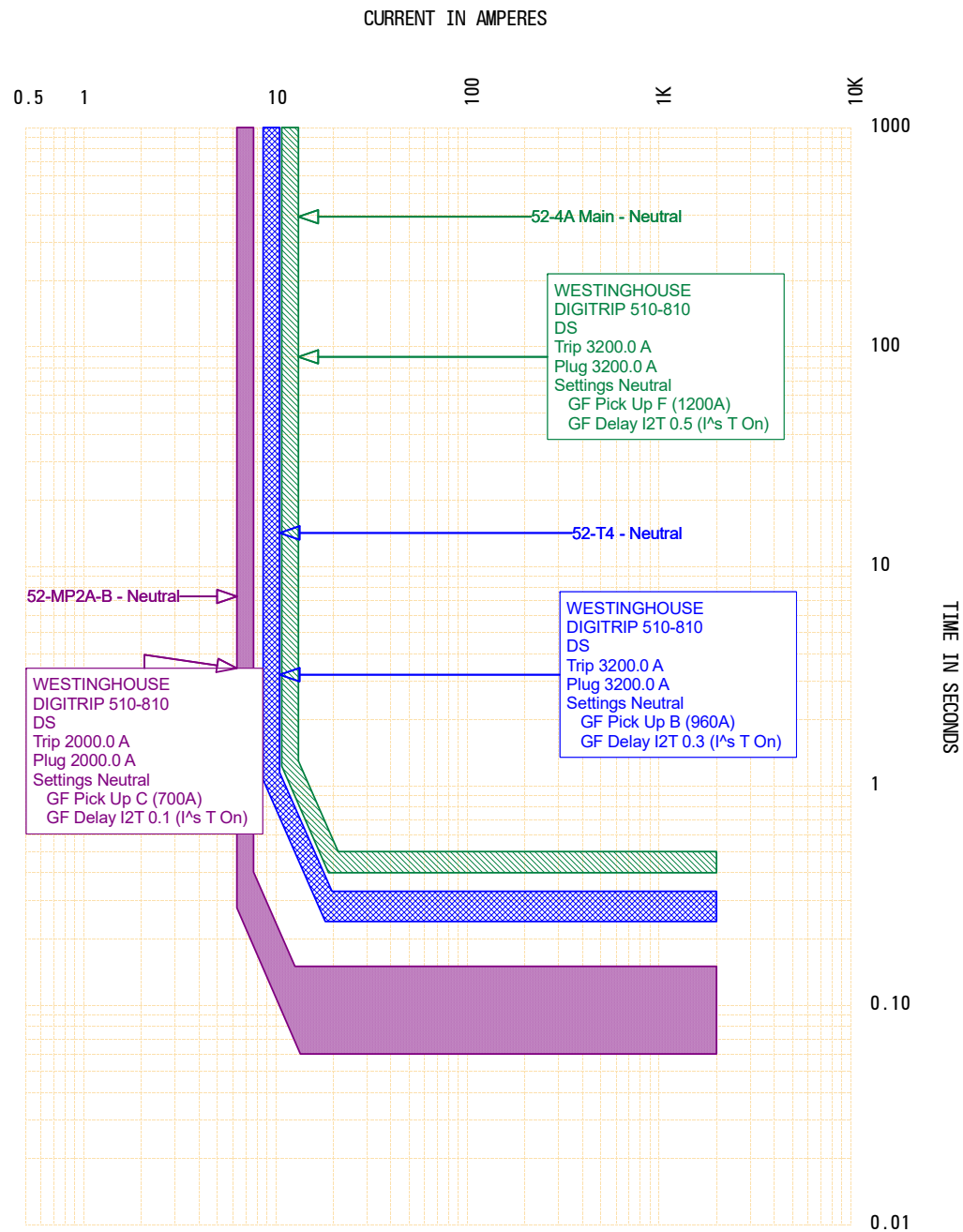
June 20, 2020

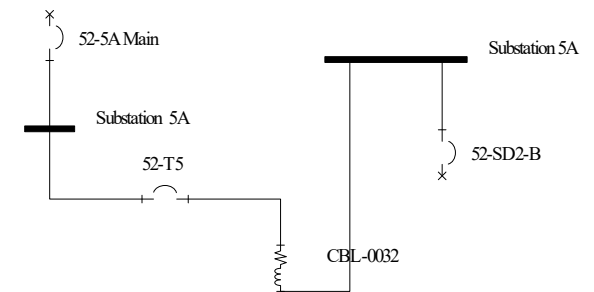
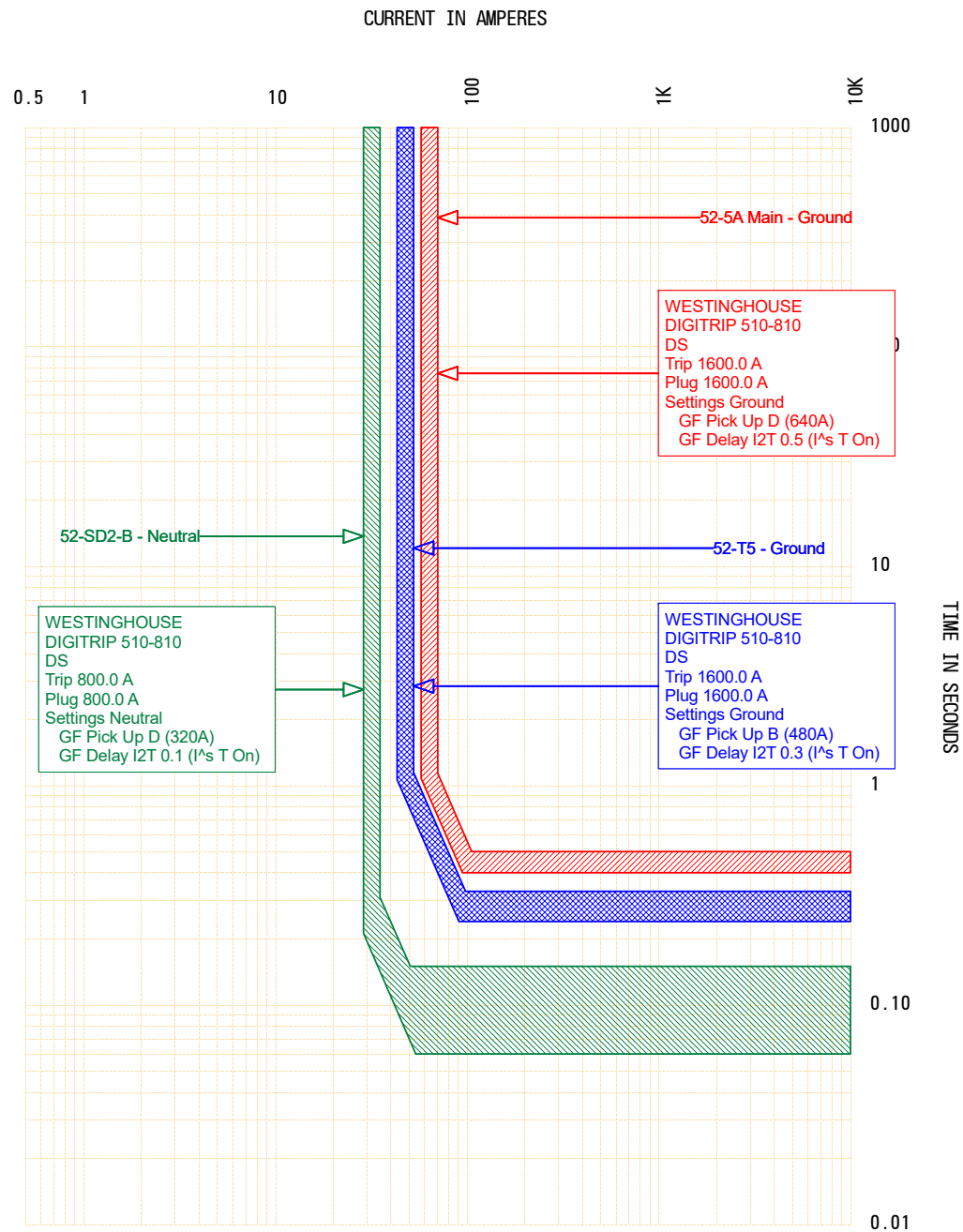


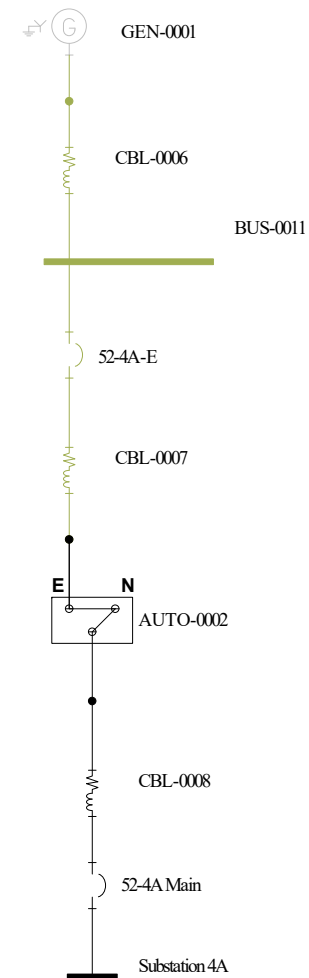
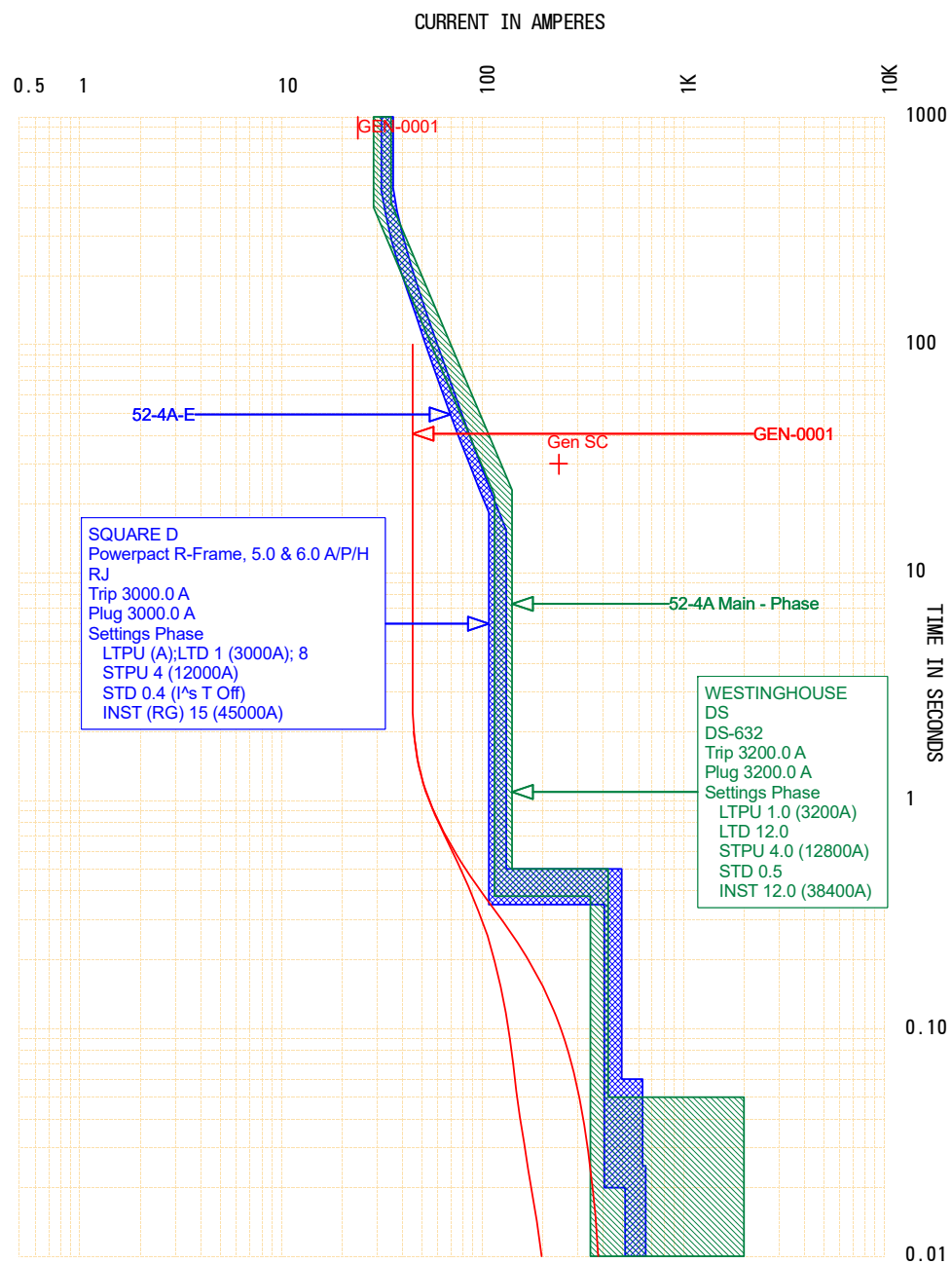


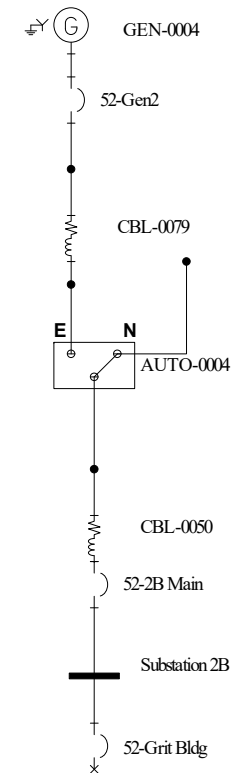
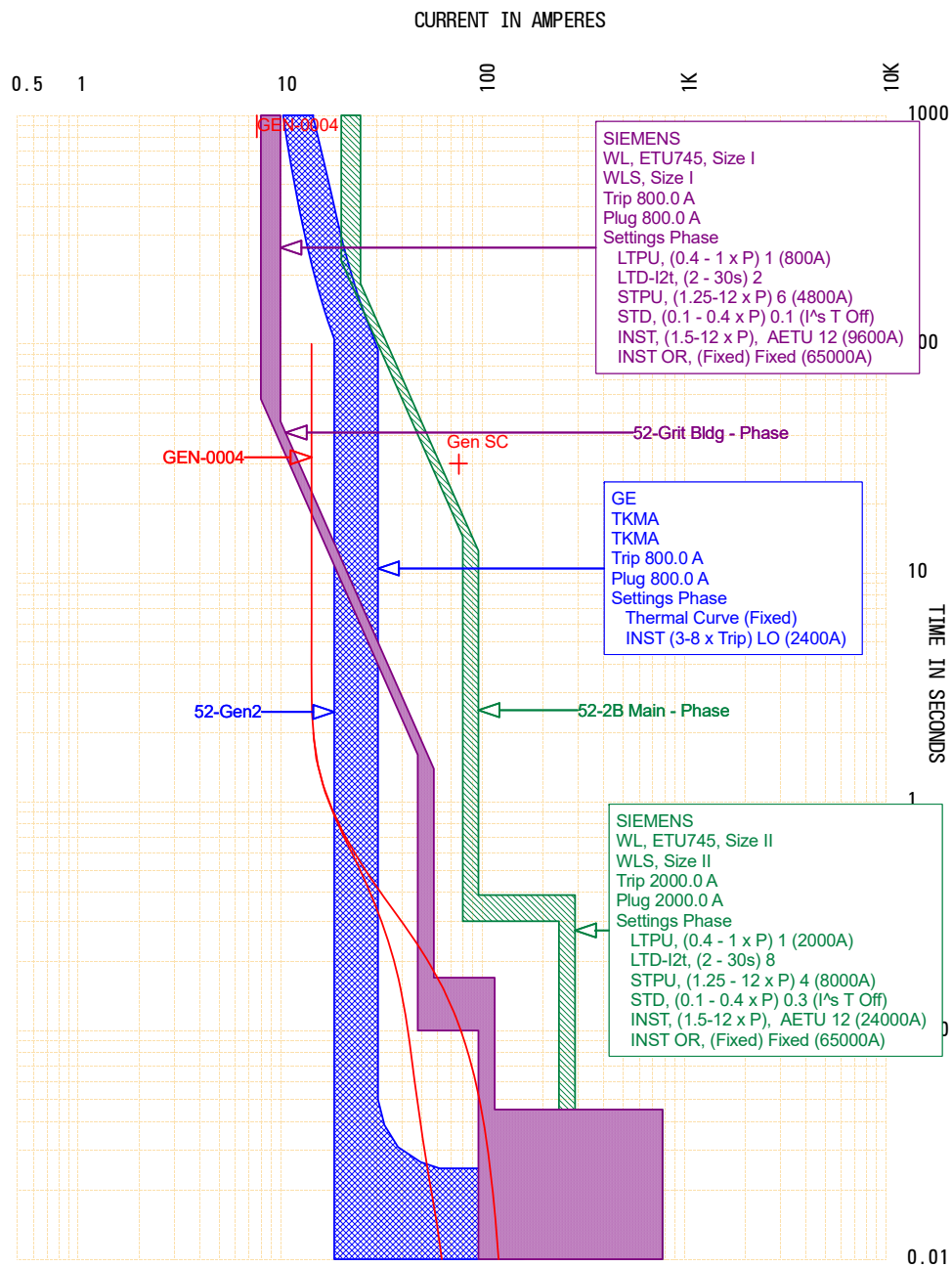












Appendix E:
Summary of Arc Flash Data

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	PPE Level / Notes (*N)	Label #
1	69kV Feed MDP-A (51-1AF2 LoadSide)	51-1AF2	13.20	4.10	3.78	4.10	3.78	0.1	0.0833	SWG	152	30	36	0.90	(*N3) (*S0)	# 0001-Load
2	69kV Feed MDP-B (51-1BF2 LoadSide)	51-1BF2	13.20	5.68	5.24	5.68	5.24	0.1	0.0833	SWG	152	37	36	1.23	(*N3) (*S0)	# 0002-Load
3	BUS-0011	MaxTripTime @2.0s	0.48	24.07	18.20	15.88	12.24	2	0.0000	PNL	25	262	18	86.6	(*N2) (*N9) (*S1)	# 0003
4	BUS-0082 (52-2A ATS N LoadSide)	52-2A ATS N	0.48	27.27	20.33	27.27	20.33	0.5	0.0000	PNL	25	119	18	24.4	(*S0)	# 0004-Load
5	BUS-0100	52-MP2A-A	0.48	15.27	11.77	14.40	11.10	0.18	0.0000	PNL	25	43	18	4.89	(*N20a) (*S1)	# 0005
6	BUS-0103	52-MP2A-B	0.48	15.82	12.19	14.08	10.85	0.18	0.0000	PNL	25	44	18	5.08	(*N20a) (*S1)	# 0006
7	Centrifuge #1 (PD-0052 LineSide)	52-Centrifuge 1	0.48	11.94	9.18	11.94	9.18	0.05	0.0000	PNL	25	16	18	1.04	(*S0)	# 0007-Line
8	Centrifuge #2 (PD-0050 LineSide)	52-Centrifuge 2	0.48	11.95	9.18	11.95	9.18	0.05	0.0000	PNL	25	16	18	1.04	(*S0)	# 0008-Line
9	Centrifuge #3 (PD-0054 LineSide)	52-Centrifuge 3	0.48	11.94	9.18	11.94	9.18	0.05	0.0000	PNL	25	16	18	1.04	(*S0)	# 0009-Line
10	Cogen Breaker	52-Cogen	0.48	18.55	14.26	12.55	9.64	0.05	0.0000	PNL	25	108	18	20.9	(*N2) (*N9) (*S0)	# 0006
11	Digester Bldg (MCC D2) (MCC D2 Main LineSide)	52-Digester Bldg	0.48	20.46	15.66	19.77	15.13	0.045	0.0000	PNL	25	22	18	1.66	(*S0)	# 0011-Line
12	Grit Bldg (MCC EG)	52-Grit Bldg	0.48	7.40	5.58	6.52	4.92	1.902	0.0000	PNL	25	116	18	23.4	(*S1)	# 0007
13	MCC GB2-A (52-GB2-A Main LineSide)	52-GB2-A	0.48	35.89	25.36	35.02	24.74	0.05	0.0000	PNL	25	33	18	3.11	(*N20a) (*S0)	# 0013-Line
14	MCC GB2-B (52-GB2-B Main LineSide)	52-GB2-B	0.48	35.87	25.35	35.00	24.73	0.05	0.0000	PNL	25	33	18	3.11	(*N20a) (*S0)	# 0014-Line

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	PPE Level / Notes (*N)	Label #
15	MCC MP2A-A	52-MP2A-B Main	0.48	21.05	16.09	20.20	15.43	0.1	0.0000	PNL	25	37	18	3.79	(*S0)	# 0011
16	MCC MP2B-A (52-MP2B-A Main LineSide)	52-MP2A-A	0.48	20.67	15.81	19.82	15.16	0.18	0.0000	PNL	25	53	18	6.70	(*N20a) (*S0)	# 0016-Line
17	MCC MP2B-B (52-MP2B-B Main LineSide)	52-MP2A-B	0.48	21.33	16.29	19.64	14.99	0.18	0.0000	PNL	25	54	18	6.92	(*N20a) (*S0)	# 0017-Line
18	MCC PST (A-1)	52-A-1	0.48	8.01	5.32	7.13	4.73	2	0.0000	PNL	25	116	18	23.7	(*N3) (*N9) (*S1)	# 0008
19	MCC PST2-A (52-PST2-A Main LineSide)	52-PST2-A	0.48	31.10	19.90	30.23	19.34	0.18	0.0000	PNL	25	62	18	8.73	(*N3) (*N20a) (*S0)	# 0019-Line
20	MCC PST2-B (52-PST2-B Main LineSide)	52-PST2-B	0.48	31.09	19.89	30.22	19.33	0.18	0.0000	PNL	25	62	18	8.73	(*N3) (*N20a) (*S0)	# 0020-Line
21	MCC RBC2-A	52-RBC2-B Main	0.48	21.74	16.58	20.90	15.94	0.02	0.0000	PNL	25	14	18	0.78	(*S0)	# 0017
22	MCC SC-A (52-SC-A Main LineSide)	52-SC-A	0.48	16.36	12.61	16.36	12.61	0.18	0.0000	PNL	25	45	18	5.26	(*N20a) (*S0)	# 0022-Line
23	MCC- SC-B	52-SC-B Main	0.48	16.34	12.59	16.34	12.59	0.1	0.0000	PNL	25	31	18	2.92	(*S0)	# 0024
24	MCC SD2-A (52-SD2A Main LineSide)	52-SD2-A	0.48	15.44	10.44	15.44	10.44	0.18	0.0000	PNL	25	40	18	4.36	(*N3) (*S0)	# 0023-Line
25	MCC SD2-B (52-SD2B Main LineSide)	52-SD2-B	0.48	15.44	10.43	15.44	10.43	0.18	0.0000	PNL	25	40	18	4.36	(*N3) (*S0)	# 0024-Line
26	MCC SO2	52-SO2	0.48	7.55	5.70	6.67	5.04	1.814	0.0000	PNL	25	114	18	22.9	(*S1)	# 0025
27	MCC SST2-A (52-SST2-A Main LineSide)	52-SST2-A	0.48	11.06	8.48	10.50	8.05	0.05	0.0000	PNL	25	16	18	0.96	(*N20a) (*S0)	# 0026-Line
28	MCC SST2-B (52-SST2-B Main LineSide)	52-SST2-B	0.48	11.06	8.48	10.50	8.05	0.05	0.0000	PNL	25	16	18	0.96	(*N20a) (*S0)	# 0027-Line
29	MCC-A3	52-MCC-A3	0.48	6.12	4.58	6.12	4.58	0.0185	0.0000	PNL	25	6	18	0.18	(*S0)	# 0025

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	PPE Level / Notes (*N)	Label #
30	MCC-CH2C	MCC-CH2C MAIN	0.48	6.57	4.93	6.57	4.93	0.022	0.0000	PNL	25	7	18	0.24	(*S0)	# 0026
31	MCC-EG2	52-Grit Bldg	0.48	7.28	5.49	6.41	4.84	1.971	0.0000	PNL	25	117	18	23.8	(*S1)	# 0031
32	MCC-RBC	52-RBC	0.48	20.85	15.94	20.85	15.94	0.0177	0.0000	PNL	25	12	18	0.66	(*S0)	# 0028
33	MCC-SC2	52-SC2-A Main	0.48	16.18	12.47	16.18	12.47	0.1	0.0000	PNL	25	31	18	2.89	(*S0)	# 0029
34	MCC-SO	52-SO2	0.48	7.06	5.32	6.24	4.70	2	0.0000	PNL	25	116	18	23.4	(*N9) (*S1)	# 0034
35	MPP-G2 (PD-0056 LineSide)	52-MPP-G2	0.48	4.58	3.37	4.58	3.37	2	0.0000	PNL	25	85	18	14.5	(*N9) (*S0)	# 0035-Line
36	Sub 2 Main SW (A)	51-1BF2	13.20	5.39	4.97	5.39	4.97	0.1	0.0833	SWG	152	35	36	1.17	(*N3) (*S0)	# 0033
37	Sub 2 Main SW (B)	51-1AF2	13.20	3.96	3.66	3.96	3.66	0.1	0.0833	SWG	152	29	36	0.87	(*N3) (*S0)	# 0027
38	Sub 4 Main SW (A) (89-4B LineSide)	51-1BF4	13.20	5.44	5.02	5.44	5.02	0.1	0.0833	SWG	152	36	36	1.18	(*N3) (*S0)	# 0038-Line
39	Sub 4 Main SW (B) (89-4A LineSide)	51-1AF4	13.20	3.98	3.67	3.98	3.67	0.1	0.0833	SWG	152	29	36	0.87	(*N3) (*S0)	# 0039-Line
40	Sub 5 Main SW (A) (89-5A LineSide)	51-1AF5	13.20	3.98	3.68	3.83	3.53	0.1	0.0833	SWG	152	29	36	0.88	(*N3) (*S0)	# 0040-Line
41	Sub 5 Main SW (B) (89-5B LineSide)	51-1BF5	13.20	5.44	5.02	5.44	5.02	0.1	0.0833	SWG	152	36	36	1.18	(*N3) (*S0)	# 0041-Line
42	Substation 5A	52-5A Main	0.48	19.23	14.76	13.36	10.26	2	0.0000	PNL	25	228	18	69.2	(*N9) (*S0)	# 0027
43	Substation 2B	52-2B Main	0.48	8.31	6.30	5.01	3.80	2	0.0000	PNL	25	129	18	28.0	(*N9) (*S1)	# 0024
44	Substation 4A	52-4A Main	0.48	23.92	18.11	15.68	11.86	2	0.0000	PNL	25	261	18	86.1	(*N9) (*S1)	# 0044
45	Substation 4B	52-T4	0.48	23.92	15.87	18.95	12.58	2	0.0000	PNL	25	241	18	75.9	(*N3) (*N9) (*N20a) (*S1)	# 0045
46	Substation 5B	52-T5	0.48	19.23	14.76	13.36	10.25	2	0.0000	PNL	25	228	18	69.2	(*N9) (*S0)	# 0028
47	For additional information refer to NFPA 70 E, Standard for Electrical Safety in the Workplace.													#Equip Eval Failed = 0	(*N2) < 80% Cleared Fault Threshold	

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/Delay Time (sec.)	Breaker Opening Time/Tol (sec.)	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	PPE Level / Notes (*N)	Label #
48														#Bus Equip Eval Failed = 0	(*N3) - Arcing Current Low Tolerances Used	
49															(*N9) - Max Arcing Duration Reached	
50															(*N20a) - Equipment Evaluation Marginal for Protective Device	
51															IEEE 1584 2018 Bus + Line + Load Side - ANSI Fault80% Cleared Fault Threshold, mis-coordination not checked	
52														Worst Case Only for:	Bus + Line + Load Side	
53															Worst Case:	
54															(*S0) - Base Project	
55															(*S1) - Generator	

Appendix F:
Arc Flash Labels



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

30 in Flash Hazard Boundary
0.90 cal/cm² Flash Hazard at 36 in
Level 1 PPE Category
13200 VAC Nominal Voltage
2 Glove Class
60 in Limited Approach
26 in Restricted Approach
Location: 69kV Feed MDP-A 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

16 in Flash Hazard Boundary
1.04 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: Centrifuge #3 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

37 in Flash Hazard Boundary
1.23 cal/cm² Flash Hazard at 36 in
Level 1 PPE Category
13200 VAC Nominal Voltage
2 Glove Class
60 in Limited Approach
26 in Restricted Approach
Location: 69kV Feed MDP-B 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

108 in Flash Hazard Boundary
20.9 cal/cm² Flash Hazard at 18 in
Level 3 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: Cogen Breaker 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

16 in Flash Hazard Boundary
1.04 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: Centrifuge #1 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

22 in Flash Hazard Boundary
1.66 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: Digester Bldg (MCC D2) 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

16 in Flash Hazard Boundary
1.04 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: Centrifuge #2 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

116 in Flash Hazard Boundary
23.4 cal/cm² Flash Hazard at 18 in
Level 3 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: Grit Bldg (MCC EG) 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

33 in Flash Hazard Boundary
3.11 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location:MCC GB2-A 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

54 in Flash Hazard Boundary
6.92 cal/cm² Flash Hazard at 18 in
Level 2 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location:MCC MP2B-B 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

33 in Flash Hazard Boundary
3.11 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location:MCC GB2-B 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

116 in Flash Hazard Boundary
23.7 cal/cm² Flash Hazard at 18 in
Level 3 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location:MCC PST (A-1) 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

37 in Flash Hazard Boundary
3.79 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location:MCC MP2A-A 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

62 in Flash Hazard Boundary
8.73 cal/cm² Flash Hazard at 18 in
Level 3 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location:MCC PST2-A 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

53 in Flash Hazard Boundary
6.70 cal/cm² Flash Hazard at 18 in
Level 2 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location:MCC MP2B-A 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

62 in Flash Hazard Boundary
8.73 cal/cm² Flash Hazard at 18 in
Level 3 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location:MCC PST2-B 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

14 in Flash Hazard Boundary
0.78 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MCC RBC2-A 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

40 in Flash Hazard Boundary
4.36 cal/cm² Flash Hazard at 18 in
Level 2 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MCC SD2-B 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

45 in Flash Hazard Boundary
5.26 cal/cm² Flash Hazard at 18 in
Level 2 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MCC SC-A 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

114 in Flash Hazard Boundary
22.9 cal/cm² Flash Hazard at 18 in
Level 3 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MCC SO2 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

31 in Flash Hazard Boundary
2.92 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MCC- SC-B 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

16 in Flash Hazard Boundary
0.96 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MCC SST2-A 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

40 in Flash Hazard Boundary
4.36 cal/cm² Flash Hazard at 18 in
Level 2 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MCC SD2-A 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

16 in Flash Hazard Boundary
0.96 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MCC SST2-B 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

6 in Flash Hazard Boundary
0.18 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MCC-A3 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

31 in Flash Hazard Boundary
2.89 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MCC-SC2 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

7 in Flash Hazard Boundary
0.24 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MCC-CH2C 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

116 in Flash Hazard Boundary
23.4 cal/cm² Flash Hazard at 18 in
Level 3 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MCC-SO 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

117 in Flash Hazard Boundary
23.8 cal/cm² Flash Hazard at 18 in
Level 3 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MCC-EG2 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

85 in Flash Hazard Boundary
14.5 cal/cm² Flash Hazard at 18 in
Level 3 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MPP-G2 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

12 in Flash Hazard Boundary
0.66 cal/cm² Flash Hazard at 18 in
Level 1 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: MCC-RBC 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

35 in Flash Hazard Boundary
1.17 cal/cm² Flash Hazard at 36 in
Level 1 PPE Category
13200 VAC Nominal Voltage
2 Glove Class
60 in Limited Approach
26 in Restricted Approach
Location: Sub 2 Main SW (A) 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

29 in Flash Hazard Boundary
0.87 cal/cm² Flash Hazard at 36 in
Level 1 PPE Category
13200 VAC Nominal Voltage
2 Glove Class
60 in Limited Approach
26 in Restricted Approach
Location: Sub 2 Main SW (B) 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

36 in Flash Hazard Boundary
1.18 cal/cm² Flash Hazard at 36 in
Level 1 PPE Category
13200 VAC Nominal Voltage
2 Glove Class
60 in Limited Approach
26 in Restricted Approach
Location: Sub 5 Main SW (B) 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

36 in Flash Hazard Boundary
1.18 cal/cm² Flash Hazard at 36 in
Level 1 PPE Category
13200 VAC Nominal Voltage
2 Glove Class
60 in Limited Approach
26 in Restricted Approach
Location: Sub 4 Main SW (A) 06/25/20



DANGER

NO SAFE PPE EXISTS ENERGIZED WORK PROHIBITED

228 in Flash Hazard Boundary
69.2 cal/cm² Flash Hazard at 18 in
Dangerous! PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: Substation 5A 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

29 in Flash Hazard Boundary
0.87 cal/cm² Flash Hazard at 36 in
Level 1 PPE Category
13200 VAC Nominal Voltage
2 Glove Class
60 in Limited Approach
26 in Restricted Approach
Location: Sub 4 Main SW (B) 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

129 in Flash Hazard Boundary
28.0 cal/cm² Flash Hazard at 18 in
Level 4 PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: Substation 2B 06/25/20



WARNING

Arc Flash and Shock Risk Appropriate PPE Required

29 in Flash Hazard Boundary
0.88 cal/cm² Flash Hazard at 36 in
Level 1 PPE Category
13200 VAC Nominal Voltage
2 Glove Class
60 in Limited Approach
26 in Restricted Approach
Location: Sub 5 Main SW (A) 06/25/20



DANGER

NO SAFE PPE EXISTS ENERGIZED WORK PROHIBITED

261 in Flash Hazard Boundary
86.1 cal/cm² Flash Hazard at 18 in
Dangerous! PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: Substation 4A 06/25/20



DANGER

**NO SAFE PPE EXISTS
ENERGIZED WORK PROHIBITED**

241 in Flash Hazard Boundary
75.9 cal/cm² Flash Hazard at 18 in
Dangerous! PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: Substation 4B 06/25/20



DANGER

**NO SAFE PPE EXISTS
ENERGIZED WORK PROHIBITED**

228 in Flash Hazard Boundary
69.2 cal/cm² Flash Hazard at 18 in
Dangerous! PPE Category
480 VAC Nominal Voltage
00 Glove Class
42 in Limited Approach
12 in Restricted Approach
Location: Substation 5B 06/25/20

Appendix G:
One-Line Diagram

A

B

C

D

E

F

A

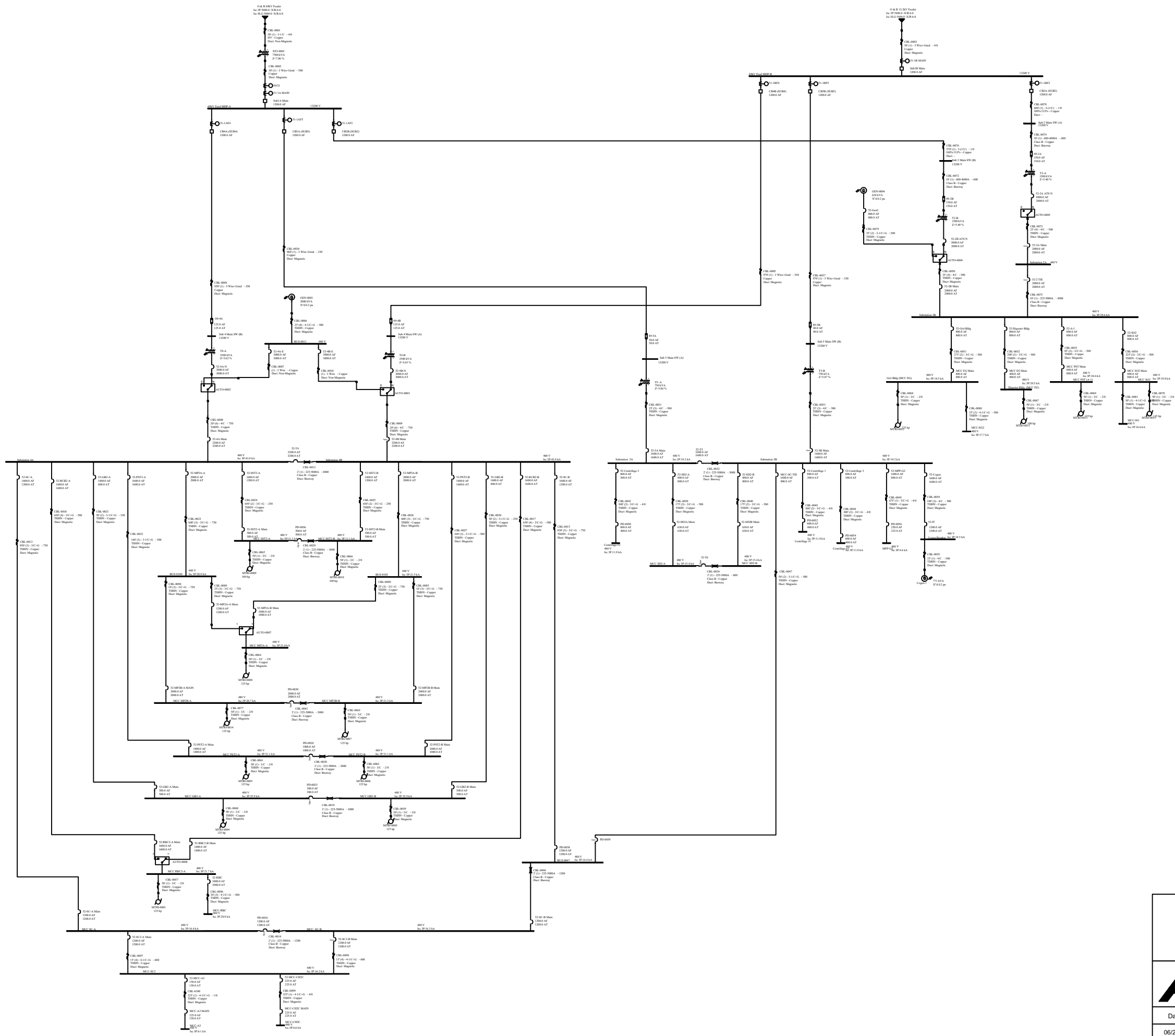
B

C

D

E

F



POWER SYSTEM STUDY ONE-LINE
ROCKLAND COUNTY SEWER DISTRICT No. 1
WASTE WATER TREATMENT PLANT

ORANGEBURG, NEW YORK



Advanced Testing Systems, Inc.
15 TROWBRIDGE DRIVE, BETHEL, CT 06801
Phone (203)743-2001 Fax (203)743-2325

Date:	PSS E-1.0
06/25/20	