

Project Manual

Contract No.: NC-35

**Ball Pump Station
Electrical Substation**

Project No. 201600238

March, 2018

Files

Contract #	1879-07
Budget Item #	
E.C. #	
Others - Bond Issue #	
O.W.I.P. #	
Expense #	

Erie County Water Authority

**295 Main Street, Room 350
Buffalo, New York 14203**





**ADDENDUM NO. 1
APRIL 4, 2018
TO THE
SPECIFICATIONS AND CONTRACT DOCUMENTS
FOR
CONTRACT NO.: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
PROJECT NO. 201600238**

The Contract Documents are herein amended by this Addendum as follows:

Changes to specifications and contract documents titled "Contract No. NC-35":

GENERAL:

1. Minutes of the March 20, 2018 Pre-Bid Meeting and attendance sheet are included as part of Addendum No. 1 and are attached hereto as Attachment AD-1 (6 pages). Attachment AD-1 is not considered part of the Bidding Documents or part of the Contract Documents.
2. Refer to the attached Sheets D104 and D105 prepared by Wendel for Contract 22A, Ball South Tank Replacement for information relating to access to the 48-inch and 60-inch Tank Inlet Piping. The drawings are included as part of Addendum No. 1 and are attached hereto as Attachment AD-2 (2 pages). Attachment AD-2 is not considered part of the Bidding Documents or part of the Contract Documents.

SPECIFICATIONS:

1. Section 00500, Agreement, in Article 3, **DELETE** "3.02 Days to Achieve Substantial Completion and Final Payment", and **REPLACE** with the following: "3.03 Days to Achieve Substantial Completion and Final Payment".
2. Section 013110, Coordination with Owner's Operation, in Part 1.06.G.3, **DELETE** Item d. in its entirety and **REPLACE** with the following: "d. Access to the 48-inch and 60-inch mains is through the tank inlet inside the South Ball Tank."
3. **DELETE**: Section 051200, Structural Steel Framing in its entirety and **REPLACE** with Section 051200, Structural Steel Framing, attached hereto as Attachment AD-3 (6 pages).
4. Section 260533, Raceway and Boxes for Electrical Systems, **DELETE**: Part 3.04.Q in its entirety and **REPLACE**: with the following: "Q. Install fittings to accommodate expansion and deflection where raceway crosses control and expansion joints, and at exposed equipment connections."



5. Section 267126, Transmission and Distribution Equipment, after Part 2.01.A.2, **INSERT** the following:

"3. Design Conditions

- a. The overhead conductor tension loads for the receiving structures are as follows:
 - 1. Westerly structure – 6,000 lbs NESC heavy.
 - 2. Easterly structure – 4,000 lbs NESC heavy.
- b. The approximate elevations of the overhead conductors at the National Grid towers are as follows:

	Westerly Tower	Easterly Tower
Northern Upper Arm	661.51	658.41
Northern Middle Arm	649.37	646.43
Northern Bottom Arm	637.45	634.53
Southern Upper Arm	661.74	657.92
Southern Middle Arm	650.14	646.08
Southern Bottom Arm	637.57	634.40

- c. The approximate elevations of the bottom conductors sag points are as follows:

Northern Conductor	632.90	
Southern Conductor	632.64	"

6. Section 267313, Liquid Filled Transformers, in Part 2.01.G, after Item 6, **ADD** the following:

"7. All accessory devices shall be factory wired to a local NEMA 4x control panel mounted on the transformer."

7. Section 267313, Liquid Filled Transformers, in Part 2.02.J, after Item 7, **ADD** the following:

"8. All accessory devices shall be factory wired to OLTC control panel mounted on the transformer."

8. Section 312500, Erosion and Sedimentation Controls, in Part 3.09, **DELETE**: Item B in its entirety and **REPLACE** with the following:

"B. Inspections

- 1. Contractor shall inspect all erosion control devices on a weekly basis and after each rainfall event and make necessary repairs to ensure erosion and sediment controls are in good working order.
- 2. The Owner/Engineer will perform weekly SWPPP inspections by a qualified Inspector. The Contractor shall perform any repairs as required."



9. Section 330513, Manholes and Structures, in Part 2.05.D, **ADD** the following after Item 1.g.:
"2. Railing shall be removable."
10. Section 334113, Public Storm Utility Drainage Piping, in Part 2.01, **DELETE**: Item A in its entirety, and **REPLACE** with the following:
"A. Ductile iron pipe, class 52, non-restrained joints in conformance with Section 400519, Ductile Iron Pipe, Fittings, and Accessories."

CONTRACT DRAWINGS

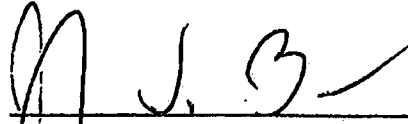
1. Title Sheet, **DELETE**: "ECWA PROJECT NO. 201600117" and **REPLACE** with the following: "ECWA PROJECT NO. 201600238".
2. Sheet E-001, Electrical Legend, Notes, and Schedules, in the Lighting Fixture Schedule, for Type FL-1, **DELETE**: the information under Manufacturer, and **REPLACE** with the following:
"Lithonia
DSXF3 LED P2 30k FL MVOLT TKC62 PER
PNMTDD3 DBLXD."
3. Sheet E-501, Electrical Details, **INSERT**: Detail D1, Electrical Duct Bank Trench Detail, attached hereto as Sketch SK-1 (1 page).



SPECIAL NOTICE

THIS ADDENDUM, INCLUDING THE ATTACHMENTS, SHALL BE INSERTED IN THE CONTRACT DOCUMENTS SUBMITTED WITH THE BID AND SHALL BE SIGNED BY THE BIDDER IN THE PACE PROVIDED BELOW.

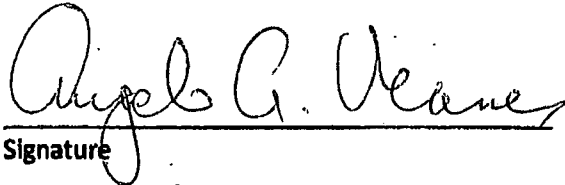
ERIE COUNTY WATER AUTHORITY



JOSEPH T. BURNS
SECRETARY TO THE AUTHORITY

SIGNATURE OF PERSON, FIRM OR CORPORATION MAKING BID:

(Seal if bid by Corporation)



Signature

ANGELO A. VEANES
President

Title

Attachments: AD-1, AD-2, AD-3 and SK-1



**ERIE COUNTY WATER AUTHORITY
CONTRACT NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
PROJECT NO. 201600238**

**PRE-BID CONFERENCE
March 20, 2018**



MEETING MINUTES

1. The Sign-in Sheets for the meeting are attached.
2. The Bid Opening is at 11:00 a.m. on Tuesday, April 17, 2018 at the Ellicott Square Building. Certified check or bid bond must be submitted with bid, 5% of the amount of the bid. The entire Project Manual along with any addendums must be submitted.
3. All questions about the meaning or intent of the Bidding Documents shall be submitted to ENGINEER in writing. In order to receive consideration, questions must be received by ENGINEER at least ten (10) days prior to the date for the opening of Bids. Oral statements may not be relied upon and will not be binding or legally effective.
4. CONTRACTOR must comply with Section 139 of the State Finance Law. Applicable forms to verify this compliance are included in Section 00430, Bid Form Supplements.
5. CONTRACTOR must comply with the Authority's M/WBE policy included in Appendix A.
6. Successful bidder must comply with the Authority's Insurance Requirements included in Appendix B.
7. Geotechnical information for the project site is available for review at Nussbaumer & Clarke's office. This information is not part of the Contract Documents.
8. Refer to Supplementary Conditions Section SC-6.06.H. for information regarding limits on subcontracting work.
9. Work is to be completed under one prime contract.
10. Work of the Project to be completed by the Contractor shall include all improvements to the existing Ball Pump Station in the Town of Amherst located at 1201 Sweet Home Road, as shown on all Sheets identified with the numbers GXXX, CXXX, SXXX, and EXXX, and generally described as follows:
 - a. A-frame receiving structures for 115kV overhead lines.
 - b. 115kV isolation switches.
 - c. 115kV tie switches.
 - d. 115kV dead tank circuit breakers.
 - e. 115kV to 4160 volt transformers.
 - f. Surge arrestors.
 - g. Lightning protection.
 - h. Fire wall.
 - i. Oil containment system.



- j. Pile supported foundations.
- k. Structural supports.
- l. Ground mats.
- m. 115kV overhead lines.
- n. Underground duct banks.
- o. Battery charging system.
- p. Fencing.
- q. Access driveways and parking area.
- r. Site lighting.
- s. Associated electrical, instrumentation, controls, and SCADA.
- t. Performance tests.
- u. 48-inch diameter transmission main.
- v. Interior joint seals for 48-inch and 60-inch diameter tank inlet piping.
- w. 8-inch diameter waterline and fire hydrant.
- x. Demolition of existing substation.
- y. Site restoration.
- z. Data Collection.
- aa. Protective Device (relay and adjustable circuit breaker) settings.
- bb. Contingency Allowances.

11. Section 013110, Coordination with Owners Operations describes a general sequence of work and general provisions for system shutdowns. This sequence of operation will minimize shutdown of the Pump Station and allows for startup and testing of the equipment. We direct your attention to this section as they may affect your need for labor to complete the project.

12. Substantial and Final Completion Dates: Refer to Article 3 of the Agreement (Section 00500).

Milestone M1: The Phase 1 Work shall be completed by August 31, 2018.

Substantial & Final Completion: The Work shall be substantially completed by May 24, 2019, and completed and ready for final payment by June 21, 2019.

13. Refer to Section 00500, Agreement, for Liquidated and Special Damages.

14. Contractor shall obtain all permits including New York State Department of Transportation prior to commencing work.

15. Coordinate work with other contractors including but not limited to the following:
a. National Grid to install tower for overhead electric for new substation.
b. Owner's electrical contractor: shut-downs and other ongoing work.

16. Section 013110 – Coordination with OWNER's Operations

The CONTRACTORS are reminded that the work is at a major pump station, which operates 24 hours a day, seven days a week. Shutdowns will be required to complete the work. Regardless, three weeks' notice will be required for any shutdown.

The period from Memorial Day to Labor Day of any calendar year is the Authority's peak pumping season. The Contractor's operations are restricted during this period.



17. **Section 013300, Part 1.15.A – Construction Photographs**
A Professional Photographer will be the only person allowed to take photographs at the site. His/her resume must be submitted to the Authority prior to being allowed on the site. Photographs taken by the CONTRACTOR will be rejected.

18. **Section 015000, Part 1.12 – Security**
There are restrictions for site access and access roads shown on the Drawings and described in this section. Likewise, security is a serious matter at this facility. Refer to Sections 1.12.C and 1.12.D regarding requirements for personnel and vehicles.

The Owner may elect to have the Contractor provide a guard at the main entrance to the facility. Payment would be part of the Contingency Allowance.

19. **Section 013310 – Substitutions**
The CONTRACTOR'S attention is directed to the specifications for requirements for substitutions of materials and equipment.

20. **Site visits**
CONTRACTORS will not be allowed to take photographs. If anyone requires additional time at the facility prior to bidding the project, contact Nussbaumer & Clarke, Inc. and we will make arrangements for you to have access to the site.

CONTRACTORS are not permitted to touch anything or to open any electrical cabinets.

21. **Sections 013543 and 260505 – Environmental Procedures for Hazardous Materials**
The Owner is not aware of any Hazardous Environmental Conditions at the site. The Contractor is to perform oil sampling and testing for the transformers and bushings with respect to PCBs/hazardous materials prior to disposal. The Contractor shall comply with all local, State, and Federal laws.

22. **The Contractor shall coordinate with the Owner's Safety programs and requirements including: lockout-tagout, confined space, materials safety data sheets, and chemical hazard, and NYS High-Voltage Proximity Act.**

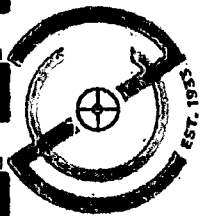
23. **Stormwater pollution prevention details are included.**

24. **Contractor is to comply with Maintenance and Protection of Traffic, Section 01550, including submittal of a plan for traffic control, including sidewalk closures. All traffic control is to be per Manual for Uniform Traffic Control Devices.**

25. **Questions:**
 - a. **Specification Section 267233, Power Quality Meters, is out of order numerically in the Project Manual.**
 - b. **Design conditions for the A-frame receiving structures is addressed in Addendum No. 1.**
 - c. **Access into the 48-inch and 60-inch Tank Inlet Piping is addressed in Addendum No. 1.**



CORPORATE OFFICE
 3556 LAKE SHORE ROAD, SUITE 500
 BUFFALO, NEW YORK 14219-1494
 PHONE: (716) 827-8000
 FAX: (716) 828-7958



**NUSSBAUMER
 & CLARKE, INC.**
 ENGINEERS AND SURVEYORS

BRANCH OFFICES
 CHAUTAQUA COUNTY
 NIAGARA COUNTY
 ERIE COUNTY

ERIE COUNTY WATER AUTHORITY

CONTRACT NC-35, BALL PUMP STATION
 ELECTRICAL SUBSTATION - PROJECT NO. 201600238

NUSSBAUMER FILE NO. 16J1-0091

PRE-BID MEETING SIGN-IN SHEET
 Tuesday, March 20, 2018

NAME	REPRESENTING	PHONE NUMBER	EMAIL
1. Richard Rosenberry	Nussbaumer & Clarke, Inc.	716-827-8000	rosenberry@nussclarke.com
2. Michael Chirico	Nussbaumer & Clarke, Inc.	716-827-8000	mchirico@nussclarke.com
3. Franco Tallarico	Nussbaumer & Clarke, Inc.	716-827-8000	ftallarico@nussclarke.com
4. Len Kowalski	Erie County Water Authority	716-	lkowalski@erie.org
5. Scott Ajple	Erie County Water Authority	716-	
6. Tina Schmeisen	Ferguson Elec	716-852-2010	Jschmei@FERGUSON-ELECTRICAL.COM
7. WIK ROBERTS	Kendrey Co	716-675-7245	wroberts@kendrey.com
8. Dan George	STATE GROUP	716-572-5807	d.george@stategroup.com
9. Darryl Green	Petersen, Beckel	315-521-1561	dgreen@petersenbeckel.com
10. Kyle Hargad	HYDROTECH	513-513-6073	kyle.hargad@hydrotech.com
11. Eric Miller	Fray Electric	716-574-1710	emiller@fray-electric.com



NAME REPRESENTING PHONE NUMBER EMAIL

- 12. Joe Ferrillo Mark Caspary Inc 716-695-4076 J.Ferrillo@markcaspary.com
- 13. Michael Parkes O'Connell Electric 585-520-5696 michael.parkes@oconnell-electric.com
- 14. Todd Marsh Pinto Const. 716-~~885~~⁸²⁵-6666 tmarsh@pintoCS.com
- 15. Kevin Schenckel The State Group 716-283-0620 k.schenckel@stategroup.com
- 16. Len Kawakke ECWA 716-685-8220 L.Kawakke@ECWA.ORG

- 17. _____
- 18. _____
- 19. _____
- 20. _____
- 21. _____
- 22. _____
- 23. _____
- 24. _____
- 25. _____
- 26. _____
- 27. _____
- 28. _____
- 29. _____



**ADDENDUM NO. 2
APRIL 11, 2018
TO THE
SPECIFICATIONS AND CONTRACT DOCUMENTS
FOR
CONTRACT NO.: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
PROJECT NO. 201600238**

The Contract Documents are herein amended by this Addendum as follows:

Changes to specifications and contract documents titled "Contract No. NC-35":

SPECIFICATIONS:

1. Section 013110, Coordination with Owner's Operations, in Part 1.06.E.2, **DELETE** Items d., e., and f. in their entirety, and **REPLACE** with the following:
 - "d. Test, disinfect, collect bacteriological samples, and obtain Erie County Water Authority approval for the waterline."

2. Section 013110, Coordination with Owner's Operations, in Part 1.06.G.1, **DELETE** Item d. in its entirety, and **REPLACE** with the following:
 - "d. The PCCP x DIP adapters shall be connected to the existing LCP PCCP using full circumferential seal welds.
 - e. Return the 48-inch Transmission Main to service (by Owner)."

3. Section 013110, Coordination with Owner's Operations, in Part 1.06.I, **DELETE** Item 2. in its entirety, and **REPLACE** with the following:
 - "2. 8" waterline and fire hydrant
 - a. Install 8" waterline, fire hydrant and appurtenances.
 - b. Provide a plug with a 4" outlet at the south end of the waterline.
 - c. Install the 12"x8" tapping sleeve and valve.
 - d. Utilize 4" pipe/hose with a 4" RPZ backflow preventer between the tapping valve and the 8" waterline.
 - e. Fill and flush the waterline.
 - f. Test, disinfect, collect bacteriological samples, and obtain Erie County Water Authority approval for the waterline.
 - g. Interconnect the waterline and the tapping valve."



4. Section 260505, Selective Demolition for Electrical, **ADD** the following after Part 3.09.B:

"C. Existing transformer nameplate data:

	South Transformer	North Transformer
Make	General Electric	General Electric
Number	G-851573A	G-851573B
Voltage	115,000-4,160	115,000-4,160
KVA rating	7,500	7,500
Approximate Weights (lbs.)		
Total	60,600	60,600
Untanking	19,600	19,600
Tank and Fittings	18,300	18,300
Oil (gal.)		
Main Tank	20,750	20,750
Radiators	1,950	1,950

5. Section 331201, Internal Pipe Joint Seals, **ADD** the following after Part 3.07:

"3.08 The 48" and 60" Tank Inlet Piping shall be flushed and disinfected in accordance with Section 331301 – Testing and Disinfection."

6. Section 331301, Testing and Disinfection, in Part 1.01.A.1, **ADD** the following after Item b.:

"c. Pressure test and leakage test are not required for the 48" and 60" Tank Inlet Piping."

7. Section 331301, Testing and Disinfection, in Part 3.01.B, **ADD** the following after Item 8.:

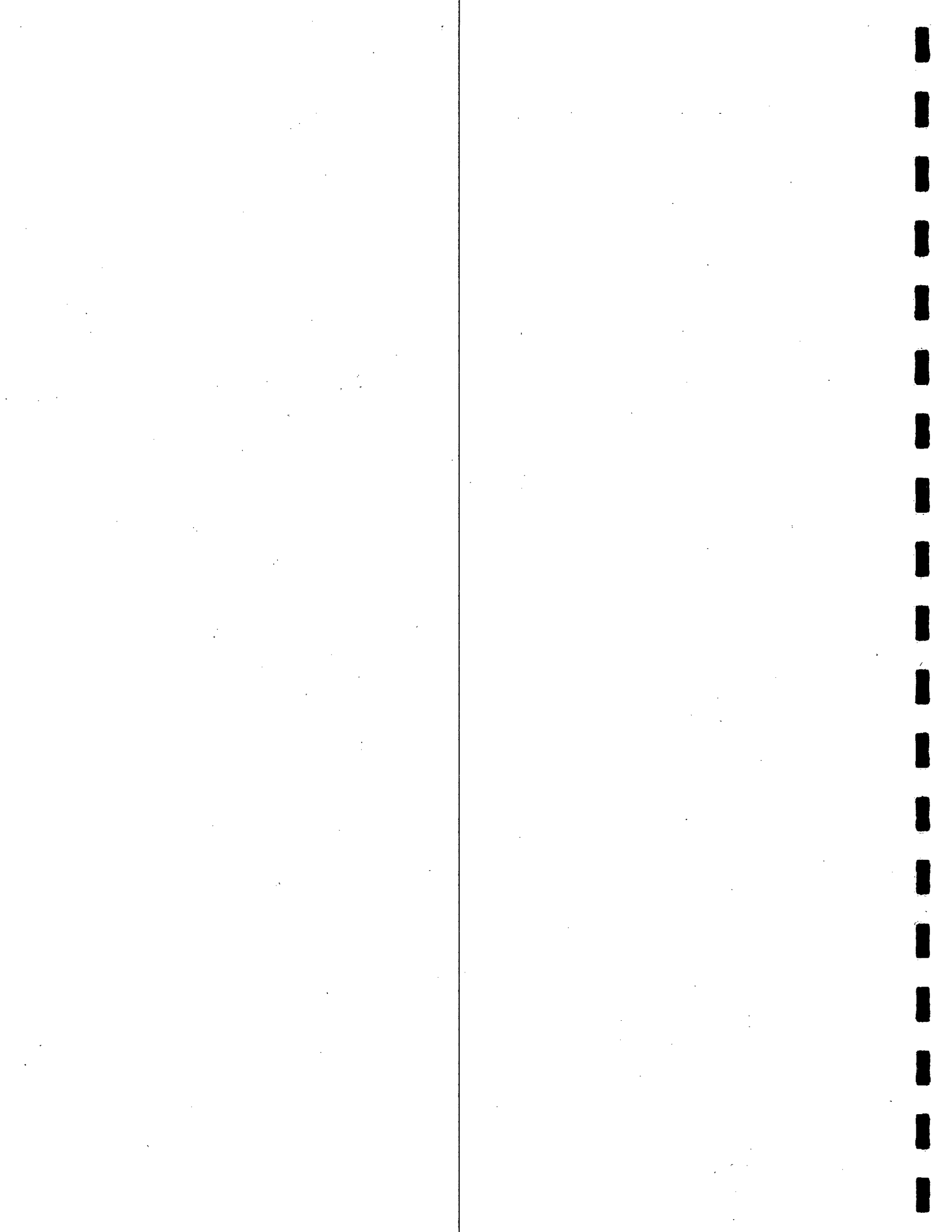
- "9. 48" Transmission Main and 48" and 60" Tank Inlet Piping
- a. The pipe shall be kept clean and free of all debris and contamination.
 - b. All surfaces shall be cleaned with high pressure water immediately prior to disinfection."

8. Section 331301, Testing and Disinfection, in Part 3.01.D.4, **ADD** the following to the end of the table:

"48" DI 3.17 "

9. Section 331301, Testing and Disinfection, after Part 3.05.K, **ADD** the following:

"L. The disinfection for the 48" transmission main and for the 48" and 60" tank inlet piping shall be in accordance with Section 331314, Water Storage Tank Disinfection. The disinfection method shall be in accordance with AWWA Standard C652 (Method 2 only)."



10. Section 331314, Water Storage Tank Disinfection, **ADD** the following after Part 1.01.A.:

"B. Work included:

1. South tank
2. North tank
3. Each tank is approximately 130 ft in diameter; 42 foot side water depth; 4,200,000 gallon capacity.
4. The South tank is concrete construction. The North tank is steel construction."

CONTRACT DRAWINGS

1. Sheet C-505, Civil Driveway Entrance Details, in Detail D5, Typical Driveway Entrance Section Detail, **DELETE**: "Class B" and **REPLACE** with "Class A".



SPECIAL NOTICE

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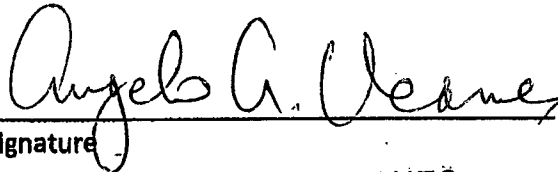
ERIE COUNTY WATER AUTHORITY



JOSEPH T. BURNS
SECRETARY TO THE AUTHORITY

SIGNATURE OF PERSON, FIRM OR CORPORATION MAKING BID:

(Seal if bid by Corporation)



Signature

ANGELO A. VEANES
President

Title



SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Structural shapes.
2. Channels and angles.
3. Hollow structural sections.
4. Structural pipe.
5. Structural plates and bars.
6. Floor plates.
7. Bolts, connectors, and anchors.
8. Grout.

1.02 RELATED REQUIREMENTS

- A. Section 267126 - Transmission and Distribution Equipment.

1.03 SUBMITTALS

A. Shop Drawings:

1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and bolts.
2. Connections.
3. Cambers.
4. Indicate welded connections with AWS A2.4 welding symbols, and indicate net weld lengths.

- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

- C. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months.

- D. Mill Test Reports: Submit indicating structural strength, destructive and non-destructive test analysis.

- E. Source Quality-Control Submittals: Indicate results of shop tests and inspections.

- F. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

G. Qualifications Statements:

1. Submit qualifications for fabricator, erector, shop painter, and welders.



SECTION 051200 - STRUCTURAL STEEL FRAMING

1.04 QUALITY ASSURANCE

- A. Perform Work according to following:
 - 1. Structural Steel: AISC 303.
 - 2. Architecturally Exposed Structural Steel: AISC 303, Section 10.
 - 3. High-Strength Bolted Connections: RCSC - Specification for Structural Joints Using ASTM A325 or ASTM A490Bolts.
- B. Perform Work according to New York State Department of Transportation Standards.
- C. Fabricator:
 - 1. Company specializing in fabricating products specified in this Section with minimum three documented experience with following current AISC Certification:
 - a. Standard Steel Building Structures (STD).
 - b. Conventional Steel Building Structures (SBD).
- D. Erector:
 - 1. Company specializing in performing Work of this Section with minimum three years' documented experience with following current AISC Certification:
 - a. Certified Steel Erector (CSE).
 - b. Advanced Certified Steel Erector (ACSE).
- E. Welders and Welding Procedures: AWS D1.1qualified within previous 12 months.

PART 2 - PRODUCTS

2.01 STRUCTURAL STEEL

- A. Structural W Shapes: ASTM A992; Grade 50.
- B. Structural T Shapes: Cut from structural W shapes.
- C. Channels and Angles: ASTM A36.
- D. Round, Hollow Structural Sections: ASTM A500, Grade B.
- E. Rectangular, Hollow Structural Sections: ASTM A500, Grade B.
- F. Structural Plates and Bars: ASTM A36.
- G. Floor Plates: ASTM A786; raised pattern.



SECTION 051200 - STRUCTURAL STEEL FRAMING

2.02 BOLTS, CONNECTORS, AND ANCHORS

- A. Bolts: Heavy-hex, structural type.
 - 1. ASTM A325; Type 1, galvanized, or Type 3, plain.
 - 2. ASTM A490; Type 1 or 3, plain.
- B. Nuts: ASTM A563; heavy-hex type.
 - 1. Finish: Hot-dip galvanized.
- C. Washers:
 - 1. ASTM F436.
 - 2. Type 1, circular.
 - 3. Finish: Hot-dip galvanized.
- D. Shear Connectors:
 - 1. ASTM A108.
 - 2. Grade 1015, headed, unfinished, and according to AWS D1.1.
 - 3. Type B.
- E. Anchor Rods:
 - 1. ASTM F1554; Grade 55, weldable.
 - 2. Shape: as indicated on Drawings.
 - 3. Plate Washers: ASTM A36.
- F. Threaded Rods:
 - 1. ASTM A36.
 - 2. Finish: Hot-dip galvanized.
- G. Forged Structural Steel Hardware:
 - 1. Clevises and Turnbuckles: ASTM A108; Grade 1085.
 - 2. Eye Nuts and Eye Bolts: ASTM A108; Grade 1030.
 - 3. Sleeve Nuts: ASTM A108; Grade 1018.
 - 4. Rod Ends, Yoke Ends and Pins, Cotter Pins, and Coupling Nuts: Carbon steel.

2.03 WELDING MATERIALS

- A. Welding Materials:
 - 1. AWS D1.1.
 - 2. Type required for materials being welded.



SECTION 051200 - STRUCTURAL STEEL FRAMING

2.04 FABRICATION

- A. Space shear stud connectors as unless indicated otherwise on Drawings.
- B. Continuously seal joined members by continuous welds. Grind exposed welds smooth.
- C. Fabricate connections for bolt, nut, and washer connectors.
- D. Develop required camber for members.

2.05 FINISHES

- A. Prepare structural component surfaces according to SSPC SP6.
- B. Galvanizing:
 - 1. ASTM A123; hot-dip galvanize after fabrication.
- C. Galvanizing for Bolts, Connectors, and Anchors:
 - 1. Hot-Dip Galvanizing:
 - a. Bolts, Nuts, and Washers: ASTM F2329.
 - b. Connectors and Anchors: ASTM A153.
 - 2. Mechanical Galvanizing: ASTM B695; Class 50 minimum.

2.06 ACCESSORIES

- A. Grout:
 - 1. Non-shrink type; premixed compound consisting of nonmetallic aggregate, cement, water-reducing, and plasticizing additives.
 - 2. Capable of developing minimum compressive strength of 5000 psi at 28 days.
- B. Touchup Primer for Galvanized Surfaces:
 - 1. SSPC Paint 20, Type I - Inorganic.
 - 2. Comply with ASTM A780.

2.07 SOURCE QUALITY CONTROL

- A. Testing: Test bolted and welded connections as specified in PART 3 for field quality control tests.



SECTION 051200 - STRUCTURAL STEEL FRAMING

B. Certificate of Compliance: When fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.

1. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that bearing surfaces are at correct elevation.
- B. Verify that anchor rods are set in correct locations and arrangements, with correct exposure for steel attachment.

3.02 PREPARATION

- A. Furnish templates for installation of anchor rods and embedments in concrete and masonry work.

3.03 ERECTION

- A. Allow for erection loads and for sufficient temporary bracing to maintain structure safe, plumb, and in alignment until completion of erection and installation of permanent bracing.
- B. Field-weld components and shear connectors as indicated on Drawings.
- C. Field-connect members with threaded fasteners; torque to required resistance and snug-tighten for bearing-type connections.
- D. Do not field-cut or alter structural members without approval of Architect/Engineer.
- E. After erection, touch up welds and abrasions to match shop finishes.

3.04 GROUT INSTALLATION

- A. Shim bearing plates and equipment supports to proper elevation, and snug-tighten anchor bolts.
- B. Fill void under bearing surface with grout; install and pack grout to remove air pockets.
- C. Moist-cure grout.
- D. Remove forms after grout is set; trim grout edges to form smooth surface, splayed 45 degrees.



SECTION 051200 - STRUCTURAL STEEL FRAMING

- E. Tighten anchor bolts after grout has cured for a minimum of three days.

3.05 TOLERANCES

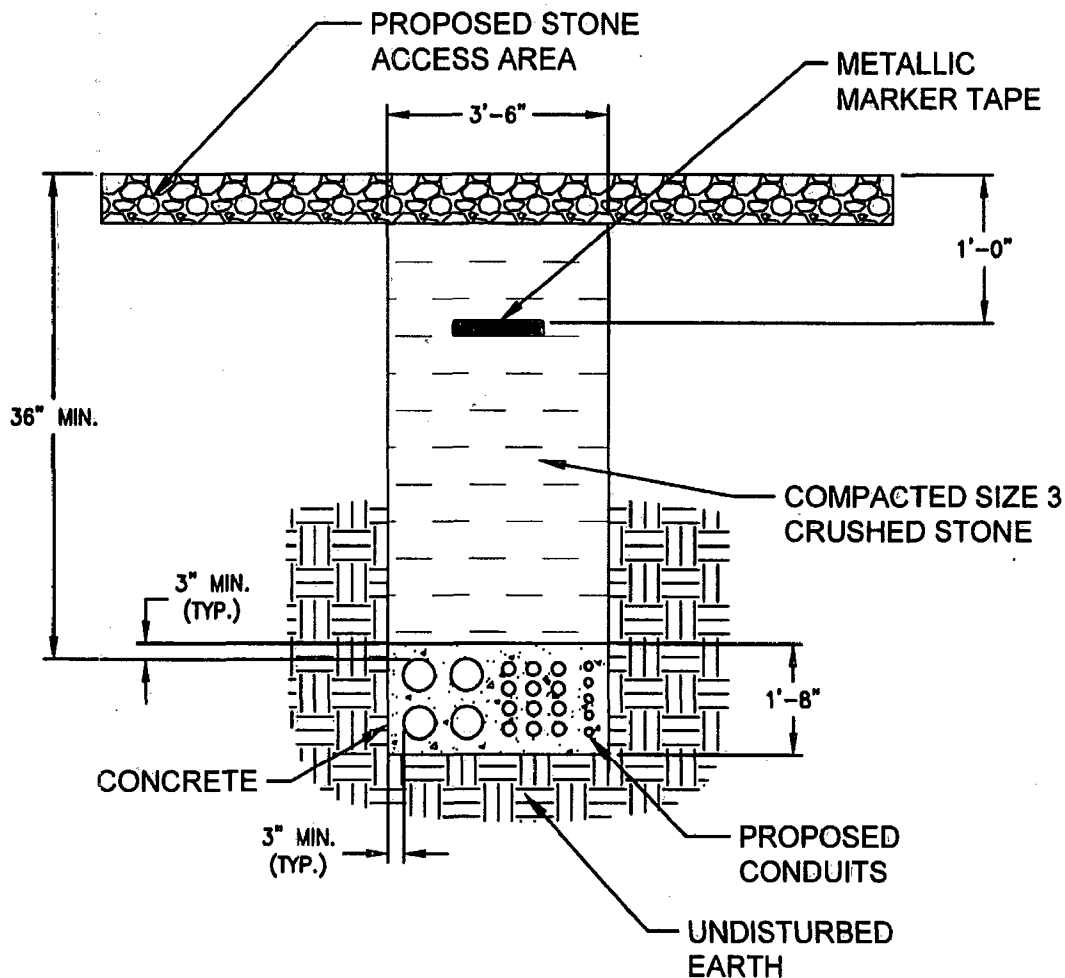
- A. Maximum Variation from Plumb: 1/4 inch per story, noncumulative.
- B. Maximum Offset from Alignment: 1/4 inch.

3.06 FIELD QUALITY CONTROL

- A. Bolted Connections: Inspect according to AISC 303.
 - 1. Visually inspect all bolted connections.
 - 2. Direct Tension Indicators: Comply with requirements of ASTM F959, and verify that gaps are less than gaps specified in Table 2.
- B. Welding: Inspect welds according to AWS D1.1.
 - 1. Use certified welders, and conduct inspections and tests as required. Record types and locations of defects found in Work. Record work required and performed to correct deficiencies.
 - 2. Visually inspect all welds.
 - 3. Ultrasonic Inspection: ASTM E164; perform on each full-penetration weld.
 - 4. Liquid Penetrant Inspection: ASTM E165.
- C. Correct defective bolted connections and welds.

END OF SECTION





NOTES:

1. THIS DETAIL D1 IS TYPICAL FOR ALL DUCT BANKS FROM TRANSFORMER TO 120' WEST OF WEST WALL OF BALL PUMP STATION.
2. SEE DETAIL A1 ON SHEET S-501 FOR TYPICAL DETAIL FOR ALL DUCT BANKS FROM BALL PUMP STATION TO 120' WEST OF THE WEST WALL OF THE PUMP STATION.

D1

ELECTRICAL DUCT BANK TRENCH DETAIL

SCALE: NTS



Addendum No. 1
 Erie County Water Authority
 Ball Pump Station - Electrical Substation
 ECWA Project No. 201600238
 Buffalo, New York

SKETCH

SK-1



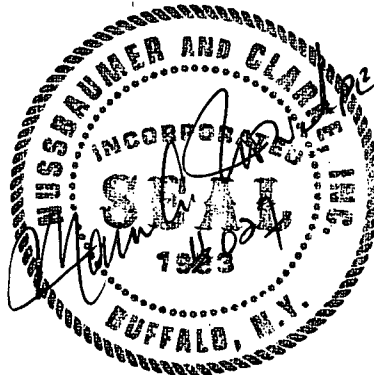
**ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK**

**CONTRACT NO: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION**

ECWA PROJECT NO: 201600238

MARCH 2018

**This Project Manual and Contract Drawings were prepared under the direct supervision of
a Professional Engineer by: Nussbaumer & Clarke, Inc.**



**ERIE COUNTY WATER AUTHORITY
295 Main Street, Room 350
Buffalo, New York 14203**



ERIE COUNTY WATER AUTHORITY
295 MAIN STREET, ROOM 350
BUFFALO, NEW YORK 14203

CONTRACT NO: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
PROJECT NO: 201600238

NOTICE TO BIDDERS

The Erie County Water Authority will receive separate, sealed bids for the furnishing of all labor, plant, tools, equipment and specified materials, etc. for ERIE COUNTY WATER AUTHORITY, BALL PUMP STATION ELECTRICAL SUBSTATION, TOWN OF AMHERST. The Work consists of the construction of a 115kV to 4160V substation including disconnect switches, circuit breakers, transformers, improvements to 48-inch and 60-inch diameter piping, and site work.

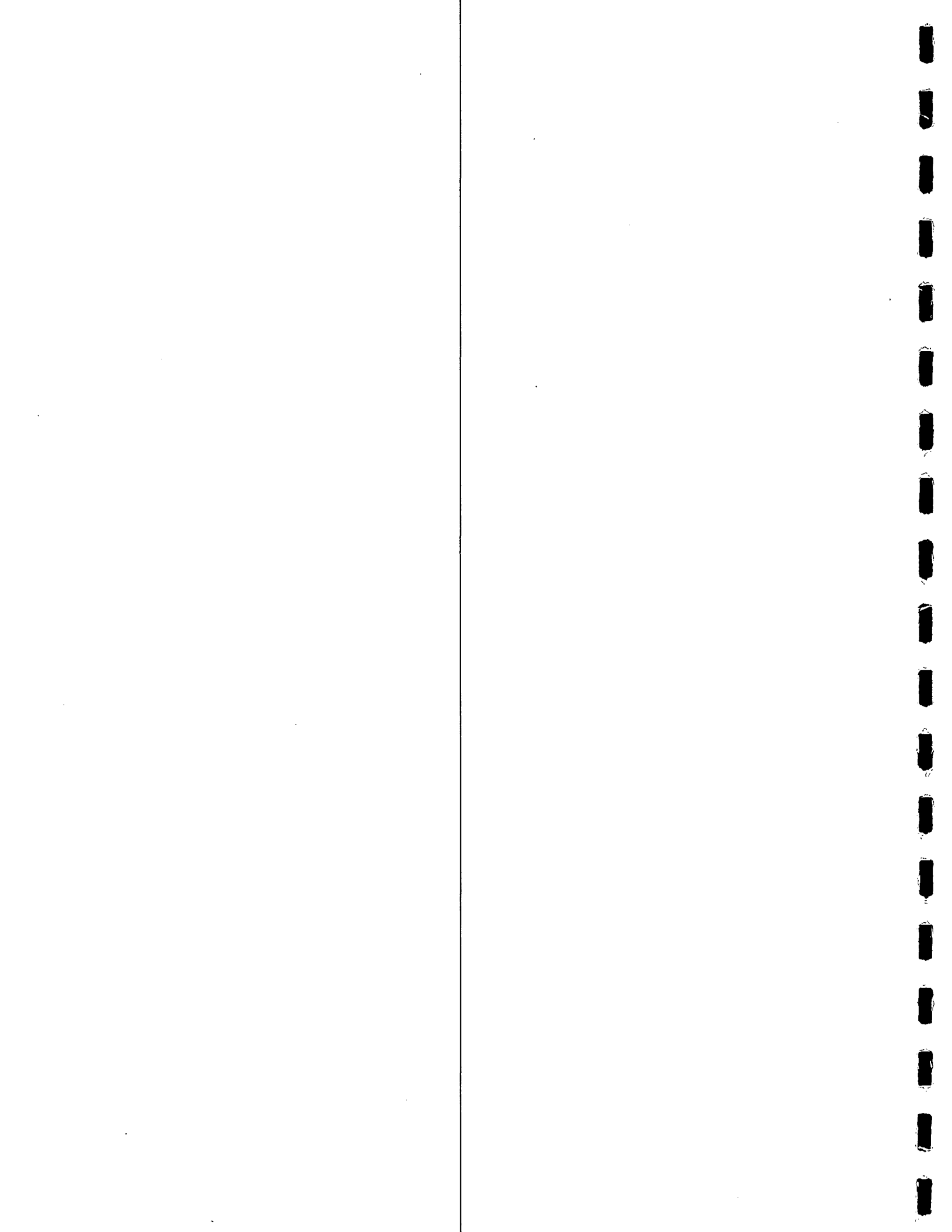
Bids will be received by the Erie County Water Authority until 11:00 a.m. prevailing time, on Tuesday, April 17, 2018 at the Cashier's Office of the Authority, 295 Main Street, Room 350, Buffalo, New York 14203, and then at that time and place will be publicly opened and read.

All bids being mailed (including FedEx, UPS, Priority Mail, etc.) or hand-delivered to the Erie County Water Authority shall be directed to the "CASHIER'S OFFICE" at the address listed above in a sealed envelope and be clearly marked on the outside of the mailing or hand-delivered envelope "BID ENCLOSED-ECWA, Contract NC-35, Ball Pump Station Electrical Substation, Town of Amherst". Failure to follow the above instructions could result in rejection of the bid.

Beginning at 9:00 a.m., on Wednesday, March 7, 2018, the Instruction to Bidders, Form of Bid and form of Contract, Specifications, and Security Bonds may be examined at the above address and may be obtained by writing the Cashier's Office at the above address or calling (716) 849-8484, between the hours of 9:00 a.m. and 5:00 p.m. upon payment of a deposit of Fifty Dollars (\$50.00). Check for documents shall be made payable to Erie County Water Authority.

Contract Documents are also available by mail through the following procedure. The ENGINEER will mail the Contract Documents to those wishing to obtain a set upon receipt of the document deposit described above plus a non-refundable mailing and handling charge of twenty five dollars (\$25.00) per set. The mailing date will be considered the bidder's date of receipt. Partial sets of documents will not be available. The \$50.00 deposit check for mailed documents shall be sent to the ENGINEER with the \$25.00 mailing and handling check. The mailing and handling check (\$25.00) shall be made payable to the ENGINEER. Deposits for deposit checks will be refunded to Bidders who return the documents within seven (7) days after the Bid Opening. Checks for mailing costs will not be refunded.

A pre-bid conference will be held at 10:00 a.m., prevailing time, on Tuesday, March 20, 2018, at the Ball Pump Station, 1201 Sweet Home Road, Amherst, NY 14228. Attendance at the pre-bid meeting is recommended but is not mandatory.




Each bid shall be accompanied by a certified check or bid bond in the amount of five percent (5%) of the amount of the bid.

In accordance with State Finance Law §§139-j and 139-k, all questions about meaning or intent of the bidding documents shall be submitted to the designated contact person in writing. The designated contact is listed below.

The Erie County Water Authority reserves the right to reject any and all bids or to accept any bid deemed to be for the best interest of the Water Authority even though the proposal chosen may result in the award of the contract to a bidder whose bid is not mathematically lowest.

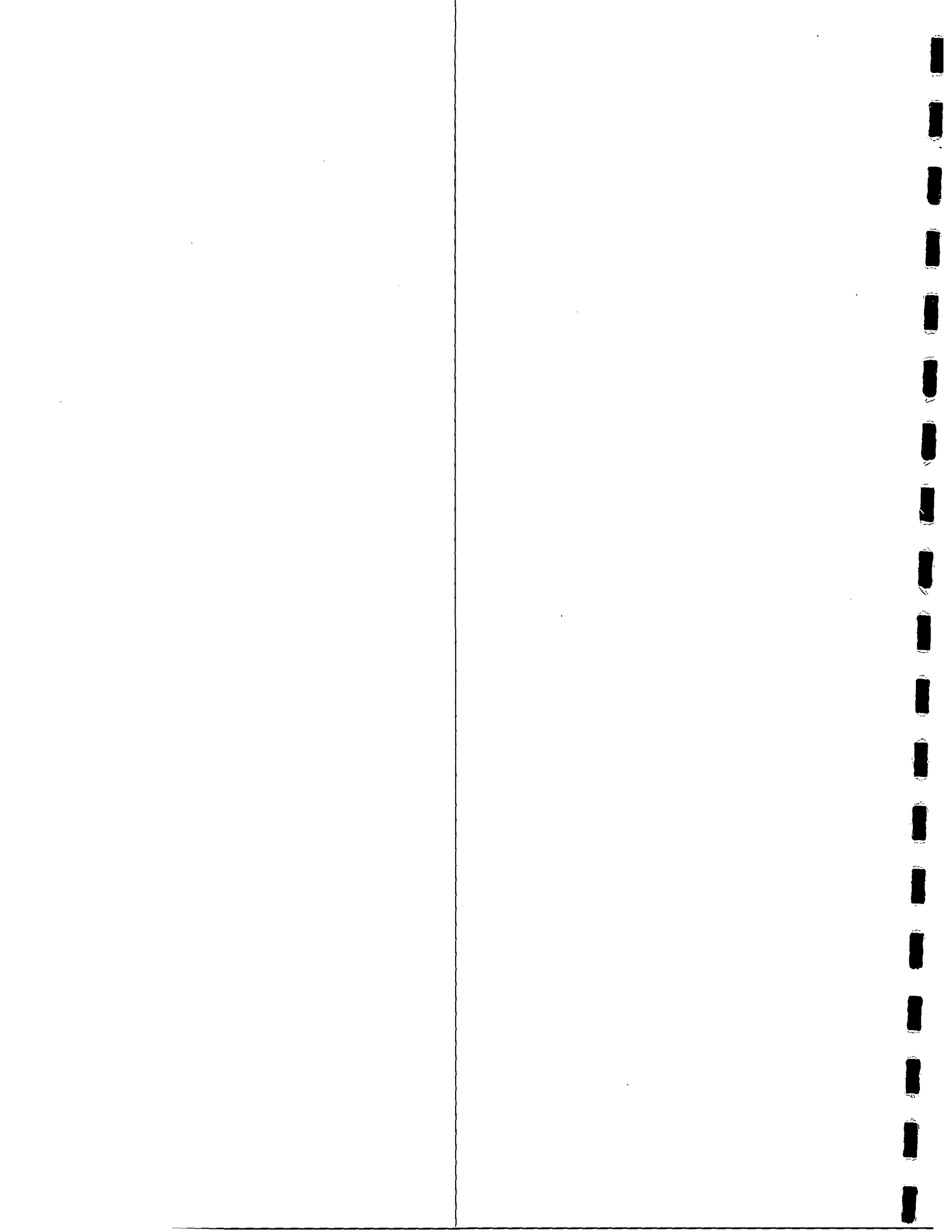
ERIE COUNTY WATER AUTHORITY



JOSEPH T. BURNS
Secretary to the Authority

Engineer/Designated Contact:

Nussbaumer & Clarke, Inc.
3556 Lake Shore Road
Suite 500
Buffalo, NY 14219
(716) 827-8000 ext. 209
mchirico@nussclarke.com



ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT NO: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
PROJECT NO: 201600238

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ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT No.: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
PROJECT No.: 201600238

SECTION 00200

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ARTICLE 1 - DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders will have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof.
- 1.02 Additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof.
- A. Bidder: The individual or entity who submits a Bid directly to OWNER.
 - B. Issuing Office: The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.
 - C. Successful Bidder: The Bidder submitting a responsive Bid to whom OWNER (on the basis of OWNER'S evaluation as hereinafter provided) makes an award. Also known as CONTRACTOR.
 - D. ENGINEER: As defined in the Agreement, Section 00500, under Article 2.

ARTICLE 2 - BIDS RECEIVED

- 2.01 Refer to Notice to Bidders for information on receipt of Bids.

ARTICLE 3 - LOCATION AND SCOPE OF WORK

- 3.01 Refer to Section 011000 of the General Requirements for the location and scope of the Work.

ARTICLE 4 - COPIES OF BIDDING DOCUMENTS

- 4.01 Refer to Notice to Bidders for information on examination and procurement of Bidding Documents.
- 4.02 The Issuing Office is the Cashier Office of the Erie County Water Authority, 295 Main Street, Room 350, Buffalo, New York 14203.
- 4.03 Complete sets of Bidding Documents must be used in preparing Bids; neither OWNER, nor ENGINEER assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 4.04 OWNER and ENGINEER in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant permission for any other use.

ARTICLE 5 - QUALIFICATIONS OF BIDDERS

- 5.01 Bidders shall be experienced in the kind of Work to be performed, shall have the necessary equipment therefore, and shall possess sufficient capital to properly execute the Work within the time allowed. Bids received from Bidders who have previously failed to complete work within the time required, or who have previously performed similar work in an unsatisfactory manner, may be rejected. A Bid may be rejected if Bidder cannot show that Bidder has the necessary ability, plant and equipment to commence the Work at the time prescribed and thereafter to prosecute and complete the Work at the rate or within the time specified. A Bid may be rejected if Bidder is already obligated for the performance of other work which would delay the commencement, prosecution or completion of the Work.
- 5.02 To demonstrate qualifications to perform the Work, Bidder shall complete and submit with its Bid the Bidder Qualifications Statement which is bound in the Project Manual. Bidders may be asked to furnish additional data to demonstrate their qualifications.
- 5.03 Bidders shall be qualified to do business in the state where the Project is located or covenant to obtain such qualification prior to signing the Agreement.

ARTICLE 6 - EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

- 6.01 Subsurface and Physical Conditions
- A. The Supplementary Conditions identify:
1. Those reports of explorations and tests of subsurface conditions at or contiguous to the Site which have been utilized by ENGINEER in preparation of the Bidding Documents.
 2. Those drawings of physical conditions in or relating to existing surface and subsurface structures (except underground facilities) which are at or contiguous to the Site that have been utilized by ENGINEER in preparation of the Bidding Documents.
- B. Copies of the reports and drawings referenced in the Supplementary Conditions will be made available by ENGINEER to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in paragraph 4.02 of the General Conditions has been identified and established in paragraph SC-4.02 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion drawn from any "technical data" or any other data, interpretations, opinions or information contained in such reports or shown or indicated in such drawings.

6.02 Underground Facilities - Physical Conditions

A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to OWNER and ENGINEER by owners of such Underground Facilities, including OWNER, or others.

6.03 Hazardous Environmental Condition

A. OWNER has no knowledge of a hazardous environmental condition at the site.

6.04 Provisions concerning responsibilities for the adequacy of data, if any, furnished to prospective Bidders with respect to subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Bidding Documents due to differing or unforeseen conditions appear in paragraphs 4.02, 4.03 and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Bidding Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the Scope of Work appear in paragraph 4.06 of the General Conditions.

6.05 On request, OWNER will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests and studies as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former conditions upon completion of such explorations, investigations, tests and studies.

6.06 On request, OWNER will conduct a Site visit during OWNER'S normal business hours.

6.07 Reference is made to the Supplementary Conditions for identification of the general nature of other work that is to be performed at the Site by OWNER or others (such as utilities and other prime contractors) that relates to the Work for which a Bid is to be submitted. On request, and if available, OWNER will provide to Bidder, for examination, access to or copies of the contract documents for such other work.

6.08 It is the responsibility of Bidder, before submitting a Bid to:

- A. Examine and carefully study the Bidding Documents, including any Addenda and the other related data identified in the Bidding Documents;
- B. Visit the Site and become familiar with and satisfy Bidder as to the general, local and Site conditions that may affect cost, progress and performance of the Work;
- C. Become familiar with and satisfy Bidder as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work;
- D. Carefully study all reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions, and to carefully study all reports and drawings of a Hazardous Environmental Condition identified at the Site, if any, which have been identified in the Supplementary Conditions as provided in paragraph 4.06 of the General Conditions;
- E. Obtain and carefully study (or assume responsibility for having done so) all examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by Bidder, including any specific means, methods, techniques, sequences and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto;
- F. Agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for the performance of the Work at the price bid and within the times and in accordance with the other terms and conditions of the Bidding Documents;
- G. Become aware of the general nature of work (if any) to be performed by OWNER and others at the Site that relates to the Work as indicated in the Bidding Documents;
- H. Correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies and data with the Bidding Documents;
- I. Promptly give ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by ENGINEER is acceptable to Bidder; and

- J. Determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.
- 6.09 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 6, that without exception the Bid is premised upon performing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences or procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given ENGINEER written notice of all conflicts, errors, ambiguities and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by ENGINEER are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing the Work.

ARTICLE 7 - PRE-BID CONFERENCE

- 7.01 A pre-bid conference will be held if so indicated in the Notice to Bidders, and will be as follows. Representatives of the OWNER and ENGINEER will be present to discuss the Project. Bidders are encouraged to attend and participate at the conference. ENGINEER will transmit to all prospective Bidders of record such Addenda as ENGINEER considers necessary in response to questions raised at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 8 - SITE AND OTHER AREAS

- 8.01 The Site is identified in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment, to be incorporated into the Work are to be obtained and paid for by CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by OWNER unless otherwise provided in the Bidding Documents.

ARTICLE 9 - INTERPRETATIONS AND ADDENDA

- 9.01 All questions about the meaning or intent of the Bidding Documents shall be submitted to ENGINEER in writing. In order to receive consideration, questions must be received by ENGINEER at least ten (10) days prior to the date for the opening of Bids. Interpretations, clarifications, and/or supplemental instructions considered necessary by ENGINEER in response to such questions will be issued by Addenda, mailed either by Registered or Certified mail, with return receipt requested, to all parties recorded by ENGINEER as having received the Bidding Documents, for receipt not later than three (3) days prior to the date for the opening of Bids. Failure of any Bidder to receive such Addendum or interpretation shall not relieve any bidder from any obligation under his bid submitted. All Addenda so issued shall become part of the Contract Documents. All Addenda must be submitted with the bid proposal and be properly signed by the Bidder

as part of the Bid Documents. Only questions answered by Addenda will be binding. The OWNER will not be responsible for any other explanations or interpretation of such documents which anyone presumes to make on behalf of the OWNER before expiration of the time set for the receipt of Bids. No interpretation of the meaning of the plans, specifications or other Contract Documents will be made to any bidder orally. Oral and other interpretations or clarifications will be without legal effect.

- 9.02 Addenda may also be issued to clarify, correct or change the Bidding Documents as deemed advisable by OWNER or ENGINEER. Such Addenda, if any, will be issued in the manner and within the time period stated in paragraph 9.01.

ARTICLE 10 - BID SECURITY

- 10.01 A Bid must be accompanied by Bid security made payable to the OWNER in the amount of five percent of Bidder's maximum Bid price and in the form of certified check or Bid Bond.
- 10.02 Bid Bond shall be on the form bound in the Project Manual. Bid Bond shall be issued by a surety meeting the requirements of paragraphs 5.01 and 5.02 of the General Conditions. The Bid Bond must contain original signatures in ink. Pencil, stamped, thermal faxed, Xeroxed, or any other copies of the signature shall be grounds for voiding the Bid.
- 10.03 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to sign and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, OWNER may annul the Notice of Award and the Bid security of that Bidder will be forfeited to the OWNER as liquidated damages for such failure.
- 10.04 The Bid security of the three lowest bidders may be retained by OWNER until the earlier of the seventh day after the Effective Date of the Agreement or the forty-first day after the Bid opening whereupon the Bid security furnished by such Bidders will be returned. The Bid security of Bidders whom OWNER believes do not have a reasonable chance of receiving an award will be returned within seven days of the Bid opening.

ARTICLE 11 - CONTRACT TIMES

- 11.01 The number of days within which the Work is to be substantially completed and also completed and ready for final payment (the Contract Times) are set forth in the Agreement.

ARTICLE 12 - LIQUIDATED AND SPECIAL DAMAGES

12.01 Provisions for liquidated and special damages, if any, are set forth in the Agreement.

ARTICLE 13 - SUBSTITUTE AND "OR EQUAL" ITEMS

13.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or "or-equal" items. Whenever it is specified or described in the Bidding Documents that a substitute or "or-equal" item of material or equipment may be furnished or used by CONTRACTOR if acceptable to ENGINEER, application for such acceptance will not be considered by ENGINEER until after the Effective Date of the Agreement. The procedure for submittal of any such application by CONTRACTOR and consideration by ENGINEER is set forth in the General Conditions which may be supplemented in the General Requirements.

13.02 Refer to Section 013310 of the General Requirements for the period of time after the Effective Date of the Agreement during which the ENGINEER will accept applications for substitute or "or-equal" items of material or equipment.

ARTICLE 14 - SUBCONTRACTORS, SUPPLIERS, AND OTHERS

14.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals or entities to be submitted to OWNER in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening submit to OWNER a list of all such Subcontractors, Suppliers, other individuals or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualifications for each such Subcontractor, Supplier, individual or entity if requested by OWNER. If OWNER or ENGINEER, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual or entity, OWNER may, before the Notice of Award is given, request the apparent Successful Bidder to submit an acceptable substitute without an increase in Bid price.

14.02 If apparent Successful Bidder declines to make any such substitution, OWNER may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers and other individuals or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual or entity so listed and against which OWNER or ENGINEER makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to OWNER and ENGINEER subject to revocation of such acceptance after the Effective Date of the Agreement as provided in paragraph 6.06 of the General Conditions.

14.03 CONTRACTOR shall not be required to employ any Subcontractor, Supplier, individual or entity against whom CONTRACTOR has reasonable objection.

ARTICLE 15 - PREPARATION OF BID

15.01 A Bid must be made on the Bid form bound in the Project Manual. The Bid form shall not be separated from the Project Manual nor shall it be altered in any way.

15.02 All blanks in the Bid Form shall be completed by printing in black ink or by typewriter. A Bid price shall be indicated in both words and numbers for each Bid item listed therein or the words "No Bid", or "Not Applicable" entered. In case of discrepancy between the words and the numerals, the words shall govern. Ditto marks are not considered writing or printing and shall not be used.

15.03 A Bid shall be executed as stated below.

- A. A Bid by an individual shall show the Bidder's name and official address.
- B. A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title shall appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown below the signature.
- C. A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid form. The official address of the joint venture shall be shown below the signature.
- D. A Bid by a corporation shall be executed in the corporate name by an officer of the corporation and shall be accompanied by a certified copy of a resolution of the board of directors authorizing the person signing the Bid to do so on behalf of the corporation. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The state of incorporation and the official corporate address shall be shown below the signature.
- E. A Bid by a limited liability company shall be executed in the name of the firm and signed by a member accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown below the signature.
- F. All names shall be typed or printed in black ink below the signature.
- G. Evidence of authority to conduct business as an out-of-state corporation in the state where the Work is to be performed shall be provided, if applicable.

15.04 The Bid shall contain an acknowledgment of the receipt of all Addenda in the space provided on the Bid form.

- 15.05 The address and telephone number for communications regarding the Bid shall be shown.
- 15.06 In addition to the Bid Form, the following listed documents, which are bound in the Project Manual in Section 00430 - Bid Form Supplements and Section 00450 – Bidder’s Qualification Statement, shall be submitted with the Bid. Each document shall be executed in the manner described in paragraph 15.03 unless another manner is indicated.
- A. Bid Security Form.
 - B. Section 2875 of the Public Authorities Law.
 - C. Section 2876 of the Public Authorities Law.
 - D. Section 2878 of the Public Authorities Law, Non-collusive Bidding Certification.
 - E. Section 139 of State Finance Law.
 - F. Bidder’s Qualification Statement, including Attachments A, B, C and D and Bidder’s “Experience in The Installation of Tapping Sleeves & Valves on Prestressed Concrete Cylinder Pipe”, if applicable.
 - G. All Addenda.

ARTICLE 16 - BASIS OF BIDS; COMPARISON OF BIDS

16.01 Lump Sum and Unit Price

- A. Bidder shall submit its Bid on the basis of each lump sum item and unit price item as set forth in the Bid Form. For each unit price item on the Bid form, Bidder shall enter the unit price Bid, and shall enter the computation of the respective quantity times the Bidder’s unit price for that item. Bidder shall compute and enter in the space provided on the Bid form, the total of all lump sum items and the total of the products of quantity and unit price Bid for each unit price item.
- B. For determination of the apparent low Bidder, Bids will be evaluated on the basis of the total of all lump sum items and the total of the products of the estimated quantity of each item and unit price Bid for that item.
- C. The quantities for the unit price items are unpredictable and the ENGINEER has inserted certain quantities in the Bid Form to be used solely for purpose of comparison bids.
- D. Fixed minimum unit prices may have been established for some of the items in the Bid. The prices represent the minimum amounts which will be paid the CONTRACTOR for these items. If in the opinion of the Bidder these prices do not

reflect the actual value of the work involved the Bidder may void the given fixed minimum unit price for that specific item and enter a higher unit price in the spaces provided in the Bid Sheets.

- 16.02 Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

ARTICLE 17 - SUBMITTAL OF BID

- 17.01 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Notice to Bidders. The entire Project Manual must be submitted with all proper forms completed and signed as required.
- 17.02 Bid shall be enclosed in an opaque sealed envelope plainly marked on the outside with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted) the name and address of the Bidder and its license or registration number, if applicable. Bid shall be accompanied by Bid security and other required documents.
- 17.03 All bids being mailed (including FedEx, UPS, Priority Mail, etc.) or hand-delivered to the Erie County Water Authority shall follow the procedure as defined in Section 00100, Notice To Bidders.

ARTICLE 18 - MODIFICATION OR WITHDRAWAL OF BID

- 18.01 Withdrawal Prior to Bid Opening:
- A. A Bid may be withdrawn by an appropriate document duly executed, in the manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time fixed for the opening of Bids. Upon receipt of such written notice, the unopened Bid will be returned to the Bidder.
- 18.02 Modification Prior to Bid Opening:
- A. If a Bidder wishes to modify its Bid, Bidder must withdraw its initial Bid in the manner specified in paragraph 18.01.A and submit a new Bid.
- 18.03 No Bids may be withdrawn after the time set for the Bid Opening.

ARTICLE 19 - OPENING OF BIDS

- 19.01 Bids will be opened at the time and place where Bids are to be submitted and, unless obviously non-responsive, read aloud publicly. An abstract of the Bids will be made available to Bidders after the opening.
- 19.02 Bids received by mail or otherwise after the date and time specified for the opening of Bids will not be accepted and will be returned to the Bidder unopened.
- 19.03 Bid results are available on the Erie County Water Authority website, www.ecwa.org (under Doing Business tab, select option Business Opportunities). No bid results will be given over the telephone.

ARTICLE 20 - DISQUALIFICATION OF BIDDERS

- 20.01 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

ARTICLE 21 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 21.01 All Bids shall remain subject to acceptance for forty five days after the day of the Bid opening, but OWNER may, in its sole discretion, release any Bid and return the Bid security prior to that date.
- 21.02 In the event that the OWNER requires more than 45 calendar days after the actual date of the Bid Opening to award the contract, Bidders shall, when requested, provide to ENGINEER a written extension of time for OWNER to award the contract. Bidders shall also provide, to ENGINEER, written Consent of Surety for extension of the bid bond.
- 21.03 In the event that the OWNER requires more than 45 calendar days after the actual date of the Bid Opening to award the contract, and the lowest qualified bidder does not grant an extension of time for the OWNER to award the contract, the OWNER reserves the right to award to the second lowest qualified bidder.

ARTICLE 22 - AWARD OF CONTRACT

- 22.01 OWNER reserves the right to reject any or all Bids, including without limitation the right to reject any or all nonconforming, non-responsive or conditional Bids. Bids may be rejected if they show any omissions, alterations of form, additions not called for, conditional or alternate bids other than are provided for in the Bid Form, bids containing escalation clauses or irregularities of any kind. OWNER further reserves the right to

reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to be non-responsible. OWNER also reserves the right to waive any informality not involving price, time or changes in the Work, if it is deemed to be in the best interest of the OWNER. The Bidder will not be allowed to take advantage of any error or omission.

- 22.02 OWNER reserves the right to reject any Bid not accompanied by specified documentation and Bid security. In the event that OWNER requires more than 45 calendar days after the actual Bid opening date to award the contract, Bidders shall provide to ENGINEER written Consent of Surety of the Bid Bond.
- 22.03 OWNER reserves the right to reject any Bid that, in its sole discretion, is considered to be unbalanced or unreasonable as to the amount bid for any lump sum or unit price item.
- 22.04 In evaluating Bidders, OWNER will consider their qualifications whether or not their Bids comply with the prescribed requirements, the alternatives, if any, the lump sum and unit prices, and other data as may be requested in the Bid Form or prior to the Notice of Award.
- 22.05 OWNER may consider the qualifications and experience of Subcontractors, Suppliers and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers and other individuals or entities must be submitted as provided in the Supplementary Conditions.
- 22.06 OWNER may conduct such investigations as OWNER deems necessary to establish the responsibility, qualifications and financial ability of the Bidders to perform the Work in accordance with the Contract Documents. OWNER reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to OWNER'S satisfaction.
- 22.07 OWNER reserves the right to accept any Bid deemed to be in its best interests even though the Bid chosen may result in the award of the Contract to a Bidder whose Bid is not, on a mathematical basis alone, the low Bid.
- 22.08 The OWNER may elect not to award a contract at this time due to budgetary or other considerations. OWNER reserves the right to reject any or all proposals and to re-bid the contract if the OWNER deems it in the public interest to do so.
- 22.09 Contracts shall be awarded only pursuant to resolution.
- 22.10 OWNER reserves the right to reject any bids from Bidders who are in arrears to, or in litigation with, the Erie County Water Authority or the County of Erie upon any debt or contract, or in default as surety or otherwise upon any obligation of the Erie County Water Authority or the County of Erie.

ARTICLE 23 - CONTRACT SECURITIES

- 23.01 Performance Bond shall be in the form of Engineers Joint Contract Documents Committee (EJCDC) "Construction Performance Bond", 1910-28-A. Payment Bond

shall be in the form of EJCDC "Construction Payment Bond", 1910-28-B. The amounts of and other requirements for Performance and Payment Bonds are stated in paragraph 5.01 of the General Conditions. The requirements for delivery of Bonds are stated in paragraph 2.01 of the General Conditions. Additional requirements may be stated in the Supplementary Conditions.

- 23.02 Successful Bidder shall within five days from the date of the Notice of Award deliver to OWNER, for OWNER'S review and approval, the Performance Bond and the Payment Bond CONTRACTOR proposes to furnish at the time of the execution of the Agreement.

ARTICLE 24 - CONTRACTOR'S INSURANCE

- 24.01 The requirements for CONTRACTOR'S insurance and delivery of insurance certificates are stated in Article 5 of the General Conditions and in the Supplementary Conditions.

ARTICLE 25 - SIGNING OF AGREEMENT

- 25.01 When OWNER gives a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with the other Contract Documents, which are identified in the Agreement as attached thereto. Within five days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to OWNER.

ARTICLE 26 - NOTICE TO PROCEED

- 26.01 Issuance of the Notice to Proceed shall be as stated in Article 2 of the General Conditions.

ARTICLE 27 - PARTNERING (NOT USED)

ARTICLE 28 - SALES AND USE TAXES

- 28.01 Refer to Supplementary Conditions paragraph SC-6.10 for information on OWNER'S exemption from sales and use taxes on materials and equipment to be incorporated into the Work. Do not include said taxes in Bid.

ARTICLE 29 - ADDITIONAL REQUIREMENTS

- 29.01 Refer to Supplementary Conditions Paragraph SC-18.03 for information on OWNER'S Women and Minority Business Enterprise requirements.

END OF SECTION

ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT NO: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
PROJECT NO: 201600238

SECTION 00320

GEOTECHNICAL DATA

ARTICLE 1 - GENERAL

- 1.01 Subsurface soil investigations have been made and the results are available as defined in Section 00800, Supplementary Conditions.
- 1.02 The subsurface investigation reports were prepared by Pittsburgh Testing Laboratory, Empire GEO Services, Professional Service Industries, Inc., and Barron & Associates and are provided as a reference source for CONTRACTORS in the preparation of Bids and in the performance of their work. These investigations are for examination by Bidders but are not a part of the Contract Documents.
- 1.03 Bidder is responsible for any conclusions drawn from soil investigation data. If he prefers not to assume such risk, he is under obligation to employ his own experts to analyze available information. Bidder is responsible for any consequences of acting on conclusions obtained.
- 1.04 OWNER does not guarantee continuity of conditions indicated at soil investigation locations.

END OF SECTION



ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT No: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
PROJECT No: 201600238

SECTION 00360

PERMIT APPLICATIONS

ARTICLE 1 - GENERAL

- 1.01 CONTRACTOR shall apply for and is responsible for complying with all requirements of the following permits.
1. New York State Department of Transportation Highway Permit for Sweet Home Road.
 2. Town of Amherst Stormwater Inspection Services Permit.
 3. Other permits as required
- 1.02 CONTRACTOR shall include all permit fees and permit requirements in his lump sum and unit bid prices for the project and will not receive separate payment for any permit fees, including all associated permit conditions.

ARTICLE 2 – SAMPLE PERMIT APPLICATIONS

- 2.01 Sample permit applications and requirements are bound in this Project Manual.

ARTICLE 3 – STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

- 3.01 The OWNER has prepared a SWPPP for the project and obtained a SPDES General Permit for Storm Water Discharges from construction activity. The CONTRACTOR shall comply with all requirements. A copy is available for review at the office of the Engineer during regular business hours upon two business days prior notice.

END OF SECTION



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(This Bid Form shall not be detached from the Project Manual. The entire Project Manual shall be returned with the executed Bid.)

SECTION 00410

BID FORMS

BID FOR:

Erie County Water Authority
Contract No: NC-35
BALL PUMP STATION ELECTRICAL SUBSTATION
Project No. 201600238

BID TO:

Erie County Water Authority
295 Main Street, Room 350
Buffalo, New York 14203

BID FROM: _____ Ferguson Electric Construction Co., Inc.

(Print or Type Name of Bidder)

(/A Corporation/A Partnership/A Limited Liability Company/An
Individual/A Joint Venture/[Bidder to strike out inapplicable terms.]

Gentlemen:

- 1.01 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the price(s) and within the times indicated in this Bid and in accordance with the Bidding Documents.



**ERIE COUNTY WATER AUTHORITY
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2.01 Bidder accepts all of the terms and conditions of the Notice to Bidders and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain open subject to acceptance for the time period set forth in the Instruction to Bidders. Bidder will sign the Agreement and will furnish the required contract security, and other required documents within the time periods set forth in the Bidding Documents.

3.01 In submitting this Bid, Bidder represents, as set forth in the Agreement, that:

A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, if any, and the following Addenda receipt of all of which is hereby acknowledged.

<u>Addendum No.</u>	<u>Date Received</u>	<u>Addendum No.</u>	<u>Date Received</u>
<u>1</u>	<u>4/06/18</u>	<u> </u>	<u> </u>
<u>2</u>	<u>4/11/18</u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance for the Work.

C. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions, and (2) reports and drawings of a Hazardous Environmental Condition identified at the Site, if any, which have been identified in the Supplementary Conditions as provided in paragraph 4.06 of the General Conditions.

E. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may effect cost, progress or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques,



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sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.

- F. Bidder does not consider that any further examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance of the Work at the price(s) and within the times and in accordance with the other terms and conditions of the Bidding Documents.
 - G. Bidder is aware of the general nature of work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Bidding Documents.
 - H. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents and all additional examinations, investigations, explorations, tests, studies and data with the Bidding Documents.
 - I. Bidder has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by ENGINEER is acceptable to Bidder.
 - J. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.
 - K. The quantities for the unit price items are unpredictable and the ENGINEER has inserted certain quantities in the proposal to be used solely for purpose of comparison of bids.
 - L. Fixed minimum unit prices may have been established for some of the items in the Bid. The prices represent the minimum amounts, which will be paid the CONTRACTOR for these items. The Bidder shall include a price not less than the stated minimum. If in the opinion of the Bidder these prices do not reflect the actual value of the work involved, the Bidder may void the given fixed minimum unit price for that specific item and enter a higher unit price in the spaces provided in the Bid Form sheets. Bidder's Proposals received which include a unit price less than the stated minimum shall be adjusted to meet the fixed minimum unit price.
- 4.01 Bidder further represents that this Bid is genuine and is not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any individual or entity to refrain from bidding; Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER; and that no person or persons acting in any official capacity for the OWNER are directly or indirectly interested in this Bid, or in any portion of the profit thereof.





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Bidder acknowledges that estimated quantities of items of Unit Price Work are not guaranteed and final payment will be based on actual quantities of Unit Price Work performed as provided in the Contract Documents.

- 6.01 Bidder agrees that the Work will be substantially complete and completed and ready for final payment in accordance with Paragraph 14.07.B of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated and special damages in the event of failure to complete the Work within the times specified above.
- 7.01 The following documents are attached to and made a condition of this Bid:
- A. Required Bid security in the amount of Two Hundred Fifty Four Thousand and Seven Hundred Thirty Dollars (\$ 254,730.00).
 - B. Section 2875 of the Public Authorities Law, Ground for Cancellation of Contract by Public Authority.
 - C. Section 2876 of the Public Authorities Law, Disqualification to Contract with Public Authority.
 - D. Section 2878 of the Public Authorities Law, Non-Collusive Bidding Certification.
 - E. Section 139 of State Finance Law, Lobbying.
 - F. Required Bidder Qualifications Statement with supporting data.
 - G. All addenda.
- 8.01 The terms used in this Bid will have the meanings indicated in the Instructions to Bidders and the General Conditions and Supplementary Conditions.

Respectfully submitted on April 17, 2018



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If Bidder is:

An Individual

By _____
(Individual's Signature)

(Printed or Typed Name of Individual)

Doing business as _____

License or Registration Number: _____

Business Address: _____

Phone No.: _____ FAX No.: _____

A Partnership

By _____
(Firm Name)

(General Partner's Signature)

(Printed or Typed Name of General Partner)
(Attach evidence of authority to sign.)

License or Registration Number: _____

Business Address: _____

Phone No.: _____ FAX No.: _____



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A Corporation

By _____ Ferguson Electric Construction Co., Inc.
(Corporation Name)

_____ New York
(State of Incorporation)

By _____ *Angelo A. Veanes*
(Signature of Officer Authorized to Sign)

_____ Angelo A. Veanes, President
(Printed or Typed Name and Title of Officer Authorized to Sign)
(Attach evidence of authority to sign.)

(CORPORATE

SEAL)

Attest _____ *Kevin M. Mislin*
(Secretary) Kevin M. Mislin

License or Registration Number: _____ N/A

Business Address: _____ 333 Ellicott Street, Buffalo NY 14203

Phone No.: _____ 716-852-2010 _____ FAX No.: _____ 716-852-4887



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Limited Liability Company

By _____
(Firm Name)

(State of Formation)

By _____
(Signature of Member/Authorized to Sign)

(Printed or Typed Name and Title of Member Authorized to Sign)
(Attach evidence of authority to sign.)

License or Registration Number: _____

Business Address: _____

Phone No.: _____ FAX No.: _____



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A Joint Venture

Joint Venture Name: _____

By _____
(Signature)

(Printed or Typed Name) (Title)

(Address)

By _____
(Signature)

(Printed or Typed Name) (Title)

(Address)

Phone and FAX number and address for receipt of communications to joint venture:

(Each joint venturer must sign. The manner of signing for each individual, partnership, corporation or limited liability company that is a party to the joint venture shall be in the manner indicated above).

END OF BID FORM



ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

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ELECTRICAL SUBSTATION
PROJECT NO: 201600238

SECTION 00430

BID FORM SUPPLEMENTS

Bid Security Form

Section 2875 of the Public Authorities Law

Section 2876 of the Public Authorities Law

Section 2878 of the Public Authorities Law

Section 139 of State Finance Law



BID SECURITY FORM

BIDDER (Name and Address):

Ferguson Electric Construction Co., Inc.
333 Ellicott Street
Buffalo, New York 14203

SURETY (Name and Address of Principal Place of Business):

Fidelity and Deposit Company of Maryland
1299 Zurich Way
Schaumburg, Illinois 60196

OWNER:

Erie County Water Authority
295 Main Street, Room 350
Buffalo, New York 14203

BID

BID DUE DATE: April 17, 2018

PROJECT:

Contract No: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
Project No: 201600238

BOND

BOND NUMBER: N/A
DATE: (Not later than Bid due date): April 17, 2018
PENAL SUM: Five Percent (5%) Of The Amount Set Forth In The Accompanying Proposal
(Words) (Figures)

IN WITNESS WHEREOF, Surety and Bidder, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

BIDDER

Ferguson Electric Construction Co., Inc. (Seal)

Bidder's Name and Corporate Seal

By: Angelo A. Veanes
Signature and Title
Angelo A. Veanes, President

Attest: [Signature]
Signature and Title

SURETY

Fidelity and Deposit Company of Maryland (Seal)

Surety's Name and Corporate Seal

By: Sean P. Keenan
Signature and Title Sean P. Keenan,
(Attach Power of Attorney) Attorney-in-fact

Attest: Marcello Ajala



1.01 Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to OWNER upon default of Bidder the penal sum set forth on the face of this Bond.

2.01 Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by OWNER) the executed Agreement required by the Bidding Documents and any performance and payment Bonds required by the Bidding Documents.

3.01 This obligation shall be null and void if:

- A. OWNER accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by OWNER) the executed Agreement required by the Bidding Documents and any performance and payment Bonds required by the Bidding Documents, or
- B. All Bids are rejected by OWNER, or
- C. OWNER fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5.01 hereof).

4.01 Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from OWNER, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5.01 Surety waives notice of and any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by OWNER and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6.01 No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in paragraph 4.01 above is received by Bidder and Surety and in no case later than one year after Bid due date.

7.01 Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8.01 Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9.01 Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative, who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.

10.01 This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11.01 The term "Bid" as used herein includes a Bid, offer or proposal as applicable.

END OF BID BOND



THE FIDELITY AND DEPOSIT COMPANY

OF MARYLAND

600 Red Brook Blvd., Suite 600, Owings Mills, MD 21117

Statement of Financial Condition

As Of December 31, 2017

ASSETS

Bonds	\$ 131,463,323
Stocks	23,365,385
Cash and Short Term Investments.....	15,943,690
Reinsurance Recoverable	7,520,824
Federal Income Tax Recoverable.....	62,266
Other Accounts Receivable.....	35,672,323
TOTAL ADMITTED ASSETS	\$ 214,027,811

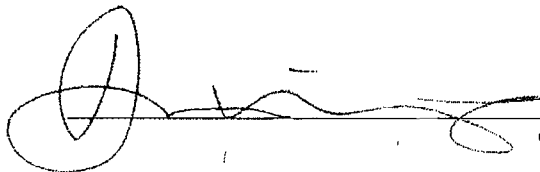
LIABILITIES, SURPLUS AND OTHER FUNDS

Reserve for Taxes and Expenses	\$ 580,990
Ceded Reinsurance Premiums Payable	42,235,595
Securities Lending Collateral Liability	0
TOTAL LIABILITIES	\$ 42,816,584
Capital Stock, Paid Up	\$ 5,000,000
Surplus	166,211,227
Surplus as regards Policyholders.....	171,211,226
TOTAL	\$ 214,027,811

Securities carried at \$62,198,396 in the above statement are deposited with various states as required by law.

Securities carried on the basis prescribed by the National Association of Insurance Commissioners. On the basis of market quotations for all bonds and stocks owned, the Company's total admitted assets at December 31, 2017 would be \$213,515,173 and surplus as regards policyholders \$170,698,588.

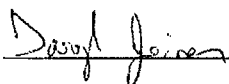
I, DENNIS F. KERRIGAN, Corporate Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing statement is a correct exhibit of the assets and liabilities of the said Company on the 31st day of December, 2017.



 Corporate Secretary

State of Illinois
 City of Schaumburg } SS:

Subscribed and sworn to, before me, a Notary Public of the State of Illinois, in the City of Schaumburg, this 9th day of March, 2018.



 Notary Public





**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Maryland, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Maryland (herein collectively called the "Companies"), by **MICHAEL BOND, Vice President**, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint **Edward F. WALSH, John N. WALSH, III, Edward F. WALSH, JR., Michael K. WALSH, Beverly A. ZOLNOWSKI, Sean P. KEENAN, Patricia A. STEGER and Patrick J. QUINN**, all of Buffalo, New York, **EACH** its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings**, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 1st day of May, A.D. 2017.

ATTEST:

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND**



By: *Dawn E. Brown*
Assistant Secretary
Dawn E. Brown

Michael Bond
Vice President
Michael Bond

State of Maryland
County of Baltimore

On this 1st day of May, A.D. 2017, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **MICHAEL BOND, Vice President, and DAWN E. BROWN, Assistant Secretary**, of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposed and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

Constance A. Dunn



Constance A. Dunn, Notary Public
My Commission Expires: July 9, 2019





Fidelity & Deposit Company of Maryland

Surety Service Center
1299 Zurich Way
Schaumburg, IL 60196-1056

May 30, 2018

Mr. Leonard F. Kowalski, PE
Director of Engineering
Erie County Water Authority
295 Main Street
Buffalo, New York 14203

Re: Contractor: Ferguson Electric Construction Co., Inc.
333 Ellicott Street, Buffalo, New York 14203
Project: Project 201600238
Ball Pump Station Electrical Substation
Electrical Contract NC-35
Bid Date: April 17, 2018

Per the request of the Engineer, Ferguson Electric Construction Co., Inc.'s bid is valid for an additional 45 days beyond the 45 days listed in the Bid Specifications.

Any bonding obligation will be contingent upon mutually accepted contract terms and normal underwriting requirements of the undersigned surety. Any arrangements, however, for bonds is a matter between the Contractor and the Surety. We, therefore, assume no liability to you or third parties if, for any reason, we do not execute the bonds.

Sincerely,

Fidelity and Deposit Company of Maryland

Sean P. Keenan, Attorney-in-fact





**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Maryland, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Maryland (herein collectively called the "Companies"), by MICHAEL BOND, Vice President, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint Edward F. WALSH, John N. WALSH, III, Edward F. WALSH, JR., Michael K. WALSH, Beverly A. ZOLNOWSKI, Sean P. KEENAN, Patricia A. STEGER and Patrick J. QUINN, all of Buffalo, New York, EACH its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: any and all bonds and undertakings, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

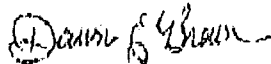
The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

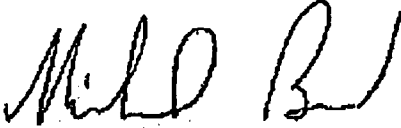
IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 8th day of December, A.D. 2017.

ATTEST:

ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND



By: 
Assistant Secretary
Dawn E. Brown


Vice President
Michael Bond

State of Maryland
County of Baltimore

On this 8th day of December, A.D. 2017, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, MICHAEL BOND, Vice President, and DAWN E. BROWN, Assistant Secretary, of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, depose and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

Constance A. Dunn

Constance A. Dunn, Notary Public
My Commission Expires: July 9, 2019





SECTION 2875 OF THE PUBLIC AUTHORITIES LAW

§2875. GROUND FOR CANCELLATION OF CONTRACT BY PUBLIC AUTHORITY.

A clause shall be inserted in all specifications or contracts hereafter made or awarded by any public authority or by any official of any public authority created by the state or any political subdivision, for work or services performed or to be performed or goods sold or to be sold, to provide that upon the refusal of a person, when called before a grand jury, head of a state department, temporary state commission, or other state agency, the organized crime task force in the department of law, head of a city department, or other city agency, which is empowered to compel the attendance of witnesses and examine them under oath, to testify in an investigation concerning any transaction or contract had with the state, any political subdivision thereof or of a public authority, to sign a waiver of immunity against subsequent criminal prosecution or to answer any relevant question concerning such transaction or contract.

(a) Such person, and any firm, partnership or corporation of which he is a member, partner, director or officer shall be disqualified from thereafter selling to or submitting bids to or receiving awards from or entering into any contracts with any public authority or official thereof, for goods, work or services, for a period of five years after such refusal, and to provide also that;

(b) any and all contracts made with any public authority or official thereof, since the effective date of this law, by such person and by any firm, partnership or corporation of which he is a member, partner, director or officer may be canceled or terminated by the public authority without incurring any penalty or damages on account of such cancellation or termination, but any monies owing by the public authority for goods delivered or work done prior to the cancellation termination shall be paid.

This is to CERTIFY that neither the undersigned nor any member, partner, director, or officer of the firm has refused to sign a waiver of immunity against subsequent criminal prosecution or to answer any relevant question concerning a transaction or contract with the state, any political subdivision thereof, a public authority or with a public department, agency or official of the state or of any political subdivision thereof or of a public authority, when called before a grand jury, head of a state department, temporary state commission, or other state agency, the organized crime task force in the department of law, head of a city department, or other city agency, which is empowered to compel the attendance of witnesses and examine them under oath.

Ferguson Electric Construction Co., Inc.

(Name of Individual, Partnership or Corporation)

By

Angela G. Weaney
(Person authorized to sign)

(SEAL)



SECTION 2876 OF THE PUBLIC AUTHORITIES LAW

§2876. DISQUALIFICATION TO CONTRACT WITH PUBLIC AUTHORITY

Any person who, when called before a grand jury, head of a state department, temporary state commission or other state agency, the organized crime task force in the department of law, head of a city department or other city agency, which is empowered to compel the attendance of witnesses and examine them under oath to testify in an investigation concerning any transaction or contract had with the state, any political subdivision thereof, a public authority or with a public department, agency or official of the state or of any political subdivision thereof or of a public authority, refuses to sign a waiver of immunity against subsequent criminal prosecution or to answer any relevant questions concerning such transaction or contract, and any firm, partnership or corporation of which he is a member, partner, director or officer shall be disqualified from thereafter selling to or submitting bids to or receiving awards from or entering into any contracts with any public authority or any official of any public authority created by the state or any political subdivision, for goods, work or services, for a period of five years after such refusal or until a disqualification shall be removed pursuant to the provisions of section twenty-six hundred three of this article.

It shall be the duty of the officer conducting the investigation before the grand jury, the head of a state department, the chairman of the temporary state commission or other state agency, the organized crime task force in the department of law, the head of a city department or other city agency before which the refusal occurs to send notice of such refusal, together with the names of any firm, partnership or corporation of which the person so refusing is known to be a member, partner, officer or director, to the commissioner of transportation of the state of New York, or the commissioner of general services as the case may be, and the appropriate departments, agencies and officials of the state, political subdivisions thereof or public authorities with whom the persons so refusing and any firm, partnership or corporation of which he is a member, partner, director or officer, is known to have a contract. However, when such refusal occurs before a body other than a grand jury, notice of refusal shall not be sent for a period of ten days after such refusal occurs. Prior to the expiration of this ten day period, any person, firm, partnership or corporation which has become liable to the cancellation or termination of a contract or disqualification to contract on account of such refusal may commence a special proceeding at a special term of the supreme court, held within the judicial district in which the refusal occurred, for an order determining whether the questions in response to which the refusal occurred were relevant and material to the inquiry. Upon the commencement of such proceeding, the sending of such notice of refusal to answer shall be subject to order of the court in which the proceeding was brought in a manner and on such terms as the court may deem just. If a proceeding is not brought within ten days, notice of refusal shall thereupon be sent as provided herein.



SECTION 2878 OF THE PUBLIC AUTHORITIES LAW

§2878. STATEMENT OF NON-COLLUSION IN BIDS OR PROPOSALS TO PUBLIC AUTHORITY.

(1) Every bid or proposal hereafter made to a public authority or to any official of any public authority created by the state or any political subdivision, where competitive bidding is required by statute, rule, regulation or local law, for work or services performed or to be performed or goods sold or to be sold, shall contain the following statement subscribed by the bidder and affirmed by such bidder as true under the penalties of perjury:

NON-COLLUSIVE BIDDING CERTIFICATION

(a) By submission of this bid, EACH BIDDER AND EACH PERSON SIGNING ON BEHALF OF ANY BIDDER CERTIFIES, AND IN THE CASE OF A JOINT BID EACH PARTY THERETO CERTIFIES AS TO ITS OWN ORGANIZATION, under penalty of perjury, that to the best of his knowledge and belief: (1) the prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; (2) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and (3) No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

(b) A bid shall not be considered for award nor shall any award be made where (a) (1) (2) and (3) above have not been complied with; provided, however, that if in any case the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where (a) (1) (2) and (3) above have not been complied with, the bid shall not be considered for award nor shall any award be made unless the head of the purchasing unit of the state, public department or agency to which the bid is made, or his designee, determines that such disclosure was not made for the purpose of restricting competition.

The fact that a bidder (a) has published price lists, rates, or tariffs covering items to be procured, (b) has informed prospective customers of proposed or pending publication of new or revised price lists for such items, or (c) has sold the same items to other customers at the same prices being bid, does not constitute, without more, a disclosure within the meaning of subparagraph one (a).



The undersigned CERTIFIES, under penalty of perjury, that he is authorized to make this bid and execute this statement of non-collusion; that each of the statements contained in (1), (2) and (3) of paragraph (a) are true; that he is familiar with the statements and restrictions contained in paragraph (b) and the paragraph regarding the publication of price lists, etc. and such statements and restrictions are true and have been complied with by the bidder.

Ferguson Electric Construction Co., Inc.
(Name of Individual, Partnership, or Corporation)

By Angelo A. Veanes
Angelo A. Veanes, President

(SEAL)



FORMS A, B, and C

SECTION 139 OF STATE FINANCE LAW

Pursuant to State Finance Law §§139-j and 139-k, this Invitation to Bid includes and imposes certain restrictions on communications between a Governmental Entity and an Offerer/bidder during the procurement process. An Offerer/bidder is restricted from making contacts from the earliest notice of intent to solicit offers, through final award and approval of the Procurement Contract by the Governmental Entity. The designated contact is identified in the Notice to Bidders. Governmental Entity employees are also required to obtain certain information when contacted during the restricted period and make a determination of the responsibility of the Offerer/bidder pursuant to these two statutes. Certain findings of non-responsibility can result in rejection for contract award and in the event of two findings within a 4-year period, the Offerer/bidder is debarred from obtaining governmental Procurement Contracts. Further information about these requirements can be found in §§139-j and 139-k of the New York State Finance Law and the Erie County Water Authority's Procurement Disclosure Policy.

Form A - Offerer's Affirmation of Understanding of and Agreement pursuant to State Finance Law.

Form B - Offerer's Certification of Compliance with State Finance Law.

Form C - Offerer's Disclosure of Prior Non-Responsibility Determinations.

Contract Termination Provision.



FORM A

**Offerer's Affirmation of Understanding of and Agreement Pursuant to State
Finance Law §139-j(3) and §139-j(6)(b)**

Instructions:

A Governmental Entity must obtain the required affirmation of understanding and agreement to comply with procedures on procurement lobbying restrictions regarding permissible contacts in the restricted period for a procurement contract in accordance with State Finance Law §139-j and §139-k. It is required that this affirmation be obtained as early as possible in the procurement process, but no later than when the Offerer submits its proposal.

Offerer affirms that it understands and agrees to comply with the procedures of the Government Entity relative to permissible contacts as required by State Finance Law §139-j(3) and §139-j(6)(b).

By: Angelo A. Veanes Date: 4/17/18

Name: Angelo A. Veanes

Title: President

Contractor Name: Ferguson Electric Construction Co., Inc.

Contractor Address: 333 Ellicott Street

Buffalo NY 14203



FORM B

**Offerer's Certification of Compliance
With State Finance Law §139-k(5)**

Instructions:

A Governmental Entity must obtain the required Certification that the information is complete, true, and accurate regarding any prior findings of non-responsibility, such as non-responsibility pursuant to State Finance Law §139-j. The Offerer must agree to the Certification and provide it to the procuring Governmental Entity. It is required that the Certification be obtained as early as possible in the process, but no later than when an Offerer submits its proposal.

Offerer Certification:

I certify that all information provided to the Governmental Entity with respect to State Finance Law §139-k is complete, true, and accurate.

By: Angelo A. Veanes Date: 4/17/18

Name: Angelo A. Veanes

Title: President

Contractor Name: Ferguson Electric Construction Co., Inc.

Contractor Address: 333 Ellicott Street
Buffalo NY 14203



FORM C**Offerer's Disclosure of Prior
Non-Responsibility Determinations****Background:**

New York State Finance Law §139-k(2) obligates a Governmental Entity to obtain specific information regarding prior non-responsibility determinations with respect to State Finance Law §139-j. In accordance with State Finance Law §139-k, an Offerer must be asked to disclose whether there has been a finding of non-responsibility made within the previous four (4) years by any Governmental Entity due to: (a) a violation of State Finance Law §139-j; or (b) the intentional provision of false or incomplete information to a Government Entity.

The terms "Offerer" and "Governmental Entity" are defined in State Finance Law §139-k(1). State Finance Law §139-j sets forth detailed requirements about the restrictions on contacts during the procurement process. A violation of State Finance Law §139-j includes, but is not limited to, an impermissible contact during the restricted period (for example, contacting a person or entity other than the designated contact person, when such contact does not fall within one of the exemptions).

As part of its responsibility determination, State Finance Law §139-k(3) mandates consideration of whether an Offerer fails to timely disclose accurate or complete information regarding the above non-responsibility determination. In accordance with law, no Procurement Contract shall be awarded to any Offerer that fails to timely disclose accurate or complete information under this section, unless a finding is made that the award of the Procurement Contract to the Offerer is necessary to protect public property or public health safety, and the Offerer is the only source capable of supplying the required Article of Procurement within the necessary timeframe. See State Finance Law §139-j(10)(b) and §139-k(3).

Instructions:

A Governmental Entity must include a disclosure request regarding prior non-responsibility determinations in accordance with State Finance Law §139-k in its solicitation of proposals or bid documents or specifications or contract documents, as applicable, for procurement contracts. The attached form is to be completed and submitted by the individual or entity seeking to enter into a Procurement Contract. It shall be submitted to the Governmental Entity conducting the Governmental Procurement no later than when the Offerer submits its proposal.



FORM C (Continued)

Offerer's Disclosure of Prior Non-Responsibility Determinations

Name of Individual or Entity Seeking to Enter into the Procurement Contract:

Ferguson Electric Construction Co., Inc.

Address: 333 Ellicott Street

Buffalo NY 14203

Name and Title of Person Submitting this Form: Angelo A. Veanes, President

Contract Procurement Number: 201600238

Date: 4/17/18

1. Has any Governmental Entity made a finding of non-responsibility regarding the individual or entity seeking to enter into the Procurement Contract in the previous four years? (Please circle): No Yes

If yes, please answer the next questions:

2. Was the basis for the finding of non-responsibility due to a violation of State Finance Law §139-j (Please circle): No Yes

3. Was the basis for the finding of non-responsibility due to the intentional provision of false or incomplete information to a Governmental Entity? (Please circle) No Yes

4. If you answered yes to any of the above questions, please provide details regarding the finding of non-responsibility below.

Governmental Entity: _____

Date of Finding of Non-Responsibility: _____

Basis of Finding of Non-Responsibility: _____

(Add additional pages as necessary)



FORM C (Continued)

5. Has any Governmental Entity or other governmental agency terminated or withheld a Procurement Contract with the above-named individual or entity due to the intentional provision of false or incomplete information? (Please circle): No Yes

6. If yes, please provide details below.

Governmental Entity: _____

Date of Termination or Withholding of Contract: _____

Basis of Termination or Withholding:

(Add additional pages as necessary)

Offerer certifies that all information provided to the Governmental Entity with respect to State Finance Law §139-k is complete, true, and accurate.

By: Angelo A. Veanes Date: 4/17/18
Signature

Name: Angelo A. Veanes

Title: President



Contract Termination Provision

Instructions:

A Contract Termination Provision will be included in each Procurement Contract governed by State Finance Law §139-k. New York State Finance Law §139-k(5) provides that every procurement contract award subject to the provisions of State Finance Law §§139-k and 139-j shall contain a provision authorizing the Governmental Entity to terminate the contract in the event that the certification is found to be intentionally false or intentionally incomplete. This statutory contract language authorizes, but does not mandate, termination. "Government Entity" and "procurement contract" are defined in State Finance Law §139-k(1).

This required clause will be included in a covered procurement contract.

A sample of the Termination Provision is included below. If a contract is terminated in accordance with State Finance Law §139-k(5), the Governmental Entity is required to include a statement in the procurement record describing the basis for any action taken under the termination provision.

Sample Contract Termination Provision

The Governmental Entity reserves the right to terminate this contract in the event it is found that the certification filed by the Offerer in accordance with New York State Finance Law §139-k was intentionally false or intentionally incomplete. Upon such finding, the Governmental Entity may exercise its termination right by providing written notification to the Offerer in accordance with the written notification terms of this contract.

END OF BID FORM SUPPLEMENTS



ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT NO: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
PROJECT NO: 201600238

SECTION 00450

BIDDER'S QUALIFICATION STATEMENT

(Completion of this statement is required in advance of
consideration for award of Contract.)

SUBMITTED TO:

Erie County Water Authority
295 Main Street, Room 350
Buffalo, New York 14203

SUBMITTED FOR:

Erie County Water Authority
Contract No: NC-35
Ball Pump Station Electrical Substation
ECWA Project No. 201600238

SUBMITTED BY:

Name of Organization: Ferguson Electric Construction Co., Inc.
(Print or Type Name of Bidder)

Name of Individual: Angelo A. Veanes

Title: President

Business Address: 333 Ellicott Street

Buffalo NY 14203

Telephone No.: 716-852-2010

Fax No.: 716-852-4887



Gentlemen:

The undersigned certifies under oath the truth and correctness of all statements and of all answers to questions made hereinafter.

(Note: Attach additional sheets as required.)

1.0 Bidder's General Business Information

1.1 Check if:

Corporation Partnership Joint Venture Sole Proprietorship

If Corporation:

A. Date and State of Incorporation:

7/18/1935 New York State

B. List of Executive Officers:

Name	Title
<u>Angelo A. Veanes, President</u>	
<u>Kevin M. Mislin, Vice President</u>	
<u>Ronald H. Markowski, Vice President</u>	
<u>James D. Schneider PE, Vice President</u>	
<u>Jeffrey H. Lattimer, CFO</u>	

If Partnership:

A. Date and State of Organization:

B. Names of Current General Partners:

C. Type of Partnership

General Publicly Traded
 Limited Other (described): _____



If Joint Venture:

A. Date and State of Organization:

B. Name, Address and Form of Organization of Joint Venture Partners: (Indicate managing partner by an asterisk *):

If Sole Proprietorship:

A. Date and State of Organization:

B. Name and Address of Owner or Owners:

- 2.0 How many years has your organization been in business as a ~~general~~ electrical contractor? 83 years
- 3.0 If your organizational structure has changed within the past five years, provide data as listed above in Item 1.0 for your previous organization. N/A
- 4.0 We normally perform 95 percent of the work with our own forces. List work normally subcontracted. We subcontract general construction, asbestos, rigging, plumbing.
- 5.0 Has any construction contract to which you have been a party been terminated by the owner; have you ever terminated work on a project prior to its completion for any reason; has any surety which issued a performance bond on your behalf ever completed the work in its own name or financed such completion on your behalf; has any surety expended any monies in connection with a contract for which they furnished a bond on your behalf? If the answer to any portion of this question is "yes", furnish details of all such occurrences including name of owner, architect or engineer, and surety, and name and date of project. No.



- 6.0 Has any officer or partner of your organization ever been an officer or partner of another organization that had any construction contract terminated by the owner; terminated work on a project prior to its completion for any reason; had any surety which issued a performance bond complete the work in its own name or financed such completion; or had any surety expend any monies in connection with a contract for which they furnished a bond? If the answer to any portion of this question is "yes", furnish details of all such occurrences including name of owner, architect or engineer, and surety, and name and date of project. No.
- 7.0 In the last five years, has your organization, or any predecessor organization, failed to substantially complete a project in a timely manner? If the answer to this question is "yes", furnish details of all such occurrences including name of owner, architect or engineer, and surety, and name and date of project. No.
- 8.0 On Schedule A, attached, list name, location and description of project, owner, architect or engineer, contract price, percent complete and scheduled completion of the major construction projects your organization has in progress on this date. Provide name, address and telephone number of a reference for each project listed.
- 9.0 On Schedule B, attached, list name, location and description of project, owner, architect or engineer, contract price, date of completion and percent of work with your own forces of major projects of the same general nature as this project which your organization has completed in the past five years. Provide name, address and telephone number of a reference for each project listed.
- 10.0 On Schedule C, attached, list name and construction experience of the principal individuals of your organization directly involved in construction operations.
- 10.1 On Schedule D, attached, list OSHA Information requested.
- 11.0 List the states and categories of construction in which your organization is legally qualified to do business. Electrical Construction in New York State
- 12.0 Provide the following for your surety:
- 12.1 Surety Company: Fidelity & Deposit Company of Maryland
- 12.2 Agent: Walsh Duffield Companies, Inc.
- A. Address: 801 Main Street, Buffalo NY 14203
- B. Telephone No.: 716-853-3820



12.3 What is your approximate total bonding capacity?

- \$500,000 to \$2,000,000
- \$2,000,000 to \$5,000,000
- \$5,000,000 to \$10,000,000
- \$10,000,000 or more

13.0 Provide the following with respect to an accredited banking institution familiar with your organization.

13.1 Name of Bank: M&T Bank

13.2 Address: One Fountain Plaza, Buffalo NY 14203

13.3 Account Manager: Tom Keenan

13.4 Telephone No.: 716-848-7316

14.0 Provide the name, address and telephone number of an individual who represents a major equipment/material supplier whom the Owner may contact for a financial reference:
Graybar Electric Co., Inc., 425 Cayuga Rd Ste 100, Cheektowaga NY 14225 Richard Ogrodnik (716) 565-5900

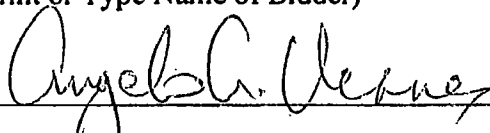
15.0 Attach a financial statement, prepared on an accrual basis, in a form which clearly indicates Bidder's assets, liabilities and net worth.

15.1 Date of financial statement: 2/20/18

15.2 Name of firm preparing statement: Lumsden McCormick

16.0 Dated at Buffalo, this 17th day of April, 2018.

Bidder: Ferguson Electric Construction Co., Inc.
(Print or Type Name of Bidder)

By: 
Angelo A. Veanes

Title: President

Attachments A, B, C, and D

(Seal, if corporation)



------(Affidavit for Individual)-----

_____ being duly sworn, deposes and says that:
a) the financial statement, taken from his/her books, is a true and accurate statement of his/her financial condition as of the date thereof; and b) all of the foregoing qualification information is true, complete, and accurate.

------(Affidavit for Partnership)-----

_____ being duly sworn, deposes and says that:
a) he/she is a member of the partnership of _____;
b) he/she is familiar with the books of said partnership showing its financial condition; c) the financial statement, taken from the books of said partnership, is a true and accurate statement of the financial condition of the partnership as of the date thereof; and d) all of the foregoing qualification information is true, complete, and accurate.

------(Affidavit for Corporation)-----

Angelo A. Veanes being duly sworn, deposes and says that:
a) he/she is President of Ferguson Electric Construction Co., Inc.;
(Full name of Corporation)
b) he/she is familiar with the books of said corporation showing its financial condition; c) the financial statement, taken from the books of said corporation, is a true and accurate statement of the financial condition of said corporation as of the date thereof; and d) that all of the foregoing qualification information is true, complete, and accurate.

------(Acknowledgment)-----

Angelo A. Veanes being duly sworn, deposes and says
that ~~he~~/she is President of Ferguson Electric Construction Co., Inc.;
(Name of Bidder)
that he/she is duly authorized to make the foregoing affidavit and that he/she makes it on behalf
of
() himself/herself; () said partnership; (X) said corporation.

Sworn to before me this 17th day of April, 2018, in the
County of Erie, State of New York.

Timothy G. Quinn
(Notary Public)

My commission expires 7/21/2021

(Seal)

TIMOTHY G. QUINN
Notary Public, State of New York
Qualified in Erie County
My Commission Expires 07/21/2021

END OF BIDDER QUALIFICATIONS STATEMENT



ATTACHMENT A

**SCHEDULE A
PROJECTS IN PROGRESS**

<u>Name, Location and Description of Project</u>	<u>Owner</u>	<u>Architect or Engineer</u>	<u>Contract Price</u>	<u>Percent Complete</u>	<u>Scheduled Completion</u>	<u>Reference/Contract Include Address and Phone</u>
79 Perry Street	Illinois Perry, LLC		\$1,925,000.00	8%	August 2018	RP Oak Hill Building Co 3556 Lakeshore Rd Ste 620, Buffalo NY 14219 Attn: Christopher Hogan (716) 822-4966
Buffalo Psychiatric Center	Dormitory Authority of NY		\$1,095,000.00	39%	2019	Savarino Companies 500 Seneca Street Ste 508, Buffalo NY 14204 Attn: Alexander Burgos (716) 332-5959
Buffalo State College Bishop Hall	Dormitory Authority of NY		\$1,439,180.00	38%	July 2018	Turner Construction Co. 50 Lakefront Blvd Ste 200, Buffalo NY 14202 Attn: Matt Sikora msikora@tcco.com
Buffalo State College Switchgear	SUNY		\$2,022,000.00	28%	August 2018	SUNY Buffalo State / Attn: Michael Carl 1300 Elmwood Avenue, Buffalo NY 14222
Iroquois Central School District / Gordon Jones Assoc.			\$1,940,700.00	62%	Nov 2018	Gordon W. Jones Assoc. Attn: Scott Jones 5757 Main Street, Williamsville, NY 14221
New York Power Authority (NYPA) AIC 10 Unit			\$2,370,720.00	60%	2021	NYPA Attn: Fiona Spencer 123 Main Street, White Plains, NY 10601
New York Power Authority (NYPA) Switchyard			\$26,135,865.00	28%	2020	NYPA / Attn: Sean Rooney 123 Main Street, White Plains, NY 10601 Sean.Rooney@NYPA.gov
Rich Products			\$980,000.00	98%		Lehigh Construction Attn: Joe Migliore 4327 S Taylor Road, Orchard Park, NY 14127 (716) 662-2151
Sumitomo Tire Capacity			\$395,261.00	91%	2018	Perry Group, Ltd 165 Smokerise Drive, Wadsworth, OH 44281 (330) 334-6070



ATTACHMENT B

**SCHEDULE B
PROJECTS COMPLETED**

<u>Name, Location and Description of Project</u>	<u>Owner</u>	<u>Architect or Engineer</u>	<u>Date Completed</u>	<u>Contract Price</u>	<u>Percent with Own Forces</u>	<u>Reference/Contract Include Address and Phone</u>
Pine Pharmacy	Montante Construction		JAN 2018	\$600,200.00	100%	Buffalo Board of Education 403 City Hall, 65 Niagara Street, Buffalo NY 14202 Attn: Veronica Kait / (716) 816-3560
BPS #94	Buffalo Board of Education		JAN 2018	\$703,400.00	100%	Turner Construction 1 Company Drive South, Albany, NY 12205 (716) 574-2087
Aquarium of Niagara Falls	Niagara Aquarium Foundation		FEB 2018	\$299,292.00	100%	SmartEdge / (716) 693-7220 4 Pequet Parkway, Tonawanda NY 14150
Oishei Childrens Hospital Temperature Controls	Kaleida Health		SEPT 2017	\$820,000.00	100%	Uniland Construction 100 Corporate Pkwy Ste 500, Amherst, NY 14226 Attn: Thomas Wheeler, (716) 913-4698
400 Airborne	Uniland Development Corp		MAY 2017	\$596,000.00	100%	Uniland Construction, 100 Corporate Pkwy Ste 500 Amherst, NY 14226 Attn: Kyle Raczka, (716) 834-5000 x 580
GSA	Delaware North (DNC 250, Inc)		JUL 2017	\$874,000.00	100%	NYP 123 Main Street, White Plains, NY 10601 Attn: James Moffett (914) 681-6698
NYP Switchyard LEM	New York Power Authority		JUL 2017	\$12,633,320.00	90%	Conestoga-Rovers (CRA) 285 Delaware Avenue, Suite 500, Buffalo, NY 14202
Niagara Falls Wasterwater Treatment Plant			2013	\$359,130.00	100%	Erie County Water Authority, Attn: Jim Ehrin 295 Main Street, Buffalo, New York 14203 (716) 685-8263
Erie County Water Authority NC-30			2011	\$6,800,000.00	90%	Erie County Water Authority, Attn: Jim Ehrin 295 Main Street, Buffalo, New York 14203 (716) 685-8263
Erie County Water Authority NC32B			2011	\$1,116,000.00	90%	



ATTACHMENT C

SCHEDULE C
PERSONNEL

<u>Name</u>	<u>Position</u>	<u>Date Started With This Organization</u>	<u>Date Started In Construction</u>	<u>Prior Positions and Experience In Construction</u>
Angelo A. Veanes	President	June 1980	June 1980	N/A
Ronald H. Markowski	Vice President	July 1978	July 1978	N/A
Kevin M. Mislin	Vice President	August 1978	August 1978	N/A
James D. Schneider PE	Vice President	June 1989	June 1989	N/A
Jeffrey H. Lattimer	CFO	November 1999	November 1999	N/A



ATTACHMENT D

**SCHEDULE D
OSHA INFORMATION**

List all Occupational Safety and Health Administration Citations for the last three years, including date, subject matter, and penalty.

see attached.

Attach copies of all determined Citations and Notification of Penalty, Form OSHA 2.

Describe all pending cases, giving pertinent information such as apparent violations, location of project, type of project, and present status.

see attached.

List any additional information on the back or attach a separate sheet if necessary.



**EXPERIENCE IN THE INSTALLATION OF
PRESTRESSED CONCRETE CYLINDER PIPE**

This Contract includes the installation of prestressed concrete cylinder pipe adapters. The Bidder is required to complete one of the following to the satisfaction of the ENGINEER:

A. I have had experience* in the above as follows:

1. Sturgeon Point Repair of 42" & 48" PCCP During Summer and Winter of 2017 and 2018
2. DA-07 Depew Water Systems - 36" PCCP Adapters at Old Pump Station Area
3. Multiple PCCP Taps and Repairs Performed Under Contract Kandey Has Had in Past With ECWA

B. The above noted work will be done by a subcontractor

Kandey Company

Who has the following experience*:

1. Joe Kandefer
2. Dick Roberts
3. John Ferraina

1. I will have a representative of a manufacturer of prestressed concrete cylinder pipe

To be determined do the above noted work.

(Insert manufacturer's name)

* List size and type (SP-5 or SP-12) of main tapped along with location, year and who the work was done for.



ACCOUNTANTS' COMPILATION REPORT

The Board of Directors
Ferguson Electric Construction Co., Inc.

Management is responsible for the accompanying balance sheets of Ferguson Electric Construction Co., Inc. (a wholly-owned subsidiary of Ferguson Electric Holdings Corp.) (an S Corporation) as of December 31, 2017 and 2016, and the related statements of income, changes in stockholder's equity, and cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America. We have performed a compilation engagement in accordance with Statements on Standards for Accounting and Review Services promulgated by the Accounting and Review Services Committee of the American Institute of Certified Public Accountants. We did not audit or review the financial statements, nor were we required to perform any procedures to verify the accuracy or the completeness of the information provided by management, and we do not express an opinion, a conclusion, nor provide any form of assurance on these financial statements.

Management has elected to omit substantially all of the disclosures required by accounting principles generally accepted in the United States of America. If the omitted disclosures were included in the financial statements, they might influence the user's conclusions about the Company's financial position, results of operations, and cash flows. Accordingly, the financial statements are not designed for those who are not informed about such matters.

Supplementary Information

The accompanying information contained in Schedules I, II, and III is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information is the responsibility of management. The supplemental information was subject to our compilation engagement. We have not audited or reviewed the supplementary information and do not express an opinion, a conclusion, nor provide any assurance on such information.

Lumsden & McCormick, LLP

February 20, 2018



OSHA English | Spanish

Find It In OSHA



A TO Z INDEX

ABOUT OSHA ▾ WORKERS ▾ EMPLOYERS ▾ REGULATIONS ▾ ENFORCEMENT ▾ TOPICS ▾ NEWS & PUBLICATIONS ▾ DATA ▾ TRAINING ▾

Inspection Detail

Case Status: PENDING ABATEMENT OF VIOLATIONS, PENDING PENALTY PAYMENT

Note: The following inspection has not been indicated as closed. Please be aware that the information shown may change, e.g. violations may be added or deleted. For open cases, in which a citation has been issued, the citation information may not be available for 5 days following receipt by the employer for Federal Inspections or for 30 days following receipt by the employer for State Inspections.

Inspection: 1236055.015 - Ferguson Electric Construction Company, Inc.

Inspection Information - Office: Buffalo

Nr: 1236055.015	Report ID: 0213600	Open Date: 05/26/2017
Ferguson Electric Construction Company, Inc. 78 Sawyer Avenue Tonawanda, NY 14150		Union Status: Union
SIC: NAICS: 238210/Electrical Contractors Mailing: 333 Elliott Street, Buffalo, NY 14203		
Inspection Type: Referral	Advanced Notice: N	
Scope: Partial	Close Conference: 11/01/2017	
Ownership: Private	Close Case:	
Safety/Health: Safety		
Related Activity: Type	ID	Safety Health
Referral	1214697	Yes

Case Status: PENDING ABATEMENT OF VIOLATIONS, PENDING PENALTY PAYMENT

Violation Summary

	Serious	Willful	Repeat	Other	Unclass	Total
Initial Violations	2					2
Current Violations	2					2
Initial Penalty	\$25,350					\$25,350
Current Penalty	\$25,350					\$25,350
FTA Amount						

Violation Items

#	ID	Type	Standard	Issuance	Abate	Curr\$	Init\$	Fta\$	Contest	LastEvent
1.	01001	Serious	19100269 C04 II B	11/17/2017	01/04/2018	\$12,675	\$12,675	\$0		Z - Issued
2.	01002A	Serious	19100269 M03 II	11/17/2017		\$12,675	\$12,675	\$0		Z - Issued
3.	01002B	Serious	19100269 M03 VI	11/17/2017		\$0	\$0	\$0		Z - Issued

UNITED STATES
DEPARTMENT OF LABOR

Occupational Safety and Health Administration
200 Constitution Ave., NW,
Washington, DC 20210
☎ 800-321-6742 (OSHA)
TTY
www.OSHA.gov

FEDERAL GOVERNMENT

White House

OCCUPATIONAL SAFETY AND HEALTH

Frequently Asked Questions

ABOUT THE SITE

Freedom of Information Act



U.S. Department of Labor

Occupational Safety and Health
Buffalo Area Office
130 S. Elmwood Avenue, Suite 500
Buffalo, NY 14202-2465
Tel: (716) 551-3053
Fax: (716) 551-3126



U.S. DEPARTMENT OF LABOR
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

In the Matter of: FERGUSON ELECTRIC CONSTRUCTION
OSHA No.(s): 1236055

INFORMAL SETTLEMENT AGREEMENT

The undersigned Employer and the Occupational Safety and Health Administration (OSHA), in settlement of the above citation(s) and penalties which were issued on 11/17/2017, hereby agree as follows:

1. The Employer agrees to pay the proposed penalties, if any, as issued with the above citation(s), or, if amended by this agreement, as amended below. Unless otherwise stated in this agreement, the proposed penalties are due and payable fifteen (15) working days from the signature date of this agreement. Checks or money orders must be made payable to "U.S. Dept. of Labor/OSHA" and have the inspection number on the check. All Payments should be sent to, the Buffalo Area Office address.
2. The Employer and OSHA agree that the following citations and penalties, if any, are not being amended:
3. OSHA agrees that the following citations and penalties are being amended as shown below:

Citation 1 Item 1 is "withdrawn in its entirety" with a penalty amended to \$ 0.00
Citation 1 Item 2a, 2b is "withdrawn in its entirety" with a penalty amended to \$ 0.00

TOTAL PENALTY NOW DUE & PAYABLE IS \$ 0.00

4. The Employer, by signing this Informal Settlement Agreement, hereby waives its rights to contest the above citation(s) and penalties, as amended in paragraph 3 of this agreement.



ferguson electric

your connection to quality

There were no OSHA citations in 2016.



Citation Number: 1057497

Date: 05/28/15

1926.501(b)(1)

Each employee on a walking / working surface having an unprotected side or edge which was six or more feet above a lower level was not protected from falling by the use of guardrail systems, safety net system, or personal fall arrest system.

Corrective Action: Fall prevention re-training was provided to employees. The employees were instructed to wear the personal fall arrest systems that were previously provided to them.



ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT NO: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
PROJECT NO: 201600238

SECTION 00500

AGREEMENT

THIS AGREEMENT is dated as of the 1st day of July in the year 2018, by and between the ERIE COUNTY WATER AUTHORITY (hereinafter called OWNER) and FERGUSON ELECTRIC CONSTRUCTION CO., INC. (hereinafter called CONTRACTOR).

WITNESSETH: OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1 - WORK

1.01 CONTRACTOR shall at its own cost and expense furnish all labor, services, tools, materials, equipment and incidentals necessary to complete all Work as specified or indicated in the Contract Documents to perform all specified work required for Contract NC-35, Ball Pump Station Electrical Substation, in the Town of Amherst. The work includes 115kV to 4160V transformers, disconnect switches, circuit breakers, site work, improvements to 48-inch and 60-inch diameter piping, and all related work as shown on the drawings and described in the specifications. The Work is generally described in Section 011000 of the General Requirements.

ARTICLE 2 - ENGINEER

2.01 The Project has been designed by Nussbaumer & Clarke, Inc., 3556 Lake Shore Road, Suite 500, Buffalo, NY 14219 who is hereinafter called the ENGINEER. Nussbaumer & Clarke, Inc. will assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in connection with completion of the Work in accordance with the Contract Documents.



ARTICLE 3 - CONTRACT TIMES

3.01 Time of the Essence

- A. All time limits for Milestones, if any, Substantial Completion, Final Completion and readiness for final payment as stated in the Contract Documents are of the essence.

3.02 Milestone Dates

- A. Milestone M1: The Phase I Work shall be completed by August 31, 2018.

3.02 Days to Achieve Substantial Completion and Final Payment

- A. The Work shall be substantially completed by May 24, 2019 as provided in paragraph 2.03 of the General Conditions, and completed and ready for final payment by June 21, 2019 in accordance with paragraph 14.07 of the General Conditions.

ARTICLE 4 - LIQUIDATED AND SPECIAL DAMAGES

4.01 Liquidated Damages

- A. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and OWNER will suffer financial loss, apart from the costs described in paragraph 4.02.A, if the Work is not substantially completed within the time specified in Article 3 for Substantial Completion, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. OWNER and CONTRACTOR also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not substantially completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER:

1. \$1,000.00 for each day that expires after the date specified in Article 3 for Milestone M1 (adjusted for any changes thereof made in accordance with Article 12 of the General Conditions) until Milestone M1 is reached.
2. \$1,000.00 for each day that expires after the date specified in Article 3 for Substantial Completion (adjusted for any changes thereof made in accordance with Article 12 of the General Conditions) until the work is Substantially Complete.

4.02 Special Damages:

- A. In addition to the amount provided for liquidated damages, CONTRACTOR shall pay OWNER the actual costs reasonably incurred by OWNER for engineering and inspection forces employed for the Work for each day that expires after the days



specified in Article 3 for Substantial Completion (adjusted for any changes thereof made in accordance with Article 12 of the General Conditions) until the Work is substantially complete.

- B. After Substantial Completion, if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER the actual costs reasonably incurred by OWNER for engineering and inspection forces employed for the Work for each day that expires after the time specified in Article 3 for Work to be completed and ready for final payment (adjusted for any extensions thereof made in accordance with Article 12 of the General Conditions) until the Work is completed and ready for final payment.

4.03 OWNER may deduct liquidated damages and special damages as determined by the provisions of this Article 4 from progress payments due CONTRACTOR under this Agreement.

ARTICLE 5 - CONTRACT PRICE

5.01 OWNER shall pay CONTRACTOR, in current funds, for completion of the Work in accordance with the Contract Documents the prices stated in CONTRACTOR'S Bid, which Bid is attached hereto and identified as Exhibit 1 of this Agreement. As provided in paragraph 11.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by ENGINEER as provided in paragraph 9.08 of the General Conditions. Unit prices have been computed as provided in paragraph 11.03 of the General Conditions.

ARTICLE 6 - PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

- A. CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed as provided in the General Conditions.

6.02 Progress Payments; Retainage

- A. OWNER shall make monthly progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by ENGINEER. CONTRACTOR'S Applications for Payment will be due on the last day of the month. All progress payments will be on the basis of the progress of the Work measured by the schedule of values provided for in paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work, based on the number of units completed and accepted) or, in the event there is no schedule of values, as provided in the General Requirements. A progress payment will not be made whenever the value of the Work completed since the last previous progress payment is less than ten thousand dollars (\$10,000).



1. Prior to Substantial Completion
 - a. Progress payments will be made in the amount of 95 percent of the Work completed, (with the balance being retainage), less the aggregate of payments previously made and less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.02 of the General Conditions; and
 - b. 95 percent of the cost of materials and equipment not incorporated in the Work but suitably stored (with the balance being retainage).
2. Upon Substantial Completion, OWNER shall pay an amount sufficient to increase total payments to CONTRACTOR to 100 percent of the Work completed, less such amounts as ENGINEER shall determine in accordance with paragraph 14.02.B.5 of the General Conditions and less 200 percent of ENGINEER'S estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.03 Final Payment:

- A. Upon final completion and acceptance of the Work in accordance with paragraph 14.07 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.07.

ARTICLE 7 - INTEREST

- 7.01 All moneys not paid when due hereunder shall bear interest at the maximum rate allowed by law at the place of the Project.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

- 8.01 As part of the inducement for OWNER to enter into this Agreement CONTRACTOR makes the following representations:
- A. CONTRACTOR has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
 - B. CONTRACTOR has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance for the Work.
 - C. CONTRACTOR is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work.
 - D. CONTRACTOR has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical



conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions, and (2) reports and drawings of a Hazardous Environmental Condition identified at the Site, if any, which have been identified in the Supplementary Conditions as provided in paragraph 4.06 of the General Conditions.

- E. CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may effect cost, progress or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents to be employed by CONTRACTOR, and safety precautions and programs incident thereto.
- F. CONTRACTOR does not consider that any further examinations, investigations, explorations, tests, studies or data are necessary for the performance of the Work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the Contract Documents.
- G. CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- I. CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.
- J. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

ARTICLE 9 - CONTRACT DOCUMENTS

9.01 The Contract Documents consist of the following:

- A. This Agreement (9 pages).
- B. Performance Bond (2 pages).
- C. Payment Bond (2 pages).



- D. General Conditions (42 pages).
 - E. Supplementary Conditions (9 pages).
 - F. Specifications, as listed in the table of contents of the Project Manual.
 - G. Appendix A - Women and Minority Business Enterprise Policy.
 - H. Appendix B - Insurance Requirements.
 - I. Appendix C - Prevailing Wage Rate Schedule.
 - J. Appendix D – NYSDOT Permit for Sweet Home Road.
 - K. Appendix E – Shop Drawings for 48” Transmission Main.
 - L. Appendix F – Shop Drawings for 48” and 60” Tank Inlet Piping.
 - M. Appendix G – Storm Water Pollution Prevention Permit.
 - N. The Drawings comprising a set entitled: Contract No: 35, Ball Pump Station Electrical Substation; and including Sheets G-001 through E-628 as shown in the Sheet List Table.
 - O. Addenda consisting of Numbers 1 to 2, inclusive.
 - P. Exhibits to the Agreement enumerated as follows:
 - 1. Exhibit 1, Bid Form (9 pages).
 - Q. The following, which may be delivered or issued on or after the Effective Date of the Agreement, and are not attached hereto:
 - 1. Notice to Proceed
 - 2. Written Amendments
 - 3. Work Change Directives
 - 4. Change Order(s)
- 9.02 The documents listed in paragraph 9.01 above are attached to this Agreement (except as expressly noted otherwise above). Documents not attached are incorporated by reference. There are no Contract Documents other than those listed in this Article 9.
- 9.03 The Contract Documents may only be amended, modified or supplemented as provided in paragraph 3.04 of the General Conditions.



ARTICLE 10 - MISCELLANEOUS

10.01 Terms

- A. Terms used in this Agreement will have the meanings indicated in the General Conditions.

10.02 Assignment of Contract

- A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 Successors and Assigns

- A. OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

10.04 Severability

- A. Any provision or part of the Contract Document, held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 Waiver

- A. The waiver by the OWNER of any breach or violation of any term, covenant, or condition of this Agreement or of any Law or Regulation shall not be deemed to be a waiver of any other term, covenant, condition, or Law or Regulation or of any subsequent breach or violation of the same or of any other term, covenant, condition, or Law or Regulation. The subsequent payment of any monies or fee by the OWNER which may become due hereunder shall not be deemed to be a waiver of any preceding breach or violation by CONTRACTOR of any term, covenant, condition of this Agreement or of any applicable Law or Regulation.



IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day and year first written above.

This Agreement will be effective on July 11, 20 18.

OWNER: Erie County Water Authority
By: [Signature]
Title: Chairman

CONTRACTOR: Ferguson Electric Construction Co, Inc.
By: [Signature]
Title: President

[CORPORATE SEAL]

[CORPORATE SEAL]

Attest [Signature]

Attest [Signature]

Address for giving notices

Address for giving notices
333 ELLIOTT ST. BRLI, N.Y.
14023

(If OWNER is a corporation, partnership, or limited liability company, attach evidence of authority to sign) (If OWNER is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of Agreement.)

License No. 16-0430730
(where applicable)

Agent for service of process: _____

(If CONTRACTOR is a corporation, partnership, or limited liability company, attach evidence of authority to sign.)



Designated Representative:

Name: Jerome D. Sched

Title: Chairman

Address: 295 Main St, Rm 350

Phone No.: 849-8484
346 NY 14203

Fax No.: 849-8463

Designated Representative:

Name: ANGELO A. VESANES

Title: President

Address: 333 Elliot St, Bldg.

Phone No.: 716 852-2010

Fax No.: 716 852-4887

END OF AGREEMENT

Handwritten text, possibly a signature or date, located in the upper right quadrant of the page. The text is faint and difficult to decipher.



Performance Bond

Bond No. 9273182

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

Ferguson Electric Constriction Co., Inc.
333 Ellicott Street
Buffalo, New York 14203

SURETY (Name and Address of Principal Place of Business):

Fidelity and Deposit Company of Maryland
1299 Zurich Way
Schaumburg, Illinois, 60196

OWNER (Name and Address):

Erie County Water Authority
295 Main Street, Room 350
Buffalo New York 14203

CONTRACT

Date: July 12, 2018
Amount: Five Million Ninety Four Thousand Six Hundred and 00/100 Dollars (\$5,094,600.00)
Description: ERIE COUNTY WATER AUTHORITY
CONTRACT NO: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
PROJECT No. 201600238

BOND

Date (Not earlier than Contract Date): July 12, 2018
Amount: Five Million Ninety Four Thousand Six Hundred and 00/100 Dollars (\$5,094,600.00)
Modifications to this Bond Form: None

Surety and CONTRACTOR, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent or representative.

Ferguson Electric Constriction Co., Inc.
Company: _____ (Corp. Seal)

Signature: Angelo A. Veanes
Name and Title: Angelo A. Veanes, President

Fidelity and Deposit Company of Maryland
Company: _____ (Corp. Seal)

Signature: Sean Keenan
Name and Title: Sean P. Keenan, Attorney-in-fact
(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

Signature: _____
Name and Title: _____

SURETY

Company: _____ (Corp. Seal)

Signature: _____
Name and Title: _____

EJCDC No. 1910-28-A (1996 Edition)

Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, and the American Institute of Architects.

1. The CONTRACTOR and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the OWNER for the performance of the Contract, which is incorporated herein by reference.

2. If the CONTRACTOR performs the Contract, the Surety and the CONTRACTOR have no obligation under this Bond, except to participate in conferences as provided in paragraph 3.1.

3. If there is no OWNER Default, the Surety's obligation under this Bond shall arise after:

3.1. The OWNER has notified the CONTRACTOR and the Surety at the addresses described in paragraph 10 below, that the OWNER is considering declaring a CONTRACTOR Default and has requested and attempted to arrange a conference with the CONTRACTOR and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Contract. If the OWNER, the CONTRACTOR and the Surety agree, the CONTRACTOR shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive the OWNER'S right, if any, subsequently to declare a CONTRACTOR Default; and

3.2. The OWNER has declared a CONTRACTOR Default and formally terminated the CONTRACTOR'S right to complete the Contract. Such CONTRACTOR Default shall not be declared earlier than twenty days after the CONTRACTOR and the Surety have received notice as provided in paragraph 3.1; and

3.3. The OWNER has agreed to pay the Balance of the Contract Price to:

3.3.1. The Surety in accordance with the terms of the Contract; or

3.3.2. Another contractor selected pursuant to paragraph 4.3 to perform the Contract.

4. When the OWNER has satisfied the conditions of paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

4.1. Arrange for the CONTRACTOR, with consent of the OWNER, to perform and complete the Contract; or

4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the OWNER for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by the OWNER and the contractor selected with the OWNER'S concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the Bonds issued on the Contract, and pay to the OWNER the amount of damages as described in paragraph 6 in excess of the Balance of the Contract Price incurred by the OWNER resulting from the CONTRACTOR Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances;

4.4.1 After investigation, determine the amount for which it may be liable to the OWNER and, as soon as practicable after the amount is determined, tender payment therefor to the OWNER; or

4.4.2 Deny liability in whole or in part and notify the OWNER citing reasons therefor.

5. If the Surety does not proceed as provided in paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the OWNER to the Surety demanding that the Surety perform its obligations under this Bond, and the OWNER shall be entitled to enforce any remedy available to the OWNER. If the Surety proceeds as provided in paragraph 4.4, and the OWNER refuses the payment tendered or the Surety has denied liability, in whole or in part, without

further notice the OWNER shall be entitled to enforce any remedy available to the OWNER.

6. After the OWNER has terminated the CONTRACTOR'S right to complete the Contract, and if the Surety elects to act under paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the OWNER shall not be greater than those of the CONTRACTOR under the Contract, and the responsibilities of the OWNER to the Surety shall not be greater than those of the OWNER under the Contract. To a limit of the amount of this Bond, but subject to commitment by the OWNER of the Balance of the Contract Price to mitigation of costs and damages on the Contract, the Surety is obligated without duplication for:

6.1. The responsibilities of the CONTRACTOR for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional and delay costs resulting from the CONTRACTOR'S Default, and resulting from the actions or failure to act of the Surety under paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of the CONTRACTOR.

7. The Surety shall not be liable to the OWNER or others for obligations of the CONTRACTOR that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the OWNER or its heirs, executors, administrators, or successors.

8. The Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after CONTRACTOR Default or within two years after the CONTRACTOR ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to the Surety, the OWNER or the CONTRACTOR shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the Contract was performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here-from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1 Balance of the Contract Price: The total amount payable by the OWNER to the CONTRACTOR under the Contract after all proper adjustments have been made, including allowance to the CONTRACTOR of any amounts received or to be received by the OWNER in settlement of insurance or other Claims for damages to which the CONTRACTOR is entitled, reduced by all valid and proper payments made to or on behalf of the CONTRACTOR under the Contract.

12.2 Contract: The agreement between the OWNER and the CONTRACTOR identified on the signature page, including all Contract Documents and changes thereto.

12.3 CONTRACTOR Default: Failure of the CONTRACTOR, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

12.4 OWNER Default: Failure of the OWNER, which has neither been remedied nor waived, to pay the CONTRACTOR as required by the Contract or to perform and complete or comply with the other terms thereof.

(FOR INFORMATION ONLY - Name, Address and Telephone)
AGENT or BROKER: OWNER'S REPRESENTATIVE (Engineer)

Walsh Duffield Companies, Inc., 801 Main Street,
Buffalo, NY 14203, 716-853-3820
Nussbaumer & Clarke, Inc., 3556 Lake Shore Road,
Buffalo, NY 14219, 716-827-8000

NC-35, Ball Pump Station Electrical Substation (#201600238)

Performance Bond,

j:2016-16j1-0091 ecwa:specs/00611 perf bond.docx

00611-2

Rev. 10/05

Payment Bond

Bond No. 9273182

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

Ferguson Electric Construction Co., Inc.
333 Ellicott Street
Buffalo, New York 14203

SURETY (Name and Address of Principal Place of Business):

Fidelity and Deposit Company of Maryland
1299 Zurich Way
Schaumburg, Illinois 60196

OWNER (Name and Address):

Erie County Water Authority
295 Main Street, Room 350
Buffalo New York 14203

CONTRACT

Date: July 12, 2018
Amount: Five Million Ninety Four Thousand Six Hundred and 00/100 Dollars (\$5,094,600.00)
Description: ERIE COUNTY WATER AUTHORITY
CONTRACT NO: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
PROJECT No. 201600238

BOND

Date (Not earlier than Contract Date): July 12, 2018
Amount: Five Million Ninety Four Thousand Six Hundred and 00/100 Dollars (\$5,094,600.00)
Modifications to this Bond Form: None

Surety and CONTRACTOR, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent or representative.

Ferguson Electric Construction Co., Inc.
Company: _____ (Corp. Seal)
Signature: Angelo A. Veanes
Name and Title: Angelo A. Veanes, President

Fidelity and Deposit Company of Maryland
Company: _____ (Corp. Seal)
Signature: Sean P. Keenan
Name and Title: Sean P. Keenan, Attorney-in-fact
(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)
Signature: _____
Name and Title: _____

SURETY

Company: _____ (Corp. Seal)
Signature: _____
Name and Title: _____

EJCDC No. 1910-28-B (1996 Edition)

Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, the American Institute of Architects, the American Subcontractors Association, and the Associated Specialty Contractors.

1. The CONTRACTOR and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the OWNER to pay for labor, materials and equipment furnished for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to the OWNER, this obligation shall be null and void if the CONTRACTOR:

2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2. Defends, indemnifies and holds harmless the OWNER from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Contract, provided the OWNER has promptly notified the CONTRACTOR and the Surety (at the addresses described in paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the CONTRACTOR and the Surety, and provided there is no OWNER Default

3. With respect to Claimants, this obligation shall be null and void if the CONTRACTOR promptly makes payment, directly or indirectly, for all sums due.

4. The Surety shall have no obligation to Claimants under this Bond until:

4.1. Claimants who are employed by or have a direct contract with the CONTRACTOR have given notice to the Surety (at the addresses described in paragraph 12) and sent a copy, or notice thereof, to the OWNER, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2. Claimants who do not have a direct contract with the CONTRACTOR:

4.2.1 Have furnished written notice to the CONTRACTOR and sent a copy, or notice thereof, to the OWNER, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and

4.2.2 Have either received a rejection in whole or in part from the CONTRACTOR, or not received within 30 days of furnishing the above notice any communication from the CONTRACTOR by which the CONTRACTOR had indicated the claim will be paid directly or indirectly; and

4.2.3 Not having been paid within the above 30 days, have sent a written notice to the Surety and sent a copy, or notice thereof, to the OWNER, stating that a claim is being made under this Bond, and enclosing a copy of the previous written notice furnished to the CONTRACTOR.

5. If a notice required by paragraph 4 is given by the OWNER to the CONTRACTOR or to the Surety, that is sufficient compliance.

6. When the Claimant has satisfied the conditions of paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:

6.1. Send an answer to the Claimant, with a copy to the OWNER, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2. Pay or arrange for payment of any undisputed amounts.

7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8. Amounts owed by the OWNER to the CONTRACTOR under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any Performance Bond. By the CONTRACTOR furnishing and the OWNER accepting this Bond, they agree that all funds earned by the CONTRACTOR in the performance of the Contract are dedicated to satisfy obligations of the CONTRACTOR and the Surety under this Bond, subject to the OWNER'S priority to use the funds for the completion of the Work.

9. The Surety shall not be liable to the OWNER, Claimants or others for obligations of the CONTRACTOR that are unrelated to the Contract. The OWNER shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. The Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by paragraph 4.1 or paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the OWNER or the CONTRACTOR shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, the OWNER or the CONTRACTOR, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is, that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, the CONTRACTOR shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS

15.1 Claimant: An individual or entity having a direct contract with the CONTRACTOR or with a Subcontractor of the CONTRACTOR to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of the CONTRACTOR and the CONTRACTOR'S Subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.2 Contract: The agreement between the OWNER and the CONTRACTOR identified on the signature page, including all Contract Documents and changes thereto.

15.3 OWNER Default: Failure of the OWNER, which has neither been remedied nor waived, to pay the CONTRACTOR as required by the Contract or to perform and complete or comply with the other terms thereof.

(FOR INFORMATION ONLY - Name, Address and Telephone)
AGENT or BROKER: OWNER'S REPRESENTATIVE (Engineer):

Walsh Duffield Companies, Inc., 801 Main Street,
Buffalo, NY 14203, 716-853-3820
Nussbaumer & Clarke, Inc., 3556 Lake Shore Road,
Buffalo, NY 14219, 716-827-8000

NC-35, Ball Pump Station Electrical Substation (#201600238)

Payment Bond,

ACKNOWLEDGMENT BY PRINCIPAL (IF A CORPORATION)

State of New York)
) ss:
County of Erie)

On this 12th day of July, 2018 before me personally came Angelo A. Veanes, who being by me duly sworn, did depose and say that he resides in Clarence, New York, that he is the President of the Ferguson Electric Construction Co., Inc., the corporation described in and which executed the foregoing instrument; that he knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by order of the Board of Directors of said corporation and that he signed his name thereto by like order.

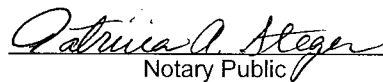

Notary Public

BRIDGET WILLADSEN
NOTARY PUBLIC-STATE OF NEW YORK
No. 01W16340684
Qualified in Erie County
My Commission Expires 04-25-2020

ACKNOWLEDGMENT BY SURETY COMPANY

State of New York)
) ss:
County of Erie)

On this 12th day of July, 2018 before me personally came Sean P. Keenan, who being by me duly sworn, did depose and say that he resides in Buffalo, New York, that he is the Attorney-in-fact of the Fidelity and Deposit Company of Maryland, the corporation described in and which executed the within instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by the order of the Board of Directors of said corporation and that he signed his name thereto by like order; and that the liabilities of said company do not exceed its assets as ascertained in the manner provided by the laws of the State of New York.


Notary Public

PATRICIA A. STEGER
Notary Public, State of New York
Qualified in Erie County
My Commission Expires June 23, 2022

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THE FIDELITY AND DEPOSIT COMPANY

OF MARYLAND

600 Red Brook Blvd., Suite 600, Owings Mills, MD 21117

Statement of Financial Condition

As Of December 31, 2017

ASSETS

Bonds	\$ 131,463,323
Stocks	23,365,385
Cash and Short Term Investments	15,943,690
Reinsurance Recoverable	7,520,824
Federal Income Tax Recoverable	62,266
Other Accounts Receivable	35,672,323
TOTAL ADMITTED ASSETS	<u>\$ 214,027,811</u>

LIABILITIES, SURPLUS AND OTHER FUNDS

Reserve for Taxes and Expenses	\$ 580,990
Ceded Reinsurance Premiums Payable	42,235,595
Securities Lending Collateral Liability	0
TOTAL LIABILITIES	<u>\$ 42,816,584</u>
Capital Stock, Paid Up	\$ 5,000,000
Surplus	<u>166,211,227</u>
Surplus as regards Policyholders	171,211,226
TOTAL	<u>\$ 214,027,811</u>

Securities carried at \$62,198,396 in the above statement are deposited with various states as required by law.

Securities carried on the basis prescribed by the National Association of Insurance Commissioners. On the basis of market quotations for all bonds and stocks owned, the Company's total admitted assets at December 31, 2017 would be \$213,515,173 and surplus as regards policyholders \$170,698,588.

I, DENNIS F. KERRIGAN, Corporate Secretary of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing statement is a correct exhibit of the assets and liabilities of the said Company on the 31st day of December, 2017.

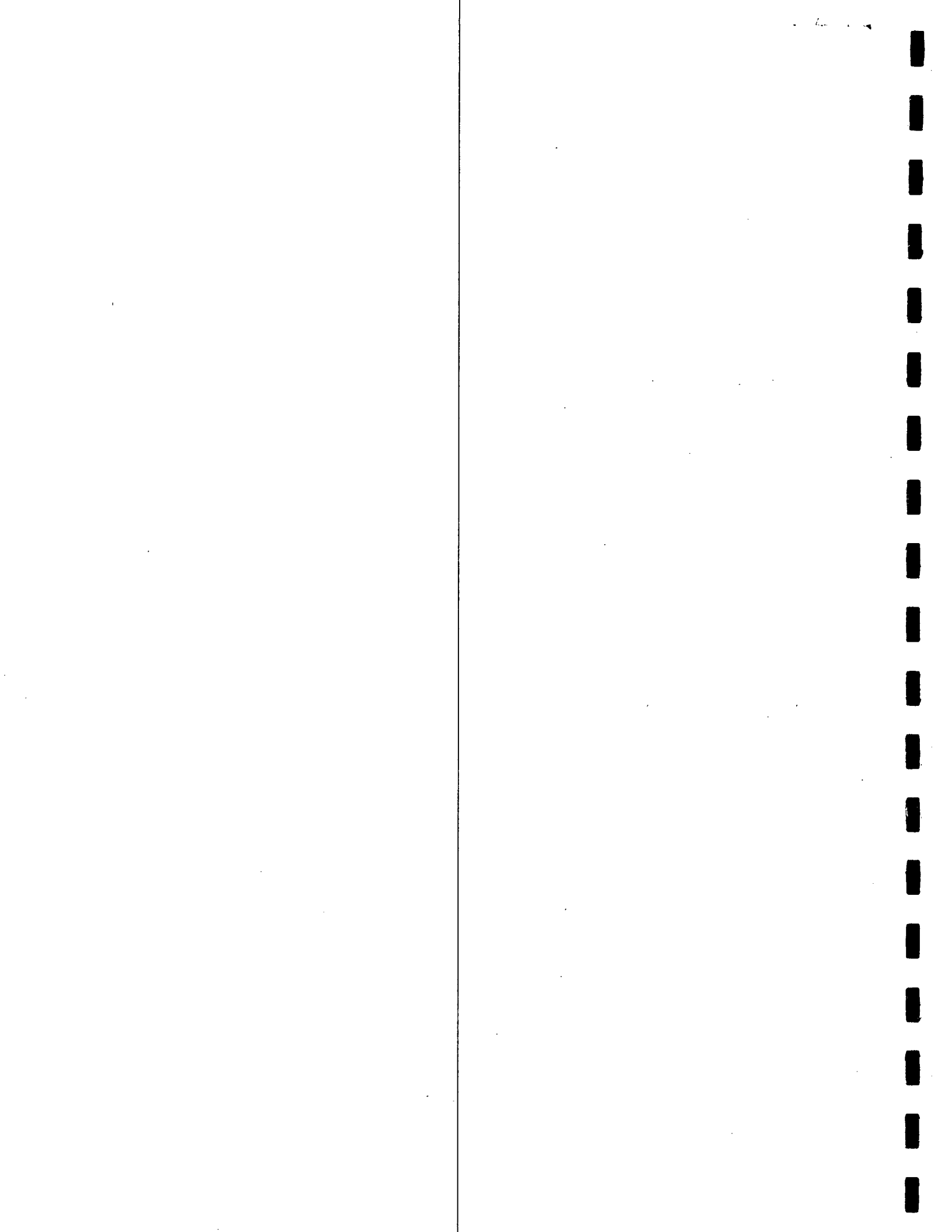
[Handwritten Signature]
Corporate Secretary

State of Illinois }
City of Schaumburg } SS:

Subscribed and sworn to, before me, a Notary Public of the State of Illinois, in the City of Schaumburg, this 9th day of March, 2018.

[Handwritten Signature]
Notary Public





**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Maryland, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Maryland (herein collectively called the "Companies"), by **MICHAEL BOND, Vice President**, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint **Edward F. WALSH, John N. WALSH, III, Edward F. WALSH, JR., Michael K. WALSH, Beverly A. ZOLNOWSKI, Sean P. KEENAN, Patricia A. STEGER and Patrick J. QUINN, all of Buffalo, New York, EACH** its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings**, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said **ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND**, this 8th day of December, A.D. 2017.

ATTEST:

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND**



By: *Dawn E. Brown*
Assistant Secretary
Dawn E. Brown

Michael Bond
Vice President
Michael Bond

State of Maryland
County of Baltimore

On this 8th day of December, A.D. 2017, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **MICHAEL BOND, Vice President, and DAWN E. BROWN, Assistant Secretary**, of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, depose and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

Constance A. Dunn
Constance A. Dunn, Notary Public
My Commission Expires: July 9, 2019



EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify or revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Vice President of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this 12th day of July, 2018.



David McVicker, Vice President

TO REPORT A CLAIM WITH REGARD TO A SURETY BOND, PLEASE SUBMIT ALL REQUIRED INFORMATION TO:

Zurich American Insurance Co.
Attn: Surety Claims
1299 Zurich Way
Schaumburg, IL 60196-1056

ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT NO: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
PROJECT NO: 201600238

SECTION 00700
GENERAL CONDITIONS

Adapted with permission from Standard General Conditions of the
Construction Contract, EJCDC No. 1910-8.(1996 Edition).

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Contract Documents and printed with initial or all capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between OWNER and CONTRACTOR covering the Work.

3. *Application for Payment*--The form acceptable to ENGINEER which is to be used by CONTRACTOR during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*--The offer or proposal of a bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

7. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, Bid security form, if any, and the Bid form with any supplements.

8. *Bonds*--Performance and payment bonds and other instruments of security.

9. *Change Order*--A document recommended by ENGINEER which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract

Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*--A demand or assertion by OWNER or CONTRACTOR seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the OWNER and CONTRACTOR concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*--The Contract Documents establish the rights and obligations of the parties and include the Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR'S Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders, and ENGINEER'S written interpretations and clarifications issued on or after the Effective Date of the Agreement. Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in this paragraph are Contract Documents. Files in electronic media format of text, data, graphics, and the like that may be furnished by OWNER to CONTRACTOR are not Contract Documents.

13. *Contract Price*--The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Substantial Completion; and (ii) complete the Work so that it is ready for final payment as evidenced by ENGINEER'S written recommendation of final payment.

15. *CONTRACTOR*--The individual or entity with whom OWNER has entered into the Agreement.

16. *Cost of the Work*--See paragraph 11.01.A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by ENGINEER which graphically shows the scope, extent, and character of the Work to be performed by CONTRACTOR. Shop Drawings and other CONTRACTOR submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *ENGINEER*--The individual or entity named as such in the Agreement.

20. *ENGINEER'S Consultant*--An individual or entity having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

21. *Field Order*--A written order issued by ENGINEER which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

22. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

23. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

24. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

25. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

27. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

28. *Notice of Award*--The written notice by OWNER to the apparent successful bidder stating that upon timely compliance by the apparent successful bidder with the conditions precedent listed therein, OWNER will sign and deliver the Agreement.

29. *Notice to Proceed*--A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform the Work under the Contract Documents.

30. *OWNER*--The individual, entity, public body, or authority with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be performed.

31. *Partial Utilization*--Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

32. *PCBs*--Polychlorinated biphenyls.

33. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

34. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part as may be indicated elsewhere in the Contract Documents.

35. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

36. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

37. *Resident Project Representative*--The authorized representative of ENGINEER who may be assigned to the Site or any part thereof.

38. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

40. *Site*--Lands or areas indicated in the Contract Documents as being furnished by OWNER upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by OWNER which are designated for the use of CONTRACTOR.

41. *Specifications*--That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

42. *Subcontractor*--An individual or entity having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the Site.

43. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents; so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

44. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

45. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.

46. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

47. *Unit Price Work*--Work to be paid for on the basis of unit prices.

48. *Work*--The entire completed construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

49. *Work Change Directive*--A written statement to CONTRACTOR issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

50. *Written Amendment*--A written statement modifying the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

1.02 Terminology

A. Intent of Certain Terms or Adjectives

1. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," "as approved," or terms of like effect or import are used to authorize an exercise of professional judgment by the ENGINEER, or the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of ENGINEER as to the Work, it is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.10 or any other provision of the Contract Documents.

B. Day

1. The word "day" shall constitute a calendar day of 24 hours measured from midnight to the next midnight.

C. Defective

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER'S recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.04 or 14.05).

D. Furnish, Install, Perform, Provide

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified

location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of CONTRACTOR, "provide" is implied.

E. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 Delivery of Bonds

A. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish.

2.02 Copies of Documents

A. OWNER shall furnish to CONTRACTOR up to ten copies of the Contract Documents. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

A. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *CONTRACTOR'S Review of Contract Documents:* Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity, or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless CONTRACTOR knew or reasonably should have known thereof.

B. *Preliminary Schedules:* Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for its timely review:

1. a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
2. a preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing, and processing such submittal; and
3. a preliminary schedule of values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

C. *Evidence of Insurance:* Before any Work at the Site is started, CONTRACTOR and OWNER shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR and OWNER respectively are

required to purchase and maintain in accordance with Article 5.

2.06 *Preconstruction Conference*

A. Within 20 days after the Contract Times start to run, but before any Work at the Site is started, a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.05.B, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 *Initial Acceptance of Schedules*

A. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to review for acceptability to ENGINEER, as provided below, the schedules submitted in accordance with paragraph 2.05.B. CONTRACTOR shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until acceptable schedules are submitted to ENGINEER.

1. The progress schedule will be acceptable to ENGINEER if it provides an orderly progression of the Work to completion within any specified Milestones and the Contract Times. Such acceptance will not impose on ENGINEER responsibility for the progress schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR'S full responsibility therefor.

2. CONTRACTOR'S schedule of Shop Drawing and Sample submittals will be acceptable to ENGINEER if it provides a workable arrangement for reviewing and processing the required submittals.

3. CONTRACTOR'S schedule of values will be acceptable to ENGINEER as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT,
AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to OWNER.

C. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in Article 9.

3.02 *Reference Standards*

A. *Standards, Specifications, Codes, Laws, and Regulations*

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of OWNER, CONTRACTOR, or ENGINEER, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall any such provision or instruction be effective to assign to OWNER, ENGINEER, or any of ENGINEER'S Consultants, agents, or employees any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, CONTRACTOR shall report it to ENGINEER in writing at once. CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as required by paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.04; provided, however, that CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity, or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways: (i) a Written Amendment; (ii) a Change Order; or (iii) a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the

following ways: (i) a Field Order; (ii) ENGINEER'S approval of a Shop Drawing or Sample; or (iii) ENGINEER'S written interpretation or clarification.

3.05 *Reuse of Documents*

A. CONTRACTOR and any Subcontractor or Supplier or other individual or entity performing or furnishing any of the Work under a direct or indirect contract with OWNER: (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER'S Consultant, including electronic media editions; and (ii) shall not reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER. This prohibition will survive final payment, completion, and acceptance of the Work, or termination or completion of the Contract. Nothing herein shall preclude CONTRACTOR from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. OWNER shall furnish the Site. OWNER shall notify CONTRACTOR of any encumbrances or restrictions not of general application but specifically related to use of the Site with which CONTRACTOR must comply in performing the Work. OWNER will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If CONTRACTOR and OWNER are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in OWNER'S furnishing the Site, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

B. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that ENGINEER has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that ENGINEER has used in preparing the Contract Documents.

B. *Limited Reliance by CONTRACTOR on Technical Data Authorized:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER, or any of ENGINEER'S Consultants with respect to:

1. the completeness of such reports and drawings for CONTRACTOR'S purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *ENGINEER'S Review:* After receipt of written notice as required by paragraph 4.03.A, ENGINEER will promptly review the pertinent condition, determine the necessity of OWNER'S obtaining additional exploration or tests with respect thereto, and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER'S findings and conclusions.

C. *Possible Price and Times Adjustments*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in CONTRACTOR'S cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in paragraph 4.03.A; and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.08 and 11.03.

2. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. CONTRACTOR knew of the existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and

contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR'S making such final commitment; or

c. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.03.A.

3. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in paragraph 10.05. However, OWNER, ENGINEER, and ENGINEER'S Consultants shall not be liable to CONTRACTOR for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities, including OWNER, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and CONTRACTOR shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents,

c. coordination of the Work with the owners of such Underground Facilities, including OWNER, during construction, and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, CONTRACTOR shall be responsible for the safety and protection of the underground facility.

2. If ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown with reasonable accuracy in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, OWNER or CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

4.05 *Reference Points*

A. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER'S judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of

such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the ENGINEER in the preparation of the Contract Documents.

B. *Limited Reliance by CONTRACTOR on Technical Data Authorized:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data", CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER or any of ENGINEER'S Consultants with respect to:

1. the completeness of such reports and drawings for CONTRACTOR'S purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. CONTRACTOR shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. CONTRACTOR shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by CONTRACTOR, Subcontractors, Suppliers, or anyone else for whom CONTRACTOR is responsible.

D. If CONTRACTOR encounters a Hazardous Environmental Condition or if CONTRACTOR or anyone for whom CONTRACTOR is responsible creates a Hazardous Environmental Condition, CONTRACTOR shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such

condition and in any area affected thereby (except in an emergency as required by paragraph 6.16); and (iii) notify OWNER and ENGINEER (and promptly thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. CONTRACTOR shall not be required to resume Work in connection with such condition or in any affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by CONTRACTOR, either party may make a Claim therefor as provided in paragraph 10.05.

F. If, after receipt of such written notice, CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in paragraph 10.05. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER'S Consultants, and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06.G shall obligate CONTRACTOR to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. The provisions of paragraphs 4.02, 4.03, and 4.04 are not intended to apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR'S obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Contract Documents.

B. All Bonds shall be in the form prescribed by the Contract Documents, except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

C. If the surety on any Bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.01.B, CONTRACTOR shall within 20 days thereafter substitute another Bond and surety, both of which shall comply with the requirements of paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain. OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) which OWNER is required to purchase and maintain.

5.04 *CONTRACTOR'S Liability Insurance*

A. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR'S performance of the Work and CONTRACTOR'S other obligations under the Contract Documents, whether it is to be performed by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR'S employees;
3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR'S employees;
4. claims for damages insured by reasonably available personal injury liability coverage which are sustained: (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason;
5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance so required by this paragraph 5.04 to be purchased and maintained shall:

1. with respect to insurance required by paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER'S Consultants, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
3. include completed operations insurance;
4. include contractual liability insurance covering CONTRACTOR'S indemnity obligations under paragraphs 6.07, 6.11, and 6.20;
5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.03 will so provide);
6. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing, or replacing defective Work in accordance with paragraph 13.07; and
7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter).

5.05 *OWNER'S Liability Insurance*

A. In addition to the insurance required to be provided by CONTRACTOR under paragraph 5.04, OWNER, at OWNER=s option, may purchase and maintain at OWNER'S expense OWNER'S own liability insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance (See Supplementary Conditions)*

5.07 (Not Used)

5.08 (Not Used)

5.09 (Not Used)

5.10 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either OWNER or CONTRACTOR has any objection to the coverage afforded by or other provisions of the Bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by paragraph 2.05.C. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the Bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent Bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. CONTRACTOR shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the

means, methods, techniques, sequences, and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of OWNER or ENGINEER in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

B. At all times during the progress of the Work, CONTRACTOR shall assign a competent resident superintendent thereto who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR'S representative at the Site and shall have authority to act on behalf of CONTRACTOR. All communications given to or received from the superintendent shall be binding on CONTRACTOR.

6.02 *Labor; Working Hours*

A. CONTRACTOR shall provide competent, suitably qualified personnel to survey, lay out, and construct the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday, or any legal holiday without OWNER=s written consent (which will not be unreasonably withheld) given after prior written notice to ENGINEER.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the General Requirements, CONTRACTOR shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly

run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.07 as it may be adjusted from time to time as provided below.

1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.07) proposed adjustments in the progress schedule that will not result in changing the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of Article 12. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment of material or equipment of other Suppliers may be submitted to ENGINEER for review under the circumstances described below.

1. "*Or-Equal*" Items: If, in ENGINEER'S sole discretion, an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an "or-equal" item, in which case review and approval of the proposed item may, in ENGINEER'S sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute

items. For the purposes of this paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. In the exercise of reasonable judgment ENGINEER determines that: (i) it is at least equal in quality, durability, appearance, strength, and design characteristics; (ii) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole; and CONTRACTOR;

b. Certifies that: (i) there is no increase in cost to the OWNER; and (ii) it will conform substantially, even with deviations, to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items*

a. If, in ENGINEER'S sole discretion, an item of material or equipment proposed by CONTRACTOR does not qualify as an "or-equal" item under paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR.

c. The procedure for review by ENGINEER will be as set forth in paragraph 6.05.A.2.d, as supplemented in the General Requirements and as ENGINEER may decide is appropriate under the circumstances.

d. CONTRACTOR shall first make written application to ENGINEER for review of a proposed substitute item of material or equipment that CONTRACTOR seeks to furnish or use. The application shall certify that the proposed substitute item will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified, and be suited to the same use as that specified. The application will state the extent, if any, to which the use of the proposed substitute item will prejudice CONTRACTOR'S achievement of Substantial Completion on time, whether or not use of the proposed substitute item

in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute item and whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute item from that specified will be identified in the application, and available engineering, sales, maintenance, repair, and replacement services will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute item. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute item.

B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER'S sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.05.A.2.

C. Engineer's Evaluation: ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.05.A and 6.05.B. ENGINEER will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized until ENGINEER'S review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." ENGINEER will advise CONTRACTOR in writing of any negative determination.

D. Special Guarantee: OWNER may require CONTRACTOR to furnish at CONTRACTOR'S expense a special performance guarantee or other surety with respect to any substitute.

E. ENGINEER'S Cost Reimbursement: ENGINEER will record time required by ENGINEER and

ENGINEER'S Consultants in evaluating substitute proposed or submitted by CONTRACTOR pursuant to paragraphs 6.05.A.2 and 6.05.B and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER approves a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER'S Consultants for evaluating each such proposed substitute.

F. CONTRACTOR'S Expense: CONTRACTOR shall provide all data in support of any proposed substitute or "or-equal" at CONTRACTOR'S expense.

6.06 Concerning Subcontractors, Suppliers, and Others

A. CONTRACTOR shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to OWNER as indicated in paragraph 6.06.B), whether initially or as a replacement, against whom OWNER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to OWNER in advance for acceptance by OWNER by a specified date prior to the Effective Date of the Agreement, and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER'S acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. CONTRACTOR shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of OWNER or ENGINEER to reject defective Work.

C. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers, and other individuals or

entities performing or furnishing any of the Work just as CONTRACTOR is responsible for CONTRACTOR'S own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other individual or entity, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR.

E. CONTRACTOR shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with ENGINEER through CONTRACTOR.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.06, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER'S Consultants, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

6.07 *Patent Fees and Royalties*

A. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER'S Consultants, and the officers, directors, partners, employees or agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto, such as plant investment fees.

6.09 *Laws and Regulations*

A. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR'S compliance with any Laws or Regulations.

B. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work; however, it shall not be CONTRACTOR'S primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR'S obligations under paragraph 3.03.

6.10 Taxes

A. CONTRACTOR shall pay all sales, consumer, use, and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas

1. CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER'S Consultant, and the officers, directors, partners, employees, agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against OWNER,

ENGINEER, or any other party indemnified hereunder to the extent caused by or based upon CONTRACTOR'S performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work CONTRACTOR shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work, CONTRACTOR shall clean the Site and make it ready for utilization by OWNER. At the completion of the Work CONTRACTOR shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading Structures:* CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 Record Documents

A. CONTRACTOR shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents, together with all approved Samples and a counterpart of all approved Shop Drawings, will be available to ENGINEER for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to ENGINEER for OWNER.

6.13 Safety and Protection

A. CONTRACTOR shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. CONTRACTOR shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. All damage, injury, or loss to any property referred to in paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or ENGINEER'S Consultant, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them). CONTRACTOR'S duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. CONTRACTOR shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be

made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, CONTRACTOR is obligated to act to prevent threatened damage, injury, or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show ENGINEER the services, materials, and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.17.E.

B. CONTRACTOR shall also submit Samples to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers, and the use for which intended and otherwise as ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.17.E. The numbers of each Sample to be submitted will be as specified in the Specifications.

C. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER as required by paragraph 2.07, any related Work performed prior to ENGINEER'S review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

D. *Submittal Procedures*

1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and

d. CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR'S obligations under the Contract Documents with respect to CONTRACTOR'S review and approval of that submittal.

3. At the time of each submittal, CONTRACTOR shall give ENGINEER specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to ENGINEER for review and approval of each such variation.

E. *ENGINEER'S Review*

1. ENGINEER will timely review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER. ENGINEER'S review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a

functioning whole as indicated by the Contract Documents.

2. ENGINEER'S review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. ENGINEER'S review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER'S attention to each such variation at the time of each submittal as required by paragraph 6.17.D.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.17.D.1.

F. *Resubmittal Procedures:*

1. CONTRACTOR shall make corrections required by ENGINEER and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.18 *Continuing the Work*

A. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.04 or as OWNER and CONTRACTOR may otherwise agree in writing.

6.19 *CONTRACTOR'S General Warranty and Guarantee*

A. CONTRACTOR warrants and guarantees to OWNER, ENGINEER, and ENGINEER'S Consultants that all Work will be in accordance with the Contract Documents and will not be defective. CONTRACTOR'S

warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors, Suppliers, or any other individual or entity for whom CONTRACTOR is responsible; or
2. normal wear and tear under normal usage.

B. CONTRACTOR'S obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR'S obligation to perform the Work in accordance with the Contract Documents:

1. observations by ENGINEER;
2. recommendation by ENGINEER or payment by OWNER of any progress or final payment;
3. the issuance of a certificate of Substantial Completion by ENGINEER or any payment related thereto by OWNER;
4. use or occupancy of the Work or any part thereof by OWNER;
5. any acceptance by OWNER or any failure to do so;
6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER;
7. any inspection, test, or approval by others; or
8. any correction of defective Work by OWNER.

6.20 Indemnification

A. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER'S Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage:

1. is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of real or personal property (other than the Work itself), including the loss of use resulting therefrom; and

2. is caused in whole or in part by any act or omission of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws or Regulations.

B. In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of CONTRACTOR under paragraph 6.20.A shall not be limited in any way by the amount or types of insurance provided by CONTRACTOR under Article 5 of the General Conditions.

D. The indemnification obligations of CONTRACTOR under paragraph 6.20.A shall not extend to the sole negligence or willful misconduct of OWNER, ENGINEER or ENGINEER'S Consultants or to the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them.

ARTICLE 7 - OTHER WORK

7.01 Related Work at Site

A. OWNER may perform other work related to the Project at the Site by OWNER'S employees, or let other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to CONTRACTOR prior to starting any such other work; and

2. if OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in paragraph 10.05.

B. CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (and OWNER, if OWNER is performing the other work with OWNER'S employees) proper and safe access to the Site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

C. If the proper execution or results of any part of CONTRACTOR'S Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR'S Work. CONTRACTOR'S failure to so report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR'S Work except for latent defects and deficiencies in such other work.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.02 *Furnish Data*

A. OWNER shall promptly furnish the data required of OWNER under the Contract Documents.

8.03 *Pay Promptly When Due*

A. OWNER shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.02.C and 14.07.C.

8.04 *Lands and Easements; Reports and Tests*

A. OWNER'S duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.01 and 4.05. Paragraph 4.02 refers to OWNER'S identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by ENGINEER in preparing the Contract Documents.

8.05 *Insurance*

A. OWNER'S responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.06 *Change Orders*

A. OWNER is obligated to execute Change Orders as indicated in paragraph 10.03.

8.07. *Inspections, Tests, and Approvals*

A. OWNER'S responsibility in respect to certain inspections, tests, and approvals is set forth in paragraph 13.03.B.

8.08 *Limitations on OWNER'S Responsibilities*

A. The OWNER shall not supervise, direct, or have control or authority over, nor be responsible for, CONTRACTOR'S means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any

failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. OWNER will not be responsible for CONTRACTOR'S failure to perform the Work in accordance with the Contract Documents.

8.09 *Undisclosed Hazardous Environmental Condition*

A. OWNER'S responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in paragraph 4.06.

8.10 *Evidence of Financial Arrangements*

A. If and to the extent OWNER has agreed to furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER'S obligations under the Contract Documents, OWNER'S responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *OWNER'S Representative*

A. ENGINEER will be OWNER'S representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER'S representative during construction are set forth in the Contract Documents and will not be changed without written consent of OWNER and ENGINEER.

9.02 *Visits to Site*

A. ENGINEER will make visits to the Site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR'S executed Work. Based on information obtained during such visits and observations, ENGINEER, for the benefit of OWNER, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. ENGINEER'S efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, ENGINEER will keep OWNER informed of the progress

of the Work and will endeavor to guard OWNER against defective Work.

B. ENGINEER'S visits and observations are subject to all the limitations on ENGINEER'S authority and responsibility set forth in paragraph 9.10, and particularly, but without limitation, during or as a result of ENGINEER'S visits or observations of CONTRACTOR'S Work. ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR'S means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more extensive observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.10 and in the Supplementary Conditions. If OWNER designates another representative or agent to represent OWNER at the Site who is not ENGINEER'S Consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Clarifications and Interpretations*

A. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from the Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a written clarification or interpretation, a Claim may be made therefor as provided in paragraph 10.05.

9.05 *Authorized Variations in Work*

A. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be

accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR, who shall perform the Work involved promptly. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of a Field Order, a Claim may be made therefor as provided in paragraph 10.05.

9.06 *Rejecting Defective Work*

A. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, or that ENGINEER believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER will also have authority to require special inspection or testing of the Work as provided in paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.07 *Shop Drawings, Change Orders and Payments*

A. In connection with ENGINEER'S authority as to Shop Drawings and Samples, see paragraph 6.17.

B. In connection with ENGINEER'S authority as to Change Orders, see Articles 10, 11, and 12.

C. In connection with ENGINEER'S authority as to Applications for Payment, see Article 14.

9.08 *Determinations for Unit Price Work*

A. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER'S preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER'S written decision thereon will be final and binding (except as modified by ENGINEER to reflect changed factual conditions or more accurate data) upon OWNER and CONTRACTOR, subject to the provisions of paragraph 10.05.

9.09 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work, the quantities and classifications of Unit Price Work, the

interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, and Claims seeking changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing, in accordance with the provisions of paragraph 10.05, with a request for a formal decision.

B. When functioning as interpreter and judge under this paragraph 9.09, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to this paragraph 9.09 with respect to any such Claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.07) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such Claim, dispute, or other matter.

9.10 *Limitations on ENGINEER'S Authority and Responsibilities*

A. Neither ENGINEER'S authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by ENGINEER shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR'S means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. ENGINEER will not be responsible for CONTRACTOR'S failure to perform the Work in accordance with the Contract Documents.

C. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. ENGINEER'S review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules,

guarantees, Bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this paragraph 9.10 shall also apply to ENGINEER'S Consultants, Resident Project Representative, and assistants.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If OWNER and CONTRACTOR are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in paragraph 3.04, except in the case of an emergency as provided in paragraph 6.16 or in the case of uncovering Work as provided in paragraph 13.04.B.

10.03 *Execution of Change Orders*

A. OWNER and CONTRACTOR shall execute appropriate Change Orders recommended by ENGINEER (or Written Amendments) covering:

1. changes in the Work which are: (i) ordered by OWNER pursuant to paragraph 10.01.A, (ii) required because of acceptance of defective Work under para-

graph 13.08.A or OWNER'S correction of defective Work under paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.18.A.

10.04 *Notification to Surety*

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR'S responsibility. The amount of each applicable Bond will be adjusted to reflect the effect of any such change.

10.05 *Claims and Disputes*

A. *Notice:* Written notice stating the general nature of each Claim, dispute, or other matter shall be delivered by the claimant to ENGINEER and the other party to the Contract promptly (but in no event later than 20 days) after the start of the event giving rise thereto. Notice of the amount or extent of the Claim, dispute, or other matter with supporting data shall be delivered to the ENGINEER and the other party to the Contract within 45 days after the start of such event (unless ENGINEER allows additional time for claimant to submit additional or more accurate data in support of such Claim, dispute, or other matter). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to ENGINEER and the claimant

within 30 days after receipt of the claimant's last submittal (unless ENGINEER allows additional time).

B. *ENGINEER'S Decision:* ENGINEER will render a formal decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any. ENGINEER'S written decision on such Claim, dispute, or other matter will be final and binding upon OWNER and CONTRACTOR unless:

1. an appeal from ENGINEER'S decision is taken within the time limits and in accordance with the dispute resolution procedures set forth in Article 16; or

2. if no such dispute resolution procedures have been set forth in Article 16, a written notice of intention to appeal from ENGINEER'S written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within 30 days after the date of such decision, and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction within 60 days after the date of such decision or within 60 days after Substantial Completion, whichever is later (unless otherwise agreed in writing by OWNER and CONTRACTOR), to exercise such rights or remedies as the appealing party may have with respect to such Claim, dispute, or other matter in accordance with applicable Laws and Regulations.

C. If ENGINEER does not render a formal decision in writing within the time stated in paragraph 10.05.B, a decision denying the Claim in its entirety shall be deemed to have been issued 31 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.

D. No Claim for an adjustment in Contract Price or Contract Times (or Milestones) will be valid if not submitted in accordance with this paragraph 10.05.

ARTICLE 11 - COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the

costs to be reimbursed to CONTRACTOR will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by OWNER.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

3. Payments made by CONTRACTOR to Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER, who will then determine, with the advice of ENGINEER, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR'S

Cost of the Work and fee as provided in this paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of CONTRACTOR'S employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of CONTRACTOR.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with

paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR'S fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expressage, and similar petty cash items in connection with the Work.

i. When the Cost of the Work is used to determine the value of a Change Order or of a Claim, the cost of premiums for additional Bonds and insurance required because of the changes in the Work or caused by the event giving rise to the Claim.

j. When all the Work is performed on the basis of cost-plus, the costs of premiums for all Bonds and insurance CONTRACTOR is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of CONTRACTOR'S officers, executives, principals (of partnerships and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by CONTRACTOR, whether at the Site or in CONTRACTOR'S principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.01.A.1 or specifically covered by paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the CONTRACTOR'S fee.

2. Expenses of CONTRACTOR'S principal and branch offices other than CONTRACTOR'S office at the Site.

3. Any part of CONTRACTOR'S capital expenses, including interest on CONTRACTOR'S capital employed for the Work and charges against CONTRACTOR for delinquent payments.

4. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraphs 11.01.A and 11.01.B.

C. *CONTRACTOR'S Fee:* When all the Work is performed on the basis of cost-plus, CONTRACTOR'S fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, CONTRACTOR'S fee shall be determined as set forth in paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to paragraphs 11.01.A and 11.01.B, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

11.02 *Cash Allowances*

A. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums as may be acceptable to OWNER and ENGINEER. CONTRACTOR agrees that:

1. the allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. CONTRACTOR'S costs for unloading and handling on the Site, labor, installation costs, overhead, profit, and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

B. Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER subject to the provisions of paragraph 9.08.

B. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR'S overhead and profit for each separately identified item.

C. For provisions for an adjustment of a unit price for an increase or decrease in the quantity of Unit Price Work, if any, see General Requirements Section 012700, Measurement and Payment.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in paragraph 11.01) plus a CONTRACTOR'S fee for overhead and profit (determined as provided in paragraph 12.01.C).

C. *CONTRACTOR'S Fee*: The CONTRACTOR'S fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under paragraphs 11.01.A.1 and 11.01.A.2, the CONTRACTOR'S fee shall be 15 percent;

b. for costs incurred under paragraph 11.01.A.3, the CONTRACTOR'S fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and CONTRACTOR will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CONTRACTOR'S fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in

CONTRACTOR'S fee shall be computed on the basis of the net change in accordance with paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times (or Milestones) may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Times (or Milestones) shall be based on written notice submitted by the party making the claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B. Any adjustment of the Contract Times (or Milestones) covered by a Change Order or of any Claim for an adjustment in the Contract Times (or Milestones) will be determined in accordance with the provisions of this Article 12.

12.03 *Delays Beyond CONTRACTOR'S Control*

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in paragraph 12.02.A. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

12.04 *Delays Within CONTRACTOR'S Control*

A. The Contract Times (or Milestones) will not be extended due to delays within the control of CONTRACTOR. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.05 *Delays Beyond OWNER'S and CONTRACTOR'S Control*

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR'S sole and exclusive remedy for such delay.

12.06 *Delay Damages*

A. In no event shall OWNER or ENGINEER be liable to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from:

1. delays caused by or within the control of CONTRACTOR; or

2. delays beyond the control of both OWNER and CONTRACTOR including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God, or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

B. Nothing in this paragraph 12.06 bars a change in Contract Price pursuant to this Article 12 to compensate CONTRACTOR due to delay, interference, or disruption directly attributable to actions or inactions of OWNER or anyone for whom OWNER is responsible.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which OWNER or ENGINEER has actual knowledge will be given to CONTRACTOR. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. OWNER, ENGINEER, ENGINEER=s Consultants, other representatives and personnel of OWNER, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR'S Site safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

A. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with

inspection and testing personnel to facilitate required inspections or tests.

B. OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.04.B shall be paid as provided in said paragraph 13.04.B; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection or approval.

D. CONTRACTOR shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for OWNER'S and ENGINEER'S acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR'S purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to OWNER and ENGINEER.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation.

F. Uncovering Work as provided in paragraph 13.03.E shall be at CONTRACTOR'S expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR'S intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by

ENGINEER, be uncovered for ENGINEER'S observation and replaced at CONTRACTOR'S expense.

B. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER'S request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

13.05 *OWNER May Stop the Work*

A. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. CONTRACTOR shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by ENGINEER, remove it from the Project and replace it with Work that is not defective. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees

and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for CONTRACTOR'S use by OWNER or permitted by Laws and Regulations as contemplated in paragraph 6.11.A is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER'S written instructions: (i) repair such defective land or areas, or (ii) correct such defective Work or, if the defective Work has been rejected by OWNER, remove it from the Project and replace it with Work that is not defective, and (iii) satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or repaired or may have the rejected Work removed and replaced, and all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR.

B. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

C. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

D. CONTRACTOR'S obligations under this paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, OWNER (and, prior to ENGINEER'S recommendation of final payment, ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to OWNER'S evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by CONTRACTOR pursuant to this sentence. If any such acceptance occurs prior to ENGINEER'S recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and OWNER shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

13.09 *OWNER May Correct Defective Work*

A. If CONTRACTOR fails within a reasonable time after written notice from ENGINEER to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.06.A, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days written notice to CONTRACTOR, correct and remedy any such deficiency.

B. In exercising the rights and remedies under this paragraph, OWNER shall proceed expeditiously. In connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the Site, take possession of all or part of the Work and suspend CONTRACTOR'S services related thereto, take possession of CONTRACTOR'S tools, appliances, construction equipment and machinery at the Site, and

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incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER'S representatives, agents and employees, OWNER'S other contractors, and ENGINEER and ENGINEER'S Consultants access to the Site to enable OWNER to exercise the rights and remedies under this paragraph.

C. All Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by OWNER in exercising the rights and remedies under this paragraph 13.09 will be charged against CONTRACTOR, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, OWNER may make a Claim therefor as provided in paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of CONTRACTOR'S defective Work.

D. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER'S rights and remedies under this paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The schedule of values established as provided in paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments*

1. At least 10 days before the date established for each progress payment (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the

Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER'S interest therein, all of which must be satisfactory to OWNER.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of CONTRACTOR stating that all previous progress payments received on account of the Work have been applied on account to discharge CONTRACTOR'S legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications*

1. ENGINEER will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER or return the Application to CONTRACTOR indicating in writing ENGINEER'S reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.

2. ENGINEER'S recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER'S observations on the Site of the executed Work as an experienced and qualified design professional and on ENGINEER'S review of the Application for Payment and the accompanying data and schedules, that to the best of ENGINEER'S knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the

Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.08, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to CONTRACTOR'S being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER'S responsibility to observe the Work.

3. By recommending any such payment ENGINEER will not thereby be deemed to have represented that: (i) inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents; or (ii) that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

4. Neither ENGINEER'S review of CONTRACTOR'S Work for the purposes of recommending payments nor ENGINEER'S recommendation of any payment, including final payment, will impose responsibility on ENGINEER to supervise, direct, or control the Work or for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for CONTRACTOR'S failure to comply with Laws and Regulations applicable to CONTRACTOR'S performance of the Work. Additionally, said review or recommendation will not impose responsibility on ENGINEER to make any examination to ascertain how or for what purposes CONTRACTOR has used the moneys paid on account of the Contract Price, or to determine that title to any of the Work, materials, or equipment has passed to OWNER free and clear of any Liens.

5. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER'S opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.02.B.2. ENGINEER may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as

may be necessary in ENGINEER'S opinion to protect OWNER from loss because:

a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Written Amendment or Change Orders;

c. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.09; or

d. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraph 15.02.A.

C. *Payment Becomes Due*

1. Sixty days after presentation of the Application for Payment to OWNER with ENGINEER'S recommendation, the amount recommended will (subject to the provisions of paragraph 14.02.D) become due, and when due will be paid by OWNER to CONTRACTOR.

D. *Reduction in Payment*

1. OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

a. claims have been made against OWNER on account of CONTRACTOR'S performance or furnishing of the Work;

b. liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens;

c. there are other items entitling OWNER to a set-off against the amount recommended; or

d. OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.02.B.5.a through 14.02.B.5.c or paragraph 15.02.A.

2. If OWNER refuses to make payment of the full amount recommended by ENGINEER, OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR any amount remaining after deduction of the amount so withheld. OWNER shall promptly pay

CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER'S satisfaction the reasons for such action.

3. If it is subsequently determined that OWNER'S refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by paragraph 14.02.C.1.

14.03 *CONTRACTOR'S Warranty of Title*

A. CONTRACTOR warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

A. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Promptly thereafter, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within 14 days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER'S objections, ENGINEER considers the Work substantially complete, ENGINEER will within said 14 days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written

recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER in writing prior to ENGINEER'S issuing the definitive certificate of Substantial Completion, ENGINEER'S aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

B. OWNER shall have the right to exclude CONTRACTOR from the Site after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Use by OWNER at OWNER'S option of any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER, and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR'S performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following conditions.

1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to OWNER and ENGINEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions

of paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

2. No occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of the Supplementary Conditions regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will promptly make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment*

1. After CONTRACTOR has, in the opinion of ENGINEER, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in paragraph 6.12), and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.04.B.7; (ii) consent of the surety, if any, to final payment; and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in paragraph 14.07.A.2 and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected

with the Work for which OWNER or OWNER'S property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

B. Review of Application and Acceptance

1. If, on the basis of ENGINEER'S observation of the Work during construction and final inspection, and ENGINEER'S review of the final Application for Payment and accompanying documentation as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR'S other obligations under the Contract Documents have been fulfilled, ENGINEER will, within 10 days after receipt of the final Application for Payment, indicate in writing ENGINEER'S recommendation of payment and present the Application for Payment to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.09. Otherwise, ENGINEER will return the Application for Payment to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

1. Sixty days after the presentation to OWNER of the Application for Payment and accompanying documentation, the amount recommended by ENGINEER will become due and, when due, will be paid by OWNER to CONTRACTOR.

D. Final Completion Delayed

1. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR'S final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted

shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.08 *(Not Used)*

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by OWNER against CONTRACTOR, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR'S continuing obligations under the Contract Documents; and

2. a waiver of all Claims by CONTRACTOR against OWNER other than those previously made in writing which are still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *OWNER May Suspend Work*

A. At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes a Claim therefor as provided in paragraph 10.05.

15.02 *OWNER May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. CONTRACTOR'S persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.07 as adjusted from time to time pursuant to paragraph 6.04);

2. CONTRACTOR'S disregard of Laws or Regulations of any public body having jurisdiction;

3. CONTRACTOR'S disregard of the authority of ENGINEER; or

4. CONTRACTOR'S violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in paragraph 15.02.A occur, OWNER may, after giving CONTRACTOR (and the surety, if any) seven days written notice, terminate the services of CONTRACTOR, exclude CONTRACTOR from the Site, and take possession of the Work and of all CONTRACTOR'S tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case, CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by OWNER arising out of or relating to completing the Work, such excess will be paid to CONTRACTOR. If such claims, costs, losses, and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses, and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and, when so approved by ENGINEER, incorporated in a Change Order. When exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

C. Where CONTRACTOR'S services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.03 OWNER May Terminate For Convenience

A. Upon seven days written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Contract. In such case,

CONTRACTOR shall be paid (without duplication of any items):

1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. for all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. for reasonable expenses directly attributable to termination.

B. CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 CONTRACTOR May Stop Work or Terminate

A. If, through no act or fault of CONTRACTOR, the Work is suspended for more than 90 consecutive days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within 30 days after it is submitted, or OWNER fails for 60 days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Contract and recover from OWNER payment on the same terms as provided in paragraph 15.03. In lieu of terminating the Contract and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within 30 days after it is submitted, or OWNER has failed for 60 days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may, seven days after written notice to OWNER and ENGINEER, stop the Work until payment is made of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.04 are not intended to preclude CONTRACTOR from making a Claim under paragraph

10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR'S stopping the Work as permitted by this paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Dispute resolution methods and procedures, if any, shall be as set forth in the Supplementary Conditions. If no method and procedure has been set forth, and subject to the provisions of paragraphs 9.09 and 10.05, OWNER and CONTRACTOR may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the

applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Agreement.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

A. The Article and paragraph headings are inserted for convenience only and do not constitute part of these General Conditions.

END OF GENERAL CONDITIONS

ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT NO: NC-35
BALL PUMP STATION
ELECTRICAL SUBSTATION
PROJECT NO: 201600238

SECTION 00800

SUPPLEMENTARY CONDITIONS

SCOPE

These Supplementary Conditions amend or supplement the General Conditions. All provisions of the General Conditions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions which are defined in the General Conditions have the meanings assigned to them in the General Conditions.

SC-1.01.A.7. Modify paragraph 1.01.A.7. by changing the word "Advertisement" in the first sentence to "Notice".

SC-1.01.A.43 Add the following to Paragraph 1.01.A.43:

"Substantial Completion is defined as the time at which all work is complete and all equipment has successfully completed the Performance Tests as specified in Section 019100, Commissioning."

SC-4.02 Add new paragraph immediately after paragraph 4.02.B which is to read as follows:

SC-4.02.C In the preparation of the Drawings and Specifications, ENGINEER has relied upon:

The following records of explorations and tests of subsurface conditions at the Site:

- a. Revised Geotechnical Evaluation Report for Proposed² New Electrical Substation; ECWA Ball Pump Station Site; dated May, 2017; prepared by Empire GEO Services, Inc.
- b. Soil boring logs by Pittsburgh Testing Laboratory; dated 5-31-72; Malcolm Pirnie Contract No. 18, Ball Pump Station.
- c. Geotechnical Engineering Report for Proposed South Water Storage Tank Replacement, Ball Pump Station; dated August, 2014; prepared by Empire GEO Services, Inc.

- d. Soil boring logs by Professional Service Industries, Inc.; dated 6-3-08; Nussbuamer & Clarke, Inc. Contract No. NC-32A, Ball Pump Station Generator Building.
- e. Geotechnical Engineering Report for Proposed Hyatt House Hotel; dated September 22, 2015; prepared by Barron & Associates, P.C.

The following drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities) which are at or contiguous to the Site:

- a. Contract No. 18; Ball Pump Station; dated July, 1978; prepared by Malcolm Pirnie.
- b. Contract NC-32A; Installation of Permanent Standby Power; dated January, 2009; prepared by Nussbaumer & Clarke, Inc.
- c. Contract No. 27; Van de Water to Ball transmission Main; dated July, 1975; prepared by Malcolm Pirnie.
- d. Contract DG-8B2; Van de Water to Ball Transmission Main; dated March, 1990; prepared by Donald Gallo Consulting Engineer.
- e. Contract MP-77A; Ball Pump Station Electrical Improvements; dated December 2015; prepared by Arcadis.

Copies of the reports and drawings listed are available for review at the office of Nussbuamer & Clarke, Inc. at 3556 Lake Shore Road, Suite 500, Buffalo, NY 14219, during regular business hours, upon two business days prior notice.

SC-4.06.A Add a new paragraph immediately after paragraph 4.06.A which is to read as follows:

SC-4.06.A.1 In the preparation of the Drawings and Specifications, ENGINEER did not utilize any report or drawing related to a Hazardous Environmental Condition identified at the Site except as identified in SC-4.02.

SC-5.01.A Modify the first part of the second sentence of paragraph 5.01.A of the General Conditions to read:

The payment Bond shall remain in effect for one year and the performance Bond shall remain in effect for two years after....

SC-5.04 through 5.10. Delete paragraph 5.04 through 5.10, inclusive, in their entirety.

SC-5.03 Add a new paragraph immediately after Paragraph 5.03, which is to read as follows:

“SC-5.04 *Insurance Requirements*

A. CONTRACTOR shall procure and maintain insurance in accordance with Insurance Requirements, as set forth in the attached Appendix B and hereby made a part of these General Conditions.”

SC-6.02.B Add new paragraphs immediately after paragraph 6.02.B which are to read as follows:

“SC-6.02.B.1 Except where otherwise prohibited by Laws or Regulations, regular working hours are defined as up to 8 hours per day, beginning no earlier than 7:00 am and ending no later than 6:00 pm.

SC-6.02.B.2 Maintenance and cleanup activities may be performed during hours other than regular working hours provided that such activities do not require the startup or operation of construction equipment.

SC-6.02.B.3 If it shall become absolutely necessary to perform Work at night or on Saturdays, Sundays or legal holidays, written notice shall be submitted to OWNER and ENGINEER at least two days in advance of the need for such Work. OWNER will only consider the performance of such Work as can be performed satisfactorily under the conditions. Sufficient lighting and all other necessary facilities for carrying out and observing the Work shall be provided and maintained where such Work is being performed at night.”

SC-6.06.G Modify paragraph 6.06.G. by changing paragraph reference 5.06 to SC-5.04.

SC-6.06.H Add the following new paragraph immediately following paragraph 6.06.G, which is to read as follows:

“SC-6.06.H The CONTRACTOR shall perform with the CONTRACTOR’S own organization, contract work amounting to not less than fifty percent of the original total contract price. The term “the CONTRACTOR’S own organization” shall be construed to include only workmen employed and paid directly by the CONTRACTOR, and equipment owned or rented by the CONTRACTOR, with or without operators.”

SC-6.09.B. Add a new paragraph immediately after paragraph 6.09.B which is to read as follows:

“SC-6.09.C Refer to Article SC-18 for Laws and Regulations which, by terms of said Laws and Regulations are to be included in the Contract Documents. The failure to include in Article SC-18 any Law or Regulation

applicable to the performance of the Work does not diminish CONTRACTOR'S responsibility to comply with all Laws and Regulations applicable to the performance of the work."

SC-6.10. Add a new paragraph immediately after paragraph 6.10.A, which is to read as follows:

"SC-6.10.B OWNER is exempt from payment of sales and compensating use taxes of the State of New York and of cities and counties on all materials to be incorporated into the Work.

1. OWNER will furnish the required certificates of tax exemption to CONTRACTOR for use in the purchase of supplies and materials to be incorporated into the Work.
2. OWNER'S exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by CONTRACTOR, or to supplies or materials not incorporated into the Work."

SC-6.15.A. Add a new paragraph immediately after paragraph 6.15.A, which is to read as follows:

"SC-6.15.B CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with all Laws and regulations. CONTRACTOR shall provide a centralized location for the maintenance of the material safety data sheets or other hazard communication information required to be made available by any employer on the Site. Location of the material safety data sheets or other hazard communication information shall be readily accessible to the employees of any employer on the Site."

SC-7.01 Add a new paragraph immediately after Paragraph 7.01 which is to read as follows:

"SC-7.02 *Separate Contractor Claims*

- A. Should CONTRACTOR cause damage to the work or property of any other contractor at the Site, or should any claim arising out of CONTRACTOR'S performance of the Work be made by any other contractor against CONTRACTOR, OWNER, or ENGINEER, CONTRACTOR shall promptly settle with such other contractor by agreement, or otherwise resolve the dispute by arbitration or at law.
- B. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, and the officer, directors, partners, employees, agents, and other consultants or subcontractors of each and any of them from and against all claims, costs, losses and damages (including but not limited to, all fees and charges of engineers, architects, attorneys, and other

professionals and all court or arbitration or other dispute resolution costs) arising directly, indirectly, or consequentially out of or relating to any claim or action, legal or equitable, brought by any other contractor against OWNER, ENGINEER, to the extent based upon CONTRACTOR'S performance of the Work.

- C. Should another contractor cause damage to the Work or property of CONTRACTOR at the Site or should the performance of work by any other contractor give rise to any other claim, CONTRACTOR shall not institute any action, legal or equitable, against OWNER, ENGINEER, or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from OWNER, ENGINEER, on account of any such damage or claim.
- D. If CONTRACTOR is delayed at any time in performing or furnishing Work by any act or neglect of another contractor and OWNER and CONTRACTOR are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, CONTRACTOR may make a claim for an extension of time in accordance with paragraph 10.05. Notwithstanding any other provision of the Contract Documents, an extension of the Contract Times shall be CONTRACTOR'S sole and exclusive remedy with respect to OWNER, ENGINEER, for any delay, disruption, interference or hindrance caused by any other contractor."

SC-9.03

Add a new paragraph immediately after paragraph 9.03.A which is to read as follows:

"SC-9.03.B. Resident Project Representative (RPR) will be OWNER'S agent at the Site, will act as directed by and under the supervision of OWNER, and will confer with OWNER AND ENGINEER regarding RPR's actions. RPR's dealings in matters pertaining to the on-site Work shall in general be with OWNER and CONTRACTOR keeping ENGINEER advised as necessary. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of CONTRACTOR."

SC-13.07

Modify paragraphs 13.07.A. and C. by changing the words "one year" in the first line to "two years".

SC-14.02,A.

Add a new paragraph immediately after paragraph 14.02.A.3. which is to read as follows:

"4. Each Application for Payment shall be accompanied by a copy of the certified payroll record."

SC-14.07,A. Add a new paragraph immediately after paragraph 14.07.A.3. which is to read as follows:

“4. The Final Application for Payment shall be accompanied by a copy of the certified payroll record.”

SC-14.07.A.2 Modify paragraph 14.07.A.2 by changing the words “subparagraph 5.04.B.7” to “SC-5.04”.

SC-17.06 Add new paragraphs immediately after paragraph 17.06,A. which are to read as follows:

“ARTICLE SC-18 - STATUTORY REQUIREMENTS

SC-18.01 This Article contains portions of certain Laws or Regulations which, by provision of Law or Regulations, are required to be included in the Contract Documents. The material included in this Article may not be complete or current. CONTRACTOR’S obligation to comply with all Laws and Regulations applicable to the Work is set forth in paragraph 6.09 of the General Conditions.

SC-18.02 Non-Discrimination in Employment:

A. During the performance of this contract, CONTRACTOR agrees as follows:

1. CONTRACTOR will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin, and will take affirmative action to insure that they are afforded equal employment opportunities without discrimination because of race, creed, color or national origin. Such action shall be taken with reference but not limited to: recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff or termination, rates of pay or other forms of compensation, and selection for training or retraining, including apprenticeship and on-the-job training.
2. CONTRACTOR will send to each labor union or representative of workers with which he has or is bound by a collective bargaining or other agreement or understanding, a notice, to be provided by the State Commission for Human Rights, advising such labor union or representative of the CONTRACTOR’S agreement under clauses 1. through 8. hereinafter called “non-discrimination clauses”. If the CONTRACTOR was directed to do so by the OWNER as part of the Bid or negotiation of this contract, CONTRACTOR shall request labor union or representative to furnish him with a written statement that such labor union or representative will not discriminate because of race, creed, color or national origin and that such labor union or representative either will affirmatively cooperate within the limits of its legal and contractual authority, in the implementation of the policy and provisions of these non-discrimination clauses or that it consents and agrees that recruitment, employment, and the terms and conditions of employment under this contract shall be in accordance with the purposes and provisions of these non-discrimination clauses. If such labor union or representative fails or refuses to comply with such a request, that it furnish such a statement, CONTRACTOR shall promptly notify the State Commission for Human Rights of such failure or refusal.

3. CONTRACTOR will post and keep posted in conspicuous places, available to employees and applicants for employment, notices to be provided by the State Commission for Human Rights setting forth the substance of the provisions of clauses 1. through 2. and such provisions of the State's Laws against discrimination as the State Commission for Human Rights shall determine.
4. CONTRACTOR will state, in all solicitations or advertisements for employees placed by or on behalf of CONTRACTOR, that all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color or national origin.
5. CONTRACTOR will comply with the provisions of the Executive Law, Human Rights Law, Article 15, will furnish all information and reports deemed necessary by the State Commission for Human Rights under these non-discrimination clauses and such sections of the Executive Law, and will permit access to his books, records and accounts by the State Commission for Human Rights, the Attorney General, District Commissioner of Housing and Community Renewal and the Industrial Commission for purposes of investigation to ascertain compliance with these non-discrimination clauses of the Executive Law, Human Rights Law, Article 15.
6. This contract may be forthwith canceled, terminated or suspended, in whole or in part, by the OWNER upon the basis of a finding made by the State Commission for Human Rights that CONTRACTOR has not complied with these non-discrimination clauses, and CONTRACTOR may be declared ineligible for future contracts made by or on behalf of the State or a public authority or agency of the State or housing authority, or an urban renewal agency, or contracts requiring the approval of the Commissioner of Housing and Community Renewal, until he has satisfied the State Commission for Human Rights after conciliation efforts by the Commission have failed to achieve compliance with these non-discrimination clauses and after a verified complaint has been filed with the Commission, notice thereof has been given to CONTRACTOR and an opportunity has been afforded him to be heard publicly before three members of the Commission. Such sanctions may be imposed and remedies invoked independently of or in addition to sanctions and remedies otherwise provided by law.
7. If this contract is canceled or terminated under clause 6., in addition to other rights of the OWNER provided in this contract upon its breach by CONTRACTOR, CONTRACTOR will hold the OWNER harmless against any additional expenses or costs incurred by the OWNER in completing the Work or in purchasing the services, materials, equipment or supplies contemplated by this contract, and the OWNER may withhold payments from CONTRACTOR in an amount sufficient for this purpose and recourse may be had against the surety on the Performance Bond if necessary.
8. CONTRACTOR will include the provisions of clauses 1. through 2. in every subcontract or purchase order altered only to reflect the proper identity of the parties in such a manner that such provisions will be binding upon each Subcontractor or vendor as to operations to be performed within the State of New York. CONTRACTOR will take such actions in enforcing such provisions of such subcontract or purchase order as the OWNER may direct, including sanctions or remedies for non-compliance. If CONTRACTOR becomes involved in or is threatened with litigation with a Subcontractor or vendor as a result of such

direction by the OWNER, the CONTRACTOR shall promptly so notify the Attorney General, requesting him to intervene and to protect the interest of the State of New York.

SC-18.03 Affirmative Action Requirements:

- A. During the performance of this Contract, the CONTRACTOR agrees that it will abide by and will require its subcontractors to abide by the AUTHORITY'S Affirmative Action Requirements and Women and Minority Business Enterprise Policy, as set forth in the attached Appendix A and hereby made a part of these General Conditions.

SC-18.04 Prevailing Rate Schedule:

- A. The labor on this contract shall be performed in accordance with the requirements of Article 8 (Sections 220-223) of the New York State Labor Law. The supplements to be provided and wages to be paid to workers, laborers and mechanics employed on this contract, determined pursuant to Section 220 of the Labor Law, are set forth in Appendix C, Prevailing Rate Schedule, attached to and hereby made a part of these General Conditions.
- B. CONTRACTOR shall note that the wage rates and supplemental benefits shown in the attached schedules are subject to change. The wage rates and supplemental benefits to be paid and provided shall be those prevailing at the time the contract is being performed.

SC-18.05 Payments to Subcontractors:

- A. In accordance with N.Y. State General Municipal Law, Section 106-b, CONTRACTOR shall:
 - 1. Within fifteen calendar days of the receipt of any payment from the OWNER, the CONTRACTOR shall pay each of his Subcontractors and materialmen the proceeds from the payment representing the value of the work performed and/or materials furnished by the Subcontractor and/or materialman and reflecting the percentage of the Subcontractor's work completed or the materialman's material supplied in the requisition approved by the OWNER and based upon the actual value of the subcontract or purchase order less an amount necessary to satisfy any claims, liens or judgments against the Subcontractor or materialman which have not been suitably discharged and less any retained amount as hereafter described. The CONTRACTOR shall retain not more than five per centum of each payment to the Subcontractor and/or materialman except that the CONTRACTOR may retain in excess of five per centum but not more than ten per centum of each payment to the Subcontractor provided that prior to entering into a subcontract with the CONTRACTOR, the Subcontractor is unable or unwilling to provide a Performance bond and a Labor and Material bond both in the full amount of the subcontract at the request of the CONTRACTOR. However, the CONTRACTOR shall retain nothing from those payments representing proceeds owed the Subcontractor and/or materialman from OWNER'S payments to the CONTRACTOR for the remaining amounts of the contract balance after the work or portions thereof are substantially complete. Within fifteen calendar days of the receipt of payment from the

CONTRACTOR, the Subcontractor and/or materialman shall pay each of his Subcontractors and materialmen in the same manner as the CONTRACTOR has paid the Subcontractor. Nothing provided herein shall create any obligation on the part of the OWNER to pay or to see to the payment of any moneys to any Subcontractor or materialman from any CONTRACTOR nor shall anything provided herein serve to create any relationship in contract or otherwise, implied or expressed, between the Subcontractor or materialman and the OWNER.

END OF SUPPLEMENTARY CONDITIONS



SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
1. Contract description.
 2. Work by Owner or other Work at the Site.
 3. Owner-furnished products.
 4. Contractor's use of Site and premises.
 5. Work sequence.
 6. Owner occupancy.
 7. Permits.
 8. Specification conventions.

1.02 CONTRACT DESCRIPTION

- A. Contractor shall ensure that all work depicted on the contract drawings and described within specifications is completed and included in submitted bid price.
- B. Work of the Project to be completed by the Contractor shall include all improvements to the existing Ball Pump Station in the Town of Amherst located at 1201 Sweet Home Road, Amherst, New York 14228 as shown on all Sheets identified with the numbers G-XXX, C-XXX, CD-XXX, S-XXX, E-XXX, and ED-XXX, and generally described as follows:
1. A-frame receiving structures for 115kV overhead lines.
 2. 115kV isolation switches.
 3. 115kV tie switches.
 4. 115kV dead tank circuit breakers.
 5. 115kV to 4160 volt transformers.
 6. Surge arrestors.
 7. Lightning protection.
 8. Fire wall.
 9. Oil containment system.
 10. Pile supported foundations.
 11. Structural supports.
 12. Ground mats.
 13. 115kV overhead lines.
 14. Underground duct banks.
 15. Battery charging system.
 16. Fencing.
 17. Access driveways and parking area.
 18. Site lighting.
 19. Associated electrical, instrumentation, controls, and SCADA.
 20. Performance tests.
 21. 48-inch diameter transmission main.
 22. Interior joint seals for 48-inch and 60-inch diameter tank inlet piping.
 23. 8-inch diameter waterline and fire hydrant.

SECTION 011000 - SUMMARY

24. Demolition of existing substation.
25. Site restoration.
26. Data Collection.
27. Protective Device (relay and adjustable circuit breaker) settings.
28. Contingency Allowances.

C. The project includes Milestone MI which consists of completing all work associated with Phase 1.

1.03 WORK BY OWNER OR OTHERS

- A. Coordinate work with other contractors including but not limited to the following:
1. Owner's electrical contractor: shut-downs and other ongoing work.
 2. National Grid (NG): New NG tower, de-energizing lines 181 and 182, re-energizing lines 181 and 182, new 115kV overhead lines from the NG towers to the dead end structures. All costs to be paid by the Water Authority.

1.04 OWNER-FURNISHED PRODUCTS - NONE

1.05 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Time Restrictions for Performing Work: Monday through Friday, 7:00 am – 6:00 pm excluding Owner holidays unless prior authorization received from Owner for different days and times.
- B. Utility Outages and Shutdown:
1. Coordinate and schedule utility outages with Owner.
 2. Outages: Allowed only at previously agreed upon times
 3. At least three weeks before scheduled outage, submit Outage Request Plan to Engineer itemizing the dates, times, and duration of each requested outage.
- C. Sound Level Restrictions: Sound pressure level measured at boundary of Site shall not exceed 40 dBA. Contractor is to be aware that residents live nearby to project site and care shall be taken to limit noises to reasonable times.
- D. Construction Plan: Before start of construction provide construction plan regarding access to Work, use of Site, and utility outages for review by Engineer and acceptance by Owner. After acceptance of plan, construction operations shall comply with accepted plan unless deviations are accepted by Owner in writing.
- E. All work shall be in compliance with the requirements of National Grid, OSHA, National Electric Safety Code, and NFPA 70E.

1.06 WORK SEQUENCE

- A. The Work shall be constructed in Phases. Coordinate the construction schedule and operations with the Engineer and Owner.

SECTION 011000 - SUMMARY

- B. Refer to Section 013110-Coordination with Owner's Operations.

1.07 OWNER OCCUPANCY

- A. Owner will occupy Site at times as needed during entire period of construction. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- B. Schedule the Work to accommodate Owner occupancy and continued operation of the pumping station.

1.08 PERMITS

- A. Furnish all necessary permits for construction of Work including the following:
 - 1. New York State Department of Transportation permit for Sweet Home Road.
 - 2. Town of Amherst Stormwater Inspection Services Permit.
- B. All permit costs shall be included in Bid.
- C. The OWNER has prepared a Storm Water Pollution Prevention Plan (SWPPP) for the project and obtained a SPDES General Permit for Storm Water Discharges from construction activity. The CONTRACTOR will be provided with a copy and shall comply with all requirements.

1.09 SPECIFICATION CONVENTIONS

- A. These Specifications are written in imperative mood and streamlined form. This imperative language is directed to Contractor unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION



SECTION 012700 - MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Description
- B. Engineer's Estimate of Quantities
- C. Contingency Allowance
- D. Adjustment of Unit Prices for Increase or Decrease of Estimated Quantities
- E. Related Provisions
- F. Bid Items
- G. Schedule of Allowances

1.02 DESCRIPTION

- A. The items listed below in Articles 1.07, refer to and are the same pay items listed in the Bid Form. They constitute all of the pay items for the completion of the Work. No direct or separate payment will be made for providing miscellaneous temporary or accessory works, plant, services, Engineer's and/or Contractor's field offices, layout surveys, job signs, sanitary requirements, permits, testing, safety devices, approval and record drawings, water supplies, power, maintaining traffic, removal of waste, watchmen, bonds, insurance, test pits and all other requirements of the General Conditions, Supplementary Conditions, and the General Requirements. Compensation for all such services, things and materials shall be included in the prices stipulated for the lump sum and work unit price pay items listed herein.
- B. The lump sum and unit bid prices will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- C. The Contractor shall furnish all labor, materials, tools, equipment, services, and all appurtenances necessary to perform all work required, at the unit or lump sum prices for the items listed in the Bidder's Proposal. Each bid item shall include all costs to perform all work to complete each item. Work shall include, but is not necessarily limited to earth excavation, disposal of excess excavated material, handling of all water, dewatering, earth backfill, select backfill, concrete, installation of electrical equipment, conduits, cables, terminations, splices, pull boxes, fittings, hangers, wall penetrations, junction boxes, instrumentation and control, grounding, all final restoration, and testing.
- D. Where fixed minimum unit prices are called for under an item heading, the bidder shall include a price not less than the stated minimum. Bidders' Proposals received which include a unit price less than the stated minimum shall be adjusted to meet the minimum unit price.

SECTION 012700 - MEASUREMENT AND PAYMENT

1.03 ENGINEER'S ESTIMATE OF QUANTITIES

- A. Engineer's estimated quantities for unit price pay items, as listed in the Bid Form, are approximate only and are included solely for the purpose of comparison of Bids. Owner does not expressly or by implication agree that the nature of the materials encountered or the actual quantities of material encountered or required will correspond therewith and reserves the right to increase or decrease any quantity or to eliminate any quantity as Owner may deem necessary. Except as provided in Article 1.05, Contractor or Owner will not be entitled to any adjustment in a unit bid price as a result of any change in an estimated quantity and agrees to accept the aforesaid unit bid prices as complete and total compensation for any additions caused by changes or alterations in the Work ordered by Owner.

1.04 CONTINGENCY ALLOWANCE

- A. Work that will be done and paid for under an allowance will be authorized in Owner's written instruction to Contractor.
- B. Do not provide work under an allowance without prior written authorization of Owner.
- C. Contingency allowances are stipulated amounts available as reserved for sole use by Owner to cover unanticipated costs.
- D. When authorization of Work under contingency allowance is contemplated by Owner for a defined scope, submit Change Order proposal to Engineer. Prepare Change Order proposal in accordance with the General Conditions as may be modified by the Supplementary Conditions, except that payments within limit of contingency allowance shall exclude cost of bond and insurance premiums.

1.05 ADJUSTMENT OF UNIT PRICES FOR INCREASE OR DECREASE OF ESTIMATED QUANTITIES

- A. For bid items paid for on a unit price basis, increases or decreases in the quantity of an item of Work will be determined by comparing the total payable quantity of Work with Engineer's estimated quantity as shown in the Bid Form. Increase or decreases will only be considered if the Schedule of Values as required in Section 012900 has been prepared, submitted, and approved.
- B. If the total payable quantity of any unit price item of Work, which has an as-bid computed total value of five percent or more of the sum of the as-bid computed total values of all items bid, varies from Engineer's estimate of quantity therefore by more than 50 percent, the unit price of that item will be a subject of review by Engineer. If warranted, an equitable adjustment will be made by means of a Change Order to credit Owner with any reduction in cost or to compensate Contractor for any increase in cost resulting from the change in quantity. This review of the adjustment will be made at a time Engineer deems reasonable and proper.
- C. Payment for any unit price item of Work which has an as-bid computed total value of less than five percent of the sum of the as-bid computed total values of all items bid, will be made at the unit price bid regardless of an increase or decrease in quantity.

SECTION 012700 - MEASUREMENT AND PAYMENT

1.06 RELATED PROVISIONS

- A. Payments to Contractor: Refer to General Conditions and Agreement.
- B. Changes in Contract Price: General Conditions.
- C. Summary: Section 011000.
- D. Schedule of Values: Section 012900.

1.07 BID ITEMS

A. ITEM 1 – ELECTRICAL SUBSTATION

- 1. Work Included:
 - a. The work shall consist of furnishing all labor, materials, equipment, and incidentals to construct the improvements at the Ball Pump Station, as shown, specified, and directed.
 - b. The work shall include all work as described in Section 011000.
- 2. Measurement and Payment:
 - a. Measurement and payment will be made for the work completed, tested, ready to use, and approved by the Engineer.
 - b. Payment will be made in accordance with the lump sum price stated in the itemized breakdown specified in Section 012900 – Schedule of Values, and shall constitute full payment for all work performed, tested, and approved by the Engineer for payment.
 - c. The percentage of completion for each item of the lump sum amount shall be as determined by the Engineer.

B. ITEM 2 – ROCK EXCAVATION

- 1. Work Included:
 - a. This work shall consist of furnishing all labor, materials, equipment and incidentals to remove rock by such methods as drilling, jacking, hammering and mechanical excavation to the lines and grades as shown, specified and directed.
 - b. This item includes disposal of rock removed from the trench, which is unsuitable for backfill.
 - c. Rock that can be removed by normal excavation equipment shall not be measured for rock excavation.
- 2. Measurement:
 - a. The quantity to be paid for under this item shall be the amount of rock in cubic yards removed from within the pay limits as shown, specified or directed.
 - b. The rock shall be uncovered prior to removal in sections acceptable to the ENGINEER, so that it may be measured prior to removal.

SECTION 012700 - MEASUREMENT AND PAYMENT

3. Payment:
 - a. The unit price bid per cubic yard shall be full compensation for furnishing all labor, materials, equipment and incidentals required to remove rock as shown, specified and directed.

C. ITEM 3 – MISCELLANEOUS CONTINGENCY ALLOWANCE

1. Measurement: Allowance includes a stipulated amount available as reserve for sole use by Owner to cover unanticipated costs.
2. Include an allowance of \$250,000 for Bid Item 3.
3. Payment for Work authorized under Item 3 will be full compensation for providing all Work authorized under the contingency allowance, complete as specified or directed by Engineer. Work authorized under contingency allowance may be included in subsequent Application(s) for Payment, as applicable, following authorization and performance of contingency allowance Work.

D. ITEM 4 – SCADA CONTINGENCY ALLOWANCE

1. Measurement: Allowance includes a stipulated amount available as reserve for sole use by Owner to cover unanticipated costs.
2. Include an allowance of \$50,000 for Bid Item 4.
3. Payment for Work authorized under Item 4 will be full compensation for providing all Work authorized under the contingency allowance, complete as specified or directed by Engineer. Work authorized under contingency allowance may be included in subsequent Application(s) for Payment, as applicable, following authorization and performance of contingency allowance Work.

PART 2 - PRODUCTS

PART 3 - EXECUTION

3.01 SCHEDULE OF ALLOWANCES

- A. Include a stipulated contingency allowance of \$250,000.00 for Bid Item 3 – Miscellaneous Contingency Allowance for use in accordance with the Owner's instruction to perform miscellaneous work such as, but not limited to:
 1. Unanticipated work.
 2. Site Security Services.
 3. Hazardous material handling and disposal.
 4. Internal pipe joint seals beyond that shown or specified.
 5. Relocation of mechanical equipment to facilitate new conduit installation in pump station.
 6. Furnishing and installing infrared and/or visual inspection windows for electrical switchgear.

SECTION 012700 - MEASUREMENT AND PAYMENT

- B. Include a stipulated contingency allowance of \$50,000.00 for Bid Item 4 – SCADA Contingency Allowance for use in accordance with the Owner’s instruction for SCADA system work to be performed by Kaman Automation.

END OF SECTION



SECTION 012900 - SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Description
- B. Preparation
- C. Submittal

1.02 DESCRIPTION

- A. The Schedule of Values is an itemized list that establishes the value or cost of each part of the Work. It shall be used as the basis for preparing progress payments and may be used as a basis for negotiations concerning additional work or credits which may arise during the construction. Quantities and unit prices may be included in the schedule when approved by or required by the Engineer.

1.03 PREPARATION

- A. Schedule shall show breakdown of labor, materials, equipment, reports and other costs used in preparation of the Bid.
- B. Costs shall be in sufficient detail to indicate separate amounts for each Section of the Specification and each site.
- C. Include an item for bond, insurance, temporary facilities and job mobilization/demobilization. This item will be included for payment in accordance with Section 012700.
- D. Schedule of Values shall be prepared on 8½-inch by 11-inch white paper and provided electronically in Excel format.
- E. Use Table of Contents of the Specifications as basis for Schedule format and identify each item with number and title in the Table of Contents. List sub-items of major products or systems as appropriate or when requested by Engineer.
- F. When requested by Engineer, support values with data that will substantiate their correctness.
- G. The sum of the individual values shown on the Schedule of Values must equal the total Contract Price.
- H. Each item shall include a directly proportional amount of the Contractor's overhead and profit.

SECTION 012900 - SCHEDULE OF VALUES

- I. Schedule shall show the purchase and delivery costs for materials and equipment that the Contractor anticipates he shall request payment for prior to their installation.
- J. Included in the detailed breakdown shall be a line item for "record documents". This amount is for preparing and supplying required information and documentation.

1.04 SUBMITTAL

- A. Submit two copies of 8 ½-inch by 11-inch paper and an electronic file in Excel format of Schedule to Engineer for approval at least 20 days prior to submitting first application for a progress payment but no later than 10 days after date of execution of agreement. After review by Engineer, revise and resubmit Schedule as required until it is approved.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Coordination and Project conditions.
- B. Preconstruction meeting.
- C. Progress meetings.
- D. Closeout meeting.

1.02 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various Sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing operating equipment in service.
- C. The Contractor shall furnish to the Engineer an emergency phone number list for 24 hour contact during the construction period. Include numbers for office phones, pagers, and cellular phones, as applicable. The list should include, but not be limited to:
 - Contractor's office representative,
 - Contractor's field superintendent,
 - Contractor's foreman,
 - Owner's main office,
 - Owner's 24 hour emergency number,
 - Project Engineer
 - Project Inspector,
 - Utility companies such as gas, water, telephone, cable, TV, etc.
 - Highway Departments,
 - Other involved agencies.
 1. Contractor shall add names and numbers given to him by Engineer and resubmit to Engineer as requested.
 2. Emergency phone list must be submitted and considered acceptable to Engineer prior to the start of construction.
 3. Phone list must be neatly typed and work processed and submitted on 8 ½ x 11 inch paper.

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

- D. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit as closely as practical; place runs parallel with lines of building. Use spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
 - 1. Coordination Drawings: Prepare as required to coordinate all portions of Work. Show relationship and integration of different construction elements that require coordination during fabrication or installation to fit in space provided or to function as intended. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are important.
- E. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.
- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.
- G. Coordinate completion and clean-up of Work of separate Sections in preparation for Substantial Completion and for portions of Work designated for Owner's partial occupancy and for portions of Work designated for Owner's occupancy.
- H. After Owner's occupancy of premises, coordinate access to Site for correction of defective Work and Work not complying with Contract Documents, to minimize disruption of Owner's activities.

1.03 PRECONSTRUCTION MEETING

- A. Engineer will schedule and preside over meeting after Notice of Award.
- B. Attendance Required: Engineer, Owner, Resident Project Representative, appropriate governmental agency representatives, Construction Manager, major Subcontractors, Contractor, Contractor's on-site supervisor, and National Grid.
- C. Minimum Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Review of Submission of list of Subcontractors, list of products, schedule of values, and Progress Schedule.
 - 5. Designation of personnel representing parties in Contract, and Engineer.
 - 6. Communication procedures.
 - 7. Procedures and processing of requests for interpretations, field decisions, and field orders, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
 - 8. Scheduling.
 - 9. Critical Work sequencing.
 - 10. Scheduling activities of testing agency.

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

D. Site Mobilization Issues:

1. Use of premises by Owner and Contractor.
2. Owner's requirements.
3. Construction facilities and controls provided by Owner.
4. Temporary utilities provided by Owner.
5. Survey and building layout.
6. Security and housekeeping procedures.
7. Schedules.
8. Procedures for testing.
9. Procedures for maintaining record documents.
10. Requirements for startup of equipment.
11. Inspection and acceptance of equipment put into service during construction period.

E. Engineer will record minutes and distribute copies to participants within three business days after meeting, with one copy each to those in attendance.

1.04 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum bi-weekly intervals.

B. Engineer will make arrangements for meetings, prepare agenda with copies for participants, and preside over meetings.

C. Attendance Required: Job superintendent, major Subcontractors, Contractor and suppliers, and Engineer, Owner, as appropriate to agenda topics for each meeting.

D. Minimum Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittal schedule and status of submittals.
6. Review of off-Site fabrication and delivery schedules.
7. Maintenance of Progress Schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on Progress Schedule and coordination.
13. Other business relating to Work.

E. Engineer will record minutes and distribute copies to participants within three business days after meeting, with one copy each to those affected by decisions made.

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

1.05 CLOSEOUT MEETING

- A. Schedule Project closeout meeting with sufficient time to prepare for requesting Substantial Completion. Preside over meeting and be responsible for minutes.
- B. Attendance Required: Contractor Construction Manager, Engineer, Owner, and others appropriate to agenda.
- C. Notify Engineer four days in advance of proposed meeting date.
- D. Minimum Agenda:
 - 1. Start-up of facilities and systems.
 - 2. Operations and maintenance manuals.
 - 3. Testing, adjusting, and balancing.
 - 4. System demonstration and observation.
 - 5. Operation and maintenance instructions for Owner's personnel.
 - 6. Contractor's inspection of Work.
 - 7. Preparation of a final "punch list."
 - 8. Procedure to request Engineer inspection to determine date of Substantial Completion.
 - 9. Completion time for correcting deficiencies.
 - 10. Inspections by authorities having jurisdiction.
 - 11. Partial release of retainage.
 - 12. Final cleaning.
 - 13. Preparation for final inspection.
 - 14. Closeout Submittals:
 - a. Project record documents.
 - b. Operating and maintenance documents.
 - c. Operating and maintenance materials.
 - d. Affidavits.
 - 15. Final Application for Payment.
 - 16. Contractor's demobilization of Site.
 - 17. Maintenance.
 - 18. Equipment Warranty.
- E. Engineer will record minutes and distribute to participants within three days after meeting, with one copy each to those affected by decisions made.

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.01 ALTERATION PROCEDURES

- A. Entire facility will be occupied for normal operations during progress of construction. Cooperate with Owner in scheduling operations to minimize conflict and to permit continuous usage.
 - 1. Perform Work not to interfere with operations of occupied areas.
 - 2. Keep utility and service outages to a minimum and perform only after written approval of Owner.
 - 3. Clean Owner-occupied areas daily. Clean spillage, overspray, and heavy collection of dust in Owner-occupied areas immediately.
- B. Materials: As specified in product Sections; match existing products with new and salvaged products for patching and extending Work.
- C. Employ skilled and experienced installer to perform alteration and renovation Work.
- D. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion. Comply with Section 017000 - Execution and Closeout Requirements
- E. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- F. Remove debris and abandoned items from area and from concealed spaces.
- G. Prepare surface and remove surface finishes to permit installation of new Work and finishes.
- H. Close openings in exterior surfaces to protect existing Work from weather and extremes of temperature and humidity.
- I. Remove, cut, and patch Work to minimize damage and to permit restoring products and finishes to original or specified condition.
- J. Refinish existing visible surfaces to remain in renovated rooms and spaces, to specified or renewed condition for each material, with neat transition to adjacent finishes.
- K. Where new Work abuts or aligns with existing Work, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- L. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and submit recommendation to Architect/Engineer for review.

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

- M. Patch or replace portions of existing surfaces that are damaged, lifted, discolored, or showing other imperfections.
- N. Finish surfaces as specified in individual product Sections.

END OF SECTION

SECTION 013110 - COORDINATION WITH OWNER'S OPERATIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Description
- B. Submittals
- C. Use of Owner's Facilities
- D. Shutdowns, Tie-ins and Coordination with Owner's Operations
- E. Work Sequence

1.02 DESCRIPTION

- A. Contractor shall carry out all operations to avoid interference with the operations of the existing facilities. The Ball Pump Station must maintain operation 24 hours a day 7 days a week except as allowed herein.
- B. Contractor shall cooperate fully with the Owner when the Contractor's operations or unforeseen conditions beyond the Owner's control negatively effect the operation of the Ball Pump Station. The Contractor shall cooperate fully with the Owner including the stopping of work to avoid loss of pumping and/or detrimental water quality issues, at no additional cost to the Owner.
- C. The Owner may restrict the Contractor's operations with respect to shutdowns, tie-ins, and starting and placing equipment in operation as specified.

1.03 SUBMITTALS

- A. For work which may affect the Owner's operations and for proposed connections including shutdowns of, and tie-ins to process, mechanical or electrical systems, submit to the Engineer for approval the following:
 - 1. Detailed schedules and descriptions of construction procedures.
 - 2. Inventory of labor, materials, equipment and supplies needed to perform the work.
 - 3. Detailed description of all preparatory work.
 - 4. Submittals required for equipment and material described under other Sections.
 - 5. The plan shall clearly demonstrate the Contractor's ability to meet the time limitations specified.
 - 6. Communications plan to coordinate work with Engineer and Owner.
 - 7. Detailed plan to respond to any emergency or unforeseen circumstance that could result from Contractor's activities.
- B. All information submitted shall be in conformance with Section 013300 - Submittal Procedures.

SECTION 013110 - COORDINATION WITH OWNER'S OPERATIONS

- C. All information shall be submitted not less than eight (8) weeks prior to commencing the work. Contractor shall provide written notice to the Owner, and National Grid if applicable, at least three (3) weeks before shutdowns or tie-ins are required.
- D. No work which may affect the Owner's operations will be permitted until the required submittals are approved by the Engineer.

1.04 USE OF OWNER'S FACILITIES

- A. Contractor may use existing facilities, grounds or equipment in the new Work for construction purposes only if the Owner's written permission is obtained.
- B. Restore existing facilities, grounds and equipment used for temporary purposes to original condition in a manner satisfactory to Owner.
- C. Contractor shall assume full responsibility for any damage that may result to existing or new facilities, grounds or equipment used for construction purposes and shall repair or replace any damaged facilities, grounds or equipment at Contractor's cost.
- D. The Contractor will not be allowed to use existing bridge cranes in the Ball Pump Station.
- E. The Contractor will not be allowed to store equipment in the Ball Pump Station.
- F. The Ball Pump Station has a 2,000 kW permanent generator facility. The Owner may elect to operate the generator during some of the planned electrical system shut-downs for brief periods of time. Fuel will be furnished by the Owner.

The Contractor will not be permitted to use the permanent generator to facilitate the Contractor's work. The Contractor shall be required to provide temporary generators as necessary to complete their work. The equipment, materials, labor, and fuel costs shall be the Contractor's responsibility.

1.05 SHUTDOWNS, TIE-INS AND COORDINATION WITH OWNER'S OPERATIONS

- A. All operation of existing valves and gates required for shutdowns and bypasses shall be done by the Owner. All operation of existing electrical equipment required for shutdowns shall be done by the Owner, unless otherwise directed by the Owner or Engineer or as noted in the Plans and Specifications. Certain electrical operations shall be by National Grid.
- B. Insofar as possible, all equipment and material shall be tested and in operating condition and all preparatory work shall be completed to the greatest extent possible before shutdowns or tie-ins are commenced.
- C. Work that requires shutdowns and tie-ins to the existing electrical facilities shall be coordinated with the Owner and Engineer. The Contractor may be limited to a specific period of time for the shutdown, and/or non-standard working hours for shutdowns, so as

SECTION 013110 - COORDINATION WITH OWNER'S OPERATIONS

not to interfere with the pump station operation. Shutdowns shall be limited to a maximum of four (4) hours.

Where work cannot be accomplished within four (4) hours, the Contractor shall be responsible for all costs, fees, labor, etc. to provide the Owner with temporary utility services, equipment, etc. to maintain normal operation at the facility. This may include but not be limited to temporary power via portable generators.

- D. All work shall be scheduled at the convenience of the Owner and under no circumstances shall it adversely affect the pump station operation. Work shall not interfere with the Owner in meeting pumping requirements as are imposed upon the existing system.
- E. Contractor shall coordinate the shutdowns, tie-ins and connection work with the Owner, Engineer, and other Work specified under this Contract.

1.06 WORK SEQUENCE

- A. Only one of the following will be allowed to be out of service at any one time to facilitate the work. All work associated with a shut-down shall be completed at that time. Only one shut-down of each will be allowed except as outlined below.
 - 1. 48-inch Delivered Water Transmission Main.
 - 2. 48-inch and 60-inch Tank Inlet Piping
 - 3. 115 kV - Line 181.
 - 4. 115 kV - Line 182.
 - 5. Transformer T1-A.
 - 6. Transformer T2-B.

B. No shut-downs will be allowed between Memorial Day and Labor Day.

C. Provide temporary power for shut-downs of the electrical systems as needed, including but not limited to temporary panels, cabling, and lighting. Refer to Section 1.04 above regarding use of the existing permanent generator.

D. The CONTRACTOR shall provide one 2,000 kW, 480 volt or 4160 volt portable generator. The portable generator shall be on-site ready for use during all construction periods when electrical shut downs are scheduled or when there is not full redundant electrical capacity for Ball Pump Station – Lines 181 and 182, transformers, and 4160 volt feeders.

Fuel shall be provided by the CONTRACTOR. The OWNER will provide all 5 kV cables and a 4160 volt/480 volt transformer if needed. The CONTRACTOR will install the cables and transformer.

The generator will be on standby use and will only be used in emergencies for unanticipated outages.

E. Phase 1 work shall include the following.

- 1. New electrical substation:
 - a. Install micropiles.
 - b. Install concrete supports for receiving structures, dead tank breakers, transformers, and fire wall.

SECTION 013110 - COORDINATION WITH OWNER'S OPERATIONS

- c. Install ground grids.
 - d. Install electrical duct banks from new substation up to existing substation.
 - e. Install the transformer oil containment areas.
 - f. Install the DC power system.
 - 2. 48-inch Transmission Main:
 - a. Perform test pits.
 - b. Prepare and submit to the Engineer a detailed piping layout for the proposed work.
 - c. Install the new section of 48-inch main up to points of interconnection.
 - d. Provide 48-inch plugs for testing with sufficient outlets to obtain scouring velocity.
 - e. Pressure test and disinfect.
 - f. Obtain approvals.
 - 3. Coordinate with work by National Grid relative to the installation of the new tower.
- F. Memorial Day to Labor Day, 2018.
- 1. No work to be performed which requires shut downs.
- G. Phase 2 work shall include the following:
- 1. 48-inch Transmission Main:
 - a. Shut down the existing 48-inch Transmission Main (by Owner).
 - b. Dewater the existing and new 48-inch Transmission Mains as required.
 - c. Perform both interconnections concurrently (8 hours maximum).
 - d. Return the 48-inch Transmission Main to service (by Owner).
 - 2. New Electrical Substation:
 - a. Open Breaker 5-A-1-13F (R105) - (by Owner).
 - b. Close Breaker 5-BT-14F (R110) - (by Owner).
 - c. Open Circuit Switcher 115-A-1-2 (R13).
 - d. Open Switch 115-A-1-1 (101) - (by Owner). De-energize Line 182 (by National Grid). Switch 115-BT-1 (100) - to remain open.
 - e. Install Duct Bank A portion in existing substation.
 - f. Relocate Line 182 to new tower and reconnect to existing tower (by National Grid).
 - g. Close Switch 115-A-1-1 (101) - (by Owner). Re-energize Line 182 (by National Grid).
 - h. Open Breaker 5-BT-14F (R110) - (by Owner).
 - i. Close Circuit Switcher 115-A-1-2 (R103) - (by Owner).
 - j. Close Breaker 5-A-1-13F (R105) - (by Owner).
 - k. Set permanent generator to manual mode (by Owner).
 - l. Open Breaker 5-B-2-16F (R205) - (by Owner).
 - m. Close Breaker 5-BT-14F (R110) - (by Owner).
 - n. Open Circuit Switcher 115-B-2-2 (R203) - (by Owner).
 - o. Open Switch 115-B-2-1 (R201) - (by Owner). De-energize Line 181 (by National Grid). Switch 115-BT-1 (100) - to remain open.
 - p. Install Duct Bank B portion in existing substation.
 - q. Close Switch 115-BT-1 (100) - (by Owner).
 - r. Open Breaker 5-BT-14F (R110) - (by Owner).
 - s. Close Circuit Switcher 115-B-2-2 (R203) - (by Owner).
 - t. Close Breaker 5-B-2-16F (R205) (by Owner).

SECTION 013110 - COORDINATION WITH OWNER'S OPERATIONS

- u. Set Permanent Generator to Automatic Mode (by Owner)
 - v. Construct new electrical substation including but not limited to transformers, breakers, switches, A-frame receiving structures, and cables.
3. 48-inch and 60-inch Tank Inlet Mains:
- a. Shut down the 48-inch and 60-inch Tank Inlet Mains (by Owner).
 - b. Drain the North and South Ball Tanks (by Owner).
 - c. Dewater the 48-inch and 60-inch Tank Inlet Mains as required.
 - d. Access to the 48-inch and 60-inch mains is by the tank inlets inside the North and South Ball Tanks.
 - e. Install the internal pipe joint seals in the 48-inch and 60-inch Tank Inlet Piping.
 - f. Disinfect the 48-inch and 60-inch mains.
 - g. Fill the 48-inch and 60-inch mains. (By Owner).
 - h. Obtain approvals.
 - i. Return the 48-inch and 60-inch Tank Inlet Mains to service (by Owner).
 - j. Disinfect the North and South Tanks.
 - k. Fill the North and South Tanks (By Owner).
 - l. Obtain approvals.
 - m. Return the North and South Ball Tanks to service (by Owner).
 - n. All Work associated with the 48-inch and 60-inch Tank Inlet Mains, Items a. through m. shall be completed within 28 calendar days.
- H. Phase 3 work shall include the following:
- 1. New electrical substation:
 - a. Open Breaker 5-B-2-16F (R205) - (by Owner).
 - b. Close Breaker 5-BT-14F (R110) - (by Owner).
 - c. Open Switch 115-BT-1 (100) - (by Owner).
 - d. Reconfigure B side protective relaying for the new substation.
 - e. Commissioning, testing, National Grid approvals for the B side.
 - f. Remove the de-energized Line 181 overhead conductors (coordinate with National Grid).
 - g. Connect Line 181 115 kV to the new substation (coordinate with National Grid).
 - h. Connect new 5 kV secondary feeders to Breaker 5-B-2-16F (R205).
 - i. Energize Line 181 at new substation B side. (by National Grid).
 - j. Verify 115-BT-2 (200) is open and close 115-B-2-1 (201).
 - k. Close 115-B-2-2 (R203).
 - l. Verify phase, rotation, and sequence match A side.
 - m. Open Breaker 5-BT-14F (R110) - (by Owner).
 - n. Close Breaker 5-B-2-16F (R205) - (by Owner).
 - o. Performance Test for new substation B side.
 - p. Open Breaker 5-A-1-13F (R105) - (by Owner).
 - q. Close Breaker 5-BT-14F (R110) - (by Owner).
 - r. Open Circuit Switcher 115-A-1-2 (R103) - (by Owner).
 - s. Open Switch 115-A-1-1 (101) - (by Owner).
 - t. Reconfigure A side protective relaying for the new substation.
 - u. Commissioning, testing, National Grid approvals for the A side.
 - v. De-energize Line 182 (by National Grid).
 - w. Install new Line 182 115 kV overhead conductors from tower to substation (coordinate with National Grid).

SECTION 013110 - COORDINATION WITH OWNER'S OPERATIONS

- x. Connect Line 182 115 kV to the new substation (coordinate with National Grid).
 - y. Connect new 5kV secondary feeders to Breaker 5-A-1-13F (R105).
 - z. Energize Line 182 at new substation B side (by National Grid).
 - aa. Verify 115-BT- (100) is open and close 115-A-1-1 (101).
 - bb. Close 115-A-1-2 (R103).
 - cc. Verify phase, rotation, and sequence match A side (by National Grid).
 - dd. Open Breaker 5-BT-14F (R110) - (by Owner).
 - ee. Close Breaker 5-A-1-13F (R105) (by Owner).
 - ff. Performance Tests for new substation A side.
- I. Remaining work items can be performed as the schedule permits.
- 1. Access roads.
 - 2. 8-inch waterline and fire hydrant.
 - 3. Site lighting.
 - 4. Demolition of existing fence and gates.
 - 5. Demolition of existing substation.
 - 6. Demolition of existing substation foundations to 12-inches below grade.
 - 7. Stone parking area.
 - 8. New fence and gates
- J. Project closeout
- 1. Project closeout meeting.
 - 2. Complete final punch list.
 - 3. Provide Operation and Maintenance Manuals,
 - 4. Provide training of Owner personnel.
 - 5. Data collection.
 - 6. Demobilization.
 - 7. Final inspection.
 - 8. Release of liens forms.
 - 9. Application for final payment.
 - 10. Record documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 013216 - CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Submittals.
- B. Quality assurance.
- C. Bar chart schedules.
- D. Review and evaluation.
- E. Updating schedules.
- F. Distribution.

1.02 SUBMITTALS

- A. Schedule Updates:
 - 1. Overall percent complete, projected and actual.
 - 2. Completion progress by listed activity and subactivity, to within five working days prior to submittal.
 - 3. Changes in Work scope and activities modified since submittal.
 - 4. Delays in submittals or resubmittals, deliveries, or Work.
 - 5. Adjusted or modified sequences of Work.
 - 6. Other identifiable changes.
 - 7. Revised projections of progress and completion.
- B. Narrative Progress Report:
 - 1. Submit with each bi-weekly submission of Progress Schedule.
 - 2. Summary of Work completed during the past period between reports.
 - 3. Work planned during the next period.
 - 4. Explanation of differences between summary of Work completed and Work planned in previously submitted report.
 - 5. Current and anticipated delaying factors and estimated impact on other activities and completion milestones.
 - 6. Corrective action taken or proposed.
- C. Submit initial schedule no later than ten days after Notice to Proceed. Subsequent schedule updates shall be submitted with Monthly Payment Applications.
- D. Project schedule shall be created using Microsoft Project, latest version.

SECTION 013216 - CONSTRUCTION PROGRESS SCHEDULE

1.03 QUALITY ASSURANCE

- A. Scheduler: Contractor's personnel having use of computer facilities capable of delivering detailed graphic printout within 48 hours of request, and having use of computer facilities capable of delivering detailed graphic printout within 4 hours of request.

1.04 BAR CHART SCHEDULES

- A. Format: Bar chart Schedule, to include at least:
 - 1. Identification and listing in chronological order of those activities reasonably required to complete the Work, including:
 - a. Subcontract Work.
 - b. Major equipment design, fabrication, factory testing, and delivery dates including required lead times.
 - c. Move-in and other preliminary activities.
 - d. Equipment and equipment system test and startup activities.
 - e. Project closeout and cleanup.
 - f. Work sequences, constraints, and milestones.
 - 2. Listings identified by Specification Section number.
 - 3. Identification of the following:
 - a. Horizontal time frame by year, month, and week.
 - b. Duration, early start, and completion for each activity and subactivity.
 - c. Critical activities and Project float.
 - d. Subschedules to further define critical portions of Work.
 - 4. Provide schedule and all updates on 11" x 17" paper.
 - 5. Provide cash flow schedule.

1.05 REVIEW AND EVALUATION

- A. Participate in joint review and evaluation of schedules with Engineer at each submittal.
- B. Evaluate Project status to determine Work behind schedule and Work ahead of schedule.
- C. After review, revise schedules incorporating results of review, and resubmit within 3 days.

1.06 UPDATING SCHEDULES

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity. Update schedules to depict current status of Work.

SECTION 013216 - CONSTRUCTION PROGRESS SCHEDULE

- C. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- D. Upon approval of a Change Order, include the change in the next schedule submittal.
- E. Indicate changes required to maintain Date of completion of work in each Phase and Total Completion.
- F. Submit sorts as required to support recommended changes.
- G. Prepare narrative report to define problem areas, anticipated delays, and impact on schedule. Report corrective action taken or proposed and its effect.

1.07 DISTRIBUTION

- A. Following joint review, distribute copies of updated schedules to Contractor's Project site file, to Subcontractors, suppliers, Engineer, and Owner.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 013216 - CONSTRUCTION PROGRESS SCHEDULE

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SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Definitions.
- B. Submittal procedures.
- C. Proposed product list.
- D. Product data.
- E. Use of electronic CAD files of Project Drawings.
- F. Shop Drawings.
- G. Samples.
- H. Other submittals.
- I. Test reports.
- J. Certificates.
- K. Manufacturer's instructions.
- L. Manufacturer's field reports.
- M. Erection Drawings.
- N. Construction photographs.
- O. Contractor review.
- P. Architect/Engineer review.
- Q. Shop drawing procedures.

1.02 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action.
- B. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

SECTION 013300 - SUBMITTAL PROCEDURES

1.03 SUBMITTAL PROCEDURES

- A. Transmit each submittal with AIA G810 - Transmittal Letter CSI Form 12.1A - Submittal Engineer-accepted form.
- B. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.
- C. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.
- D. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite Project, submit electronic submittals via e-mail as PDF electronic files to Engineer. Coordinate submission of related items.
- F. For each submittal for review, allow 10 business days excluding delivery time to and from Contractor.
- G. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.
- H. Allow space on submittals for Contractor and Engineer review stamps.
- I. When revised for resubmission, identify changes made since previous submission.
- J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- K. Submittals not requested will not be recognized nor processed.
- L. Incomplete Submittals: Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Architect/Engineer.

1.04 PROPOSED PRODUCT LIST

- A. Within 10 business days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.05 PRODUCT DATA

- A. Product Data: Action Submittal: Submit to Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.

SECTION 013300 - SUBMITTAL PROCEDURES

- B. Submit electronic submittals via email as PDF electronic files.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.06 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

- A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.
- B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:
 - 1. Use of files is solely at receiver's risk. Architect/Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Architect/Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
 - 2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
 - 3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
 - 4. Receiver shall not hold Architect/Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
 - 5. Receiver shall understand that even though Architect/Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
 - 6. Receiver shall not hold Engineer responsible for such viruses or their consequences, and shall hold Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.
 - 7. Contractor will sign waiver for use of electronic CAD files as included.

1.07 SHOP DRAWINGS

- A. Shop Drawings: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

SECTION 013300 - SUBMITTAL PROCEDURES

- C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.
 - 1. Include signed and sealed calculations to support design.
 - 2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
 - 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- D. Submit electronic submittals via email as PDF electronic files.
- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.08 SAMPLES

- A. Samples: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
- B. Samples for Selection as Specified in Product Sections:
 - 1. Submit to /Engineer for aesthetic, color, and finish selection.
 - 2. Submit Samples of finishes, textures, and patterns for Engineer selection.
- C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.
- D. Include identification on each Sample, with full Project information.
- E. Submit number of Samples specified in individual Specification Sections; Engineer will retain two Samples.
- F. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.
- G. Samples will not be used for testing purposes unless specifically stated in Specification Section.
- H. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.09 OTHER SUBMITTALS

- A. Closeout Submittals: Comply with Section 017000 - Execution and Closeout Requirements.
- B. Informational Submittal: Submit data for Architect/Engineer's knowledge as Contract administrator or for Owner.

SECTION 013300 - SUBMITTAL PROCEDURES

- C. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

1.10 TEST REPORTS

- A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.11 CERTIFICATES

- A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Engineer, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.

1.12 MANUFACTURER'S INSTRUCTIONS

- A. Informational Submittal: Submit manufacturer's installation instructions for Architect/Engineer's knowledge as Contract administrator or for Owner.
- B. Submit printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing, to Architect/Engineer in quantities specified for Product Data.
- C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.13 MANUFACTURER'S FIELD REPORTS

- A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit report in duplicate within 3 days of observation to Engineer for information.
- C. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.14 ERECTION DRAWINGS

- A. Informational Submittal: Submit Drawings for Engineer's knowledge as Contract administrator or for Owner.

SECTION 013300 - SUBMITTAL PROCEDURES

- B. Submit Drawings for information assessing conformance with information given and design concept expressed in Contract Documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by Engineer or Owner.

1.15 CONSTRUCTION PHOTOGRAPHS

- A. Provide photographs of Site and construction throughout progress of Work produced by a professional photographer acceptable to Engineer. Resume to be submitted for approval.
- B. At bi-weekly progress meetings submit photographs.
- C. Photographs: digital copy with accompanying description.
- D. Take sufficient number of site photographs from different directions both interior and exterior (minimum of 5 per bi-weekly meeting) photographs of site indicating relative progress of the Work, two days maximum before submitting.
- E. Take photographs as evidence of existing Project conditions:
- F. Identify each print on front. Identify name of Project, Contract number phase orientation of view, date and time of view, name and address of photographer, and photographer's numbered identification of exposure.
- G. Digital Images: Deliver complete set of digital image electronic files on CD-ROM to Engineer for review with Project record documents. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as sensor, uncropped.
 - 1. Digital Images: Uncompressed TIFF format, produced by digital camera with minimum sensor size of 4.0 megapixels, and image resolution of not less than 1024 by 768 pixels.
 - 2. Date and Time: Include date and time in filename for each image.

1.16 CONTRACTOR REVIEW

- A. Review for compliance with Contract Documents and approve submittals before transmitting to Engineer.
- B. Contractor: Responsible for:
 - 1. Determination and verification of materials including manufacturer's catalog numbers.
 - 2. Determination and verification of field measurements and field construction criteria.
 - 3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
 - 4. Determination of accuracy and completeness of dimensions and quantities.
 - 5. Confirmation and coordination of dimensions and field conditions at Site.
 - 6. Construction means, techniques, sequences, and procedures.
 - 7. Safety precautions.

SECTION 013300 - SUBMITTAL PROCEDURES

- 8. Coordination and performance of Work of all trades.
- C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.
- D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Engineer.

1.17 ARCHITECT/ENGINEER REVIEW

- A. Do not make "mass submittals" to Engineer. "Mass submittals" are defined as six or more submittals or items in one day or 20 or more submittals or items in one week. If "mass submittals" are received, Engineer's review time stated above will be extended as necessary to perform proper review. Engineer will review "mass submittals" based on priority determined by Engineer after consultation with Owner and Contractor.
- B. Informational submittals and other similar data are for Engineer's information, do not require Engineer's responsive action, and will not be reviewed or returned with comment.
- C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.
- D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order, Engineer's Supplemental Instruction Field Order, or Construction Work Change Directive.

1.18 SHOP DRAWING PROCEDURES

- A. Shop Drawing procedures shall conform to requirements described in this Section.
- B. Submittals of Shop Drawings shall be made to the Engineer at the address listed in the Advertisement for Bids.
- C. A letter of transmittal shall accompany each submittal. If data for more than one Section of the Specifications is submitted, a separate transmittal letter shall accompany the data submitted for each Section.
- D. Copies of submittals shall be sent to the Erie County Water Authority at the Service Center Address at 3030 Union Road, Buffalo, New York 14227 and Owner at the Time Contractor submits to Engineer.
- E. At the beginning of each letter of transmittal provide a reference heading indicating the following:
 - 1. Owner's Name _____
 - 2. Project Name _____
 - 3. Contract No. _____
 - 4. Transmittal No. _____
 - 5. Section No. _____

SECTION 013300 - SUBMITTAL PROCEDURES

- F. If a Shop Drawing deviates from the requirements of the Contract Documents, Contractor shall specifically note each variation in his letter of transmittal.
- G. All Shop Drawings submitted for review shall have a title block with complete identifying information satisfactory to Engineer.
- H. All Shop Drawings submitted shall bear the stamp of approval and signature of Contractor as evidence that they have been reviewed by Contractor. Submittals without this stamp of approval will not be reviewed by Engineer and will be returned to Contractor. Contractor's stamp shall contain the following minimum information:
Project Name: _____
Contractor's Name: _____
Date: _____
-----Reference-----
Item: _____
Specifications: _____
Section: _____
Page No.: _____
Para. No.: _____
Drawing No.: _____ of _____
Location: _____
Submittal No.: _____
Approved By: _____
- I. A number shall be assigned to each submittal by Contractor starting with No. 1 and thence numbered consecutively. Resubmittals shall be identified by the original submittal number followed by the suffix "A" for the first resubmittal, the suffix "B" for the second resubmittal, etc.
- J. The CONTRACTOR shall initially submit to ENGINEER a minimum of 4 copies of all submittals that are on 8¹/₂-inch by 11-inch or smaller sheets, and one unfolded sepia and 2 prints made from that sepia for all submittals on sheets larger than 8¹/₂-inch by 11-inch. The OWNER and ENGINEER shall receive one copy only of each submittals which will be stamped "Preliminary - Not For Construction."
- K. After ENGINEER completes his review, Shop Drawings will be marked with one of the following notations:
1. Approved.
2. Approved as Corrected.
3. Revise and Resubmit.
4. Not Approved.
5. Submitted for Information.
- L. If a submittal is acceptable, it will be marked "Approved" or "Approved as Corrected". Four prints or copies of the submittal will be returned to CONTRACTOR.
- M. Upon return of a submittal marked "Approved" or "Approved as Corrected", CONTRACTOR may order, ship or fabricate the materials included on the submittal, provided it is in accordance with the corrections indicated.

SECTION 013300 - SUBMITTAL PROCEDURES

- N. If a Shop Drawing marked "Approved as Corrected" has extensive corrections or corrections affecting other drawings or Work, ENGINEER may require that CONTRACTOR make the corrections indicated thereon and resubmit the Shop Drawings for record purposes. Such drawings will have the notation, "Approved as Corrected - Resubmit."
- O. If a submittal is unacceptable, 2 copies will be returned to CONTRACTOR with one of the following notations:
1. "Revise and Resubmit"
 2. "Not Approved"
- P. Upon return of a submittal marked "Revise and Resubmit", CONTRACTOR shall make the corrections indicated and repeat the initial approval procedure. The "Not Approved" notation is used to indicate material or equipment that is not acceptable. Upon return of a submittal so marked, CONTRACTOR shall repeat the initial approval procedure utilizing acceptable material or equipment.
- Q. Any related Work performed or equipment installed without an "Approved" or "Approved as Corrected" Shop Drawing will be at the sole responsibility of the CONTRACTOR.
- R. Shop Drawings shall be submitted well in advance of the need for the material or equipment for construction and with ample allowance for the time required to make delivery of material or equipment after data covering such is reviewed. Contractor shall assume the risk for all materials or equipment which are fabricated or delivered prior to the review of Shop Drawings. Materials or equipment will not be included in periodic progress payments until review thereof has been obtained in the specified manner.
- S. Engineer will review and process all submittals promptly, but a reasonable time should be allowed for this, for the Shop Drawings being revised and resubmitted, and for time required to return the reviewed Shop Drawings to Contractor.
- T. It is Contractor's responsibility to review submittals made by his suppliers and Subcontractors before transmitting them to Engineer to assure proper coordination of the Work and to determine that each submittal is in accordance with his desires and that there is sufficient information about materials and equipment for Engineer to determine compliance with the Contract Documents. Incomplete or inadequate submittals will be returned for revision without review.
- U. Contractor shall furnish required submittals with complete information and accuracy in order to achieve required review of an item within three submittals. All costs to Engineer involved with subsequent submittals of Shop Drawings, Samples or other items requiring review, will be backcharged to Contractor, at the rate of 3.0 times direct technical labor cost, by deducting such costs from payments due Contractor for Work completed. In the event that Contractor requests a substitution for a previously reviewed item, all of Engineer's costs in the reviewing of the substitution will be backcharged to Contractor unless the need for such substitution is beyond the control of Contractor.

SECTION 013300 - SUBMITTAL PROCEDURES

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 013310 - SUBSTITUTIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Description
- B. Contractor's Options
- C. Substitutions

1.02 DESCRIPTION

- A. Requests for review of a substitution shall conform to these requirements and shall contain complete data substantiating compliance of proposed substitution with Contract Documents.

1.03 CONTRACTOR'S OPTIONS

- A. For materials or equipment (hereinafter products) specified only by reference standard, select product meeting that standard, by any manufacturer, fabricator, supplier or distributor (hereinafter manufacturer). To the maximum extent possible, provide products of the same generic kind from a single source.
- B. For products specified by naming several products or manufacturers, select any one of the products or manufacturers named which complies with Specifications.
- C. For products specified by naming one or more products or manufacturers and stating "or equal", submit a request for a substitution for any product or manufacturer which is not specifically named.
- D. For products specified by naming only one product or manufacturer and followed by words indicating that no substitution is permitted, there is no option and no substitution will be allowed.
- E. Where more than one choice is available as a Contractor's option, select product which is compatible with other products already selected or specified.

1.04 SUBSTITUTIONS

- A. During a period of 30 days after date of commencement of Contract Time, Engineer will consider written requests from Contractor for substitution of products or manufacturers, and construction methods (if specified).
 - 1. After end of specified period, requests will be considered only in case of unavailability of product or other conditions beyond control of Contractor.

SECTION 013310 - SUBSTITUTIONS

- B. Owner will withhold monies due to Contractor to cover additional Engineer's costs associated with requests for substitution.
- C. Submit 5 copies of request for substitution. Submit separate request for each substitution. Include in request the following:
1. For products or manufacturers:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature with product description, performance and test data, and reference standards.
 - c. Samples, if appropriate.
 - d. Name and address of similar projects on which product was used, and date of installation.
 2. For construction methods (if specified):
 - a. Detailed description of proposed method.
 - b. Drawings illustrating method.
 3. Such other data as the Engineer may require to establish that the proposed substitution is equal to the product, manufacturer or method specified.
- D. In making request for substitution, Contractor represents that:
1. Contractor has investigated proposed substitution, and determined that it is equal to or superior in all respects to the product, manufacturer or method specified.
 2. Contractor will provide the same or better guarantees or warranties for proposed substitution as for product, manufacturer or method specified.
 3. Contractor waives all claims for additional costs or extension of time related to proposed substitution that subsequently may become apparent.
- E. A proposed substitution will not be accepted if:
1. Acceptance will require changes in the design concept or a substantial revision of the Contract Documents.
 2. It will delay completion of the Work, or the work of other contractors.
 3. It is indicated or implied on a Shop Drawing and is not accompanied by a formal request for substitution from Contractor.
- F. If the Engineer determines that a proposed substitute is not equal to that specified, Contractor shall furnish the product, manufacturer or method specified at no additional cost to Owner.
- G. Approval of a substitution will not relieve Contractor from the requirement for submittals as set forth in the Contract Documents.

SECTION 013310 - SUBSTITUTIONS

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 013310 - SUBSTITUTIONS

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SECTION 013543 - ENVIRONMENTAL PROCEDURES FOR HAZARDOUS MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. CONTRACTOR shall comply with all Federal, State, and local Laws and Regulations related to environmental protection and environmental safety including, but not limited, to the following:
1. Title 29 Code of Federal Regulations Parts 1910, Occupational Safety and Health.
 2. Title 40 Code of Federal Regulations, Environmental Protections.
 3. Title 49 Code of Federal Regulations, Transportation.
 4. State Occupational Safety and Health Administration (OSHA).
- B. In order to ensure the OWNER that CONTRACTOR is complying with the intent of the regulations stated in Paragraph 1.01.A, above, as they relate to the on-site use of hazardous materials, hazardous wastes and other substances similarly defined in those regulations, CONTRACTOR shall develop and maintain a CONTRACTOR'S Hazardous Materials Management Program that includes as a minimum, but is not limited to the requirements specified herein. The interests of the OWNER are that accidental spills, Site contamination, and injury of personnel on the Site are avoided. OWNER will not enforce suspected violations of the rules and regulations referenced in Paragraph 1.1.A, above, however the OWNER will notify CONTRACTOR of suspected violations. If in the opinion of the OWNER, CONTRACTOR fails to address the suspected violations in a timely and appropriate manner, OWNER will notify Federal, State, or local regulatory agencies, report the suspected violations to them, and request that they inspect CONTRACTOR'S operations. Any fines that may be levied against OWNER for violations committed on the Site by CONTRACTOR as well as any costs to OWNER associated with cleanup of materials shall be reimbursed immediately by CONTRACTOR. All documents required by the program shall be made available to the OWNER'S Environmental Representative immediately, upon request.
- C. Any hazardous waste, as defined in any of the above listed regulations, generated by CONTRACTOR shall be the responsibility of CONTRACTOR. If CONTRACTOR is going to generate, or has generated, a substance that qualifies as a hazardous waste, CONTRACTOR shall obtain an EPA identification number, listing CONTRACTOR'S name and construction Site address as the generator of the hazardous waste. CONTRACTOR shall be responsible for the identification, analysis, profiling, transport and disposal of hazardous wastes generated. The identification number can be obtained from the New York State Department of Environmental Conservation. This number shall be provided to the ENGINEER within 5 days after the Notice to Proceed, or before any hazardous materials are brought onto the Site.

1.02 HAZARDOUS MATERIALS MANAGEMENT PROGRAM REQUIREMENTS

- A. Within the regulations listed in Paragraph 1.01.A, above, terms such as hazardous material, hazardous wastes, and similar terms have varying definitions. To dispel confusion regarding what materials fall under the Program Requirements and for the purposes of this Article, Hazardous Material is defined as "any material, whether solid, semi-solid, liquid, or gas, which, if not stored or used properly, may cause harm or injury to persons through inhalation, ingestion, absorption or injection, or which may negatively impact the

SECTION 013543 - ENVIRONMENTAL PROCEDURES FOR HAZARDOUS MATERIALS

environment through the use or discharge of the material on the ground, in the water (including groundwater), or to the air."

- B. All chemicals brought onto the Site must be approved by OWNER. Prior to bringing any chemical onto the Site, CONTRACTOR shall request approval from OWNER'S Environmental Representative for each chemical CONTRACTOR proposes to bring onto the Site. At the time of request, OWNER'S Environmental Representative may request and receive from CONTRACTOR, specific information associated with each chemical. The specific information may include, but is not limited to, MSDS, manufacture, vendor, container size(s), number of containers, minimum and maximum volume of material intended to be stored on-site, as well a description to the process or procedures in which any requested chemical is to be used. OWNER, within 5 days from receipt of the specific chemical information, will inform CONTRACTOR as to whether the chemical has been approved for use on-site.
- C. CONTRACTOR shall, in accordance with applicable Laws and Regulations, develop a Hazardous Materials Communication Plan. At a minimum, CONTRACTOR shall maintain on-site two notebooks containing (1), a chemical inventory, and (2), current (dated within the past two years) Material Safety Data Sheets for all materials being used on-site, whether or not they are defined as a Hazardous Material in Paragraph 1.2.A, above. One notebook shall be kept in CONTRACTOR'S on-site office and the other shall be kept in a location specified by the OWNER'S Environmental Representative. These notebooks must be kept up-to-date as materials are brought onto and removed from the Site. Copies of MSDS sheets for chemicals removed from the Site shall be provided to the OWNER'S Environmental Representative.
- D. CONTRACTOR shall develop an emergency/spill response plan, for each hazardous material or class/group of materials. As a minimum, the response plan must address the following:
 - 1. Provide a description of equipment on-site available to contain or respond to an emergency/spill of the material.
 - 2. Notification procedures.
 - 3. Response coordination procedures between CONTRACTOR, OWNER, and ENGINEER.
 - 4. Provide a Site Plan showing the location of stored hazardous materials and location of spill containment/response equipment.
 - 5. Provide a description of the hazardous material handling and spill response training provided to CONTRACTOR'S employees.
- E. CONTRACTOR shall, in accordance with applicable Laws and Regulations, properly and safely store all hazardous materials, which shall include as a minimum, the following:
 - 1. Have a designated storage site for hazardous materials that includes secondary containment. The Site must include barriers to prevent vehicles from colliding with the storage containers and offer protection from environmental factors such as weather.
 - 2. Provide signage in accordance with applicable Laws and Regulations, clearly identifying the hazardous materials storage site.
 - 3. All hazardous materials containers must bear the applicable Hazard Diamonds.

SECTION 013543 - ENVIRONMENTAL PROCEDURES FOR HAZARDOUS MATERIALS

- F. CONTRACTOR shall properly label all containers of consumable materials, whether or not they are classified as Hazardous Materials under this Section. The name of CONTRACTOR or subcontractor shall be stenciled on any container containing a hazardous material and on any container over five-gallon capacity containing a non-hazardous material. Any container must have a label clearly identifying the contents. If any such unlabeled containers are discovered on the Site, the OWNER'S Environmental Representative will notify CONTRACTOR, and CONTRACTOR will within one hour properly label the container or remove it from the Site. Any containers that are filled from larger containers must also be properly labeled.
- G. OWNER encourages storage of hazardous materials off-site until the materials are needed on-site.
- H. CONTRACTOR shall provide all documentation required herein available upon request of OWNER'S Environmental Representative immediately upon request of OWNER'S Environmental Representative. CONTRACTOR'S Safety Representative will meet at least monthly with OWNER'S Environmental Representative to review CONTRACTOR'S Hazardous Materials Management Program documents, procedures, and inspect the storage site and the Site to ensure the requirements specified herein are being complied with. CONTRACTOR shall also provide OWNER'S Environmental Representative and the ENGINEER with copies of all permits obtained from environmental regulatory agencies.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Quality control.
- B. Tolerances.
- C. References.
- D. Labeling.
- E. Mockup requirements.
- F. Testing and inspection services.
- G. Manufacturers' field services.

1.02 QUALITY CONTROL

- A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- C. Perform Work using persons qualified to produce required and specified quality.
- D. Products, materials, and equipment may be subject to inspection by Engineer and Owner at place of manufacture or fabrication. Such inspections shall not relieve Contractor of complying with requirements of Contract Documents.
- E. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

1.03 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

SECTION 014000 - QUALITY REQUIREMENTS

1.04 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current as of date for receiving Bids except where specific date is established by code.
- C. Obtain copies of standards and maintain on Site when required by product Specification Sections.
- D. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- E. Neither contractual relationships, duties, or responsibilities of parties in Contract nor those of Architect/Engineer shall be altered from Contract Documents by mention or inference in reference documents.

1.05 LABELING

- A. Attach label from agency approved by authorities having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.
- B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label:
 - 1. Model number.
 - 2. Serial number.
 - 3. Performance characteristics.
- C. Manufacturer's Nameplates, Trademarks, Logos, and Other Identifying Marks on Products: Not allowed on surfaces exposed to view in public areas, interior or exterior.

1.06 MOCK-UP REQUIREMENTS

- A. Tests will be performed under provisions identified in this Section and identified in individual product Specification Sections.
- B. Assemble and erect specified or indicated items with specified or indicated attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mockups shall be comparison standard for remaining Work.
- D. Where mockup has been accepted by Engineer and is specified in product Specification Sections to be removed, remove mockup and clear area when directed to do so by Engineer.

SECTION 014000 - QUALITY REQUIREMENTS

1.07 TESTING AND INSPECTION SERVICES

- A. Owner will employ and pay for specified services of an independent firm to perform testing and inspection.
- B. Independent firm will perform tests, inspections, and other services specified in individual Specification Sections and as required by Engineer.
 - 1. Laboratory: Authorized to operate at Project location in State of New York.
 - 2. Laboratory Staff: Maintain full-time Professional Engineer or specialist on staff to review services.
 - 3. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.
- C. Testing, inspections, and source quality control may occur on or off Project Site. Perform off-Site testing as required by Engineer or Owner at no additional cost to the Owner.
- D. Reports shall be submitted by independent firm to Engineer, Contractor, and authorities having jurisdiction, indicating observations and results of tests and compliance or noncompliance with Contract Documents.
 - 1. Submit final report indicating correction of Work previously reported as noncompliant.
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify Engineer and independent firm 48 hours before expected time for operations requiring services.
 - 2. Make arrangements with independent firm and pay for additional Samples and tests required for Contractor's use.
- F. Employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.
- G. Retesting or re-inspection required because of nonconformance with specified or indicated requirements shall be performed by same independent firm on instructions from Engineer. Payment for retesting or re-inspection will be the responsibility of the Contractor, no claim for additional costs from the Contractor will be accepted.
- H. Agency Responsibilities:
 - 1. Test Samples of mixes submitted by Contractor.
 - 2. Provide qualified personnel at Site. Cooperate with Engineer and Contractor in performance of services.
 - 3. Perform indicated sampling and testing of products according to specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Engineer and Contractor of observed irregularities or nonconformance of Work or products.

SECTION 014000 - QUALITY REQUIREMENTS

6. Perform additional tests required by Engineer.
 7. Attend preconstruction meetings and progress meetings.
- I. Agency Reports: After each test, promptly submit one copy of report to Engineer, Contractor, and authorities having jurisdiction. When requested by Engineer, provide interpretation of test results. Include the following:
1. Date issued.
 2. Project title and number.
 3. Name of inspector.
 4. Date and time of sampling or inspection.
 5. Identification of product and Specification Section.
 6. Location in Project.
 7. Type of inspection or test.
 8. Date of test.
 9. Results of tests.
 10. Conformance with Contract Documents.
- J. Limits on Testing Authority:
1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Agency or laboratory may not approve or accept any portion of the Work.
 3. Agency or laboratory may not assume duties of Contractor.
 4. Agency or laboratory has no authority to stop the Work.

1.08 MANUFACTURER'S FIELD SERVICES

- A. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, assist with startup of equipment, testing, adjusting, and balancing of equipment and commissioning as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Engineer 30 days in advance of required observations. Observer is subject to approval of Engineer.
- C. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.
- D. Refer to Section 013300 - Submittal Procedures, "Manufacturer's Field Reports" Article.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. References
- B. Temporary Utilities:
 - 1. Temporary electricity.
 - 2. Temporary lighting.
 - 3. Temporary water service.
 - 4. Temporary sanitary facilities.
- C. Construction Facilities:
 - 1. Field offices and sheds.
 - 2. Vehicular access.
 - 3. Progress cleaning and waste removal.
 - 4. Fire-prevention facilities.
- D. Temporary Controls:
 - 1. Enclosures and fencing.
 - 2. Security.
 - 3. Water control.
 - 4. Dust control.
 - 5. Erosion and sediment control.
 - 6. Noise control.
- E. Removal of utilities, facilities, and controls.

1.02 REFERENCES

- A. ASTM International:
 - 1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 2. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
 - 3. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

1.03 TEMPORARY GENERAL CONSTRUCTION ELECTRICITY

- A. Use Owner's existing power service. Coordinate location for temporary service connection with Owner.
- B. Complement existing power service capacity and characteristics as required for construction operations.

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

- C. Provide power outlets with branch wiring and distribution boxes located as required for construction operations. Provide suitable, flexible power cords as required for portable construction tools and equipment.
- D. Provide main service disconnect and overcurrent protection at convenient location feeder switch at source distribution equipment, and/or meter as field required.
- E. Permanent convenience receptacles may be used during construction.
- F. Provide distribution equipment, wiring, and outlets for single-phase branch circuits for power and lighting.
 - 1. Provide 20-ampere duplex outlets, single-phase circuits for power tools as needed in active work area.
 - 2. Provide 20-ampere, single-phase branch circuits for lighting.

1.04 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain building incandescent lighting for construction operations to achieve minimum lighting level of 2 watts/sq ft.
- B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtailed, lamps, and the like, for specified lighting levels.
- C. Maintain lighting and provide routine repairs.
- D. Permanent building lighting shall not be used during rough construction.

1.05 TEMPORARY WATER SERVICE

- A. Use Owner's existing water service. Coordinate location for temporary service connection with Owner. Connect using a backflow preventer.

1.06 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Existing Facility use is not permitted. Provide facilities at time of Project mobilization.

1.07 FIELD OFFICES AND SHEDS

- A. A staging area for the Contractor is shown on the drawings and is for field offices, storage and employee parking.
- B. Provide Contractor's field office at location shown on Contract Drawings or specified by the Engineer or Owner with the minimum facilities as follows:
 - 1. As required by Contractor but with sufficient room for project meetings.
 - 2. Include conference table and chairs sufficient for six persons.
 - 3. Telephone service with answering machine.
 - 4. Fax machine.

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

5. Sufficient lighting, heating, and air conditioning systems.
 6. Six protective helmets for visitor's use.
 7. First-aid kit.
 8. Other furnishings at Contractor's option.
 9. Provide one set of all Contract Documents in the office for ready reference at all items by interested parties.
 10. Post the emergency phone list, necessary OSHA documents, New York State Labor Law Requirements, and all permits on wall for easy inspection to all visitors.
 11. Contractor must maintain project file in field office containing copies of all approved submittals (with Engineer's approval stamp), manufacturer's data for all materials used on site, and a health and safety manual as per OSHA requirements.
- C. Furnish, install and maintain an office area within the Contractor's field office for the Engineer or in a separate trailer. Work will not be allowed to commence until such time that the office is functional.
1. The office will include a desk (minimum 5' by 3'), rolling office chair, table (minimum 5' by 3'), four drawer filing cabinet, wastebasket, first aid kit, and private sanitary facilities.
 2. Provide a separate work station with internet service for the Engineer for the duration of the project. The work station shall be furnished with the following at a minimum.
 - a. Microsoft Surface Pro 3 with 128GB hard drive, "I5 processor, and 4 GB. Ram.
 - b. Urban Armor Gear Case for Surface Pro 3. Model No. UAG-SFPRO3-BLK-VP.
 - c. Tempered glass screen protector for Surface Pro 3.
 - d. USB docking station – pluggable Model UD-3900.
 - e. 22" LED, 1920 x 1080 monitor with HDMI port.
 - f. USB inkjet printer/copier/fax capable of 11 x 17 paper.
 - g. 4G, LTE mobile WiFi Hotspot.
 - h. Cellular internet/data service.
 - i. Miscellaneous cables as required.
- D. Storage Areas and Sheds: Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and inspection of products to suit requirements in Section 016000 - Product Requirements.
- E. Preparation: Fill and grade Sites for temporary structures sloped for drainage away from buildings.
- F. Installation:
1. Install field office spaces ready for occupancy 10 days after date established by Notice to Proceed.
 2. Employee Residential Occupancy: Not allowed on Owner's property.
- G. Maintenance and Cleaning:
1. Weekly janitorial services for field offices; periodic cleaning and maintenance for sheds and storage areas.
 2. Maintain walks free of mud, water, snow, and the like.

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

- H. Removal: At completion of Work remove buildings, foundations, utility services, and debris. Restore areas to same or better condition as original condition.

1.08 VEHICULAR ACCESS

- A. Provide unimpeded access for emergency vehicles. Maintain 15 foot-wide driveways with turning space between and around combustible materials.
- B. Provide and maintain access to fire hydrants and control valves free of obstructions.
- C. Provide means of removing mud from vehicle wheels before entering streets.
- D. Use designated existing on-Site roads for construction traffic.

1.09 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, before enclosing spaces.
- C. Broom and vacuum clean interior areas before starting surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and rubbish from Site weekly and dispose of off-Site.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.10 FIRE-PREVENTION FACILITIES

- A. Prohibit smoking within buildings. Designate area on Site where smoking is permitted. Provide approved ashtrays in designated smoking areas.
- B. Establish fire watch for cutting, welding, and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.

1.11 ENCLOSURES AND FENCING

- A. Construction: Commercial-grade chain-link fence.
- B. Provide 8-foot-high fence around construction Site as necessary when existing fence is temporarily removed for construction activities; equip with vehicular and pedestrian gates with locks.

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

C. Exterior Enclosures:

1. Provide temporary insulated weathertight closure of exterior openings to accommodate acceptable working conditions and protection for products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual Specification Sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.12 SECURITY

A. Security Program:

1. Protect Work on existing premises and Owner's operations from theft, vandalism, and unauthorized entry.
2. Initiate program in coordination with Owner's existing security system at Project mobilization.
3. Maintain program throughout construction period until Owner's acceptance precludes need for Contractor's security.

B. Entry Control:

1. Restrict entrance of persons and vehicles to Project Site and existing facilities.
2. Allow entrance only to authorized persons with proper identification.
3. Maintain log of workers and visitors and make available to Owner on request.
4. Owner will control entrance of persons and vehicles related to Owner's operations.
5. Coordinate access of Owner's personnel to Site in coordination with Owner's security forces.

C. Personnel Identification:

1. Provide identification badge for each person authorized to enter premises.
2. Badge to Include: Personal photograph, name, and employer.
3. Maintain list of accredited persons and submit copy to Owner on request.
4. Require return of badges at expiration of employment on the Work.

D. Vehicle Identification:

1. All Contractor vehicles, including employee vehicles, shall display a vehicle identification tag clearly visibly located on the dashboard. The vehicle tag shall be issued by the Contractor and shall include the following information: site name, Contractor name, contract number, vehicle license plate number, state of issue, name and employer of vehicle owner and vehicle owner contact telephone number.

E. Security Service:

1. Facility to be fenced off and locked when no workers or operator is on-site.
2. Coordinate with Owner and operator for securing site when operator is not present.

F. Restrictions:

1. Do not allow cameras on Site or photographs taken except by written approval of Owner.

G. Contingency Allowance:

1. The Contingency Allowance included in the Contract includes costs for the services of a security firm to provide a security guard house and guard at the site during

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

normal business hours to monitor vehicles and personnel entering and exiting the site that are involved with the Contractor's Work. This Allowance would be utilized only if the Owner elects to provide these site security services.

2. This is for security related to site access only. If the Owner does not elect to provide this site access security service, it in no way releases the Contractor from the responsibilities of Article 1.12 of this Section. The costs for all other site security outlined in Article 1.12 shall be the responsibility of the Contractor and is not part of the Contingency Allowance for site access security services.

1.13 WATER CONTROL

- A. Grade Site to drain. Maintain excavations free of water. Provide, operate, and maintain necessary pumping equipment.
- B. Protect Site from puddles or running water. Provide water barriers as required to protect Site from soil erosion.

1.14 DUST CONTROL

- A. Execute Work by methods that minimize raising dust from construction operations.
- B. Provide positive means to prevent airborne dust from dispersing into atmosphere and into Owner-occupied areas.
- C. Dust control measures shall be employed for all work inside the Ball Pump Station to protect all pumps, motors, electrical equipment, ventilation systems, and other equipment. This shall include but is not limited to installing temporary barriers and exhaust systems.
- D. Contractor shall submit plans for dust control to the Engineer for approval.

1.15 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Minimize surface area of bare soil exposed at one time.
- C. Provide temporary measures including berms, dikes, drains, and other devices to prevent water flow.
- D. Construct fill and waste areas by selective placement to avoid erosive surface silts and clays.
- E. Periodically inspect earthwork to detect evidence of erosion and sedimentation. Promptly apply corrective measures.
- F. Comply with sediment and erosion control plan indicated on Drawings.

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

1.16 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise produced by construction operations.

1.17 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials before Final Application for Payment inspection.
- B. Remove underground installations to minimum depth of 2 feet. Grade Site as indicated on Drawings.
- C. Clean and repair damage caused by installation or use of temporary Work.
- D. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

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SECTION 015519 – TEMPORARY PARKING AND STAGING AREAS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Scope of Work.
- B. Description of Work.
- C. Permits and Regulations

1.02 SCOPE OF WORK

- A. During construction activities, the Contractor shall park within designated areas as determined by the Owner.
- B. Contractor shall stage equipment, materials, and field offices in staging areas designated prior to construction.
- C. The staging area is shown on the drawings and is for use by the Contractor.

1.03 DESCRIPTION OF WORK

- A. Temporary Parking Areas:
 - 1. At the site, temporary stone with geotextile fabric may be placed in grass area(s) for additional parking areas and/or turn around areas as approved by the Owner.
 - 2. Contractor shall leave sufficient space for plant operator and other staff to park and access the site as necessary.
- B. Staging Areas:
 - 1. Contractor shall stage equipment, materials, and field offices in designated staging areas, as directed by the Owner.
- C. Restoration
 - 1. At the end of the project the Contractor shall remove all temporary parking and staging areas and restore to acceptable standards per contract documents or as directed by the Owner.

1.04 PERMITS AND REGULATIONS

- A. The Contractor shall comply with all municipal, County, State and Federal regulations relating to safety, noise and air pollution and shall apply for, obtain and pay all costs in connection with permits as may be required.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 – EXECUTION – NOT APPLICABLE

END OF SECTION

SECTION 015519 – TEMPORARY PARKING AND STAGING AREAS

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SECTION 015620 - PROTECTION OF THE WORK AND PROPERTY

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Description
- B. Barricades and Warning Signals
- C. Tree and Plant Protection
- D. Protection of Existing Structures
- E. Protection of Floors, Roofs, and Ceilings
- F. Protection of Installed Products and Landscaping

1.02 DESCRIPTION

- A. Contractor shall be responsible for taking all precautions, providing all programs, and taking all actions necessary to protect the Work and all public and private property and facilities from damage as specified in the General Conditions and herein.
- B. In order to prevent damage, injury or loss, Contractor's actions shall include, but not be limited to, the following:
 - 1. Store apparatus, materials, supplies, and equipment in an orderly, safe manner that will not unduly interfere with the progress of the Work or the Work of any other contractor or utility service company.
 - 2. Provide suitable storage facilities for all materials which are subject to injury by exposure to weather, theft, breakage, environmental contamination, or otherwise.
 - 3. Place upon the Work or any part thereof only such loads as are consistent with the safety of that portion of the Work.
 - 4. Clean up frequently all refuse, rubbish, scrap materials, and debris caused by his operations, to the end that at all times the site of the Work shall present a safe, orderly and workmanlike appearance.
 - 5. Provide barricades and guard rails around openings, for scaffolding, for temporary stairs and ramps, around excavations, elevated walkways and other hazardous areas.
- C. Contractor shall not, except after written consent from proper parties, enter or occupy privately-owned land with men, tools, materials or equipment, except on easements provided herein.
- D. Contractor shall assume full responsibility for the preservation of all public and private property or facility on or adjacent to the site. If any direct or indirect damage is done by or on account of any act, omission, neglect or misconduct in the execution of the Work by the Contractor, it shall be restored by the Contractor, at his expense, to a condition equal to that existing before the damage was done.

SECTION 015620 - PROTECTION OF THE WORK AND PROPERTY

1.03 BARRICADES AND WARNING SIGNALS

- A. Where Work is performed on or adjacent to any roadway, right-of-way, or public place, Contractor shall provide barricades, fences, lights, warning signs, danger signals, watchmen, and shall take other precautionary measures for the protection of persons or property and of the Work. Barricades shall be painted to be visible at night. From sunset to sunrise, Contractor shall furnish and maintain at least one light at each barricade. Sufficient barricades shall be erected to keep vehicles from being driven on or into Work under construction. Contractor shall furnish watchmen in sufficient numbers to protect the Work. Contractor's responsibility for the maintenance of barricades, signs, lights, and for providing watchmen shall continue until the Project is accepted by Owner.

1.04 TREE AND PLANT PROTECTION

- A. Contractor shall protect existing trees, shrubs and plants on or adjacent to the site that are shown or designated to remain in place against unnecessary cutting, breaking or skinning of trunk, branches, bark or roots.
- B. Materials or equipment shall not be stored or parked within the drip line.
- C. Temporary fences or barricades shall be installed to protect trees and plants in areas subject to traffic.
- D. Fires shall not be permitted under or adjacent to trees and plants.
- E. Within the limits of the work, water trees and plants that are to remain, in order to maintain their health during construction operations.
- F. Cover all exposed roots with burlap that shall be kept continuously wet. Cover all exposed roots with earth as soon as possible. Protect root systems from mechanical damage and damage by erosion, flooding, run-off or noxious materials in solution.
- G. If branches or trunks are damaged, prune branches immediately and protect the cut or damaged areas with emulsified asphalt compounded specifically for horticultural use in a manner approved by the Engineer.
- H. All damaged trees and plants that die or suffer permanent injury shall be removed when ordered by the Engineer and replaced by a specimen of equal or better quality.
- I. Coordinate work in this section with requirements of Division 2 Technical Specifications.

1.05 PROTECTION OF EXISTING STRUCTURES

- A. Underground Structures:
 - 1. Underground structures are defined to include, but not be limited to, all sewer, water, gas, and other piping, and manholes, chambers, electrical conduits, tunnels and other existing subsurface work located within or adjacent to the limits of the Work.

SECTION 015620 - PROTECTION OF THE WORK AND PROPERTY

2. All underground structures known to Engineer except water, sewer, electric, and telephone service connections are shown. This information is shown for the assistance of Contractor in accordance with the best information available, but is not guaranteed to be correct or complete.
3. Contractor shall explore ahead of his trenching and excavation Work and shall uncover all obstructing underground structures sufficiently to determine their location, to prevent damage to them and to prevent interruption to the services which such structures provide. If Contractor damages an underground structure, he shall restore it to original condition at his expense.
4. Necessary changes in the location of the Work may be made by Engineer, to avoid unanticipated underground structures.
5. If permanent relocation of an underground structure or other subsurface facility is required and is not otherwise provided for in the Contract Documents, Engineer will direct Contractor in writing to perform the Work, which shall be paid for under the provisions of the General Conditions.

B. Surface Structures:

1. Surface structures are defined as all existing buildings, structures and other facilities above the ground surface. Included with such structures are their foundations or any extension below the surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, roads, dams, channels, open drainage, piping, poles, wires, posts, signs, markers, curbs, walks and all other facilities that are visible above the ground surface.

C. Protection of Underground and Surface Structures:

1. Contractor shall sustain in their places and protect from direct or indirect injury all underground and surface structures located within or adjacent to the limits of the Work. Such sustaining and supporting shall be done carefully and as required by the party owning or controlling such structure. Before proceeding with the work of sustaining and supporting such structure, Contractor shall satisfy the Engineer that the methods and procedures to be used have been approved by the party owning same.
2. Contractor shall assume all risks attending the presence or proximity of all underground and surface structures within or adjacent to the limits of the Work. Contractor shall be responsible for all damage and expense for direct or indirect injury caused by his Work to any structure. Contractor shall repair immediately all damage caused by his work, to the satisfaction of the owner of the damaged structure.

- D. All other existing surface facilities, including but not limited to, guard rails, posts, guard cables, signs, poles, markers, and curbs which are temporarily removed to facilitate installation of the Work shall be replaced and restored to their original condition at Contractor's expense.

1.06 PROTECTION OF FLOORS, ROOFS, AND CEILINGS

- A. Contractor shall protect floors, roofs and ceilings during the entire construction period.

SECTION 015620 - PROTECTION OF THE WORK AND PROPERTY

- B. Proper protective covering shall be used when moving heavy equipment, handling materials or other loads, when painting, handling mortar and grout and when cleaning walls and ceilings.
- C. Use metal pans to collect all oil and cuttings from pipe, conduit, or rod threading machines and under all metal cutting machines.
- D. Roofs and ceilings shall not be loaded without written permission of the Engineer.

1.07 PROTECTION OF INSTALLED PRODUCTS AND LANDSCAPING

- A. Provide protection of installed products to prevent damage from subsequent operations. Remove protection facilities when no longer needed, prior to completion of Work.
- B. Control traffic to prevent damage to equipment, materials and surfaces.
- C. Provide coverings to protect equipment and materials from damage.
 - 1. Cover projections, wall corners, and jambs, sills and soffits of openings, in areas used for traffic and for passage of products in subsequent work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 015750 - RESPIRABLE CRYSTALLINE SILICA

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Description
- B. Quality Assurance
- C. Submittals
- D. Competent Person
- E. Permits and Compliance
- F. Personal Protective Equipment
- G. Signs and Labels
- H. Other Products or Materials
- I. Work Procedures
- J. Prohibited Work Practices and Engineering Controls
- K. Payment

1.02 DESCRIPTION

- A. Work Specified.
The work specified shall include all labor, materials, tools, equipment, services, and incidentals necessary to work around respirable crystalline silica (RCS).

1.03 QUALITY ASSURANCE

- A. Reference Standards.
 - 1. Code of Federal Regulations U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), 29 CFR 1926.1153, Respirable Crystalline Silica.
 - 2. New York State Department of Labor, Public Employee Safety and Health Bureau, PESH Act.
 - 3. AWWA Manual M28, Rehabilitation of Water Mains.
 - 4. AWWA Manual M9, Concrete Pressure Pipe.
 - 5. NSF/ANSI Standard 61.
 - 6. Underwriter's Laboratories (UL).
 - 7. International Organization for Standardization (ISO).
 - 8. Factory Mutual Research Corporation.
 - 9. Clean Air Act (CAA).
 - 10. Safe Drinking Water Act (SDWA).
 - 11. ANSI Z88.2-80, Practices for Respiratory Protection.
 - 12. 29 CFR 1910.1200, "Hazard Communication" (OSHA).

SECTION 015750 - RESPIRABLE CRYSTALLINE SILICA

13. 29 CFR 1910.134, "Respiratory Protection" (OSHA).
14. 29 CFR 1926, "Construction Industry" (OSHA).
15. Occupational Safety and Health Administration.
16. United States Department of Transportation (USDOT).
17. New York State Department of Environmental Conservation (NYSDEC).
18. New York State Department of Health (NYSDOH).
19. New York State Department of Labor (NYSDOL).
20. New York State Department of Transportation (NYSDOT).

1.04 SUBMITTALS

- A. CONTRACTOR shall submit the following prior to the start of work:
1. A letter from the CONTRACTOR, on company letterhead, stating that they are knowledgeable of all current local, state, and federal requirements regarding respirable crystalline silica, that all work will meet those requirements, and that all workers shall be protected against exposure as defined by OSHA. Letter shall have an original signature, signed by an officer of the company.
 2. Written exposure control plan, as defined in 29 CFR 1926.1153(g) which includes at minimum the following items:
 - a. A description of the tasks in the workplace that involve exposure to respirable crystalline silica.
 - b. A description of the engineering controls, work practices, and respiratory protection used to limit employee exposure to respirable crystalline silica for each task.
 - c. A description of the housekeeping measures used to limit employee exposure to respirable crystalline silica.
 - d. A description of the procedures used to restrict access to work areas, when necessary, to minimize the number of employees exposed to respirable crystalline silica and their level of exposure, including exposures generated by other employees or sole proprietors.

1.05 COMPETENT PERSON

- A. Prior to the start of work on any given day, CONTRACTOR shall designate one individual on site as the Competent Person.
- B. *Competent Person* means, in addition to the definition in 29 CFR 1926.1153(b), one who is capable of identifying existing and foreseeable respirable crystalline silica hazards in the workplace who has the authorization to take prompt corrective measures to eliminate or minimize them.
- C. The Competent Person shall have the knowledge and ability necessary to fulfill the responsibilities set forth under 29 CFR 1926.1153(g).
- D. The Competent Person shall be responsible for worker and job site safety as required by all relevant respirable crystalline silica regulations and OSHA requirements.
- E. The name(s) and contact phone number of the competent person shall be given to the ENGINEER and OWNER before the work is to begin.

SECTION 015750 - RESPIRABLE CRYSTALLINE SILICA

1.06 PERMITS AND COMPLIANCE

- A. The CONTRACTOR shall assume full responsibility and liability for compliance with all applicable federal, state, and local laws, rules, and regulations pertaining to work practices, protection of workers, authorized visitors to the site, and persons and property adjacent to the work areas.

1.07 PERSONAL PROTECTIVE EQUIPMENT

- A. All use of Personal Protective Equipment (PPE) shall be in compliance with applicable OSHA regulations and procedures.

1.08 SIGNS AND LABELS

- A. Provide warning signs and barrier tapes at all approaches to the Work area. Locate signs at such distance that personnel may read the sign and take the necessary protective steps required before entering the area.

1.09 OTHER PRODUCTS OR MATERIALS

- A. Other products or materials that are required for use during work activities shall comply with local, state, and federal codes and regulations, if applicable. The CONTRACTOR is expected to furnish and utilize industry standard equipment and materials. The CONTRACTOR shall not furnish equipment or materials that have been altered in such a manner that violates local, state, and/or federal codes and regulations, or presents unnecessary health and safety risk.

PART 2 - MATERIALS - NOT USED

PART 3 - EXECUTION

3.01 WORK PROCEDURES

- A. The Competent Person shall be on site at all times Work is progressing.
- B. All Work shall be performed in such a manner as to minimize the risk of exposure to personnel and to minimize the risk of release of respirable crystalline silica or respirable crystalline silica-containing debris to the environment.
- C. All Work shall be performed in strict accordance with the Project Documents and all governing codes, rules, and regulations. The information contained within this specification section will be considered part of the Project Documents. Where conflicts occur between the Project Documents and applicable codes, rules, and regulations, the more stringent procedure(s) shall apply.
- D. The CONTRACTOR shall take notice, and make employees aware, of occupational safety hazards associated with the work being performed on-site.

SECTION 015750 - RESPIRABLE CRYSTALLINE SILICA

3.02 PROHIBITED WORK PRACTICES AND ENGINEERING CONTROLS

- A. CONTRACTOR shall not use procedures that subject silica sources to forces that will crumble, pulverize, or reduce to powder the silica sources.
- B. The following work practices and engineering controls shall **not** be used on silica sources during construction:
 - 1. High-speed abrasive disc saws and sanders not equipped with point of cut ventilator or enclosures with HEPA filtered exhaust air.
 - 2. Carbide-tipped cutting blades.
 - 3. Electrical drills, chisels, and rasps used to make field connections in concrete pipe.
 - 4. Shell cutters used to cut entry holes in concrete pipe.
 - 5. A hammer and chisel without using wet techniques to remove pipe connections.
 - 6. Compressed air used to remove dust or other debris containing respirable crystalline silica.
 - 7. Dry sweeping, dry shoveling, or other dry clean-up of dust.
 - 8. Employee rotation as a means of reducing employee exposure to respirable crystalline silica.
 - 9. Fans or other air handling techniques used to deliberately move the respirable crystalline silica to other locations or away from the work site.

3.03 PAYMENT

- A. All costs for work involving respirable crystalline silica are included in the various bid items of the Contract.

END OF SECTION

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.
- D. Product options.
- E. Installation data.

1.02 PRODUCTS

- A. At minimum, comply with specified requirements and reference standards.
- B. Specified products define standard of quality, type, function, dimension, appearance, and performance required.
- C. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.
- D. Do not use materials and equipment removed from existing premises except as specifically permitted by Contract Documents.
- E. Furnish interchangeable components from same manufacturer for components being replaced.

1.03 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products according to manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

1.04 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products according to manufacturer's instructions.

SECTION 016000 - PRODUCT REQUIREMENTS

- B. Store products with seals and labels intact and legible.
- C. Store sensitive products in weathertight, climate-controlled enclosures in an environment suitable to product.
- D. For exterior storage of fabricated products, place products on sloped supports aboveground.
- E. Provide bonded off-Site storage and protection when Site does not permit on-Site storage or protection unless otherwise approved by Owner.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products; use methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.05 PRODUCT OPTIONS

- A. Refer to Section 013310 – Substitution Procedures.

1.06 INSTALLATION DATA

- A. Installation data is defined as written instruction; drawings; illustrative, wiring and schematic diagrams; diagrams identifying external connections, terminal block numbers and internal wiring; and all other such information pertaining to the location of materials and equipment that is not furnished with Shop Drawings. Included are all printed manufacturers installation instructions, including those that may be attached to equipment and for which review by the Engineer is not required.
- B. Contractor shall submit two copies of all such data to the Engineer for each piece of equipment which he furnished and for all other construction products for which such information is available from the manufacturer. Data shall be acceptably identified and accompanied with a letter of transmittal.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Field engineering.
- B. Closeout procedures.
- C. Starting of systems.
- D. Demonstration and instructions.
- E. Testing, adjusting, and balancing.
- F. Project record documents.
- G. Operation and maintenance data.
- H. Manual for equipment and systems.
- I. Spare parts and maintenance products.
- J. Product warranties and product bonds.
- K. Maintenance service.
- L. Examination.
- M. Preparation.
- N. Execution.
- O. Cutting and patching.
- P. Protecting installed construction.
- Q. Final cleaning.

1.02 FIELD ENGINEERING

- A. Employ land surveyor registered in State of New York and acceptable to Engineer.
- B. Locate and protect survey control and reference points. Promptly notify Engineer of discrepancies discovered.
- C. Control datum for survey is per NAD83 and NGVD29 and New York State Plane Coordinates as indicated on Drawings.

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

- D. Prior to beginning Work, verify and establish floor elevations of existing facilities to ensure that new Work will meet existing elevations in smooth and level alignment except where specifically detailed or indicated otherwise.
- E. Verify setbacks and easements; confirm Drawing dimensions and elevations.
- F. Provide field engineering services. Establish elevations, lines, and levels using recognized engineering survey practices.
- G. Submit copy of Site drawings signed by land surveyor certifying elevations and locations of the Work are in conformance with Contract Documents.
- H. Maintain complete and accurate log of control and survey Work as Work progresses.
- I. On completion of foundation walls and major Site improvements, prepare certified survey illustrating dimensions, locations, angles, and elevations of construction and Site Work.
- J. Protect survey control points prior to starting Site Work; preserve permanent reference points during construction.
- K. Promptly report to Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.
- L. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect/Engineer.
- M. Final Property Survey: Prior to Substantial Completion, prepare final property survey illustrating locations, dimensions, angles, and elevations of buildings and Site Work that have resulted from construction indicating their relationship to permanent bench marks and property lines.
 - 1. Show significant features (real property) for Project.
 - 2. Include certification on survey, signed by surveyor, that principal metes, bounds, lines, levels, and elevations of Project are accurately shown.

1.03 CLOSEOUT PROCEDURES

- A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:
 - 1. Submit maintenance manuals, Project record documents, digital images of construction photographs, and other similar final record data in compliance with this Section.
 - 2. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in compliance with this Section.
 - 3. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.

4. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include certificate of occupancy, operating certificates, and similar releases from authorities having jurisdiction and utility companies.
5. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner.
6. Make final change-over of locks eliminating construction master-key system and transmit keys directly to Owner. Advise Owner's personnel of change-over in security provisions.
7. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
8. Perform final cleaning according to this Section.

B. Substantial Completion Inspection:

1. When Contractor considers Work to be substantially complete, submit to Engineer Owner:
 - a. Written certificate that Work, or designated portion, is substantially complete.
 - b. List of items to be completed or corrected (initial punch list).
2. Within seven days after receipt of request for Substantial Completion, Engineer will make inspection to determine whether Work or designated portion is substantially complete.
3. Should Engineer determine that Work is not substantially complete:
 - a. Engineer will promptly notify Contractor in writing, stating reasons for its opinion.
 - b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Engineer.
 - c. Engineer will reinspect Work.
 - d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer's inspection.
4. When Engineer's finds that Work is substantially complete, Engineer will:
 - a. Prepare Certificate of Substantial Completion on EJCDC C-625 - Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected as verified and amended by Engineer and Owner (final punch list).
 - b. Submit Certificate to Owner and Contractor for their written acceptance of responsibilities assigned to them in Certificate.
5. After Work is substantially complete, Contractor shall:
 - a. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion.

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

- b. Complete Work listed for completion or correction within time period stipulated.
 6. Owner will occupy all of building as specified in Section 011000 - Summary.
- C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.
1. When Contractor considers Work to be complete, submit written certification that:
 - a. Contract Documents have been reviewed.
 - b. Work has been examined for compliance with Contract Documents.
 - c. Work has been completed according to Contract Documents.
 - d. Work is completed and ready for final inspection.
 2. Submittals: Submit following:
 - a. Final punch list indicating all items have been completed or corrected.
 - b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 - c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
 - d. Accounting statement for final changes to Contract Sum.
 - e. Contractor's affidavit of payment of debts and claims on AIA G706 - Contractor's Affidavit of Payment of Debts and Claims.
 - f. Contractor affidavit of release of liens on AIA G706A - Contractor's Affidavit of Release of Liens.
 - g. Consent of surety to final payment on AIA G707 - Consent of Surety to Final Payment Form.
 3. Perform final cleaning for Contractor-soiled areas according to this Section.
- D. Final Completion Inspection:
1. Within seven days after receipt of request for final inspection, Engineer will make inspection to determine whether Work or designated portion is complete.
 2. Should Engineer consider Work to be incomplete or defective:
 - a. Engineer will promptly notify Contractor in writing, listing incomplete or defective Work.
 - b. Contractor shall remedy stated deficiencies and send second written request to Engineer that Work is complete.
 - c. Engineer will reinspect Work.
 - d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer's inspection.

1.04 STARTING OF SYSTEMS

- A. Coordinate schedule for startup of various equipment and systems.

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

- B. Notify Engineer and Owner seven days prior to startup of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Verify that tests, meter readings, and electrical characteristics agree with those required by equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute startup under supervision of manufacturer's representative or Contractors' personnel according to manufacturer's instructions.
- G. When specified in individual Specification Sections, require manufacturer to provide authorized representative who will be present at Site to inspect, check, and approve equipment or system installation prior to startup and will supervise placing equipment or system in operation.
- H. Submit a written report according to Section 013300 - Submittal Procedures that equipment or system has been properly installed and is functioning correctly.

1.05 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Demonstrate Project equipment and instruct Owner's personnel by manufacturer's representative who is knowledgeable about the Project.
- C. Video Recordings: Provide high-quality color video recordings of demonstration and instructional sessions. Engage commercial videographer to record sessions. Include classroom instructions, demonstrations, board diagrams, and other visual aids. Include menu navigation.
- D. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- E. Use operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- F. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location. Provide instructions at several times if needed to accommodate shift schedules.
- G. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- H. Required instruction time for each item of equipment and system is specified in individual Specification Sections.

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

1.06 PROJECT RECORD DOCUMENTS

- A. Maintain on Site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, product data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates used.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:
 - 1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
 - 2. Include locations of concealed elements of the Work.
 - 3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
 - 4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
 - 5. Identify and locate existing buried or concealed items encountered during Project.
 - 6. Measured depths of foundations in relation to finish main floor datum.
 - 7. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 8. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 9. Field changes of dimension and detail.
 - 10. Details not on original Drawings.
- G. Submit marked-up paper copy documents to Engineer before Substantial Completion.
- H. Submit final PDF electronic files of documents to Engineer with claim for final Application for Payment.

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

- I. Power System Studies Data Collection (Arc-Flash):
 1. CONTRACTOR shall furnish all data as required for the ENGINEER to complete the power system studies. The ENGINEER is performing the short-circuit, protective device coordination and arc flash hazard analysis studies and shall furnish the CONTRACTOR with a listing of required data after award of the contract. The CONTRACTOR shall expedite collection of the data to assure completion of the studies as required for final approval of the equipment shop drawings and/or prior to the release of the equipment for manufacturing where requested by the ENGINEER.
 2. The CONTRACTOR shall obtain existing equipment data, including but not limited to the items listed below, and data on new (proposed) installed items to satisfy the study requirements.
 - a. Feeders
 - b. Protective devices (i.e. fuses, circuit breakers, relays)
 - c. Switchgears, switchboards, and panelboards
 - d. Motor control centers and motor controllers
 - e. Motors greater than or equal to 50 horsepower
 - f. Industrial control panels
 - g. Safety switches (fused and unfused)
 3. Data shall be compiled in a manner acceptable to the ENGINEER such as by using data collection forms, legible single line notes, photographs, and/or combination of such.

1.07 OPERATION AND MAINTENANCE DATA

- A. Submit in PDF composite electronic indexed file.
- B. Submit data bound in 8-1/2 x 11-inch text pages, three D side ring binders with durable plastic covers.
- C. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of Project, and subject matter of binder when multiple binders are required.
- D. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- E. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- F. Contents: Prepare table of contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
 1. Part 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.
 2. Part 2: Operation and maintenance instructions, arranged by process flow and subdivided by Specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Include the following:
 - a. Significant design criteria.

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

- b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - g. Safety precautions to be taken when operating and maintaining or working near equipment.
3. Part 3: Project documents and certificates, including the following:
- a. Shop Drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Photocopies of warranties.

1.08 MANUAL FOR MATERIALS AND FINISHES

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.
- B. For equipment or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit one copy of completed volumes before Substantial Completion. Draft copy be reviewed and returned after Substantial Completion, with Engineer comments. Revise content of document sets as required prior to final submission.
- D. Submit three sets of revised final volumes within ten days after final inspection.
- E. Submit in PDF composite electronic indexed file of final manual within ten days after final inspection.
- F. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Include information for re-ordering custom-manufactured products.
- G. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- H. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.
- I. Additional Requirements: As specified in individual product Specification Sections.
- J. Include listing in table of contents for design data, with tabbed fly sheet and space for insertion of data.

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

1.09 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Engineer will review draft and return one copy with comments.
- B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit one copy of completed volumes before Substantial Completion. Draft copy will be reviewed and returned after Substantial Completion, with Engineer comments. Revise content of document sets as required prior to final submission.
- D. Submit three sets of revised final volumes within ten days after final inspection.
- E. Submit in PDF composite electronic indexed file of final manual within ten days after final inspection.
- F. Each Item of Equipment and Each System: Include description of unit or system and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
- G. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; by label machine.
- H. Include color-coded wiring diagrams as installed.
- I. Operating Procedures: Include startup, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.
- J. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- K. Include servicing and lubrication schedule and list of lubricants required.
- L. Include manufacturer's printed operation and maintenance instructions.
- M. Include sequence of operation by controls manufacturer.
- N. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- O. Include control diagrams by controls manufacturer as installed.
- P. Include Contractor's coordination drawings with color-coded piping diagrams as installed.
- Q. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

- R. Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- S. Include test and balancing reports as specified in Section 014000 - Quality Requirements.
- T. Additional Requirements: As specified in individual product Specification Sections.
- U. Include listing in table of contents for design data with tabbed dividers and space for insertion of data.

1.10 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.
- B. Deliver to place in location as directed by Owner; obtain receipt prior to final payment.

1.11 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers within ten days after completion of applicable item of Work.
- B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Include table of contents and assemble in three D side ring binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Time of Submittals:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
 - 2. Make other submittals within ten days after date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

1.12 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in Specification Sections during warranty period.

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

- B. Examine system components at frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by manufacturer of original component.
- D. Do not assign or transfer maintenance service to agent or Subcontractor without prior written consent of Owner.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Verify that utility services are available with correct characteristics and in correct locations.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer-required or -recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

3.03 EXECUTION

- A. Comply with manufacturer's installation instructions, performing each step in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.
- B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

- D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
 - 1. Secure Work true to line and level and within specified tolerances, or if not specified, industry-recognized tolerances.
 - 2. Physically separate products in place, provide electrical insulation, or provide protective coatings to prevent galvanic action or corrosion between dissimilar metals.
 - 3. Exposed Joints: Provide uniform joint width and arrange to obtain best visual effect. Refer questionable visual-effect choices to Architect/Engineer for final decision.
- E. Allow for expansion of materials and building movement.
- F. Climatic Conditions and Project Status: Install each unit of Work under conditions to ensure best possible results in coordination with entire Project.
 - 1. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.
 - 2. Coordinate enclosure of Work with required inspections and tests to minimize necessity of uncovering Work for those purposes.
- G. Mounting Heights: Where not indicated, mount individual units of Work at industry recognized standard mounting heights for particular application indicated.
 - 1. Refer questionable mounting heights choices to Architect/Engineer for final decision.
 - 2. Elements Identified as Accessible to Handicapped: Comply with applicable codes and regulations.
- H. Adjust operating products and equipment to ensure smooth and unhindered operation.
- I. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.
- J. Protective Device Field Adjustment: CONTRACTOR shall adjust relay and protective device settings according to the recommended settings table provided by the ENGINEER in the coordination study.

3.04 CUTTING AND PATCHING

- A. Employ skilled and experienced installers to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements affecting:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight-exposed elements.
 - 5. Work of Owner or separate contractor.

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

- C. Execute cutting, fitting, and patching including excavation and fill to complete Work and to:
 - 1. Fit the several parts together, to integrate with other Work.
 - 2. Uncover Work to install or correct ill-timed Work.
 - 3. Remove and replace defective and nonconforming Work.
 - 4. Remove samples of installed Work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Execute Work by methods to avoid damage to other Work and to provide proper surfaces to receive patching and finishing.
- E. Cut masonry and concrete materials using masonry saw or core drill.
- F. Restore Work with new products according to requirements of Contract Documents.
- G. Fit Work tight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.
- H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- I. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.
- J. Identify hazardous substances or conditions exposed during the Work to Architect/Engineer for decision or remedy.

3.05 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual Specification Sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Use durable sheet materials to protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic from landscaped areas.

3.06 FINAL CLEANING

- A. Execute final cleaning prior to final Project assessment.
 - 1. Employ experienced personnel or professional cleaning firm.

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

- B. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains, and foreign substances; polish transparent and glossy surfaces.
- C. Clean equipment and fixtures to sanitary condition with appropriate cleaning materials.
- D. Replace filters of operating equipment.
- E. Clean debris from roofs, gutters, downspouts, and drainage systems.
- F. Clean Site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from Site.

END OF SECTION

SECTION 019100 - COMMISSIONING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall initially start-up and place all equipment installed into satisfactory operation, according to manufacturer's written instructions and as required by manufacturer's field representatives. Provide all material, labor, tools, and expendables as required.
- B. In addition to the testing required by this Section, Contractor shall perform all other tests required in detailed equipment specifications and testing specifications.
- C. At least 30 days prior to his proposed testing, the Contractor shall submit in writing to the Engineer (and National Grid) a complete outline of his proposed procedure for testing and proposed device settings. No testing shall begin until approval is given. Such approval shall be for the general schedules of testing and in no way relieves the Contractor of his responsibility for conducting the test expeditiously and with an adequate number of personnel to handle all emergencies.
- D. Only one system shall be out of service at any one time. All associated work (i.e., supports, painting, electrical equipment, etc.) and all phases of the Performance Testing shall be completed and approved before the next system is taken out of service.
- E. Related work specified elsewhere:
 - 1. Section 011000, Summary
 - 2. Section 013110, Coordination with Owner's Operations.

1.02 PHASE 1 PERFORMANCE TESTS

- A. After each system has been installed; the complete unit will be subject to Phase 1 Performance Tests under de-energized conditions. The results of the tests will be used to determine compliance with the specifications as to the operating characteristics, proper handling and installation.
- B. The Contractor shall notify the Engineer, National Grid, and Owner two weeks prior to the start of field testing.
- C. The tests shall be made by the Contractor under the direct supervision of a qualified representative of the manufacturer(s), and in the presence of, and as directed by the Engineer.
- D. The Contractor shall provide a checklist to record the results of the Performance Test. The tests shall demonstrate that under all conditions of operation, each unit:
 - 1. has not been damaged by transportation or installation;
 - 2. has been properly installed;
 - 3. has no mechanical defects;

SECTION 019100 - COMMISSIONING

4. has no electrical defects;
 5. is in proper alignment;
 6. has been properly connected;
 7. has functional instrumentation and control equipment;
 8. is free of overheating of any parts;
 9. is free of all objectionable vibration;
 10. is free of overloading of any parts;
 11. is free of all unusual/objectionable noise.
- E. Any defects in the equipment or installation or failure to meet the requirements of the Specifications shall be promptly corrected by replacement or as otherwise directed by the Engineer. The decision of the Engineer as to whether or not the Contractor has fulfilled his obligations under the Contract shall be final and conclusive. If the Contractor fails or refuses to make the required corrections, or if the improved equipment, when tested, shall again fail to meet the requirements of the Specifications, the Owner shall have the option of rejecting the equipment or of accepting the same at such reduced prices as may be agreed upon by the parties hereto.
- F. The Contractor shall, in the event of rejection of his equipment and upon release of any claim or interest of the Owner therein, repay all monies paid to him on account and shall remove the equipment or reimburse the Owner for all costs in connection with such removal and the Contractor agrees that the unsatisfactory equipment furnished by him shall remain in place and may be used by the Owner to the extent necessary, without rental or other charge, until other new equipment is obtained and replaces the rejected equipment.

1.03 PHASE 2 PERFORMANCE TESTS

- A. Each complete system shall be subjected to Phase 2 Performance Tests.
- B. During the Performance Tests, the Contractor's personnel shall demonstrate, to the satisfaction of the Engineer, with Owner's personnel present, that all equipment is coordinated and operating properly; that all controls, safety features, and alarms operate satisfactorily in coordination with the equipment installed; and that the installed equipment complies in all respects mechanically and electrically with applicable Drawings and Specifications.
- C. The Performance Tests shall be concluded with a twenty-four-hour energized (no load) test of each unit completed.
- D. Performance Tests for each unit shall be considered concluded at the end of the twenty-four hour period designated for the tests, if the Owner is satisfied with the test results. In the event that the test results are unsatisfactory in the opinion of the Owner, the Owner reserves the right to have the Contractor rerun a portion or the entire test until, in the Owner's opinion, satisfactory results are obtained.
- E. All operating costs, until satisfactory completion of the Phase 2 Performance Tests is achieved, shall be paid for by the Contractor and shall be included as a part of the lump sum and unit prices bid for work items set forth in the Proposal. Operating costs shall be understood to include, but not be limited to, the costs of lubricants, parts, and labor. The

SECTION 019100 - COMMISSIONING

Contractor shall also be responsible for maintenance during the testing procedure. If the Contractor does not have sufficient personnel to handle an emergency and the Owner must make repairs with his own forces from damage caused by the Contractor's actions, the Contractor shall reimburse the Owner for this work. The calculation of Owner's costs and extent of damages to be reimbursed by Contractor will be at the sole discretion of the Engineer and Owner.

- F. The cost of utilities during the Phase 2 Performance Tests shall be at the Owner's expense.

1.04 PHASE 3 PERFORMANCE TESTS

- A. Each complete system shall be subjected to Phase 3 Performance Tests.
1. All systems shall successfully complete a fourteen-day Phase 3 Performance Test.
 2. During the Performance Test, the units shall be operated energized (with load) in normal operation by the Owner, via the SCADA system, and/or local controls, as if it were a part of the Owner's standard operating procedure.
 3. The Owner shall notify the Contractor one week prior to the start of the Performance Test.
 4. Failure of the mechanical, electrical, instrumentation or control equipment installed by the Contractor, as part of this Contract, to operate as specified shall constitute failure of the test. Failure of any one component of the equipment supplied by the Contractor shall constitute failure of the Performance Test.
 5. If failure of the Performance Test occurs at any time during the period, then the entire fourteen-day performance period shall start over. The Performance Test shall be restarted for as many times as necessary.
 6. If failure occurs, then the Contractor shall locate and correct the problem. The Contractor shall notify the Engineer when the problem has been corrected, and the fourteen-day Performance Test can again be started.
 7. The Engineer may categorize a failure occurrence as a "minor problem." In general, a "minor problem" is defined as a problem which can be completely corrected within two hours. It is up to the discretion of the Engineer and the Owner whether or not failure of the system was caused by a minor problem.
 8. If it is decided that failure of the system was caused by a minor problem, then the amount of downtime will be added on to the time remaining in the Performance Test.
 9. If the same minor problem occurs more than once during the Performance Test, then it shall be considered failure of the Performance Test.
 10. Successful completion of the Phase 3 Performance Test for each unit constitutes the completion of that phase of the project, subject to all other terms and conditions of the Contract.

SECTION 019100 - COMMISSIONING

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Demolishing designated building equipment and fixtures.
2. Demolishing designated construction.
3. Cutting and alterations for completion of the Work.
4. Removing designated items for reuse.
5. Protecting items designated to remain.
6. Removing demolished materials.

1.02 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Demolition Schedule: Indicate overall schedule and interruptions required for utility and building services.

C. Shop Drawings:

1. Indicate demolition and removal sequence.

1.03 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Accurately record actual locations of capped utilities, concealed utilities discovered during demolition, and subsurface obstructions.

1.04 QUALITY ASSURANCE

A. Conform to Williams-Steiger Occupational Health and Safety Act of 1970 (Public Law 91596), as amended.

B. Conform to NYSDOL Industrial Code Rules for procedures when hazardous or contaminated materials are discovered.

C. Obtain permits, if required, from authorities having jurisdiction.

1.05 SEQUENCING

A. Section 011000 - Summary: Requirements for sequencing.

SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION

- B. Sequence activities in accordance with the requirements for maintaining operations at the raw water pumping station.

1.06 SCHEDULING

- A. Section 013000 - Administrative Requirements and 013216 - Construction Progress Schedule: Requirements for scheduling.
- B. Schedule Work to coincide with new construction, and maintaining operations at the raw water pumping station.
- C. Cooperate with Owner in scheduling noisy operations and waste removal that may impact Owners operation and activities in adjoining spaces on the grounds of the water treatment plant.

1.07 PROJECT CONDITIONS

- A. Conduct demolition to minimize interference with adjacent and occupied building areas.
- B. Cease operations immediately if structure appears to be in danger and notify Engineer. Do not resume operations until directed.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 PREPARATION

- A. Notify affected utility companies before starting work and comply with their requirements.
- B. Mark location and termination of utilities.
- C. Erect, and maintain temporary barriers and security devices, including warning signs and lights, and similar measures, for protection of the public, Owner, and existing improvements indicated to remain.
- D. Erect and maintain weatherproof closures for exterior openings.
- E. Erect and maintain temporary partitions to prevent spread of dust, odors, and noise to permit continued Owner occupancy.
- F. Prevent movement of structure; provide temporary bracing and shoring required to ensure safety of existing structure.
- G. Provide appropriate temporary signage including signage for exit or building egress.

SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION

- H. Do not close or obstruct building egress path.
- I. Do not disable or disrupt building fire or life safety systems without 3 days prior written notice to Owner.

3.02 SALVAGE REQUIREMENTS

- A. Coordinate with Owner to identify building components and equipment required to be removed and delivered to Owner.
- B. Tag components and equipment Owner designates for salvage.
- C. Protect designated salvage items from demolition operations until items can be removed.
- D. Carefully remove building components and equipment indicated to be salvaged.
- E. Disassemble as required to permit removal from building.
- F. Package small and loose parts to avoid loss.
- G. Mark equipment and packaged parts to permit identification and consolidation of components of each salvaged item.
- H. Prepare assembly instructions consistent with disassembled parts. Package assembly instructions in protective envelope and securely attach to each disassembled salvaged item.
- I. Deliver salvaged items to Owner. Obtain signed receipt from Owner.

3.03 DEMOLITION

- A. Conduct demolition to minimize interference with adjacent and occupied building areas.
- B. Maintain protected egress from and access to adjacent existing buildings at all times.
- C. Do not close or obstruct roadways and sidewalks without permits.
- D. Cease operations immediately when structure appears to be in danger and notify Engineer.
- E. Disconnect and remove designated utilities within demolition areas.
- F. Cap and identify abandoned utilities at termination points when utility is not completely removed. Annotate Record Drawings indicating location and type of service for capped utilities remaining after demolition.
- G. Demolish in orderly and careful manner. Protect existing improvements, supporting structural members.

SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION

- H. Carefully remove building components indicated to be reused.
 - 1. Disassemble components as required to permit removal.
 - 2. Package small and loose parts to avoid loss.
 - 3. Mark components and packaged parts to permit reinstallation.
 - 4. Store components, protected from construction operations, until reinstalled.
- I. Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.
- J. Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.
- K. Remove temporary Work.

3.04 SCHEDULES

- A. Materials and equipment scheduled for demolition are shown in detail on the “_D” sheets, and in select notes on the Contract Drawings.
- B. Demolition shall be staged so that the Ball Pump Station can remain in service throughout the duration of construction.

END OF SECTION

SECTION 031000 - CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Formwork for cast-in-place concrete.
2. Shoring, bracing, and anchorage.
3. Architectural form liners.
4. Form accessories.
5. Form stripping.

B. Related Requirements:

1. Section 032000 - Concrete Reinforcing: Reinforcing steel and required supports for cast-in-place concrete.
2. Section 033000 - Cast-in-Place Concrete: Cast-in-place or in-situ concrete for structural building frame, slabs-on-grade, and other concrete components associated with building.

1.02 REFERENCE STANDARDS

A. American Concrete Institute:

1. ACI 117 - Specification for Tolerances for Concrete Construction and Materials.
2. ACI 301 - Specifications for Structural Concrete.
3. ACI 318 - Building Code Requirements for Structural Concrete.
4. ACI 347 - Guide to Formwork for Concrete.

B. American Forest & Paper Association:

1. AF&PA - National Design Specification (NDS) for Wood Construction.

C. APA - The Engineered Wood Association:

1. APA/EWA PS 1 - Voluntary Product Standard - Structural Plywood.

D. West Coast Lumber Inspection Bureau:

1. WCLIB - Standard No. 17 Grading Rules for West Coast Lumber.

1.03 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with other Sections of Work in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.

SECTION 031000 - CONCRETE FORMING AND ACCESSORIES

1.04 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings:
 - 1. Indicate:
 - a. Formwork, shoring, and reshoring.
 - b. Pertinent dimensions, openings, methods of construction, types of connections, materials, joint arrangement and details, ties and shores, location of framing, studding and bracing, and temporary supports.
 - c. Means of leakage prevention for concrete exposed to view in finished construction.
 - d. Sequence and timing of erection and stripping, assumed compressive strength at time of stripping, height of lift, and height of drop during placement.
 - e. Vertical, horizontal, and special loads according to ACI 347, and camber diagrams when applicable.
 - f. Notes to formwork erector showing size and location of conduits and piping embedded in concrete according to ACI 318.
 - g. Procedure and schedule for removal of shores and installation and removal of reshores.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Delegated Design Submittals:
 - 1. Submit signed and sealed Shop Drawings with design calculations and assumptions for formwork and shoring.
 - 2. Indicate loads transferred to structure during process of concreting, shoring, and reshoring.
 - 3. Include structural calculations to support design.

1.05 QUALITY ASSURANCE

- A. Perform Work according to ACI 318.
- B. For wood products furnished for Work of this Section, comply with AF&PA.
- C. Design formwork under direct supervision of Professional Engineer experienced in design of the Work and licensed in the State of New York.

1.06 QUALIFICATIONS

- A. Licensed Professional: Professional engineer experienced in design of specified Work and licensed in State of New York.

SECTION 031000 - CONCRETE FORMING AND ACCESSORIES

PART 2 - PRODUCTS

2.01 WOOD FORM MATERIALS

- A. Form Materials: At discretion of Contractor and approved by Engineer.

2.02 PREFABRICATED FORMS

- A. Manufacturers:

1. EFCO.
2. Molded Fiber Glass Construction.
3. Sonoco Products Co.
4. Symons by Dayton Superior.
5. Wall-Ties & Forms, Inc.
6. Western Forms.
7. Substitutions: Permitted.

- B. Preformed Steel Forms: Minimum 16 gage matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.

- C. Glass Fiber Fabric Reinforced Plastic Forms: Matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished concrete surfaces.

- D. Pan Type: Steel of size and profile required.

- E. Steel Forms: Sheet steel, suitably reinforced, and designed for particular use indicated on Drawings.

- F. Form Liners: Smooth, durable, grainless and non-staining hardboard, unless otherwise indicated on Drawings.

- G. Framing, Studding and Bracing: Stud or No. 3 structural light framing grade.

2.03 FORMWORK ACCESSORIES

- A. Form Ties: Suitable for concrete tank wall construction, with waterproofing washer.

1. Manufacturers:

- a. Heckmann Building Products.
- b. Symons by Dayton Superior.
- c. Wall-Ties & Forms, Inc.
- d. Substitutions: Permitted.

- B. Spreaders: Standard, non-corrosive metal form clamp assembly, of type acting as spreaders and leaving no metal within 1 inch of concrete face. Wire ties, wood spreaders or through-bolts not permitted.

- C. Form Anchors and Hangers:

1. Do not use anchors and hangers leaving exposed metal at concrete surface.
2. Symmetrically arrange hangers supporting forms from structural steel members.

SECTION 031000 - CONCRETE FORMING AND ACCESSORIES

3. Penetration of structural steel members is not permitted.
- D. Form Release Agent: Colorless mineral oil that will not stain concrete, or absorb moisture.
 1. Manufacturers:
 - a. Architectural Concrete Chemicals, LLC.
 - b. Nox-Crete Products Group.
 - c. Substitutions: Permitted.
- E. Corners: Chamfer, wood strip type; 1 x 1 inch size; maximum possible lengths.
 1. Manufacturers:
 - a. BoMetals, Inc.
 - b. Wall-Ties & Forms, Inc.
 - c. Substitutions: Permitted.
- F. Dovetail Anchor Slot: Galvanized steel, 22 gage thick, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
 1. Manufacturers:
 - a. BoMetals, Inc.
 - b. Dur-O-Wal.
 - c. Heckmann Building Products.
 - d. Substitutions: Permitted.
- G. Flashing Reglets: Rigid PVC, 22 gage thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
 1. Manufacturers:
 - a. Cheney Flashing Company.
 - b. Fry Reglet Corporation.
 - c. Heckmann Building Products.
 - d. Hohmann & Barnard, Inc.
 - e. O'Keeffe's Inc.
 - f. W.P. Hickman Systems, Inc.
 - g. Substitutions: Permitted.
- H. Vapor Retarder: Where indicated on Drawings, 8 mil thick polyethylene sheet.
- I. Bituminous Joint Filler: ASTM D1751.
- J. Nails, Spikes, Lag Bolts, Through-bolts, Anchorages: Size, strength and character to maintain formwork in place while placing concrete.

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- K. Water Stops: PVC, minimum 1,750 psi tensile strength, maximum minus 35 degrees Flow temperature brittleness according to ASTM D-746, 9 inch wide, maximum possible lengths, ribbed profile, preformed corner sections, heat welded jointing.

1. Manufacturers:

- a. Adeka Ultra Seal/OCM, Inc.
- b. BoMetals, Inc.
- c. JP Specialties, Inc.
- d. Paul Murphy Plastics Co.
- e. Sika Greenstreak.
- f. Vinylex Waterstop & Accessories.
- g. WESTEC Barrier Technologies.
- h. Williams Products, Inc.
- i. Substitutions: Permitted.

2.04 COATINGS

- A. Coatings for Aluminum: Polyamide epoxy finish coat with paint manufacturer's recommended primer for aluminum substrate. Apply one coat primer and one coat finish.

1. Manufacturers:

- a. H&C Concrete Care Products.
- b. Increte Systems, Inc.
- c. Sauereisen.
- d. Substitutions: Permitted.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify lines, levels, and centers before proceeding with formwork.
- C. Verify that dimensions agree with Drawings.
- D. If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement, request instructions from Engineer before proceeding.

3.02 INSTALLATION

- A. Earth Forms: Not permitted.

SECTION 031000 - CONCRETE FORMING AND ACCESSORIES

B. Formwork:

1. Provide top form for sloped surfaces steeper than 1.5 horizontal to 1 vertical to hold shape of concrete during placement, unless it can be demonstrated that top forms can be omitted.
2. Construct forms to correct shape and dimensions, mortar-tight, braced, and of sufficient strength to maintain shape and position under imposed loads from construction operations.
3. Camber forms where necessary to produce level finished soffits unless indicated otherwise on Drawings.
4. Positioning:
 - a. Carefully verify horizontal and vertical positions of forms.
 - b. Correct misaligned or misplaced forms before placing concrete.
5. Complete wedging and bracing before placing concrete.
6. Erect formwork, shoring, and bracing to achieve design requirements according to ACI 318.
7. Stripping:
 - a. Arrange and assemble formwork to permit dismantling and stripping.
 - b. Do not damage concrete during stripping.
 - c. Permit removal of remaining principal shores.
8. Obtain approval of Engineer before framing openings in structural members not indicated on Drawings.
9. Do not reuse wood formwork more than two times for concrete surfaces to be exposed to view.
10. Do not patch formwork.
11. Leave forms in place for minimum number of days according to ACI 347.

C. Form Removal:

1. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads, and removal has been approved by Architect/Engineer.
2. Loosen forms carefully; do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
3. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged.
4. Discard damaged forms.
5. Form Release Agent:
 - a. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
 - b. Do not apply form release agent where concrete surfaces are indicated to receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.
 - c. Reuse and Coating of Forms: Thoroughly clean forms and reapply form coating before each reuse. For exposed work, do not reuse forms with damaged faces or edges. Apply form coating to forms in accordance with manufacturer's

SECTION 031000 - CONCRETE FORMING AND ACCESSORIES

specifications. Do not coat forms for concrete indicated to receive "scored finish."
Apply form coatings before placing reinforcing steel.

6. Form Cleaning:

- a. Clean forms as erection proceeds to remove foreign matter within forms.
- b. Clean formed cavities of debris prior to placing concrete.
- c. Flush with water or use compressed air to remove remaining foreign matter.
- d. Ensure that water and debris drain to exterior through cleanout ports.
- e. Cold Weather:
 - 1) During cold weather, remove ice and snow from within forms.
 - 2) Do not use de-icing salts.
 - 3) Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure; use compressed air or other dry method to remove foreign matter.

7. Reuse and Coating of Forms:

- a. Thoroughly clean forms and reapply form coating before each reuse.
- b. For exposed Work, do not reuse forms with damaged faces or edges.
- c. Apply form coating to forms according to manufacturer instructions.
- d. Do not coat forms for concrete indicated to receive "scored finish."
- e. Apply form coatings before placing reinforcing steel.

D. Framing, Studding, and Bracing:

1. Maximum Spacing of Studs:

- a. Boards: Maximum 16 inches o.c.
- b. Plywood: 12 inches o.c.

2. Size framing, bracing, centering, and supporting members for sufficient strength to maintain shape and position under imposed loads from construction operations.
3. Distribute bracing loads over base area on which bracing is erected.
 - a. When placed on ground, protect against undermining, settlement, and accidental impact.

E. Form Anchors and Hangers:

1. Do not use anchors and hangers leaving exposed metal at concrete surface.
2. Symmetrically arrange hangers supporting forms from structural-steel members to minimize twisting or rotation of member.
3. Penetration of structural-steel members is not permitted.

F. Inserts, Embedded Parts, and Openings:

1. Install formed openings for items to be embedded in or passing through concrete Work.
2. Locate and set in place items required to be cast directly into concrete.
3. Install accessories straight, level, and plumb, and ensure that items are not disturbed during concrete placement.

SECTION 031000 - CONCRETE FORMING AND ACCESSORIES

4. Joints:
 - a. Install waterstops continuous without displacing reinforcement.
 5. Openings:
 - a. Provide temporary ports or openings in formwork as required to facilitate cleaning and inspection.
 - b. Locate openings at bottom of forms to allow flushing water to drain.
 6. Close temporary openings with tight-fitting panels, flush with inside face of forms, and neatly fitted such that joints will not be apparent in exposed concrete surfaces.
- G. Form Ties:
1. Provide sufficient strength and quantity to prevent spreading of forms.
 2. Place ties at least 1 inch away from finished surface of concrete.
 3. Leave inner rods in concrete when forms are stripped.
 4. Space form ties equidistant, symmetrical, and aligned vertically and horizontally unless indicated otherwise on Drawings.
- H. Arrange formwork to allow proper erection sequence and to permit form removal without damage to concrete.
- I. Construction Joints:
1. Install surfaced pouring strip where construction joints intersect on exposed surfaces to provide straight line at joints.
 2. Just prior to subsequent concrete placement, remove strip and tighten forms to conceal shrinkage.
 3. Appearance:
 - a. Show no overlapping of construction joints.
 - b. Construct joints to present same appearance as butted plywood joints.
 4. Arrange joints in continuous line straight, true, and sharp.
- J. Embedded Items:
1. Make provisions for pipes, sleeves, anchors, inserts, reglets, anchor slots, nailers, waterstops, and other features.
 2. Do not embed wood or uncoated aluminum in concrete.
 3. Obtain installation and setting information for embedded items furnished under other Sections.
 4. Securely anchor embedded items in correct location and alignment prior to placing concrete.
 5. Ensure that conduits and pipes, including those made of coated aluminum, meet requirements of ACI 318 regarding size and location limitations.

SECTION 031000 - CONCRETE FORMING AND ACCESSORIES

K. Openings for Items Passing through Concrete:

1. Frame openings in concrete where indicated on Drawings.
2. Establish exact locations, sizes, and other conditions required for openings and attachment of Work specified under other Sections.
3. Coordinate Work to avoid cutting and patching of concrete after placement.
4. Perform cutting and repairing of concrete required as result of failure to provide required openings.

L. Screeds:

1. Set screeds and establish levels for tops of and finish on concrete slabs.
2. Slope slabs to drain where required or as indicated on Drawings.
3. Before depositing concrete, remove debris from space to be occupied by concrete and thoroughly wet forms; remove freestanding water.

M. Screed Supports:

1. For concrete over waterproof membranes and vapor retarder membranes, use cradle-, pad-, or base-type screed supports that will not puncture membrane.
2. Staking through membrane is not permitted.

N. Cleanouts and Access Panels:

1. Provide removable cleanout sections or access panels at bottoms of forms to permit inspection and effective cleaning of loose dirt, debris, and waste material.
2. Clean forms and surfaces against which concrete is to be placed.
3. Remove chips, sawdust, and other debris.
4. Thoroughly blow out forms with compressed air just before concrete is placed.

3.03 TOLERANCES

A. Construct formwork to maintain tolerances according to ACI 318 and ACI 350.

B. Camber:

1. Slabs and Beams: 1/4 inch per 10 feet.

3.04 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.

B. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.

SECTION 031000 - CONCRETE FORMING AND ACCESSORIES

C. Inspection:

1. Inspect erected formwork, shoring, and bracing to ensure that Work complies with formwork design and that supports, fastenings, wedges, ties, and items are secure.
2. Notify Architect/Engineer after placement of reinforcing steel in forms but prior to placing concrete.
3. Schedule concrete placement to permit formwork inspection before placing concrete.

END OF SECTION

SECTION 032000 - CONCRETE REINFORCING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
1. Reinforcing bars.
 2. Welded wire fabric.
 3. Reinforcement accessories.

1.02 SUBMITTALS

- A. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel and welded wire fabric, bending and cutting schedules, and supporting and spacing devices.
- B. Certificates: AWS qualification for welders employed on Work.
- C. Manufacturer's Certificate: Products meet or exceed specified requirements.
- D. Certified copies of mill test report of reinforcement materials analysis.

1.03 QUALITY ASSURANCE

- A. Perform Work according to ACI 318.
- B. Prepare Shop Drawings according to ACI SP-66.
- C. Welders: AWS-qualified within previous 12 months.

PART 2 - PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, 60 ksi yield grade, deformed billet bars, uncoated finish.
- B. Welded Deformed Wire Fabric: ASTM A497/A497M; in flat sheets; unfinished.

2.02 ACCESSORY MATERIALS

- A. Tie Wire: Minimum 16 gage annealed type.

SECTION 032000 - CONCRETE REINFORCING

- B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions.
- C. Special Chairs, Bolsters, Bar Supports, Spacers Adjacent to Weather-exposed Concrete Surfaces: Plastic-coated steel type; size and shape to meet Project conditions.
- D. Reinforcing Splicing Devices: Mechanical threaded type; full tension and compression; sized to fit joined reinforcing.
 - 1. Manufacturers:
 - a. Dur-O-Wal.
 - b. ERICO International Corp.
 - c. Symons by Dayton Superior
 - d. Substitutions: Per Section 013310 - Substitutions.

2.03 FABRICATION

- A. Fabricate concrete reinforcement according to ACI 318 and ACI 350.
- B. Form standard hooks for 180 degree bends, 90 degree bend, stirrup and tie hooks, and seismic hooks as indicated on Drawings.
- C. Form reinforcement bends with minimum diameters according to ACI 318.
- D. Form ties and stirrups from following:
 - 1. Bars No. 10 and Smaller: No. 3 deformed bars and No. 4 deformed bars or as indicated on the Drawings.
- E. Locate reinforcement splices at point of minimum stress. Review location of splices with Engineer.

2.04 SOURCE QUALITY CONTROL

- A. When fabricator is approved by authority having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.
 - 1. Specified shop tests are not required for Work performed by approved fabricator.

SECTION 032000 - CONCRETE REINFORCING

PART 3 - EXECUTION

3.01 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position beyond specified tolerance.
 - 1. Do not weld crossing reinforcement bars for assembly.
- B. Space reinforcement bars with minimum clear spacing in accordance with ACI 318.
 - 1. Where bars are indicated in multiple layers, place upper bars directly above lower bars.
- C. Maintain concrete cover around reinforcement in accordance with as follows:

Reinforcement Location		Minimum Concrete Cover
Footings and Concrete Formed Against Earth		3 inches
Concrete exposed to earth or weather	No. 6 bars and larger	2 inches
	No. 5 bars and smaller	2 inches
Supported Slabs, Walls, and Joists	No. 14 bars and larger	2 inches
	No. 11 bars and smaller	2 inches
Beams and Columns		2 inches

- D. Splice reinforcing where indicated on Drawings according to splicing device manufacturer's instructions.
- E. Bond and ground reinforcement in accordance with requirements of Section 260526.

3.02 ERECTION TOLERANCES

- A. Install reinforcement within following tolerances for flexural members, walls, and compression members:

Reinforcement Depth	Depth Tolerance	Concrete Cover Tolerance
Greater than 8 inches	plus or minus 3/8 inch	minus 3/8 inch
Less than 8 inches	plus or minus 1/2 inch	minus 1/2 inch

- B. Install reinforcement within tolerances specified in 350 for tank walls.

SECTION 032000 - CONCRETE REINFORCING

3.03 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed by Contractor's testing laboratory according to New York State Building Code.
- B. Provide free access to Work and cooperate with subcontracted firm.
- C. Reinforcement Inspection:
 - 1. Placement Acceptance: Specified and ACI 318 material requirements and specified placement tolerances.
 - 2. Welding: Inspect welds in accordance with AWS D1.1.
 - 3. Periodic Placement Inspection: Inspect for correct materials, fabrication, sizes, locations, spacing, concrete cover, and splicing.
 - 4. Weldability Inspection: Inspect for reinforcement weldability when formed from steel other than ASTM A706/A706M.
 - 5. Continuous Weld Inspection: Inspect reinforcement as required by ACI 318.
 - 6. Periodic Weld Inspection: Other welded connections.
- D. Place, support and secure reinforcement against displacement.
- E. Do not weld crossing reinforcement bars for assembly.
- F. Space reinforcement bars with minimum clear spacing according to ACI 318.
- G. Maintain concrete cover around reinforcement according to ACI 318 and ACI 350.
- H. Bond and ground reinforcement according to requirements of Section 260526.

END OF SECTION

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes cast-in-place concrete for the following:

1. Foundation walls.
2. Slabs on grade.
3. Control, expansion and contraction joint devices.
4. Equipment pads.

B. Related Sections:

1. Section 031000 - Concrete Forming and Accessories
2. Section 032000 - Concrete Reinforcing.
3. Section 033900 - Concrete Curing.
4. Section 079000 - Joint Protection.

1.02 REFERENCES

A. American Concrete Institute:

1. ACI 301 - Specifications for Structural Concrete.
2. ACI 305 - Hot Weather Concreting.
3. ACI 306.1 - Standard Specification for Cold Weather Concreting.
4. ACI 308.1 - Standard Specification for Curing Concrete.
5. ACI 318 - Building Code Requirements for Structural Concrete.
6. ACI 350 - Code Requirements for Environmental Engineering Concrete Structures.

B. ASTM International:

1. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
2. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
3. ASTM C33 - Standard Specification for Concrete Aggregates.
4. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
5. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
6. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.
7. ASTM C150 - Standard Specification for Portland Cement.
8. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.

SECTION 033000 - CAST-IN-PLACE CONCRETE

9. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
10. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
11. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
12. ASTM C330 - Standard Specification for Lightweight Aggregates for Structural Concrete.
13. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
14. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
15. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
16. ASTM C685/C685M - Standard Specification for Concrete Made By Volumetric Batching and Continuous Mixing.
17. ASTM C845 - Standard Specification for Expansive Hydraulic Cement.
18. ASTM C989 - Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
19. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
20. ASTM C1064/C1064M - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
21. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
22. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
23. ASTM C1157 - Standard Performance Specification for Hydraulic Cement.
24. ASTM C1218/C1218M - Standard Test Method for Water-Soluble Chloride in Mortar and Concrete.
25. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.
26. ASTM D994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
27. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
28. ASTM D1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
29. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
30. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
31. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
32. ASTM E1643 - Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs.
33. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

SECTION 033000 - CAST-IN-PLACE CONCRETE

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit data on joint devices, attachment accessories, admixtures and.
- C. Design Data:
 - 1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:
 - a. Hot and cold weather concrete work.
 - b. Air entrained concrete work.
 - 2. Identify mix ingredients and proportions, including admixtures.
 - 3. Identify chloride content of admixtures and whether or not chloride was added during manufacture.
- D. Samples: Submit two 9 x 12 inch long samples of expansion/contraction joint and control joint.
- E. Manufacturer's Installation Instructions: Submit installation procedures and interface required with adjacent Work.

1.04 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Accurately record actual locations of embedded utilities and components concealed from view in finished construction.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 318 and ACI 350.
- B. Conform to ACI 305 when concreting during hot weather.
- C. Conform to ACI 306.1 when concreting during cold weather.
- D. Acquire cement and aggregate from one source for Work.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Section 016000 - Product Requirements: Environmental conditions affecting products on site.
- B. Maintain concrete temperature after installation at minimum 50 degrees F for minimum 7 days.

SECTION 033000 - CAST-IN-PLACE CONCRETE

1.07 COORDINATION

- A. Section 013000 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type II - Moderate, or Type IIA - Air Entraining Portland type.
- B. Normal Weight Aggregates: ASTM C33.
 - 1. Coarse Aggregate Maximum Size: In accordance with ACI 318.
- C. Water: ACI 318; potable, without deleterious amounts of chloride ions.

2.02 ADMIXTURES

- A. Manufacturers:
 - 1. BASF Construction Chemical.
 - 2. Euclid Chemical Co.
 - 3. Grace Construction Products.
 - 4. Sika Corporation.
 - 5. Substitutions: Permitted.
- B. Air Entrainment: ASTM C260.
- C. Chemical: ASTM C494/C494M.
- D. Plasticizing: ASTM C1017/C1017M.

2.03 ACCESSORIES

- A. Bonding Agent:
 - 1. Manufacturers:
 - a. Euclid Chemical Company.
 - b. Sika Corporation.
 - c. W.R. Meadows, Inc.
 - d. Substitutions: Section 016000 - Product Requirements.

SECTION 033000 - CAST-IN-PLACE CONCRETE

- B. Non-Shrink Grout: ASTM C1107/C1107M; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 7,000 psi in 28 days.

- 1. Manufacturers:

- a. Euclid Chemical Co.
- b. L&M Construction Chemical.
- c. QUIKRETE.
- d. Sika Corporation.
- e. Substitutions: Section 016000 - Product Requirements.

2.04 JOINT DEVICES AND FILLER MATERIALS

- A. Joint Filler Type C: ASTM D1752; Premolded sponge rubber.
- B. Expansion and Contraction Joint Devices: ASTM B221 alloy, extruded aluminum; resilient elastomeric filler strip with Shore A hardness of 35 to permit plus or minus 25 percent joint movement with full recovery; of longest manufactured length at each location, recessed mounted; color as selected.
- C. Sealant and Primer: As specified in Section 079200.

2.05 VAPOR BARRIER

- A. Vapor barrier shall be six (6) mil polyethylene sheets applied in the widest practicable width with all seams lapped a minimum of six (6) inches, and secured in place.

2.06 CONCRETE MIX

- A. Select proportions for concrete in accordance with ACI 318 trial mixtures.
- B. Provide concrete to the following criteria:

Material and Property	Measurement
Compressive Strength (28 day)	4,000 psi
Cement Type	ASTM C150
Cement Content (minimum)	606 pounds/cu yd
Aggregate Type	Normal weight
Fine Aggregate	36 percent by volume
Water-Cement Ratio (maximum)	0.46 by weight
Air Content	6.5 percent plus or minus 1.5 percent

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Fly Ash Content:	20 percent of cementitious materials by weight, maximum
Silica Fume Content:	0 percent of cementitious materials by weight, maximum
Slag	0 percent of cementitious materials by weight, maximum
Slump	3 inches plus or minus 1 inch

- C. Admixtures: Include admixture types and quantities indicated in concrete mix designs only when approved by Engineer.
 - 1. Use accelerating admixtures in cold weather. Use of admixtures will not relax cold weather placement requirements.
 - 2. Do not use calcium chloride nor admixtures containing calcium chloride.
 - 3. Use set retarding admixtures during hot weather.
 - 4. Add air entrainment admixture to concrete mix for work exposed to freezing and thawing or deicing chemicals.
 - 5. For concrete exposed to deicing chemicals, limit fly ash, pozzolans, silica fume, and slag content as required by applicable code.
- D. Average Compressive Strength Reduction: Permitted in accordance with ACI 318.
- E. Ready Mixed Concrete: Mix and deliver concrete in accordance with ASTM C94/C94M.
- F. Site Mixed Concrete: Mix concrete in accordance with ACI 318.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Coordination and project conditions.
- B. Verify requirements for concrete cover over reinforcement.
- C. Verify anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.02 PREPARATION

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Remove laitance, coatings, and unsound materials.
- B. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
- C. Remove debris and ice from formwork, reinforcement, and concrete substrates.

SECTION 033000 - CAST-IN-PLACE CONCRETE

- D. Remove water from areas receiving concrete before concrete is placed.

3.03 PLACING CONCRETE

- A. Place concrete in accordance with ACI 318 and ACI 350.
- B. Notify testing laboratory and Engineer minimum 24 hours prior to commencement of operations.
- C. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints, are not disturbed during concrete placement.
- D. Install vapor retarder under interior slabs on grade in accordance with ASTM E1643. Lap joints minimum 6 inches and seal watertight by taping edges and ends.
- E. Repair vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches and seal watertight.
- F. Separate slabs on grade from vertical surfaces with 1/2 inch thick joint filler.
- G. Install construction joint devices in coordination with pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- H. Install joint device anchors. Maintain correct position to allow joint cover to be flush with floor and wall finish.
- I. Install joint covers in longest practical length, when adjacent construction activity is complete.
- J. Apply sealants in joint devices in accordance with Section 079000.
- K. Deposit concrete at final position. Prevent segregation of mix.
- L. Place concrete in continuous operation for each panel or section determined by predetermined joints.
- M. Consolidate concrete.
- N. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- O. Place concrete continuously between predetermined expansion, control, and construction joints.

3.04 CONCRETE FINISHING

- A. Provide formed concrete surfaces to be left exposed with smooth rubbed finish.
- B. Finish concrete floor surfaces in accordance with ACI 318.

SECTION 033000 - CAST-IN-PLACE CONCRETE

- C. Steel trowel surfaces which are indicated to be exposed.
- D. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1/4 inch per foot nominal.

3.05 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
 - 1. Protect concrete footings from freezing for minimum seven days.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Cure concrete floor surfaces as specified in Section 033900.

3.06 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Field inspection and testing will be performed by Contractor's testing laboratory in accordance with New York State Building Code.
- C. Provide free access to Work and cooperate with subcontracted firm.
- D. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of Work.
- E. Concrete Inspections:
 - 1. Continuous Placement Inspection: Inspect for proper installation procedures.
 - 2. Periodic Curing Inspection: Inspect for specified curing temperature and procedures.
- F. Strength Test Samples:
 - 1. Sampling Procedures: ASTM C172.
 - 2. Cylinder Molding and Curing Procedures: ASTM C31/C31M, cylinder specimens, field cured.
 - 3. Sample concrete and make one set of five cylinders for every 75 cu yds or less of each class of concrete placed each day and for every 5,000 sf of surface area for slabs and walls.
 - 4. When volume of concrete for any class of concrete would provide less than 5 sets of cylinders, take samples from five randomly selected batches, or from every batch when less than 5 batches are used.
 - 5. Make one additional cylinder during cold weather concreting, and field cure.

SECTION 033000 - CAST-IN-PLACE CONCRETE

G. Field Testing:

1. Slump Test Method: ASTM C143/C143M.
2. Air Content Test Method: ASTM C173/C173M.
3. Temperature Test Method: ASTM C1064/C1064M.
4. Measure slump and temperature for each compressive strength concrete sample.
5. Measure air content in air entrained concrete for each compressive strength concrete sample.

H. Cylinder Compressive Strength Testing:

1. Test Method: ASTM C39/C39M.
2. Test Acceptance: In accordance with ACI 318.
3. Test one cylinder at 7 days.
4. Test two cylinders at 28 days.
5. Test one cylinder at 14 days.
6. Retain one cylinder for 56 days for testing when requested by Engineer.
7. Dispose remaining cylinders when testing is not required.

I. Core Compressive Strength Testing:

1. Sampling and Testing Procedures: ASTM C42/C42M.
2. Test Acceptance: In accordance with ACI 318.
3. Drill three cores for each failed strength test from concrete represented by failed strength test.

J. Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

3.07 PATCHING

- A. Allow Engineer to inspect concrete surfaces immediately upon removal of forms.
- B. Honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.
- C. Patch imperfections as directed by Engineer.

3.08 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by Engineer.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.

END OF SECTION

SECTION 033000 - CAST-IN-PLACE CONCRETE

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SECTION 033500 - CONCRETE FINISHING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Finishing concrete floors.
2. Floor surface treatment.

B. Related Sections:

1. Section 033000 - Cast-In-Place Concrete.
2. Section 033900 - Concrete Curing.
3. Section 079000 - Joint Protection.

1.02 REFERENCES

A. American Concrete Institute:

1. ACI 301 - Specifications for Structural Concrete.
2. ACI 302.1 - Guide for Concrete Floor and Slab Construction.

B. ASTM International:

1. ASTM E1155 - Standard Test Method for Determining Floor Flatness and of Levelness Using the F-number System.

1.03 SUBMITTALS

- A. Product Data: Submit data on sealer, curing compounds and slip resistant treatment, compatibilities, and limitations.

1.04 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit data on maintenance renewal of applied coatings.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301 and ACI 302.1.
- B. Perform Work in accordance with Building Codes New York State (B.C.N.Y.S.).

1.06 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

SECTION 033500 - CONCRETE FINISHING

- B. Installer: Company specializing in performing work of this section with minimum three years documented experience.

1.07 MOCK-UP

- A. Construct mock-up area under conditions similar to those which will exist during actual placing, 10 feet long by 10 feet wide, with specified finishes, and coatings applied.
- B. Locate where directed by Engineer.
- C. Incorporate accepted mockup as part of Work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's packaging including application instructions.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Temporary Lighting: Minimum 200 W light source, placed 8 feet above floor surface, for each 425 sq ft of floor being finished.
- B. Do not finish floors until interior heating system is operational.
- C. Temporary Heat: Ambient temperature of 50 degrees F minimum.
- D. Ventilation: Sufficient to prevent injurious gases from temporary heat or other sources affecting concrete.

1.10 COORDINATION

- A. Coordinate the Work with concrete floor placement and concrete floor curing.

PART 2 - PRODUCTS

2.01 COMPOUNDS - HARDENERS AND SEALERS

- A. Sealer:
 - 1. Manufacturers:
 - a. ChemTec Int'l.
 - b. Euclid Chemical Company.
 - c. Vexcon Chemical Inc.

SECTION 033500 - CONCRETE FINISHING

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify floor surfaces are acceptable to receive the Work of this section.

3.02 FLOOR FINISHING

- A. Finish concrete floor surfaces in accordance with ACI 301 and ACI 302.1.
- B. Steel trowel surfaces which are indicated to be exposed.
- C. In areas with floor drains, maintain design floor elevation at walls; slope surfaces uniformly to drains as indicated on Drawings.

3.03 FLOOR SURFACE TREATMENT

- A. Apply sealer on floor surfaces.

3.04 TOLERANCES

- A. Maximum Variation of Surface Flatness For Exposed Concrete Floors: 1/8. inch in 10 ft.
- B. Correct defects in defined traffic floor by grinding or removal and replacement of defective Work. Areas requiring corrective Work will be identified. Re-measure corrected areas by same process.

END OF SECTION

SECTION 033500 - CONCRETE FINISHING

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SECTION 033900 - CONCRETE CURING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes initial and final curing of horizontal and vertical concrete surfaces.

1.02 SUBMITTALS

- A. Product Data: Curing compounds, Mats, compatibilities, and limitations.

1.03 QUALITY ASSURANCE

- A. Perform Work according to ACI 318 and ACI 350.
- B. Perform Work according to New York State Department of Transportation Standards.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Membrane Curing Compound: ASTM C309, Type 1D, Class B.

1. Manufacturers:

- a. Anti-Hydro International.
- b. BASF Corporation-Construction.
- c. ChemMasters, Inc.
- d. Dayton Superior Specialty.
- e. Euclid Chemical Company.
- f. Kaufman Products, Inc.
- g. L&M Construction Chemical.
- h. Lambert Corporation.
- i. Nox-Crete Products Group.
- j. Right Pointe.
- k. SpecChem, LLC.
- l. TK Products.
- m. US Spec.
- n. Vexcon Chemicals Inc.
- o. W.R. Meadows, Inc.
- p. Substitutions: Permitted.

SECTION 033900 - CONCRETE CURING

PART 3 - EXECUTION

3.01 INSTALLATION - HORIZONTAL SURFACES

- A. Cure concrete according to ACI 308.1.
- B. Spraying: Spray water over floor slab areas and maintain wet for seven days.
- C. Membrane Curing Compound: Apply curing compound in one coat.

3.02 INSTALLATION - VERTICAL SURFACES

- A. Cure concrete according to ACI 308.1.
- B. Membrane Curing Compound: Apply compound in two coats with second coat applied at right angles to first.

END OF SECTION

SECTION 036000 - GROUTING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
1. Portland cement grout.
 2. Rapid curing epoxy grout.
 3. Non-shrink cementitious grout.

1.02 SUBMITTALS

- A. Product Data: Grout.
- B. Manufacturer's Installation Instructions: Mixing, handling, surface preparation and placing epoxy type and non-shrink type grouts.
- C. Manufacturer's Certificate: Products meet or exceed specified requirements.

1.03 QUALITY ASSURANCE

- A. Perform Work according to New York State Department of Transportation Standards.

1.04 ENVIRONMENTAL REQUIREMENTS

- A. Do not perform grouting if temperatures exceed 85 degrees F.
- B. Maintain minimum temperature of 50 before, during, and after grouting, until grout has set.

PART 2 - PRODUCTS

2.01 PORTLAND CEMENT GROUT MATERIALS

- A. Portland Cement: ASTM C150, Type II.
- B. Water:
1. Potable; containing no impurities, suspended particles, algae or dissolved natural salts in quantities capable of causing:
 - a. Corrosion of steel.
 - b. Volume change increasing shrinkage cracking.
 - c. Efflorescence.

SECTION 036000 - GROUTING

d. Excess air entraining.

C. Fine Aggregate:

1. Washed natural sand.
2. Gradation in accordance with ASTM C33 and represented by smooth granulometric curve within required limits.
3. Free from injurious amounts of organic impurities as determined by ASTM C40.

D. Mix:

1. Portland cement, sand and water. Do not use ferrous aggregate or staining ingredients in grout mixes.

2.02 RAPID CURING EPOXY GROUT

A. Manufacturers:

1. L&M Construction Chemical.
2. Sika Corporation.
3. W.R. Meadows, Inc.
4. Substitutions: Permitted.

B. Rapid-Curing Epoxy Grout: High strength, three-component epoxy grout formulated with thermosetting resins and inert fillers. Rapid-curing, high adhesion, and resistant to ordinary chemicals, acids and alkalis.

Property	Test	Result
Compressive Strength	ASTM C579	12,000 psi at 7 days
Tensile Strength	ASTM C307	2,000 psi minimum
Coefficient of Expansion	ASTM C531	0.000030 in per degree F
Shrinkage	ASTM C827	none

2.03 NON-SHRINK CEMENTITIOUS GROUT

A. Manufacturers:

1. CGM, Inc.
2. Euclid Chemical Company.
3. L&M Construction Chemical.
4. QUIKRETE.
5. Sika Corporation
6. Substitutions: Permitted.

B. Non-shrink Cementitious Grout: Pre-mixed ready for use formulation requiring only addition of water; non-corrosive, non-metallic, non-gas-forming, no chlorides.

C. Properties: Certified to maintain initial placement volume or expand after set and meet following minimum properties when tested according to CRD-C621, for Type D non-shrink grout:

SECTION 036000 - GROUTING

Property	Test	Time	Result
Setting Time	ASTM C191	Initial	2 hours (approx.)
		Final	3 hours (approx.)
Expansion			0.10% - 0.4% Maximum
Compressive Strength	CRD-C621	1 day	4,000 psi
		7 days	7,000 psi
		28 days	10,000 psi to 10,800 psi

2.04 FORMWORK

- A. Refer to Section 031000.

2.05 CURING

- A. Prevent rapid loss of water from grout during first 48 hours by using approved membrane curing compound or with by using wet burlap method.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Remove defective concrete, laitance, dirt, oil, grease and other foreign material from concrete surfaces until sound, clean concrete surface achieved.
- B. Rough concrete lightly, but not enough to interfere with placement of grout.
- C. Remove foreign materials from metal surfaces in contact with grout.
- D. Align, level, and maintain final positioning of components to be grouted.
- E. Saturate concrete surfaces with clean water; remove excess water, leaving none standing.

3.02 INSTALLATION - FORMWORK

- A. Construct leakproof forms anchored and shored to withstand grout pressures.
- B. Install formwork with clearances to permit proper placement of grout.

3.03 MIXING

- A. Portland Cement Grout:
 1. Use proportions of two parts sand to one part cement, measured by volume.
 2. Prepare grout with water to obtain consistency to permit placing and packing.

SECTION 036000 - GROUTING

3. Mixing Water and Grout: Pre-mix using approximately 2/3 of water; after partial mixing, add remaining water to bring mix to desired placement consistency and continue mixing 2 to 3 minutes.
4. Mix only quantities of grout capable of being placed within 30 minutes after mixing.
5. Do not add additional water after grout has been mixed.

- B. Mix and prepare rapid curing epoxy grout according to manufacturer's instructions.
- C. Mix and prepare non-shrink cementitious grout according to manufacturer's instructions.
- D. Mix grout components in proximity to Work area and transport mixture quickly and in manner not permitting segregation of materials.

3.04 PLACING GROUT

- A. Do not use pneumatic-pressure or dry-packing methods; do not vibrate placed grout.
- B. Thoroughly compact final installation and eliminate air pockets.

3.05 CURING

- A. Immediately after placement, protect grout from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. After grout has attained its initial set, keep damp for minimum of three days.

3.06 FIELD QUALITY CONTROL

- A. Perform field inspection and testing according to ACI 318.
- B. Submit proposed mix design of each class of grout to inspection and testing firm for review prior to commencement of Work.
- C. Tests of grout components may be performed to ensure conformance with specified requirements.

END OF SECTION

SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Structural shapes.
2. Channels and angles.
3. Hollow structural sections.
4. Structural pipe.
5. Structural plates and bars.
6. Floor plates.
7. Bolts, connectors, and anchors.
8. Grout.

1.02 RELATED REQUIREMENTS

- A. Section 053123 – Steel Roof Decking: Support framing for openings in roof deck.
- B. Section 099000 – Painting and Coating: Structural steel framing finish painting.

1.03 SUBMITTALS

A. Shop Drawings:

1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and bolts.
2. Connections.
3. Cambers.
4. Indicate welded connections with AWS A2.4 welding symbols, and indicate net weld lengths.

- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months.
- D. Mill Test Reports: Submit indicating structural strength, destructive and non-destructive test analysis.
- E. Source Quality-Control Submittals: Indicate results of shop tests and inspections.
- F. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

SECTION 051200 - STRUCTURAL STEEL FRAMING

G. Qualifications Statements:

1. Submit qualifications for fabricator, erector, shop painter, and welders.

1.04 QUALITY ASSURANCE

A. Perform Work according to following:

1. Structural Steel: AISC 303.
2. Architecturally Exposed Structural Steel: AISC 303, Section 10.
3. High-Strength Bolted Connections: RCSC - Specification for Structural Joints Using ASTM A325 or ASTM A490Bolts.

B. Perform Work according to New York State Department of Transportation Standards.

C. Fabricator:

1. Company specializing in fabricating products specified in this Section with minimum three documented experience with following current AISC Certification:
 - a. Standard Steel Building Structures (STD).
 - b. Conventional Steel Building Structures (SBD).

D. Erector:

1. Company specializing in performing Work of this Section with minimum three years' documented experience with following current AISC Certification:
 - a. Certified Steel Erector (CSE).
 - b. Advanced Certified Steel Erector (ACSE).

E. Shop Painter:

1. Company specializing in performing Work of this Section with minimum three years' documented experience with following current AISC Certification:
 - a. Sophisticated Paint Endorsement - Enclosed (P1).
 - b. Sophisticated Paint Endorsement - Covered (P2).
 - c. Sophisticated Paint Endorsement - Outside (P3).

F. Welders and Welding Procedures: AWS D1.1 qualified within previous 12 months.

PART 2 - PRODUCTS

2.01 STRUCTURAL STEEL

- A. Structural W Shapes: ASTM A992; Grade 50.

SECTION 051200 - STRUCTURAL STEEL FRAMING

- B. Structural T Shapes: Cut from structural W shapes.
- C. Channels and Angles: ASTM A36.
- D. Round, Hollow Structural Sections: ASTM A500, Grade B.
- E. Rectangular, Hollow Structural Sections: ASTM A500, Grade B.
- F. Structural Plates and Bars: ASTM A36.
- G. Floor Plates: ASTM A786; raised pattern.

2.02 BOLTS, CONNECTORS, AND ANCHORS

- A. Bolts: Heavy-hex, structural type.
 - 1. ASTM A325; Type 1, galvanized, or Type 3, plain.
 - 2. ASTM A490; Type 1 or 3, plain.
- B. Nuts: ASTM A563; heavy-hex type.
 - 1. Finish: Hot-dip galvanized.
- C. Washers:
 - 1. ASTM F436.
 - 2. Type 1, circular.
 - 3. Finish: Hot-dip galvanized.
- D. Shear Connectors:
 - 1. ASTM A108.
 - 2. Grade 1015, headed, unfinished, and according to AWS D1.1.
 - 3. Type B.
- E. Anchor Rods:
 - 1. ASTM F1554; Grade 55, weldable.
 - 2. Shape: as indicated on Drawings.
 - 3. Plate Washers: ASTM A36.
- F. Threaded Rods:
 - 1. ASTM A36.
 - 2. Finish: Hot-dip galvanized.
- G. Forged Structural Steel Hardware:
 - 1. Clevises and Turnbuckles: ASTM A108; Grade 1085.
 - 2. Eye Nuts and Eye Bolts: ASTM A108; Grade 1030.
 - 3. Sleeve Nuts: ASTM A108; Grade 1018.

SECTION 051200 - STRUCTURAL STEEL FRAMING

4. Rod Ends, Yoke Ends and Pins, Cotter Pins, and Coupling Nuts: Carbon steel.

2.03 WELDING MATERIALS

A. Welding Materials:

1. AWS D1.1.
2. Type required for materials being welded.

2.04 FABRICATION

- A. Space shear stud connectors as unless indicated otherwise on Drawings.
- B. Continuously seal joined members by continuous welds. Grind exposed welds smooth.
- C. Fabricate connections for bolt, nut, and washer connectors.
- D. Develop required camber for members.

2.05 FINISHES

A. Structural Steel:

1. Shop Primer: SSPC Paint 15, Type 1, Red Oxide.
2. Touchup Primer: Match shop primer.
3. Finish: Field per Section 099000.

B. Galvanizing for Bolts, Connectors, and Anchors:

1. Hot-Dip Galvanizing:
 - a. Bolts, Nuts, and Washers: ASTM F2329.
 - b. Connectors and Anchors: ASTM A153.
2. Mechanical Galvanizing: ASTM B695; Class 50 minimum.

2.06 ACCESSORIES

A. Grout:

1. Non-shrink type; premixed compound consisting of nonmetallic aggregate, cement, water-reducing, and plasticizing additives.
2. Capable of developing minimum compressive strength of 5000 psi at 28 days.

SECTION 051200 - STRUCTURAL STEEL FRAMING

B. Touchup Primer for Galvanized Surfaces:

1. SSPC Paint 20, Type I - Inorganic.
2. Comply with ASTM A780.

2.07 SOURCE QUALITY CONTROL

- A. Testing: Test bolted and welded connections as specified in PART 3 for field quality control tests.
- B. Certificate of Compliance: When fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.
 1. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that bearing surfaces are at correct elevation.
- B. Verify that anchor rods are set in correct locations and arrangements, with correct exposure for steel attachment.

3.02 PREPARATION

- A. Furnish templates for installation of anchor rods and embedments in concrete and masonry work.

3.03 ERECTION

- A. Allow for erection loads and for sufficient temporary bracing to maintain structure safe, plumb, and in alignment until completion of erection and installation of permanent bracing.
- B. Field-weld components and shear connectors as indicated on Drawings.
- C. Field-connect members with threaded fasteners; torque to required resistance and snug-tighten for bearing-type connections.
- D. Do not field-cut or alter structural members without approval of Architect/Engineer.
- E. After erection, touch up welds and abrasions to match shop finishes.

SECTION 051200 - STRUCTURAL STEEL FRAMING

3.04 GROUT INSTALLATION

- A. Shim bearing plates and equipment supports to proper elevation, and snug-tighten anchor bolts.
- B. Fill void under bearing surface with grout; install and pack grout to remove air pockets.
- C. Moist-cure grout.
- D. Remove forms after grout is set; trim grout edges to form smooth surface, splayed 45 degrees.
- E. Tighten anchor bolts after grout has cured for a minimum of three days.

3.05 TOLERANCES

- A. Maximum Variation from Plumb: 1/4 inch per story, noncumulative.
- B. Maximum Offset from Alignment: 1/4 inch.

3.06 FIELD QUALITY CONTROL

- A. Bolted Connections: Inspect according to AISC 303.
 - 1. Visually inspect all bolted connections.
 - 2. Direct Tension Indicators: Comply with requirements of ASTM F959, and verify that gaps are less than gaps specified in Table 2.
- B. Welding: Inspect welds according to AWS D1.1.
 - 1. Use certified welders, and conduct inspections and tests as required. Record types and locations of defects found in Work. Record work required and performed to correct deficiencies.
 - 2. Visually inspect all welds.
 - 3. Ultrasonic Inspection: ASTM E164; perform on each full-penetration weld.
 - 4. Liquid Penetrant Inspection: ASTM E165.
- C. Correct defective bolted connections and welds.

END OF SECTION

SECTION 079000 - JOINT PROTECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Sealants and joint backing.
2. Accessories.

1.02 REFERENCE STANDARDS

A. ASTM International:

1. ASTM C 661 - Standard Test Method for Indentation Hardness of Elastomeric Type Sealants by Means of a Durometer.
2. ASTM C 719 - Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants under Cyclic Movement (Hockman Cycle).
3. ASTM C 920 - Specification for Elastomeric Joint Sealants.
4. ASTM C 1135 - Standard Test Method for Determining Tensile Adhesion Properties of Structural Sealants.
5. ASTM C 1184 - Standard Specification for Structural Silicone Sealants.
6. ASTM C 1193 - Standard Guide for Use of Joint Sealants.
7. ASTM C 1248 - Test Method for Staining of Porous Substrate by Joint Sealants.
8. ASTM C 1330 - Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
9. ASTM D 2240 - Standard Test Method for Rubber Property - Durometer Hardness.
10. ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.

B. Sealant, Waterproofing, and Restoration Institute (SWRI): www.swrionline.org:

1. SWRI Validation Program.

1.03 SUBMITTALS

A. Product Data: For each type of joint sealant product specified, including:

1. Preparation instructions and recommendations.
2. Standard drawings illustrating manufacturer's recommended sealant joint profiles and dimensions applicable to Project.

B. Joint Sealant Schedule: Indicate joint sealant location, joint sealant type, manufacturer and product name, and color, for each application. Utilize joint sealant designations included in this Section.

C. Samples for Color Selection: For each joint sealant type.

D. Samples for Verification: For each exterior joint sealant product, for each color selected.

SECTION 079000 - JOINT PROTECTION

E. INFORMATIONAL SUBMITTALS

1. Qualification Data: For qualified applicator.
2. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.
3. Preconstruction compatibility and adhesion test reports.
4. Preconstruction field-adhesion test reports.
5. Field quality control adhesion test reports.
6. Warranty: Sample of unexecuted manufacturer and installer special warranties.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Experienced Installer equipped and trained for application of joint sealants required for this Project with record of successful completion of projects of similar scope.
- B. Single Source Responsibility: Provide exterior joint sealants by a single manufacturer responsible for testing of Project substrates to verify compatibility and adhesion of joint sealants.
- C. Preconstruction Field-Adhesion Testing: Prior to installing joint sealants, field test adhesion to joint substrates using ASTM C 1193 Method A or method recommended by manufacturer. Verify adhesion is adequate. Modify joint preparation recommendations for failed joints and re-test. Submit written report to Architect.
- D. Mockups: Provide joint sealant application within mockups required in other sections identical to specified joint sealants and installation methods.
 1. Warranty Period for Silicone Sealants: 20 years date of Substantial Completion.

1.05 MOCKUPS

- A. Construct mockup of sealant joints at each location using up to three colors selected from the samples.
- B. Construct mockup with specified sealant types and with other components as indicated.
- C. Preparation and Priming:
 1. Determine requirements based on manufacturer recommendations.
 2. Correct failure of sealant tests on mockup if required.
- D. Verify that sealants, primers, and other components do not stain adjacent materials.
- E. Locate mock-up at an easily accessible area that can be seen from the ground.
- F. Incorporate accepted mockup as part of Work. Remove mock-ups that were not accepted.

SECTION 079000 - JOINT PROTECTION

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- B. Store products according to manufacturer instructions.
- C. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Provide additional protection according to manufacturer instructions.

1.07 FIELD CONDITIONS

- A. Hazardous Materials: No hazardous materials are known to be present on site.
 - 1. If suspected hazardous materials are encountered, do not disturb materials, and immediately notify Architect and Owner.
- B. Maintain temperature and humidity as recommended by sealant manufacturer during and after installation.

1.08 WARRANTY

- A. Special Installer's Warranty: Original statement on Installer's letterhead in which Installer agrees to repair or replace joint sealants that demonstrate deterioration or failure within warranty period specified.
 - 1. Warranty Period: Two years from date of Substantial Completion.
 - 2. Include coverage for:
 - a. Installed sealants and accessories failing to achieve watertight seal.
 - b. Installed sealants and accessories exhibiting loss of adhesion or cohesion.
 - c. Sealants that do not cure.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint sealant manufacturer agrees to furnish joint sealants to repair or replace those that demonstrate deterioration or failure under normal use within warranty period specified.

SECTION 079000 - JOINT PROTECTION

PART 2 - PRODUCTS

2.01 JOINT SEALERS

A. Manufacturers:

1. Dow Corning Corporation
 - a. 2200 W. Salzburg Street P.O. Box 994 Midland MI 48686-0994
 - b. Phone: (800) 248-2481
2. Sika Corporation
 - a. 201 Polito Avenue Lyndhurst NJ 07071
 - b. Phone: 800-933-8800
3. Tremco Incorporated
 - a. 3735 Green Road Beachwood OH 44122
 - b. Phone: 800.321.7906
4. GE Construction Sealants
 - a. 9930 Kincey Ave Huntersville NC 28078
 - b. Phone: 877-943-7325

2.02 JOINT SEALERS BY APPLICATION

A. High-Performance General-Purpose Exterior (Nontraffic) Sealant:

1. Material: Silicone
2. Comply with ASTM C920, Grade NS, Class 25, Uses M, G, and A.
3. Type: Single component.
4. Color: As selected.
5. Applications:
 - a. Control, expansion, and soft joints in masonry.
 - b. Joints between metal frames and other materials.
 - c. Other exterior nontraffic joints for which no other sealant is indicated.

2.03 ACCESSORIES

A. Primer:

1. Type: Non-staining.
2. As recommended by sealant manufacturer to suit application.

SECTION 079000 - JOINT PROTECTION

B. Joint Cleaner:

1. Type: Non-corrosive and non-staining.
2. As recommended by sealant manufacturer.
3. Compatible with joint forming materials.

C. Joint Backing:

1. Description: Round foam rod, compatible with sealant.
2. Comply with ASTM D1667.
3. Size: Oversized 30 to 50 percent larger than joint width.

D. Bond Breaker:

1. Description: Pressure-sensitive tape.
2. As recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces and joint openings are ready to receive Work of this Section.
- B. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION

- A. Comply with ASTM C1193.
- B. Remove loose materials and foreign matter that could impair adhesion of sealant.
- C. Clean and prime joints.
- D. Protect elements surrounding Work of this Section from damage or disfiguration.

3.03 APPLICATION

- A. Comply with ASTM C1193.
- B. Measure joint dimensions and size joint backers to achieve following:
 1. Width to Depth Ratio: 2:1.
 2. Neck Dimension: No greater than 1/2 of joint width.
 3. Surface Bond Area on Each Side: Not less than 75 percent of joint width.
- C. Install bond breaker where joint backing is not used.
- D. Apply sealant free of air pockets, foreign embedded matter, ridges, and sags.

SECTION 079000 - JOINT PROTECTION

E. Joint Tooling: Concave.

3.04 CLEANING

A. Clean adjacent soiled surfaces.

3.05 PROTECTION

A. Protect sealants until cured.

END OF SECTION 079000

SECTION 260503 - EQUIPMENT WIRING CONNECTIONS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes electrical connections to equipment.
- B. Related Sections:
 - 1. Section 260519 - Low-Voltage Electrical Power Conductors and Cables.
 - 2. Section 260533 - Raceway and Boxes for Electrical Systems.

1.02 REFERENCES

- A. National Electrical Manufacturers Association:
 - 1. NEMA WD 1 - General Requirements for Wiring Devices.
 - 2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.
- B. National Fire Protection Association:
 - 1. NFPA 70-National Electrical Code

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit wiring device manufacturer's catalog information showing dimensions, configurations, and construction.
- C. Manufacturer's installation instructions.

1.04 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Submittal procedures.
- B. Project Record Documents: Record actual locations, sizes, and configurations of equipment connections.

1.05 COORDINATION

- A. Section 013000 - Administrative Requirements: Coordination and project conditions.
- B. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.

SECTION 260503 - EQUIPMENT WIRING CONNECTIONS

- C. Determine connection locations and requirements.
- D. Sequence rough-in of electrical connections to coordinate with installation of equipment.
- E. Sequence electrical connections to coordinate with start-up of equipment.

PART 2 - PRODUCTS

2.01 CORD AND PLUGS

- A. Attachment Plug Construction: Conform to NEMA WD 1.
- B. Configuration: NEMA WD 6; match receptacle configuration at outlet furnished for equipment.
- C. Cord Construction: Type SO SJO (as required) multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
- D. Cord Construction: Type SOOW SJOOW (as required) multiconductor flexible cord with identified equipment grounding conductor, suitable for use in wet locations.
- E. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Coordination and project conditions.
- B. Verify equipment is ready for electrical connection, for wiring, and to be energized.

3.02 EXISTING WORK

- A. Remove exposed abandoned equipment wiring connections, including abandoned connections above accessible ceiling finishes.
- B. Disconnect abandoned utilization equipment and remove wiring connections. Remove abandoned components when connected raceway is abandoned and removed. Install blank cover for abandoned boxes and enclosures not removed.
- C. Extend existing equipment connections using materials and methods compatible with existing electrical installations, or as specified.

SECTION 260503 - EQUIPMENT WIRING CONNECTIONS

3.03 INSTALLATION

- A. Make electrical connections.
- B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible metallic conduit with watertight connectors in damp or wet locations.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Install receptacle outlet to accommodate connection with attachment plug.
- E. Install cord and cap for field-supplied attachment plug.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

3.04 ADJUSTING

- A. Section 017000 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Cooperate with utilization equipment installers and field service personnel during checkout and starting of equipment to allow testing and balancing and other startup operations. Provide personnel to operate electrical system and checkout wiring connection components and configurations.

END OF SECTION



SECTION 260505 - SELECTIVE DEMOLITION FOR ELECTRICAL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Removal of existing electrical equipment, wiring, and conduit in areas of work; removal of designated construction; dismantling, cutting and alterations for completion of the Work.
2. Disposal of materials.
3. Storage of removed materials.
4. Identification of utilities.
5. Salvaged items.
6. Protection of items to remain as scheduled at end of section.
7. Relocate existing equipment to accommodate construction.

1.02 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of capped utilities, conduits and equipment abandoned in place.

1.03 QUALITY ASSURANCE

- A. Perform Work in accordance with NFPA 70 (National Electric Code) and/or IEEE C2 (National Electric Safety Code), as applicable.

1.04 PRE-INSTALLATION MEETINGS

- A. Section 013000 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum 2 weeks prior to commencing work of this section.

1.05 SEQUENCING

- A. Section 011000 - Summary: Requirements for sequencing.

SECTION 260505 - SELECTIVE DEMOLITION FOR ELECTRICAL

1.06 SCHEDULING

- A. Section 013000 - Administrative Requirements and 013216 - Construction Progress Schedule: Requirements for scheduling.
- B. Schedule work to coincide with new construction.
- C. Perform noisy work:
 - 1. Between hours of 8:00 AM and 5:00 PM.
- D. Cease operations immediately when any structure appears to be in danger and notify Engineer. Do not resume operations until directed.

1.07 COORDINATION

- A. Section 013000 - Administrative Requirements: Requirements for coordination.
- B. Conduct demolition to minimize interference with adjacent building areas.
- C. Coordinate demolition work with General Contractor, Engineer, and Owner's representative.
- D. Coordinate and sequence demolition so as not to cause shutdown of operation of surrounding areas.
- E. Shut-down Periods:
 - 1. Arrange timing of shut-down periods of in service equipment with Engineer and Owner's representative. Do not shut down any utility without prior written approval.
 - 2. Keep shut-down period to minimum or use intermittent period as directed by General Contractor, Engineer and Owner's representative.
 - 3. A minimum three (3) week advanced notice is required for all National Grid shutdowns.
- F. Identify salvage items in cooperation with Owner.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.

SECTION 260505 - SELECTIVE DEMOLITION FOR ELECTRICAL

- B. Verify wiring and equipment indicated to be demolished serve only abandoned facilities.
- C. Verify termination points for demolished services.
- D. Perform oil sampling and analysis for transformers and bushings with respect to PCB's/hazardous materials requiring additional disposal efforts. For basis of bid, assume oil does not contain PCB's or other hazardous materials.

3.02 PREPARATION

- A. Erect, and maintain temporary safeguards, including warning signs and lights, barricades, and similar measures, for protection of the public, Owner, Contractor's employees, and existing improvements to remain.

3.03 DEMOLITION

- A. Demolition Drawings are based on casual field observation and existing record documents. Report discrepancies to Engineer before disturbing existing installation.
- B. Remove exposed abandoned conduit. Cut conduit flush with walls and floors, and patch surfaces.
- C. Remove conduit, wire, boxes, and fastening devices to avoid any interference with new installation.
- D. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.
- E. Reconnect equipment being disturbed by renovation work and required for continue service to the location indicated on drawings.
- F. Disconnect or shut off service to areas where electrical work is to be removed. Remove electrical fixtures, equipment, and related switches, outlets, conduit and wiring which are not part of final project.
- G. Perform work on energized equipment or circuits with experienced and trained personnel and only with prior written authorization from Engineer and Owner's representative.
- H. Remove, relocate, and extend existing installations to accommodate new construction.
- I. Repair adjacent construction and finishes damaged during demolition and extension work.
- J. Remove exposed abandoned grounding and bonding components, fasteners and supports, and electrical identification components. Cut embedded support elements flush with walls and floors.
- K. Clean and repair existing equipment to remain or to be reinstalled.
- L. Protect and retain power to existing active equipment remaining.
- M. Cap abandoned empty conduit at both ends.

SECTION 260505 - SELECTIVE DEMOLITION FOR ELECTRICAL

3.04 EXISTING PANELBOARDS

- A. Ring out circuits in existing panel affected by the Work. Where additional circuits are needed, reuse circuits available for reuse. Install new breakers.
- B. Tag unused circuits as spare.
- C. Where existing circuits are indicated to be reused, use sensing measuring devices to verify circuits feeding Project area or are not in use.
- D. Remove existing wire no longer in use from panel to equipment.
- E. Provide new updated typed directories.

3.05 SALVAGE ITEMS

- A. Remove and protect items indicated in Schedule to be salvaged and turn over to Owner.
- B. Items of salvageable value may be removed as work progresses. Transport salvaged items from site as they are removed and deliver to location identified by Owner.

3.06 REUSABLE ELECTRICAL EQUIPMENT

- A. Carefully remove equipment, materials, or fixtures which are to be reused.
- B. Disconnect, remove, or relocate existing electrical material and equipment interfering with new installation.

3.07 CLEANING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Remove demolished materials as work progresses. Legally dispose.
- C. Keep workplace neat.

3.08 PROTECTION OF FINISHED WORK

- A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.

3.09 SCHEDULES

- A. Remove, store and protect the following materials and equipment:
 - 1. Circuit Switchers.

SECTION 260505 - SELECTIVE DEMOLITION FOR ELECTRICAL

B. Protect the following materials and equipment remaining:

1. 5kV switchgear
2. Pump motors
3. SCADA control cabinet
4. 480 and 208V motor control centers

END OF SECTION



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SECTION 260513 - MEDIUM-VOLTAGE CABLES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Medium voltage cable.
2. Cable terminations.
3. Fireproofing tape.
4. Underground cable markers.
5. Bedding and cover materials.

B. Related Sections:

1. Section 310516 - Aggregates for Earthwork: Aggregate for backfill in trenches.
2. Section 312316 - Excavation: Product and execution requirements for excavation and backfill required by this section.
3. Section 312317 - Trenching: Execution requirements for trenching required by this section.
4. Section 312323 - Fill: Requirements for backfill to be placed by this section.

1.02 REFERENCES

A. International Electrical Testing Association:

1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

1.03 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit for cable, terminations, and accessories.

C. Test Reports: Indicate results of cable test in tabular form and in plots of current versus voltage for incremental voltage steps, and current versus time at 30 second intervals at maximum voltage.

1.04 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual sizes, length, and locations of cables.

C. Operation and Maintenance Data: Submit instructions for testing and cleaning cable and accessories.

SECTION 260513 - MEDIUM-VOLTAGE CABLES

1.05 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling requirements.
- B. Protect cable ends from entrance of moisture.

PART 2 - PRODUCTS

2.01 MEDIUM VOLTAGE CABLE

- A. Manufacturers:
 - 1. Okonite
 - 2. Southwire
 - 3. General Cable
 - 4. Omni Cable
 - 5. Substitutions: Section 016000 - Product Requirements.
- B. Voltage: 5 kV.
- C. Insulation Level: 133 percent of operating voltage.
- D. Cable Continuous Operating Temperature Rating: MV-105.
- E. Configuration: Single conductor.
- F. Conductor Material: Copper.
- G. Conductor Construction: Compact stranded.
- H. Conductor Shield: Tape.
- I. Non-Armor Jacket: PVC Thermo-plastic rubber.
- J. Listing: UL.

2.02 CABLE TERMINATIONS

- A. Voltage: 5 kV.
- B. Location: Indoor.
- C. Conductor Quantity: Single core.

SECTION 260513 - MEDIUM-VOLTAGE CABLES

D. Type: Cold shrink.

E. Listing: UL.

2.03 FIREPROOFING TAPE

A. Manufacturers:

1. 3M.

2. Substitutions: Section 016000 - Product Requirements.

B. Product Description: Flexible, conformable fabric, coated on one side with flame retardant, flexible polymeric or chlorinated elastomer. Non-corrosive to and compatible with cable sheaths jackets. Does not support combustion.

C. Width: Approximately 3 inches.

D. Thickness: Not less than 0.03 inch.

E. Weight: Not less than 2.5 pounds per square yard.

F. Listing: UL

PART 3 - EXECUTION

3.01 EXAMINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Verify excavations are to required grade, dry, and not over-excavated.

C. Verify conduit, duct, trench, and manholes are ready to receive cable.

D. Verify routing and termination locations of cable prior to rough-in.

3.02 PREPARATION

A. Use swab to clean conduits and ducts before pulling cables.

3.03 EXISTING WORK

A. Remove abandoned medium-voltage cable.

B. Maintain access to existing medium-voltage cable and other installations remaining active and requiring access. Modify installation or provide access panel.

SECTION 260513 - MEDIUM-VOLTAGE CABLES

- C. Extend existing medium-voltage cable installations using materials and methods compatible with existing electrical installations, or as specified.
- D. Clean and repair existing medium-voltage cable to remain or to be reinstalled.

3.04 INSTALLATION

- A. Avoid abrasion and other damage to cables during installation.
- B. Use suitable manufacturer approved lubricants and pulling equipment.
- C. Sustain cable pulling tensions and bending radii below manufacturer's recommended limits.
- D. Ground cable shield at each termination and splice.
- E. Install cables in manholes along wall providing longest route.
- F. Arrange cable in manholes to avoid interference with duct entrances.

3.05 FIREPROOFING

- A. Apply fireproofing tape to cables when installed in manholes, cable rooms, pull boxes, or other enclosures.
- B. Smooth out irregularities, at splices or other locations, with insulation putty before applying fireproofing tape.
- C. Apply fireproofing tape tightly around cables spirally in half-lapped wrapping or in butt jointed wrapping with second wrapping covering joints first.
- D. Extend fireproofing 1 inch into conduit or duct.
- E. Install tape with coated side toward cable.
- F. Install random wrappings of plastic tape around fireproofing tape to prevent unraveling.
- G. Install fireproofing to withstand a 200 Ampere arc for 30 seconds.

3.06 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect exposed cable sections for physical damage.
- C. Inspect cable for proper connections, phase rotation, torque, and phasing between utility sources.
- D. Inspect shield grounding, cable supports, and terminations for proper installation.

SECTION 260513 - MEDIUM-VOLTAGE CABLES

- E. Perform inspections and tests listed in NETA ATS including;
 - 1. Resistance measurements through bolted connection with a low-resistance ohmmeter.
 - 2. Insulation resistance test individually on each conductor.
 - 3. Shield continuity test.
 - 4. Dielectric withstand voltage test (HIPOT).
 - 5. Power factor/dissipation factor (tan delta).
 - 6. Offline partial discharge test.
 - 7. Infrared thermography at all terminations.

3.07 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 017000 - Execution and Closeout Requirements: Protecting installed construction.
- B. Protect installed cables from entrance of moisture.

END OF SECTION



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SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes building wire and cable; metal clad cable; and wiring connectors and connections.
- B. Related Sections:
 - 1. Section 260553 - Identification for Electrical Systems: Product requirements for wire identification.

1.02 REFERENCES

- A. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- B. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.

1.03 SYSTEM DESCRIPTION

- A. Product Requirements: Provide products as follows:
 - 1. Stranded conductor for feeders and branch circuits.
 - 2. Stranded conductors for control circuits.
 - 3. Conductor not smaller than 12 AWG for power and lighting circuits.
 - 4. Conductor not smaller than 16 AWG for control circuits.
 - 5. Increase wire size in branch circuits to limit voltage drop to a maximum of 3 percent.
- B. Wiring Methods: Provide the following wiring methods:
 - 1. Concealed Dry Interior Locations: Use only building wire, Type THWN insulation, in raceway, armored cable or metal clad cable.
 - 2. Exposed Dry Interior Locations: Use only building wire, Type THWN insulation, in raceway.
 - 3. Wet or Damp Interior Locations: Use only building wire, Type THWN insulation, in raceway or metal clad cable.
 - 4. Exterior Locations: Use only building wire, Type THWN insulation, in raceway.
 - 5. Underground Locations: Use only building wire, Type THWN insulation, in raceway.

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

1.04 DESIGN REQUIREMENTS

- A. Conductor sizes are based on copper unless indicated as aluminum or "AL".
- B. When aluminum conductor is substituted for copper conductor, size to match circuit requirements, terminations, conductor ampacity and voltage drop.
- C. Aluminum conductor substitutions must be submitted to and approved by the Engineer prior to commencing work.

1.05 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit for building wire and each cable assembly type.
- C. Design Data: Indicate voltage drop and ampacity calculations for aluminum conductors substituted for copper conductors.
- D. Test Reports: Indicate procedures and values obtained.

1.06 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of components and circuits.

1.07 QUALITY ASSURANCE

- A. Perform Work in accordance with NFPA 70 (National Electric Code).
- B. Maintain one copy of each document on site.

1.08 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.09 FIELD MEASUREMENTS

- A. Verify field measurements are as indicated on Drawings.

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

1.10 COORDINATION

- A. Section 013000 - Administrative Requirements: Requirements for coordination.
- B. Where wire and cable destination is indicated and routing is not shown, determine routing and lengths required.
- C. Wire and cable routing indicated is approximate unless dimensioned.

PART 2 - PRODUCTS

2.01 BUILDING WIRE

- A. Product Description: Single conductor insulated wire.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation Temperature Rating: 75 degrees C.
- E. Insulation Material: Thermoplastic.

2.02 METAL CLAD CABLE

- A. Conductor: Copper.
- B. Insulation Voltage Rating: 600 volts.
- C. Insulation Temperature Rating: 75 degrees C.
- D. Insulation Material: Thermoplastic.
- E. Armor Material: Steel.
- F. Armor Design: Corrugated tube.
- G. Jacket: PVC.

2.03 INDUSTRIAL INSTRUMENTATION AND CONTROL

- A. Product Description: A factory assembly of two or more insulated conductors, with or without shield, under a nonmetallic jacket NFPA 70 Type TC.
 - 1. All analog, RTD, communication or similar wiring shall be shielded.

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

- B. Conductor: Copper.
- C. Overall Jacket: Polyvinyl Chlorine (PVC) in accordance with UL 1277.
- D. Insulation Voltage Rating: 600 volts.
- E. Insulation Temperature Rating: 90 degrees C.
- F. Listings: wire shall be listed by approved third party testing agency such as UL or CSA.

2.04 ETHERNET CABLE

- A. Product Description: A Category 6 industrial grade multi-pair cable with overall shielding.
- B. Conductor: Copper.
- C. Overall Jacket: Polyvinyl Chloride (PVC).
- D. Insulation Voltage: 300 V or 600 V where applicable.
- E. Listings: Cable shall be listed by approved third party testing agency such as UL or CSA.

2.05 TERMINATIONS

- A. Terminal Lugs for Wires 6 AWG and Smaller: Solderless, compression type copper.
- B. Lugs for Wires 4 AWG and Larger: Color keyed, compression type copper, with insulating sealing collars.
- C. Tighten all screw, bolt, or similar connections with torque drive per manufacture's specifications.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Coordination and project conditions.
- B. Verify interior of building has been protected from weather.
- C. Verify mechanical work likely to damage wire and cable has been completed.
- D. Verify raceway installation is complete and supported.

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

3.02 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

3.03 EXISTING WORK

- A. Remove exposed abandoned wire and cable. Patch surfaces where removed cables pass through building finishes.
- B. Disconnect abandoned circuits and remove circuit wire and cable. Remove abandoned boxes when wire and cable servicing boxes is abandoned and removed. Install blank cover for abandoned boxes not removed.
- C. Provide access to existing wiring connections remaining active and requiring access. Modify installation or install access panel.
- D. Extend existing circuits using materials and methods compatible with existing electrical installations, or as specified.
- E. Clean and repair existing wire and cable remaining or wire and cable to be reinstalled.

3.04 INSTALLATION

- A. Route wire and cable to meet Project conditions.
- B. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- C. Identify and color code wire and cable under provisions of Section 260553. Identify each conductor with its circuit number or other designation indicated.
- D. Special Techniques--Building Wire in Raceway:
 - 1. Pull conductors into raceway at same time.
 - 2. Install building wire 4 AWG and larger with pulling equipment.
- E. Special Techniques - Cable:
 - 1. Protect exposed cable from damage.
 - 2. Support cables above accessible ceiling, using spring metal clips.
 - 3. Use suitable cable fittings and connectors.
- F. Special Techniques - Wiring Connections:
 - 1. Clean conductor surfaces before installing lugs and connectors.
 - 2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
 - 3. Tape uninsulated conductors and connectors with electrical tape to 150 percent of insulation rating of conductor.
 - 4. Install insulated multitap connectors for copper conductor splices and taps, 6 AWG and larger.

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

5. Install solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
 6. Install insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
 7. Terminate aluminum conductors with tin-plated, aluminum-bodied compression connectors only. Fill with anti-oxidant compound before installing conductor.
 8. Install suitable reducing connectors or mechanical connector adaptors for connecting aluminum conductors to copper conductors.
- G. Install stranded conductors for branch circuits 10 AWG and smaller. Install crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under screws.
- H. Install terminal lugs on ends of 600 volt wires unless lugs are furnished on connected device, such as circuit breakers.
- I. Size lugs in accordance with manufacturer's recommendations terminating wire sizes. Install 2-hole type lugs to connect wires 4 AWG and larger to copper bus bars.
- J. For terminal lugs fastened together such as on motors, transformers, and other apparatus, or when space between studs is small enough that lugs can turn and touch each other, insulate for dielectric strength of 2-1/2 times normal potential of circuit.

3.05 WIRE COLOR

- A. General:
1. Install wire colors in accordance with the following:
 - a. Black and red for single phase circuits at 120/240 volts.
 - b. Black, red, and blue for circuits at 120/208 volts single or three phase.
 - c. Orange, brown, and yellow for circuits at 277/480 volts single or three phase.
 - d. Red for 48VDC.
 - e. Red with yellow stripe for 48VDC interlock circuits.
 - f. Blue for 24VDC.
- B. Neutral Conductors: White (120V), Gray (277V). When two or more neutrals are located in one conduit, individually identify each with proper circuit number.
- C. Branch Circuit Conductors: Install three or four wire home runs with each phase uniquely color coded.
- D. Feeder Circuit Conductors: Uniquely color code each phase.
- E. Ground Conductors: Green

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

3.06 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Perform inspections and tests listed in NETA ATS.

END OF SECTION

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

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SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
1. Wire.
 2. Mechanical connectors.
 3. Exothermic connectors.
 4. Rod electrodes.
 5. Test wells.

1.02 REFERENCES

- A. Institute of Electrical and Electronics Engineers:
1. IEEE 80 – Guide for Safety in AC Substation Grounding.
 2. IEEE 142 - Recommended Practice for Grounding of Industrial and Commercial Power Systems.
 3. IEEE 1100 - Recommended Practice for Powering and Grounding Electronic Equipment.
 4. IEEE C2 – National Electric Safety Code.
- B. International Electrical Testing Association:
1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- C. National Fire Protection Association:
1. NFPA 70 - National Electrical Code.

1.03 SUBMITTALS

- A. Section 013300 – Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data for grounding electrodes and connectors.
- C. Shop Drawings: Indicate layout and installation details of grounding components.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Test and Evaluation Reports: Submit data collection form(s) and sample report for review prior to conducting tests. All field data and measurements shall be included in report so that fall-of-potential slope can be verified.
- F. Manufacturer Instructions: Submit details instructions on installation requirements, including storage and handling procedures.
- G. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

- H. Qualifications Statement:
 - 1. Submit qualifications for manufacturer.

1.04 CLOSEOUT SUBMITTALS

- A. Section 017000 – Execution and Closeout Requirement: Requirements for submittals.
- B. Project Record Documents: Record actual locations of electrodes and connections.

1.05 SYSTEM DESCRIPTION

- A. Grounding systems use the following elements as grounding electrodes:
 - 1. New rod electrodes.
 - 2. Metal building frame.
 - 3. Existing grounding system.

1.06 PERFORMANCE REQUIREMENTS

- A. Grounding System Resistance: 5 ohms maximum.

1.07 QUALITY ASSURANCE

- A. Provide grounding materials conforming to requirements of NEC, IEEE, and UL labeled.
- B. Perform Work in accordance with local codes and standards.

1.08 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing work of this section.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

- D. Do not deliver items to project before time of installation. Limit shipment of bulk and multiple-use materials to quantities needed for immediate installation.

PART 2 - PRODUCTS

2.01 WIRE

- A. Material: Stranded copper.
- B. Bonding Conductor: Copper conductor bare.
- C. Minimum Size: 4/0 AWG, unless otherwise noted.

2.02 MECHANICAL CONNECTORS

- A. Manufacturers:
 - 1. Burndy
 - 2. ERICO
 - 3. Harger Lightning and Grounding
 - 4. Or approved equal.
- B. Description: Bronze connectors, suitable for grounding and bonding applications, in configurations required for particular installation.

2.03 EXOTHERMIC CONNECTORS

- A. Manufacturers:
 - 1. Burndy
 - 2. ERICO
 - 3. Harger
 - 4. Or approved equal.
- B. Description: Exothermic materials, accessories, and tools for preparing and making permanent field connections between grounding system components.

2.04 ROD ELECTRODES

- A. Manufacturers:
 - 1. ERICO
 - 2. Harger
 - 3. Or approved equal.
- B. Description: Copper-clad steel ground rods.
- C. Diameter: 3/4 inch
- D. Length: 10 feet

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

2.05 Test Wells

- A. Well:
 - 1. Description: Square Polymer Concrete Well
 - 2. Size: 12" x 12" x 18" deep.
- B. Well Cover: Polymer concrete with legend "Ground" embossed on cover.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify that final backfill and compaction have been completed before driving rod electrodes.

3.02 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Remove paint, rust, mill oils, surface contaminants at connection points.
- C. Remove exposed and abandoned grounding components by cutting conductors flush with grade and pavement, and then patching surfaces.
- D. Existing Installations:
 - 1. Provide access to existing grounding electrodes, connections, and other installations remaining active and requiring access.
 - 2. Modify installation or install wells as indicated on Drawings.
- E. Extended existing Site grounding installation using materials and methods compatible with existing installation, or as specified.
- F. Clean and repair existing remaining grounding connections.

3.03 INSTALLATION

- A. Install in accordance with IEEE 80, 142, and 1100.
- B. Install grounding and bonding conductors concealed from view.
- C. Bond together reinforcing steel and metal accessories in structures.
- D. Equipment Grounding Conductor: Install separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

- E. Permanently ground entire light and power system in accordance with NEC, including service equipment, distribution panels, lighting panelboards, switch and starter enclosures, motor frames, grounding type receptacles, and other exposed non-current carrying metal parts of electrical equipment.
- F. Install branch circuits feeding isolated ground receptacles with separate insulated grounding conductor, connected only at isolated ground receptacle, ground terminals, and at ground bus of serving panel.
- G. Accomplish grounding of electrical system by using insulated grounding conductor installed with feeders and branch circuit conductors in conduits. Size grounding conductors in accordance with NEC. Install from grounding bus of serving panel to ground bus of served panel, grounding screw of receptacles, lighting fixture housing, light switch outlet boxes or metal enclosures of service equipment. Ground conduits by means of grounding bushings on terminations at panelboards with installed number 12 conductor to grounding bus.
- H. Grounding electrical system using continuous metal raceway system enclosing circuit conductors in accordance with NEC.
- I. Permanently attach equipment and grounding conductors prior to energizing equipment.
- J. Install rod electrodes in vertical position with bottom at least 5 feet below frost line.
- K. Install interconnecting wire 18 inches below finished grade level.
- L. Install grounding wells as indicated on Drawings

3.04 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS.
- B. Grounding and Bonding: Perform inspections and tests listed in NETA ATS.
- C. Perform continuity testing in accordance with IEEE 142.
- D. Perform ground impedance test of the completed substation grounding system in accordance with IEEE 80 and IEEE 81 fall of potential method. Test shall be repeated in a minimum of two (2) directions at each ground test well. All testing shall be witnessed by Engineer or Owner.
- E. When improper grounding is found on receptacles, check receptacles in entire project and correct. Perform retest.

END OF SECTION

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

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SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Conduit supports.
2. Formed steel channel.
3. Spring steel clips.
4. Sleeves.
5. Mechanical sleeve seals.
6. Equipment bases and supports.

B. Related Sections:

1. Section 033000 - Cast-In-Place Concrete: Product requirements for concrete for placement by this section.

1.02 REFERENCES

A. National Fire Protection Association:

1. NFPA 70 - National Electrical Code.

1.03 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data:

1. Hangers and Supports: Submit manufacturers catalog data including load capacity.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.

C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 2 - PRODUCTS

2.01 CONDUIT SUPPORTS

- A. Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.
- B. Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.
- C. Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt to tighten.
- D. Conduit clamps - general purpose: One hole malleable iron for surface mounted conduits.
- E. Cable Ties: High strength nylon temperature rated to 185 degrees F. Self locking.

2.02 FORMED STEEL CHANNEL

- A. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

2.03 SPRING STEEL CLIPS

- A. Product Description: Mounting hole and screw closure.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.

3.02 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.
- B. Remove incompatible materials affecting bond.
- C. Do not drill or cut structural members.

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

3.03 INSTALLATION - HANGERS AND SUPPORTS

A. Anchors and Fasteners:

1. Concrete Structural Elements: Provide, expansion anchors.
2. Steel Structural Elements: Provide beam clamps.
3. Concrete Surfaces: Provide Hilti-HY200 Anchoring System.
4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Provide toggle bolts.
5. Solid Masonry Walls: Provide Hilti-HY200 Anchoring System.
6. Sheet Metal: Provide sheet metal screws.
7. Wood Elements: Provide wood screws.

B. Install conduit and raceway support and spacing in accordance with NEC.

C. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.

D. Install multiple conduit runs on common hangers.

E. Supports:

1. Fabricate supports from structural steel or formed steel channel. Install hexagon head bolts to present neat appearance with adequate strength and rigidity. Install spring lock washers under nuts.
2. Install surface mounted cabinets and panelboards with minimum of four anchors.
3. In wet and damp locations install steel channel supports to stand cabinets and panelboards 1 inch off wall.
4. Support vertical conduit at every floor.

3.04 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

A. Provide housekeeping pads of concrete, minimum 3-1/2 inches thick and extending 6 inches beyond supported equipment. Refer to Section 033000.

B. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.

3.05 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

3.06 CLEANING

A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

3.07 PROTECTION OF FINISHED WORK

- A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes conduit and tubing, outlet boxes, pull and junction boxes.
- B. Related Sections:
 - 1. Section 260503 - Equipment Wiring Connections.
 - 2. Section 260529 - Hangers and Supports for Electrical Systems.
 - 3. Section 260553 - Identification for Electrical Systems.

1.02 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
 - 2. ANSI C80.3 - Specification for Electrical Metallic Tubing, Zinc Coated.
- B. National Electrical Manufacturers Association:
 - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
 - 2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
 - 3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.

1.03 SYSTEM DESCRIPTION

- A. Raceway and boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.
- B. Underground More than 5 feet outside Foundation Wall: Provide, thickwall nonmetallic conduit.
- C. Underground Within 5 feet from Foundation Wall: Provide rigid steel conduit.
- D. Outdoor Locations, Above Grade: Provide rigid steel conduit. Provide cast metal outlet boxes.
- E. Wet and Damp Locations: Provide rigid steel conduit. Provide cast metal outlet, junction, and pull boxes.
- F. Exposed Dry Locations: Provide rigid steel conduit. Provide sheet-metal boxes. Provide hinged enclosure for large pull boxes.

SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

1.04 DESIGN REQUIREMENTS

- A. Minimum Raceway Size: 3/4 inch unless otherwise specified.

1.05 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit for the following:
 - 1. Flexible metal conduit.
 - 2. Liquidtight flexible metal conduit.
 - 3. Nonmetallic conduit.
 - 4. Metallic conduit.
 - 5. Raceway fittings.
 - 6. Conduit bodies.
 - 7. Pull and junction boxes.
- C. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

1.06 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents:
 - 1. Record actual routing of conduits larger than 2 inch.
 - 2. Record actual locations and mounting heights of outlet, pull, and junction boxes.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling requirements.
- B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- C. Protect PVC conduit from sunlight.

1.08 COORDINATION

- A. Section 013000 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate installation of outlet boxes for equipment connected under Section 260503.

SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 2 - PRODUCTS

2.01 METAL CONDUIT

- A. Rigid Steel Conduit: ANSI C80.1.
- B. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

2.02 FLEXIBLE METAL CONDUIT

- A. Product Description: Interlocked steel construction.
- B. Fittings: NEMA FB 1.

2.03 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Product Description: Interlocked steel construction with PVC jacket.
- B. Fittings: NEMA FB 1.

2.04 NONMETALLIC CONDUIT

- A. Product Description: NEMA TC 2; Schedule 80 PVC.
- B. Fittings and Conduit Bodies: NEMA TC 3.

2.05 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
 - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2 inch male fixture studs where required.
 - 2. Concrete Ceiling Boxes: Concrete type.
- B. Cast Boxes: NEMA FB 1, Type FD, cast fer alloy. Furnish gasketed cover by box manufacturer.
- C. Wall Plates for Finished Areas: As specified in Section 262726.
- D. Wall Plates for Unfinished Areas: Furnish gasketed cover.

2.06 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Coordination and project conditions.
- B. Verify outlet locations and routing and termination locations of raceway prior to rough-in.

3.02 EXISTING WORK

- A. Remove exposed abandoned. Cut raceway flush with walls and floors, and patch surfaces.
- B. Remove concealed abandoned raceway to its source.
- C. Disconnect abandoned outlets and remove devices. Remove abandoned outlets when raceway is abandoned and removed. Install blank cover for abandoned outlets not removed.
- D. Maintain access to existing boxes and other installations remaining active and requiring access. Modify installation or provide access panel.
- E. Extend existing raceway and box installations using materials and methods compatible with existing electrical installations, or as specified.
- F. Clean and repair existing raceway and boxes to remain or to be reinstalled.

3.03 INSTALLATION

- A. Ground and bond raceway and boxes.
- B. Fasten raceway and box supports to structure and finishes in accordance with Section 260529.
- C. Identify raceway and boxes in accordance with Section 260553.
- D. Arrange raceway and boxes to maintain headroom and present neat appearance.

3.04 INSTALLATION - RACEWAY

- A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system.
- B. Arrange raceway supports to prevent misalignment during wiring installation.
- C. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

- D. Group related raceway; support using conduit rack. Construct rack using steel channel specified in Section 260529.
- E. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports
- F. Do not attach raceway to other piping systems.
- G. Construct wireway supports from steel channel specified in Section 260529.
- H. Route exposed raceway parallel and perpendicular to walls.
- I. Maintain clearance between raceway and piping for maintenance purposes.
- J. Maintain 12 inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.
- K. Cut conduit square using saw or pipe cutter; de-burr cut ends.
- L. Bring conduit to shoulder of fittings; fasten securely.
- M. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.
- N. Install conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations.
- O. Install no more than equivalent of three 90 degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams. Install factory elbows for bends in metal conduit larger than 2 inch size.
- P. Avoid moisture traps; install junction box with drain fitting at low points in conduit system.
- Q. Install fittings to accommodate expansion and deflection where raceway crosses, control and expansion joints.
- R. Install suitable pull string or cord in each empty raceway except sleeves and nipples.
- S. Install suitable caps to protect installed conduit against entrance of dirt and moisture.

3.05 INSTALLATION - BOXES

- A. Install wall mounted boxes at elevations to accommodate mounting heights as indicated on Drawings.
- B. Do not fasten boxes to other piping systems.
- C. Support boxes independently of conduit.

SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

- D. Install gang box where more than one device is mounted together. Do not use sectional box.
- E. Install gang box with plaster ring for single device outlets.

3.06 ADJUSTING

- A. Section 017000 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Install knockout closures in unused openings in boxes.

3.07 CLEANING

- A. Section 017000 - Execution and Closeout Requirements: Final cleaning.
- B. Clean interior of boxes to remove dust, debris, and other material.
- C. Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
1. Nameplates.
 2. Labels.
 3. Wire markers.
 4. Conduit markers.
 5. Stencils.

1.02 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Submittal procedures.
- B. Product Data:
1. Submit manufacturer's catalog literature for each product required.
 2. Submit electrical identification schedule including list of wording, symbols, letter size, color coding, tag number, location, and function.
- C. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.

1.03 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of tagged devices; include tag numbers.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept identification products on site in original containers. Inspect for damage.
- C. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- D. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Section 016000 - Product Requirements: Environmental conditions affecting products on site.
- B. Install labels only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

PART 2 - PRODUCTS

2.01 NAMEPLATES

- A. Product Description: Laminated three-layer plastic with engraved black letters on white contrasting background color.
- B. Letter Size:
 - 1. 1/4 inch high letters for identifying individual equipment and loads.
 - 2. 1/2 inch high letters for identifying grouped equipment and loads.
- C. Minimum nameplate thickness: 1/8 inch.

2.02 LABELS

- A. Labels: Embossed adhesive tape, with 3/16 inch black letters on white background.

2.03 WIRE MARKERS

- A. Description: Cloth tape, split sleeve, or tubing type wire markers.
- B. Legend:
 - 1. Power and Lighting Circuits: Branch circuit or feeder number.
 - 2. Control Circuits: Control wire number as indicated on schematic and interconnection diagrams.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 EXISTING WORK

- A. Install identification on existing equipment to remain in accordance with this section.

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

3.03 INSTALLATION

- A. Install identifying devices after completion of painting.
- B. Nameplate Installation:
 - 1. Install nameplate parallel to equipment lines.
 - 2. Install nameplate for each electrical distribution and control equipment enclosure with corrosive-resistant mechanical fasteners, or adhesive.
 - 3. Install nameplates for each control panel and major control components located outside panel with corrosive-resistant mechanical fasteners, or adhesive.
 - 4. Secure nameplate to equipment front using adhesive.
 - 5. Install nameplates for the following:
 - a. Panelboards and Switchboards.
 - b. Transformers and OLTC
 - c. Dead Tank Circuit Breakers.
 - d. High Voltage Switches and motor operators.
- C. Label Installation:
 - 1. Install label parallel to equipment lines.
- D. Wire Marker Installation:
 - 1. Install wire marker for each conductor at panelboard gutters, pull boxes, outlet and junction boxes control cabinets, and each load connection.

END OF SECTION



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SECTION 262200 - LOW-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Two-winding transformers.
- B. Related Requirements:
 - 1. Section 260526 - Grounding and Bonding for Electrical Systems.
 - 2. Section 260529 - Hangers and Supports for Electrical Systems.
 - 3. Section 260533 - Raceway and Boxes for Electrical Systems.
 - 4. Section 260553 - Identification for Electrical Systems.

1.2 REFERENCE STANDARDS

- A. National Electrical Manufacturers Association:
 - 1. NEMA ST 1 - Specialty Transformers (Except General Purpose Type).
 - 2. NEMA ST 20 - Dry Type Transformers for General Applications.
- B. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

1.3 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit outline and support point dimensions of enclosures and accessories, unit weight, voltage, kVA, and impedance ratings and characteristics, tap configurations, insulation system type, and rated temperature rise.

1.4 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Closeout procedures.
- B. Record Documentation: Record actual locations of transformers.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling requirements.
- B. Store in clean, dry space. Maintain factory wrapping or provide additional canvas or plastic cover to protect units from dirt, water, construction debris, and traffic.

SECTION 262200 - LOW-VOLTAGE TRANSFORMERS

- C. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided. Handle carefully to avoid damage to transformer internal components, enclosure, and finish.

PART 2 - PRODUCTS

2.1 TWO-WINDING TRANSFORMERS

- A. Manufacturers:
 - 1. Eaton/Cutler Hammer
 - 2. Square D
 - 3. ACME
 - 4. Hammond
 - 5. Substitutions: Section 016000 - Product Requirements
- B. Description: NEMA ST 20, factory-assembled, air-cooled, dry type transformers, ratings as indicated on Drawings.
- C. Operation:
 - 1. Primary Voltage: as indicated on Drawings.
 - 2. Secondary Voltage: as indicated on Drawings.
 - 3. Winding Taps: as indicated on Drawings
 - 4. Basic Impulse Level: 10 kV
 - 5. Mounting:
 - a. 1-15 kVA: Suitable for wall mounting.
 - b. 16-75 kVA: Suitable for wall, floor, or trapeze mounting.
 - c. Larger than 75 kVA: Suitable for floor or trapeze mounting.
- D. Materials:
 - 1. Ground core and coil assembly to enclosure by means of visible flexible copper grounding strap.
 - 2. Coil Conductors: Continuous copper windings with terminations brazed or welded.
 - 3. Enclosure: NEMA Type 3R non-ventilated. Furnish lifting eyes or brackets.
- E. Fabrication:
 - 1. Isolate core and coil from enclosure using vibration-absorbing mounts.
 - 2. Nameplate: Include transformer connection data.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify mounting supports are properly sized and located including concealed bracing in walls.

SECTION 262200 - LOW-VOLTAGE TRANSFORMERS

3.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Provide concrete pads under provisions of Section 033000.

3.3 DEMOLITION

- A. Disconnect and remove abandoned transformers.
- B. Maintain access and adequate ventilation to existing transformers and other installations remaining active and requiring access and ventilation. Modify installation or provide access panel or ventilation grilles.

3.4 INSTALLATION

- A. Set transformer plumb and level.
- B. Use flexible conduit, in accordance with Section 260533, 2 feet minimum length, for connections to transformer case. Make conduit connections to side panel of enclosure.
- C. Support transformers in accordance with Section 260529.
 - 1. Mount wall-mounted transformers using integral flanges or accessory brackets furnished by manufacturer.
 - 2. Mount floor-mounted transformers on vibration isolating pads suitable for isolating transformer noise from building structure.
 - 3. Mount trapeze-mounted transformers as indicated on Drawings.
- D. Install grounding and bonding in accordance with Section 260526.

3.5 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements - Requirements for inspecting and testing.
- B. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- C. Perform inspections and tests listed in NETA ATS.

3.6 ADJUSTING

- A. Section 017000 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Measure primary and secondary voltages and make appropriate tap adjustments.

3.7 CLEANING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Clean existing transformers to remain or to be reinstalled.

SECTION 262200 - LOW-VOLTAGE TRANSFORMERS

END OF SECTION

SECTION 262416 - PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Distribution and branch circuit panelboards.
- B. Related Requirements:
 - 1. Section 260526 - Grounding and Bonding for Electrical Systems.
 - 2. Section 260553 - Identification for Electrical Systems.

1.2 REFERENCE STANDARDS

- A. National Electrical Manufacturers Association:
 - 1. NEMA PB 1 - Panelboards.
 - 2. NEMA PB 1.1 - General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less.
- B. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- C. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.
- D. UL:
 - 1. UL 50 - Cabinets and Boxes
 - 2. UL 67 - Safety for Panelboards.
 - 3. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures.

1.3 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit catalog data showing specified features of standard products.
- C. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker arrangement and sizes.

1.4 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of panelboards and record actual circuiting arrangements.
- C. Operation and Maintenance Data: Submit spare parts listing, source and current prices of replacement parts and supplies, and recommended maintenance procedures and intervals.

SECTION 262416 - PANELBOARDS

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for maintenance products.
- B. Extra Stock Materials:
 - 1. Furnish two of each panelboard key.

1.6 QUALITY ASSURANCE

- A. Qualifications
 - 1. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' experience.

PART 2 - PRODUCTS

2.1 BRANCH CIRCUIT PANELBOARDS

- A. Manufacturers:
 - 1. Eaton/Cutler Hammer
 - 2. Square D
 - 3. GE
 - 4. Substitutions: Section 016000 - Product Requirements
- B. Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panelboard.
- C. Materials:
 - 1. Panelboard Bus: Copper current carrying components, ratings as indicated on Drawings. Furnish copper ground bus in each panelboard
 - 2. Minimum Integrated Short Circuit Rating: 10,000 A rms symmetrical for 240 V panelboards; 14,000 A rms symmetrical for 480 V panelboards, unless otherwise indicated on Drawings.
 - 3. Molded Case Circuit Breakers: UL 489, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles, listed as Type SWD for lighting circuits, Class A ground fault interrupter circuit breakers as indicated on Drawings. Do not use tandem circuit breakers.
 - 4. Current Limiting Molded Case Circuit Breakers: UL 489, circuit breakers with integral thermal and instantaneous magnetic trip in each pole, coordinated with automatically resetting current limiting elements in each pole. Interrupting rating 100,000 symmetrical A, let-through current and energy level less than permitted for same size NEMA FU 1, Class RK-5 fuse.
 - 5. Enclosure: NEMA PB 1, Type 3R.
- D. Cabinet Front: Surface cabinet front with concealed trim clamps, concealed hinge, metal directory frame, and flush lock keyed alike. Finishes:
 - 1. Finish in manufacturer's standard gray enamel.

SECTION 262416 - PANELBOARDS

PART 3 - EXECUTION

3.1 DEMOLITION

- A. Disconnect abandoned panelboards. Remove abandoned panelboards.
- B. Maintain access to existing panelboard remaining active and requiring access. Modify installation or provide access panel.

3.2 INSTALLATION

- A. Install panelboards according to NEMA PB 1.1.
- B. Install panelboards plumb.
- C. Height: 6 feet to top of panelboard; install panelboards taller than 6 feet with bottom no more than 4 inches above floor.
- D. Install filler plates for unused spaces in panelboards.
- E. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes to balance phase loads. Identify each circuit as to its clear, evident and specific purpose of use.
- F. Install engraved plastic nameplates according to Section 260553.
- G. Ground and bond panelboard enclosure according to Section 260526. Connect equipment ground bars of panels according to NFPA 70.

3.3 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.
- B. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- C. Inspect and test according to NETA ATS.
- D. Perform circuit breaker inspections and tests listed in NETA ATS.

3.4 ADJUSTING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for starting and adjusting.

3.5 CLEANING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Clean existing panelboards to remain or to be reinstalled.

END OF SECTION

SECTION 262416 - PANELBOARDS

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SECTION 263343 – DC POWER SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes battery charger, batteries and accessories.
- B. Scope of work includes replacement of existing 48VDC substation battery charger and batteries, 24VDC automatic transfer switch batteries, and 24VDC generator circuit breaker batteries.

1.02 REFERENCES

- A. National Fire Protection Association:
 - 1. NFPA 111 - Standard on Stored Electrical Energy Emergency and Standby Power Systems.

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Submittals procedures.
- B. Product Data: Submit catalog and data sheets showing electrical characteristics and connection requirements. Include unit ratings, dimensions, and finishes.
- C. Certified Test Data

1.04 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Submit battery charger maintenance and unit testing procedures.
- C. Manufacture record drawings.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with NFPA 111.

1.06 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years' experience.

SECTION 263343 – DC POWER SYSTEM

1.07 WARRANTY

- A. Section 017000 - Execution and Closeout Requirements: Product warranties and product bonds.

1.08 EXTRA MATERIALS

- A. Section 017000 - Execution and Closeout Requirements: Spare parts and maintenance products.

PART 2 - PRODUCTS

2.01 Battery Charger

A. Manufacturers:

- 1. Sens-USA
- 2. Hindle Power
- 3. Outback
- 4. Or approved equal

- B. Product Description: The battery charger shall provide a continuous regulated DC output derived from an AC source. The output shall be suitable to maintain the battery(s) in a fully charged state, while supporting the normal DC loads. The battery charger shall also have the ability to automatically or manually provide an equalizing charge as required for recharging the battery after discharge.

- C. Input Voltage: 120/208 volts, 60 Hz, single phase.

- D. Output Power: 25 AMPS.

- E. Output Voltage: 48 volts DC.

- F. Maximum Recharge Time: 12 hours following 8 hour discharge.

- G. Charger: Dual rate, designed to maintain battery in full-charge condition during normal conditions, with DC output filter to limit DC ripple to 30 mV rms. Compatible with both lead acid and nickel-cadmium cells.

H. Protective Devices:

- 1. AC Input: Molded Cast Circuit Breaker and MOV (Metal-Oxide Varistor).
- 2. DC Output: Molded Case Circuit Breaker and MOV (Metal-Oxide Varistor).
- 3. Protection from Oscillatory Surges (SWC) as defined by ANSI C37.90.

I. Controls and Indicators:

- 1. Charge mode selection and indication
- 2. Equalization Method (timer, manual, automatic) and hours remaining
- 3. Meter Display (DC Volts, DC AMPS)
- 4. Lamp Test
- 5. Circuit Breakers
- 6. AC On
- 7. High Voltage DC Alarm LED

SECTION 263343 – DC POWER SYSTEM

8. Low Voltage DC Alarm LED
9. DC Output Failure Alarm LED
10. Positive Ground Fault Alarm LED
11. Negative Ground Fault Alarm LED
12. AC Failure Alarm LED
13. Two (2) Form-C General Alarm Contacts
14. Modbus RTU Communications.

2.02 48VDC Batteries

- A. Manufacturers:
 1. SBS
 2. Enersys
 3. Or approved equal
- B. Product Description: Nickel-cadmium type battery.
- C. Cell Voltage: 1.2VDC Nominal
- D. Capacity: 150AH
- E. String Quantity: Forty (40)
- F. Charger Compatibility: Batteries shall be compatible with Charger provided under section 2.01.
- G. Battery Rack: Two step horizontal rack with insulated rails.
- H. Spill Containment: Tray with neutralizing and absorbing pillow for use with nickel-cadmium batteries.

2.03 24VDC Batteries

- A. Manufacturers:
 1. SBS
 2. Enersys
 3. Or approved equal
- B. Product Description: Nickel-cadmium type battery.
- C. Cell Voltage: 1.2VDC Nominal
- D. Capacity: 110AH
- E. String Quantity: Twenty (20)
- F. Charger Compatibility: Batteries shall be compatible with 24VDC VFX series Outback charger.
- G. Battery Rack: Two step horizontal rack with insulated rails.

SECTION 263343 – DC POWER SYSTEM

- H. Spill Containment: Tray with neutralizing and absorbing pillow for use with nickel-cadium batteries.

PART 3 - EXECUTION

3.01 EXISTING WORK

- A. Disconnect and remove existing battery charger.
- B. Remove and dispose of existing batteries.
 - 1. Existing batteries are:
 - a. Four (4), SBS, STT 12V150 (Substation).
 - b. Two (2), SBS, STT12V100 (Generator Breaker).
 - c. Two (2), SBS, STT12V100 (Transfer Switch).

3.02 INSTALLATION

- A. Install units plumb and level.

3.03 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Verify operation of unit by simulating outage.

3.04 DEMONSTRATION AND TRAINING

- A. Demonstrate normal operation of unit.

END OF SECTION

SECTION 267119 - ELECTRICAL UNDERGROUND DUCTS, DUCT BANKS, AND MANHOLES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Rigid steel conduit.
2. Plastic conduit.
3. Handholes.
4. Underground duct markers.

B. Related Requirements:

1. Section 031000 - Concrete Forming and Accessories: Product and execution requirements for forms for cast-in-place manholes.
2. Section 032000 - Concrete Reinforcing: Product and execution requirements for reinforcement for cast-in-place manholes.
3. Section 033000 - Cast-in-Place Concrete: Product and execution requirements for concrete for cast-in-place manholes.
4. Section 312316 - Excavation: Product and execution requirements for excavation and backfill required by this Section.
5. Section 312317 - Excavation, Backfill, and Trenching.
6. Section 312323 - Fill: Requirements for backfill to be placed by this Section.

1.02 REFERENCE STANDARDS

A. American National Standard Institute:

1. ANSI C80.1 - American National Standard for Electric Rigid Steel Conduit.

B. ASTM International:

1. ASTM A48/.
2. ASTM C857 - Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.
3. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures.
4. ASTM C891 - Standard Practice for Installation of Underground Precast Concrete Utility Structures.
5. ASTM C1037 - Standard Practice for Inspection of Underground Precast Concrete Utility Structures.

C. National Electrical Manufacturers Association:

1. NEMA FB 1 - Fittings, Cast Metal Boxes and Conduit Bodies for Conduit, Electrical Metallic Tubing (EMT) and Cable.
2. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.

SECTION 267119 - ELECTRICAL UNDERGROUND DUCTS, DUCT BANKS, AND MANHOLES

3. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing.
4. NEMA TC 6 and 8 - Polyvinyl Chloride (PVC) Plastic Utilities for Underground Installations.
5. NEMA TC 9 - Fittings for Polyvinyl Chloride (PVC) Plastic Utilities Duct for Underground Installation.

1.03 COORDINATION

- A. Section 013000 - Administrative Requirements: Requirements for coordination.
- B. Coordinate Work of this Section with existing underground utilities and structures.

1.04 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit manufacturer information for metallic conduits, nonmetallic conduits, and handholes.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.

1.05 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents:
 1. Record actual routing and elevations of underground conduit and duct bank.
 2. Record actual locations and sizes of handholes.

1.06 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

SECTION 267119 - ELECTRICAL UNDERGROUND DUCTS, DUCT BANKS, AND MANHOLES

- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Store products according to manufacturer instructions.
- D. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Provide additional protection according to manufacturer instructions.

PART 2 - PRODUCTS

2.01 SYSTEM DESCRIPTION

- A. Interconnected system of encased conduits, ducts, and handholes to distribute medium-voltage power, low-voltage power, and control wiring.
- B. Routing:
 - 1. Conduit and duct routing and handhole locations are shown in approximate locations on Drawings unless dimensions are indicated.
 - 2. Route and locate for completion of duct bank system.
- C. Medium-Voltage Systems: Rigid plastic conduit.
- D. Low-Voltage Systems: Rigid plastic conduit.
- E. Control Systems: Rigid plastic conduit.

2.02 PLASTIC CONDUIT

- A. Description:
 - 1. Rigid Plastic Conduit:
 - a. Comply with NEMA TC 2.
 - b. Material: PVC, Schedule 80.
 - c. Fittings and Conduit Bodies: Comply with NEMA TC 3.
 - d. Listing: UL or equivalent NRTL.

2.03 HANDHOLES

- A. Manufacturers:
 - 1. Hubbell
 - 2. Quazite
 - 3. Or approved equal.

SECTION 267119 - ELECTRICAL UNDERGROUND DUCTS, DUCT BANKS, AND MANHOLES

- B. Description: Molded composite material, comprising modular and interlocking sections, open bottom, and complete with accessories.
- C. Loading: ANSI/SCTE 77 Tier 22..
- D. Shape: Rectangular.
- E. Nominal Inside Dimensions: 36 by 48 inches.
- F. Inside Depth: 48 inches.
- G. Wall Thickness: 1/2 inches.
- H. Covers:
 - 1. Description: Molded composite with hex bolt fasteners.
 - 2. Furnish cover embedded with ELECTRIC.
- I. Duct Entry Provisions: Window knockouts.
- J. Duct Entry Locations: As indicated on Drawings.

2.04 ACCESSORIES

- A. Underground Duct Markers:
 - 1. Underground Warning Tape: 4-inch-wide plastic tape, detectable type, colored red, and with suitable warning legend describing buried electrical lines.
 - 2. Trace Wire: Magnetic detectable conductor, brightly colored plastic covering, and imprinted with ELECTRIC HIGH VOLTAGE in large letters.

2.05 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for testing, inspection, and analysis.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify routing and termination locations of duct bank prior to excavation for rough-in.
- C. Verify locations of handholes prior to excavating for installation.

SECTION 267119 - ELECTRICAL UNDERGROUND DUCTS, DUCT BANKS, AND MANHOLES

3.02 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Existing Work:
 - 1. Abandoned duct bank to remain in place.
 - 2. Maintain access to existing duct bank and other installations remaining active and requiring access.
 - 3. Clean and repair existing duct banks to remain or to be reinstalled.

3.03 INSTALLATION

- A. Duct Banks:
 - 1. Install duct to locate top of ducts at depths as indicated on Drawings.
 - 2. Conduit and Duct Slope:
 - a. Minimum 4 inches per 100 feet.
 - b. Slope conduit and duct towards handholes and away from building entrances.
 - 3. Cut conduit and duct square using saw or pipe cutter, and de-burr cut ends.
 - 4. Insert conduit and duct to shoulder of fittings, and fasten securely.
 - 5. Connecting:
 - a. Join nonmetallic conduit and duct using adhesive as recommended by manufacturer.
 - b. Wipe nonmetallic conduit and duct dry and clean before joining.
 - c. Apply full even coat of adhesive to entire area inserted in fitting.
 - d. Allow joint to cure for minimum 20 minutes.
 - 6. Install no more than equivalent of three 90-degree bends between pull points.
 - 7. Terminate conduit and duct at handhole entries using end bell.
 - 8. Stagger conduit and duct joints vertically.
 - 9. Separators and Chairs:
 - a. Provide suitable separators and chairs, installed not greater than 4 feet o.c.
 - b. Secure separators and chairs to trench bottom prior to pouring concrete.
 - 10. Band conduits and ducts together before backfilling or placing concrete.
 - 11. Securely anchor conduit and duct to prevent movement during concrete placement.
 - 12. Place concrete as specified in Section 033000 - Cast-in-Place Concrete.
 - 13. Use mineral pigment to color concrete red.
 - 14. Install ducts with minimum 3 inches of concrete cover at bottoms, tops, and sides, unless otherwise shown on plans.
 - 15. Install two No. 4 steel reinforcing bars in top of bank under paved areas, unless otherwise shown on plans.
 - 16. Provide suitable pull string in each empty duct, except sleeves and nipples.

SECTION 267119 - ELECTRICAL UNDERGROUND DUCTS, DUCT BANKS, AND MANHOLES

17. Swab duct, and provide suitable caps to protect installed duct against entrance of dirt and moisture.
18. Backfill trenches as specified in Section 312317 – Excavation, Backfilling, and Trenching.
19. Duct Markers:
 - a. Interface installation of underground duct markers with backfilling as specified in Section 312317 – Excavation, Backfilling, and Trenching.
 - b. Install 6 inches below finished surface.

B. Precast Handholes:

1. Excavate for handhole installation as specified in Section 312316 - Excavation.
2. Install and seal precast sections according to ASTM C891.
3. Install handholes plumb.
4. Backfill handhole excavations as specified in Section 312323 - Fill.

END OF SECTION 267119

SECTION 267126 - TRANSMISSION AND DISTRIBUTION EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. A-Frame receiving structures
2. Line hardware
3. Insulators.
4. Line conductors.
5. Overhead line accessories.

B. Related Requirements:

1. Section 267263 – Substation Disconnect Switches.
2. Section 267313 – Liquid Filled Transformers.
3. Section 267519 – Gas High-Voltage Circuit Breakers

1.02 REFERENCE STANDARDS

A. ASTM International:

1. ASTM B1 - Standard Specification for Hard-Drawn Copper Wire.
2. ASTM B2 - Standard Specification for Medium-Hard-Drawn Copper Wire.
3. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire.
4. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
5. ASTM B228 - Standard Specification for Concentric-Lay-Stranded Copper-Clad Steel Conductors.
6. ASTM B232 - Standard Specification for Concentric-Lay-Stranded Aluminum Conductors, Coated-Steel Reinforced (ACSR).

B. The Institute of Electrical and Electronics Engineers, Inc.:

1. IEEE C2 - National Electrical Safety Code (NESC).

C. InterNational Electrical Testing Association:

1. NETA ATS - Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems.

D. National Electrical Manufacturers Association:

1. NEMA C29.2 - Insulators - Wet-Process Porcelain and Toughened Glass - Transmission Suspension Type.
2. NEMA C29.3 - Wet-Process Porcelain Insulators - Spool Type.
3. NEMA C29.4 - Wet-Process Porcelain Insulators - Strain Type.
4. NEMA C29.7 - Wet Process Porcelain Insulators - High-Voltage Line - Post Type.

1.03 SUBMITTALS

- ##### A. Section 013300 - Submittal Procedures: Requirements for submittals.

SECTION 267126 - TRANSMISSION AND DISTRIBUTION EQUIPMENT

- B. Product Data: Submit manufacturer catalog information for line materials, line hardware, conductors, insulators, arresters, and accessories.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.
- E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- F. Qualifications Statement:
 - 1. Submit qualifications for manufacturer.

1.04 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Store materials according to manufacturer instructions.
- D. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Provide additional protection according to manufacturer instructions.

PART 2 - PRODUCTS

2.01 A-FRAME RECEIVING STRUCTURES

- A. A-Frame receiving structure
 - 1. The contractor shall be responsible for the design, fabrication and erection of the electrical receiving structures depicted on the construction drawings. The construction drawings show a conceptual structure only. The structural design of members, connections and attachment of electrical appurtenances shall be the contractor's responsibility. The contractor shall provide stamped signed drawings and calculations prepared by a professional engineer licensed in New York State.
 - 2. General Construction and materials

SECTION 267126 - TRANSMISSION AND DISTRIBUTION EQUIPMENT

- a. The structure shall be composed of standard open structural shapes and plates.
- b. The structure shall be galvanized steel. All aspects of specification section 051200 - STRUCTURAL STEEL FRAMING shall apply.
- c. All welds shall be completed during fabrication in the shop.
- d. All connections made in the field during erection shall be bolted connections

2.02 LINE HARDWARE

- A. Manufacturers:
 1. Hubbell Power Systems, Inc.
 2. MacLean Power Systems
 3. Or approved equal.
- B. Insulator Pins: Bolt type.
- C. Insulator Fittings: Clevis or Y-Clevis.
- D. Quadrant Transmission Deadend Clamps:
 1. Type: Aluminum body, stainless steel cotter pin, galvanized fittings and hardware.
 2. U-Bolts: Min. (5) 5/8"
 3. Fitting: Y-Clevis
- E. Suspension Clamps:
 1. Type: Aluminum body, stainless steel cotter pin, galvanized fittings and hardware.
 2. Fitting: Clevis
- F. Grounding Ball Studs:
 1. Type: Transmission line, clamp style; Structure mounted, threaded with nut and washer.
 2. Material: Aluminum Alloy.
 3. Ball Diameter: 1-inch

2.03 INSULATORS

- A. Manufacturers:
 1. Hubbell Power Systems, Inc.
 2. MacLean Power Systems
 3. Or approved equal
- B. Description: Radio interference-free wet process porcelain insulators, with minimum wet flashover rating of 230 kV (station post) and 295 kV (dead end suspension).
- C. Post Insulators: Comply with NEMA C29.9.
- D. Suspension Insulators: Comply with NEMA C29.2.

2.04 LINE CONDUCTORS

- A. High-Voltage Overhead Line Conductors: Bare aluminum conductor, steel reinforced (ACSR).

SECTION 267126 - TRANSMISSION AND DISTRIBUTION EQUIPMENT

1. Conductors: Hard-drawn aluminum with galvanized steel core and minimum class A coating.
2. Minimum Size: #4/0 AWG.
3. Rated Strength: Minimum 8,000 lbs.

B. Ground (Shield) Wires:

1. Conductors: Hard-drawn aluminum with galvanized steel core and minimum class A coating.
2. Minimum Size: #4/0 AWG.
3. Rated Strength: Minimum 8,000 lbs.

2.05 OVERHEAD LINE ACCESSORIES

- A. Vibration Dampers: Tuned mass damper to suppress wind-induced aeolian vibrations.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that equipment and structures have been installed properly.

3.02 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Disconnect abandoned overhead lines and remove overhead line materials.
- C. Extend existing overhead line installations using materials and methods compatible with existing electrical installations, or as specified.
- D. Clean and repair existing overhead line materials to remain or to be reinstalled.

3.03 INSTALLATION

- A. Comply with IEEE C2.
- B. Lightning Protection:
 1. Provide lightning protection for overhead lines.

3.04 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.

SECTION 267126 - TRANSMISSION AND DISTRIBUTION EQUIPMENT

- B. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- C. Inspect and test surge arresters according to NETA ATS.
- D. Perform inspections and tests as listed in NETA ATS.

END OF SECTION



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SECTION 267263 – SUBSTATION DISCONNECT SWITCHES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes non-load interrupting high-voltage substation disconnect switches.
- B. Related Sections:
 - 1. Section 260526 - Grounding and Bonding for Electrical Systems.

1.02 REFERENCES

- A. American National Standards Institute:
- B. Institute of Electrical and Electronics Engineers:
 - 1. IEEE 48 - Standard Test Procedures and Requirements for Alternating-Current Cable Terminations 2.5 kV Through 765 kV.
- C. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- D. UL:
 - 1. UL 508 - Standard for Industrial Control Equipment.

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate electrical characteristics and connection requirements, outline dimensions, connection and support points, weight, specified ratings, and materials.
- C. Product Data: Submit electrical characteristics and connection requirements, standard model design tests, and options.
- D. Test Reports: Indicate procedures and results for specified factory and field testing and inspection.
- E. Manufacturer's Field Reports: Indicate activities on Site, adverse findings, and recommendations.

SECTION 267263 – SUBSTATION DISCONNECT SWITCHES

1.04 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Include copy of manufacturer's certified Drawings.
- C. Operation and Maintenance Data: Submit operating instructions for manually and electrically opening and closing switches, and include maintenance instructions for switch removal, replacement, testing and adjustment, and lubrication.

1.05 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling requirements.
- B. Lift only with lugs provided. Handle carefully to avoid damage to internal components, enclosure, and finish.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Section 016000 - Product Requirements.
- B. Conform to specified service conditions during and after installation of equipment.

1.08 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.09 SEQUENCING

- A. Section 011000 - Summary: Work sequence.
- B. Sequence Work to avoid interferences with installation of other products.

1.10 MAINTENANCE MATERIALS

- A. Section 017000 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Furnish two of each special tool required to operate and maintain equipment.
- C. Provide two of each key.

SECTION 267263 – SUBSTATION DISCONNECT SWITCHES

PART 2 - PRODUCTS

2.01 SERVICE CONDITIONS

- A. Meet requirements for usual service conditions described in IEEE C37.20.2.
- B. Maximum/Minimum Ambient Temperature: 99/0degrees F.
- C. Altitude: ±600 feet.
- D. Meet requirements for use as service disconnecting means.

2.02 GROUP OPERATED VERTICAL BREAK SWITCH

- A. Manufacturers:
 - 1. Southern States
 - 2. S&C
 - 3. Cleveland Price
 - 4. Or approved equal
- B. Product Description: Three pole, group operated, vertical break disconnect switch with 1/2-inch ice break capability, arcing horns, and motor operator.
- C. Nominal Voltage: 115 kV, three phase, 60 Hz.
- D. Rated Maximum Voltage: Min. 121 kV.
- E. Basic Impulse Level: 550kV.
- F. Rated Frequency: 60 Hz.
- G. Rated Continuous Current: Min. 600 A, rms.
- H. Short-Circuit Rating: Min 40 kA rms momentary, at rated maximum voltage.
- I. Ice Break: Min. ½-inch
- J. Mounting Orientation: Vertical
- K. Rated Opening Voltage: 48 V dc from external power supply; furnish terminals.
- L. Rated Control Voltage, Closing: 48 V dc from external control power supply; furnish terminals.

2.03 GROUP OPERATED DOUBLE END BREAK SWITCH

- A. Manufacturers:
 - 1. Southern States
 - 2. S&C
 - 3. Cleveland Price

SECTION 267263 – SUBSTATION DISCONNECT SWITCHES

4. Or approved equal

- B. Product Description: Three pole, group operated, double end break disconnect switch with 1/2-inch ice break capability, arcing horns, and motor operator.
- C. Nominal Voltage: 115 kV, three phase, 60 Hz.
- D. Rated Maximum Voltage: Min. 121 kV.
- E. Basic Impulse Level: 550kV.
- F. Rated Frequency: 60 Hz.
- G. Rated Continuous Current: Min. 600 A, rms.
- H. Short-Circuit Rating: Min 40 kA rms momentary, at rated maximum voltage.
- I. Ice Break: Min. 1/2-inch
- J. Mounting Orientation: Vertical
- K. Rated Opening Voltage: 48 V dc from external power supply; furnish terminals.
- L. Rated Control Voltage, Closing: 48 V dc from external control power supply; furnish terminals.

2.04 ACCESSORIES

- A. Space Heaters: For 120 V external source, sized by equipment manufacturer.
- B. Motor Operator: 48VDC with local manual operator backup.
- C. Lockout Device: One (1) Shaft mounted lockout device per motor operator. Lockout device shall de-couple motor operator from switch operating shaft and secure blades in the open position.

2.05 NAMEPLATES

- A. Refer to Section 260553 - Identification for Electrical Systems.
- B. Provide metal nameplate in accessible location on each assembly, designating voltage, phase, Hertz, main bus current rating, short circuit bus rating, manufacturer's name, general order number and item number.

2.06 FACTORY FINISHES

- A. Clean surfaces before applying paint.
- B. Apply corrosion-resistant primer to surfaces.

SECTION 267263 – SUBSTATION DISCONNECT SWITCHES

- C. Finish Color: Manufacturer's standard gray finish.

2.07 SOURCE QUALITY CONTROL

- A. Test according to manufacturer and industry standards.
- B. Make available manufacturing facility and similar equipment for inspection by Owner and/or Engineer prior to submittal approvals and fabrication. (Costs for travel, lodging, meals, etc. shall be paid under the Miscellaneous Contingency Allowance).

PART 3 - EXECUTION

3.01 EXISTING WORK

- A. Disconnect and remove abandoned equipment

3.02 INSTALLATION

- A. Install equipment on deadend A-frame receiving structures.
- B. Install equipment plumb and level and with each structure aligned properly with bus.
- C. Make electrical connections between equipment sections using connectors furnished by manufacturer.
- D. Install engraved nameplates according to Section 260553.
- E. Ground and bond equipment according to Section 260526.

3.03 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect and test according to NETA ATS.

3.04 ADJUSTING

- A. Section 017000 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Adjust operating mechanisms for free mechanical movement.
- C. Torque bolted bus connections according to manufacturer's instructions after placing equipment.

SECTION 267263 - SUBSTATION DISCONNECT SWITCHES

3.05 DEMONSTRATION AND TRAINING

- A. Section 017000 - Execution and Closeout Requirements: Demonstrating installed work.
- B. Demonstrate operation of switches.
- C. Furnish 4 hours of instruction to be conducted at project site with manufacturer's representative.

END OF SECTION

SECTION 267313 – LIQUID FILLED TRANSFORMERS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes liquid-filled substation transformers.

1.02 REFERENCES

- A. Institute of Electrical and Electronics Engineers:
 1. IEEE C57.12.00 - Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers.
 2. IEEE C57.12.10 – Standard Requirements for Liquid-immersed Power Transformers.
 3. IEEE C57.12.90 - Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers and IEEE Guide for Short Circuit Testing of Distribution and Power Transformers.
 4. IEEE C57.12.91 - Standard Test Code for Dry-Type Distribution and Power Transformers.
 5. IEEE C57.13 - Standard Requirements for Instrument Transformers.
 6. IEEE C57.94 - Recommended Practice for Installation, Application, Operation, and Maintenance of Dry-Type General Purpose Distribution and Power Transformers.
 7. IEEE C57.106 - Guide for Acceptance and Maintenance of Insulating Oil in Equipment.
 8. IEEE C57.131 – Standard Requirements for TAP Chargers.
 9. IEEE C57.148 – Standard for Control Cabinets for Power Transformers.
 10. IEEE C57.19.00 – Standard and General Requirements and Test Procedure for Power Apparatus Bushings.
 11. IEEE C57.19.01 – Standard Performance Characteristics and Dimensions for Outdoor Apparatus Bushings.
- B. International Electrical Testing Association:
 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate electrical characteristics and connection requirements, outline dimensions, connection and support points, weight, specified ratings and materials.
- C. Product Data: Submit electrical characteristics and connection requirements, standard model design tests, and options.
- D. Test Reports: Indicate procedures and results for specified factory and field testing and inspection. Including design test reports and routine test reports.
- E. Manufacturer's Field Reports: Indicate activities on site, adverse findings, and recommendations.

SECTION 267313 – LIQUID FILLED TRANSFORMERS

1.04 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Include copy of manufacturer's certified drawings.
- C. Operation and Maintenance Data: Submit maintenance procedures for sampling and maintaining fluid.

1.05 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Testing Agency: Company specializing in testing products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling, storing, and protecting products.

1.07 FIELD MEASUREMENTS

- A. Verify field measurements, orientation, and locations of all components prior to fabrication.

1.08 MAINTENANCE MATERIALS

- A. Section 017000 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Furnish two each of special tools required to operate and maintain transformer.

1.09 EXTRA MATERIALS

- A. Section 017000 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Furnish two of each size and type fuse (if applicable).

PART 2 - PRODUCTS

2.01 LIQUID-FILLED TRANSFORMERS

- A. Manufacturers:
 - 1. ABB
 - 2. Niagara Transformer Corp.

SECTION 267313 – LIQUID FILLED TRANSFORMERS

3. General Electric
 4. Virginia Transformer Corp.
 5. Substitutions: Section 016000 - Product Requirements.
- B. Product Description: three phase, self-cooled transformer unit.
- C. Cooling and Temperature Rise; IEEE C57.12.00; Class ONAN 65 degrees C, self-cooled.
- D. Insulating Liquid: Degassed mineral oil conforming to IEEE C57.106.
- E. SERVICE CONDITIONS
1. Meet requirements for usual service conditions described in IEEE C57.12.00 and IEEE C57.12.12.
 2. Maximum/Minimum Ambient Temperature: 99/0 degrees F.
 3. Altitude: ± 600 feet.
 4. Transformer Loading Requirements: motors.
- F. RATINGS
1. Capacity: 7,500 kVA (without the need for supplemental cooling fans).
 2. Primary Voltage: 115 kV, delta connected.
 3. Primary DETC Taps: 2.5% and 5.0% above, and 2.5% and 5.0% below rated voltage.
 4. Secondary Voltage: 4,160 volts, wye connected.
 5. Secondary OLTC: (16) 0.625% steps above and (16) 0.625% steps below rated voltage.
 6. Impedance: 7.1 percent.
 7. Basic Impulse Level: 550 kV.
- G. ACCESSORIES
1. Accessories: IEEE C57.12.00, ANSI C57.12.10, standard accessories and magnetic liquid level indicator, dial type thermometer, pressure/vacuum gauge, liquid level switches, pressure/vacuum switch, and temperature switch.
 2. Tap Changer: De-energized tap changer (DETC) on primary and on-load tap (OLTC) changer on secondary.
 3. Primary Terminations: Porcelain condenser bushing with clamp-type connector.
 4. Secondary Terminations: Porcelain bushing with spade lugs.
 5. Inert Air System: Nitrogen tank with enclosed, lockable, cabinet to maintain transformer tank pressure between 0.5 and 5 psi.
 6. Other Accessories: Primary lightning arrestors, pressure relief device, sudden pressure relay, bushing potential device (115 kV-115/66V), secondary air termination cabinet, (2) sets of 1200:5 MR, C800 primary bushing current transformers, and (1) 1200:5 MR, C800 secondary neutral current transformers conforming to IEEE C57.13.
- H. FACTORY FINISHING
1. Clean surfaces before applying paint.
 2. Apply corrosion-resisting primer to surfaces.
 3. Finish Color: Manufacturer's standard gray finish.

2.02 On-Load Tap Changer (OLTC)

- A. Manufacturers:
1. Reinhausen

SECTION 267313 – LIQUID FILLED TRANSFORMERS

2. Waukesha (SPX)
 3. ABB
 4. General Electric
 5. Substitutions: Section 016000 - Product Requirements.
- B. Product Description: Compartment type, three phase, reactor switching with vacuum interrupters, welded to transformer to raise/lower (R/L) secondary voltage.
- C. Regulating Voltage: 4.16kV, WYE (Transformer Secondary)
- D. Insulating Liquid: Degassed mineral oil conforming to IEEE C57.106.
- E. Service Conditions: See Transformer specifications.
- F. Ratings:
1. Rated through power: 7.5MVA
 2. Maximum rated through current: 1,500A
 3. Rated step voltage: 26V
 4. Maximum rated step voltage: 30V
 5. Rated frequency: 60Hz
 6. Rated insulation level: 110kV BIL
 7. See Transformer specifications for additional information.
- G. Number of positions/steps: 33 positions / 32 steps (16L...N...16R)
- H. Tank:
1. Backplate: Welded to transformer with internal gasket
 2. Front door: Single door, bolted and hinged at left side.
- I. Valves and fittings:
1. Drain valve: Globe type, flange / 2" / threaded
 2. Vacuum connection: Nipple 2"
 3. Liquid fill connection: Nipple 1"
- J. Accessories:
1. Liquid level indicator with auxiliary contacts
 2. Dial type thermometer with auxiliary contacts
 3. Pressure/vacuum gauge with auxiliary contacts
 4. Pressure relief device with auxiliary contacts
 5. Sudden pressure relay with two (2) sets of auxiliary contacts
 6. Motor/Drive unit with local control panel.
 - a. NEMA 4X enclosure
 - b. Local/Remote selector switch with auxiliary contacts
 - c. Manual/Auto selector switch with auxiliary contacts
 - d. Local control operator switches and indicators
 - e. 120VAC heater
 - f. 208VAC, single phase, supply and motor voltage
 - g. Manual hand crank.
 - h. Operation counter.
 - i. 86X for vacuum bottle interrupt failure with auxiliary alarm contacts
 - j. One (1) Form C contact for incomplete tap change

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- k. Input signals for use with dry contacts for remote raise/lower commands
- l. One (1) 4-20mA analog output for remote position indication
- 7. Desiccant or breather.

2.03 SOURCE QUALITY CONTROL (AND TESTS)

- A. Provide transformer factory tests conforming to IEEE C57.12.90, IEEE C57.12.91, IEEE C57.19.00, IEEE C57.131, and ASTM 1533. Include routine tests as defined in IEEE C57.12.00, IEEE C57.131, and the following other tests:
 - 1. Winding resistance.
 - 2. Voltage ratio and phase displacement.
 - 3. Impedance voltage and load loss.
 - 4. No load loss and current.
 - 5. Dielectric tests.
 - 6. Audible sound level.
 - 7. Zero-phase-sequence impedance voltage.
 - 8. Temperature rise (type test).
 - 9. Dissipation factor.
- B. Test insulating liquid samples in accordance with IEEE C57.106.
- C. Make available manufacturing facility and similar equipment for inspection by Owner and/or Engineer prior to submittal approvals and fabrication. (Costs for travel, lodging, meals, etc. shall be paid under the Miscellaneous Contingency Allowance).
- D. Make completed transformer available for inspection at manufacturer's factory prior to packaging for shipment. Notify Engineer at least fourteen days before inspection is allowed. (Costs for travel, lodging, meals, etc. shall be paid under the Miscellaneous Contingency Allowance).
- E. Allow witnessing of factory inspections and tests at manufacturer's test facility. Notify Engineer at least fourteen days before inspections and tests are scheduled. (Costs for travel, lodging, meals, etc. shall be paid under the Miscellaneous Contingency Allowance).

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Coordination and project conditions.
- B. Verify pads and supports are suitable for installation.

3.02 EXISTING WORK

- A. Disconnect and remove abandoned transformers. Cut abandoned raceway flush with surface of concrete pad.

SECTION 267313 – LIQUID FILLED TRANSFORMERS

3.03 INSTALLATION

- A. Install in accordance with IEEE C57.94.
- B. Install plumb and level on concrete pad.
- C. Install safety labels in accordance with NEMA 260.
- D. Install engraved plastic nameplates in accordance with Section 260553.
- E. Ground and bond substation in accordance with Section 260526.

3.04 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Perform inspections and tests listed in NETA ATS. Include the following optional tests:
 - 1. Power factor or dissipation-factor tests.
 - 2. Winding-resistance tests for each winding at nominal and final tap setting.
 - 3. Individual excitation current tests on each phase.
 - 4. Insulating liquid specific gravity, power factor, water content, dissolved gas, and total combustible gas.
 - 5. Operational test and adjustments on controls and alarm functions.
 - 6. Percent oxygen test on nitrogen gas blanket.
 - 7. Load tap-changer winding resistance at each tap position
 - 8. Load tap-changer vacuum bottle integrity test (dielectric withstand voltage) across each vacuum bottle with the contacts in the open position in strict accordance with manufacturer's published data.

3.05 ADJUSTING

- A. Section 017000 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Adjust primary taps so secondary voltage is above and within 2 percent of rated voltage.

END OF SECTION

SECTION 267519 – GAS HIGH-VOLTAGE CIRCUIT BREAKERS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes medium-voltage circuit breaker switchgear.
- B. Related Sections:
 - 1. Section 260526 - Grounding and Bonding for Electrical Systems.
 - 2. Section 260553 - Identification for Electrical Systems.

1.02 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI C37.06 - American National Standard for Switchgear - AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis - Preferred Ratings and Related Required Capabilities.
- B. Institute of Electrical and Electronics Engineers:
 - 1. IEEE 48 - Standard Test Procedures and Requirements for Alternating-Current Cable Terminations 2.5 kV Through 765 kV.
 - 2. IEEE C37.04 - Standard Rating Structure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis.
 - 3. IEEE C37.11 - Standard Requirements for Electrical Control for High-Voltage Circuit Breakers Rated on A Symmetrical Current Basis.
 - 4. IEEE C57.13 - Standard Requirements for Instrument Transformers.
- C. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- D. UL:
 - 1. UL 508 - Standard for Industrial Control Equipment.

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate electrical characteristics and connection requirements, outline dimensions, connection and support points, weight, specified ratings, and materials.
- C. Product Data: Submit electrical characteristics and connection requirements, standard model design tests, and options.

SECTION 267519 – GAS HIGH-VOLTAGE CIRCUIT BREAKERS

- D. Test Reports: Indicate procedures and results for specified factory and field testing and inspection.
- E. Manufacturer's Field Reports: Indicate activities on Site, adverse findings, and recommendations.

1.04 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Include copy of manufacturer's certified Drawings.
- C. Operation and Maintenance Data: Submit operating instructions for manually and electrically opening and closing circuit breakers, and include maintenance instructions for circuit breaker removal, replacement, testing and adjustment, and lubrication.

1.05 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.
- B. Testing Agency: Company specializing in testing products specified in this Section with minimum three years' documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling requirements.
- B. Lift only with lugs provided. Handle carefully to avoid damage to internal components, enclosure, and finish.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Section 016000 - Product Requirements.
- B. Conform to specified service conditions during and after installation of equipment.

1.08 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.09 SEQUENCING

- A. Section 011000 - Summary: Work sequence.
- B. Sequence Work to avoid interferences with installation of other products.

SECTION 267519 – GAS HIGH-VOLTAGE CIRCUIT BREAKERS

1.10 MAINTENANCE MATERIALS

- A. Section 017000 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Furnish two of each special tool required to operate and maintain the equipment.
- C. Provide two of each key.

PART 2 - PRODUCTS

2.01 SERVICE CONDITIONS

- A. Meet requirements for usual service conditions described in IEEE C37.20.2.
- B. Maximum/Minimum Ambient Temperature: 99/0 degrees F.
- C. Altitude: ±600 feet.

2.02 CIRCUIT BREAKERS

- A. Manufacturers:
 - 1. ABB.
 - 2. GE
 - 3. Siemens
 - 4. Or approved equal.
- B. Product Description: IEEE C37.04, SF6 dead tank circuit breaker.
- C. Circuit Breaker Operator: Spring-charged stored energy with electric operator to IEEE C37.11.
- D. Rated Maximum Voltage: min. 121 kV.
- E. Basic Impulse Level: min. 550 kV.
- F. Rated Frequency: 60 Hz.
- G. Rated Continuous Current: 1,200 A, rms.
- H. 60 Hz wet withstand: min 275 kV.
- I. Close and Latch Current: min. 104 kA.
- J. Short-Circuit Breaking Rating: min. 40kA rms, at rated maximum voltage.
- K. Operation Endurance Capability: ANSI C37.06.
- L. Rated Tripping Voltage: 48 V dc from external tripping power supply; furnish terminals. Provide redundant trip coil.

SECTION 267519 – GAS HIGH-VOLTAGE CIRCUIT BREAKERS

- M. Rated Control Voltage, Closing: 48 V dc from external control power supply; furnish terminals.
- N. 150" creep composite bushings.

2.03 INSTRUMENT TRANSFORMERS

- A. Current Transformers: IEEE C57.13; 5 A secondary, multi-ratio bushing type, with single secondary winding and secondary shorting device, primary/secondary ratio, burden and accuracy consistent with connected metering and relay devices, 60 Hz 1200:5, C800 two per bushing.

2.04 ACCESSORIES

- A. Space Heaters: For 120 V external source, sized by manufacturer.
- B. Tools and SF6 gas for field filling.

2.05 NAMEPLATES

- A. Refer to Section 260553 - Identification for Electrical Systems.
- B. Provide metal nameplate in accessible location on each assembly, designating voltage, phase, Hertz, current rating, short circuit rating, manufacturer's name, general order number and item number.
- C. Provide nameplates not less than 1 inch by 2.5 inches with 1/8 inch high letters mounted on each compartment door designating function of equipment in compartment or space.
- D. Nameplate Legend: As indicated on single-line diagram on Drawings. Including circuit breaker frame size and trip rating.

2.06 FACTORY FINISHES

- A. Clean surfaces before applying paint.
- B. Apply corrosion-resistant primer to surfaces.
- C. Finish Color: Manufacturer's standard gray finish.

2.07 SOURCE QUALITY CONTROL

- A. Test according to manufacturer and industry standards.
- B. Make available manufacturing facility and similar equipment for inspection by Owner and/or Engineer prior to submittal approvals and fabrication. (Costs for travel, lodging, meals, etc. shall be paid under the Miscellaneous Contingency Allowance).

SECTION 267519 – GAS HIGH-VOLTAGE CIRCUIT BREAKERS

- C. Make completed equipment available for inspection at manufacturer's factory prior to packaging for shipment. Notify Engineer at least fourteen days before inspection is allowed. (Costs for travel, lodging, meals, etc. shall be paid under the Miscellaneous Contingency Allowance).
- D. Allow witnessing of factory inspections and tests at manufacturer's test facility. Notify Engineer at least fourteen days before inspections and tests are scheduled. (Costs for travel, lodging, meals, etc. shall be paid under the Miscellaneous Contingency Allowance).

PART 3 - EXECUTION

3.01 EXISTING WORK

- A. Disconnect and remove abandoned equipment.

3.02 INSTALLATION

- A. Install equipment on level structural steel channels according to manufacturer's published instructions.
- B. Install equipment plumb and level.
- C. Install engraved plastic nameplates according to Section 260553.
- D. Ground and bond equipment according to Section 260526.

3.03 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect and test according to NETA ATS.

3.04 ADJUSTING

- A. Section 017000 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Adjust operating mechanisms for free mechanical movement.
- C. Torque bolted connections according to manufacturer's instructions after placing equipment.

SECTION 267519 – GAS HIGH-VOLTAGE CIRCUIT BREAKERS

3.05 DEMONSTRATION

- A. Section 017000 - Execution and Closeout Requirements: Demonstrating installed work.
- B. Demonstrate operation of circuit breakers.

END OF SECTION

SECTION 267233 – POWER QUALITY METERS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Power quality meters.

1.02 REFERENCES

- A. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.
- B. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Indicate electrical characteristics and connection requirements, outline dimensions, connection and support points, specified ratings and materials.
- C. Product Data: Submit electrical characteristics and connection requirements, standard model design tests, and options.
- D. Test Reports: Indicate procedures and results for specified factory and field testing and inspection. Including design test reports and routine test reports.

1.04 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Include copy of as left program settings.
- C. Operation and Maintenance Data: Submit maintenance and testing procedures.

1.05 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Testing Agency: Company specializing in testing products specified in this section with minimum three years documented experience.

SECTION 267233 – POWER QUALITY METERS

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.

1.07 FIELD MEASUREMENTS

- A. Verify field measurements, orientation, and locations of all components prior to fabrication.

1.08 MAINTENANCE MATERIALS

- A. Section 017000 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Furnish two each of special tools required to operate and maintain equipment.
- C. Furnish two USB-ANSI Optical programming/communication cables.

1.09 EXTRA MATERIALS

- A. Section 017000 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Furnish two of each size and type fuse (if applicable).

PART 2 - PRODUCTS

2.01 POWER QUALITY METER

- A. Manufacturers:
 - 1. Schweitzer Engineering Laboratories (SEL)
 - 2. Substitutions: None permitted
- B. Product Description: 32-bit microprocessor-based with a combination of recording, automation, and communications capabilities. The meter shall include self-diagnostic functions to alarm upon detected failure. Specific requirements are as follows:
 - 1. Accuracy. Accuracy shall exceed ANSI and IEC Class 0.2 with a $\pm 0.06\%$ Wh guarantee at unity power factor and a Class 0.2 accuracy guarantee for at least 10 years.

SECTION 267233 – POWER QUALITY METERS

2. Power Quality. The meter shall meet IEC 61000-4-30 Class A power quality accuracy for voltage, current, power, harmonics, and flicker.
3. True Four-Quadrant Metering. Energy and demand registers shall report delivered and received active power and energy as well as leading and lagging VARs for delivered and received reactive power and energy.
4. Load Profile Recording. The meter shall include at least 128 MB of nonvolatile memory for data storage and simultaneously record 192 channels for at least 140 days at 5-minute intervals. Statistical recording shall include minimum, maximum, average, changeover interval, and end-of-interval calculations. The recording rate shall be adjustable from 3 seconds to 2 hours. Recorded data shall be available via SEL, Modbus®, DNP3, MV-90, IEC 61850, and ASCII protocols.
5. Predictive Demand. A predictive demand calculation shall alarm when the demand for a fixed interval will pass a set value.
6. Transformer/Line-Loss Compensation. The meter shall compensate for meter locations remote from billing points. Bidirectional compensation shall include factors for excitation and loading losses in the transformer.
7. Human-Machine Interface. An integrated liquid crystal display (LCD) shall report all available analog quantities including power, energy, voltage, current, frequency, harmonics, phase angle, and maximum/minimum values. Customer-accessible programming shall support custom naming, alarming, scaling, and 1-line and 3-line display modes. The front panel shall include at least four programmable pushbuttons that can enter Test Mode, cycle to alternate display points, trigger waveform capture, and reset alarms. At least 14 programmable LEDs shall indicate status, alarms, and the presence of voltage.
8. Time-of-Use (TOU) Metering. The meter shall record demand and energy consumption during different time periods based on a user-defined calendar. Programming will allow for 4 seasons, 6 rates, 10 day types, 40 rate schedules, a 20-year calendar, and 15 self reads.
9. Instrument Transformer Compensation. The meter shall compensate for instrument transformer ratio and phase errors, and shall provide six calibration points for each transformer.
10. Minimum/Maximum Recording. Each phase voltage and current shall have the date and time of the last maximum and minimum value since resetting the maximum/minimum.
11. Sequential Events Recorder (SER). A chronological report shall record the most recent 16,000 events with 1 ms time-stamp accuracy.
12. Voltage Sag/Swell/Interruption Recording (VSSI). A VSSI recorder shall capture excursions with 1 ms time-stamp accuracy. At least 11,000 record samples shall adapt sampling rates from a quarter cycle to daily. VSSI summary and detailed reports shall be available less than 5 seconds after the event occurs.
13. Waveform Capture. The meter shall simultaneously capture 512 samples-per-cycle events for a total of 35 seconds from each phase. Available formats shall include filtered .CEV and full-bandwidth COMTRADE files, which are available 5 seconds after the event subsides. Waveform event reports shall contain data including the trigger bit, digital input, digital output, and device status.
14. Harmonic Metering. The meter shall report individual harmonics up to the 63rd order, including voltage, current, phase angles, and power magnitudes. The meter shall exceed IEC 61000-4-7 Class II accuracy. Interharmonic values shall encompass 5 Hz to 3800 Hz in 5 Hz bins.

SECTION 267233 – POWER QUALITY METERS

15. K-Factor Calculation. The meter shall perform K-factor calculations for transformer loading, as defined by IEEE transformer loading guides.
16. Flicker. The meter shall report instantaneous, short-term, and long-term flicker measurement per IEC 61000-4-15.
17. Inputs and Outputs. The meter contains three electromechanical outputs and two digital inputs, standard. Optional inputs and outputs include combinations of electromechanical and solid-state outputs, analog outputs, and digital inputs.
18. Clock. The meter shall have an internal battery-backed clock with 20 ppm accuracy and retain time without power for at least 10 years.
19. Time Synchronization. Time synchronization shall include IRIG-B, DNP3, Modbus, MV-90, SNTP, ASCII, and front-panel inputs. Time stamps synchronized to an IRIG-B signal shall have a resolution of 10 μ s.
20. Analog and Math Logic. The meter shall support programmable logic for remote terminal unit (RTU) control and automation. Binary and analog meter data shall be available for Boolean logic calculations and mathematical functions. Boolean logic shall include AND, OR, NOT, rising-edge detection, and falling-edge detection, as well as latches and counters. Mathematical functions shall include add, subtract, multiply, and divide as well as analog compare functions.
21. Communication. The meter shall support up to ten simultaneous communications sessions via EIA-232 serial, EIA-485/EIA-422 multidrop, infrared, 10/100BASE-T Ethernet, 100BASE-FX Ethernet, 100BASE-LX Ethernet, or telephone modem.
22. Protocols. The meter shall support simultaneous SEL-ASCII, Modbus, DNP3, IEC 61850 GOOSE and MMS, MV-90, MIRRORING BITS[®], IEEE C37.118.2-2011, and binary interleaved communications protocols. The SEL-ASCII, Modbus, DNP3, and IEC 61850 protocols shall support at least 2,000 simultaneous analog quantities with user-configurable mapping and scaling.
23. Synchrophasor Measurements. Synchrophasor measurements shall comply with the C37.118.1-2011 IEEE Standard for Synchrophasor Measurements for Power Systems. The synchrophasor datastream shall allow as many as four user-defined analog quantities and 16 digital status word bits. The Synchrophasor feature shall be P Class compliant and transmit at a data rate as high as 60 messages per second.
24. Software. The meter shall include no-charge settings configurations, data retrieval, and analysis software. The software shall retrieve, display, and store text and graphical reports including VSSI, Load Profile, TOU, and waveform event data without erasing stored meter data. Standard event analysis software shall support waveform event playback and harmonic reporting. The software shall export data in .CSV, .TXT, .HHF, .COMTRADE, .CEV, and .BIN file formats.
25. Mechanical Construction. The meter case shall be aluminum with a front-panel International Protection (IP) rating of 65 when installed in a panel. Mounting provisions shall include rack-, panel-, and surface-mount options. An optional pre-wired outdoor enclosure shall include an FT-1 style test switch and include an IP rating of 66.
26. Compliance. The meter shall comply with ANSI C12.20, IEC 61000-4-30, IEC 62052-11, IEC 62053-22, IEC 62053-23, NMI M6-1, and ISO 9001 requirements.
27. Safety. The meter shall comply with UL 508, CAN/CSA C22/2 No. 142, and CE safety requirements.

SECTION 267233 – POWER QUALITY METERS

28. Temperature. The meter shall function in ambient temperatures ranging from –40° to +85°C (–40° to +185°F).
 29. Reliability. SEL shall supply the actual measured mean time between failures (MTBF) for the device upon request.
 30. Service. The device shall include no-charge technical support for the life of the product.
 31. Manufacturer. The manufacturer shall design and assemble all components including the printed circuit boards in a wholly owned manufacturing facility within the United States.
 32. Conformal Coating. The device shall include conformal coating to protect the circuit boards from harsh environments.
 33. Warranty Return. SEL shall support a 72-hour turnaround on all warranty repairs.
 34. Warranty. The device shall include a ten-year, no-questions-asked warranty for all material and workmanship defects. In addition, the warranty shall cover accidental customer-induced damage.
- C. Model: SEL Advanced Revenue and Power Quality Meter part number (0735EX20922GXXXXXX16102XX) and all required accessories for installation and commissioning including but not limited to;
1. Easily Extractable Meter (EXM) Kit.
 2. Quick disconnect harness for power, I/O, and Voltage connections.
 3. Self-shorting current disconnect harness.
 4. Retrofit bezel with release latches.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.

3.02 EXISTING WORK

- A. Disconnect and remove abandoned 94 devices and furnish mounting/fill plates as field required to install power quality meter in resulting space.

3.03 INSTALLATION

- A. Install configurable labels, as needed.
- B. Install engraved plastic nameplates in accordance with Section 260553.

3.04 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

SECTION 267233 – POWER QUALITY METERS

- B. Upload configuration files as provided by ENGINEER.
- C. Inspect and test in accordance with NETA ATS.

END OF SECTION

SECTION 268010 – DATA COLLECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Field data collection requirements for power system studies including short-circuit, protective device coordination and arc flash hazard analysis.

1.02 REFERENCES

A. National Fire Protection Association:

1. NFPA 70 - National Electrical Code (NEC).
2. NFPA 70E – Standard for Electrical Safety in the Workplace

B. IEEE:

1. IEEE C2 – National Electric Safety Code (NESC)

1.03 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Results of field testing, if applicable.

1.04 FIELD MEASUREMENTS

A. Measure, collect, and verify actual field data for;

1. Feeders: Sizes, type, insulation, length, raceway (magnetic/non-magnetic)
2. Transformers: Nameplate data and tap settings
3. Switchgear: Manufacturer, model, and nameplate data
4. Switchboards: Manufacturer, model, and nameplate data
5. Panelboards: Manufacturer, model, and nameplate data
6. Protective Relays: Manufacturer, model, settings (and software settings where possible), CT and PT configuration, ratings, and taps
7. Circuit breakers: Nameplate data, available settings, and current settings
8. Fuses: Manufacturer, model, and rating
9. Safety Switches (fused and non-fused): Manufacturer, model, and nameplate data
10. Motor Control Centers: Manufacturer, model, and nameplate data
11. Motor Controllers: Manufacturer, model, type, and nameplate data
12. Motors ≥ 50 hp: Nameplate data, ratings, and type (induction, synchronous, etc.)
13. Overloads ≥ 50 hp: Manufacturer, model available settings, and current settings.
14. Transfer Switches: Manufacturer, model, and nameplate data
15. Generators: Manufacturer, model, and nameplate data
16. Industrial control panels: Nameplate data

B. Photographs: Take digital photographs of all equipment, nameplates, and relevant data. Provide digital photographs to engineer along with an identification key.

SECTION 268010 – DATA COLLECTION

- C. One-line markups: Verify the complete one-line diagram matches field conditions. Redline any discrepancies so that markup reflects actual conditions.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.

3.02 EXISTING WORK

- A. Remove existing arc flash hazard warning labels.

3.03 INSTALLATION

- A. Adjust circuit breakers, relays, and overloads as directed by Engineer.
- B. Install new arc flash hazard warning labels (provided by Engineer).

3.04 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Test protective relays with updated settings to verify proper pickup and timing.

END OF SECTION

SECTION 310513 - SOILS FOR EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Subsoil materials.
 - 2. Topsoil materials.
- B. Related Sections:
 - 1. Section 310517 – Select Granular Materials.
 - 2. Section 312316 – Excavation.
 - 3. Section 312317 – Excavation, Backfill, and Trenching.
 - 4. Section 312323 - Fill.
 - 5. Section 329119 - Landscape Grading.
 - 6. Section 329219 - Seeding.

1.02 REFERENCES

- A. American Association of State Highway and Transportation Officials:
 - 1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- B. ASTM International:
 - 1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - 2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 - 3. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Materials Source: Submit name of imported materials source.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

- A. Perform Work in accordance with NYSDOT Standard Specifications (latest revision).

PART 2 - PRODUCTS

2.01 SUBSOIL MATERIALS

- A. Subsoil Type S2:
 - 1. Excavated and re-used material and imported borrow.
 - 2. Graded.
 - 3. Free of lumps larger than 3inches, rocks larger than 2inches, and debris.

SECTION 310513 - SOILS FOR EARTHWORK

4. Conforming to ASTM D2487 Group Symbol CL, OL.

2.02 TOPSOIL MATERIALS

- A. Topsoil Type S4:
 1. Excavated and reused material.
 2. Graded.
 3. Free of roots, rocks larger than 2 inch, subsoil, debris, large weeds and foreign matter.
 - a. Screening: Single screened.
 4. Conforming to ASTM D2487 Group Symbol OH, PT.
- B. Topsoil Type S5:
 1. Imported borrow.
 2. Friable loam.
 3. Reasonably free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds, and foreign matter.
 - a. Screening: Double screened.
 4. Acidity range (pH) of 5.5 to 7.5.
 5. Containing minimum of 4 percent and maximum of 25 percent inorganic matter.
 6. Conforming to ASTM D2487 Group Symbol OH, PT.
 7. Limit decaying matter to 6 percent of total content by volume.

2.03 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Testing and Inspection Services Testing and analysis of soil material.
- B. Testing and Analysis of Subsoil Material: Perform in accordance with ASTM D698 or ASTM D1557.
- C. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D698 or ASTM D1557.
- D. When tests indicate materials do not meet specified requirements, change material and retest.
- E. Furnish materials of each type from same source throughout the Work.

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 310517 - SELECT GRANULAR MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work Specified
Select granular materials shall be used in bedding, pipe encasement, or backfill and as specified or as directed by the ENGINEER.
- B. Related Work Specified Elsewhere
 - 1. Section 310513 - Soils for Earthwork
 - 2. Section 312317 - Excavation, Backfill and Trenching
 - 3. Section 331100 - Buried Piping Installation

1.02 QUALITY ASSURANCE

- A. Reference Standards
 - 1. NYSDOT Standards, latest revision

1.03 SUBMITTALS

- A. The CONTRACTOR shall furnish representative samples, sieve analysis and certification of specification compliance for the select granular materials to the ENGINEER and advise on the location of the source.
- B. The CONTRACTOR shall submit copies of proposed materials, methods and operations of backfilling and compaction to the ENGINEER for review prior to the start of work. A list of equipment to be used in CONTRACTOR'S Methods and Operations must be included.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Bedding and Pipe Encasement
 - 1. NYSDOT No. 1 Crushed Stone or Crushed Gravel – bedding for PVC, DIP, and PCCP watermain.
Thoroughly washed, clean, sound, tough, hard, crushed limestone conforming to the requirements of NYSDOT Material Specification 703-0201 or crushed gravel conforming to the requirements of NYSDOT Material Specification 703-0202, having the following gradation by weight:

<u>% Passing</u>	<u>Sieve</u>
100	1-inch
90 - 100	1/2-inch
0 - 15	1/4-inch

- 2. NYSDOT No. 2A Crushed Stone or Crushed Gravel – bedding for DIP and PCCP watermain, top course from stone access areas.

SECTION 310517 - SELECT GRANULAR MATERIALS

Shall be a No. 1 and No. 2 blend, thoroughly washed, clean, sound, tough, hard, crushed limestone conforming to the requirements of NYSDOT Item No. 703.0201 or crushed gravel conforming to the requirements of NYSDOT Item No. 703.0202, having the following gradation by weight:

<u>% Passing</u>	<u>Sieve</u>
100	1-1/2-inch
93-100	1-inch
27-58	1/2-inch
0-8	1/4-inch

3. NYSDOT Concrete Sand – bedding for copper and polyethylene tubing. Washed, fine aggregate sand shall conform to the requirements of NYSDOT Material Specification 703-07, having the following gradation by weight:

<u>% Passing</u>	<u>Sieve</u>
100	3/8-inch
90 - 100	No. 4
75 - 100	No. 8
50 - 85	No. 16
25 - 60	No. 30
10 - 30	No. 50
1 - 10	No. 100
0 - 3	No. 200

B. Select Backfill

1. NYSDOT Subbase Type 2 Crusher Run Stone or Crusher Run Gravel. Material shall conform to the requirements of NYSDOT Item No. 304.12, having the following gradation by weight:

<u>% Passing</u>	<u>Sieve</u>
100	2-inch
25 - 60	1/4-inch
5 - 40	No. 40
0 - 10	No. 200

C. Peagravel

1. NYSDOT Type 1A Screened Gravel for the annular space between the carrier pipe and the casing pipe. Screened gravel shall conform to the requirements of NYSDOT Material Specification 703-0203 and have the following gradation by weight:

<u>% Passing</u>	<u>Sieve</u>
100	1/2-inch
90 - 100	1/4-inch
0 - 15	1/8-inch

SECTION 310517 - SELECT GRANULAR MATERIALS

D. Fire quenching stone for oil containment systems around transformer foundations.

1. NYSDOT Size 4 Crushed Stone. Thoroughly washed, clean, sound, tough, crushed limestone conforming to the requirements of NYSDOT Material Specification 703-0201 and have the following gradation by weight.

<u>% Passing</u>	<u>Sieve</u>
100	4"
90 - 100	3"
0 - 15	2"
0 - 0.7	#200

2. The porosity of the stone must be a minimum of 52%. The stone must have a minimum electrical resistance of 3000 ohm.m.

E. Yard Stone for the top course within the electrical substation yard, base course for stone access areas.

1. NYSDOT Size 3 Crushed Stone. Thoroughly washed, clean, sound, tough, crushed limestone conforming to the requirements of NYSDOT Material Specification 703-0201 and have the following gradation by weight.

<u>% Passing</u>	<u>Sieve</u>
100	2 ½"
90 - 100	2"
0 - 15	1 ½"
0 - 0.7	#200

F. Sand for oil containment systems around the transformer foundations.

1. NYSDOT Grout Sand – washed, fine aggregate sand shall conform to the requirements of NYSDOT Material Specification 703-01 and have the following gradation by weight.

<u>% Passing</u>	<u>Sieve</u>
100	No. 16
90 - 100	2"

G. Follow NYSDOT Standard Specifications if gradation data varies from those listed above.

H. Recycled concrete or asphalt pavement shall not be allowed.

I. Slag of any type shall not be allowed.

J. Flowable fill shall not be allowed.

SECTION 310517 - SELECT GRANULAR MATERIALS

PART 3 - EXECUTION

3.01 INSTALLATION

A. General

1. Select granular material as specified or directed for watermain bedding or encasement shall be placed in accordance with Section 312317 - Excavation, Backfill and Trenching and Section 331100 - Buried Piping Installation.
2. Select backfill where specified or directed shall be placed in accordance with the backfilling provisions of Section 312317 - Excavation, Backfill & Trenching.

3.02 DISPOSAL OF DISPLACED MATERIALS

- A. Materials displaced through the use of the above materials shall be wasted or disposed of by the CONTRACTOR and the cost of such disposal shall be included in the appropriate bid item.

END OF SECTION

SECTION 310519.13 - GEOTEXTILES FOR EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Woven geotextile material.
2. Nonwoven geotextile material.

B. Related Requirements:

1. Section 310513 - Soils for Earthwork: Fill and grading materials.
2. Section 310517 - Select Granular Materials.
3. Section 312323 - Fill: Backfilling required at building perimeter and Site structures to subgrade elevations; fill under slabs on grade, pavement, and landscaped areas.
4. Section 312500 - Erosion and Sedimentation Controls: Erosion and sedimentation control devices.
5. Section 321123 - Aggregate Base Courses: Subbase and base course for placement under paving.
6. Section 329119 - Landscape Grading: Placing, leveling, and compacting topsoil materials prior to final landscaping.

1.02 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO M288 - Standard Specification for Geotextile Specification for Highway Applications.

B. ASTM International:

1. ASTM D4355 - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus.
2. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
3. ASTM D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
4. ASTM D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
5. ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile.
6. ASTM D1777 - Standard Test Method for Thickness of Textile Materials.
7. ASTM D3776 - Standard Test Methods for Mass Per Unit Area (weight) of Fabric.
8. ASTM D3786 - Standard Test Method for Bursting Strength of Textile Fabrics - Diaphragm Bursting Strength Tester Method.
9. ASTM D6241 - Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-related Products using a 50-mm Probe.

SECTION 310519.13 - GEOTEXTILES FOR EARTHWORK

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit manufacturer information including tensile strength, elongation, thickness, UV resistance, and other material specifications.
- C. Shop Drawings: Indicate fabric layout, seam locations, and overlap details in installation drawings.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.
- F. Source Quality-Control Submittals: Indicate results of shop tests and inspections.
- G. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- H. Qualifications Statements:
 - 1. Submit qualifications for manufacturer and installer.
 - 2. Submit manufacturer's approval of installer.

1.04 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of geotextile material, including placement depth.

1.05 QUALITY ASSURANCE

- A. Perform Work according to NYSDOT standards.
- B. Maintain 1 copy of each standard affecting Work of this Section on Site.

1.06 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.
- B. Installer: Company specializing in performing Work of this Section with minimum three years' documented experience and approved by manufacturer.

SECTION 310519.13 - GEOTEXTILES FOR EARTHWORK

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Comply with ASTM D4873.
- D. Store materials according to manufacturer instructions.
- E. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Provide additional protection according to manufacturer instructions.

PART 2 - PRODUCTS

2.01 WOVEN GEOTEXTILE MATERIALS

- A. Manufacturers:
 - 1. Tencate Geosynthetic (MIRAFI)
 - 2. Propex
 - 3. Substitutions: As specified in Section 016000 - Product Requirements.
- B. Description:
 - 1. Non-biodegradable, UV-resistant, woven geotextile fabric.
 - 2. Material: Polypropylene.
 - 3. Edges: finished to prevent separation of outer material.
 - 4. Calendar such that yarns will retain relative positions.
- C. Performance and Design Criteria:
 - 1. Comply with AASHTO M288.
 - 2. Apparent opening size
 - a. No. 40 U.S Sieve
 - b. Comply with ASTM D4751
 - 3. CBR Puncture Strength
 - a. 900 lbs
 - b. Comply with ASTM D6241.

SECTION 310519.13 - GEOTEXTILES FOR EARTHWORK

4. Trapezoidal Tear
 - a. 120 lbs
 - b. Comply with ASTM D4533.
5. Tensile Strength (Grab):
 - a. 315 lbf
 - b. Comply with ASTM D4632.
6. Maximum Elongation:
 - a. 15 percent.
 - b. Comply with ASTM D6818.
7. Permittivity:
 - a. 0.05 sec -1
 - b. Comply with ASTM 4491.
8. Water Flow Rate:
 - a. 4 gal/min./sf.
 - b. Comply with ASTM 4491.
9. UV Resistance at 500 Hours:
 - a. Strength Retention: 70 percent.
 - b. Comply with ASTM D4355/D4355M.

2.02 NONWOVEN GEOTEXTILE MATERIALS

A. Manufacturers:

1. Tencate Geosynthetics
2. Terrafix Geosynthetics
3. Substitutions: As specified in Section 016000 - Product Requirements

B. Description:

1. Non-biodegradable, UV-resistant, nonwoven geotextile fabric.
2. Material: Polypropylene.
3. Edges: finished to prevent separation of outer material.
4. Calendar such that yarns will retain relative positions.

C. Performance and Design Criteria:

1. Nominal Weight: 12.2-13.5 oz. /sq. yd.
2. Minimum Sheet Thickness 0.130-0.170 in.

SECTION 310519.13 - GEOTEXTILES FOR EARTHWORK

3. Mullen Burst
 - a. 600 psi minimum.
 - b. Comply with ASTM D4751.
4. Grab Tensile Strength:
 - a. 225 lbf, minimum average roll value.
 - b. Comply with ASTM D4632/D4632M.
5. Elongation:
 - a. 95 percent, minimum average roll value.
 - b. Comply with ASTM D4632.
6. Trapezoidal Tear Strength:
 - a. 112 lbf, minimum average roll value.
 - b. Comply with ASTM D4533/D4533M.

2.03 ACCESSORIES

A. Sewing Thread:

1. Material: Polypropylene.
2. Durability: Equal to or greater than durability of geotextile.

B. Securing Pins:

1. Material: Steel rods.
2. Diameter: 3/16 inch.
3. Minimum Length: 12 inches.
4. Washers:
 - a. Material: Steel
 - b. Outside Diameter: Minimum 1-1/2 inches.
 - c. Inside Diameter: 1/4 inch.
 - d. Thickness: 1/8 inch.

C. Wire Staples:

1. Material: Steel
2. Minimum Size: 10 gage.
3. Minimum Length: 6 inches.

2.04 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for testing, inspection, and analysis.
- B. Provide shop inspection and testing of completed assembly.

SECTION 310519.13 - GEOTEXTILES FOR EARTHWORK

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that underlying surface is smooth and free of ruts or protrusions that could damage geotextile material.

3.02 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Subgrade Material and Compaction Requirements: As specified in Section 310513-Soils for Earthwork.

3.03 INSTALLATION

A. Geotextile Material:

- 1. Lay and maintain smooth and free of tensile stresses, folds, wrinkles, or creases.
- 2. Ensure that material is in direct contact with subgrade.
- 3. Orientate with long dimension of each sheet parallel to direction of slope.
- 4. Minimum Unseamed Joints Overlap: 18 inches.

B. Securement Pins:

- 1. Insert through geotextile midway between edges of overlaps and minimum 6 inches from free edges.
- 2. Minimum Spacing:
 - a. Slopes Steeper than 3 Horizontal on 1 Vertical: 24 inches o.c.
 - b. Slopes 3 Horizontal on 1 Vertical to 4 Horizontal on 1 Vertical: 3 feet o.c.
 - c. Slopes Flatter than 4 Horizontal on 1 Vertical: 5 feet o.c.
- 3. Ensure that washer bears against geotextile.

C. Seams:

- 1. Minimum Seamed Joints Overlap: 12 inches at longitudinal and transverse joints.
- 2. Seams across Slope: Lap upper panel over lower panel.
- 3. Sewn Seams:
 - a. Continuously sew seams on slopes steeper than 1 vertical on 4 horizontal.
 - b. Stitch Type: As recommended by geotextile manufacturer.
 - c. Tie off thread at the end of each seam to prevent unraveling.

SECTION 310519.13 - GEOTEXTILES FOR EARTHWORK

4. Thermal Seams:
 - a. As recommended by geotextile manufacturer.
 - b. Comply with ASTM D4886.
 - D. Penetrations: As recommended by geotextile manufacturer.
 - E. Repairing Damaged Geotextiles:
 1. Repair torn or damaged geotextile by placing patch of same type of geotextile over damaged area minimum of 12 inches beyond edge of damaged area, and fasten as recommended by geotextile manufacturer.
 2. Remove and replace geotextile rolls which cannot be repaired.
 - F. Fill and Cover:
 1. Place fill to prevent tensile stress or wrinkles in geotextile.
 2. Place fill from bottom of side-slopes upward.
 3. Do not drop fill from height greater than 3 feet.
- 3.04 FIELD QUALITY CONTROL
- A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.
 - B. Manufacturer Services: Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than one day on Site for installation, inspection, and field testing.
 - C. Equipment Acceptance:
 1. Adjust, repair, modify, or replace components failing to perform as specified.
 2. Make final adjustments to equipment under direction of manufacturer's representative.
- 3.05 PROTECTION
- A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.
 - B. Ballast: Adequate to prevent uplift of material by wind.
 - C. UV Exposure: Do not leave material uncovered for more than 14 days after installation.
 - D. Do not use staples or pins to hold geotextiles in place where located adjacent to other geosynthetic layers that could be damaged.
 - E. Do not operate equipment directly on top of geotextile.

END OF SECTION 310519.13

SECTION 310519.13 - GEOTEXTILES FOR EARTHWORK

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SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Removing surface debris.
2. Removing designated paving, curbs, and existing substation yard.
3. Removing designated trees, shrubs, and other plant life.
4. Removing abandoned utilities.
5. Excavating topsoil.

B. Related Sections:

1. Section 312318 - Rock Removal.

1.02 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data for herbicide. Indicate compliance with applicable codes for environmental protection.

1.03 QUALITY ASSURANCE

A. Conform to applicable code for environmental requirements, disposal of debris, and use of herbicides.

B. Perform Work in accordance with State standard.

C. Maintain one copy of each document on site.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Herbicide: type, approved by authority having jurisdiction.

SECTION 311000 - SITE CLEARING

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify existing plant life designated to remain is tagged or identified.
- C. Identify waste area for placing removed materials.

3.02 PREPARATION

- A. Call Local Utility Line Information service not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.

3.03 PROTECTION

- A. Locate, identify, and protect utilities indicated to remain, from damage.
- B. Protect trees, plant growth, and features designated to remain, as final landscaping as specified in Section 015000 - Temporary Facilities and Controls.
- C. Protect bench marks, survey control points, and existing structures from damage or displacement.

3.04 CLEARING

- A. Clear areas required for access to site and execution of Work to minimum depth of 6 inches.
- B. Remove trees, shrubs, and stumps.
- C. Clear undergrowth and deadwood, without disturbing subsoil.
- D. Apply herbicide to remaining stumps to inhibit growth.

3.05 REMOVAL

- A. Remove debris, rock, and extracted plant life from site.
- B. Partially remove paving, curbs, and, existing substation yard as indicated on Drawings. Neatly saw cut edges at right angle to surface.

SECTION 311000 - SITE CLEARING

- C. Remove abandoned utilities. Indicated removal termination point for underground utilities on Record Documents.
- D. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.
- E. Do not burn or bury materials on site. Leave site in clean condition.

3.06 TOPSOIL EXCAVATION

- A. Excavate topsoil from areas to be further excavated, relandscaped, or regraded, without mixing with foreign materials for use in finish grading.
- B. Do not excavate wet topsoil.
- C. Stockpile in area on site to depth not exceeding 8 feet and protect from erosion. Stockpile material on impervious material and cover over with same material, until disposal.
- D. Remove excess topsoil not intended for reuse, from site.

END OF SECTION

SECTION 311000 - SITE CLEARING

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SECTION 312316 - EXCAVATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Soil densification.
2. Excavating for building foundations.
3. Excavating for parking areas.
4. Excavating for slabs-on-grade.
5. Excavating for site structures.

B. Related Sections:

1. Section 310517 - Select Granular Materials.
2. Section 312318 - Rock Excavation: Removal of rock during excavating.

1.02 REFERENCES

- ##### A. Local utility standards when working within 24 inches of utility lines.

1.03 SUBMITTALS

- ##### A. Section 013300 - Submittal Procedures: Requirements for submittals.

- ##### B. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.

- ##### C. Shop Drawings: Indicate soil densification grid for each size and configuration footing requiring soils densification.

1.04 QUALITY ASSURANCE

- ##### A. Perform Work in accordance with NYSDOT Standard Specifications.

PART 2 - PRODUCTS - NOT USED

SECTION 312316 - EXCAVATION

PART 3 - EXECUTION

3.01 PREPARATION

- A. Call Dig Safely New York at 1-800-962-8962 not less than five working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Protect utilities indicated to remain from damage.
- D. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- E. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.02 EXCAVATION

- A. Underpin adjacent structures which may be damaged by excavation work.
- B. Excavate subsoil to accommodate building foundations, slabs-on-grade paving site structures, and construction operations.
- C. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with Section 312323.
- D. Slope and/or shore banks as per minimum statutory/regulatory requirements for a safe work site.
- E. Do not interfere with 45 degree bearing splay of foundations.
- F. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- G. Trim excavation. Remove loose matter.
- H. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume. Remove larger material as specified in Section 312323.
- I. Notify Engineer of unexpected subsurface conditions.
- J. Correct areas over excavated as directed by Engineer.
- K. Stockpile subsoil in area designated on site to depth not exceeding 8 feet and protect from erosion.
- L. Repair or replace items indicated to remain damaged by excavation.

SECTION 312316 - EXCAVATION

3.03 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements.
- B. Perform inspection of excavation and controlled fill operations in accordance with applicable code.
- C. Obtain visual inspection of bearing surfaces by qualified geotechnical firm before installing subsequent work.

3.04 PROTECTION

- A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

END OF SECTION

SECTION 312316 - EXCAVATION

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SECTION 312317 - EXCAVATION, BACKFILL, AND TRENCHING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The CONTRACTOR shall furnish all labor, materials, equipment, and incidentals necessary for excavation, trenching, backfill, and compaction as shown and specified. Disposal of excess and unsuitable excavated material is included.
2. Backfill of excavations with acceptable materials as specified in other Sections.

B. Related Work Specified Elsewhere

1. Section 310517 - Select Granular Materials
2. Section 312318 - Rock Excavation
3. Section 331100 - Buried Piping Installation
4. Section 312500 - Erosion and Sedimentation Controls

1.02 QUALITY ASSURANCE

A. Reference Standards

1. ASTM A36, Structural Steel
2. ASTM A328, Steel Sheet Piling
3. ASTM D422, Particle-Size Analysis of Soils
4. ASTM D698, Moisture-Density Relations of Soils, using 5.5 lb. Rammer and 12-inch Drop
5. ASTM D1556, Density of Soil in Place by the Sand-Cone Method
6. ASTM D1557, Moisture-Density Relations of Soils, using 10 lb. Rammer and 18-inch Drop
7. ASTM D2321, Recommended Practices for Underground Installation of Pipe for Sewers and Other Gravity Flow Applications
8. ASTM D2922, Density of Soil and Soil-Aggregate in Place by Nuclear Method (Shallow Depth)
9. AISC Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings
10. Occupational Safety and Health Administration (OSHA) Regulations
11. Industrial Code Rule 23

1.03 SUBMITTALS

- ##### A.
- Before any excavation begins, the CONTRACTOR shall obtain all permits and licenses required by governing authorities having jurisdiction and submit certified copies to ENGINEER prior to work being performed.
- ##### B.
- The CONTRACTOR shall submit drawings submitted with a PE stamp, for information only, for the following items as required:
1. Sheeting, shoring and bracing
 2. Dewatering systems
 3. Cofferdams

SECTION 312317 - EXCAVATION, BACKFILL, AND TRENCHING

4. Additional protection systems required
 5. Underpinning
 6. Underdraining
 7. Sediment and Erosion control
 8. Boring and Receiving Pits.
- C. The CONTRACTOR shall submit proposed materials, methods and operations of backfilling and compaction to the ENGINEER for review prior to the start of work. A list of equipment to be used in CONTRACTOR'S methods and operations must be included.
- D. All drawings shall be prepared and sealed by an independent professional engineer recognized as an expert in the specialty involved and licensed to practice in the State of New York. The drawings shall be submitted to the ENGINEER to establish compliance with the terms of the Contract Documents. Calculations shall not be submitted. Drawing submissions will not be checked and will not imply approval by the ENGINEER of the work involved. CONTRACTOR shall be wholly responsible for designing, installing, and operating whatever system is necessary to accomplish satisfactory sheeting, bracing, protection, underpinning, and dewatering.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Bedding and Select Backfill
1. Bedding and select backfill material shall be in accordance with Section 02316 - Select Granular Materials.
- B. Backfill and Fill Materials
1. Excavated materials may be used for backfill provided:
 - a. Material is sandy, loamy or similar to bank run gravel.
 - b. Material is free of debris, hazardous materials, frozen materials, organic or other deleterious materials. Material greater than 4-inches in any direction is unacceptable. Material greater than 2-inches in any direction is unacceptable for backfill directly against the watermain.
 - c. Maximum dry density and optimum moisture content are determined in accordance with the above.
 - d. Material is reviewed and deemed acceptable by the ENGINEER.
 2. Use select granular backfill within 5 feet or within a 1 on 1 slope from the trench to the edge of pavement of all roadways.
- C. Topsoil
1. Topsoil shall be furnished and installed and coordinated with Section 329119, Landscape Grading.
- D. Explosives
1. Explosives are not allowed to be used nor allowed on site.

SECTION 312317 - EXCAVATION, BACKFILL, AND TRENCHING

E. Sheeting, Shoring & Bracing

1. Used material shall be in good condition, not damaged or excessively pitted. Unless otherwise specified, all sheeting to remain in place shall be new. New or used sheeting may be used for temporary work.
2. All timber used for breast boards (lagging) shall be new or used, meeting the requirements for Douglas Fir Dense Construction grade or Southern Pine No. 2 Dense S3. Where close or tight sheeting is required, wood sheeting shall be tongued and grooved.
3. All steel work for sheeting, shoring, bracing, cofferdams, etc. shall be designed in accordance with the provisions of the "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings", of the AISC except that field welding will be permitted.
4. Steel sheet piling shall be manufactured from steel conforming to ASTM A328. Steel soldier piles, wales and braces shall be new or used and shall conform to ASTM A36.
5. Steel sheeting shall have a minimum thickness of $\frac{3}{8}$ -inch in web, unless otherwise specified.

PART 3 - EXECUTION

3.01 INSPECTION

- A. The CONTRACTOR shall provide the ENGINEER with sufficient time and means to examine the areas and conditions under which excavating, filling and grading are to be performed. The CONTRACTOR shall notify the ENGINEER of conditions detrimental to the proper and timely completion of work. The CONTRACTOR shall not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the ENGINEER.

3.02 TEST PITS

- A. Where shown or ordered by the ENGINEER, the CONTRACTOR shall excavate and backfill test pits in advance of construction to determine conditions or location of existing facilities. The CONTRACTOR shall perform all work required in connection with excavating, stockpiling, maintaining, sheeting, shoring, backfilling and restoring the surface for the test pits.
- B. Test pits which the CONTRACTOR excavates that are not shown on the Drawings or specified or ordered shall be at the CONTRACTOR'S expense.
- C. No test pits will be dug prior to utility company stakeout.
- D. Cold patch for temporary repair shall be placed as directed by the ENGINEER.

3.03 EROSION CONTROL

- A. All necessary precautions shall be taken to preclude the contamination of any wetland or waterway by suspended solids, sediment, fuels, solvents, lubricants, epoxy coatings, paints,

SECTION 312317 - EXCAVATION, BACKFILL, AND TRENCHING

concrete leachate or any other environmentally deleterious substance associated with the project.

- B. All necessary precautions shall be taken to prevent the entry of raw concrete or concrete liquors into the waters and/or wetlands of the State of New York. Equipment washwater from this project shall not be allowed to enter any waterway or wetland.
- C. All sediments are to be retained on the project site through the use of hay bales, silt fences or other barriers, as specified or approved by the local authority having jurisdiction, to prevent erosion.
- D. All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with hay or straw within one week of final grading. Mulch shall be maintained until a suitable vegetative cover has been established.
- E. Pumped groundwater collected from excavations shall not be allowed to be discharged directly to any wetland, waterway, or other water body.
- F. Contamination of any wetland, waterway, or other water body shall be cleaned and/or restored to the satisfaction of the ENGINEER and governing authorities at the expense of the CONTRACTOR.

3.04 EXCAVATION

- A. The CONTRACTOR shall perform all excavation required to complete the work as shown and specified. Excavations shall include earth, sand, clay, gravel, hardpan, boulders and ledge rock, decomposed rock, pavements, rubbish and all other materials within the excavation limits, except rock. Where the excavation is in rock meeting the definition in Section 312318 - Rock Excavation (requiring drilling, jack-hammering and hand removal), the rock shall be removed as specified in Section 312318.
- B. Excavations for pipelines, utilities and structures shall be open excavations, shored and braced where necessary, according to OSHA standards, to prevent possible injury to workmen and to new and existing structures or pipelines.
- C. Where the pipeline, utility or structure is to be placed below the ground water table, well-points, cofferdams or other acceptable methods shall be used to permit construction under dry conditions. Dry conditions shall prevail until concrete has reached sufficient strength to withstand earth and hydrostatic loads and until the pipelines are properly jointed, tested and backfilled.
- D. Pumping in excavations shall be done in such a manner so as to prevent damage to the existing subgrade, and to prevent the carrying away of unconsolidated concrete materials.
- E. Excavations for pipelines shall be made sufficiently wide to permit proper laying and jointing of the pipe. The trench width at the top of the pipe should not be greater than the outside diameter of the pipe barrel plus 2 feet, but shall be sufficient to allow thorough compacting of earth refill adjacent to the bottom half of the pipe. The depth of trench shall be sufficient to allow a minimum cover over the top of the pipe as shown on the drawings. The use of

SECTION 312317 - EXCAVATION, BACKFILL, AND TRENCHING

excavating equipment which requires the trench to be excavated to an excessive width will not be allowed. All trenches for buried piping shall be excavated at least 6 inches below the bottom of the pipe and backfilled with pipe bedding material as specified in Section 310517—Select Granular Materials.

- F. Acceptable excavated materials shall be stockpiled in specified areas until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.
 - 1. Locate and retain soil materials away from edge of excavations.
 - 2. Unsuitable backfill material shall be kept separate from all other material and shall be disposed of as specified hereinafter. Disposal of unsuitable and excess excavated material shall be accomplished immediately upon removal from the excavation.
 - 3. Stockpiles shall not be located such that they interfere with traffic or access to public or private property. If necessary, the CONTRACTOR shall maintain additional stockpile areas located elsewhere on the site, and shall transport the suitable backfill material to and from such stockpile areas as required for the work.
 - 4. In built-up districts and in streets where traffic conditions render it necessary, the material excavated from the initial opening shall be removed by the CONTRACTOR as soon as excavated, and the material subsequently excavated, if suitable for the purpose, shall be used to backfill the trenches in which pipe has been laid or structures have been built, and neither the excavated material nor materials of construction shall be stored on the streets or sidewalks.
- G. If the material at the design grade is unsuitable as determined by the ENGINEER, the CONTRACTOR, when ordered in writing, shall excavate additional material to the depth necessary and shall backfill to the proposed grade with select granular material.
- H. Unless otherwise directed or permitted, not more than 100 feet of trench in advance of the end of the completed pipe or structure therein shall be opened at any time. Every trench in rock shall be fully opened at least 30 feet in advance of any place where masonry or pipe is being laid. Any time when the CONTRACTOR'S crews are not on the job working, a trench length equal to or less than one-half of the last length of pipe installed may be left open, but properly covered or barricaded to protect the public.
- I. At such locations where two pipes may be installed in parallel in a common trench, and where specified, the CONTRACTOR shall install the pipes a minimum of 2 feet apart as measured horizontally from the outside diameter of pipe.

3.05 UNAUTHORIZED EXCAVATION

- A. All excavation outside the lines and grades shown and not specified, together with the removal and disposal of the associated material shall be at the CONTRACTOR'S expense. The unauthorized excavation shall be filled as directed by the ENGINEER with select compacted backfill at the CONTRACTOR'S expense. Claims and damages resulting from the CONTRACTOR'S unauthorized excavation will be his sole responsibility.

SECTION 312317 - EXCAVATION, BACKFILL, AND TRENCHING

3.06 DRAINAGE AND DEWATERING

A. General

1. Prevent surface and subsurface water from flowing into excavations and from flooding adjacent areas.
2. Remove water from excavation as fast as it collects.
3. Maintain the ground water level at least 2 feet below the bottom of the excavation to provide a stable surface for construction operations and to prevent damage to the work during all stages of construction.
4. Provide and maintain pumps, sumps, suction and discharge lines and other dewatering system components necessary to convey water away from excavations.
5. Provide sediment traps when water is conveyed into water courses.
6. Notify the ENGINEER before shutting down dewatering systems for any reason.
7. Standing water shall not be permitted in the excavation at any time. If the material at the design grade becomes unsuitable or contaminated due to the actions of the CONTRACTOR, the CONTRACTOR shall excavate additional material to the depth necessary and shall backfill to the proposed grade with select fill or crushed stone.
8. 100% stand-by pumps (gasoline powered) shall be maintained at the site at all times.
9. Any hardships created by the temporary dewatering for this Contract which adversely affects the water supply to local property owners, shall be satisfactorily resolved by the CONTRACTOR, including the provision of temporary water service, if required, at no additional cost to the OWNER.
10. Obtain required permits from agencies of jurisdiction, NYSDEC, and USACOE, for any water being discharged into rivers, streams, or water courses.

B. Disposal of Water Removed by Dewatering Systems

1. Dispose of all water removed from the excavation in such a manner as not to endanger public health, property, or any portion of the work under construction or completed.
2. Dispose of water in such a manner as to cause no inconvenience to the owner or others on or adjacent to the site.
3. Convey water from the excavation in a closed conduit. Do not use trench excavations as temporary drainage ditches.
4. Disposal of water shall be by specified methods and shall not cause erosion or sedimentation to occur in existing drainage systems. All sedimentation or blocking of existing systems shall be thoroughly cleaned and returned to original condition by the CONTRACTOR at his expense.
5. Damage caused by the CONTRACTOR'S operations to public or private property shall be repaired by him to the satisfaction of the ENGINEER and the damaged property owner at the CONTRACTOR'S expense.
6. The CONTRACTOR shall perform all work, furnish all materials and install all measures required to reasonably control soil erosion resulting from construction operations and prevent excessive flow of sediment from the construction site. Such work may include the installation of water diversion structures, diversion ditches and sediment basins and seeding, mulching or sodding critical areas to provide temporary protection. The CONTRACTOR shall submit a plan showing the methods to be used for controlling erosion and sedimentation during construction along with the schedule of construction operations to the ENGINEER for review.

SECTION 312317 - EXCAVATION, BACKFILL, AND TRENCHING

7. All erosion and sediment control practices shall be in place prior to any grading operations and installation of proposed structures or utilities.
8. All erosion and sediment control practices shall be left in place until construction is completed and/or area is stabilized.
9. Where necessary, disturbed areas shall be temporarily seeded and/or mulched until proper weather conditions exist for establishment of a permanent vegetative cover.

3.07 SHEETING, SHORING, AND BRACING

A. General

1. Unless otherwise shown or specified, excavations shall be open, shored and braced or sheeted where necessary to prevent injury to workmen, structures, pipelines and utilities.
2. Structures within 100 feet of sheeting installations shall be subject to a pre-construction survey to identify and record existing structural conditions. In the instance of private residencies, the homeowners shall be contacted directly. These inspections shall be carried out by a pre-inspection firm experienced in this line of work.
3. During the actual construction process, the CONTRACTOR shall provide the monitoring and recording of the actual vibrations generated. A baseline of ambient vibration levels shall be established prior to driving sheet piling.
 - a. The particle acceleration during the driving of the sheet piling shall not exceed 2.0 FPS.
 - b. The CONTRACTOR will be required to change the construction methods if the work is resulting in unacceptable vibration levels.
4. All municipal, county, state, and federal ordinances, codes, regulations, and laws shall be observed. The CONTRACTOR shall provide all sheeting, shoring, and bracing which conforms to New York State Department of Labor – Industrial Code Note 23 and all applicable sections of the 1970 Occupational Safety and Health Act (OSHA), and any other requirements as necessary.
5. All municipal, county, state and federal ordinances, codes, regulations, laws and OSHA regulations shall be observed.
6. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down the shoring and bracing as excavation progresses.
7. Safe and satisfactory sheeting, shoring and bracing shall be the entire responsibility of the CONTRACTOR.
8. The CONTRACTOR shall be held accountable and responsible for the sufficiency of all shoring and bracing used and for all damage to persons or property resulting from the improper quality, strength, placing, maintaining or removing of the same.
9. The ENGINEER'S permission to proceed with work in either a sheeted, shored braced or open trench condition shall in no way relieve the CONTRACTOR from the above responsibilities.
10. The clearances and types of temporary structures, insofar as they affect the character of the finished work, and the design of steel sheeting to be left in place, will be subject to the review of the ENGINEER, but the CONTRACTOR shall be solely responsible for the adequacy of all sheeting, shoring, bracing, cofferdamming, etc.

SECTION 312317 - EXCAVATION, BACKFILL, AND TRENCHING

11. Unless otherwise shown, specified, or ordered, all materials used for temporary construction shall be removed when work is completed. Such removal shall be made in a manner not injurious to the pipelines or structures.
12. All steel sheet piling designed to remain in place shall be new materials. New or used materials may be used for temporary work.
13. Steel sheet piling shall be manufactured from steel conforming to ASTM A328. Steel for soldier piles, wales, and braces shall be manufactured to conform to ASTM A36.

B. Sheeting Left in Place

1. Steel sheet piling shall be left in place or where conditions are such that the removal of sheeting will endanger the work or adjacent pipes or structures or when ordered in writing to be left in place by the ENGINEER. It shall consist of rolled sections of the continuous interlocking type unless otherwise specified. The type and design of the sheeting and bracing shall conform to the above specifications for all steel work for sheeting and bracing.
2. Steel sheet piling to be left in place shall be driven straight to the lines and grades as shown or directed. The piles shall penetrate into firm materials with secure interlocking throughout the entire length of the pile. Damaged piling having faulty alignment shall be pulled and replaced by new piling.
3. The type of guide structure used and method of driving for steel sheet piling to be left in place shall be submitted to the ENGINEER for review. Jetting will not be permitted.
4. The CONTRACTOR shall cut off piling left in place at least 2 feet below road surface or to the grades shown or ordered by the ENGINEER and shall dispose of the cutoffs.
5. Portions of sheeting or soldier piles and breast boards which are in contact with concrete shall be left in place.

C. Removal of Sheeting and Bracing

1. Sheeting and bracing shall be removed from excavation unless otherwise indicated by the ENGINEER. Removal shall be done so as to not cause injury to the work.
 - a. Wood or steel sheeting shall not be removed when adjacent to structures, pavement, pipes, or any other public or private property where removal may cause damage to such property.
 - b. Fill all voids left by removal of sheeting with select fill.
2. Removal of sheet piling shall be done so as not to cause injury to the Work. Removal shall be equal on both sides of excavation to ensure no unequal loads on pipe or structures.

SECTION 312317 - EXCAVATION, BACKFILL, AND TRENCHING

- D. Pipeline Alignment in New York State Department of Transportation and Erie County Highway Department Right-Of-Way:
1. The New York State Department Of Transportation and Erie County Highway Department require all trenches or excavations which fall within a 1 on 1 slope as measured from the edge of pavement to be tight-sheeted with pre-driven steel sheet piling prior to excavation.
 - a. The design of the predriven steel sheet piling and bracing system is the responsibility of the CONTRACTOR. The ENGINEER may reject any materials which he regards as unsound.
 - b. A copy of all predriven steel sheet piling and bracing system designs shall be submitted to the ENGINEER for his information before installation of same. Each drawing and computation page shall display the seal and signature of a licensed New York State professional engineer. This information must also be submitted to the Agency having jurisdiction for review and must meet with that Agency's approval.
 - c. The CONTRACTOR'S submittal to the ENGINEER shall include written verification from the Agency of jurisdiction that the information being submitted to the ENGINEER has been approved by that Agency.
 2. If devices other than pre-driven steel sheet piling are approved by the Agency of jurisdiction in areas designated as requiring temporary sheeting, the CONTRACTOR may (with the ENGINEER'S review) be allowed to use them. However, the costs of furnishing and using these devices will be considered as included in the unit prices bid for the various pipe sections.
- E. In areas where the Drawings call for sheeting to remain in place, alternate sheeting methods will not be allowed. Only pre-driven, steel sheet piling systems designed for the CONTRACTOR by a professional engineer will be allowed in these areas.

3.08 BACKFILL AND COMPACTION

- A. All backfill required for trenches and structures required to provide the finished grades shown and as described herein shall be furnished, placed and compacted in 6 inch lifts by the CONTRACTOR. Unless otherwise specified or required, fill shall be obtained from the excavated materials. All materials used for filling and backfilling shall be soil of acceptable quality, free from boulders, frozen lumps, wood, stumps, sludge, or other organic matter or other deleterious or hazardous materials. Excavated materials meeting these requirements and approved by the ENGINEER may be used as backfill.
- B. Rock and/or earth material may be encountered during the work that is unsuitable for backfilling. When this material is encountered, it shall be disposed of in the specified manner, possibly resulting in a shortage of suitable backfill material. In this event, the CONTRACTOR shall be responsible for furnishing, delivering and installing clean earth or select backfill materials to properly and completely backfill the excavation. Backfill material for these situations may be obtained from other areas of the project where suitable material is available or from offsite locations as approved by the ENGINEER. All backfill material is subject to the ENGINEER'S review and must meet the minimum requirements of the specifications above.

SECTION 312317 - EXCAVATION, BACKFILL, AND TRENCHING

- C. Backfill excavations as promptly as work permits, but not until completion of the following:
1. Inspection by the ENGINEER of all work within the excavation.
 2. Inspection, testing approval, and recording of locations of underground utilities, connections, branches, structures and other facilities.
 3. Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Cut off temporary sheet piling driven below bottom of structures and remove in a manner to prevent settlement of the structure or utilities, or leave in place if required.
 4. Removal and proper disposal of trash and debris.
- D. Excavation shall be kept dry during backfilling operations. Backfill around piping and structures shall be brought up evenly on all sides.
- E. The minimum density to be obtained during backfilling operations shall be 95 percent and is a percentage of the maximum density obtained in the laboratory as defined in ASTM D698 Method C including Note 2. This percentage is of modified Proctor density. In-place density determinations shall be made using a sand density cone or equivalent method as specified by ASTM D1556. If any bricks, bottles, pieces of metal, debris or other foreign matter larger than $\frac{3}{4}$ -inch size are encountered in the density test hole, a different test location shall be chosen. The ENGINEER will determine the frequency of field testing required to determine the density of the fill and shall direct the number and location of density tests. All equipment necessary to determine fill density, including nuclear density meters, shall be supplied by the CONTRACTOR.
- F. The water content of fill material shall be controlled during placement within the range necessary to obtain the density specified. In general, the moisture content of the fill shall be within 5 percent dry and 2 percent wet of the optimum moisture content for the specified density as determined by laboratory tests. The CONTRACTOR shall perform all necessary work to adjust the water content of the material to within the range necessary to permit the density specified. No fill material shall be placed and no compaction of fill will be permitted when there is any standing water in the trenches or when the fill material or the ground the fill is to be placed on is frozen.
- G. The CONTRACTOR is not allowed to access any part of an existing water supply system (fire hydrants, etc.) as a source of water for any reason during construction activities, including the use of water for backfilling to obtain the proper moisture content.
- H. If the specified densities are not obtained because of the CONTRACTOR'S improper control of placement or compaction procedures, or because of inadequate or improperly functioning equipment, the CONTRACTOR shall perform whatever work is required to provide the specified densities. This work shall include complete removal of unacceptable fill areas, replacement and recompaction until acceptable fill is provided.
- I. All backfill in pipe trenches shall be placed in horizontal layers not exceeding 6 inches in depth and thoroughly compacted before the next layer is placed.
- J. Where pipe is laid in rock excavation, crushed stone or gravel fill shall be carefully placed and tamped over the rock before the pipe is laid. After laying pipe, the balance of the backfill shall be placed as described herein above.

SECTION 312317 - EXCAVATION, BACKFILL, AND TRENCHING

K. Placement:

1. Place pipe bedding, select backfill and/or earth backfill or borrow materials, as specified herein and in Section 331100- Buried Piping Installation.
2. Trenches under roadways shall be backfilled with select backfill material for the entire length of the open cut crossing plus 5 feet back from the edge of pavement or a distance equal to a 1 on 1 slope to the invert, whichever is greater.
3. Where shoulders are excavated, the trench shall be backfilled with select granular material.
4. The entire trench area under driveways, parking areas, and sidewalks, shall be backfilled with select granular material in accordance with the Contract Drawings and Specifications.
5. Prior to commencing with the backfilling operation, the CONTRACTOR shall submit information to the ENGINEER such as catalog cuts, specification sheets, etc., describing the type of compaction equipment he intends to use.

L. Pipe Trench Preparation

1. Braced trench width shall be minimized to greatest extent practical but shall conform to the following:
 - a. Trench width shall be sufficient to provide room for installing, jointing and inspecting piping, as shown on Contract Drawings.
 - b. Enlargements at pipe joints may be made if required and specified by the ENGINEER.
 - c. Trench width shall be sufficient for sheeting, bracing, sloping, and dewatering.
 - d. Trench width shall be sufficient to allow thorough compacting of backfill.
 - e. Do not use excavating equipment which requires the trench to be excavated to excessive width.
2. Depth of trench shall be as shown. If required, depths may be revised as specified by the ENGINEER.

- M. The CONTRACTOR shall repair any settlement that occurs at no additional cost to the OWNER.

3.09 GRADING

A. General

Uniformly grade areas within limits of grading under this Section including adjacent transition areas. Smooth subgrade surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

B. Turfed Areas

Finish areas to receive topsoil to within not more than 1 inch above or below the required subgrade elevation.

C. Walks and Pavements

Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 1/2 inch above or below the required subgrade elevation.

SECTION 312317 - EXCAVATION, BACKFILL, AND TRENCHING

- D. Slabs
Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 3 inch when tested with a 10 foot straightedge.
- E. Compaction
After grading, compact subgrade surfaces to the depth and percentage of maximum density required.
- F. All existing drainage swales and ditches, if disturbed, shall immediately, upon completion of pipe installation, be restored to proper lines and grades. CONTRACTOR shall ensure the final drainage facilities are in working condition and acceptable to the agency of jurisdiction.

3.10 PAVEMENT SUBBASE COURSE

- A. General
Place subbase material, in layers of specified thickness, over ground surface to support the pavement base course.
- B. Grade Control
During construction, maintain lines and grades including crown and cross-slope of subbase course.
- C. Shoulders
Place shoulders along edges of subbase course to prevent lateral movement. Construct shoulders of acceptable soil materials as specified, placed in such quantity to compact to thickness of each subbase course layer. Compact and roll at least 12 inch width of shoulder simultaneously with compacting and rolling of each layer of subbase course.
- D. Placing
Place subbase course material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting subbase material during placement operations. When a compacted subbase course is shown to be 6 inches thick or less, place material in a single layer. When shown to be more than 6 inches thick, place material in equal layers, except no single layer more than 6 inches or less than 3 inches in thickness when compacted.

3.11 DISPOSAL OF EXCAVATED MATERIALS

- A. Material removed from the excavations which does not conform to the requirements for fill or is in excess of that required for backfill shall be hauled away by the CONTRACTOR and disposed of in compliance with Municipal, County, State, Federal or other applicable regulations at no additional cost to the OWNER.
- B. The CONTRACTOR shall not dispose waste excavated material in any of the following locations:
 - 1. Wetland areas.
 - 2. Flood plains.
 - 3. Any area where excess siltation will damage or pollute receiving water.

SECTION 312317 - EXCAVATION, BACKFILL, AND TRENCHING

4. Disposal of excess materials shall only be allowed at locations approved by NYSDEC Region 9.

3.12 RESTORATION AND CLEAN-UP

- A. Following installation, the CONTRACTOR shall restore all areas to their original condition to the requirements of Division 32 Sections, and to the satisfaction of the ENGINEER.

END OF SECTION

SECTION 312317 - EXCAVATION, BACKFILL, AND TRENCHING

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SECTION 312318 - ROCK EXCAVATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The CONTRACTOR shall furnish all labor, materials, equipment, and incidentals necessary for rock excavation for construction of structures and pipelines as shown and specified. Disposal of excess and unsuitable excavated rock material is included in this item.
2. This item includes backfill of rock excavations with acceptable materials as defined in other Related Work.

B. Related Work Specified Elsewhere

1. Section 310517 - Select Granular Materials
2. Section 312317 - Excavation, Backfill and Trenching
3. Section 331100 - Buried Piping Installation
4. Section 312500 - Erosion and Sedimentation Control

1.02 SUBMITTALS

- A. Before any rock removal begins, the CONTRACTOR shall obtain all permits and licenses required by governing authorities having jurisdiction and supply certified copies to the ENGINEER.
- B. Submit procedures and list equipment to be used.

PART 2 - PRODUCTS

2.01 DEFINITIONS

- A. Rock shall be defined as hard cap rock or boulders exceeding one (1) cubic yard in volume and solid ledge rock which, in the opinion of the ENGINEER, requires drilling and blasting or jackhammering for its removal.
- B. The following materials will not be measured nor allowed for payment as rock excavation:
 1. Soft, weathered or disintegrated rock which can be removed by normal excavation equipment.
 2. Loose or previously blasted rock.
 3. Broken stone in rock fills.
 4. Any rock which may fall into the excavation trench from outside the limits of excavation specified.

SECTION 312318 - ROCK EXCAVATION

PART 3 - EXECUTION

3.01 GENERAL

- A. Limits of Rock Excavation
1. Structures:
 - a. The lowest elevation of the structure, manhole, pump station, plus bedding etc. at each location or as directed by the ENGINEER.
 - b. Vertical planes located 12 inches outside the footing or as shown on the Contract Drawings.
 - c. As ordered by ENGINEER.
 2. Pipe Trenches: The width of trenches shall be the outside diameter of the pipe plus 2 feet, exclusive of bells, branches, hubs, spurs or cradles. The sides of the trench shall be vertical.
 - a. The depth of the trench shall be the depth on the bottom of the pipe exclusive of bells and branches plus bedding.
 - b. The length shall be equal to the laid length of pipe, measured horizontally.
 - c. Additional width in pipe trenches at field joints or beyond the lines described above will be considered outside the limits described.
 - d. As ordered by the ENGINEER.
- B. When there is a separate pay bid item for rock excavation, the rock shall be uncovered prior to removal in sections acceptable to the ENGINEER so that it may be measured.
- C. When there is not a separate pay bid item for rock excavation, the rock shall be uncovered prior to removal in sections acceptable to the ENGINEER for observation and for record.

3.02 METHODS OF REMOVAL

- A. Hand removal
1. The CONTRACTOR shall remove rock by hand methods such as drilling, jack-hammering and mechanical excavation.
 2. Under no circumstances will blasting be allowed. Explosive materials used primarily for blasting operations are not allowed on site.

3.03 DISPOSAL

- A. Backfill
1. Pieces of rock larger than 4 inches shall not be used in backfilling pipe trenches.
 2. Rock backfill shall not be placed within two feet of the outside diameter of pipes.
 3. The quantity of rock used in any backfill location shall not be so great as to result in voids, as determined by the ENGINEER.
 4. Rock backfill shall not be placed within 18 inches of the surface of finish grade.
 5. Excess or unacceptable rock may be disposed of on the site only where shown or specified by the ENGINEER. Rock which cannot be disposed of on the site shall be removed and disposed of off the site at the CONTRACTOR'S expense and in compliance with all applicable federal, state and local regulations.

SECTION 312318 - ROCK EXCAVATION

- B. The rock excavated, which cannot be incorporated into the backfill material, as specified, shall be disposed of as spoil and shall be replaced with the quantity of acceptable material for backfilling.

END OF SECTION

SECTION 312318 - ROCK EXCAVATION
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SECTION 312323 - FILL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Backfilling building perimeter to subgrade elevations.
2. Backfilling site structures to subgrade elevations.
3. Fill under slabs-on-grade.
4. Fill under paving.
5. Fill for over-excavation.

B. Related Sections:

1. Section 033000 - Cast-In-Place Concrete: Concrete materials.
2. Section 310517 - Select Granular Materials: Aggregates for fill.
3. Section 312316 - Excavation.
4. Geotechnical Report; borehole locations and findings of subsurface materials.

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

1.03 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data for geotextile fabric indicating fabric and construction.

SECTION 312323 - FILL

- C. Materials Source: Submit name of imported fill materials suppliers.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements NYSDOT Standard Specifications Current Edition.

1.04 QUALITY ASSURANCE

- A. Perform Work in accordance with NYSDOT Standard Specifications, Current Edition.

PART 2 - PRODUCTS

2.01 FILL MATERIALS

- A. Structural Fill: Select structural fill as specified in Section 310516.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Coordination and project conditions.
- B. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.
- C. Verify underground tanks are anchored to their own foundations to avoid flotation after backfilling.
- D. Verify structural ability of unsupported walls to support loads imposed by fill.

3.02 PREPARATION

- A. Compact subgrade to density requirements for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with structural granular fill and compact to density equal to or greater than requirements for subsequent fill material.
- C. Scarify subgrade surface to depth as required.
- D. Proof roll to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

SECTION 312323 - FILL

3.03 BACKFILLING

- A. All trenches and excavation shall be backfilled to the original surface of the ground or to such other grades as may be shown on the plans or directed by the engineer.
- B. Backfill areas to contours and elevations with sound material, free from waste, objectionable organic material, rubbish, boggy or unsuitable. No frozen material shall be used.
- C. Backfilling shall begin as soon as practicable after structures and pipelines have been installed and inspected. Materials for bedding and backfill shall be as shown on the drawings and as specified.
- D. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- E. Place fill material in continuous layers and compact in accordance with schedule at end of this section.
- F. Backfill shall be placed in uniform horizontal layers and shall be tamped or otherwise consolidated as the work progresses. In no case shall the consolidated layers of backfill be more than 6-inches in depth. Lumps of earth shall be broken up and if there are any stones or lumps that cannot be readily broken up, they shall be distributed throughout the mass so that all interstices are solidly filled with fine materials.
- G. Employ placement method that does not disturb or damage other work.
- H. Maintain optimum moisture content of backfill materials to attain required compaction density.
- I. Backfill against supported foundation walls. Do not backfill against unsupported foundation walls.
- J. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.
- K. Slope grade away from building minimum 2 percent slope for minimum distance of 10 ft, unless noted otherwise.
- L. Make gradual grade changes. Blend slope into level areas.
- M. Remove surplus backfill materials from site.
- N. Leave fill material stockpile areas free of excess fill materials.

3.04 TOLERANCES

- A. Section 014000 - Quality Requirements: Tolerances.
- B. Top Surface of Backfilling Within Building Areas: Plus or minus 1/4 inch from required elevations.

SECTION 312323 - FILL

- C. Top Surface of Backfilling Under Paved Areas: Plus or minus 1/2 inch from required elevations.
- D. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.05 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Perform laboratory material tests in accordance with ASTM D1557, ASTM D698, and AASHTO T180.
- C. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: or ASTM D2922.
 - 2. Moisture Tests: ASTM D3017.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- E. Frequency of Tests: As directed by Engineer.
- F. Proof roll compacted fill surfaces under slabs-on-grade, pavers, and paving.

3.06 PROTECTION OF FINISHED WORK

- A. Section 017000 - Execution and Closeout Requirements: Protecting finished work.
- B. Reshape and re-compact fills subjected to vehicular traffic.

3.07 SCHEDULE

- A. Structures:
 - 1. Backfill with specified material and compact to 95% for granular material.

END OF SECTION

SECTION 312324 - FLOWABLE FILL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Flowable fill for:
 - a. Structure backfill.
 - b. Filling abandoned utilities.
- B. Related Requirements:
 - 1. Section 312316 - Excavation: General building excavation.
 - 2. Section 312317 - Trenching: Soil and aggregate backfill for utility trenches.
 - 3. Section 312323 - Fill: Soil and aggregate backfill for structures.
 - 4. Section 329119 - Landscape Grading: Filling of topsoil over backfilled trenches to finish grade elevation.

1.2 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, manhole, tank, or cable.
- B. Excavatable Flowable Fill: Lean cement concrete fill used where future excavation may be required, such as fill for utility trenches, bridge abutments, and culverts.
- C. Non-excavatable Flowable Fill: Lean cement concrete fill used where future excavation is not anticipated, such as fill below structure foundations and filling abandoned utilities.

1.3 REFERENCE STANDARDS

- A. ASTM International:
 - 1. ASTM C33 - Standard Specification for Concrete Aggregates.
 - 2. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
 - 3. ASTM C150 - Standard Specification for Portland Cement.
 - 4. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
 - 5. ASTM C403/C403M - Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance.
 - 6. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
 - 7. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
 - 8. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
 - 9. ASTM C1040 - Standard Test Methods for Density of Unhardened and Hardened Concrete in Place By Nuclear Methods.
 - 10. ASTM D4832 - Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.

1.4 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.

SECTION 312324 - FLOWABLE FILL

- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C. Field Quality-Control Submittals:
 - 1. Mix Design:
 - a. Furnish flowable fill mix design for each specified strength.
 - b. Furnish separate mix designs when admixtures are require for the following:
 - 1) Flowable fill Work during hot and cold weather.
 - 2) Air entrained flowable fill Work.
 - c. Identify design mix ingredients, proportions, properties, admixtures, and tests.
 - 2. Furnish test results to certify flowable fill mix design properties meet or exceed specified requirements.
- D. Delivery Tickets:
 - 1. Furnish duplicate delivery tickets indicating actual materials delivered to Project Site.
- E. Qualifications Statements:
 - 1. Submit qualifications for supplier.

1.5 QUALITY ASSURANCE

- A. Perform Work according to NYSDOT Standard Specifications.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Section 015000 - Temporary Facilities and Controls specifies ambient condition control facilities for product storage and installation.
- B. Minimum Conditions: Do not install flowable fill during inclement weather or when ambient temperature is less than 40 degrees F.

PART 2 - PRODUCTS

2.1 FLOWABLE FILL

- A. Furnish materials according to NYSDOT Standard Specifications, Section 733.01.
- B. Flowable Fill: Excavatable type and non-excavatable type.

2.2 MATERIALS

- A. Portland Cement: ASTM C150 Type I - Normal; Type II - Moderate.
- B. Fine Aggregates: concrete sand per NYSDOT Standard Specification, Section 703-07.
- C. Water: Clean and not detrimental to concrete.

2.3 ADMIXTURES

- A. Furnish materials according to NYSDOT Standard Specifications.

SECTION 312324 - FLOWABLE FILL

- B. Air Entrainment: ASTM C260.
- C. Chemical Admixture: ASTM C494/C494M.
 - 1. Type A - Water Reducing.
 - 2. Type B - Retarding.
 - 3. Type C - Accelerating.
 - 4. Type D - Water Reducing and Retarding.
 - 5. Type E - Water Reducing and Accelerating.
 - 6. Type F - Water Reducing, High Range.
 - 7. Type G - Water Reducing, High Range and Retarding.
- D. Fly Ash: ASTM C618 Class C or F obtained from residue of electric generating plant using ground or powdered coal.
- E. Plasticizing: ASTM C1017/C1017M Type I, plasticizing. Type II, plasticizing and retarding.

2.4 MIXES

- A. Mix and deliver flowable fill according to ASTM C94/C94M, Option C.
- B. Flowable Fill Design Mix:

ITEM	EXCAVATABLE	NON-EXCAVATABLE
Cement Content	75 to 100 lb/cu yd	100 to 150 lb/cu yd
Fly Ash Content	None	150-600 pcf
Water Content	As specified	As specified
Air Entrainment	5 to 35 percent	5 to 15 percent
28-Day Compressive Strength	Maximum 100 psi.	Minimum 125 psi
Unit Mass (Wet)	80 to 110 pcf	100 to 125 pcf
Temperature, Minimum at Point of Delivery	50 degrees F	50 degrees F

- C. Provide water content in design mix to produce self-leveling, flowable fill material at time of placement.
- D. Design mix air entrainment and unit mass are for laboratory design mix and source quality control only.

2.5 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Test properties of flowable fill design mix and certify results for the following:
 - 1. Design mix proportions by weight of each material.
 - 2. Aggregate: ASTM C33 for material properties and gradation.
 - 3. Properties of plastic flowable fill design mix including:
 - a. Temperature.
 - b. Slump.
 - c. Air entrainment.
 - d. Wet unit mass.

SECTION 312324 - FLOWABLE FILL

- e. Yield.
- f. Cement factor.
- 4. Properties of hardened flowable fill design mix including:
 - a. Compressive strength at 1 day, 7 days, and 28 days. Report compressive strength of each specimen and average specimen compressive strength.
 - b. Unit mass for each specimen and average specimen unit mass at time of compressive strength testing.
- C. Prepare delivery tickets containing the following information:
 - 1. Project designation.
 - 2. Date.
 - 3. Time.
 - 4. Class and quantity of flowable fill.
 - 5. Actual batch proportions.
 - 6. Free moisture content of aggregate.
 - 7. Quantity of water withheld.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting Work.
- B. Verify excavation specified in Section 312316 and trenching specified in Section 312317 is complete.
- C. Verify utility installation is complete and tested before placing flowable fill.
- D. Verify excavation is dry.

3.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements, requirements for installation preparation.
- B. Support and restrain utilities to prevent movement and flotation during installation of flowable fill.
- C. Protect structures and utilities from damage caused by hydraulic pressure of flowable fill before fill hardens.
- D. Protect utilities and foundation drains to prevent intrusion of flowable fill.

3.3 INSTALLATION - FILL, BEDDING, AND BACKFILL

- A. Place flowable fill by chute, pumping or other methods approved by Engineer.
 - 1. When required, place flowable fill under water using tremie procedure.
 - 2. Do not place flowable fill through flowing water.

SECTION 312324 - FLOWABLE FILL

- B. Place flowable fill in lifts to prevent lateral pressures from exceeding structural capacity of structures and utilities.
- C. Place flowable fill evenly on both sides of utilities to maintain alignment.
- D. Place flowable fill to elevations indicated on Drawings without vibration or other means of compaction.

3.4 INSTALLATION - FILLING ABANDONED UTILITIES

- A. Verify pipes and conduits are not clogged and are sufficiently empty to permit gravity installation of flowable fill for entire length indicated to be filled.
- B. Seal lower end of pipes and conduits by method to contain flowable fill and to vent trapped air caused by filling operations.
- C. Place flowable fill using method to ensure there are no voids.
 - 1. Fill pipes and conduits from high end.
 - 2. Fill manholes, tanks, and other structures from grade level access points.
- D. After filling pipes and conduits seal both ends.

3.5 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements for inspecting and testing.
- B. Perform inspection and testing according to ASTM C94/C94M.
 - 1. Take samples for tests for every 150 cu yd of flowable fill, or fraction thereof, installed each day.
 - 2. Sample, prepare and test four compressive strength test cylinders according to ASTM D4832. Test one specimen at 3 days, one at 7 days, and two at 28 days.
 - 3. Measure temperature at point of delivery when samples are prepared.
- C. Perform in place penetration (density) tests using hand held penetrometer to measure penetration resistance of hardened flowable fill according to ASTM C403.
- D. Also acceptable, perform in-place density tests using nuclear test device according to ASTM C1040.
 - 1. Perform tests at locations as directed by Engineer.
- E. Defective Flowable Fill: Fill failing to meet the following test requirements or fill delivered without the following documentation.
 - 1. Test Requirements:
 - a. Minimum temperature at point of delivery.
 - b. Compressive strength requirements for each type of fill.
 - 2. Documentation: Duplicate delivery tickets.

3.6 CLEANING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Remove spilled and excess flowable fill from Project Site.

SECTION 312324 - FLOWABLE FILL

- C. Restore facilities and Site areas damaged or contaminated by flowable fill installation to existing condition before installation.

END OF SECTION

SECTION 312500 - EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Sediment Socks/Wattle/Silt Fence.
2. Inlet Protection.
3. Sediment Filter Bags.
4. Stabilized Construction Entrance.
5. Dust Control.
6. Concrete Wash Area.

B. Related Sections:

1. Section 310517 - Select Granular Materials.
2. Section 312316 - Excavation.
3. Section 312317 - Excavation, Backfilling and Trenching.
4. Section 312318 - Rock Excavation.
5. Section 312323 - Fill.

- C. The OWNER has prepared a Storm Water Pollution Prevention Plan (SWPPP) for the project and obtained a SPDES General Permit for Storm Water Discharges from Construction Activity. The CONTRACTOR will be provided with a copy and shall comply with all requirements.

1.02 REFERENCES

A. New York State:

1. Standards and Specifications for Erosion and Sediment Control (current edition).
2. Stormwater Design Manual (current edition).
3. Department of Transportation Standard Specifications (current edition).

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Product Data: Submit data on sediment socks/wattles/silt fence, inlet protection, sediment filter bags.
- C. Samples: N/A
- D. Test Reports: N/A.

SECTION 312500 - EROSION AND SEDIMENTATION CONTROLS

- E. Manufacturer's Certificate: Certify silt socks/wattles/silt fence, inlet protection, sediment filter bags meet or exceed New York State Erosion, Sediment & Stormwater requirements.

1.04 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with requirements of Section 312316, Section 312317, and Section 312318.
- B. Perform Work in accordance with State of New York and Town of Amherst Standards.
- C. Maintain one copy of SWPPP document on-site.

1.06 PRE-INSTALLATION MEETINGS

- A. Section 013000 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum two week prior to commencing work of this section.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Section 016000 - Product Requirements: Environmental conditions affecting products on site.
- B. Do not place grout when air temperature is below freezing.
- C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 - PRODUCTS

2.01 ROCK AND GEOTEXTILE MATERIALS

- A. Furnish materials in accordance with New York State Department of Transportation Standard Specifications and New York State Standards and Specifications for Erosion & Sediment Control (current editions).

SECTION 312500 - EROSION AND SEDIMENTATION CONTROLS

2.02 SEDIMENT SOCKS/WATTLE/SILT FENCE

- A. Furnish materials in accordance with New York State Department of Transportation Standard Specifications and New York State Standards and Specifications for erosion and sediment control (current editions).

2.03 INLET PROTECTION

- A. Furnish materials in accordance with New York State Department of Transportation Standard Specifications and New York State Standards and Specifications for erosion and sediment control (current editions).

2.04 SEDIMENT FILTER BAGS

- A. Furnish materials in accordance with New York State Department of Transportation Standard Specifications and New York State Standards and Specifications for erosion and sediment control (current editions).

2.05 STABILIZED CONSTRUCTION ENTRANCE

- A. Furnish materials in accordance with New York State Department of Transportation Standard Specifications and New York State Standards and Specifications for erosion and sediment control (current editions).

2.06 DUST CONTROL

- A. Furnish materials in accordance with New York State Department of Transportation Standard Specifications and New York State Standards and Specifications for erosion and sediment control (current editions).

2.07 CONCRETE WASH AREA

- A. Furnish materials in accordance with New York State Department of Transportation Standard Specifications and New York State Standards and Specifications for erosion and sediment control (current editions).

2.08 BLOCK, STONE, AGGREGATE, AND SOIL MATERIALS

- A. Course Aggregate: Select Backfill, as specified in Section 310517.
- B. Soil Backfill: Soil Type S1, as specified in Section 310513.

SECTION 312500 - EROSION AND SEDIMENTATION CONTROLS

2.09 PLANTING MATERIALS

- A. Seeding and Soil Supplements: as specified in New York State Department of Transportation Standard Specifications.
- B. Mulch: as specified in New York State Department of Transportation Standard Specifications.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify compacted subgrade, granular base, stabilized soil is acceptable and ready to support devices and imposed loads.
- C. Verify gradients and elevations of base or foundation for other work are correct.

3.02 SEDIMENT SOCKS/WATTLES/SILT FENCE

- A. Clear debris and vegetation as necessary as specified in Section 311000.
- B. Install control measures.
- C. Ensure full adherence to ground or subsoil.

3.03 INLET PROTECTION

- A. Clean inlet surface as necessary to allow for installation.
- B. Install control measure.
- C. Ensure full inlet coverage.

3.04 SEDIMENT FILTER BAG

- A. Install control measure.

3.05 STABILIZED CONSTRUCTION ENTRANCE

- A. Prepare area to proper subgrade depth by removing debris, vegetation, soil or stone as necessary as specified in Sections 311000 and 312316.
- B. Install geotextile and stone.

SECTION 312500 - EROSION AND SEDIMENTATION CONTROLS

3.06 DUST CONTROL

- A. Prevent dust creation by spraying water on construction areas as necessary.
- B. If site areas continue to exhibit dust problems, install temporary or permanent measures (i.e. grass, mulch, polymer, etc.) as necessary. Consult with Engineer first.

3.07 CONCRETE WASH AREA

- A. Install control measure.
- B. Ensure water tightness to avoid concrete escaping wash area.

3.08 SITE STABILIZATION

- A. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.
- B. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.
- C. Stockpile and waste pile heights shall not exceed 12 feet. Slope stockpile sides at 1: 1 or flatter.
- D. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 14 days.
 - 1. During non-germinating periods, apply mulch at recommended rates.
 - 2. Stabilize disturbed areas which are not at finished grade and which will be disturbed within one year in accordance with Section 329219 at 100% percent of permanent application rate with no topsoil.
 - 3. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with Section 329219 permanent seeding specifications.
- E. Stabilize diversion channels, swales, discharge outlets, slopes, etc.

3.09 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.
- C. Compaction Testing: As specified in Section 312323.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

SECTION 312500 - EROSION AND SEDIMENTATION CONTROLS

- E. Frequency of Compaction Testing: One for each lift.

3.10 CLEANING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.
- B. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove and dispose of sediment.
- C. Do not damage structure or device during cleaning operations.
- D. Do not permit sediment to erode into construction or site areas or natural waterways.
- E. Clean channels when depth of sediment reaches approximately one half channel depth.

3.11 PROTECTION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.

END OF SECTION

SECTION 313800 – OIL CONTAINMENT SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Oil Mat.
 - 2. SAM Layer.
 - 3. Liner.

- B. Related Sections:
 - 1. Section 310517 – Select Granular Materials.
 - 2. Section 310519.13 - Geotextiles for Earthwork.

1.02 REFERENCES

- A. ASTM International:
 - 1. ASTM D751 - Standard Test Methods for Coated Fabrics
 - 2. ASTM D1777 - Standard Test Method for Thickness of Textile Materials
 - 3. ASTM D2136 - Standard Test Method for Coated Fabrics—Low-Temperature Bend Test
 - 4. ASTM D3786 - Standard Test Method for Bursting Strength of Textile Fabrics—Diaphragm Bursting Strength Tester Method
 - 5. ASTM D4355 - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus
 - 6. ASTM D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles
 - 7. ASTM D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
 - 8. ASTM D4716 - Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
 - 9. ASTM D5034 - Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test)
 - 10. ASTM D5993 - Standard Test Method for Measuring Mass Per Unit of Geosynthetic Clay Liners
 - 11. ASTM D6241 - Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe
 - 12. ASTM D6364 - Standard Test Method for Determining Short-Term Compression Behavior of Geosynthetics
 - 13. ASTM D6496 - Standard Test Method for Determining Average Bonding Peel Strength Between Top and Bottom Layers of Needle-Punched Geosynthetic Clay Liners
 - 14. ASTM D7747 - Standard Test Method for Determining Integrity of Seams Produced Using Thermo-Fusion Methods for Reinforced Geomembranes by the Strip Tensile Method
 - 15. ASTM G151-00 - Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources

SECTION 313800 – OIL CONTAINMENT SYSTEM

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

PART 2 - PRODUCTS

2.01 OIL CONTAINMENT MATERIALS

- A. Oil Mat:
 - 1. Construction
 - a. Top layer: Black Non-Woven Geotextile 300R
 - b. Absorbent Layer: Copoly-005
 - c. Scrim Support: Woven Polyethylene
 - d. Bottom Layer: Black Non-Woven Geotextile 215B
 - 2. Properties

Property	Values	Test Method
Total Mass per Unit Area (Nom.)	96.3 oz/yd2	ASTM D5993
Polymer Loading (Nom.)	82.6 oz/yd2	Manufacturer Technical Data
Polymer Loading (Min.)	73.7 oz/yd2	Manufacturer Technical Data
Peel Strength	0.6 lbf	ASTM D6496
Grab Tensile	176.4 lbf	ASTM D4632
Puncture Resistance	132.3 lbf	ASTM D4833
CBR Puncture strength	819.0 ± 90.4 lbf	ASTM D6241
Compressive Strength	302.7 ± 26.0 lbf	ASTM D6364
Trapezoidal Tearing Strength – Machine direction	113.0 ± 9.0 lbf	ASTM D4533
Trapezoidal Tearing Strength - Cross Machine direction	185.0 ± 29.8 lbf	ASTM D4533
Hydraulic Transmissivity @ 0.5% gradient	5.94 x 10-5 ft2	ASTM D4716
Hydraulic Transmissivity @ 1.0% gradient	4.86 x 10-4 ft2/s	ASTM D4716
UV Resistant*	70% @ 500 hours	ASTM D4355

* applies to non-woven components only.

- 3. Manufacturer
 - a. Style SWC-0105, Albarrie GeoComposites Ltd, or equal.
- B. SAM LAYER
 - 1. Construction:
 - a. Top layer: Black Non-Woven Geotextile 300R
 - b. Absorbent Layer: Copoly-008
 - c. Scrim Support: Woven Polyethylene
 - d. Bottom Layer: Black Non-Woven Geotextile 215B

SECTION 313800 – OIL CONTAINMENT SYSTEM

2. Properties

Property	Values	Test Method
Mass Per Unit Area	94.6 oz/yd ²	ASTM D5993
Thickness	0.40 in	ASTM D1777
Grab Breaking Load	2.05 lbf	ASTM D4632
Peel Strength (Min.)	0.77 lbf	ASTM D6496
Tensile Strength	238.1 lbf	ASTM D4632
Elongation at Peak	60%	ASTM D4632
Puncture (Nom.)	183.65 lbf	ASTM D4833
UV Resistant*	70% @ 500 hours	ASTM D4355
Absorption Rate**	3.5 gal/yd ²	Manufacturer Technical Data

* applies to non-woven components only.

** Test method: 1 drop/second over a period of 5.5 hrs.

3. Manufacturer

- a. Style SWC-0106, Albarrie GeoComposites Ltd, or equal.

C. IMPERMEABLE LINER

1. Construction:

- a. Reinforced Polyethylene Constructed of pre-stressed high density polyethylene tapes woven into a stable network and coated in a thin film of linear low density polyethylene.

2. Properties

Property	Values	Test Method
Nominal Thickness	0.024"	ASTM D1777
Coating Thickness	0.024"	ASTM D1777
Nominal Weight	10.03 oz/yd ²	
Tensile Strength MD	337.2 lbf	ASTM D5034
Tensile Strength CD	337.2 lbf	ASTM D5034
Elongation	15%	ASTM D751
Low Temperature Bend	131°F	ASTM D2136
Burst Strength	649.8 PSI	ASTM D3786
UV Resistant*	90% @ 2000 hours	ASTM G151-00
Heat Bonded Seam (Manufacturer Weld) Strength	119.9 lb/in	ASTM D7747 1" strip

2.02 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Testing and Inspection Services Testing and analysis of soil material.
- B. When tests indicate materials do not meet specified requirements, change material and retest.

SECTION 313800 – OIL CONTAINMENT SYSTEM

PART 3 - EXECUTION – NOT USED

END OF SECTION

SECTION 316333 - DRILLED MICROPILES

PART 1 - GENERAL

1.01 SUMMARY

- A. This work shall consist of furnishing all labor, materials and equipment, and performing all operations necessary to install micropiles at the locations and to the required capacities indicated in the contract documents.
- B. The drilling equipment shall be capable of advancing drill casing and permanent casing, and drilling holes for micropiles by rotating the casing(s) and applying a static vertical load. The equipment shall be capable of cleaning out the inside of the casing(s) without disturbing the surrounding soil or excavating more than 1 foot ahead of the casing. The equipment shall be equipped with gauges conveniently located at the pile installation site to measure the volume of grout being pumped into the pile and the grouting pressure. The equipment shall be able to perform the work without removing or relocating existing utilities, structures and structural members.
- C. Definitions. Definitions that apply within this specification are:
1. Bond Breaker. A device or special treatment incorporated into a length of a micropile that will allow no load to be transferred to the soil over that length. A bond breaker also provides full lateral support of the pile over the length of the bond breaker.
 2. Grout placed in contact with the soil using gravity pressure only will not be considered to constitute a bond breaker.
 3. Bond Zone. The gravity-grouted, pressure-grouted, and/or post-grouted length of a micropile that provides the pile's capacity.
 4. Design Load. The load permitted on a pile. The design load is indicated in the contract documents.
 5. Drill Casing. Steel pipe of flush joint type used in the drilling process to stabilize the drill hole.
 6. Duplex Drilling. A method of progressing and cleaning out a hole for installing a micropile in which the outer drill casing is progressed simultaneously with an inner drill rod string. The drill casing is cleaned using reverse circulation. Intimate contact between the soil and an outer drill casing is maintained during drilling.
 7. Extended Length. An additional pile length resulting from a requirement that the pile capacity be achieved below a given elevation. Typically, extended lengths are prompted by a conflict with subsurface elements (e.g., underground structure, utilities, etc.) or unreliable soil strata. Bond breakers may be required.
 8. Micropile. A small-diameter (typically less than 12 inches) friction pile formed by removing material using non-vibratory and non-displacement methods to create a cased open, cylindrical hole in the ground, which is subsequently filled with grout and steel reinforcement.
 9. Mill Secondary. Mill rejected American Petroleum Institute (API) casing, a.k.a. "Mill Rejects," "Structural Grade," "Limited Service," or "Minimum Test Pipe."
 10. Non-production Pile. Non-production piles are piles that are not incorporated into the substructure. For example, test piles which are abandoned after testing has been completed.
 11. Permanent Casing. A steel casing installed in the upper portion of a micropile to increase the pile's moment capacity and lateral capacity against horizontal loads.
 12. Positive circulation or flush. A method of progressing and cleaning out a hole for

SECTION 316333 - DRILLED MICROPILES

a micropile wherein drilling fluid is injected into the hole and returns upward along the outside of the drill casing.

13. Post grouting. A method used to increase pile capacity after the grout column has reached initial set by pumping grout at very high pressure (up to 1000 psi) through a sleeved port pipe (post grout tube).
14. Pressure grouting. A method used to develop pile capacity wherein pressure is applied continuously to the top of the fluid grout column through the drill head as the casing is removed from the bond zone.
15. Production pile. A pile which will be incorporated into the structure's foundation.
16. Recirculation. A method of handling drilling fluid where the fluid coming back out of the hole is captured in a pan and reused.
17. Reverse Circulation. A method of cleaning the inside of the drill casing. Drilling fluid is circulated down through the drill rods and returns upwards through the inside of the drill casing to flush the drill casing clean.
18. Static Pile Load Test. A test to verify design assumptions and the adequacy of the contractor's installation methods.
19. Telltale. A simple mechanical device, a.k.a. "strain rod," that is used to measure deflection in concrete or steel. The device consists of a small-diameter steel rod that is fixed at a selected point along or within the pile. This rod is encased, and free to move, in a slightly larger pipe or tube which extends up to the pile top. Dial gages are used to measure the deflections at the top of the rod.
20. Tremie Grouting. A method used to place grout in a wet hole. A grout tube is placed to the bottom of the drill hole. While keeping the tube opening submerged in the grout, grout is pumped into the hole, causing the drilling fluid to be displaced.

1.02 SUBMITTALS

- A. Submit the method-of-installation information outlined below to the ENGINEER for approval by ENGINEER. The ENGINEER will require 20 work days to review the submittal. Do not begin work prior to receiving approval by the ENGINEER. Approval of the installation method by the ENGINEER does not constitute a guarantee of acceptable pile installations. Acceptable installations are the responsibility of the Contractor.
- B. Include in the submittal:
 1. Submit literature fully describing the type of equipment proposed for use to the Engineer.
 2. Provide information on the proposed steel drill casing/pipe used as reinforcement.
 3. Details of equipment for pile installation.
 4. Details of procedures for pile installation including, but not limited to, installation sequence and the approximate time required for each sequence step.
 5. Procedures for advancing through boulders and other obstructions.
 6. Procedures for containment of drilling fluid and spoil, and disposal of spoil.
 7. Where applicable, drawings that show the specific work can be performed under limited headroom conditions and as close to obstructions as site conditions warrant, to install the piles at the locations and to the depths indicated in the contract documents. Provide information on the length of the casing sections to be used, as dictated by the length of the drill mast and by the available overhead clearance, and the resulting location of joints.

SECTION 316333 - DRILLED MICROPILES

8. Procedures and equipment for placing grout.
 - a. Prepare the mix design for the grout and obtain documentation from an independent laboratory showing the following:
 - 1) The mix design conforms to the submitted mix and meets the strength requirements specified in the contract documents.
 - 2) The compressive strength of the mix, tested at 3, 7, 14, and 28 days.
 - 3) The specific gravity of the mix.
 - 4) Identify a method for monitoring quality control of the mix. At a minimum, the Contractor shall use a Baroid Mud Balance per American Petroleum Institute (API) Recommended Practice (RP) 13B-1: Standard Procedure for Testing Water-Based Drilling Fluids, to check the specific gravity of the mixed grout prior to placement of the grout into each micropile.
 - 5) Provide pressure gages capable of measuring the actual grout pressures used and such that actual pressure readings are within the middle third of the gage.
9. Details of post-grouting equipment and procedures, including the method, sequence of operations, and equipment required.
10. Layout drawings showing the proposed sequence of pile installation. Coordinate this sequence with the proposed phasing and scheduling.

1.03 QUALITY ASSURANCE

- A. The Contractor performing the work described in this specification shall submit proof of the following:
 1. Five projects in the past five years on which the Contractor has successfully installed micropiles or soil tiebacks using non-displacement methods, under similar site conditions to those indicated in the contract documents.
 2. The proposed On-Site Supervisor for this work having supervised the successful installation of micropiles or soil tiebacks on at least five projects in the past five years.

PART 2 - PRODUCTS

2.01 DRILL CASING

- A. Provide drill casing consisting of flush joint type steel pipe of appropriate thickness to withstand the stresses associated with advancing it into the ground, in addition to the stresses due to hydrostatic and earth pressures.
- B. Steel casing pipe shall consist of a minimum Grade 50 ($F_y \geq 50$ KSI) steel with a minimum diameter of 6-inches and a minimum wall thickness of 0.375 inches.
- C. The micropile foundation installation shall consist of a permanent steel casing from the top of the micropile (pile cap) to the top of the effective embedment zone within the shale and dolostone bedrock.

SECTION 316333 - DRILLED MICROPILES

2.02 DRILL CASING/PIPE USED AS REINFORCEMENT

- A. Provide steel drill casing/pipe used as reinforcement conforming to API-5CT N8, with the exception that spiral welded pipe shall not be allowed. Mill secondaries cannot be used for reinforcement. Approval of the steel drill casing/pipe used as reinforcement shall be done in accordance with the following procedure:
 - 1. Requirements for Micropile Structural Casing. Structural casing that is installed in coupled (spliced) sections shall meet the following requirements:
 - a. The casing shall be flush joint and the pipe joint shall be completely shouldered and with no stripped threads.
 - b. All welded connections shall be performed by a NYSDOT Certified Welder in conformance with NYSDOT Steel Construction Manual (SCM), the approved Welding Procedure Specification (WPS) and the Approved Welding Procedure Qualification Record (WPQR). Welds shall be full penetration welds for full structural load capacity. For piles with bending or tension stress, welds shall be Ultrasonic (UT) or Radiograph Tested (RT). These requirements do not apply to minor welding that does not carry structural load, such as cutting teeth and tacking on bearing plates.
 - c. If significant tension loads are being considered, the Department will require the Contractor to provide data demonstrating the adequacy of the proposed detail.
 - d. The design shall limit the maximum yield stress of steel (Fy) to 87 ksi.

2.03 BAR REINFORCEMENT

- A. Provide Bar reinforcement meeting the requirements of NYSDOT Standard Specifications Section 709-01 Bar Reinforcement, Grade 60, or continuously threaded "Uncoated High-Strength Steel Bars for Prestressing Concrete" - ASTM A722.

2.04 GROUT

- A. Provide a pumpable grout consisting of, as a minimum, Portland Cement - Type 2 and Water meeting the following NYSDOT Specification requirements:

Material	Subsection
Portland Cement, Type 2	§701-01
Grout Sand	§703-04
Fly Ash	§711-10
Water	§712-01

- B. The use of Grout Sand and Fly Ash in the mix is optional. Field sampling and testing shall be done in accordance with the current procedural directives of the Materials Bureau of the Office of Technical Services.
- C. A concrete grout with a minimum compressive strength of 4,000 psi shall be used, with Type II cement for sulfate resistance.

SECTION 316333 - DRILLED MICROPILES

2.05 CENTRALIZERS AND SPACERS

- A. Provide centralizers and spacers fabricated from schedule 40 PVC pipe, tube, steel, or material non-detrimental to the reinforcing steel. Wood shall not be used.

PART 3 - EXECUTION

3.01 CONSTRUCTION DETAILS

A. Drilling and Excavation.

1. Progress all micropiles using steel drill casing.
2. Advance the hole using a duplex drilling method. Do not drill or flush ahead of the drill casing by more than 1 foot. Perform drilling and excavation in such a manner to prevent collapse of the hole. Use of bentonite slurry is not permitted. Use of polymer slurry to remove cuttings from the cased hole shall be approved by the Engineer.
3. If obstructions are encountered during excavation for a pile, progress through them by means of coring or a tricone roller bit. Use of drop-type impact hammers and blasting are not permitted. Use of a down-the-hole hammer must be approved by the Engineer.
4. Control the procedures and operations so as to prevent mining, damage, or settlement to adjacent structures, tunnels, utilities, or adjacent ground. If any mining, damage, or settlement occurs, halt operations. Provide a written plan to the Engineer for review with procedures to avoid reoccurrence. Resume work only after the Engineer has approved the plan in writing. Repair all damage and settlement at no additional cost to the Owner.
5. Control the procedures and operations so as to prevent the soil at the bottom of the hole from flowing into the hole at all times during installation and cleaning out. Monitor the rate of fluid flow used to progress the holes.
6. Control drilling fluid and dispose of spoil in accordance with the approved procedure.
7. Do not progress a hole, pressure-grout, or post-grout, within a radius of 5 pile diameters or 5 feet, whichever is greater, of a micropile until the grout for that micropile has set for 24 hours or longer if a retarder is used.

B. Reinforcement and Post Grout Tube Placement.

1. Provide centralizers sized to position the reinforcement within 3/8 inch of plan location from the center of the pile; sized to allow grout tremie pipe insertion to the bottom of the drillhole; and sized to allow grout to freely flow up the drill hole and casing and between adjacent reinforcing bars. Centralizers, spaced not to exceed 10 feet, must be used to center the reinforcement for its entire length. Securely attach the centralizers to withstand installation stresses. Do not drop, but lower the steel reinforcement to its specified location in the hole. If a post grout tube is used, attach it to the steel reinforcement prior to lowering it.

SECTION 316333 - DRILLED MICROPILES

- C. Grout Placement and Casing Removal.
1. Provide quality control of the mix by monitoring grout quality. Measure grout consistency by determining grout density per API Recommended Practice (RP) 13B-1 by the Baroid Mud Balance Test at a frequency, of at least one test per micropile, and provide the information to the inspector.
 2. The Engineer will perform quality assurance of the mix in accordance with the Micropile Inspector Guidelines per NYSDOT Geotechnical Engineering Manual (GEM-25) and the NYSDOT Materials Test Method No. NY 701-19E Grout Cube Molding Procedures..
 3. Place grout by means of a tremie pipe from the bottom of the pile upward. Record the initial volume of grout required to fill the hole. Record grouting pressure and volume of grout being pumped into the pile during pressure grouting. Upon completion, maintain the grout level at or above the pile cut off elevation until the grout has set.
 4. Locate the grout pressure and volume measuring gages at the pile installation site so that they are accessible and legible to the inspector.
- D. Cut off Elevation
1. Cut off the top of the pile at the elevation indicated in the contract documents.
- E. Effective Bond Length and Effective Zone for Side Shear Resistance.
1. The micropiles shall have a minimum effective bond length of at least five (5) feet in the more competent shale and dolostone bedrock.
 2. The effective zone for developing the side shear resistance should be set at or below the top of the more competent Shale and Dolostone bedrock (i.e. at or below a depth of about 24 feet (El. 569.2 feet) at boring B-2 and at or below a depth of about 18 feet (El. 578.5 feet) at boring B-3.
 3. The bedrock surface drops rather abruptly in the southeast corner of the substation site and therefore should be anticipated.
 4. The depth to the suitable stratum conditions should be confirmed by the Micropile Contractor.

3.02 FIELD QUALITY CONTROL

- A. Construction Tolerances. Install the piles so that the center of each micropile does not vary from the plan location by more than 3 inches. Do not allow the micropile to vary from the vertical or established batter by more than 1/4 inch per foot, as measured above ground.
- B. Plumbness of the micropiles shall be maintained within 1% of the total height.
- C. Pile Acceptance Criteria Pile meets Construction Tolerance criteria.
1. Pile was installed in accordance with the approved submittal.
 2. Pile is not damaged.
 3. Pile was installed using the same method, grout volumes, and pressures as the accepted test pile, if applicable.

SECTION 316333 - DRILLED MICROPILES

- D. Unacceptable Piles.
1. Unacceptable piles are piles which do not meet the acceptance criteria identified above.
 2. Submit to the Engineer a written plan of remedial action, for approval by the Engineer, showing how to correct the problem and prevent its recurrence. Repair, augment, or replace the unacceptable pile in accordance with the approved remedial plan at the Contractors expense.

END OF SECTION

SECTION 316333 - DRILLED MICROPILES

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SECTION 316340 – AXIAL COMPRESSIVE LOAD TESTING

PART 1 – GENERAL

1.01 SUMMARY

- A. This work shall consist of furnishing all materials and labor necessary for properly performing axial compressive pile load tests in conformance with ASTM D 1143. The Contractor shall supply all material, equipment, labor and reports as specified prior to, during and after the load test. The Contractor shall provide all necessary equipment, services, and instrumentation as detailed herein.
- B. The Contractor shall provide complete protection at all times for the piles, supports, and reference beam from wind, direct sunlight, frost action, vibration, impact and other disturbances. The Contractor shall also maintain an air temperature in the immediate vicinity of the test pile and reference beam of not less than 50 degrees F throughout the duration of the test and provide a thermometer to monitor temperature. To accomplish the required minimum temperature, the Contractor may be required to provide heat and to construct a suitable test enclosure of fiberboard, polyethylene, canvas, or other materials acceptable to the Engineer. The Contractor shall provide adequate lighting within the enclosure such that dial gauges and equipment can be monitored for the duration of the test. The Contractor shall provide access to the test pile setups at all times to allow the Engineer to read all dials, gauges, and other instruments.
- C. Two micropiles at location approved by the Engineer shall be tested to geotechnical failure to prove out the ultimate bond strength resistance and to develop the criteria for the production micropile design. The test piles shall be constructed with generally similar bearing conditions (i.e. diameters and embedment lengths), to that of the anticipated production piles. The micropiles shall be load tested by the Contractor to twice the allowable or working loads to confirm that adequate capacity has been developed.

1.02 SUBMITTALS

- A. Submittals for the compressive load test loading system(s), reaction frames, and all other portions of the load test shall be submitted to the Engineer for review and approval at least 30 days prior to the construction of the system. Submittals shall be in accordance with the NYSDOT Steel Construction Manual, 4th Edition, with current addenda.

1.03 QUALITY ASSURANCE

- A. The Contractor shall engage the services of a Professional Engineer as specified below.
- B. **CONTRACTOR'S PROFESSIONAL ENGINEER**
 - 1. The Contractor shall engage the services of a Professional Engineer, registered in the State of New York, who is experienced in all aspects of pile load testing and is acceptable to the Engineer, to design the ASTM D 1143 axial compressive load test loading system(s) and reaction frame(s) to perform the load tests. The Contractor, in cooperation with the Contractor's Engineer, will supply and supervise the mobilization, assembly and operation of the specified load test equipment. The Contractor's Engineer will conduct the specified load tests, with the Contractor providing auxiliary equipment and services as detailed in these Special Provisions and as required by the Contractor's Engineer.

SECTION 316340 – AXIAL COMPRESSIVE LOAD TESTING

2. The Contractor's agreement with the registered Professional Engineer shall provide for the registered Professional Engineer to be at the test site during all load testing to ensure that the loading system(s), reaction frame(s) and support platforms are performing as designed and to perform the load tests. The Contractor shall furnish and include all costs for all materials, personnel and equipment as required by the Contractor's Engineer to adequately perform the specified load tests.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. All materials used in the construction of the load test arrangement shall conform to the relevant standards of the American Association of State Highway and Transportation Officials and/or all other applicable standards and methods acceptable to the Engineer.

2.02 LOAD APPLICATION SYSTEM

- A. The load shall be applied by means of one or more hydraulic jacks, having a total capacity of at least the maximum test loads shown on the plans. The jack load shall be transferred to the test pile and the reaction by means of spherical bearing plates that bear firmly and concentrically against the test pile bearing plate and the reaction. Bearings and bearing plates shall be of steel and of sufficient size to accommodate the testing equipment used and to transmit the applied loads without detrimentally high unit pressures.
 1. Hydraulic Jack(s)
 - a. Jacking capacity shall be at least the maximum test loads shown on the Plans. The jacks shall have a minimum ram travel of 12 inches and in no case less than 25 percent of the outer diameter of the test pile. The hydraulic jack(s) and the load cell shall be calibrated together as a unit by an independent testing laboratory within 14 days of use and to not less than 5 percent of the maximum test load. It is anticipated that multiple jacks will be needed.
 2. Load Cell(s)
 - a. Properly constructed load cell(s), shall be used in series with the hydraulic jack(s) and shall be utilized for load monitoring during the load test. An independent testing laboratory shall calibrate the load cell(s) within 14 days of use and to an accuracy of not less than 2 percent of the applied load.
 3. Pump
 - a. An automatic load-maintaining pump with manual supplement shall control load application. The range of the pressure gauge shall be such that the pressure reading corresponding to the maximum test load shown on the Plans shall be between 40 and 60 percent of the maximum gauge pressure. An independent testing laboratory shall calibrate the pump within 14 days of use and to an accuracy of not less than 5 percent of the applied load.
 4. Anchor Piles
 - a. The layout, size and details of the reaction pile system, including the size of bolts and plates, shall be designed by the Contractor and/or the Contractor's Professional Engineer.

SECTION 316340 – AXIAL COMPRESSIVE LOAD TESTING

2.03 INSTRUMENTATION

- A. The readings of applied load and movement will be measured simultaneously using the load cells, pressure gauges, LVDTs (linearly variable differential transducers) and dial gauges as shown on the Plans. Vibrating wire strain gauges shall also be installed in the test piles for axial compressive tests as shown on the Plans.
1. Reference Beams
 - a. The reference beams shall be supported completely independent of the test pile and the loading apparatus. LVDTs or dial gauges shall be supported a minimum clear distance of 10 feet (or as shown on the Plans) from the closest face of the test pile and from any reaction piles or supports for the weighted box or platform. Maintain a clear distance of 6 to 12 inches from the test pile to the reference beam or any projection used for supporting a dial. The reference beam shall be oriented perpendicular to the line of load application and located a sufficient distance from the pile to avoid interference with the test pile throughout the test. The beam and projections shall be at approximately the same elevation as the attachments to the pile on which the dial gauges will bear. These attachments shall be steel angles approximately 3-inches by 4-inches with the 4-inch dimension projecting from the pile. Attach the dial gauge supports to the reference beam to allow the stem of each gauge to rest on an attachment to the pile sides. The surfaces on which the gauge stems bear shall be smooth finished, such as glass or sheet acrylic attached by a suitable adhesive.
 2. Measurement of Vertical Movement of Pile Top
 - a. A primary and a secondary monitoring system shall be used to measure the vertical movement of the pile. The primary system shall utilize LVDTs or dial gauges. The secondary system shall consist of either dial gauges (if LVDTs are used for the primary system) or a wire, mirror and scale.
 3. LVDTs
 - a. If LVDTs are used as the primary system, the Contractor shall provide a primary system consisting of three (3) LVDTs and a readout unit for monitoring movement at the pile top. The LVDTs shall be DC/DC type displacement transducers with at least 6 inches of travel and have a linearity of 0.5 percent or less. The readout unit shall be capable of monitoring the output from at least three (3) DC/DC type LVDTs and have a minimum display of 4 digits. The mounting hardware shall be of non-magnetic materials such as brass, aluminum or 303 series stainless steel. The alignment and attachment of the LVDTs will be the same as that stated below for the dial gauges.
 4. Dial Gauges
 - a. If dial gauges are used as the primary or secondary system, the Contractor shall provide three (3) dial gauges for monitoring movement of the pile top. The gauges shall have at least 6 inches of travel, an adequate number of suitable gauge blocks to increase the travel to at least an additional 4 inches, and a precision of 0.001 inches.
 5. Location and Orientation
 - a. Dial gauges and LVDTs shall be attached to the reference beam (with stems bearing against the pile or the cap) or to lugs attached to the test pile (with stems bearing against the reference beam). The gauges and LVDTs

SECTION 316340 – AXIAL COMPRESSIVE LOAD TESTING

- shall be mounted with stems horizontal and in line with the applied load.
- b. Align the dial gauges or LVDTs parallel to the longitudinal axis of the test pile and the axis of load application. These attachments shall be placed at a 120 degree spacing and equal radial distance from the test pile.
6. Wire, Mirror and Scale (as secondary system only)
 - a. If wire, mirror and scale are used as the secondary system, Contractor shall provide a secondary system consisting of wire, mirror and scale. Pile movement shall be determined by means of a single strand of wire drawn in front of a graduated scale mounted on a mirror. This scale shall be at least 8 inches long, machine-divided in graduations of 0.01 inch and mounted on a 3 inch by 8 inch mirror with metal-and-glass bonding adhesive or electrical tape. Attach the mirror directly to the pile, so oriented that the mirror face is parallel to the reference beam. Mount the wire between the ends of the reference beam, with one end fixed and the other placed over a pulley with a weight to maintain tension. The wire shall be level and located within 3/4 inch of the mirror face.
 7. Measurement of Lateral Movement.
 - a. Measurements of lateral movements of the axially loaded test pile may reveal eccentric loading or abnormal behavior of the test pile. Such measurements are recommended to determine the precise response of the test pile to the axial load.
 8. Measurement of Load and Vertical Deflections along Pile Shaft
 - a. Load-deflection instrumentation along pile shaft shall be required.

PART 3 - EXECUTION

3.01 METHOD OF LOAD APPLICATION

- A. The Contractor shall furnish and construct a suitable reaction frame to provide the required maximum test loads shown on the Plans. Load shall be applied to the piles by jacking against the reaction frame using one or more hydraulic jacks. If multiple jacks are used, they must be connected in parallel and calibrated together. The reaction frame shall include four or more anchor piles, installed after installation of the test pile, and located a clear distance of at least five (5) times the maximum diameter of the largest anchor or test pile but not less than 10 feet from the test pile or reference beam supports. The frame shall be constructed of girders of sufficient strength and section for the load, and of load transfer beams that are attached to the upper ends of the anchor piles. This reaction frame shall be designed by the Contractor's Professional Engineer to resist at least the maximum test load.
- B. All piles and structural members will be sized/designed and dimensioned by the Contractor's Professional Engineer.
- C. The Contractor may request approval for supplying the reaction for the test load by another method. In this case, the Contractor shall submit in writing a summary of the alternative loading system with appropriately detailed drawings for approval by the Engineer.

SECTION 316340 – AXIAL COMPRESSIVE LOAD TESTING

D. WAITING PERIOD

1. Axial compressive load testing may begin immediately after the second restrike with approval of the Engineer.

3.02 Field Quality Control

A. LOADING PROCEDURES AND MEASUREMENT OF MOVEMENTS.

1. Prior to loading, all gauges shall be zeroed. The jack shall be slowly engaged and the pile slowly loaded until the LVDTs or dial gauges begin to move. Once the pile has been slightly loaded, all gauges shall be re-zeroed and the test shall begin. The general loading procedure shall be the Standard Load test method as specified in ASTM D 1143.
2. Apply loads and follow reading schedules as shown on the Plans. Take required readings at gauges or reference points as nearly simultaneously as possible. Add load increments until continuous jacking is required to maintain the test load or until the specified capacity of the loading apparatus is reached, or pile failure (as determined by the Contractor's Professional Engineer), whichever occurs first, at which time stop the jacking.
3. During unloading cycles, the load decrement shall be such that at least four data points are acquired for the load versus movement curve. Additional cycles of loading or unloading using similar procedures may be required by the Engineer following the completion of the initial test cycle. The cost of additional load cycles ordered by the Engineer and any delays experienced by the Contractor due to additional load cycles shall be incidental to each pile load test.
4. Record, report and explain any adjustments made during the test to the instrumentation or to the data recorded in the field. Terminate the test if an unsafe eccentric loading condition develops as a result of high or out-of-line pile movements. The Contractor's Professional Engineer shall determine when the test site is unsafe.

B. REPORTS

1. Documentation of axial load testing shall be prepared by the Contractor's Professional Engineer for each load test.

END OF SECTION

SECTION 316340 – AXIAL COMPRESSIVE LOAD TESTING

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SECTION 321123 - AGGREGATE BASE COURSES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Aggregate subbase.
2. Aggregate base course.

B. Related Sections:

1. Section 310517 - Select Granular Materials.
2. Section 312323 - Fill: Compacted fill under base course.
3. Section 321216 - Asphalt Paving: Binder and finish asphalt courses.

1.02 REFERENCES

A. NYSDOT Standard Specifications current edition, Section 300, 400 and 700.

B. American Association of State Highway and Transportation Officials:

1. AASHTO M288 - Standard Specification for Geotextile Specification for Highway Applications.

C. ASTM International:

1. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
2. ASTM D2940 - Standard Specification for Graded Aggregate Material For Bases or Subbases for Highways or Airports.

1.03 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data:

1. Submit data for stone base course.

C. Materials Source: Submit name of aggregate materials suppliers.

D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements NYSDOT Standard Specifications, current edition.

SECTION 321123 - AGGREGATE BASE COURSES

1.04 QUALITY ASSURANCE

- A. Furnish each aggregate material from single source throughout the Work. Notify Engineer before hand if this cannot be achieved.
- B. Perform Work in accordance with NYSDOT Standard Specifications current edition.

PART 2 - PRODUCTS

2.01 AGGREGATE MATERIALS

- A. Coarse Aggregate: Fill Type NYSDOT Subbase Type 2 Crusher Run Stone as specified in Section 310516.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify compacted substrate is dry and ready to support paving and imposed loads.
 - 1. Proof roll substrate with 6 in minimum two perpendicular passes to identify soft spots.
 - 2. Remove soft substrate and replace with compacted fill as specified in Section 321123-3.5.A and 312323.
- C. Verify substrate has been inspected, gradients and elevations are correct.

3.02 PREPARATION

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place fill on soft, muddy, or frozen surfaces.

3.03 AGGREGATE PLACEMENT

- A. Install geotextile fabric over subgrade in accordance with manufacturer's instructions.
 - 1. Lap ends and edges minimum 6 inches.
 - 2. Anchor fabric to subgrade when required to prevent displacement until aggregate is installed.

SECTION 321123 - AGGREGATE BASE COURSES

- B. Place aggregate equal thickness layers to total compacted thickness as indicated on Drawings.
 - 1. Maximum Layer Compacted Thickness: 6 inches.
 - 2. Minimum Layer Compacted Thickness: 3 inches.
- C. Level and contour surfaces to elevations, profiles, and gradients indicated.
- D. Add small quantities of fine aggregate to coarse aggregate when required to assist compaction.
- E. Maintain optimum moisture content of fill materials to attain specified compaction density.
- F. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.04 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements and 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

3.05 COMPACTION

- A. Aggregate shall be compacted to requirements of NYSDOT Standard Specifications Section 203-3.03c, "Compaction".

3.06 SCHEDULES

- A. Refer to Drawing details for subbase thicknesses.

END OF SECTION

SECTION 321123 - AGGREGATE BASE COURSES

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SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Asphalt materials.
2. Aggregate materials.
3. Aggregate subbase.
4. Asphalt paving base course, binder course, and wearing course.

B. Related Requirement:

1. Section 310517 - Select Granular Materials: Product requirements for aggregate for placement by this section.
2. Section 312323 - Fill: Compacted subbase for paving.
3. Section 321123 - Aggregate Base Courses: Compacted subbase for paving.

1.02 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO M17 - Standard Specification for Mineral Filler for Bituminous Paving Mixtures.
2. AASHTO M29 - Standard Specification for Fine Aggregate for Bituminous Paving Mixtures.
3. AASHTO M140 - Standard Specification for Emulsified Asphalt.
4. AASHTO M208 - Standard Specification for Cationic Emulsified Asphalt.
5. AASHTO M288 - Standard Specification for Geotextile Specification for Highway Applications.
6. AASHTO M320 - Standard Specification for Performance-Graded Asphalt Binder.
7. AASHTO M324 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
8. AASHTO MP1a - Standard Specification for Performance-Graded Asphalt Binder.

B. Asphalt Institute:

1. AIMS-2 - Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types.
2. AI MS-19 - Basic Asphalt Emulsion Manual.
3. AI SP-2 - Superpave Mix Design.

C. ASTM International:

1. ASTM C1371-2004a - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.

SECTION 321216 - ASPHALT PAVING

2. ASTM C1549-2004 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
3. ASTM D242 - Standard Specification for Mineral Filler For Bituminous Paving Mixtures.
4. ASTM D692 - Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures.
5. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction.
6. ASTM D977 - Standard Specification for Emulsified Asphalt.
7. ASTM D1073 - Standard Specification for Fine Aggregate for Bituminous Paving Mixtures.
8. ASTM D1188 - Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
9. ASTM D2027 - Standard Specification for Cutback Asphalt (Medium-Curing Type).
10. ASTM D2397 - Standard Specification for Cationic Emulsified Asphalt.
11. ASTM D2726 - Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures.
12. ASTM D2950 - Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.
13. ASTM D3381 - Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.
14. ASTM D3515 - Standard Specification for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
15. ASTM D3549 - Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens.
16. ASTM D3910 - Standard Practices for Design, Testing, and Construction of Slurry Seal.
17. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
18. ASTM E408-1971(1996)e1 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
19. ASTM E903-1996 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
20. ASTM E1918-1997 - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
21. ASTM E1980-2001 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data:
 1. Submit product information for asphalt and aggregate materials.
 2. Submit mix design with laboratory test results supporting design.
- C. Manufacturer's Certificate: Certify products meet or exceed NYSDOT Standard Specifications, current edition.

SECTION 321216 - ASPHALT PAVING

1.04 QUALITY ASSURANCE

- A. Mixing Plant: Conform to NYSDOT Standard Specifications, current edition.
- B. Mixing Plant: Certified by NYSDOT.
- C. Obtain materials from same source throughout.
- D. Perform Work in accordance with NYSDOT Standard Specifications current edition.

1.05 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum five years documented experience.

1.06 AMBIENT CONDITIONS

- A. Section 015000 - Temporary Facilities and Controls: Ambient conditions control facilities for product storage and installation.
- B. Do not place asphalt mixture between November 1 and April 14. Asphalt placed outside this timeframe must provide a limited warranty against defects in such work.
- C. Do not place asphalt mixture when ambient air or base surface temperature is less than 40 degrees F for lift sections 3-inches or greater, or surface is wet or frozen.

PART 2 - PRODUCTS

2.01 SUSTAINABILITY CHARACTERISTICS

- A. Reclaimed or recycled material can be included as per NYSDOT Standard Specifications, current edition.

2.02 ASPHALT PAVING

- A. Performance/Design Criteria:
 - 1. Asphalt paving section shall be as the following per contract documents:
 - a. Stone Base Course Type 2: 6-inches, NYSDOT Item #304.12 (Select Backfill per 310516).
 - b. Asphalt 19 F9 Binder Course HMA, 80 Series Compaction: 3-inches, NYDOT Item #402.19802
 - c. Asphalt 9.5 Top Course HMA, 80 Series Compaction: 1-1/2-inches, NYSDOT Item #402.098902

SECTION 321216 - ASPHALT PAVING

B. Asphalt Materials:

1. Unless otherwise specified herein, all bituminous macadam materials and work shall conform to the applicable requirements of the NYSDOT Standard Specifications, current edition.
2. The materials shall include but not limited to:
 - a. Asphalt binder
 - b. Asphalt cement
 - c. Aggregates
 - d. Tack coat
 - e. Emulsions

2.03 MIXES

- A. Mix shall adhere to Hot Mix Asphalt (HMA) Pavement Requirements per NYSDOT Standard Specifications Sections 400 and 700 per current standards.

2.04 ACCESSORIES

- A. Geotextile Stabilization Fabric: NYSDOT Item 207.24 and as per materials Section 737-01E.

2.05 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Submit proposed mix design for review prior to beginning of Work.
- C. Test samples in accordance with NYSDOT Standard Specifications Section 400.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify utilities indicated under paving are installed with excavations and trenches backfilled and compacted.
- C. Verify compacted soil subbase is dry and ready to support paving and imposed loads.
 1. Remove any unsuitable subgrade materials or soft subbase and replace with compacted fill as specified in Section 312323.
- D. Verify gradients and elevations of base are correct.

SECTION 321216 - ASPHALT PAVING

- E. Verify gutter drainage grilles and manhole frames and are installed in correct position and elevation.

3.02 PREPARATION

- A. Prepare subbase in accordance with NYSDOT Standard Specifications, current edition.

3.03 INSTALLATION

- A. The Contractor shall construct pavement in the locations shown and to the grade and compacted depth pavement indicated.
- B. The bottom two courses shall be Type A4 aggregate, uniformly graded, crushed stone, each compacted to a total 6 inches in depth. The depth of loose stone, in all cases, shall be gauged by the use of cubical blocks of suitable size. The spreading of any layer or course of broken stone, or filler shall be done from suitable spreader equipment or from piles dumped along the road as directed by the Engineer. No segregation of large or fine particles will be allowed, but the stone as spread shall be well graded with no pockets of fine material. After the bottom course of stone has been laid loose, it shall be thoroughly rolled with an approved roller weighing not less than ten (10) tons.
- C. This rolling must begin at the sides and continue toward the center and shall continue until there is no movement of the course ahead of the roller. After the course is thoroughly compacted, No. 1 stone and screenings or sand, or a mixture of these, shall be uniformly spread, either by hand labor or by an approved mechanical device, upon the surface and swept in by means of a gang-dragged broom of an approved type and rolled dry. After rolling, the course shall be tested with a line 40 feet in length and any depression over 1/2 inch in depth shall be satisfactorily eliminated. After the completion of the rolling, no hauling other than that necessary for bringing material for the next course shall be allowed over the rolled material. It is the intention to bind this course with the small stone, but no surplus or filler will be allowed on this course. This course shall not be laid in excess of 500 linear feet without being rolled and thoroughly filled so as to render it waterproof and thereby prevent the softening up of the subgrade.
- D. If the subgrade material shall become churned up into, or mixed with the bottom course through any reason whatsoever, the Contractor shall at his own expense remove such mixture of subgrade material and broken stone, or gravel, and replace it with clean broken stone, or gravel, of the proper size and shall roll or otherwise compact the material so as to produce a uniform, firm and even bottom course.
- E. If hand spreading is used, all filler shall be delivered and piled alongside the road before the course is placed.
- F. Over this prepared base course, construct a 4-1/2 inch compacted depth two-course, asphalt concrete, consisting of 3 inches of binder course and 1-1/2 inches of top course per Section 321216-2.2.

SECTION 321216 - ASPHALT PAVING

- G. After the roadway areas are completed, the Contractor shall string lines along the edges of the pavement and shall trim the edges as required by the Engineer to give a neat edge appearance to the road construction.
- H. Slope all roadway areas as shown on the Drawings to catch basins so that there are no low spots where water will collect.
- I. In general the new pavement shall be graded to drain as shown on the Drawings. Where new paving work meets existing paving, care shall be taken to provide a neat and smooth transition in a neat and workmanlike manner.

3.04 TOLERANCES

- A. Section 014000 - Quality Requirements: Tolerances.
- B. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- C. Scheduled Compacted Thickness: Within 1/4 inch.
- D. Variation from Indicated Elevation: Within 1/2 inch.

3.05 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for inspecting, testing.
- B. Material tickets: Copies of tickets for materials placed must be provided to engineer/inspector.
- C. Asphalt Paving Mix Temperature: Measure temperature at time of placement.
- D. Asphalt Paving Thickness: Measure thickness at time of placement.

3.06 PROTECTION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Immediately after placement, protect paving from mechanical injury or until surface temperature is less than 140 degrees F.

3.07 SCHEDULES

- A. Refer to drawing details for subbase thicknesses.

END OF SECTION

SECTION 323113 - FENCING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. CONTRACTOR shall provide all labor, materials, tools, equipment and incidentals as shown, specified and required to furnish and install all fencing.
2. Extent of fencing is shown.
3. Types of products required include the following:
 - a. Aluminum-coated, steel chain-link fabric.
 - b. Galvanized steel framework.
 - c. Auxiliary system components, gates, accessories, fasteners and fittings.

B. Related Sections:

1. Section 033000, Cast-In-Place Concrete.
2. Section 036000, Grouting.
3. Section 260526, Grounding and Bonding for Electrical Systems.

1.02 REFERENCES

A. Standards referenced in this Section are listed below:

1. The Americans with Disabilities Act of 1990 (Public Law 101-336), Appendix A to Title 28 Code of Federal Regulations Part 36 (Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities - ADAAG).
2. American Society for Testing and Materials, (ASTM).
 - a. ASTM F 1553,
 - b. Others as applicable.
3. Chain Link Fence Manufacturer's Institute, (CLFMI).
 - a. CLF 2445 - Product Manual.
4. Institute of Electrical and Electronic Engineers, (IEEE).
 - a. Standard No. C2 - National Electrical Safety Code.
 - b. Standard 80 - Guide for Safety in AC Substation Grounding.
 - c. Standard No. 81 - Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System, Standard Guide for.
5. Underwriters' Laboratories, Incorporated, (UL).
 - a. Standards for Safety, UL Standard No. 467, Grounding and Bonding Equipment.

1.03 DEFINITIONS

A. Terminology used in this Section shall comply with CLF 2445, ASTM F 552 and the following:

1. The term "knuckling" shall be used to describe the type of selvage obtained by interlocking adjacent pairs of wire ends and then bending the wire ends back into a closed loop.
2. The term "fencing" shall be used to describe an assembly of metal components, including wire chain-link fabric fastened to top, bottom and intermediate horizontal rails and to vertical line posts, corner posts and terminal posts. This assembly shall also include all auxiliary components, gates, fittings, fasteners and other accessories all with polymer coating and other specified protective coatings.

SECTION 323113 - FENCING

1.04 QUALITY ASSURANCE

A. Erector Qualifications:

1. Engage a single erector skilled, trained and with successful and documented experience in the installation of fencing, who is acceptable to the fencing manufacturer, and with specific skill and successful experience in the erection of the types of components required; and who agrees to employ only tradesmen with specific skill and successful experience in this type of Work. Submit names and qualifications to ENGINEER along with the following information on a minimum of three successful projects:
 - a. Names and telephone numbers of owners, architects or engineers responsible for projects.
 - b. Approximate contract cost of the fencing.
 - c. Amount of area installed.

B. Source Quality Control:

1. Provide fencing as a complete system with all gates, hardware, appurtenances and other components produced by a single manufacturer, including custom erection accessories, fittings, clamps and fastenings as may be necessary or required.
2. Provide fence fabric imprinted with manufacturer's trade name, country of origin, core wire gauge, and finished outside diameter gauge.
3. Provide shipping list for materials used, endorsed with the manufacturer's voucher certifying that the material used in the fencing complies with these Specifications and with specific selections made on approved Shop Drawings.
4. Structural shapes of satisfactory sections and equal strengths may be substituted if approved by ENGINEER.

C. Performance Criteria:

1. Comply with the standards of the Chain Link Fence Manufacturer's Institute for product and installation requirements and the requirements of ASTM F 567. These standards shall represent a minimum level of quality when additional information is not shown or specified in the Contract Documents.
2. Where proposed fencing framework or other structural components varies from Contract Documents, the fabricator shall provide structural calculations for the design of the proposed fencing to CONTRACTOR for submittal to ENGINEER as part of Shop Drawing review. Structural analysis shall verify that all system components including, but not limited to, supports, gates, fasteners, fittings and connections meet the requirements of governing authorities having jurisdiction at the Site. Such modifications shall be incorporated into the Work only as acceptable to ENGINEER.
3. Verify size of framing members shown or specified, and submit with Shop Drawings. Member sizes, thicknesses and weights shown or specified shall be considered minimum. Where structural analysis indicates, provide additional members, or increased member size, thickness or weight.
4. Modifications may be made only as necessary to meet Site conditions to provide proper fitting and support of the Work, and only upon submittal of Shop Drawings and receipt of approval by ENGINEER.
5. Furnish weights of zinc and aluminum coatings on wire and pipe fabrications, in compliance with CLF 2445.

SECTION 323113 - FENCING

- D. Fabrication Tolerances:
1. Fabric, posts, rails, and other supports shall be straight or uniformly curved to provide the profiles shown, to a dimensional tolerance of 1/16-inch in 10 feet - 0 inches without warp or rack in the finished installation.

1.05 SUBMITTALS

- A. Qualifications Data: Submit qualifications data for the following:
1. Erector.
- B. Samples: Submit the following:
1. Each fencing component, fastener, post, rail, support, chain-link fabric and other auxiliary and miscellaneous items labeled with identification as to use and location.
 2. Each chain-link fabric material, 6-inches square; and framework members, and typical accessories, each approximately 6-inches long.
 3. Full range of manufacturer's standard and custom colors.
 4. ENGINEER's review will be for color and texture only. Compliance with all other requirements is the responsibility of CONTRACTOR.
- C. Shop Drawings: Submit the following:
1. Copies of manufacturer's technical product information, specifications and installation instructions for all fencing components, and auxiliary system components such as gate operators and motors.
 2. All structural calculations verifying that all system components comply with the requirements of governing authorities having jurisdiction at the Site.
 3. Large scale details drawn at a scale of 3-inches equals one foot for all connections and gate details, including motor mounting arrangements.
 4. A list of all hardware, fasteners and accessories.
 5. Weight of aluminum coating on wire fabrications in compliance with ASTM A 428.
 6. Weight of zinc coating on pipe fabrications in compliance with ASTM A 90.

1.06 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by OWNER or others, unless permitted under the following conditions, and then only after arranging to provide temporary utility services according to requirements indicated.
- a. Notify ENGINEER not less than 10 days in advance of proposed utility interruptions.
 2. Do not proceed with utility interruptions without ENGINEER's written permission.
- B. Site-Measurements: Take measurements at the Site and verify layout information and dimensions for fencing and gates in relation to property surveys and existing conditions.
- C. Do not begin installation and erection of the fencing until final grading is completed.

SECTION 323113 - FENCING

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. Tube sizes specified are nominal outside dimension.
2. Roll-formed section sizes are the nominal outside dimensions.
3. Wire gauges shall conform to American Steel and Wire Company gage.
4. Heat-form all arcs and chords before protective coatings are applied to metal.
5. All sizes specified are given for uncoated metal. All protective coatings are in addition to specified metal dimensions, gages and sizes.

B. Chain-Link Fence Fabric:

1. One-piece fabric widths, for fencing 12-feet and less in height, complying with CLFM I product requirements.
2. Wire mesh shall be woven throughout in the form of approximately uniform square mesh with parallel sides and horizontal and vertical diagonals of approximately uniform dimensions, of size and gage specified and in compliance with ASTM A 817, Type I, cold-drawn carbon steel wire with minimum breaking strength of 2, 170 pounds and coated with aluminized finish, as specified. Fabric shall be recommended by the Chain Link Fence Manufacturer's Institute for heavy industrial usage.
3. Provide fabric knuckled to eliminate exposure of sharp edges.
4. Fabric Gage: Provide the following:
 - a. For High Security Fence: No. 9-gage wires.
 - b. For chain link Fence: No. 9-gage wires.
5. Mesh Size: Provide the following:
 - a. For High Security Fence: 1-inch mesh.
 - b. For chain link Fence: 2-inch mesh.

2.02 FRAMEWORK

- A. General : The following table is provided for the convenience of CONTRACTOR and provides actual OD and equivalent nominal NPS size and trade size of round members.

<u>Actual OD</u>	<u>NPS Size</u>	<u>Trade Size</u>
1.315	1	1-3/8
1.660	1-114	1-5/8
1.900	1-112	2
2.375	2	2-1/2
2.875	2-112	3
3.500	3	3-1/2
4.000	3-112	4
6.625	6	6-5/8
8.625	8	8-5/8

- B. Pipe shall be commercial grade, plain end steel pipe with standard weight walls. Steel strip used in the manufacture of pipe shall be in compliance with ASTM F 1083, Schedule 40 pipe with minimum yield strength of 25,000 pounds per square inch and

SECTION 323113 - FENCING

protected with zinc, as specified.

- C. End, Corner, and Pull Posts: Provide end, corner, and pull posts of minimum sizes as follows:
 - 1. Up to six feet fabric height:
 - a. 2.50-inches OD pipe weighing 7.58-pounds per linear foot.
 - 2. Over six feet fabric height:
 - a. 2.875-inches OD pipe weighing 5.79-pounds per linear foot.
- D. Line Posts: Provide line posts of the minimum sizes and weights as follows:
 - 1. Up to six feet fabric height:
 - a. 2.50-inches OD pipe; weight of 7.58-pounds per linear foot.
 - 2. Over six feet fabric height:
 - a. 2.375-inches OD pipe; weight of 3.65-pounds per linear foot.
- E. Gate Posts: Furnish gate posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:
 - 1. Over six feet and up to 13 feet wide:
 - a. 4-inches OD pipe weighing 9.11-pounds per linear foot.
 - 2. Over 13 feet wide:
 - a. 6 5/8-inches OD pipe weighing 18.99-pounds per linear foot.
- F. Top and Bottom Rails: Provide top and bottom rails, unless otherwise shown, conforming to the following:
 - 1. Up to six feet fabric height:
 - a. 1.90-inch OD top rail weighing 2.72 pounds per linear foot.
 - 2. Over six feet fabric height:
 - a. 1.66-inch OD top rail weighing 2.27 pounds per linear foot.
 - 3. Provide in manufacturer's longest lengths, with expansion type coupling 1.051-inch thick rail sleeves, approximately 7 inches long, for each joint.
 - 4. Provide means for attaching the top rail securely to each gate, corner, pull and end post.
- G. Center Rails Between Line Posts: Provide center rails between line posts, where shown, consisting of 1.660-inch OD pipe weighing 2.27-pounds per linear foot.
- H. Roll-Formed Steel: Provide rolled steel shapes produced from structural-quality steel conforming to ASTM A 570, Grade 45, with a minimum yield strength of 45,000 pounds per square inch. Protective coating system shall conform to ASTM F 1043, as specified.

2.03 GATES

- A. Swing gates shall comply with ASTM F 900.
- B. Gate hinges shall be of the double clamping offset type. To hold the gate in the open or closed positions, provide each gate frame with a keeper that automatically engages a gate shoe set in concrete. Gates shall have a drop latch with provision for a padlock.
 - 1. Gate Hinges: Pressed or forged steel or malleable iron to suit gate size, non-lift-off type, 180 degree offset heavy-industrial hinges; 1-1/2 pair per leaf,
 - 2. Latch: Forked-type or plunger-bar type to permit operation from either side of gate, with pad lock eye as integral part of latch.

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3. Keeper: Provide a gate keeper for vehicle gates that automatically engages gate leaf and holds it in the open position until manually released.

C. Padlocks: Not required.

D. All gate frames shall have intermediate horizontal rails. Gate frames shall be of welded construction and shall be galvanized after fabrication. Single gates 6-feet wide or wider and double gates 12-feet wide or wider shall be provided with diagonal bracing in one direction, extending from top to bottom rail.

E. Gate Stops: Provide gate stops for double gates consisting of mushroom-type flush plate with anchors, set in concrete and designed to engage a center drop rod or plunger bar. Include locking device and padlock eyes as an integral part of the latch, using one padlock for locking both gate leaves.

F. Fabricate gate perimeter frames of tubular members. Provide additional horizontal and vertical members to ensure proper gate operation and for attachment of fabric, hardware and accessories. Space so that frame members are not more than eight feet apart. Fabricate as follows:

1. Over six feet high, or leaf width exceeding eight feet:
 - a. 1.900-inch OD pipe weighing 2.72-pounds per linear foot.

G. Assemble gate frames by welding or with special malleable or pressed steel fittings and rivets for rigid connections. Use same fabric as for the fence. Install fabric with stretcher bars at vertical edges. Bars may also be used at top and bottom edges. Attach stretchers to gate frame at not more than 15-inches on center. Attach hardware with rivets or by other means, which will provide security against removal or breakage.

H. Install diagonal cross-bracing on gates consisting of 1/2-inch diameter adjustable length truss rods provided with turnbuckles to ensure frame rigidity without sag or twist.

2.04 AUXILIARY FENCING MATERIALS AND ACCESSORIES

A. Wire Ties:

1. For tying fabric to line posts, use 9-gage, aluminum alloy 1100-H4, polyvinyl chloride coated wire ties to match fence fabric, spaced 12 inches on center.
2. For tying fabric to rails and braces, use 9-gage, aluminum alloy 1100-H4, polyvinyl chloride coated wire ties to match fence fabric, spaced 24 inches on center.
3. For tying fabric to tension wire, use 11-gage, aluminum alloy 1100-H4, polyvinyl chloride coated wire hog ring ties to match fence fabric, spaced 24 inches on center.

B. Tension Wire: Provide tension wire consisting of aluminized, 7-gage, coiled spring steel wire coated with 0.40-ounces of aluminum per square foot of wire surface, minimum; in compliance with ASTM F 1664.

1. Locate at bottom and top of fabric.

C. Barbed Wire Supporting Arms: Pressed steel for three rows of barbed wire attached to each arm, complete with provisions for anchorage to posts. Supporting arms shall be

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integral with post top weather cap. Provide following type:

- 1. Vee-type with two arms, each at 45 degrees to vertical, one set for each post.
- D. Barbed Wire: Commercial quality steel, two strand, 11-gauge line wire with 14-gauge, 4-point twisted aluminum alloy barbs spaced 5-inches on center, as follows:
 - 1. PVC Coated, complying with ASTM F-1665.
- E. Post Caps: Pressed steel, wrought iron, or cast aluminum alloy, designed as a weather tight closure cap, for tubular posts. Provide one cap for each post unless equal protection is afforded by combination post top cap and barbed wire supporting arm, where barbed wire is required.
 - 1. Provide caps with openings to permit through passage of the top rail.
 - 2. Provide cone-type caps for terminal posts and loop-type caps for line posts.
- F. Stretcher Bars: One-piece lengths equal to full height of fabric, with a minimum cross-section of 3/16-inch by 3/4-inch. Provide one stretcher bar for each gate and end post, and two for each corner and pull post, except where fabric is integrally woven into the post.
- G. Stretcher Bar Bands: Pressed steel, galvanized, 0.078-inches to 0.108-inches thick depending on post diameter, spaced not over 15 inches on center to secure stretcher bars to end, corner, pull, and gate posts.
 - 1. Bands may also be used with special fittings for securing rails to end, corner, pull and gate posts.
- H. Truss Rods: Steel rods, 3/8-inch diameter, merchant quality with turnbuckle.
- I. Concrete: Refer to Section 03300, Cast-In-Place Concrete.

2.05 FINISHES

- A. Chain-Link Fence Fabric:
 - 1. Aluminized finish with not less than 0.40-ounces aluminum per square foot, complying with ASTM A 491, Class II.
- B. Framework and Appurtenances: Provide the following finishes for steel framework, auxiliary system components and miscellaneous accessories:
 - 1. Galvanizing: Zinc for galvanizing shall be of High Grade or Special High Grade conforming to ASTM B 6 with a maximum aluminum content of 0.01 percent. Galvanize metal by the "hot-dip" process in compliance with the following standards:

Class of Work	ASTM
Structural Iron and Steel Shapes	A 123
Rolled-Form Sheet Steel	A 653
Hardware and Accessories	A 153
Fittings	F 626
Pipe	A 53

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2. Provide minimum weights of zinc as follows:
 - a. Pipe: 1.8-ounces of zinc per square foot. Type A coating shall be applied both inside and outside according to ASTM F 1043, as determined by ASTM A 90.
 - b. Rolled-Form Sheet Steel: 4.0-ounces of zinc per square foot of surface area.
 - c. Hardware and Accessories: Zinc weights in compliance with Table I of ASTM A 153.

C. Welded Joints:

1. Repair zinc coatings at welded joints by applying a zinc-rich paint, as recommended by the manufacturer.
2. Repair polymer-coated steel by applying an epoxy primer, intermediate coat and a urethane topcoat, as recommended by the manufacturer, matching color and reflectivity of adjacent PVC finish.

2.06 BARRIER GATES

- A. Barrier gates shall be 4' high by 20' wide double swing style.
- B. Gates shall be Z-style tubular galvanized steel construction.
- C. Gates shall be installed per manufacturer's recommendations.
- D. Gates shall be as manufactured by Hoover Fence Co. or approved equal.

PART 3 - EXECUTION

3.01 INSPECTION

- A. CONTRACTOR shall examine the conditions under which the fencing and gates are to be erected and notify ENGINEER, in writing, of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to the ENGINEER.

3.02 ERECTION

- A. Erect framework, fabric and accessories in accordance with ASTM F 567.
- B. Excavation: Drill holes of diameters specified, for post footings in firm, undisturbed or compacted soil.
 1. For posts set in cast-in-place concrete, provide hole diameters dug or drilled a minimum of four times the largest cross section of the post.
 - a. Unless otherwise indicated, excavate hole depths approximately 3- inches lower than the post bottom, with bottom of posts set not less than 24-inches below the surface of finished grade when in firm, undisturbed soil, plus an additional 3-inches for each foot increase in the fence height over four feet.
 2. Spread soil from excavations uniformly adjacent to the fence line, or on adjacent areas of the Site, as directed by the ENGINEER.
 3. When solid rock is encountered at the surface, drill into rock at least 12- inches for line posts and at least 18-inches for end, pull, comer, and gate posts. Drill

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hole at least 1-inch greater diameter than the largest dimension of the post to be placed.

- a. If solid rock is below soil overburden, drill to full depth required, except penetration into rock need not exceed the minimum depths specified above.

C. **Setting Posts:** Remove loose and foreign materials from sides and bottoms of holes, and moisten soil prior to placing concrete.

1. Center and align posts in holes 3-inches above bottom of excavation.
2. Posts shall be set in concrete footings, except as otherwise shown or specified. Place concrete around posts in a continuous pour, and vibrate or tamp for consolidation. Check each post for vertical and top alignment, and hold in position during placement and finishing operations.
3. Extend concrete to 2-inches above grade or to 2-inches below grade if a cover of sod, blacktop, or other material is shown to conceal concrete. Crown to shed water away from posts.
4. Extend footings for gate posts to the underside of bottom hinge. Set keeps, stops, sleeves and other accessories into concrete as required.
5. Keep exposed concrete surfaces moist for at least seven days after placement, or cure with membrane curing materials, or other acceptable curing method.

D. **Concrete Strength:** Allow concrete to attain at least 75 percent of its minimum 28-day compressive strength, but in no case sooner than seven days after placement, before rails, tension wires, barbed wire, or chain-link fabric is installed.

1. Do not stretch and tension fabric and wires, and do not hang gates until the concrete has attained its full design strength.

E. **Posts and Rails:**

1. **Line Posts:** Set posts in cast-in-place concrete footings as specified, spaced not more than ten feet on centers. Install caps on tops of all posts to exclude moisture and to receive the top rail, unless equal protection is afforded by combination post top cap and barbed wire supporting arm, where barbed wire is required.
2. **Top Rails:** Run rail continuously through post caps or extension arms, bending to radius for curved runs. Provide expansion couplings as recommended by fencing manufacturer to form a continuous rail between terminal posts.
3. **Brace Assemblies:** Install braces so posts are plumb when diagonal rod are under proper tension. Install brace assemblies at end posts and at both sides of corner and pull post panels. Panels adjacent to gates shall have intermediate horizontal rails and diagonal bracing. The diagonal bracing shall run from the center of the first line post to the bottom of the terminal post.

F. **Chain-Link Fabric:**

1. Install fabric on security side of fence, and anchor to framework so that fabric remains in tension after pulling force is released. Fasten to terminal posts and gate posts with tension bars threaded through mesh and secured with tension bands at maximum intervals of 4-inches.
2. Tie to line posts, gate frames and top and bottom rails with tie wires spaced at maximum 12-inches on posts and 24-inches on rails.
3. Connect tension bars to posts and frames by means of adjustable bolts and bands spaced not more than 4-inches apart.
4. Leave approximately 2-inches between finish grade and bottom selvage, except where bottom of fabric extends into concrete.

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5. Join roll of chain-link fabric by weaving a single picket into the ends of the roll to form a continuous mesh.
- G. Tension Wire:
 1. Stretch tension wire taut and free of sag, from end to end of each stretch of fence and position at a height that will enable the wire to be fastened to the chain-link fabric by securing within the top 12-inches of the chain-link fabric.
 2. Fasten bottom tension wire within the bottom 6-inches of the chain-link fabric.
 3. Tie tension wire to each post with not less than 6-gage galvanized wire.
- H. Barbed Wire:
 1. Install three parallel wires on each extension arm, on security side of fence, unless otherwise indicated.
 2. Pull wire taut to remove all sag and firmly install in the slots of extension arms to prevent movement or displacement.
 3. Secure wires to terminate L posts band arms or brace bands.
 4. Extend vertical members of gates to receive the barbed wire.
- I. Stretcher Bars: Thread through or clamp to fabric 4 inches on center, and secure to posts with metal bands spaced 15 inches on center.
- J. Gates: Install gates plumb, level, and secure for full opening without interference. Install ground-set items in concrete for anchorage, as shown on approved Shop Drawings. Adjust hardware for smooth operation and lubricate where necessary.
- K. Tie Wires: Use U-shaped wires conforming to diameter of pipe. Clasp pipe and fabric firmly with ends twisted at least two full turns. Bend ends of wire to minimize hazard to persons or clothing.
- L. Fasteners: Install nuts for tension band and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.
- M. Grounding: Coordinate with electrical substation grounding system.

3.03 ADJUSTMENT AND CLEANING

- A. Repair coatings damaged in the shop or during erection on-Site by recoating with manufacturer's recommended repair compound, applied in accordance with manufacturer's directions.
- B. Gate: Adjust gate to operate smoothly, easily, and quietly, free from binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- C. Lubricate operating equipment and clean exposed surfaces.
- D. Repair and replace all broken or bent components.

END OF SECTION

SECTION 329119 - LANDSCAPE GRADING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Final grade topsoil for finish landscaping.
- B. Related Sections:
 - 1. Section 310513 - Soils for Earthwork.
 - 2. Section 312316 - Excavation.
 - 3. Section 312317 - Excavation, Backfill, and Trenching: Backfilling trenches.
 - 4. Section 312323 - Fill: Backfilling at building areas.
 - 5. Section 329219 - Seeding.

1.02 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Submittal procedures
- B. Samples: Submit, in air-tight containers, 5 lb sample of each type of fill to testing laboratory.
- C. Materials Source: Submit name of imported materials source.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.03 QUALITY ASSURANCE

- A. Furnish each topsoil material from single source throughout the Work.
- B. Perform Work in accordance with NYSDOT Standard Specifications.

PART 2 - PRODUCTS

2.01 MATERIAL

- A. Topsoil: Fill Type S5 as specified in Section 310513.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify building and trench backfilling have been inspected.
- C. Verify substrate base has been contoured and compacted.

3.02 PREPARATION

- A. Protect landscaping and other features remaining as final Work.

SECTION 329119 - LANDSCAPE GRADING

- B. Protect existing structures, fences, sidewalks, utilities, paving, and curbs as noted on the drawings.

3.03 SUBSTRATE PREPARATION

- A. Eliminate uneven areas and low spots.
- B. Remove debris, roots, branches, stones, in excess of 1 inch in size. Remove contaminated subsoil.
- C. Scarify surface to depth of 3 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

3.04 PLACING TOPSOIL

- A. Place topsoil in areas where seeding, sodding, and planting are required to thickness as scheduled. Place topsoil during dry weather.
- B. Fine grade topsoil/plant soil mix to eliminate rough or low areas. Maintain profiles and contour of subgrade.
- C. Remove roots, weeds, rocks, and foreign material while spreading.
- D. Manually spread topsoil close to planting beds and building to prevent damage.
- E. Remove surplus subsoil and topsoil from site.
- F. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.05 TOLERANCES

- A. Section 014000 - Quality Requirements: Tolerances.
- B. Top of Topsoil: Plus or minus ¼ inch.

3.06 PROTECTION OF INSTALLED WORK

- A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Prohibit construction traffic over topsoil.

END OF SECTION

SECTION 329219 - SEEDING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Fertilizing.
 - 2. Seeding.
 - 3. Hydroseeding.
 - 4. Mulching.
 - 5. Maintenance.
- B. Related Sections:
 - 1. Section 310513 - Soils for Earthwork.
 - 2. Section 312316 - Excavation.
 - 3. Section 312317 - Excavation, Backfill, and Trenching: Rough grading over cut.
 - 4. Section 329119 - Landscape Grading: Preparation of subsoil and placement of topsoil in preparation for the Work of this section.

1.02 REFERENCES

- A. ASTM International:
 - 1. ASTM C602 - Standard Specification for Agricultural Liming Materials.

1.03 DEFINITIONS

- A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.04 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data for seed mix, fertilizer, mulch, and other accessories.
- C. Manufacturer's Certificate: Certify seed meets or exceeds specified requirements.

1.05 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging.
- B. Perform Work in accordance with NYSDOT Standard Specifications.

1.06 QUALIFICATIONS

- A. Seed Supplier: Company specializing in manufacturing Products specified in this section with minimum five years documented experience.

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- B. Installer: Company specializing in performing work of this section with minimum five years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling requirements.
- B. Deliver grass seed mixture in labeled original sealed containers. Seed in damaged packaging is not acceptable.
- C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.08 MAINTENANCE SERVICE

- A. Section 017000 - Execution and Closeout Requirements: Requirements for maintenance service.
- B. Maintain seeded areas for twelve (12) months from Date of Substantial Completion.

PART 2 - PRODUCTS

2.01 SEED MIXTURE

- A. Suppliers:
 - 1. Preferred Seed.
 - 2. Or equivalent.

- B. Seed Mixture:

Species	Lawn Area *	Non-maintained Areas*
Kentucky Bluegrass	50	20
Creeping Red Fescue	30	20
Manhattan or Pennfine Rygrass	20	60

* % by weight

2.02 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.
- B. Fertilizer: Commercial grade; recommended for grass; of proportion necessary to eliminate deficiencies of topsoil, as indicated in analysis.
- C. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.
- D. Erosion Fabric: Jute matting, open weave.

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- E. Stakes: Softwood lumber, chisel pointed.
- F. String: Inorganic fiber.

2.03 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, sand content gradation soluble salt content, organic matter content, and pH value.
- C. Provide recommendation for fertilizer application rates for specified seed mix as result of testing.
- D. Testing is not required when recent tests and certificates are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify prepared soil base is ready to receive the Work of this section.

3.02 FERTILIZING

- A. Apply fertilizer at application rate recommended by soil analysis.
- B. Apply after smooth raking of topsoil.
- C. Do not apply fertilizer at same time or with same machine used to apply seed.
- D. Mix fertilizer thoroughly into upper 2 inches of topsoil.
- E. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

3.03 SEEDING

- A. Apply seed at rate of 8 lbs per 100 sq ft evenly in two intersecting directions. Rake in lightly.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Planting Season: Spring (April 1 to June 1) and Fall (August 15 to September 30).

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- D. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph.
- E. Immediately following seeding, apply mulch to thickness of 1/8 inches. Maintain clear of shrubs and trees.
- F. Apply water with fine spray immediately after each area has been mulched. Saturate to 4 inches of soil or 1-inch of water per week.

3.04 HYDROSEEDING

- A. Apply fertilizer, mulch and seeded slurry with hydraulic seeder at rate of 1500 lb/ac evenly in one pass.
- B. After application, apply water with fine spray immediately after each area has been hydroseeded. Saturate to 4 inches of soil and maintain moisture levels two to four inches.

3.05 SEED PROTECTION

- A. Identify seeded areas with stakes and string around area periphery. Set string height to 36 inches. Space stakes at 6 feet 0 inches.
- B. Cover seeded slopes where grade is 4 inches per foot (or 1 on 3) or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.
- C. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Overlap edges and ends of adjacent rolls minimum 12 inches. Backfill trench and rake smooth, level with adjacent soil.
- D. Secure outside edges and overlaps at 36 inch intervals with stakes.
- E. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- F. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

3.06 MAINTENANCE

- A. Mow grass at regular intervals to maintain at maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at each mowing. Perform first mowing when seedlings are 40 percent higher than desired height.
- B. Neatly trim edges and hand clip where necessary.
- C. Immediately remove clippings after mowing and trimming. Do not let clippings lay in clumps.
- D. Water to prevent grass and soil from drying out.
- E. Control growth of weeds. Apply herbicides. Remedy damage resulting from improper use of herbicides.

SECTION 329219 - SEEDING

- F. Immediately reseed areas showing bare spots.
- G. Repair washouts or gullies.
- H. Protect seeded areas with warning signs during maintenance period.

END OF SECTION



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SECTION 330513 - MANHOLES AND STRUCTURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Monolithic concrete manholes and structures with transition to cover frame, covers, anchorage, and accessories.
2. Modular precast concrete manhole and structures with tongue-and-groove joints with transition to cover frame, covers, anchorage, and accessories.
3. Bedding and cover materials.

B. Related Requirements:

1. Section 031000 - Concrete Forming and Accessories: Erecting forms and bracing them against movement.
2. Section 033000 - Cast-in-Place Concrete: Concrete type for manhole and structures base pad construction.
3. Section 310513 - Soils for Earthwork: Soil for backfill in trenches.
4. Section 310517 - Select Granular Materials: Aggregate for backfill in trenches.
5. Section 312316 - Excavation: Excavating for manholes and structures.
6. Section 312323 - Fill: Compaction requirements for precast concrete manholes and structures specified in this Section.

1.02 REFERENCE STANDARDS

A. American Concrete Institute:

1. ACI 318 - Building Code Requirements for Structural Concrete.
2. ACI 530/530.1 - Building Code Requirements and Specification for Masonry Structures.

B. ASTM International:

1. ASTM A48 - Standard Specification for Gray Iron Castings.
2. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
3. ASTM C55 - Standard Specification for Concrete Building Brick.
4. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made From Clay or Shale).
5. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.
6. ASTM C497 - Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile.
7. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures.
8. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
9. ASTM D3753 - Standard Specification for Glass-Fiber-Reinforced Polyester Manholes and Wetwells.

SECTION 330513 - MANHOLES AND STRUCTURES

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit cover and frame construction, features, configuration, and dimensions.
- C. Shop Drawings: Indicate manhole and structure locations, elevations, piping, and sizes and elevations of penetrations.
- D. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.

1.04 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Unload, store, and handle precast manholes and structures according to manufacturer instructions.
- C. Storage:
 - 1. Store precast concrete manholes and structures as to prevent damage to Owner's property or other public or private property.
 - 2. Repair property damaged from materials storage.

PART 2 - PRODUCTS

2.01 PERFORMANCE AND DESIGN CRITERIA

- A. Equivalent strength: Based on structural design of reinforced concrete as outlined in ACI 318.
- B. Design of Lifting Devices for Precast Components: According to ASTM C913.
- C. Design of Joints for Precast Components:
 - 1. According to ASTM C913.
 - 2. Maximum Leakage: 0.025 gal. per hour per foot of joint at 3 feet of head.
- D. Shaft Construction: Concentric with concentric cone top section; lipped male/female dry joints; sleeved to receive pipe and conduit sections.
- E. Shape: Square, Rectangular, Round.
- F. Clear Inside Dimensions:
 - 1. As indicated on Drawings.

SECTION 330513 - MANHOLES AND STRUCTURES

- G. Design Depth: As indicated on Drawings.
- H. Clear Cover Opening:
 - 1. As indicated on Drawings.
- I. Pipe and Conduit Entry: Furnish openings as indicated on Drawings.

2.02 MANHOLES AND STRUCTURES

- A. Manufacturers:
 - 1. Kistner Concrete Products.
 - 2. Fort Miller, Inc.
 - 3. Lakelands.
 - 4. Or approved equal.
 - 5. Substitutions: As specified in Section 016000 - Product Requirements.
- B. General: the following requirements apply to all precast concrete structures, chambers, vaults, and catch basins constructed on this project.
 - 1. All precast concrete structures shall be designed by a licensed New York State registered Professional Engineer. Each drawing for design shall be stamped and signed by the Professional Engineer.
 - 2. Precast concrete structures shall be manufactured in accordance with ATM C478, latest revision, and shall be designed for HS-20 Live Load, latest revision.
 - 3. Precast concrete structures shall be of approved design and sufficient strength to withstand the loads to be imposed upon them. An approved watertight joint shall be provided between precast concrete sections.
 - 4. Mark date of manufacture and name or trademark of manufacturer on inside of precast concrete chamber section.
 - 5. Sizes of precast concrete structures shall be as shown on the drawings.
 - 6. All concrete in precast units shall be stone aggregate and develop a strength of 4,000 psi at 28 days and shall conform to the following specifications:
 - a. All concrete furnished and installed for precast concrete vaults shall be in accordance with ACI 318 Code for Reinforced Concrete.
 - b. Materials:
 - 1) Cement: Portland Cement, ASTM C150, Type I or Type II.
 - 2) Admixtures: Admixtures other than air entraining shall not be used. Air entraining admixture shall conform to ASTM C260. Air content of concrete with ¾-inch maximum size aggregate shall be 6 percent plus or minus 1 percent volume.
 - c. Water: Clean and free from injurious amounts of oils, acids, alkalis, organic materials, or other substances.
 - d. Aggregates: aggregates shall conform to ASTM C33, latest revision. Course aggregate shall be size number 67 (nominal ¾inch to No. 4).
 - e. Proportions of materials in concrete and strength of concrete shall be subject to the following conditions:
 - 1) Minimum 28-day compressive strength – 4,000 psi.
 - 2) Maximum water to cement ration by weight – 0.45.
 - 3) Minimum cement content 600 lbs/cubic yard.
 - 7. All precast concrete shall be manufactured by wet cast methods only, and shall be approved design.

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8. All precast concrete shall be reinforced. Reinforcing shall be designed for all applicable loads and forces encountered. Steel reinforcing shall be ASTM A 496-A 615 Grade 60-60 KSI.
9. Prior to backfilling, all below grade exterior faces of the concrete structures shall be painted with two coats of sealer. The sealer shall be Bitumastic 300-M, a comparable grade of Carboline, or approved equal.

2.03 CHAMBER, VAULT, AND MANHOLE CONSTRUCTION DETAILS.

- A. Precast concrete chamber, vault, bases, and manholes shall have monolithic reinforced concrete and shall have a keyway type joint between precast concrete sections.
- B. Joint between precast concrete section shall be sealed as recommended by manufacturer and shall be watertight upon completion of joint. Joints shall be buttered inside and outside with 1 to 2 cement brick sand mortar.
- C. Where the proposed piping passes through exterior walls of precast concrete chambers and vaults, the manufacturer shall provide an oversized opening and mechanical type seal or shall provide an assembly consisting of a flexible rubber boot with clamp assembly. The boot assembly shall meet the requirements of ASTM C-923 and shall have a stainless steel power sleeve and clamps.
- D. All precast concrete chambers and vaults shall be furnished with a sump assembly as shown on the drawings.
- E. Product and manufacturer:
 1. Kistner Concrete Products.
 2. Fort Miller, Inc.
 3. Or approved equal.

2.04 PRECAST CONCRETE CATCH BASINS.

- A. In addition to the general requirements for precast concrete structures outline above, the following shall apply:
 1. Precast concrete catch basins shall be manufactured as one or two piece units with integral bottom and wall cast in one pour per piece so that there are no joints present in the sections.
 2. Catch basin base and walls shall be of acceptable design and of sufficient strength to safely support HS-20 loading.
 3. For precast concrete base section, the minimum thickness of base slab shall be 6-inch thickness.
 4. Precast concrete walls for catch basin shall be 6-inch thickness except at knockouts where the minimum thickness shall be 2 inches.
 5. Pipe connections to catch basins for storm drainage piping shall consist of a knockout in the catch basin wall for installation of the proposed piping. The void between the proposed piping and the wall of the catch basin shall be grouted with cement - mortar grout and shall be approved by the ENGINEER.
 6. Product and manufacturer:
 - a. Kistner Concrete Products.
 - b. Fort Miller, Inc.
 - c. Or approved equal.

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2.05 MISCELLANEOUS METALS.

A. Steps.

1. Provide approved aluminum steps as follows:
 - a. Aluminum-magnesium-silicide type alloy conforming to ASTM Specification B221.
 - b. Drop front design with grooved step surface.
 - c. Conform to details shown on Drawings.
 - d. Aluminum surfaces embedded in concrete and in contact with dissimilar materials shall be painted with an approved bitumastic paint.

B. Ladders.

1. Provide approved ladders as follows:
 - a. Produce from ASTM A36 steel, galvanized.
 - b. Shall have 1-inch diameter rungs spaced a maximum of 12-inch on centers.
 - c. Conform to all applicable OSHA 1910.27 requirements for fixed ladders.
 - d. Designed for a single concentrated load of 200 pounds minimum.
 - e. Minimum ladder width of 16 inches.
 - f. Length as required to extend from underside of slab to top of floor.
 - g. Shall be attached to wall with galvanized steel hardware suitable for all loads imposed upon them and as recommended by the ladder manufacturer.
 - h. All ladders shall have a dismount system that enables the climber to safely dismount the vaults. The system shall be the Saf-T-Pivot Dismount as manufactured by North Safety or equal.

C. Frames and Cover-Catch Basins.

1. Made from best merchantable gray cast iron, tough, even-grained, and free from all flaws and injurious or unsightly defects, ASTM A48, Class 30, cast iron.
2. Frame and covers shall be rated for HS-20 loading, latest revisions.
3. All covers for catch basins shall be bicycle safe type covers.
4. Letters to be cast on every manhole cover as shown on the Drawings. If not detailed on drawings, covers for manhole vaults shall be provided with the designation "water."
5. Machined to insure proper fit and even bearing in all positions.
6. Properly clean castings and coat with asphaltic varnish applied by immersion, while the coating is hot.
7. Product and manufacturer:
 - a. Provide one of the following:
 - 1) Valve Manhole Vaults
 - a) Neenah Foundry Co., Model R1916-C Watertight Manhole Frame and Cover.
 - b) Or approved equal.
 - 2) Catch Basins.
 - a) Catch Basin Frame and Cover – Grate Top – Model No. R4832B, Bicycle Proof, by Neenah Foundry Co.
 - b) Or approved equal.

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D. Aluminum Handrails and Railings

1. Railings shall be constructed of 1-1/2" nominal diameter, standard weight Schedule 40 aluminum pipe, Alloy 6063-T832, with a caustic etch and Alumilite finish 204-R1.
 - a. Railings shall be as long as practicable but shall not exceed 20 feet 0 inches in length. Bends shall be made without the use of fittings, where practical. All shop made structural joints in railing shall be welded and ground smooth.
 - b. Standard railing shall consist of top rail, intermediate rail, and posts, and shall have a vertical height of 42 inches nominal from upper surface of top rail to floor on platform level.
 - c. Stainless steel snap hooks and eyes shall be furnished where chain is used in lieu of handrails.
 - d. Stair railings shall be of construction similar to standard railing but the vertical height shall be 33 inches from upper surface of top rail to surface of tread in line with face of riser at forward edge of tread.
 - e. Base plates for aluminum posts shall be cut from aluminum bar stock, welded to posts and bolted to stringers with stainless steel bolts.
 - f. Provide toe boards at railings around openings. Fabricate to the dimensions and details shown or, if not shown, use 4" high x 1/4" plate welded or screwed to each post of railing and centered under railing posts. Omit toe bar wherever curb or other construction under railing provides the required safety.
 - g. Provide brackets and anchors for railing posts and for handrail supports. Furnish inserts and sleeves as required for anchorage to concrete or masonry work.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that items provided by other Sections of Work are properly sized and located.
- C. Verify that built-in items are in proper location and ready for roughing into Work.
- D. Verify correct size of excavation.

3.02 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers as indicated on Drawings to indicate its intended use.
- C. Coordinate placement of inlet and outlet pipe or duct sleeves required by other Sections.

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- D. Do not install structures where Site conditions induce loads exceeding structural capacity of structures.
- E. Inspect precast concrete structures immediately prior to placement in excavation to verify structures are internally clean and free from damage; remove and replace damaged units.

3.03 INSTALLATION

- A. Excavation and Backfill:
 - 1. Excavate manholes and structures as specified in Section 312316 - Excavation in location and to indicated depth.
 - 2. Provide clearance around sidewalls of structure for construction operations.
 - 3. When groundwater is encountered, prevent accumulation of water in excavations; place manholes and structures in dry trench.
 - 4. Where possibility exists of watertight structure becoming buoyant in flooded excavation, anchor structure to avoid flotation as approved by Engineer.
- B. Base Pad:
 - 1. Place base pad.
 - 2. Trowel top surface level.
- C. Place manhole and structure sections plumb and level, trim to correct elevations, and anchor to base pad.
- D. Backfill excavations for manholes and structures as specified in Section 312316 - Excavation and 312323 - Fill.
- E. Form and place manhole and structures cylinder plumb and level and to correct dimensions and elevations.
- F. As Work progresses, build fabricated metal items.
- G. Cut and fit for pipe and sleeves.
- H. Grout base of shaft sections to achieve slope to exit piping, trowel smooth, and contour to form continuous drainage channel as indicated on Drawings.
- I. Set cover frames and covers level without tipping and to correct elevations.
- J. Coordinate with other Sections of Work to provide correct size, shape, and location.
- K. Precast Concrete Manholes and Structures:
 - 1. Lift precast components at lifting points designated by manufacturer.
 - 2. When lowering manholes and structures into excavations and joining pipe to units, take precautions to ensure that interior of pipeline and structure remains clean.
 - 3. Set precast structures bearing firmly and fully on crushed stone bedding, compacted as specified in Section 312316 - Excavation and 312323 - Fill or on other support system as indicated on Drawings.

SECTION 330513 - MANHOLES AND STRUCTURES

4. Assemble multi-section structures by lowering each section into excavation; set level and firmly position base section before placing additional sections.
5. Remove foreign materials from joint surfaces and verify sealing materials are placed properly.
6. Maintain alignment between sections by using guide devices affixed to lower section.
7. Joint sealing materials may be installed on Site or at manufacturer's plant.
8. Verify that installed manholes and structures meet required alignment and grade.
9. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe; fill annular spaces with mortar.
10. Cut pipe flush with interior of structure.
11. Shape inverts through manhole and structures as indicated on Drawings.

L. Installation of Handrails and Railings

1. Provide anchorage devices and fasteners where necessary for securing handrails and railings to in-place construction including preset pipe sleeves for concrete and masonry inserts, toggle bolts, through bolts, lag bolts and other connectors as required.
2. Perform cutting, drilling, and fittings required for installation. Set the work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide expansion joints where required.

Fit exposed connections accurately together to form tight hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop-welded because of shipping size limitations. Grind joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces of units which have been coated or finished after fabrication and are intended for field connections.

3. Adjust railings prior to securing in place to ensure proper matching at butting joints and correct alignment throughout their length. Space posts not more than 6'-0" on centers unless otherwise shown. Plumb posts in each direction. Secure posts and rail ends to construction as follows:
 - a. Anchor posts in concrete by means of pipe sleeves set and anchored into the concrete. Provide sleeves of plastic or stainless steel pipe, not less than 6" long, and having an inside diameter not less than 1/2" greater than the outside diameter of the inserted pipe post. After the posts have been inserted into the sleeves, fill the annular space between post and sleeve solid with a quick-setting hydraulic cement. Cover anchorage joint with a round metal flange finished to match post.
 - b. Anchor posts to steel or aluminum with oval flanges, angle type or floor type as required by conditions, welded to posts and bolted to the metal supporting members.
 - c. Anchor rail ends into concrete and masonry with round flanges welded to rail ends and anchored into the wall construction with lead expansion shields and bolts.
 - d. Provide removable railings sections as shown, or as required.
4. Secure handrails to walls by means of wall brackets and wall return fitting at handrail ends. Provide brackets with not less than 3" projection from the finish wall surface to the center of the pipe handrail and with the wall plate portion of the bracket drilled to receive one 3/8" bolt. Locate brackets not more than 60"

SECTION 330513 - MANHOLES AND STRUCTURES

o.c. Provide flush-type wall return fittings with the same projection as that specified for wall brackets. Secure wall brackets and wall return fittings to building construction as follows:

- a. For concrete and solid masonry anchorage, use bolt anchor expansion shields and lag bolts.
- b. For hollow masonry and stud partition anchorage, use toggle bolts having square heads.

3.04 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.
- B. Lifting holes shall be sealed tight with a solid rubber plug driven into hole and remaining void filled with a mix of 1 part cement and 2 part sand mortar.
- C. All precast concrete structures shall be free from visible leakage; each structure shall be tested for leaks and inspected and all leaks shall be repaired in a manner subject to the Engineer's approval.
- D. Vertical Adjustment of Existing Manholes and Structures:
 1. If required, adjust top elevation of existing manholes and structures to finished grades as indicated on Drawings.
 2. Reset existing frames, grates, and covers that were carefully removed and cleaned of mortar fragments to required elevation according to requirements specified for installation of castings.
 3. When removal of existing concrete wall is required, remove concrete without damaging existing vertical reinforcing bars, clean concrete from vertical bars, and bend into new concrete top slab or splice to required vertical reinforcement as indicated on Drawings.
 4. Clean and apply sand-cement bonding compound on existing concrete surfaces to receive cast-in-place concrete as specified in Section 033000 - Cast-in-Place Concrete.

END OF SECTION

SECTION 330513 - MANHOLES AND STRUCTURES

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SECTION 331100 - BURIED PIPING INSTALLATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

The work specified shall include all labor, material, equipment, services and incidentals necessary to furnish and install watermain, specials and fittings, install fire hydrants and to perform interconnections and abandonments as shown on the plans and specified herein.

B. Related Work Specified Elsewhere

1. Section 310517 - Select Granular Materials
2. Section 312317 - Excavation, Backfill, and Trenching
3. Section 331301 - Testing and Disinfection
4. Section 400515 - Prestressed Concrete Cylinder Pipe Adapters
5. Section 400519 - Ductile Iron Pipe and Fittings
6. Section 400520 - Piping Specialties and Accessories
7. Section 400540 - Fire Hydrants
8. Section 400560 - Valves and Appurtenances

1.02 QUALITY ASSURANCE

A. Reference Standards

1. AWWA Standards identified in other related sections
2. ASTM Standards identified in other related sections
3. ANSI Standards identified in other related sections
4. Occupational Safety and Health Administration (OSHA)
5. 1996 Safe Drinking Water Act
6. NSF/ANSI Standard 60 and 61, as applicable
7. All other standards itemized in related work sections

B. CONTRACTOR'S Qualifications:

1. CONTRACTOR shall have a minimum of five (5) years of experience installing prestressed concrete cylinder pipe, fittings, and appurtenances.
2. A list of qualifications shall be submitted including:
 - a. The number of years your organization has been installing prestressed concrete cylinder pipe under your present name.
 - b. Any projects similar to this project completed by your organization. Include all projects completed within the last three (3) years and all projects completed for the Authority specifically within the last five (5) years.
 - c. List the names of any company that has operated under the umbrella of your organization and the projects that they have completed.

SECTION 331100 - BURIED PIPING INSTALLATION

C. Welder's Qualifications:

1. All welders and welding operators shall be qualified under AWS D1.1 Structural Welding Code – Steel, under AWS D1.3 Structural Welding Code – Sheet Steel, or under Sec. IX of the ASME Boiler and Pressure Vessel Code for Welding P – No. 1 (carbon or low alloy) steels. For the purpose of this standard, welders and the welding operators qualified under Sec. IX of the ASME Boiler and Pressure Vessel Code to weld P – No. 1 steels shall be deemed qualified to weld any combination of steels listed in Sec. 4.6 of AWWA C-301. Each welder and welding operator shall have been qualified or requalified within the past three (3) years.

1.03 SUBMITTALS

B. Shop Drawings

Prior to obtaining any products in relationship to this Section, the CONTRACTOR shall submit detailed shop drawings and data for review by the ENGINEER.

C. Materials List

The CONTRACTOR shall submit, along with shop drawings, a materials list, which shall include full information regarding all components of the watermain. Materials of construction shall be presented in the listing.

D. Other Submittals

1. Prior to installation of the proposed watermain, the CONTRACTOR shall furnish the required number of the manufacturer's Operation and Maintenance Manual for each item.
2. The CONTRACTOR shall submit certificates of compliance with the applicable referenced standards.
3. A tabulated layout schedule.
4. Detailed procedure, schedules and list of materials for interconnection sequence.
5. Furnish delivery tickets indicating the pipe manufacturer, pipe type and class, identifying that the pipe was new and from a manufacturer that has been submitted and approved.

E. Certificate

1. Submit certificate of compliance with NSF/ANSI Standard 61 for all products under this section, including interior coatings, by an independent, authorized laboratory.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. During delivery and handling, all materials shall be braced and protected from any distortion or damage in accordance with the manufacturer's requirements; any such distortion or damage shall be basis for rejection of the materials.
- B. Equipment used for unloading shall be covered with wood or rubber to avoid damage to the exterior of the pipe, fittings and accessories. Do not drop or roll materials off trucks.
- C. The materials shall be inspected before and after unloading. Materials that are found to be cracked, chipped, gouged, dented, or otherwise damaged shall not be accepted.

SECTION 331100 - BURIED PIPING INSTALLATION

- D. Interiors of pipe, fittings and specials shall be kept free from dirt and foreign matter.
- E. Store pipe and fittings on heavy wood blocking or platforms so they are not in contact with the ground.
- F. Pipe, fittings, and specials shall be unloaded opposite to or as close to the place where they are to be used as is practical to avoid unnecessary handling.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General
 - 1. All products, including interior coatings, shall be suitable for use in a potable water system.
 - 2. All products, including wetted parts, shall be certified to meet NSF/ANSI Standard 61.
- B. Pipe

Materials for the piping, joints and fittings shall be as specified in other related sections or as shown in the pipe schedule or on the Contract Drawings.

 - 1. Pipe and appurtenances shall comply with the applicable standards for its type of material.
 - 2. All pipes, fittings, valves, hydrants, specials, and accessories must be new materials in first-class condition. Used or recycled materials shall not be allowed, regardless of condition.
 - 3. Piping for hydrant branches shall only be Class 53 ductile iron.
 - 4. Piping within casing pipes (except for tree bores) and beneath pavement shall be either ductile iron pipe or prestressed concrete cylinder pipe as shown and as specified.
 - 5. Piping in non-paved areas shall be either ductile iron pipe, prestressed concrete cylinder pipe, or PVC as shown and as specified.
- C. Joints

Type of joints shall be as specified in other related Sections or as shown in the pipe schedule or as on the Contract Drawings.
- D. Magnetic Pipe Marking Tape

Magnetic pipe marking tape as manufactured by C. H. Hanson Products, Paul Potter Warning Tape, or approved equal shall be installed above all new watermain.

 - 1. Tape shall be 3 inches wide consisting of two (2) exterior plies of polyethylene with an aluminum alloy foil core.
 - 2. Tape shall be blue color and labeled: "WATER" in black letters.

SECTION 331100 - BURIED PIPING INSTALLATION

PART 3 - EXECUTION

3.01 INSTALLATION

A. General

1. Excavation and backfilling shall be in accordance with the applicable provisions of Section 312317 - Excavation, Backfill, and Trenching.
2. Blocking will not be permitted under pipe, except where the pipe is to be laid with concrete cradle or encasement.
3. Pipe shall be installed on a layer of select material as shown on the Drawings to provide an acceptable bedding. The top of this layer shall then be considered the bottom of the trench.
4. Pipe shall not be laid on bedrock without appropriate bedding stone.
5. No pipe shall be laid upon a foundation in which frost exists; or when there is danger of the formation of ice or the penetration of frost at the bottom of the excavation.
6. Bell holes shall be dug in the bottom of the trench to allow the pipe to have a firm bedding along the entire length of the pipe.
7. Temporary watertight bulkheads shall be placed in all open ends of pipe whenever pipe laying is not actively in process. The bulkheads shall be designed to prevent the entrance of dirt, debris, or water.
8. Precautions shall be taken to prevent the flotation of pipe in the event of water entering the trench.
9. Hydrant installation shall be as specified in Section 400540 - Fire Hydrants and as specified herein.

B. Location and Grade

1. Watermain and appurtenances shall be located as shown on the Contract Drawings or as directed and as established from the control survey in accordance with the General Requirements.
2. The alignment and grades shall be determined and maintained by a method acceptable to the ENGINEER.
3. Pipe shall be installed in straight horizontal trenches. "Snaking" of pipe by bending sections horizontally shall not be allowed.

C. Subgrade

The subgrade for pipelines shall be earth or bedding as specified or directed and shall be installed in accordance with Section 312317 - Excavation, Backfill and Trenching.

D. Joints

1. Joints shall be assembled using gaskets, lubricants and solvents as furnished by the pipe manufacturer and in accordance with the manufacturer's recommendations.
2. Joint deflection shall not exceed 50% of manufacturer's recommendations.

SECTION 331100 - BURIED PIPING INSTALLATION

E. Bedding

Bedding shall be deposited and compacted in accordance with Section 312317 - Excavation, Backfill, and Trenching, and shall be as itemized below unless otherwise specified or directed.

1. For watermains:
 - a. The bedding shall be as specified in Section 310517, Select Granular Materials.
 - b. Bedding shall be deposited and tamped in 6-inch layers to the centerline of the pipe or to 6 inches above the pipe in paved or traveled areas.
 - c. Native material placed above the centerline of the pipe shall be deposited in such a manner as to not damage the pipe. Native material shall be suitable for backfill above the centerline of the pipe provided the materials are 2 inches in size or less. Native materials shall be suitable for backfill 6 inches above the pipe in non-paved areas provided the materials are 2 to 4 inches in size, but bedding is required to 6 inches above the pipe. Native materials greater than 4 inches are unacceptable for backfill.

F. Thrust Restraints

Thrust restraints for watermains shall be accomplished by the use of both thrust blocks and mechanical restraints for sizes through 12 inches. Joints for watermains 16 inches and larger shall have thrust restraints provided by harnessed joints only. Restraints shall be in the form of retainer glands; ductile iron locking segments with spigot weldment; or anchors of the size and type specified or as required by the pressure and stability of the supporting surface.

1. Thrust restraints shall be installed at all changes in direction, changes in size, dead ends or other locations where shown or directed.
2. Valves shall be treated as a bulkhead condition and pipe joints shall be restrained on both sides of the valve.
3. Cast in place concrete used for thrust restraints shall have developed the required strength prior to testing of the watermain.
4. When approved for use by ENGINEER, tie rods and nuts for thrust restraints shall be of high tensile steel and shall have a minimum yield strength of 70,000 psi.
 - a. Tie rods and nuts installed underground shall be coated with two coats of coal tar pitch preservative coating after installation.
 - b. Oil, grease, paint, or any coating which requires drying will not be acceptable.
5. All fire hydrant branches from the mainline tee to and including valve and hydrant shall be restrained.
6. All piping installed for interconnections shall be restrained.
7. All piping installed within casing pipes shall be restrained for the full length of the pipe installed within the casing pipe.
8. All piping installed within the limits of creek crossings shall be restrained for the full length of the creek crossing limits.

G. Service Connections

1. Connections to in-service pressure watermains shall be in accordance with the applicable provisions of Section 400520, Piping Specialties and Accessories.

SECTION 331100 - BURIED PIPING INSTALLATION

- H. Concrete Thrust Blocks
 - 1. Solid concrete blocks shall be used for proper blocking. Hollow concrete blocks or wooden blocking are not acceptable. Cast-in-place wet concrete mix shall be used for vertical bends and anchor collars.
- I. Magnetic Pipe Marker
 - 1. Magnetic pipe marker tape shall be placed above all new watermains as shown on the Drawings.
 - 2. Magnetic pipe marker tape shall be tied to watermain valve boxes.
 - 3. Splices, where needed, shall be made in accordance with manufacturer's recommendations.
 - 4. At completion of the project and before final payment is made, the CONTRACTOR shall test the entire length of the pipe using pipe locating equipment. Tests shall be made only in the presence of the ENGINEER. Any section of tape not continuous or that is undetectable shall be removed and replaced at the CONTRACTOR'S expense.

3.02 CUTTING AND SPECIAL HANDLING

- A. Field cuts of pipes shall be in accordance with the manufacturer's instructions.
- B. Where a pipe requires special handling or installation it shall be in accordance with the applicable referenced standard.

3.03 INTERCONNECTIONS

- A. Perform interconnections as shown on the Contract Drawings and in accordance with Section 013110, Coordination with Owner's Operations.

3.04 ABANDONMENTS

- A. Hydrants and Valves
 - 1. Removal of existing and abandoned hydrants and valves shall be made with caution to prevent damage while being removed.
 - 2. Return all existing and abandoned hydrants as specified or when directed to the Erie County Water Authority at 3030 Union Road, Cheektowaga, New York.
 - 3. CONTRACTOR is responsible for unloading the abandoned hydrants at the Erie County Water Authority and placing the hydrants in the location specified by the AUTHORITY.
 - 4. CONTRACTOR must deliver the hydrants during normal business hours and must schedule the delivery at least 48 hours in advance.
 - 5. At all valves being abandoned, locate the valve, close the valve, remove the entire valve box, backfill and restore as shown on the Drawings.
- B. Existing Watermains
 - 1. No watermain abandonments shall be performed until the ENGINEER is satisfied that the new watermain is functional and meets all codes, standards, tests, and requirements.
 - 2. Abandonments shall only be allowed after all service connections have been transferred to the new watermain, when applicable.

SECTION 331100 - BURIED PIPING INSTALLATION

3. Perform the abandonments as shown on Contract Drawings and in accordance with Section 013110, Coordination with Owner's Operations.

3.05 TREE TUNNELING

- A. Provide root protection at trees by boring casing pipe through root system.
 1. Use casing pipe as defined in Section 400514, Casing Pipe.
 2. All pipe installed in casing pipe must be restrained.
 3. PVC pipe may be installed in casing pipe if authorized by ENGINEER.
 4. Fill annular space with pea gravel to satisfaction of ENGINEER.
 5. The volume of pea gravel used shall be compared to the annular space volume to ensure complete filling. Incomplete filling of annular space will not be considered acceptable. CONTRACTOR shall remove pea gravel and reinstall, at his expense, if so ordered by the ENGINEER.

3.06 INSTALLATION OF PIPE UNDER CREEKS BY OPEN CUT METHOD

- A. General
 1. Install watermain, fittings, bedding, and rip rap within the pay limits for the creek crossings as shown and specified.
 2. Comply with the applicable requirements of this section as well as other sections of these specifications.
 3. Comply in all respects with the requirements of the applicable permits issued for this project.
 4. Construction of the creek crossings shall be performed within the work limits shown on the plans or specified in the permits. Any other lands, easements, or rights-of-way required by the CONTRACTOR for his operations shall be obtained by the CONTRACTOR at his expense.
 5. All necessary precautions shall be taken to prevent contamination of any wetland or waterway by any soils, sediments, fuels, solvents, lubricants, paints, or any other environmental deleterious materials associated with this project.
 6. Any material dredged in the prosecution of the Work shall be removed evenly, without leaving large refuse piles, ridges across the bed of the waterway, or deep holes that may cause damage to navigable channels or to the banks of the waterway.
 7. Debris or excess material dredged during construction operations shall be completely removed from the bed and banks of all water areas and sent to an approved upland area for disposal.
 8. All sediments are to be retained on the project site through the use of hay bales or other approved sediment traps.
 9. Disturbances to the bed and banks of the creek shall be limited to those areas shown on the plans and covered under the applicable permits.
 10. No work on creek crossings shall be performed immediately after a storm that may cause high water conditions or flooding.
 11. Whenever possible, creek excavation and bank grading shall be carried out by equipment operating on dry land.
 12. Prior to trenching through stream banks, the upland sections of the trench shall be bulkheaded or plugged to prevent drainage of turbid water into the creek.
 13. Existing stream banks and vegetation shall be protected as much as possible to prevent bank collapse and erosion.

SECTION 331100 - BURIED PIPING INSTALLATION

14. Watermain markers shall be provided on both sides of the creek crossings. Markers shall be flexible post made of fiber reinforced composite materials, manufactured by Carsonite International or approved equal. Posts shall be colored blue and shall have the wording: "CAUTION WATERMAIN. BEFORE DIGGING CALL UFPO".
15. All other applicable requirements of this section shall apply to excavation and backfill of creek crossings.

3.07 TESTING

A. General

Performance testing, leakage, hydrostatic, and proof-of-design tests shall be as specified in Section 331301 - Testing and Disinfection.

B. Testing Criteria

Perform pressure testing to the criteria listed in the table as shown on the Drawings.

C. Ultrasonic Joint Testing.

1. Each joint shall, at the CONTRACTOR'S sole cost and expense, be tested with ultrasonic test equipment prior to being backfilled. If a leak is detected, corrective action shall be taken prior to installing the next pipe.
2. The fact that a point (or joints) has passed the ultrasonic testing does not wave the requirements for the hydrostatic tests described in Section 331301.
3. The testing equipment shall be as manufactured by Moffat Enterprises of Powell Butte, or equal.

3.08 DISINFECTION

- A. All watermains, hydrant branches, blow-offs, and ARV piping shall be tested and disinfected in accordance with Section 331301 - Testing and Disinfection.

3.09 GENERAL

- A. Install watermain, fittings, and accessories in accordance with applicable sections; as shown on the drawings; and, as specified, required, or directed.

B. Tapping Information

1. All materials as specified herein shall be installed by or under the direction of personnel who are acceptable to the Authority.
 - a. Threaded taps shall be made using a machine designed for cutting, threading and inserting the corporation without interruption of service.
 - 1) Teflon tape may be used on corporation threads.
 - b. Tapping sleeve connections shall be made using a machine to cut and remove the segment through the valve without interruption of service.
2. Valve boxes shall be set plumb and shall be independently supported on concrete blocking so no weight will be transmitted to the curb stop or watermain.
3. Service saddles and tapping saddles installed on prestressed concrete cylinder pipe shall be encased in a minimum of 2 inches of concrete mortar after installation.

SECTION 331100 - BURIED PIPING INSTALLATION

4. Service saddles shall be used under the following condition:
 - a. When water services are placed on 4-inch or smaller pipes.
 - b. When water services larger than 1-inch are placed on a 6-inch pipe.
 - c. When water services larger than 1-¹/₂-inch are placed on an 8-inch pipe.
 - d. When water services are tapped to all plastic (PVC) pipe.
 - e. When services larger than 1-¹/₂-inch are placed on ductile iron pipe.
 - f. When water services are tapped to all asbestos-cement pipe.
 5. CONTRACTOR is not allowed to excavate, disturb, or park any equipment beyond the Right-of-Way line without prior approval from the property owner.
 6. If minimum depth is not achieved for the water service at any location, CONTRACTOR shall either excavate and lower the service or repush/drill the service to the minimum depth, at his expense, until a satisfactory service is installed.
 7. Curb boxes are not allowed to be cut for any reason.
 8. Repair or replace any connections, which are leaking to ensure a watertight connection.
- C. Water Service Tubing
1. Copper tubing shall be installed in accordance with the applicable provisions of Section 312317 - Excavation, Backfill & Trenching, and Section 331100 - Buried Piping Installation.
 2. Bedding for service connection tubing shall be furnished, installed and coordinated with Section 310517 - Select Granular Materials.
- D. Water Service Installations
1. Existing service lines shall be maintained until such time as the proposed watermain has been installed, tested, and disinfected, and approval to place the watermain into service has been obtained. Existing services may then be transferred to the new watermain.
 2. New water service installations shall be installed by boring or jacking method under existing roads and pavements. Open-cut of water services across roads will not be allowed.
 3. Use tapping machines and equipment compatible with corporation stops and service saddles specified. Use tools and cutting equipment, which minimizes the amount of PVC shavings and remove shavings during tapping; retain coupon, and reduce stress during tapping. Single fluted cutters or twist drills shall not be used for tapping PVC piping.
 4. Service locations shown on the drawings are shown schematically only. The actual service locations shall be determined by ENGINEER and CONTRACTOR in the field.
 5. For additional information relating to water services, refer to the Drawings.
- E. Tapping Watermain.
1. Wet tap connections to existing watermains shall be as shown on the drawings.
 2. The person or firm who will be performing the watermain tap shall be acceptable to the Authority.
 3. Prior to ordering the tapping sleeve, the CONTRACTOR shall excavate a test pit to the depth required and expose the main to be taped to accurately measure the

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outside diameter of the main. No tapping sleeve shall be ordered until this information has been obtained.

4. Tapping sleeves shall be suitable for use with the existing pipe to be tapped. Tapping sleeve shall be compatible with the tapping valve furnished.
5. Thrust blocks shall be constructed behind the wet tap connection as shown on the drawings and specified herein.
6. Refer to Section 331301 for additional requirements for tapping sleeve and valve testing.
7. After each tap has been completed, the CONTRACTOR shall keep the tapping area uncovered for a minimum period of one (1) hour to determine if any leakage is occurring. If any leakage has occurred, the tap shall be made watertight in a manner approved by the ENGINEER.
8. A full pipe coupon shall be retained as a result of the tapping operation.
9. The valves shall be kept closed until approval from the ENGINEER is given to open the valve.

F. Discrepancies

1. If discrepancies occur between the Drawings and field conditions, the CONTRACTOR shall notify the ENGINEER immediately.
2. The CONTRACTOR shall not proceed with the installation in areas of discrepancy until said discrepancy is resolved.

END OF SECTION

SECTION 331201 – INTERNAL PIPE JOINT SEALS

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Specified

The work specified shall include all labor, materials, tools, equipment, services and incidentals necessary to furnish and install internal pipe joint seal to repair and rehabilitate existing pipelines as shown, specified and required.

B. Product Application

1. Internal pipe joint seals are designed to seal leaking joints in most types of pipes including concrete, reinforced concrete, cast iron, ductile iron, steel, vitrified clay, polyethylene, PVC, and corrugated metal.
2. The internal pipe joint seal repairs leaking joints, by bridging the joint with a flexible rubber seal which is compressed against the inside diameter of the pipe on either side of the joint with stainless steel bands. The stainless steel retaining bands are expanded in a radial direction and locked in place with a wedge providing an interference fit.
3. The internal pipe joint seals may be interlocked with adjoining seals to provide continuous interlocking sleeve system.

1.02 QUALITY ASSURANCE

A. Qualifications

1. Manufacturer shall have a minimum of 5 years experience producing and installing internal mechanical joint seals with a minimum 3,000 seals in place and shall show evidence of at least 5 installations in satisfactory operation.
2. Parts Interchangeability: It is the intent of these specifications that all materials furnished herein shall be compatible with similar materials of other manufacturers.
3. The joint seals shall be installed by the manufacturer.

B. Reference Standards

1. ASTM D395, Standard Test of Rubber Compression Set
2. ASTM D412, Standard Test Method for Rubber Properties in Tension
3. ASTM 0573, Standard Test Method for Rubber Deterioration in Air Oven
4. ASTM D1171, Standard Test Method for Rubber Deterioration Surface Ozone Cracking Outdoors or Chamber
5. ASTM 02000, Standard Classification System for Rubber Products in Automotive Application
6. ASTM D2240, Standard Test Method for Rubber Property Durometer Hardness
7. ASTM D3568, Standard Test Method for Rubber Evaluation for EPDM
8. Food & Drug Administration, Title 21 Code of Federal Regulations; Section 177.2600 Rubber Articles Intended for Repeated Use
9. ANSI/NSF Standard 61 Drinking water Components

SECTION 331201 – INTERNAL PIPE JOINT SEALS

1.03 SUBMITTALS

A. Shop Drawings: Submit for approval the following:

1. Detailed drawings and data (material safety data sheet, applicable instructions, etc.) on internal pipe joint seal.
2. Submit means and methods for work procedures outlined under this section.
3. A materials list, which shall include full information regarding all components of the equipment. Materials of construction shall be presented in the listing.
4. Dewatering systems, means and methods.
5. Protection methods anticipated.
6. Safety plan, including confined space entry.

All drawings shall be prepared and stamped by an independent professional ENGINEER recognized as an expert in the specialty involved and licensed to practice in the State of New York. The drawings shall be submitted to the ENGINEER to establish compliance with the terms of the specifications. Calculations shall not be submitted. Drawing submissions will not be checked and will not imply approval by the ENGINEER of the work involved. Contractor shall be wholly responsible for designing, installing, and operating whatever system is necessary to accomplish any sheeting, bracing, protection, underpiping and dewatering.

B. Submit certificates of compliance with the applicable referenced standards.

C. Submit certificate of compliance with NSF/ANSI Standard 61 for all products under this section.

D. Furnish delivery tickets indicating the internal mechanical joint seals were new and from a manufacturer that has been submitted and approved.

1.03 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. During delivery and handling, all materials shall be braced and protected from any distortion or damage; any such distortion or damage shall be basis for rejection of the materials.

B. The materials shall be inspected before unloading. Materials that are found to be cracked, gouged, chipped, dented, or otherwise damaged will not be accepted.

B. Internal pipe seals shall remain in manufacturers original unopened containers until time to be installed. Containers shall indicate contents, lot number, and expiration dates.

C. Containers containing internal pipe joint seals shall not be stacked or stored in such a manner as to damage rubber membranes or hardware and shall be stored in a cool dry environment.

SECTION 331201 – INTERNAL PIPE JOINT SEALS

PART 2 PRODUCTS

2.01 MATERIALS

- A. All products shall be suitable for use in a potable water system.
- B. All products shall be certified to meet NSF/ANSI Standard 61.
- C. Acceptable manufacturer's are:
 - 1. HydraTech Engineered Products LLC.
 - 2. Miller Pipeline Weko-Seal.
 - 3. In-Weg by PLCS, Inc.
 - 4. No substitutions.

2.02 EPDM RUBBER

- A. The EPDM Rubber shall be manufactured in accordance with referenced standards and comply with the following:
 - 1. Ingredients of the EPDM polymer are listed in FDA Title 21 Code of Federal Regulations Section 1772600 with the final material not supporting microbiological growth when used in potable water.
 - 2. The volume change of the rubber shall not exceed 3-percent after immersion in potable water at 212°F for 70 hours.
 - 3. The stress relaxation shall not exceed 12-percent when tested from a time of 30 minutes to 24 hours.
 - 4. No voids, cracks, or similar defect shall be witnessed to during visible inspection.
 - 5. Physical Properties:

Durometer ASTM D22400	65+/- 5
Tensile (psi) ASTM D412	1450 min.
Elongation (%) ASTM D412	350

Heat Aged 70 Hours @ 70°C ASTM D573

Durometer	+/- 15
Tensile Change (%)	+/- 30
Elongation Change (%)	-50 max.

Compression set: 22 hours @ 70°C ASTM D395B

Permanent Set (%)	25 max.
Ozone Resistance (%)	85 min.

2.03 EPDM JOINT SPLICING

- A. The splice in the EPDM rubber seal shall be made using compression molding methods with virgin rubber of the same compound which the seal is manufactured. A minimal width of 1/4-inch shall be maintained at the interface.
- B. The joint shall be vulcanized at 330°F minimum temperature.

SECTION 331201 – INTERNAL PIPE JOINT SEALS

- C. The joint shall not be manufactured with any glue, adhesive, or equivalent.
- D. Gripping the seal at approximately 6-inches on each side of the spliced joint and bending around a 3-inch minimum diameter mandrel should not produce any visible separation. No voids, cracks, or similar defect shall be witnessed during testing.
- E. The number of joints splices shall be minimized per the manufacture's equipment capabilities.

2.04 BANDS, SHIMS, AND WEDGES

A. Stainless Steel Materials

- 1. The stainless steel retaining bands UNS 530400 (type 304), UNS 531603 (type 316L), or UNS N08367 (AL-6XN) shall conform to AWS A5.4-92 and alloy 625 (ERNICrMo-3) shall conform to AWS A5.1489.
- 2. All materials such as push tabs, shims, and wedges shall be made compatible with the base metal.
- 3. In the process of selecting the base metal for retaining band, it is important that the chemical properties are compatible with the weld wire, such as the table listed below.

Retaining Band	Weld Wire
UNS S30400	E308
UNS S31603	E316L
UNS N08367	ERNICrMo-3

- 4. The retaining bands shall be rolled to the radius of the pipe that is being epalred. The radius shall be taken from the measurement data collected from the inspection report and each retaining band shall checked on the fixed radius gauge.
- 5. The push tabs shall be manufactured from the same manufacturer lot number as the hand. All shop and field welds shall be made by certified welders with a minimum 2 years experience on alloy (T-304). The welds shall be made with a stick or wire of 1-308 alloy as mentioned in the above table.
- 6. Welding shall be accomplished by using either gas metal arc welding or shielded metal arc welding.
- 7. All material specifications shall be certified.
- 8. Shims shall be manually radiused and all shall be deburred.
- 9. The retaining bands shall be made of stainless steel and shall meet the following requirements:

Physical Requirements

Physical Properties	Type 304	Type 316L	Type AL-6XN
UNS Designed	S30400	S31603	N08367
Tensile Strength (min.)	75,000 psi	70,000 psi	100,000 psi
Yield Strength (min.)	30,000 psi	25,000 psi	45,000 psi
Elongation in 2-inch (min.)	40%	40%	30%
Brinell Hardness (max.)	201	217	233
Weld Wire TS	80,000 psi	70,000 psi	110,000 psi

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Design Requirements

- Retaining bands shall not buckle under installation loading.
- The maximum stress in the push tab welds shall conform with AWS D1.6:99.
- The maximum stress in the push tab welds shall not exceed the ultimate tensile strength in the weld wire or stick.
- The compressive force created in the retaining band due to thermal expansion shall not buckle under installation loading.
- The hydrodynamic pressure shall not exceed the minimum friction force created by the hydraulic expander under installation loading.

2.05 TEST VALVE

- A. A test valve shall be installed in the rubber seal to enable pressure test after seals have been installed. The test valve shall be stainless steel UNS 531603 (type 316), or UNS N08367 (AL-6XN) and shall conform to ASTM A240. The test valve shall be equipped with a means to seal or plug the valve after testing. Means of sealing with a threaded plug or equivalent shall include a non-toxic Teflon thread sealant (NSF approved for potable water applications).

2.06 JOINT LUBRICATION

- A. The use of a joint lubrication may be necessary to assist in the installation of the rubber membrane and stainless steel bands. The joint lubrication shall:
1. Be non-toxic and shall not support the growth of bacteria.
 2. Does not have any deteriorating effect on natural or synthetic rubber.
 3. Will not impart taste or odor to water.
 4. Does not contain any petroleum based oils or greases.
 5. Must be able to be used on potable water systems, NSF 61 approved.
 6. Temperature range 0° and 120°F.
 7. Acceptable lubrication products Include:
 - IC. Whitelam Mfg. Co. "Blue tube";
 - Seacord Corp. "Ease-On";
 - Or Equal

2.07 PIPE FILLER AND PIPE PREP

- A. It may be required to fill low areas of the pipe on each side of the joint where the seating surface/band location of the seal is to be located. The filler material shall:
1. For steel, cast iron, ductile iron, polyethylene, and PVC piping, an epoxy and/or metallic polymer based system may be used. For concrete piping an epoxy and/or hydraulic cement metallic polymer based system may be used. The filler shall have the following characteristics:
 - Be non-toxic and shall not support growth of bacteria.
 - Does not have any deteriorating effect on natural or synthetic rubber.
 - Will not impact taste or odor to water.
 - Does not contain any petroleum based oils or greases.
 - Must be able to be used on potable water systems, NSF approved.
 - Minimum Compressive strength (ASTM C109) equal to 3,000psi after one day.
 - Minimum Shore 0 Hardness (ASTM D2240) equal to 80.
 - Acceptable filler products include, but not limited to, the following:
 1. PW HydrWrap Primer.#8001 for potable water applications.

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2. Belzona 1211 for deep imperfections in steel or iron substrates greater than 0.125".
3. Unitex hydraulic cement for spalling and deep imperfections in concrete pipe.

2.08 HYDRAULIC EXPANDER

- A. Hydraulic expanders shall be capable of providing 6,000 psi of hydraulic expansion pressure for installation of stainless steel retaining bands. Two hydraulic expanders should be onsite, one for use as a spare.

PART 3 EXECUTION

3.01 GENERAL

- A. All work associated with the installation and testing of internal pipe joint seals shall comply with the applicable Federal, State, and local codes and standards.
- B. All workers shall be properly trained in the hazards and risk associated with working in confined spaces.
- C. Prior to installation, seals should be visually inspected by a qualified installer to assure seal material is free of defects. If quality or condition of material is in doubt, the seals shall not be used.

3.02 SITE PREP WORK

- A. All permits, as required by local and states codes, or by owner of pipeline and as agreed to in the Contract shall have been processed and received and shall be available for review.
- B. Installation work shall be performed with pipe lines removed from service and an adequate safety boundary has been established and approved by all parties. All pipelines shall have been dewatered and are maintained at atmospheric pressure throughout the duration of installation work.
- C. The Contractor is responsible to dewater the watermain prior to completion of the installation of Joint seals. The watermain shall be dewatered to the extent necessary to adequately perform video inspection and Install the joint seals. He shall drain all low spots as necessary and will be responsible to control the water which may be present from leaking valves by the use plugs, caps, pumps, or other necessary equipment for completion of the work. Any plugs, caps, or buckheads installed by the Contractor shall be adequately braced and restrained for the anticipated and encountered pressures.

The elevations of the existing watermains are not accurately known and may vary from area to area. Low spots in the watermain may exist. The Contractor shall drain all low spots as necessary to perform the video inspection and for installation of the joint seals.

Water which is removed from the watermain which is dewatered by the Contractor under this project shall be disposed of at a location directed by the ENGINEER. Disposal of water as a result of dewatering operations shall be disposed of In accordance with all

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applicable codes and regulations, and in a manner approved by the ENGINEER and the City.

The Contractor shall make all arrangements and shall pay all costs associated with dewatering of watermains including disposal costs if necessary.

- D. All seals, materials, consumables, and tools required for completion of work shall be verified as in good working condition. All equipment and tools required for installation and testing shall be calibrated as required.
- E. Means of providing continuous forced air ventilation must be provided and maintained to establish a safe level for confined space entry.

3.03 CLEANING

- A. Remove all dirt, scale, and other debris from pipe walls in area where seals are to be installed. The extent of the cleaned area should extend a minimum 1-inch beyond sealing area. Cleaning operations shall be accomplished by hand brushing and scraping, pneumatic wire brushes, and/or oil-free air jet.
- B. All materials removed by the cleaning operations shall be intercepted and removed at the nearest manhole/access point and disposed of at an approved location.
- C. All roots (if any) in the location of the seal installation or hinder access to the seal location shall be removed by mechanical means.
- D. Roots (if any) in the seal area shall be removed to a minimum 1-inch behind inside face of pipe joint.
- E. During cleaning and root removal (if needed), protect pipeline from damage. Any damage that may occur during the cleaning process must be repaired at no cost to the Owner by an acceptable and approved method.

3.04 JOINT PREPARATION

- A. Joint preparation shall be performed in accordance with the manufacturer's installation instructions. The following steps are general installation guidelines and are not intended to be inclusive of all procedures for joint preparation.
 1. The pipe should be pre-marked with a grease chalk to properly define the seal position and the area of the pipe to be surface prepared.
 2. The area of the pipe on either side of the joint, where the lip seal makes contact with the pipe must be prepared to a finish which will allow the lip seal to interface consistently as to provide a tight and permanent seal.
 3. High and low surface imperfections in the areas of the sealing surface must be removed. Low areas must be filled with a suitable non-toxic filler material as described in this specification.
 4. Gaps at the joints that are produced by offset, separated or misaligned pipes shall be filled to the full depth and rendered flush with the surface of the pipe with a suitable non-toxic filler material as described in this specification.

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3.05 SEAL INSTALLATION

- A. Installation of the seal shall be performed in accordance with the manufacturer's installation instructions. The following steps are general Installation guidelines and are not intended to be Inclusive of all installation procedures.
1. Lubricate the prepared seal area with an approved lubricant. The lubricant functions as an aid in fitting the seal as is not credited with seal tightness.
 2. Verify that the seating of the rubber seal is free of any dirt, scale or other debris.
 3. Position the seal such that the lip seals run parallel with the joint and are located per the markings on the pipe. The pressure test valve should be located at either the 9:00 or 3:00 position.
 4. Install metal radiused shims underneath the wedge area in the seal grooves for each band prior to installing the stainless retaining bands in the seal. These shims enable radial loads to be transmitted evenly to the rubber seal as the bands are expanded.
 5. Position the retaining bands in the seal grooves.
 6. Position the seal expander in line with the retaining band and ensure that the retaining band remains in the grove. Expand the bands using the hydraulic expander.
 7. Install a radiused locking piece (wedge) in the exposed gap between the expanded band ends. The wedge size shall be selected so as to provide interference fit.
 8. Repeat 5 through 7 for subsequent bands on the same seal.
 9. Perform a second expansion of each of the retaining bands a minimum of 30 minutes after the first expansion using the same pressure range as the first expansion. Replace wedge piece with larger size If required to provide interference fit.

3.06 SEAL TESTING

- A. Testing of the seal shall be performed in accordance with the manufacturers installation instructions. The following steps are general installation guidelines and are not intended to be inclusive of all testing procedures.
1. A pressure test shall be performed to assure the seal has been installed correctly. After a minimum of 30 minutes has elapsed after the last expansion, the test shall be conducted.
 2. Pressurize to 10psig (\pm 2psig) through the seal test valve. Apply an approved soap test solution to the seal ends and inspect for leakage.
 3. If the pressure test indicated leakage, determine cause and repeat installation steps 2 through 9 In Section 3.05 (Seal Installation).
 4. In the event a second pressure test fails, notify manufacturer for evaluation and direction before additional work on the failed seal.
 5. Depressurize the seal and isolate the test port.
 6. Remove all installation hardware, pressure gauges, consumables from pipe.

SECTION 331201 – INTERNAL PIPE JOINT SEALS

3.07 QUALITY CONTROL AND DOCUMENTATION

- A. The seal manufacturer shall provide to installer documentation detailing seal installation and forms to be used as a checklist that all steps required for proper seal installation and testing have been completed.
- B. The installer shall appoint a qualified technician the responsibility of recording all data associated with the seal installation and testing including, but not limited to, the following:
 - 1. Pipe sealing surface condition has been properly prepared and all voids have been filled and high areas removed.
 - 2. The sealing surface area of the seal is free of debris.
 - 3. The seal has been properly located over the joint.
 - 4. Record the time that each band is installed.
 - 5. Record the pressure of the hydraulic expander for each band installed and confirm expander is maintained at the correct pressure.
 - 6. Record the time of second expansion of each band and confirm that 30 minutes has elapsed between the first and second expansion.
 - 7. Record the pressure of hydraulic expander for each band installed and confirm expander is maintained at the correct pressure during second expansion.
 - 8. Record whether larger wedge was installed for each band.
 - 9. Record 30 minute has elapsed from second expansion to begin pressure test.
 - 10. Record time and pressure for first pressure test.
 - 11. Record status of first pressure test.
 - 12. Record seal is depressurized and test plug has been plugged.
 - 13. Record that all tools, equipment, hardware, consumables have been removed from piping.

END OF SECTION



SECTION 331301 - TESTING AND DISINFECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Testing and disinfection of all pressure piping for leakage as specified.
 - a. The CONTRACTOR shall furnish all labor, equipment, test connections, vents, water and materials necessary for carrying out the pressure and leakage tests as specified and required.
 - b. The work specified shall include all labor, material, equipment, services and incidentals necessary to fill, clean, chlorinate, flush, and test all pipelines which will carry or hold potable water.

B. Related Work Specified Elsewhere

1. Section 331100 - Buried Piping Installation
2. Section 400515 - Prestressed Concrete Cylinder Pipe Adapters
3. Section 400519 - Ductile Iron Pipe and Fittings
4. Section 400520 - Piping Specialties and Accessories
5. Section 400540 - Fire Hydrants
6. Section 400560 - Valves and Appurtenances

C. Description

1. Permission shall be obtained from the OWNER of the water system before the use of water from any existing system. The CONTRACTOR shall:
 - a. Conform to the requirements of the OWNER.
 - b. Pay all costs connected with the taking or use of water for any retesting.
 - c. The CONTRACTOR shall provide written notice to the Authority and ENGINEER at least three working days in advance of testing and disinfection.
2. All work under this section shall be performed in the presence of the ENGINEER. A representative of the public health authority having jurisdiction must also be present, as required.
3. Chlorination shall be scheduled such that sampling and flushing will be performed during normal business hours.

1.02 QUALITY ASSURANCE

A. Reference Standards

1. AWWA B300, Standard for Hypochlorites
2. AWWA B301, Standard for Liquid Chlorine
3. AWWA C104, Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water
4. AWWA C301, Prestressed Concrete Pressure Pipe, Steel-Cylinder Type for Water and Other Liquids
5. AWWA C502, Standard for Dry-Barrel Fire Hydrants
6. AWWA C504, Standard for Rubber Seated Butterfly Valves

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7. AWWA C600, Standard for Installation of Ductile Iron Watermains and Their Construction
8. AWWA C651-14, Standard for Disinfecting Water Mains
9. AWWA C900 Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch Through 12-inch for Water Distribution
10. NSF/ANSI Standard 60 and 61 (as applicable)
11. Standard Methods for the Examination of Water and Wastewater, latest edition
12. 1996 Safe Drinking Water Act

1.03 SUBMITTALS

- A. The CONTRACTOR shall submit proposed materials, methods, and operations regarding testing and disinfection to the ENGINEER for review prior to the start of testing.
- B. CONTRACTOR must provide a sketch to the ENGINEER of the sampling locations identifying at minimum the following:
 1. Street names,
 2. North arrow,
 3. Sampling locations,
 4. House numbers of nearest buildings to sampling locations.
 5. Other distinguishable landmarks,
 6. Any other information as requested by ENGINEER, OWNER, AUTHORITY, or County Health Department.
- C. The CONTRACTOR shall submit certification that all backflow preventers (Reduced Pressure Zone attachments) and pressure gauges have been tested and certified within the last year.
- D. Qualifications of laboratory analyzing biological samples shall be New York State ELAP certified.
- E. Chain-of-Custody forms are to be furnished for all biological samples taken.
- F. For flushing operations, ENGINEER shall supply calculations identifying that a minimum 3.0 ft/sec scour velocity has been achieved in the new waterline and that three pipe volumes have passed through it.
- G. ENGINEER shall provide pressure testing and leakage test results on the ECWA Pressure Test/Leakage Test form available on the ECWA website.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. All products must be suitable for use in a potable water system and NSF-60 certified. All piping, valves, etc. shall be NSF-61 certified.

SECTION 331301 - TESTING AND DISINFECTION

- B. Chlorination shall be by the use of a solution of sodium hypochlorite contained in the pipe or structure as specified. The use of calcium hypochlorite in powdered, granular, or tablet form, shall not be allowed.

PART 3 - EXECUTION

3.01 TESTS ON PRESSURE PIPING FOR POTABLE WATER

A. General

1. Flush, test and disinfect prior to connection to existing watermains as specified below, except as otherwise authorized by the ENGINEER.
2. The length of piping and sections included in the tests shall meet the approval of the ENGINEER; however, the length shall not exceed 2,000 feet in any case. Pressure test of pipe section shall be from valve to valve regardless of watermain size.
3. Notify the ENGINEER 72 hours in advance of testing.
4. Equipment in or attached to the pipes being tested shall be protected. Any damage to such equipment during the test shall be repaired by the CONTRACTOR at his expense.
5. Conduct all tests per AWWA C-600 and C-651, latest editions in the presence of the ENGINEER. Repeat tests in the presence of local authorities having jurisdiction if required by them.
6. CONTRACTOR shall have sufficient personnel at the site for the entire duration of all tests.
7. When piping is to be insulated or concealed in a structure, tests shall be made before the pipe is covered.
8. Provide outlets to flush line, expel air and perform specified tests.
9. Where connections to existing lines are called for only one such connection will be allowed.
10. All fittings, hydrants and appurtenances must be properly braced and harnessed before the pressure is applied. Thrust restraining devices which will become a part of the system must also be tested at the test pressure.
11. When testing absorbent pipe materials such as cement or concrete, the pipeline shall be filled with water at least 24 hours before the test is made.
12. The CONTRACTOR must supply all materials and manpower to perform the tests as specified herein.
13. Testing and disinfection shall be acceptable and approved by the agency of jurisdiction before another connection is made.

B. Initial Flushing

1. CONTRACTOR shall fill and flush new main to remove dirt and miscellaneous debris from the inside of the watermain.
2. CONTRACTOR is responsible for removing all entrapped air during flushing.
3. Flushing must have sufficient flowrate to achieve a fluid velocity of 3.0 feet per second inside the waterline.
4. A minimum 2" tap is required for proper flushing of all watermains having a diameter of 8 inches or less, however, multiple taps or larger taps may be

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required. ENGINEER shall be responsible for determining necessary connections and providing calculations verifying flushing conditions are met.

5. Refer to AWWA C651, for number of taps required to obtain the minimum 3.0 feet per second flow velocity in all pipes.
6. CONTRACTOR is responsible for providing a water source for flushing. With the permission of the OWNER, an existing watermain may be used as a water source, however, the following restrictions apply:
 - a. The CONTRACTOR is not allowed to operate any valves or hydrants or operate any components which belong to the OWNER.
 - b. If water is drawn from the existing system, an appropriate backwater preventer such as a Reduced-Pressure Zone (RPZ) device must be used. The RPZ must be tested within one (1) year and approved prior to usage.
 - c. Water from flushing procedures must be disposed of properly. Water may be piped or gravity-fed to an existing storm sewer with the ENGINEER'S and the OWNER'S permission if proper erosion control methods to minimize sediment build-up are used. Discharge of water into a roadway or into a parking lot area is strictly prohibited. Water discharging operations shall not cause damage to any public or private property.
7. CONTRACTOR shall partially open and close valves and hydrants several times under expected line pressure to flush foreign material out of the valves and hydrants.
8. Flushing shall continue until three pipe volumes have passed through the new waterline and the water appears sediment-free.

C. Pressure Test

1. Pressure test apparatus must be installed as shown on the Drawings
2. Test pressure shall be as specified in Section 331100, Buried Piping Installation, at the lowest point in the line.
3. Test pressure shall be held on the piping for a period of at least 2 hours, unless a longer period is requested by the ENGINEER, OWNER, or AUTHORITY. Pressure should not fluctuate by more than 5 psi during testing.
4. Pressure gauge must be in good working condition and must be demonstrated to be accurate to the ENGINEER prior to any testing.
5. Gauge must have proper labeling to allow ENGINEER to accurately distinguish the maximum allowable 5 psi change in pressure. Gauge must have markings at no greater than 2 psi increments to allow accurate readings.
6. ENGINEER is responsible for reading the gauge and recording the test results he/she witnesses. Results obtained by the ENGINEER are considered final, and not subject to discussion by the CONTRACTOR.
7. ENGINEER may tap pressure gauge at each reading to ensure needle is measuring pressure accurately.
8. The AUTHORITY reserves the right to read the pressure gauge and record the test results for those lines considered suspect or for potentially inaccurate result recording.
9. ENGINEER shall record pressure at 15 or 30 minute intervals to help determine if the pressure loss is stabilizing.
10. The CONTRACTOR will inform the ENGINEER when to begin the test.

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11. If the pressure drop is greater than 5 psi in 2 hours, or if the ENGINEER believes the line is suspect, the CONTRACTOR shall explore for the cause of the excessive leakage and after repairs have been made, the line shall be retested. This procedure shall be repeated until the pressure loss is less than the maximum allowable and the ENGINEER is satisfied.
12. If the pressure drop is 3 psi or greater but less than 5 psi in 2 hours, the CONTRACTOR shall continue the test for another 2 hours. If the pressure drop over the 4 hour period is 5 psi or greater, the test failed and must be repeated after the cause of the leakage is explored and the necessary repairs have been made
13. The ENGINEER shall make a preliminary determination if the test passes or fails based on the pressure and volume losses recorded during testing.
14. After each test, the CONTRACTOR must demonstrate that the test apparatus, including the pressure gauge, is fully functional and accurate. Inaccurate gauges or non-satisfactory equipment will be grounds for test failure, regardless of test results. CONTRACTOR will resupply proper equipment and retest, at his expense.
15. The pressure loss recorded over the 2 or 4-hour test must be acceptable to the County Health Department and AUTHORITY for final hydrostatic testing approval to be given.
16. At the end of the test, the pressure shall be increased to the starting pressure, so that the leakage test data is acquired. See Section D Leakage Test below, for additional information.

D. Leakage Test

1. The leakage test shall be conducted concurrently with the pressure test.
2. The rate of leakage shall be determined at 15-minute intervals by means of volumetric measurement of the makeup water added to maintain the test pressure. The test shall proceed until the rate of leakage has stabilized or is decreasing below an allowable value, for three consecutive 15-minute intervals. After this, the test pressure shall be maintained for at least another 15 minutes.
 - a. At the completion of the test the pressure shall be released at the furthestmost point from the point of application.
3. All exposed piping shall be examined during the test and all leaks, defective material or joints shall be repaired or replaced before repeating the tests.
4. The leakage for pressure pipelines shall not exceed the following allowable rates in gallons per hour per 1000 feet of pipe at the test pressure specified in Section 331100, Buried Piping Installation:

Pipe Diameter	Pipe Material	ECWA Allowable Leakage*
4"	PVC, DI	0.29
6"	PVC, DI	0.44
8"	PVC, DI	0.59
10"	PVC, DI	0.74
12"	PVC, DI	0.88
16"	DI, PCCP	1.17
20"	DI, PCCP	1.47
24"	DI, PCCP	1.76

* 75% of allowable leakage per AWWA C600, rev.99.

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5. Regardless of the above allowables, any visible leaks shall be permanently stopped.
6. The CONTRACTOR shall provide a meter certified within the last year or a source-water tank/barrel of small enough cross section so that measurable changes in water depth can be accurately recorded. A two hour test is permitted for circular tanks/barrels of 15 inches in diameter or less. A four hour test is required for circular tanks/barrels greater than 15 inches in diameter. If a tank of non-circular cross section or irregular shape is used, and the change in water depth cannot be properly measured, the ENGINEER or AUTHORITY may require the test to be run more than 2 hours until an accurate depth change can be recorded and the ENGINEER is satisfied with the results.
7. The leakage volume recorded over the 2 or 4-hour test must be acceptable to the County Health Department and AUTHORITY for final waterline approval to be given.

3.02 BUTTERFLY VALVE TESTING

- A. Each butterfly valve shall have a field leakage test performed with the pressure differential as identified in Section 15051, Buried Piping Installation, applied in both directions. This requirement does not waive the requirements stipulated in AWWA C504.
- B. The duration of each field test in each direction shall be a minimum of two (2) hours.
- C. The CONTRACTOR shall demonstrate to the ENGINEER'S satisfaction that all system components operate correctly, both individually and as a system. All testing equipment and materials required to perform all tests shall be provided by the CONTRACTOR and demonstrated as functional and accurate to the ENGINEER. Non-functional or inaccurate equipment, regardless of test results, will be grounds for test failure. CONTRACTOR shall resupply proper equipment and retest.

3.03 RESILIENT SEAT GATE VALVE TESTING

- A. Each gate valve shall have a field leakage test performed with the pressure differential as identified in Section 331100, Buried Piping Installation, applied in both directions. This requirement does not waive the requirements stipulated in AWWA C509.
- B. The duration of each field test in each direction shall be a minimum of two (2) hours unless specifically defined by the ENGINEER.
- C. The CONTRACTOR shall demonstrate to the ENGINEER'S satisfaction that all system components operate correctly, both individually and as a system. All testing equipment and materials required to perform all tests shall be provided by the CONTRACTOR and demonstrated as functional and accurate to the ENGINEER. Non-functional or inaccurate equipment, regardless of test results, will be grounds for test failure. CONTRACTOR will resupply proper equipment and retest.

SECTION 331301 - TESTING AND DISINFECTION

3.04 TAPPING SLEEVE AND VALVE TESTING

- A. Prior to making the tap, gate valves shall have a field leakage test performed with a hydrostatic pressure as identified in Section 331100, Buried Piping Installation, on the open end.
- B. Once the system is complete, the valves shall be tested in accordance with the Butterfly and Resilient Seat Gate Valve Testing criteria stated above.
- C. The duration of each field test shall be a minimum of two (2) hours unless specifically defined by the ENGINEER.
- D. After installation of the tapping sleeve or saddle and prior to tapping the main, the sleeve or saddle shall be air tested in accordance with manufacturers' recommendations. If the results of the air test do not meet manufacturers' specifications, the sleeve or saddle will be replaced and retested until the results are satisfactory.
- E. The CONTRACTOR shall demonstrate to the ENGINEER'S satisfaction that all system components operate correctly, both individually and as a system. All testing equipment and materials required to perform all tests shall be provided by the CONTRACTOR and demonstrated as functional and accurate to the ENGINEER. Non-functional or inaccurate equipment, regardless of test results, will be grounds for test failure. CONTRACTOR will resupply proper equipment and retest.

3.05 DISINFECTION

- A. Before disinfection, the line shall be cleaned and flushed with clean water as defined in the Initial Flushing section. CONTRACTOR shall provide outlets as required.
- B. The chlorine solution shall be admitted to pipelines through corporation stops placed in the horizontal axis of the pipe, to structures by means of tubing extending directly into the structure or other approved methods.
- C. CONTRACTOR shall install 2-inch saddles on existing and proposed mains and run 2-inch Type K copper tubing with backflow prevention device to allow for addition of chlorinated water. The rate of chlorine solution flow shall be in such proportion to the rate of water entering the pipe or structure that the resulting free chlorine residual shall be between 50 and 100 milligrams per liter (mg/l). Concentrations over 100 mg/l shall not be allowed to enter the piping system.
- D. The placement of chlorine powder or tablets inside the pipe during installation as a means of disinfection will not be allowed.
- E. The proposed piping shall be tested in all respects, prior to connecting the second end of the pipe to the existing system and prior to installing the annular fill at casing pipes.
- F. All valves to existing mains must be closed during the chlorination process. CONTRACTOR must flush the proposed main through a backflow preventer such as a Reduced Pressure Zone (RPZ) and 2-inch copper until chlorine residual at the opposite

SECTION 331301 - TESTING AND DISINFECTION

end reaches 50 mg/l. All valves to the existing water network are to remain closed until this level is reached. While the chlorinated water is being added, all appurtenances on the main shall be operated so as to completely disinfect the new work. The operation shall be repeated as necessary to provide complete disinfection.

- G. Chlorinated water from hydrants and taps must be properly collected and disposed of by the CONTRACTOR. Discharge of chlorinated water into the existing storm sewer or a natural water body shall not be allowed.
- H. The chlorine treated water shall be retained in the pipe or structure at least 24 hours, unless otherwise directed. During the retention period all valves and hydrants within the treated sections shall be operated.
- I. The chlorine residual shall be not less than 25 mg/l at any point in the pipe or structure at the end of the retention period. CONTRACTOR shall immediately perform final flushing to reduce the retention time high levels of chlorinated water.
- J. When making repairs to or when specified, structures and portions of pipelines shall be chlorinated by a concentrated chlorine solution containing between 200 mg/l and 300 mg/l of free chlorine. The solution shall be applied with a brush or sprayed on the entire inner surface of the empty pipes or structures. The surfaces disinfected shall remain in contact with the strong chlorine solution for at least 30 minutes.
- K. The CONTRACTOR must use an approved test method, as defined in AWWA C651 and *Standard Methods for the Examination of Water and Wastewater*, to determine chlorine levels. Test strips and test kits will be allowed for testing chlorine levels if the kit is less than six months old, in the original bottle, is not past the expiration date, and has a color coded scale on the side with legible concentrations defined. ENGINEER and AUTHORITY reserve the right to reject test results if the test strip or kit is suspect. Sending samples to an approved laboratory is also acceptable.

3.06 FINAL FLUSHING

- A. Upon completion of each disinfecting operation, the CONTRACTOR will be required to empty the contents of the pipe into a tank truck. Dumping into a sewer will only be allowed with approval from the local governing body. In no instance will chlorinated testing or flushing water be emptied onto the roadways, in ditches, culverts, streams, wetlands, or any other natural water body.
- B. Final flushing will continue until such time as the chlorine residual is between 0.5 and 1.2 mg/l.
- C. Prior to discharging into storm or sanitary sewer systems, and with the written approval of the municipality, the CONTRACTOR shall use a reducing agent (such as sodium thiosulfate) to neutralize any chlorine residual. CONTRACTOR shall prove to the ENGINEER, AUTHORITY and municipality that the water has been properly neutralized prior to discharge using an appropriate testing method.

SECTION 331301 - TESTING AND DISINFECTION

3.07 BACTERIOLOGICAL TESTING

- A. After disinfection and final flushing, a representative of the laboratory hired by the CONTRACTOR shall, in the presence of the ENGINEER, take two bacteriological samples from sampling points at maximum 1,000-foot intervals along the waterline, at every branch off the main line, and at each end of the test section (one immediately after final flushing and a second one after 24 hours) for testing by an ELAP certified laboratory in accordance with the latest Health Department requirements.
- B. Should acceptable results not occur after these two consecutive tests, the CONTRACTOR shall, at his expense, repeat the disinfection procedure until safe results are obtained.
- C. All precautions shall be taken to maintain dry and sanitary conditions and to prevent contamination of any piping, at the CONTRACTOR'S expense.
- D. If, in the opinion of the ENGINEER or AUTHORITY, contamination has occurred, the CONTRACTOR shall repeat the disinfection and bacteriological testing at his cost and expense.
- E. Test results from the laboratory shall be sent directly to the ENGINEER. Test results sent through the CONTRACTOR shall not be considered.
- F. Bacteriological test results shall expire 30 calendar days after the samples are taken. After 30 calendar days, the CONTRACTOR shall be required to repeat the process, taking two sets of samples and submitting results for review.
- G. As per AWWA C651-14 standards, the limit for pipe installed without bacteriological samples being taken is 20 linear feet.

3.08 APPROVAL

- A. The ENGINEER shall submit the Waterline Installation Complete Works Approval Report(s) to the Erie County Water Authority for review and processing.
- B. Once approval is given, after reconnecting the proposed piping to the existing piping, the CONTRACTOR shall slowly refill the watermain with water and allow it to pressurize so that the ENGINEER may inspect the connections and/or other piping.
- C. The CONTRACTOR shall, at his expense, correct any observed defects to the satisfaction of the ENGINEER and OWNER.

END OF SECTION

SECTION 331301 - TESTING AND DISINFECTION

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SECTION 331314 - WATER STORAGE TANK DISINFECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Cleaning, inspection and disinfection.
 - 2. Bacteriological testing.

1.02 REFERENCE STANDARDS

- A. American Water Works Association:
 - 1. AWWA C652 - Disinfection of Water Storage Facilities.

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Disinfection Procedure:
 - 1. Submit description of procedure, including type of disinfectant and calculations indicating quantities of disinfectants required to produce specified chlorine concentration.
 - 2. Comply with Sections 3 and 4 of AWWA C652.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Certify that disinfectants meet or exceed AWWA C652 requirements.
- E. Test and Evaluation Reports: Indicate results of bacteriological and residual chlorine laboratory test reports.
- F. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- G. Qualifications Statement:
 - 1. Submit qualifications for applicator.

1.04 QUALITY ASSURANCE

- A. Perform Work in compliance with AWWA C652.
- B. Perform Work according to local standards.
- C. Maintain one copy of each standard affecting Work of this Section on Site.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

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- C. Store disinfectants according to manufacturer's recommendations and in a cool, dry place away from combustibles such as wood, rags, oils, and greases.
- D. Handle disinfectants according to manufacturer's safety precautions.

PART 2 - PRODUCTS

2.01 DISINFECTANTS

- A. Chlorine Forms: Sodium hypochlorite according to AWWA C652, Section 4.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for application examination.
- B. Inspection:
 1. Conduct inspection of tank interior before beginning disinfection.
 2. Verify that tank is clean and free of polluting materials.
 3. Verify that tank pipe and vent connections are properly made and clear of obstructions.

3.02 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for application preparation.
- B. Furnish personnel working inside tank during disinfection with equipment to comply with Federal and State regulations for Work conducted in a hazardous atmosphere.
- C. Protect aquatic life and vegetation from damage from disinfectant solution purged from tank.

3.03 CLEANING

- A. The Owner will isolate and drain the tank. The Contractor shall remove any remaining standing water in the tank.
- B. High Pressure Water Washing (Power Wash)
 1. All interior surfaces shall be cleaned by High Pressure Water Washing following recommended practice in NACE Standard RP-05-95 (SSPC-SP12) with permissible exceptions noted in following.
 2. For purposes of this specification, High Pressure Water Washing shall employ minimum nozzle pressure of 3,000 PSI and water volume of 4 gpm minimum.
 3. High Pressure Water Washing shall remove from the surface being cleaned all water soluble chemical contamination, chalk, deteriorated and loose chalking paint, poorly adhering paint, loose rust and scale, dust and dirt.
 4. Water used must be clean and free of silts or other contaminants that could leave a corrosive deposit on the surface being cleaned.

SECTION 331314 - WATER STORAGE TANK DISINFECTION

5. If, after approval by the Engineer, detergents or various other suitable cleaning agents are used to remove oil, grease, chalk or other contamination, any residue from such agents shall be removed from the surface by flushing with clean water.

C. Ventilation and Safety Requirements

1. The Contractor shall maintain adequate and continuous explosion-proof ventilation during all operations. The ventilation shall meet all current federal, state and local regulations.
2. All equipment used, including ventilation fans, shall be maintained in good working order and shall be explosion-proof and/or non-sparking.
3. The Contractor shall provide adequate explosion-proof lighting during all surface preparation and coating operations sufficient to clearly illuminate the working area without shadows.
4. All work shall be performed in a safe and orderly manner and shall comply with current OSHA standards including, but not limited to, 29 CFR 1926.62, 1910.134 and 1910.146 and standards as prescribed by the New York State Department of Labor and Industry. The Contractor shall comply with all current regulations governing confined space entry.
5. Compliance with 29 CFR 1910.146 for confined space entry includes, but is not limited to, the following:
 - a. Worker and Supervisor training and certification.
 - b. Development of a written compliance program.
 - c. Emergency response procedures and training for rescue and emergency services.

D. Testing and Disposal

1. The Contractor will be responsible for sampling and testing the debris material to determine if it is hazardous. Testing agency must be approved by the Engineer and sample taken in the presence of the Engineer. Copies of all testing results shall be sent to the Engineer prior to removal of any debris from the site. Toxicity Characteristics Leaching Procedures (TCLP) tests will be performed on the appropriate number of samples to make this determination per the testing agency's recommendation.
2. Until the material is tested to determine its hazardous nature, the Contractor shall be responsible for storing and handling the debris material as though it were hazardous. Special attention shall be given to the time of storage, amount of material stored at any one time, use of proper containers and personnel training. All of the above shall be done in strict accordance with all current federal, state and local regulations. Debris shall not be placed on the unprotected ground and shall be shielded adequately to prevent dispersion of the debris by wind or rain water. Any evidence of improper storage shall be cause for immediate shutdown of the project until corrective action is taken.
3. It shall be the responsibility of the Contractor to arrange for the proper transportation, treatment and disposal of the waste, consistent with the hazardous classification of the waste. Transportation, treatment and disposal shall be done in strict accordance with all current federal, state and local regulations.
4. The Contractor shall submit to the Engineer written confirmation that the proper transportation, treatment and disposal of the waste will be accomplished in accordance with all current federal, state and local requirements. The submittal shall include the names and EPA identification numbers of the transporter and

SECTION 331314 - WATER STORAGE TANK DISINFECTION

disposal facility, if required, and the necessary notifications and certifications on shipments.

5. Signed manifests shall be returned to the Engineer to verify that all steps of the handling and disposal process have been completed properly.
6. The Contractor is responsible to store waste until disposal. Prior to disposal, all paperwork for disposal and transportation must be completed, reviewed and signed.
7. The Contractor shall include in his bid the costs for handling and disposal based on non-hazardous debris. Additional costs for handling and disposal if determined to be hazardous will be under the Contingency Allowance.

3.04 INSPECTION

- A. The Contractor shall provide a seven day period upon completion of the cleaning to allow the Owner to perform an inspection of the tank interior.
- B. The Contractor shall provide a scaffold system on wheels, and maneuvering assistance to the City for the inspection work.

3.05 DISINFECTION OF INTERIOR.

- A. Prior to filling and placing in service, the storage tank interior areas, which includes all surfaces inside the tank areas in contact with water and areas above the high water level such as the, tank roof, and inlet, outlet, and overflow piping, shall be disinfected in accordance with AWWA Standard C652 (Method 2 only), latest revision thereof, and meet N.Y.S. and Erie County Health Department Standards. After disinfection and filling, the Testing Laboratory shall, in the presence of the Engineer, take two bacteriological samples (one immediately after tank is completely filled and a second one after 24 hours) for testing by an approved laboratory in accordance with the latest Health Department requirements. The Contractor shall submit the reports directly to the Owner and the Engineer. Should acceptable results not occur after these two consecutive tests, the Contractor shall, at his expense, repeat the disinfection procedure until safe results are obtained.
- B. In addition, one water sample shall also be analyzed for free chlorine residual. The free chlorine residual shall be greater than 0.5 mg/1 and be less than 1.5 mg/1 prior to placing the tank back into service. All testing is at Contractor's expense.
- C. The Contractor shall notify the Owner's representative when disinfection work is to be done so that he may be present to observe the work.
- D. The Contractor shall notify the Engineer prior to filling the tank. The Engineer will arrange with the City of Buffalo to fill the tank to overflow elevation. The Contractor will be required to monitor filling operations.
- E. Superchlorinated water shall be discharged in a manner that will not adversely affect flora and fauna, and shall conform to applicable state regulations for waste discharge.
- F. The Owner shall provide the water at no cost to the Contractor for the initial fill. If, for any reason, the tank must be drained to waste and refilled, the cost of water will be paid

SECTION 331314 - WATER STORAGE TANK DISINFECTION

by the Contractor. The Contractor will be responsible for any disposal costs and any required permits for discharge of water that does not meet regulations.

- G. Contractor is responsible for sealing roof manholes, and vent during the completion of work following initial disinfection and filling of interior to ensure no contamination of interior wet area while tank is out of service. If, for any reason, the tank must be drained to waste and refilled, the cost of water will be paid by the Contractor. The Contractor will be responsible for any disposal costs and any required permits for discharge of water that does not meet regulations.
- H. The costs for any additional testing, beyond that specified above, and any other work necessary to bring the tank into compliance with all regulations, are the responsibility of the Contractor.

3.06 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.
- B. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- C. Sampling:
 - 1. Collect samples of water from filled tank for bacteriological analysis according to Section 5 of AWWA C652.
 - 2. Take inlet and outlet water samples.
- D. Test water samples for bacterial contamination, residual chlorine, and according to State Health Standards for potable water.
- E. When water samples fail to meet State Health Standards for potable water, perform following corrective measures until water quality conforms to State Health Standards:
 - 1. Sample Failure: Eliminate source of contamination in water supply, repeat disinfection, and retest water quality.

END OF SECTION

SECTION 331314 - WATER STORAGE TANK DISINFECTION

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SECTION 334113 - PUBLIC STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Storm drainage piping.
2. Accessories.
3. Underground pipe markers.
4. Drainage structures.
5. Bedding and cover materials.
6. Pile support systems.
7. Pipe support systems.
8. Concrete encasement and cradles.

B. Related Sections:

1. Section 032000 - Concrete Reinforcing: Reinforcement of concrete cradles.
2. Section 310513 - Soils for Earthwork: Soils for backfill in trenches.
3. Section 310517 - Select Granular Materials: Aggregate for backfill in trenches.
4. Section 312316 - Excavation: Product and execution requirements for excavation and backfill required by this section.
5. Section 312317 - Trenching: Execution requirements for trenching required by this section.
6. Section 312323 - Fill: Requirements for backfill to be placed by this section.

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
2. AASHTO M36/M36M - Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains.
3. AASHTO M86 - Concrete, Sewer, Storm Drain, and Culvert Pipe. AASHTO M170 - Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
4. AASHTO M196/M196M - Corrugated Aluminum Pipe for Sewers and Drains.
5. AASHTO M198 - Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets.
6. AASHTO M206 - Reinforced Concrete Arch Culvert Storm Drain, and Sewer Pipe. AASHTO M207 - Reinforced Concrete Elliptical Culvert, Storm Drain and Sewer Pipe.
7. AASHTO M252 - Corrugated Polyethylene Drainage Tubing.
8. AASHTO M264 - Acrylonitrile-Butadiene-Styrene (ABS) and Poly Vinyl Chloride (PVC) Composite Sewer Piping.
9. AASHTO M278 - Class PS 50 Polyvinyl Chloride (PVC) Pipe.
10. AASHTO M288 - Geotextiles.
11. AASHTO M294 - Corrugated Polyethylene Pipe, 12- to 36-in Diameter.

B. ASTM International:

1. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

SECTION 334113 - PUBLIC STORM UTILITY DRAINAGE PIPING

2. ASTM A746 - Standard Specification for Ductile Iron Gravity Sewer Pipe.
3. ASTM C14 - Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
4. ASTM C969 - Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines.
5. ASTM C924 - Standard Practice for Testing Concrete Pipe Sewer Lines by Low-Pressure Air Test Method.
6. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
7. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
8. ASTM D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.
9. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
10. ASTM D2564 - Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.
11. ASTM D2729 - Standard Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
12. ASTM D2751 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.
13. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
14. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
15. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
16. ASTM D3034 - Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
17. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
18. ASTM F405 - Standard Specification for Corrugated Polyethylene (PE) Pipe and Fittings.
19. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
20. ASTM F667 - Standard Specification for Large Diameter Corrugated Polyethylene Pipe and Fittings.
- 21.

1.03 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data indicating pipe, pipe accessories, and structure information.
- C. Manufacturer's Installation Instructions: Submit special procedures required to install Products specified.

SECTION 334113 - PUBLIC STORM UTILITY DRAINAGE PIPING

D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.04 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents:

1. Accurately record actual locations of pipe runs, connections, manholes, inlets, catch basins, and invert elevations.
2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with NYSDOT Standards.

1.06 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum five years documented experience.

B. Installer: Company specializing in performing work of this section with minimum five years documented experience.

1.07 PRE-INSTALLATION MEETINGS

A. Section 013000 - Administrative Requirements: Pre-installation meeting.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Block individual and stockpiled pipe lengths to prevent moving.

C. Do not place pipe or pipe materials on private property or in areas obstructing pedestrian or vehicle traffic.

D. Do not place pipe flat on ground. Cradle to prevent point stress.

E. Store UV sensitive materials out of direct sunlight.

1.09 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate the Work with termination of storm sewer, trenching, connection to public storm sewer and outfall installation.

C. Coordinate unrecorded or variations in site conditions, and corresponding adjustments to construction requirements.

SECTION 334113 - PUBLIC STORM UTILITY DRAINAGE PIPING

PART 2 - PRODUCTS

2.01 STORM DRAINAGE PIPING

- A. Plastic Pipe: ASTM F667 AASHTO M294, and AASHTO M252 corrugated Polyethylene Drainage Pipe, dual walled, smooth interior, inside nominal diameter as indicated on drawings.
 - 1. Fittings: Polyethylene conform to AASHTO M252, AASHTO M294, ASTM F2306.
 - 2. Joints: ASTM F667, AASHTO M252, AASHTO M294, AASHTO M252 or ASTM F2306.

2.02 ACCESSORIES

- A. Geotextile Filter Fabric: Non-woven meeting NYSDOT Sec. 737-01C requirements.

2.03 UNDERGROUND PIPE MARKERS

- A. Trace Wire: Magnetic detectable conductor, clear, brightly colored plastic covering, imprinted with "Storm Sewer Service" in large letters.
- B. Catch Basins, Inlets and Manholes: Conform to Section 330513.

2.04 DRAINAGE STRUCTURES

- A. Drainage Structures: Precast concrete Cast-In-Place concrete, Concrete block, Brick, Plastic, as specified in Section 330513.

2.05 BEDDING AND COVER MATERIALS

- A. Bedding: Fill Type A1 or A2 as specified in Section 310516.
- B. Cover: Fill Type A4 under or near pavement and Type S1 in lawn or non critical areas, as specified in Section 310516.
- C. Soil Backfill from top of pipe to top of trench: Soil Type S2, as specified in Section 310513.

2.06 PIPE SUPPORTS AND ANCHORING

- A. Metal for pipe support brackets: Galvanized structural steel thoroughly coated with bituminous paint.
- B. Metal tie rods and clamps or lugs: Galvanized steel sized in accordance with NFPA 24 thoroughly coated with bituminous paint.

2.07 FINISHING - STEEL

- A. Galvanizing: ASTM A123/A123M; hot dip galvanize after fabrication.
- B. Galvanizing for Nuts, Bolts and Washers: ASTM A153/A153M.

SECTION 334113 - PUBLIC STORM UTILITY DRAINAGE PIPING

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings. Notify Engineer of discrepancies.

3.02 PREPARATION

- A. Hand trim excavations to required elevations. Correct over excavation with fine aggregate.
- B. Remove large stones and other hard or organic matter capable of damaging piping or impeding consistent backfilling or compacting.

3.03 EXCAVATION AND BEDDING

- A. Excavate pipe trench in accordance with Section 312317. Hand trim excavation for accurate placement of pipe to elevations indicated.
- B. Dewater excavations to maintain dry conditions to preserve final grades at bottom of excavation.
- C. Provide sheeting and shoring in accordance with Section 312317.
- D. Place bedding material at trench bottom, level materials in continuous layers not exceeding 6 inches compacted depth.
- E. Install pipe on compacted subgrade meeting bedding requirements. Cradle bottom 20 percent of diameter to avoid point load.
- F. Compact according to requirements.
- G. Place geotextile fabric over backfill.

3.04 INSTALLATION - PIPE

- A. Install pipe, fittings, and accessories in accordance with ASTM D2321. Seal joints watertight.
- B. Place pipe on minimum 6 inch deep bed of Type A1 bedding, or compacted subgrade meeting bedding requirements.
- C. Lay pipe to slope gradients noted on drawings with maximum variation from indicated slope of 1/8 inch in 10 feet. Connect pipe to drainage structures.
- D. Install aggregate at sides and over top of pipe. Install top cover to minimum compacted thickness of 12 inches. Compact to 95 percent dry density by weight.

SECTION 334113 - PUBLIC STORM UTILITY DRAINAGE PIPING

- E. Refer to Section 312323 for backfilling and compacting requirements. Do not displace or damage pipe when compacting.
- F. Install trace wire continuous over top of pipe. buried 12 inches below finish grade, above piping; coordinate with Section 312323, 312317.

3.05 INSTALLATION - DRAINAGE STRUCTURES

- A. Install catch basins, inlets, and manholes in accordance with Section 330513.

3.06 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements, 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Request inspection prior to and immediately after placing aggregate cover over pipe.
- C. Compaction Testing: In accordance with ASTM D1557, ASTM D698, AASHTO T180, ASTM D2922, and ASTM D3017.
- D. When tests indicate work does not meet specified requirements, remove work, replace and retest.
- E. Frequency of Compaction Tests: As directed by Engineer.
- F. Infiltration Test: Test in accordance with ASTM 969
- G. Deflection Test: Test in accordance with pipe manufacture tests.
- H. Pressure Test: Test in accordance with ASTM C924 and ASTM 1103, depending on size of pipe.

3.07 PROTECTION OF FINISHED WORK

- A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is complete.
 - 1. Take care not to damage or displace installed pipe and joints during construction of pipe supports, backfilling, testing, and other operations.
 - 2. Repair or replace pipe that is damaged or displaced from construction operations.

END OF SECTION

SECTION 400515 – PRESTRESSED CONCRETE CYLINDER PIPE ADAPTERS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The work specified shall include all labor, materials, tools, equipment, services, and incidentals necessary to furnish and install prestressed concrete cylinder water piping and fittings as shown, specified and required.

B. Related Work Specified Elsewhere

1. Section 331100 – Buried Piping Installation.
2. Section 400519 – Ductile Iron Pipe, Fittings, and Accessories.

1.02 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

1. Manufacturer shall have a minimum of 5 years experience producing prestressed concrete cylinder pipe, fittings, and appurtenances, and shall show evidence of at least 5 installations in satisfactory operation.
2. Parts Interchangeability: It is the intent of these specifications that all materials furnished herein shall be compatible with similar materials of other manufacturers. This interchangeability for both cylinder and embedded cylinder pipe shall include, but not be limited to the following components: cylinder outside diameter, joint ring outside diameter, joint depth (stab depth), and joint O-ring gasket. Care must also be taken to assure that the interchangeable pipe has the proper design for both external and internal pressures (working plus surge) and have the proper cylinder thickness if installed in a restrained joint area of the pipeline.

B. Marking for Identification:

1. All pipe, fittings, and specials shall have the pipe class and specification designation with size and length dimensions stenciled thereon. Pipe that has been designed for pipe load conditions or thrust restraint shall have special markings thereon which can be readily identified. The name or trademark of the manufacturer, and the date and place of manufacturer shall also be stenciled on the pipe, fittings, and specials. The piping for each service or system as specified herein shall be provided by a manufacturer who has thoroughly familiarized himself with the design intent of the overall system and will provide piping suitable for the service intended.

C. Reference Standards:

1. AWWA C301, Prestressed Concrete Pressure Pipe, Steel-Cylinder Type, for Water and Other Liquids.
2. AWWA C304, Design and Prestressed Concrete Cylinder Pipe.
3. AWWA Manual M9, Concrete Pressure Pipe.

SECTION 400515 – PRESTRESSED CONCRETE CYLINDER PIPE ADAPTERS

4. AWWA C651, Preventative and Corrective Measures During Construction.
5. NSF/ANSI Standard 61.
6. Underwriter's Laboratories (UL).
7. International Organization for Standardization (ISO).
8. Factory Mutual Research Corporation.

1.03 SUBMITTALS

A. Shop Drawings: Submit for approval the following:

1. Information on the product confirming compliance with the specified standard and any modifications included in this specification section.
2. As a minimum, the submittal shall include the following: design data sheet(s), pipe and joint detail drawings, restrained joint detail drawings, closure details (restrained and unrestrained), fitting detail drawings, and pipe laying schedule. The submittal should note any exceptions to AWWA C301 and any modifications included in this specification section.
3. Material specifications and certifications.
4. Shop drawings and affidavit of compliance per AWWA C301.
5. The manufacturer is solely and fully responsible for adapter manufacture in accordance with the design criteria contained in the specifications.
6. Affidavit that all materials conform to AWWA C301 and any modifications included in this specification section.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. During delivery and handling, all materials shall be braced and protected from any distortion or damage; any such distortion or damage shall be basis for rejection of the materials.
- B. Equipment used for unloading shall be covered with wood or rubber to avoid damage to the exterior of the pipe, fittings and appurtenances. Do not drop or roll materials off trucks. All prestressed concrete cylinder pipe and fittings shall be handled with padded slings or other appropriate equipment. The use of cables, hooks or chains will not be permitted.
- C. The materials shall be inspected before and after unloading. Materials that are found to be cracked, gouged, chipped, or otherwise damaged will not be accepted.
- D. Interiors and pipe, fittings and appurtenances shall be kept free from dirt and foreign matter.
- E. Store pipe and fittings on heavy wood blocking or platforms so they are not in contact with the ground.
- F. Pipe, fittings, and specials shall be unloaded opposite to or as close to the place where they are to be laid as is practical to avoid unnecessary handling.

SECTION 400515 – PRESTRESSED CONCRETE CYLINDER PIPE ADAPTERS

PART 2 - EXECUTION

2.01 PRESTRESSED CONCRETE CYLINDER PRESSURE PIPE ADAPTERS

A. General:

1. All products, including interior coatings shall be suitable for use in a potable water system.
2. All products including wetted parts shall be certified to meet NSF/ANSI Standard 61.

B. Prestressed Concrete Steel Cylinder Pipe Adapters (Lined Cylinder and Embedded Cylinder Pipe).

1. Steel thickness of all adapter fittings shall be designed in accordance with Chapter 8 of the AWWA M9 manual for Concrete Pressure Pipe. Adapter fittings shall be designed for the same conditions as the adjacent pipe.
2. Fabrication of the adapters shall be as per AWWA M9 Manual and the AWWA C301 Standard for the Manufacture of Prestressed Concrete Steel Cylinder Pipe.
3. Interior and Exterior concrete/mortar coating shall be as per the AWWA C301 Standard.

PART 3 - EXECUTION

3.01 PRESTRESSED CONCRETE CYLINDER PIPE.

- A. Before the pipe is lowered into the trench, the mortar coating at the pipe ends and both end rings should be thoroughly cleaned and carefully checked for damage. The bell joint ring shall be smooth and free from burrs and deformations. Before the gasket is installed, it shall be thoroughly lubricated by immersing it in a viscous solution of vegetable soap.
- B. After the pipe has been lowered into the ditch, the lubricated gasket should be stretched around the spigot and settled into the circumferential groove.
- C. While the pipe is still clear of the trench bottom, it shall be aligned with the pipe to which it will be joined. As the pipe is advanced toward the pipe in place, the spigot is depressed manually and guided into the flare of the bell.
- D. The joints of pipes 24 inches in diameter and larger may be checked from within the pipe. As the spigot is thrust "home", its advance is checked by two steel inserts in the seat of the bell, 180 degrees apart. These inserts are then removed and a feeler gauge is entered into the recess until the gasket can be felt. If any irregularity is detected in the position of the gasket, the pipe must be removed and the gasket examined for cuts. If undamaged, it may be used again after both, the gasket and the joint are relubricated.
- E. Prior to the installation of adjacent pipe, a joint diaper shall be placed around the bell of the pipe already laid. After the installation of the adjacent pipe, the diaper shall be slipped forward to cover the joint recess and fastened in place with either wire or steel strapping stitched into its edges. A 1:3 cement mortar grout mixture (1 part cement to 3 parts sand) shall then be poured

SECTION 400515 – PRESTRESSED CONCRETE CYLINDER PIPE ADAPTERS

into the joint recess beneath the diaper and rodded to assure complete filling of the entire diaper and recess.

- F. Complete installation of polyethylene encasement prior to backfilling.

3.02 ULTRASONIC JOINT TESTING

- A. Each joint shall, at the CONTRACTOR'S sole cost and expense, be tested with ultrasonic test equipment prior to being backfilled. If a leak is detected, corrective action shall be taken prior to installing the next pipe.
- B. The fact that a point (or joints) has passed the ultrasonic testing does not waive the requirements for the hydrostatic tests described herein.
- C. The testing equipment shall be as manufactured by Moffat Enterprises of Powell Butte, or equal.

3.03 HYDROSTATIC PRESSURE AND LEAKAGE TEST

- A. After the transmission main has been laid and the joints completed, this newly laid pipe shall be subjected to a pressure and leakage test.
- B. The test pressure for this test shall be as specified in Section 331100, Buried Piping Installation, and shall be measured at the lowest point in the test section.

3.04 DURATION

- A. The duration of the hydrostatic pressure and leakage test shall be as specified in Section 331100, Buried Piping Installation.

3.05 PROCEDURE

- A. The pipe shall be slowly filled with water and the specified test pressure, measured at the point of lowest elevation, shall be applied by means of a pump connected to the pipe in a satisfactory manner. Prior to testing, the pipe shall be allowed to soak under low pressure to allow the pipe walls to absorb water and for temperature stabilization. The pump, pipe, gauges, water, and measuring devices will be furnished by the CONTRACTOR. All work shall be accomplished by the CONTRACTOR.
- B. When filling of the new line is achieved by accepting water from an existing waterline, the CONTRACTOR shall, as minimum, furnish and install apparatus
- C. such as a reduced pressure zone backflow preventer at the source of the supply to protect against the backflow of water from the new line to the existing line. Water for these purposes shall be metered. The pipeline shall be allowed to soak under low pressure to allow the pipe walls to absorb water and for temperature stabilization.
- D. Testing shall be done as soon as the line is installed as determined by the ENGINEER.

SECTION 400515 – PRESTRESSED CONCRETE CYLINDER PIPE ADAPTERS

- E. The pressure and leakage test shall be performed as follows:
1. For the entire Contract from the beginning station to the end station.
 2. For each valved section of the Contract (i.e., from line valve to line valve). These series of section tests shall be performed so that each section is tested separately and so that each butterfly line valve is tested in both directions.
 3. The CONTRACTOR shall furnish outlets for filling with water, expelling air, and testing each section as required. Outlets shall also be provided for sample points as shown on the drawings. These outlets shall be manufactured with the pipe.
 4. All tests shall indicate satisfactory results.

3.06 EXPELLING AIR BEFORE TESTING

- A. Before applying the specified test pressure, all air shall be expelled from the pipe. To accomplish this, factory installed outlets shall be furnished at various locations and elevations in the test section including the points of highest elevation in the test section. After satisfactory test results these outlets shall be tightly plugged if no longer required.
- B. When test bulkheads are used for testing, they shall include two (2) outlets, one for filling and one for releasing air.

3.07 PRESSURE AND LEAKAGE TEST

- A. All exposed pipes, joints, and fittings which are exposed when the test is conducted shall be carefully examined for visible leakage. Those portions of the pipeline covered by backfill shall be walked to observe leakage appearing on the ground surface. Any leaks discovered in the joints shall be corrected until tight. Any cracked or defective pipe, fittings, etc. discovered in consequence of this pressure test shall be removed and replaced by the CONTRACTOR with new material as previously specified and the test repeated until satisfactory to the ENGINEER.
- B. Suitable means (acceptable to ENGINEER) shall be provided by the CONTRACTOR for determining the quantity of water loss by leakage under the specified test pressure. No pipe installation will be acceptable until, or unless, this leakage is less than specified.
- C. Allowable leakage shall be as specified in Section 331301, Testing and Disinfection.
- D. Should any test of pipe laid disclose leakage per mile of pipe greater than that specified, the CONTRACTOR shall, at his own expense, locate and repair the defective joints or pipe until the leakage is within the specified allowable.

3.08 LEAKAGE DEFINED

- A. Leakage is defined as the quantity of water to be supplied into the newly laid pipe necessary to maintain the specified test pressure after the pipe has been filled with water and the air expelled.

3.09 WATER FOR TESTING

- A. Water for performing the first filling, flushing, and testing operations shall be furnished by the OWNER. Disposal of all water shall be by the CONTRACTOR at his expense. If the water for

SECTION 400515 – PRESTRESSED CONCRETE CYLINDER PIPE ADAPTERS

filling and testing is obtained from an existing waterline, a meter shall be installed to measure the quantity of water used for these purposes. No water shall be obtained from an existing waterline unless the CONTRACTOR first obtains the consent of the agency having jurisdiction over the existing main. Existing codes may restrict the amount and rate of water that can be obtained from the existing line and the CONTRACTOR shall comply with the directions of the agency of jurisdiction or the ENGINEER in this regard. If additional water is required for any reason (refilling, retesting, etc.), the water shall be at the CONTRACTOR'S expense.

- B. If test results are unsatisfactory and additional water is required to refill, retest, etc., additional water shall be at the CONTRACTOR'S expense.

3.10 DISINFECTION

- A. All watermains shall be disinfected in accordance with AWWA C601 and Section 331301, Testing and Disinfection.

END OF SECTION

SECTION 400519 - DUCTILE IRON PIPE, FITTINGS, AND ACCESSORIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

The work specified shall include all labor, material, equipment, tools, services and incidentals necessary to furnish and install ductile iron pipe, fittings and appurtenances as shown, specified and required.

B. Pipe Schedule

1. Hydrant piping:
 - a. Pipe Class 53.
 - b. All joints are to be restrained and only as follows:
 - 1) Mechanical joint pipe and fittings utilizing wedge action retainer glands.
 - 2) Anchor pipe and anchor fittings.
2. 4-inch through 12-inch watermain (except hydrant piping):
 - a. Pipe class 52.
 - b. Non-restrained joints
 - 1) Bell and spigot push-on joint pipe.
 - c. Restrained joints utilizing one of the following:
 - 1) Mechanical joint pipe and fittings utilizing wedge action retainer glands.
 - 2) Bell and spigot push-on joint pipe with ductile iron pipe wedge action restraining devices and mechanical joint fittings utilizing wedge action retainer glands.
 - 3) Flexible restrained joint pipe and fittings utilizing patented ductile iron locking segment(s) or flex ring with factory applied spigot retainer weldment.
 - 4) Flexible restrained joint pipe utilizing patented ductile iron locking segment(s) or flex ring with factory applied spigot retainer weldment and mechanical joint fittings utilizing wedge action retainer glands.
3. 16-inch and larger watermain:
 - a. Pipe Class 56.
 - b. Non-restrained joints:
 - 1) Bell and spigot push-on joint pipe.
 - c. Restrained joints, utilizing one of the following:
 - 1) Flexible restrained joint pipe and fittings utilizing patented ductile iron locking segment(s) or flex ring with factory applied spigot retainer weldment.
 - 2) Flexible restrained joint pipe utilizing patented ductile iron locking segment(s) or flex ring with factory applied spigot retainer weldment and mechanical joint fittings utilizing wedge action retainer glands.
4. Watermain installed by Horizontal Directional Drilling:
 - a. Pipe Class 53
 - b. All pipe joints are to be restrained by use of boltless and flexible restraint joint pipe utilizing patented ductile iron locking segment(s) or flex ring

SECTION 400519 - DUCTILE IRON PIPE, FITTINGS, AND ACCESSORIES

with factory applied retainer weldment. If fittings are part of the Horizontal Directional Drill, they shall be flexible restraint joints utilizing patented ductile iron locking segment(s) or flex ring with factory applied spigot retainer weldment.

5. Flanged pipe watermain, all sizes:
 - a. Pipe Class 53.
 - b. Flanged joints are for non-buried applications.

C. Related Work Specified Elsewhere

1. Section 331100 - Buried Piping Installation
2. Section 331301 - Testing and Disinfection
3. Section 400515 - Prestressed Concrete Cylinder Pipe Adapters
4. Section 400520 - Piping Specialties and Accessories
5. Section 400540 - Fire Hydrants
6. Section 400560 - Valves and Appurtenances

1.02 QUALITY ASSURANCE

A. Manufacturer's Qualifications

1. Manufacturer shall have a minimum of 5 years experience producing ductile iron pipe, fittings and accessories, and shall show evidence of at least 5 installations in satisfactory operation.
2. Parts Interchangeability: It is the intent of these specifications that all materials furnished herein shall be compatible with similar materials of other manufacturers.

B. Reference Standards

1. AWWA C104, American National Standard for Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water
2. AWWA C105, American National Standard for Polyethylene Encasement for Ductile Iron Pipe Systems
3. AWWA C110, American National Standard for Ductile-Iron and Gray-Iron Fittings, 3-inch through 48-inch, (75 mm through 1200 mm), for Water and Other Liquids
4. AWWA C111, American National Standard for Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings
5. AWWA C115, American National Standard for Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges
6. AWWA C150, American National Standard for Thickness Design of Ductile-Iron Pipe
7. AWWA C151, American National Standard for Ductile Iron Pipe, Centrifugally Cast, for Water
8. AWWA C153, American National Standard for Ductile-Iron Compact Fittings. 3 In. Through 24 In. (76 mm through 610 mm) and 54 In. Through 64 In. (1400 mm through 1600 mm), for Water Service
9. ANSI B16.1, Cast Iron Pipe Flanges and Flanged Fittings
10. ANSI B1.20, Pipe, Threads, General Purpose (Inch)
11. ANSI B18.2.1, Square and Hex Bolts and Screws Inch Series, Including Hex Cap Screws and Lag Screws
12. ANSI B18.2.2, Square and Hex Nuts

SECTION 400519 - DUCTILE IRON PIPE, FITTINGS, AND ACCESSORIES

13. ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
14. ASTM A354, Specification for Quenched and Tapered Alloy Steel Bolts, Studs and Other Externally Threaded Fasteners
15. ASTM A536 Standard Specification for Ductile Iron Castings
16. NSF/ANSI Standard 61
17. Underwriter's Laboratories (UL)
18. International Organization for Standardization (ISO)
19. Factory Mutual Research Corporation
20. 1996 Safe Drinking Water Act

1.03 SUBMITTALS

- A. Shop Drawings: Submit for approval the following:
 1. Detailed drawings and data on pipe, fittings and accessories.
 2. A materials list, which shall include full information regarding all components of the equipment. Materials of construction shall be presented in the listing.
- B. Laying Schedules or drawings when requested or required or when custom pieces or specially marked pipe is used. Field closures and field cuts, and manner of restrained joints shall be shown.
- C. Submit certificates of compliance with the applicable referenced standards.
- D. Submit certificate of compliance with NSF/ANSI Standard 61 for all products under this section, including interior coatings, by an independent, authorized laboratory.
- E. Furnish delivery tickets indicating the pipe manufacturer, pipe type and class, identifying that the pipe was new and from a manufacturer that has been submitted and approved.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. During delivery and handling, all materials shall be braced and protected from any distortion or damage; any such distortion or damage shall be basis for rejection of the materials.
- B. Equipment used for unloading shall be covered with wood or rubber to avoid damage to the exterior of the pipe, fittings and accessories. Furthermore, all ductile iron pipe requiring polyethylene encasement as per Section 2.02.B, where the polyethylene has been field pre-applied to the pipe shall be handled with suitably padded equipment to prevent damage to the coating. Do not drop or roll materials off trucks. All ductile iron pipe and fittings shall be handled with padded slings or other appropriate equipment. The use of cables, hooks or chains will not be permitted.
- C. The materials shall be inspected before and after unloading. Materials that are found to be cracked, gouged, chipped, dented or otherwise damaged will not be accepted.
- D. Interiors of pipe, fittings and accessories shall be kept free from dirt and foreign matter.
- E. Store pipe and fittings on heavy wood blocking or platforms so they are not in contact with the ground.

SECTION 400519 - DUCTILE IRON PIPE, FITTINGS, AND ACCESSORIES

- F. Pipe, fittings, and specials shall be unloaded opposite to or as close to the place where they are to be used as is practical to avoid unnecessary handling.

1.05 PIPE INSTALLATION SPECIALIST

- A. A factory trained and certified manufacturer's pipe installation specialist shall be present during CONTRACTOR start-up and for a total of 5 working days when pipe laying is in progress and thereafter shall be available during the course of the project to assist the OWNER, ENGINEER, and/or CONTRACTOR when requested by the OWNER, ENGINEER and/or CONTRACTOR. This field service shall be at no cost to the OWNER. This can include field review of pipe/fittings when requested by the OWNER, ENGINEER, and/or CONTRACTOR.
- B. The specialist shall submit three (3) copies of a written report to the ENGINEER presenting the findings of each visit. As a minimum, each report should include the following: date, day, time, purpose of the visit (and who initiated the visit), weather conditions, CONTRACTOR'S name, project name and the contract number, ENGINEER'S name, individuals contacted, location visited (station, street, field office, ENGINEER'S main office, OWNER'S office CONTRACTOR'S office, etc.), and any other pertinent information related to the visit (such as the results of individual pipe/fitting inspections, etc.)

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General
1. All products, including interior coatings shall be suitable for use in a potable water system.
 2. All products, including wetted parts, shall be certified to meet NSF/ANSI Standard 61.
 3. All ductile iron pipe, fittings and accessories shall be designed for a working pressure and field hydrostatic test pressure as shown in Section 331100, Buried Piping Installation.
 4. All ductile iron pipe, fittings, and accessories must be new materials in first-class condition. Used or recycled materials shall not be allowed, regardless of condition.
 5. All ductile iron pipe shall be provided from the same manufacturer.
 6. Pipe shall be fully gauged.
 7. Pipe shall be furnished in nominal laying lengths of 18 or 20 feet unless otherwise specified.
 8. Pipe and fittings shall be lined with cement mortar lining in accordance with AWWA C104, except it shall be double thickness and a bituminous seal coat meeting NSF/ANSI Standard 61. The exterior shall be provided with a bituminous coating in accordance with AWWA C151. Fittings may be lined with an NSF/ANSI Standard 61 approved fusion bonded epoxy meeting the applicable sections of AWWA C116.
 9. Bonded joints may be required in areas where the ENGINEER has evaluated soil conditions and has recommended that corrosion protection is required at locations as shown on the drawings. The pipe manufacturer shall supply all joint

SECTION 400519 - DUCTILE IRON PIPE, FITTINGS, AND ACCESSORIES

bonding materials, including #4 AWG stranded insulated copper wire bonding jumpers.

B. Ductile Iron Mechanical Joint Pipe and Fittings

1. Ductile Iron Mechanical Joint Pipe:

a. Pipe shall be centrifugally cast ductile iron conforming to the requirements of AWWA C151 for material, dimensions, tolerance, tests, markings and other requirements.

b. Manufacturer:

- 1) American Cast Iron Pipe Co.,
- 2) Atlantic States, Inc.,
- 3) Clow - A Division of McWane, Inc.,
- 4) Griffin,
- 5) US Pipe.

2. Ductile Iron Mechanical Joint Fittings:

a. Tees, bends, elbows, reducers, increasers, offsets and other such fittings shall be mechanical joint ductile iron compact body conforming to AWWA C110 or AWWA C153, as specified.

b. Reducers shall be concentric or eccentric where specified.

c. Fittings shall be suitable for use with polyvinyl chloride pressure pipe.

d. Manufacturer:

- 1) American Cast Iron Pipe Co.,
- 2) Clow - A Division of McWane, Inc.,
- 3) Griffin,
- 4) Sigma Corp.,
- 5) Star Pipe Products, Inc.
- 6) Tyler - A Division of McWane, Inc.,
- 7) US Pipe.

3. Joints for Ductile Iron Mechanical Joint Pipe and Fittings:

a. Joints shall conform to AWWA C111 and shall be mechanical joint bell and spigot and be furnished complete with all necessary accessories consisting of ductile iron follower glands, plain tipped rubber gaskets, nuts and bolts, unless otherwise specified.

b. Fittings shall have mechanical joint ends and be furnished with all necessary joint accessories consisting of ductile iron follower glands, (or cast iron glands for cast iron fittings), plain tipped rubber gaskets, nuts and bolts, unless otherwise specified. Split follower glands shall be furnished and installed only when approved by the ENGINEER.

c. All nuts and tee bolts for mechanical joint accessories shall be stainless steel or fluorocarbon coated as specified herein.

4. Restrained Joints for Ductile Iron Mechanical Joint Pipe and Fittings:

a. Restrained joints for mechanical joint pipe and fittings shall be made by restraining the pipe on each side of the fitting for all joints along the length of pipe as shown, specified or required.

b. Restraining shall be accomplished at the mechanical joint fitting by use of a mechanical joint wedge action retainer that incorporates mechanical joint restraint into the design of the follower gland with individually actuated wedges that are tightened against the barrel of the pipe, as specified herein.

SECTION 400519 - DUCTILE IRON PIPE, FITTINGS, AND ACCESSORIES

C. Push-On Ductile Iron Pipe and Fittings

1. Push-On Ductile Iron Pipe:

- a. Pipe shall be centrifugally cast ductile iron conforming to the requirements of AWWA C151 for material, dimensions, tolerance, tests, markings and other requirements.
- b. Manufacturer:
 - 1) American Cast Iron Pipe Co.,
 - 2) Atlantic States, A Division of McWane, Inc.,
 - 3) Clow - A Division of McWane, Inc.,
 - 4) Griffin,
 - 5) US Pipe.

2. Fittings:

- a. Tees, bends, elbows, reducers, increasers, offsets and other such fittings shall be mechanical joint ductile iron compact body conforming to AWWA C110 or AWWA C153 and as specified herein.

3. Joints for Push-On Ductile Iron Pipe and Fittings:

- a. Joints shall conform to AWWA C111 and shall be bell and spigot and be furnished complete with circular rubber gaskets, and other accessories as necessary for a complete installation.
- b. Fittings shall have mechanical joint ends and be furnished with all necessary joint accessories consisting of ductile iron follower glands, (cast iron glands for cast iron fittings), plain tipped rubber gaskets, nuts and bolts, unless otherwise specified. Split follower glands shall be furnished and installed only when approved by the ENGINEER.
- c. All nuts and tee bolts for mechanical joint accessories shall be stainless steel or fluorocarbon coated as specified herein.

D. Ductile Iron Flexible Restraint Joint Pipe and Fittings and/or Mechanical Joint Fittings

1. Ductile Iron Flexible Restraint Joint Pipe:

- a. Pipe shall be centrifugally cast ductile iron conforming to the requirements of AWWA C151 for material, dimensions, tolerance, tests, markings, and other requirements.
- b. Restrained joint pipe shall be designed for a water working pressure of 350 psi for pipe sizes 4-inch through 20-inch and 250 psi for pipe sizes 24-inch through 54-inch.
- c. Flexible restraint joints shall consist of a boltless, glandless restraining system with factory applied spigot weld ring or weldment (weld bead of established height and width), which retains the wedge-shaped locking segments. These locking segments are either inserted into the bell prior to spigot engagement or inserted after spigot engagement by "caulking" a snap-ring into the bell, or inserting the segments through slots cast into the bell face.
- d. Pipe that utilizes gaskets with embedded restraining gripper or friction segments is not acceptable.
- e. Field applied weldments or weldments applied in a shop other than at the manufacturing facility are not allowed. Field cuts shall be restrained by cutting the barrel of the pipe and inserting it into a mechanical joint fitting and using wedge action retainer glands. As an alternative, flexible restrained closures may be incorporated into the Work provided they are accounted for in the approved laying schedule.

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- f. Manufacturer:
 - 1) American Cast Iron Pipe Co. - Flex Ring,
 - 2) Clow - Super Lock,
 - 3) US Pipe - TR Flex,
 - 4) Or approved equal.
- 2. Ductile Iron Restrained Fittings and Mechanical Joint Fittings:
 - a. All ductile iron fittings shall meet the requirements of AWWA C153 or AWWA C110.
 - b. Fittings may be either flexible restraint joint or mechanical joint. If flexible restraint joint fittings are used, a certain number of fittings must be mechanical joint to allow for field adjustments in line or grade.
 - c. Fittings that utilize gaskets with embedded restraining gripper or friction segments are not acceptable.
 - d. Field applied weldments or weldments applied in a shop other than at the manufacturing facility are not allowed.
 - e. Manufacturer of Flexible Restraint Joint Fittings:
 - 1) American Cast Iron Pipe Co. - Flex Ring,
 - 2) Clow - Super Lock,
 - 3) US Pipe - TR Flex,
 - 4) Or approved equal.
 - f. Manufacturer of Mechanical Joint Fittings:
 - 1) American Cast Iron Pipe Co.,
 - 2) Clow - A Division of McWane, Inc.,
 - 3) Griffin,
 - 4) Sigma Corp.,
 - 5) Star Pipe Products, Inc.
 - 6) Tyler - A Division of McWane, Inc.,
 - 7) US Pipe.
- E. Ductile Iron Anchor Pipe and Fittings
 - 1. Ductile iron anchor pipe and fittings shall provide positive joint restraint by incorporating an integrally cast anchor gland (stop shoulder) at one end and an anchor, mechanical joint or plain end at the other end. The plain end, when fitted with a standardized mechanical joint gasket is to be inserted into a mechanical joint bell and bolted tight. A split, rotating ring shall be provided on the elbows, tees and on one end of the couplings or anchor pipe to permit vertical alignment regardless of the mating bolt hole alignment.
 - a. Pipe shall be centrifugally cast ductile iron conforming to the applicable requirements of AWWA C151 for material, dimensions, tolerance, tests, markings and other requirements.
 - b. Fittings shall conform to the applicable requirements of AWWA C110 or AWWA C153.
 - c. Anchor pipe shall be furnished in lengths from 18-inches to 18 feet as shown or specified.
 - d. Pipe and fittings shall be furnished complete with circular rubber gaskets conforming to AWWA C111, and other accessories as necessary for a complete installation.
 - e. Manufacturer:
 - 1) Tyler - A Division of McWane, Inc.,
 - 2) Clow - A Division of McWane, Inc.

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F. Ductile Iron Flanged Pipe and Fittings

1. Ductile Iron Pipe with Threaded Flanges:

- a. Pipe shall be centrifugally cast ductile iron conforming to the requirements of AWWA C151 and C115 for material, dimensions, tolerance, tests, markings, and other requirements.
- b. Pipe barrels and flanges shall have a taper pipe thread (NPT) in accordance with ANSI B1.20.1, with pipe diameters adapted to ductile iron pipe standard outside diameters.
- c. Flanged pipe shall be minimum Class 53 thickness and shall be furnished in standard laying lengths as specified or required.
- d. Manufacturer:
 - 1) American Cast Iron Pipe Co.,
 - 2) Clow - A Division of McWane, Inc.,
 - 3) US Pipe,
 - 4) Fast Fabricators, Inc.

2. Ductile Iron Flanged Fittings:

- b. Tees, bends, elbows, reducers, increasers and other such fittings shall be flanged ductile iron in accordance with the requirements of AWWA C110 and shall conform to ANSI A21.10, 250 psi rating.
- c. Reducers shall be eccentric unless otherwise specified.
- d. Manufacturer:
 - 1) American Cast Iron Pipe Co.,
 - 2) Clow - A Division of McWane, Inc.,
 - 3) Griffin,
 - 4) Sigma Corp,
 - 5) Tyler - A Division of McWane, Inc.,
 - 6) Union Foundry Co., A Division of McWane, Inc.
 - 7) US Pipe.

3. Joints for Ductile Iron Flanged Pipe and Fittings:

- a. Flanged joints shall conform to the requirements of AWWA C110 and drilling and facing of flanges shall be in accordance with ANSI B16.1 Class 125 flanges unless otherwise specified.
- b. Flanged ductile iron pipe and fittings shall be furnished complete with all necessary joint accessories consisting of natural or synthetic rubber gaskets, $\frac{1}{8}$ -inch thick, full face; and, nuts, bolts and washers, unless otherwise specified.
- c. All nuts, bolts and washers for flanges and accessories shall conform to ANSI B18.2.1 and ANSI B18.2.2, respectively and shall be Type 304 stainless steel, high strength, low alloy steel or fluorocarbon coated as specified herein.

G. Accessories

1. Flange Fillers, Blind Flanges and Reducing Companion Flanges:

- a. Conform to the requirements of AWWA C115 for material, dimensions, tolerance, tests, markings and other requirements.
- b. Drilling and facing of flanges shall be in accordance with ANSI B16.1, Class 125 flanges unless otherwise specified.
- c. Flanged fillers, blind flanges and reducing companion flanges shall be furnished complete with all necessary joint accessories consisting of natural or synthetic rubber gaskets, $\frac{1}{8}$ -inch thick, full face; and, nuts, bolts and washers, unless otherwise specified.

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- d. Threaded outlets or taps, (Mueller threads), shall be provided in blind flanges as specified or required.
 - e. All nuts, bolts and washers for flanges and accessories shall conform to ANSI B18.2.1 and ANSI B18.2.2, respectively and shall be Type 304 stainless steel, high strength, low alloy steel.
2. Caps and Plugs:
 - a. Conform to the requirements of AWWA C110 for material, dimensions, tolerance, tests, markings and other requirements.
 - b. Caps and plugs shall be mechanical joint or push-on joint and be furnished with all necessary joint accessories consisting of ductile iron follower glands, plain tipped rubber gaskets, nuts and bolts, unless otherwise specified.
 - c. All nuts and tee bolts for mechanical joint accessories shall be fluorocarbon coated as specified herein.
 - d. Threaded outlets or taps, (Mueller threads), shall be provided in plugs and caps as specified or required.
 3. Solid Mechanical Joint Sleeves:
 - a. Conform to the requirements of AWWA C153 for material, dimensions, tolerance, tests, markings, and other requirements of mechanical joint class 350 ductile iron solid sleeves.
 - b. Unless otherwise specified, provide long laid length sleeves complete with follower glands, rubber gaskets and fluorocarbon coated nuts, tee bolts, and accessories.
 4. Manufacturer
 - a. American Cast Iron Pipe Co.,
 - b. Clow - A Division of McWane, Inc.,
 - c. Griffin,
 - d. Sigma Corp.,
 - e. Star Pipe Products,
 - f. Tyler - A Division of McWane, Inc.,
 - g. US Pipe.
- H. Mechanical Joint Wedge Action Retainer Gland
1. Restraint shall be accomplished by use of a retainer gland that incorporates mechanical joint restraint into the follower gland with individually actuated wedges that increase their resistance to pull-out as pressure or external forces increase.
 2. The joint restraint ring and its wedging components shall be made of grade 65-45-12 ductile iron conforming to ASTM A536. The wedges shall be ductile iron heat treated to a minimum hardness of 370 BHN. T-bolts shall be fluorocarbon coated as specified herein.
 3. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell conforming to AWWA C111 and AWWA C153.
 4. Torque limiting twist off nuts shall be used to insure the proper actuation of the wedges. When the nut is sheared off, a standard hex head shall remain.
 5. Manufacturer, for use on ductile iron pipe:
 - a. EBAA Iron, Series 1100 MEGALUG,
 - b. Uni-Flange Series 1400,
 - c. SIGMA One-Lok,
 - d. Star Pipe products – Stargrip.

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I. Push-On Ductile Iron Pipe Joint Restraining Device

1. When specified or allowed by the ENGINEER, restraining push-on ductile iron pipe joints shall be accomplished by use of a joint restraint system that consists of restraining rods and split ductile iron clamping rings, installed on the spigot and behind the bell. The clamping ring shall incorporate a series of machined serrations on the inside surface to provide 360 degree contact and support of the pipe barrel. Lateral thrust restraint is provided when the side clamping bolts are tightened allowing the serrations to lock onto the pipe barrel.
2. Threaded restraining rods and bolts and clamping bolts and nuts shall be fluorocarbon coated or type 304 stainless steel.
3. The joint restraint rings shall be made of high strength, grade 65-45-12 ductile iron conforming to ASTM A536.
4. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell conforming to AWWA C111 and AWWA C153.
5. Restraining push-on joints as specified herein shall not be allowed for hydrant branches.
6. Restraining push-on joints shall be used on pipe sizes 6-inch to 12-inch only when allowed or specified. Restraining push-on joints in this manner shall not be allowed on pipe larger than 12 inches.
7. Manufacturer, for use on ductile iron pipe:
 - a. Uni-Flange Series 1450,
 - b. EBAA Series 1700,
 - c. Or approved equal.

J. Fluorocarbon Coated Nuts and Bolts

1. T-bolts shall be heat treated ductile iron material with a minimum of 65,000 psi tensile strength and 45,000 psi yield strength meeting ANSI/AWWA C111/A21-95.
2. Nuts and bolts shall have a fluorocarbon SC-1 coating.
3. Manufacturer:
 - a. Standco Industries,
 - b. Or approved equal.

K. Threaded Harnessing Rods and Bolting Accessories

1. Threaded harnessing rods shall only be used when approved by the ENGINEER.
2. Harness rods and nuts shall be heat treated steel with a minimum yield strength of 70,000 psi and a minimum ultimate strength of 110,000 psi.
3. Threads shall conform to American Standard Course Threads.
4. Rods and nuts shall be galvanized or cadmium plated, unless otherwise specified.
5. Non-coated materials may be protected with the application of two (2) coats of a bituminous preservative coating after installation.
6. Oil, grease, paint, or any coating, which requires drying will not be acceptable.

2.02 COATINGS, LININGS, AND POLYETHYLENE ENCASEMENT FOR DUCTILE IRON PIPE AND FITTINGS

A. Coatings and Linings for Ductile Iron Joint Pipe and Fittings

1. Ductile iron pipe and fittings shall be lined with a bituminous seal coated cement-mortar lining in accordance with AWWA C104, except the thickness for pipe shall be double that specified.

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2. Ductile iron pipe and fittings shall be coated on the outside with a bituminous coating, approximately one millimeter thick. Fittings may be lined with an NSF/ANSI Standard 61 approved fusion bonded epoxy meeting the applicable sections of AWWA C116.
 3. The exterior of flanged ductile iron pipe and fittings for exposed piping shall be coated with a primer coating suitable to receive epoxy paint finish paint system.
- B. Polyethylene Encasement For Ductile Iron Pipe and Fittings
1. Polyethylene encasement shall be used for ductile iron pipe and fittings and on ductile iron fittings when using PVC pipe, conforming to AWWA Specification C105.
 2. Polyethylene film shall be manufactured of virgin polyethylene material conforming to the following requirements of ASTM Standard Specification D1248 - Polyethylene Plastics Molding and Extrusion Materials.
 3. Polyethylene film shall have a tensile strength of 1,200 psi minimum and shall allow elongation of 300 percent minimum and have a dielectric strength of 800 V/mil thickness minimum.
 4. Polyethylene film shall have a minimum nominal thickness of 0.008 in (8 mils). The minus tolerance of thickness shall not exceed 10 percent of the nominal thickness.
 5. Tape required to complete the installation shall be approximately two (2) inches wide, plastic backed adhesive tape such as Polyken #900, Scotchrap #50 or approved equal.
 6. Tube size or sheet width for each size of pipe shall be in accordance with AWWA C-105.
- C. Polyethylene Encasement for Ductile Iron Pipe to be Installed by Horizontal Directional Drilling (HDD)
1. Ductile iron pipe to be installed by horizontal directional drilling (HDD) shall be installed with a double polyethylene encasement per AWWA C105. "Method A" shall be used for installations below the water table. Only polyethylene encasement meeting all material requirements of AWWA C105 shall be used.
 2. Polyethylene film shall be manufactured of virgin polyethylene material conforming to the following requirements of ASTM Standard Specification D1248 - Polyethylene Plastics Molding and Extrusion Materials.
 3. Polyethylene film shall have a tensile strength of 1,200 psi minimum and shall allow elongation of 300 percent minimum and have a dielectric strength of 800 V/mil thickness minimum.
 4. Polyethylene film shall have a minimum nominal thickness of 0.008 in (8 mils). The minus tolerance of thickness shall not exceed 10 percent of the nominal thickness.
 5. Tape required to complete the installation shall be approximately two (2) inches wide, plastic backed adhesive tape, such as Polyken #900, Scotchrap #50, or approved equal.
 6. Tube size or sheet width for each size of pipe shall be in accordance with AWWA C-105.

SECTION 400519 - DUCTILE IRON PIPE, FITTINGS, AND ACCESSORIES

PART 3 - EXECUTION

3.01 GENERAL

- A. Refer to Section 331100 for Buried Piping Installation.

END OF SECTION

SECTION 400520 - PIPING SPECIALTIES AND ACCESSORIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. CONTRACTOR shall provide all labor, materials, equipment, tools, services, and incidentals necessary to furnish and install piping specialties and accessories as shown, specified and required. Included, but not limited to the following: couplings, repair clamps, joint clamps, service saddles, service fittings, water meter fittings, tile set, corporation stops, curb stops, and curb boxes.

B. Related Work Specified Elsewhere

1. Section 310517 - Select Granular Materials
2. Section 312317 - Excavation, Backfill and Trenching
3. Section 331301 - Testing and Disinfection
4. Section 400515 - Prestressed Concrete Cylinder Pipe Adapters
5. Section 400519 - Ductile Iron Pipe and Fittings
6. Section 400560 - Valves and Appurtenances

1.02 QUALITY ASSURANCE

A. Manufacturer's Qualifications

1. Manufacturer shall have a minimum of 5 years of experience in the production of substantially similar types of piping specialties specified and shall show evidence of satisfactory service in at least 5 installations.
2. Parts Interchangeability: It is the intent of these specifications that all materials furnished herein shall be compatible with similar materials of other manufacturers.

B. Reference Standards

1. AWWA C104, Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water
2. AWWA C115, American National Standard for Flanged Ductile-Iron Pipe with Ductile-Iron Pressure Pipe and Fittings
3. AWWA C301, Prestressed Concrete Pressure Pipe, Steel-Cylinder Type, for Water and Other Liquids
4. AWWA C600, Standard for Installation of Ductile-Iron Watermains and Their Appurtenances
5. AWWA C605, Standard for Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water
6. AWWA C651, Standard for Disinfecting Watermains
7. AWWA C800, Underground Service Line Valves and Fittings
8. AWWA C900, Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch Through 12-inch for Water Distribution
9. ASTM A536, Standard Specification for Ductile Iron Castings
10. ASTM B92, Specification for Standard Size Seamless Copper Pipe
11. ASTM B62, Standard Specification for Composition Bronze or Ounce Metal Castings

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12. ASTM D2000, Standard Classification System for Rubber Products in Automotive Applications
13. NSF/ANSI Standard 61
14. Underwriter's Laboratories (UL)
15. International Organization for Standardization (ISO)
16. Factory Mutual Research Corporation
17. 1996 Safe Drinking Water Act

1.03 SUBMITTALS

- A. Shop Drawings: Submit for approval the following:
 1. Manufacturer's literature, illustrations, specifications, detailed drawings, data and descriptive literature on all piping specialties.
 2. Deviations from Drawings and Specifications.
 3. Engineering data including dimensions, materials, size and weight.
 4. Fabrication, assembly, installation and wiring diagrams.
- B. Operation and Maintenance Data: Submit complete manuals including:
 1. Copies of all Shop Drawings, test reports, maintenance data and schedules, description of operation, and spare parts information.
- C. Certificates:
 1. Where specified or otherwise required by ENGINEER, submit test certificates.
 2. The CONTRACTOR shall submit certificates of compliance with the applicable referenced standards.
 3. Submit certificate of compliance with NSF/ANSI Standard 61 for all products under this section, including interior coatings, by an independent, authorized laboratory.
- D. Delivery Tickets:
 1. Furnish delivery tickets indicating the manufacturer, accessory type and class, identifying that the equipment was new and from a manufacturer that has been submitted and approved.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. During delivery and handling, all materials shall be braced and protected from any distortion or damage; any such distortion or damage shall be basis for rejection of the materials.
- B. Handle all materials very carefully. Materials which are cracked, dented or otherwise damaged will not be accepted.
- C. The materials shall be inspected before and after unloading. Materials that are found to be cracked, gouged, chipped, dented or otherwise damaged will not be accepted.
- D. Interiors of pipe, fittings and accessories shall be kept free from dirt and foreign matter.
- E. Store piping specialties and accessories on heavy wood blocking or platforms as necessary so they are not in contact with the ground.

SECTION 400520 - PIPING SPECIALTIES AND ACCESSORIES

- F. Pipe, fittings, and specials shall be unloaded as necessary opposite to or as close to the place where they are to be used as is practical to avoid unnecessary handling.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General

1. All products, including interior coatings shall be suitable for use in a potable water system.
2. All products, including wetted parts, shall be certified to meet NSF/ANSI Standard 61.
3. All piping specialties and accessories must be new materials in first-class condition. Used or recycled materials will not be allowed, regardless of condition.

B. Couplings

1. Sleeve Type, Flexible Couplings:
 - a. Material: Steel, with epoxy coated sleeve.
 - b. Gasket: Manufacturer's standard best quality for the service intended.
 - c. Bolts and Nuts: Buried or submerged couplings shall be provided with Type 304 stainless steel or fluorocarbon coated bolts and nuts.
 - d. Couplings shall be designed for a working pressure and field hydrostatic test pressure as identified in Section 331100, Buried Piping Installation.
 - e. Harnessing:
 - 1) Harness couplings to restrain pressure piping. Couplings shall be designed for a working pressure and field hydrostatic test pressure as identified in Section 331100, Buried Piping Installation.
 - 2) Adjacent flanges shall be tied with bolts of corrosion resistant alloy steel. Provide flange mounted stretcher bolt plates and lugs as required and to be designed by coupling manufacturer, unless otherwise approved.
 - 3) Conform to dimensions, size, spacing and materials for lugs, bolts, washers and nuts as recommended by manufacturer and approved by ENGINEER for the pipe size, wall thickness and test pressure required. However, the following minimum bolting shall be provided if not specifically stated by the ENGINEER.

SECTION 400520 - PIPING SPECIALTIES AND ACCESSORIES

Pipe Diameter (In.)	Minimum Number of Bolts	Bolt Diameter (In.)	At (Degrees)
4	2	5/8	180
6-8	2	3/4	180
10-12	2	7/8	180
14-20	4	1	90
24-48	4	1-1/2	90

- f. Remove pipe stop unless otherwise shown or specified.
- g. Couplings 16-inches to 24-inches shall be furnished as long laying lengths of 16-inches. Couplings over 24-inches shall be furnished as 10-inch lengths.
- h. Manufacturer:
 - 1) Dresser Industries, Style 138, for sizes up to 12-inches, Dresser Industries, Style 38, for sizes over 12-inches,
 - 2) Smith-Blair, Type 411, (or type 441 where specified),
 - 3) Or approved equal.

- 2. Hymax Coupling:
 - a. Material: Center sleeve shall be fabricated of high strength carbon steel tubing. Compression end rings to be either one bolt or two fabricated of carbon steel.
 - b. Gasket: Two layered gaskets of which the inner ring is removable to expand the range of the coupling. Material shall be EPDM according to NSF61.
 - c. Bolts and Nuts: Buried or submerged couplings shall be provided with type 304 stainless steel. Bolts to be coated with an anti-seize coating to prevent galling.
 - d. Coating: Interior and exterior shall be provided with NFS-61 approved fusion bonded epoxy coating.
 - e. Harnessing: as specified herein.
 - f. To be used only when approved by ENGINEER.
 - g. Manufacturer:
 - 1) Dresser Industries Style 262 for sizes up to 12-inches,
 - 2) Or approved equal.

- C. Flanged Coupling Adapter
 - 1. The body shall be ductile iron conforming to ASTM A536. The bolt circle, bolt size, and spacing shall conform to AWWA C115 flange drilling.
 - 2. The follower gland shall be ASTM A536 ductile iron.
 - 3. Gaskets and "O" rings shall be grade 30 standard.
 - 4. Nuts and bolts shall be fluorocarbon coated or Type 304 stainless steel, high strength, low alloy.
 - 5. Provide fusion bonded epoxy coating on the gasket ring and shop prime enamel on the body.
 - 6. Flange coupling adapter shall not be provided with anchor studs, which are not allowed.

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7. Flange coupling adapter shall be suitable for use on ductile or cast iron pipe to the outside diameter specified.
8. Flange coupling adapters shall be restrained as shown, specified, or required.
9. Manufacturer:
 - a. Smith-Blair, Style 912,
 - b. Dresser, Style 128,
 - c. Ford FFCA,
 - d. Hymax 2100,
 - e. Or approved equal.

D. Restrained Flanged Adapter

1. Restraint shall be accomplished by use of a gland that incorporates wedges that increase their resistance to pull out as pressure or external forces increase.
2. The restrained flange adapter shall be comprised of two rings made of ductile iron conforming to ASTM A536.
3. The restraining ring shall be suitable for flanges conforming to AWWA C115 flange drilling.
4. Nuts and bolts shall be fluorocarbon coated or Type 304 stainless steel, high strength, low alloy.
5. Torque limiting twist off nuts shall be used to insure the proper actuation of the wedges. When the nut is sheared off, a standard hex head shall remain.
6. Provide fusion bonded epoxy coating on the gasket ring and shop primer on the body.
7. Restrained flange adapter shall be suitable for use on ductile iron pipe.
8. Manufacturer:
 - a. EBAA Iron, Series 2100 Megaflange,
 - b. Or approved equal.

E. Repair Clamps

1. Repair clamps shall be full circle, 18-8 type 304 stainless steel single band provided in minimum length of 12-inches unless otherwise specified. Bands are to be single section for sizes to 12 inches and double sections for sizes over 12 inches.
2. Nuts and bolts shall be Type 304 stainless steel or fluorocarbon coated.
3. Ductile iron lugs shall be field removable.
4. Repair clamps with a separate keeper bar will not be accepted nor repair clamps with two bolts on a 7.5 inch full circle clamp.
5. Grade 60 gasket.
6. When ordered, provide tapped repair clamps with stainless steel outlet taps for corporation stops in CC (AWWA) thread.
7. Manufacturer:
 - a. Smith-Blair, Style 226, for sizes to 12 inches,
Smith-Blair, Style 227, for sizes over 12 inches,
Smith-Blair, 238 and 239 for tapped clamps,
 - b. Dresser, Style 360,
 - c. Ford, Style F1, for sizes to 12 inches,
Ford, Style F2, for sizes over 12 inches,
 - d. Or approved equal.

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F. Joint Clamps

1. Joint clamps shall be furnished to permanently stop or prevent leaks through the jointing materials of bell and spigot joints.
2. Clamp shall be fully adjustable to provide a close fit on the bell and spigot and shall be designed to be installed on pipes without interruption of water service.
3. Manufacturers standard rubber gasket shall shut the leak off when compressed by the spigot ring drawn up, in turn, by bolts connected to a bell ring.
4. Manufacturer:
 - a. Smith-Blair, Style #274,
 - b. Dresser, Style 160,
 - c. Or approved equal.

G. Service Saddles

1. Service saddles for iron, asbestos-cement pipe or Polyvinyl Chloride (PVC) pipe shall be of the double strap style.
2. Bodies shall be brass alloy conforming to ASTM B62 (85-5-5-5) and a threaded outlet conforming to AWWA C800.
3. Straps shall be high quality silicon bronze, flattened to provide a wider bearing surface to the pipe.
4. Nuts shall be brass alloy as per ASTM B62.
5. Gasket shall be Buna-N rubber in accordance with ASTM D2000.
6. Manufacturer:
 - a. Smith-Blair, Style 323,
 - b. Ford, Style 202B,
 - c. Or approved equal.

H. Services Fittings: Bronze Unions, Couplings and Adapters

1. General
 - a. Service fittings shall have a body cast from corrosion resistant bronze in accordance with ASTM B62 (85-5-5-5).
 - b. Connections shall meet applicable sections of AWWA C-800 and be suitable for flared connection to type K copper pipe.
2. Manufacturer:
 - a. Unions, copper to copper, three parts:
 - 1) Mueller Co #H-15400,
 - 2) Ford C22-XX,
 - 3) Or approved equal.
 - b. Unions, copper to copper, two parts:
 - 1) Mueller Co #H-15405,
 - 2) Ford C02-XX,
 - 3) Or approved equal.
 - c. Eighth bend coupling with gasket:
 - 1) Mueller Co #H-15063,
 - 2) Ford LA02-XX,
 - 3) Or approved equal.
 - d. Quarter bend coupling with gasket:
 - 1) Mueller Co #H-15068,
 - 2) Ford L02-XX,
 - 3) Or approved equal.

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- e. Straight male adapter:
 - 1) Mueller Co #H-15425,
 - 2) Ford C28-XX,
 - 3) Or approved equal.
- f. Straight female adapter:
 - 1) Mueller Co #H-15450,
 - 2) Ford C21-XX,
 - 3) Or approved equal.
- I. Water Meter Couplings, Flanges and Gaskets
 - 1. Water Meter Coupling:
 - a. Meter couplings shall be bronze hex body with iron pipe thread and bronze nut drilled for wire seal.
 - b. Manufacturer:
 - 1) Ford #C38 Body Style A,
 - 2) Or approved equal.
 - 2. Water Meter Flanges:
 - a. Meter flanges shall be bronze, tapped for iron pipe or have male iron pipe thread.
 - b. Manufacturer:
 - 1) Ford #6F or M; and, Ford #7F,
 - 2) Or approved equal.
 - 3. Water Meter Gaskets:
 - a. Gaskets shall be 1/8-inch thick, not reinforced rubber.
 - b. Manufacturer:
 - 1) Ford: #GT120R, #GT140 and #GT141,
 - 2) Or approved equal.
- J. Water Meter Tile Set
 - 1. The water meter tile set shall be rigid PVC, high insulating "R" value body meter box specially designated for buried meter applications.
 - 2. The water meter tile set shall be designed such that the meter is easily accessible and braced for additional stabilization. No bottom is to be provided.
 - 3. A closed-cell insulation pad or a double lid cover system shall be provided to prevent freezing.
 - 4. The water meter tile set shall be suitable for a minimum depth of cover of 5 feet over the water service tubing.
 - 5. A locking cast iron lid shall be furnished for each tile set.
 - 6. The water meter tile set shall be furnished complete with male I.P. thread inlet and outlet connections, full port angle key at meter inlet, dual check valve at meter outlet, coupling and fittings ready for a complete meter installation.
 - 7. Manufacturer:
 - a. Mueller/McCullough Thermo Coil Meter Box,
 - b. Ford Pit Setter – PD VHH-188-18-60 for 5/8-inch x 3/4-inch meters,
Ford Pit Setter – PD VHH-488-20-60 for 1-inch meters,
 - c. Or approved equal.
- K. 1 1/2-inch and 2-inch Water Meter Tile Set.
 - 1. The water meter tile set shall be suitable diameter to allow for 1 1/2-inch and 2-inch meters and shall be constructed of rigid PVC specially designated for buried meter applications.

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2. The water meter tile set shall be designed such that the meter is easily accessible and braced for additional stabilization. No bottom is to be provided.
3. The water meter tile set shall be suitable for a minimum depth of cover of 5 feet over the water service tubing.
4. A locking cast iron lid shall be furnished for each tile set. An insulation pad or double lid arrangement shall be provided to prevent freezing.
5. The water meter tile set shall be furnished complete with male I.P. thread inlet and outlet connections, angle key valve at meter inlet, angle key valve at meter outlet, bypass piping with ball valve, flanged meter couplings, and fittings ready for a complete meter installation.
6. Manufacturer:
 - a. Mueller/McCullough EZ-Vault Meter Setter,
 - b. Ford Pit Setter-PMBB-688-36HB-60 for 1 ½-inch meters,
Ford Pit Setter-PMBB-788-36HB-60 for 2-inch meters,
 - c. Or approved equal.

L. Corporation Stops

1. Corporation stops shall be furnished with bronze stem, washer, nut, body and key.
2. Corporation stops shall be threaded to conform to AWWA C800 with standard corporation stop thread at the inlet. The outlet shall be fitted with coupling nut for flared tube service unless otherwise specified.
3. Components shall be suitable for operating pressure meeting or exceeding AWWA C-800 criteria for high pressure application.
4. Manufacturer:
 - a. Mueller: copper outlet, #B25000, for sizes ¾-inch through 1-inch,
Mueller: copper outlet, #B25020, for sizes over 1-inch,
 - b. Ford: copper outlet, FB600, for sizes ¾-inch through 1-inch,
Ford: copper outlet, FB600 with L02, for sizes over 1-inch,
 - c. Or approved equal.

M. Curb Stops

1. Curb stops shall be manufactured in accordance with AWWA C-800 and shall have all brass components conforming to 85-5-5-5 ASTM B62.
2. Curb stops shall be ball type, quarter turn to open or close, and shall be suitable for potable water service buried application.
3. Components shall be suitable for operating pressure meeting or exceeding AWWA C-800 criteria for high pressure application.
4. Manufacturer:
 - a. Mueller:
 - 1) ¾-inch through 2-inch copper to copper: B25204.
 - 2) ¾-inch through 2-inch copper to iron: B25174.
 - b. Ford:
 - 1) ¾-inch through 2-inch copper to copper: B22.
 - 2) ¾-inch through 2-inch copper to iron: B21,
 - c. Or approved equal.

N. Curb Boxes

1. Curb boxes shall be high quality cast-iron castings suitable for H2O loadings.
2. Boxes shall be two-piece adjustable depth with arch pattern base. An extension stem will not be allowed.

SECTION 400520 - PIPING SPECIALTIES AND ACCESSORIES

3. Valve box covers shall be marked "water" and shall be cast iron with a brass pentagon plug.
4. Manufacturer:
 - a. Bibby-LaPerle:
 - 1) For $\frac{3}{4}$ -inch and 1-inch; 2 $\frac{1}{2}$ -inch shaft: V-009, size 95E,
 - 2) For 1 $\frac{1}{2}$ -inch and 2-inch; 4 $\frac{1}{4}$ -inch shaft: V-425, size 145R,
 - b. Hays,
 - c. Mueller,
 - d. Clow - a division of McWane, Inc.,
 - e. Tyler - a division of McWane, Inc.,

O. Valve Boxes

1. Valves installed in the ground shall be equipped with an adjustable screw type valve box, minimum 1 foot adjustment.
2. The valve box shall have a barrel with a base to fit the valve on which it is to be installed.
3. Valve boxes for gate valves shall be three piece screw type, 5 $\frac{1}{4}$ " shaft with No. 6 base and a valve box cover.
4. Valve boxes for butterfly valves shall be as noted above but without the base.
5. Valve boxes shall be high quality cast-iron castings suitable for HS-20 loadings.
6. All valve box parts must be compatible and interchangeable with Buffalo Pipe and Foundry Corp. valve boxes.
7. Valve box covers shall be marked "water" and shall fit properly in the barrel without movement.
8. Manufacturer:
 - a. Bibby-LaPerle, (Figure V619 #CC),
 - b. Hays,
 - c. Tyler - a division of McWane, Inc.,
 - d. Sigma

P. Insulation

1. Materials
 - a. Watermain, valves, water service piping and fittings and other appurtenances installed where depth of bury is less than 54 inches (4 feet, 6 inches) or where shown on the drawings, shall be fully wrapped with a closed cell polystyrene insulation.

2.02 PAINTING

A. Shop Painting

1. Clean and prime coat ferrous metal surfaces.
2. All interior wetted ferrous surfaces of valves and appurtenances except finished or bearing surfaces shall be shop-painted with an approved epoxy paint system certified to NSF/ANSI Standard 61 for potable water and applied in accordance with the paint system manufacturer's recommendations.
3. Coat machined, polished and non-ferrous surfaces including gears, bearing surfaces and similar unpainted surfaces with corrosion prevention compound listed in NSF/ANSI Standard 61 and applied in accordance with the manufacturer's recommendations. Maintain coating during storage and until equipment begins operation.

SECTION 400520 - PIPING SPECIALTIES AND ACCESSORIES

PART 3 - EXECUTION

3.01 GENERAL

- A. Install piping specialties and accessories as shown on the Drawings and in accordance with the applicable requirements of Section 331100, Buried Piping Installation.

END OF SECTION

SECTION 400540 - FIRE HYDRANTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

The work specified shall include all labor, material, equipment, tools, services and incidentals necessary to furnish and install hydrants and valve assemblies as shown, specified and required.

B. Related Work Specified Elsewhere

1. Section 310517 - Select Granular Materials
2. Section 312317 - Excavation, Backfill and Trenching
3. Section 331100 - Buried Piping Installation
4. Section 331301 - Testing and Disinfection
5. Section 400519 - Ductile Iron Pipe, Fittings and Accessories
6. Section 400560 - Valves and Appurtenances

1.02 QUALITY ASSURANCE

A. Manufacturer's Qualifications

1. Manufacturer shall have a minimum of 5 years experience producing fire hydrants and shall show evidence of at least 5 installations in satisfactory operation.

B. Parts Interchangeability

1. Hydrants and appurtenances provided under this Section shall be the standard product in regular production by manufacturers whose products have proven reliable in similar service for at least five years.
2. Parts Interchangeability: It is the intent of these specifications that all materials furnished herein shall be compatible with similar materials of other manufacturers.

C. Reference Standards

1. ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
2. ASTM A354, Specification for Quenched and Tapered Alloy Steel Bolts, Studs, and Externally Threaded Fasteners
3. AWWA C502, Standard for Dry-Barrel Fire Hydrants
4. NSF/ANSI Standard 61
5. Underwriter's Laboratories (UL)
6. International Organization for Standardization (ISO)
7. Factory Mutual Research Corporation

SECTION 400540 - FIRE HYDRANTS

1.03 SUBMITTALS

- A. Shop Drawings: Submit for approval the following:
 - 1. Manufacturer's literature, illustrations, specifications, detailed drawings, data and descriptive literature on all fire hydrant materials.
 - 2. Engineering data including dimensions, materials, size and weight.
- B. Operation and Maintenance Data: Submit complete manuals including:
 - 1. Copies of all Shop Drawings, test reports, maintenance data and schedules, description of operation, and spare parts information.
- C. Certificates:
 - 1. Where specified or otherwise required by ENGINEER, submit test certificates.
 - 2. The CONTRACTOR shall submit certificates of compliance with the applicable referenced standards.
 - 3. Submit certificate of compliance with NSF/ANSI Standard 61 for all products under this Section, including interior coatings, by an independent, authorized laboratory.
- D. Delivery Tickets:
 - 1. Furnish delivery tickets indicating the manufacturer, identifying that the fire hydrant was new and from a manufacturer that has been submitted and approved.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. During delivery and handling, all materials shall be braced and protected from any distortion or damage; any such distortion or damage shall be basis for rejection of the materials.
- B. Equipment used for unloading shall be covered with wood or rubber to avoid damage to the exterior of the materials. Do not drop or roll materials off trucks. All hydrants and valves shall be handled with padded slings or other appropriate equipment. The use of cables, hooks or chains will not be permitted.
- C. The materials shall be inspected before and after unloading. Materials that are found to be cracked, gouged, chipped, dented or otherwise damaged will not be accepted.
- D. Interiors of hydrants and valves shall be kept free from dirt and foreign matter.
- E. Store all hydrants, valves and appurtenances on heavy wood blocking or platforms so they are not in contact with the ground.
- F. Hydrants shall be unloaded opposite to or as close to the place where they are to be laid as is practical to avoid unnecessary handling.

SECTION 400540 - FIRE HYDRANTS

PART 2 - PRODUCTS

2.01 MATERIALS

A. General

1. All products, including interior coatings, shall be suitable for use in a potable water system.
2. Interior coating shall be certified to meet NSF/ANSI Standard 61.
3. All materials shall be suitable for use in potable water systems.
4. All hydrants shall have manufacturer's name cast in raised letters on hydrant body.
5. All bolts required to connect buried valves shall be Type 304 stainless steel or fluorocarbon coated, high strength corrosion resistant low alloy steel.
6. All other bolts, nuts and studs shall, unless otherwise specified, conform to ASTM A307, Grade B; or ASTM A354.
7. Bolts and nuts shall have hexagon heads and nuts.
8. Gasket material and installation shall conform to manufacturer's recommendations.
9. Hydrant shut-off gate valve (auxiliary valve) shall be resilient seat as specified in Section 400560, Valves and Appurtenances.
10. All hydrants, valves, and appurtenances must be new materials in first-class condition. Used or recycled materials will not be allowed, regardless of condition.

B. Hydrants

1. Hydrant shall be cast iron body, break-away type barrel, "O" ring operating stem seal and a 300 psi test pressure with a minimum 150 psi working pressure, in accordance with AWWA Standard C-502, latest revision.
2. All operating parts, including brass valve seat, shall be removable through the barrel without excavation.
3. Hydrant shall be compression type, with valve opening not less than 5-¹/₄ inches, with readily removable brass seats and non-rising stems. Valve shall open against pressure and shall close with pressure. Valve opening limit stops shall be in the shoe of the hydrant.
4. Hydrant shall have two 2-¹/₂-inch hose nozzles and one 4-¹/₂-inch steamer connection with National Standard threads and operating nuts.
5. Hydrants shall be designed to allow 5 feet of cover on the branch and allow 15-inches to 18-inches between the centerline of the lowest nozzle and the surface of the ground.
6. Operating nuts and caps shall be 1-³/₈ inch square and shall turn right (clockwise) to close. Nozzle caps shall be chained to the barrel.
7. Hydrant piping shall be 6-inch restrained ductile iron pipe mechanical joint or anchor pipe unless otherwise specified.

SECTION 400540 - FIRE HYDRANTS

8. Weep holes shall be provided for drainage and remain unplugged. If required by the OWNER, weep holes are to be plugged and the hydrant pumped dry after all flushing, testing, and other filling operations.

C. Acceptable Manufacturers

1. Kennedy - Guardian,
2. Mueller - Centurion,
3. Clow-Medallion,
4. American AVK Model 2780.

2.02 PAINT

- A. All interior wetted surfaces of fire hydrants except finished or bearing surfaces shall be shop painted in accordance with NSF/ANSI Standard 61 specifications for potable water and applied in accordance with the manufacturer's recommendations. Exterior surfaces shall be factory painted with touch-up paint applied in field, as necessary, meeting the following criteria:

1. OSHA safety yellow.
2. Conforming to Federal lead standards.
3. Polyurethane modified alkyd.
4. Solids by weight 67.5%.
5. Solids by volume 46%.
6. Paint shall not be supplied in spray-can container.
7. Manufacturers: Dutch Standard DEF1-Rust Enamel #448, Rust-Oleum #944, Pennsbury Hydrant-Hide #9032, Con-Lux Steel Guard #8504 Caution Yellow and Bruning Silathane #52035 Yellow, or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General

1. Install all hydrants and components in accordance with manufacturer's instructions.
2. The hydrant shall be set plumb with the center of the lowest nozzle between 15 inches and 18 inches above the finished grade or as specified by the ENGINEER. The pumper nozzle shall be oriented normal to the near edge of pavement.
3. The auxiliary valve shall be located as close to the main line as possible and at no time shall the center of the hydrant to the center of the auxiliary valve be less than 36 inches. The valve shall not be placed in pavement.
4. No part of the hydrant shall be closer than 2 feet to the face of the curb or 5 feet to the edge of the pavement where no curb exists or as per governing municipalities requirements.
5. All pipe connecting the main to the hydrant stem shall be 6 inch ductile iron pipe, fully restrained by use of anchor pipe or mechanical restraints as

SECTION 400540 - FIRE HYDRANTS

specified. Use of tie-rods shall be restricted to restraining existing conditions.

6. A drain pocket of clean No. 1 stone shall be provided as shown on the Drawings.
 - a. The granular material shall be extended above the hydrant drain.
7. Grease all hydrant nozzle threads after installation. The upper stem shall be lubricated with oil or grease. If grease is used, provide alemite fittings. Lubricate areas to be sealed from wet areas with "O" rings. Grease used shall be a food grade compound specially formulated for fire hydrants.
8. Install concrete block during hydrant installation for thrust restraint.

B. Inspection

1. All hydrants and valves will be inspected by the ENGINEER prior to installation. Damaged or defective materials will be rejected whether previously incorporated into the work or not.
2. Prior to the work in this section, the CONTRACTOR shall inspect the installation area to determine if the work of other trades has progressed to the point where the installation may properly commence.
3. The CONTRACTOR shall verify that the installation can proceed in accordance with all pertinent codes and regulations, the original design and the referenced standards.

C. Discrepancies

1. If the above referenced inspection reveals discrepancies, the CONTRACTOR shall notify the ENGINEER immediately.
2. The CONTRACTOR shall not proceed with the installation in areas of discrepancy until said discrepancy is resolved.

3.02 PAINTING

- A. All interior wetted surfaces of fire hydrants except finished or bearing surfaces shall be shop painted in accordance with NSF/ANSI Standard 61 for potable water and applied in accordance with the manufacturers recommendations. Exterior surfaces shall be factory painted yellow and shall be repainted yellow in the field after installation with paint meeting the requirements of this specification.

3.03 TESTING

- A. All parts and components shall be adjusted as required to provide correct operation.
- B. The CONTRACTOR shall demonstrate to the ENGINEER'S satisfaction that all system components operate correctly, both individually and as a system. All testing equipment required shall be provided by the CONTRACTOR.

SECTION 400540 - FIRE HYDRANTS

- C. CONTRACTOR will replace fire hydrant assemblies, which are leaking or are considered suspect by the ENGINEER.

END OF SECTION

SECTION 400560 - VALVES AND APPURTENANCES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

The work specified shall include all labor, material, equipment, services and incidentals necessary to furnish and install valves and appurtenances as shown, specified and required.

B. Related Work Specified Elsewhere

1. Section 331100 - Buried Piping Installation
2. Section 331301 - Testing and Disinfection
3. Section 400519 - Ductile Iron Pipe and Fittings
4. Section 400540 - Fire Hydrants

1.02 QUALITY ASSURANCE

A. Manufacturer's Qualifications

1. Manufacturer shall have a minimum of 5 years experience producing valves and appurtenances, and shall show evidence of at least 5 installations in satisfactory operation.
2. Parts Interchangeability: It is the intent of these specifications that all materials furnished herein shall be compatible with similar materials of other manufacturer's.

B. Reference Standards

1. ANSI B16.1, Cast Iron Pipe Flanges and Flanged Fittings
2. ANSI B16.4, Cast Iron Fittings
3. ASTM A48, Standard Specification for Gray Iron Castings
4. ASTM A126, Standard Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings
5. ASTM A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
6. ASTM A354, Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs and Other Externally Threaded Fasteners
7. ASTM A436, Standard Specification for Austenitic Gray Iron Castings
8. ASTM A536, Standard Specification for Ductile Iron Castings
9. ASTM B62, Standard Specification for Composition Bronze or Ounce Metal Castings
10. AWWA C500, Standard for Metal-Seated Gate Valves for Water Supply Service
11. AWWA C504, Standard for Rubber-Seated Butterfly Valves
12. AWWA C508, Standard for Swing Check Valves for Waterworks Service, 2 in. (50 mm) Through 24 in. (600 mm) NPS
13. AWWA C509, Standard for Resilient Seated Gate Valves for Water Supply Service

SECTION 400560 - VALVES AND APPURTENANCES

14. AWWA C800, Underground Service Line Valves and Fittings
15. American Gear Manufacturers Association (AGMA) Standards
16. NEMA, National Electrical Manufacturer's Association
17. NEC, National Electrical Code
18. NSF/ANSI Standard 61
19. Underwriter's Laboratories (UL)
20. International Organization for Standardization (ISO)
21. Factory Mutual Research Corporation
22. 1996 Safe Drinking Water Act
23. Manufacturing Standardization Society of the Value and Fittings Industry (MSS)

1.03 SUBMITTALS

- A. Shop Drawings: Submit for approval the following:
 1. Manufacturer's literature, illustrations, specifications, detailed drawings, data and descriptive literature on all valves and appurtenances.
 2. Deviations from Drawings and Specifications.
 3. Engineering data including dimensions, materials, size and weight.
 4. Fabrication, assembly, installation and wiring diagrams.
- B. Operation and Maintenance Data: Submit complete manuals including:
 1. Copies of all Shop Drawings, test reports, maintenance data and schedules, description of operation, and spare parts information.
- C. Shop Tests: Submit for approval the following:
 1. Hydrostatic tests for each valve when required by the valve specifications included herein.
 2. Each gate valve shall have the leakage test required by Section 5 of AWWA C509 performed with the pressure differential applied in both directions.
 3. The manufacturer of butterfly valves shall submit certified copies of reports covering the bi-directional leakage tests in accordance with Section 6, AWWA C504.
- D. Certificates:
 1. Where specified or otherwise required by ENGINEER, submit test certificates.
 2. The CONTRACTOR shall submit certificates of compliance with the applicable referenced standards.
 3. Submit certificate of compliance with NSF/ANSI Standard 61 for all products under this section, including interior coatings, by an independent, authorized laboratory.

SECTION 400560 - VALVES AND APPURTENANCES

- E. Delivery Tickets:
 - 1. Furnish delivery tickets indicating the valve manufacturer, valve type and class, identifying that the valves are new and from a manufacturer that has been submitted and approved.
- F. Testing Criteria:
 - 1. CONTRACTOR must provide manufacturer's test specifications for all tapping sleeve and valves prior to field testing.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. During delivery and handling, all materials shall be braced and protected from any distortion or damage; any such distortion or damage shall be basis for rejection of the materials.
- B. Equipment used for unloading shall be covered with wood or rubber to avoid damage to the exterior of the valves and accessories. Do not drop or roll materials off trucks. All valves and appurtenances shall be handled with padded slings or other appropriate equipment. The use of cables, hooks or chains will not be permitted.
- C. The materials shall be inspected before and after unloading. Materials that are found to be cracked, gouged, chipped, dented or otherwise damaged will not be accepted.
- D. Interiors of valves and appurtenances shall be kept free from dirt and foreign matter.
- E. Store valves and appurtenances on heavy wood blocking or platforms so they are not in contact with the ground.
- F. Valves and appurtenances shall be unloaded opposite to or as close to the place where they are to be used as is practical to avoid unnecessary handling.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General
 - 1. All products, including interior coatings, shall be suitable for use in a potable water system.
 - 2. All products, including wetted parts, shall be certified to meet NSF/ANSI Standard 61.
 - 3. Valves shall have manufacturer's name and working pressure cast in raised letters on valve body. Valves shall be suitable for test pressures specified in Section 331100, Buried Piping Installation.

SECTION 400560 - VALVES AND APPURTENANCES

4. Manual valve operators shall turn clockwise to close unless otherwise specified. Valves shall indicate the direction of operation.
5. Valve shall be treated as a bulkhead (dead end) condition and pipe joints shall be restrained on both sides of the valve for the lengths as shown, specified, or required.
6. All valves, operators, and appurtenances shall be designed to withstand the working and hydrostatic test pressures as specified in Section 15051, Buried Piping Installation.
7. Unless otherwise specified all flanged valves shall have ends conforming to ANSI B16.1, Class 125.
8. All bolts, nuts and studs shall, unless otherwise approved, shall conform to ASTM A307, Grade B; or ASTM A354. All bolts, nuts and studs on or required to connect submerged or buried valves shall be fluorocarbon coated.
9. Bolts and nuts shall have hexagon heads and nuts.
10. Gasket material and installation shall conform to manufacturer's recommendations.
11. Identification: Identify each valve 4 inches and larger with a brass or stainless steel nameplate stamped with the approved designation. Nameplate shall be permanently fastened to valve body at the factory. Stenciled designations are acceptable for buried valves.
12. All valves and appurtenances must be new materials in first-class condition. Used or recycled materials will not be allowed, regardless of condition.

B. Gate Valves, Flanged and Screwed

1. 2¹/₂ inches Diameter and Smaller: Valves shall be bronze screwed ends, solid wedge, rising stem, screwed bonnet type with screwed ends.
 - a. Product and Manufacturer: Provide one of the following:
 - 1) Fig. 49-U, as manufactured by Jenkins Brothers or,
 - 2) Watts - WGV,
 - 3) Or approved equal.
2. 3-Inch Diameter and Larger:
 - a. Valves shall be iron body, bronze mounted, rising stem and in conformance with AWWA C500.
 - b. Unless otherwise shown or specified exposed valves shall have flanged ends conforming to ANSI B16.1, Class 125 conforming to ANSI A21.11.
 - c. Exposed manually operated gate valve shall be equipped with hand wheels. Gate valves located more than five feet above the operating floor shall be provided with chainwheels, sprockets, and aluminum chain. The chain shall extend to three feet above the operating floor.
 - d. Manufacturer: Provide gate valves of one of the following:
 - 1) Mueller Company,
 - 2) Dresser Manufacturing Division, M&H Division,
 - 3) Or approved equal.

SECTION 400560 - VALVES AND APPURTENANCES

C. Resilient Seat Gate Valves

1. General

- a. The design working pressure and test pressure for all valve sizes shall be as described in AWWA C509 and materials conforming to C509. All valves shall be designed to operate vertically in a horizontal pipeline.
- b. The valve disc shall be fully encapsulated with a synthetic elastomer and shall seat against a corrosion-resistant surface.
- c. Valves for buried applications shall have mechanical joint ends and be restrained per Section 400519, Ductile Iron Pipe, Fittings, and Accessories, by use of a mechanical joint wedge action retainer gland to resist movement.
- d. All bolts and nuts, including bonnet assembly and seal plate hold-down, shall be fluorocarbon coated high strength, corrosion resistant low alloy steel.
- e. Valves for exposed applications shall have flanged ends conforming to ANSI B16.1, Class 125 conforming to ANSI A21.11.
- f. Thin walled AWWA C515 valves shall not be allowed.

2. Gate Valve

- a. The body, bonnet, seal plate, disc and hub nut shall be iron.
- b. Non-rising valve stem, stem nuts, glands and bushings shall be bronze.
- c. Shaft "O"-ring seals shall be synthetic rubber or Buna-N and shall be capable of being replaced under pressure.
- d. All internal parts shall be accessible without removing the main body from the pressurized line.

3. Operators

- a. Operator shall be suitable for buried service.
- b. Operators shall be as specified in AWWA C509 for submerged, buried, or in-plant service as specified.
- c. Operators shall be equipped with a 2-inch square operating nut and shall be full gasketed and grease packed for buried service. Operating nuts shall turn clockwise to close the valve. A cast arrow showing the direction of valve opening shall be supplied.

4. Manufacturer:

- a. Kennedy Valve Company, No. 8571,
- b. Mueller, 2360-16,
- c. Or approved equal.

D. Butterfly Valves

1. General

- a. Butterfly valves shall be short-body design conforming to AWWA C504 and shall have flanged ends for exposed applications and mechanical joint or Victaulic ends for buried applications as specified.

SECTION 400560 - VALVES AND APPURTENANCES

- b. Valves for buried applications shall have mechanical joint ends and be restrained per Section 400519, Ductile Iron Pipe, Fittings, and Accessories, by use of a mechanical joint wedge action retainer gland. Valves may also have Victaulic ends as shown, specified, or required.
 - c. Valves shall be tight closing, rubber seat type with recessed rubber seat securely mounted to the valve body.
 - d. All other bolts, nuts and studs shall, unless otherwise approved, be flouorocarbon coated.
 - e. Bolts and nuts shall have hexagon heads and nuts.
 - f. Gasket material and installation shall conform to manufacturer's recommendations.
 - g. Identification: Identify each valve with a brass or stainless steel nameplate stamped with the approved designation. Nameplate shall be permanently fastened to valve body at the factory.
 - h. All butterfly valves and their operators shall be designed for buried and submerged conditions and shall open counterclockwise.
2. Butterfly Valve
- a. Body shall be cast iron ASTM A126, Class B, with integrally cast shaft bearing hubs. Flanged ends shall conform to ANSI B16.1 and match existing.
 - b. Valve shafts shall be Type 304 stainless steel solid one piece design for valve sizes 3" through 20" and stub shaft design for valves larger than 24" in diameter with an adjustable thrust bearing to center the valve disc.
 - c. Discs shall be of one-piece design, cast iron or ductile with a Type 316 stainless steel seating edge with demonstrated test results of 100,000 cycles of drip tight capability.
 - d. Valve seats shall be synthetic rubber. Rubber seats shall be bonded to the valve body. The seat bond must withstand a 75 pound pull under test procedure ASTM D429, Method B.
 - e. Valve bearings shall be as specified in Sect. 3, AWWA C504. The shaft bearings shall be teflon or teflon lined/fiberglass backed.
 - f. Valve shaft packing shall be non-metallic, split-V self-compensating Chevron style.
3. Operators
- a. Operators shall be permanently lubricated and totally enclosed and be provided with a handwheel, chainwheel or 2-inch square nut, as specified.
 - b. Operators shall be equipped with a totally enclosed permanently lubricated lever-traveling nut drive, self locking type and shall be designed to hold the valve in any intermediate position between "fully open" and "fully closed" without creeping or fluttering.
 - c. Operators shall be equipped with adjustable stop-limiting devices to prevent over travel of the disc in the open and closed positions. Stops shall be located within the operator housing and be capable

SECTION 400560 - VALVES AND APPURTENANCES

of adsorbing the full operator torque with minimum safety factor of 5.

- d. Operator housing, supports and connections to the valve shall have provisions for four-bolt mounting.
 - e. Operator components shall withstand an input torque of 450 foot-pounds at the extreme operator positions without damage.
 - f. Enclosed lever-traveling nut operators shall have a gear ratio designed not to exceed 80 pounds pull to meet the required operator torque.
 - g. Operators shall turn clockwise to close the valve.
 - h. Extension stems shall not be allowed. All valves shall be located such that the cover over the top of the operating nut shall not exceed 5-foot in depth.
4. Manufacturer:
- a. Henry Pratt Co, Groundhog,
 - b. DeZurik,
 - c. Or approved equal.

E. Tapping Sleeve and Valve

- 1. Tapping Sleeve
 - a. Tapping sleeves and valves shall be used for connections larger than 2 inches and shall be stainless steel constructed of 18-8 Type 304 stainless steel.
 - b. All bolts and nuts shall be 18-8 Type 304 stainless steel, with heavy hex nuts to be fluorocarbon coated to prevent galling.
 - c. Tapping sleeves shall be designed and sized in accordance with the recommendations of the manufacturer.
 - d. The sleeve shall be fabricated in two halves, for assembly around the watermain by means of bolts and gaskets to form a watertight seal. Bolts shall be removable and the gasket shall be a 360 degree gridded type to resist oil, alkalies, and suitable for water service.
 - e. The flange shall be 18-8 type 304 stainless steel, the outlet side shall conform to AWWA C 207 (ANSI B16.1, class 125), 150 lb drilling for attachment to standard tapping valves. 18-8 type 304 stainless steel flange bolts and flange gasket shall be supplied with tapping sleeve.
- 2. Tapping Saddle for Prestressed Concrete Cylinder Pipe.
 - a. Tapping saddle assembly shall consist of tapping saddle, steel bands, rubber gasket, and a separate flanged tapping gland.
 - b. The assembly shall be so designed that the saddle must be installed on the pipe before the prestressing wires can be cut. The gland is to be a separate piece that is installed after the wires are cut and is held against the cylinder by bolting its flange to the flange on the saddle. The outlet on the gland shall allow a tapping valve, as specified herein, to be bolted to it.

SECTION 400560 - VALVES AND APPURTENANCES

3. Tapping Valve (16-inch diameter and smaller):
 - a. Valves for tapping sleeves 16-inches and smaller shall be resilient seat as specified in paragraph 2.01.C herein and shall be specially designed for this purpose.
 - b. The end flange of the tapping valve shall mate with the flange of the tapping sleeve and conform to AWWA C 207 (ANSI B16.1, class 125), 150 lb drilling and to the dimensions of MSS SP-60. The other end of the tapping valve shall be mechanical joint, unless otherwise specified.
 4. Tapping Sleeve Manufacturer for Tapping Ductile Iron, PVC Pipe, or ACP Pipe.
 - a. Mueller, Model No. 304,
 - b. Ford style FTSS,
 - c. Smith Blair 665,
 - d. Or approved equal.
 5. Tapping Saddle Manufacturer for Prestressed Concrete Cylinder Pipe:
 - a. Price Brothers,
 - b. Or approved equal.
 6. Tapping Valve Manufacturer:
 - a. Mueller, No. 2360/2361,
 - b. Kennedy No. 8950,
 - c. Or approved equal.
- F. Check Valves - Liquid Service
1. General:
 - a. Check valves shall absolutely prevent the return of water back through the valve when the upstream pressure decreases below the downstream pressure. The valve shall be tight seating.
 2. 2¹/₂-Inches Diameter and Smaller: Valves shall be bronze, screwed ends with screw in cap suitable for 150 psi service.
 - a. Product and Manufacturer: Provide one of the following:
 - 1) Fig. 92-A, as manufactured by Jenkins Brothers,
 - 2) Fig. 34-1/2, as manufactured by Crane Company,
 - 3) Or approved equal.
- G. Air Release Valves
1. Air release valves shall be designed to operate automatically under pressure to release entrapped air from a watermain, pump, tank, or water system. Once the air has been released, the valve shall close and remain closed until reopened by entrapped air. No leakage or process fluid will be permitted.
 2. All internal valve components shall be stainless steel.
 3. The air release valve shall be float operated and shall incorporate a compound lever mechanism to enable the valve to automatically release accumulated air from a fluid system that system is pressurized and operating.

SECTION 400560 - VALVES AND APPURTENANCES

4. The air release valve shall close drop tight, incorporating an adjustable Buna-N orifice button.
5. The float shall be stainless steel and be capable of withstanding a test pressure of 300 psi.
6. The linkage/lever mechanism shall be able to be removed from the valve without disassembly of the mechanism, and shall be designed to prevent jamming.
7. The body and cover shall be cast iron conforming to the requirements of ASTM A126 Class B, and shall be designed to withstand a test pressure of 450 psig.
8. Manufacturer:
 - a. ValMatic, model #38,
 - b. Or approved equal.

H. Combination Air and Vacuum Release Valves

1. Combination air release valves shall be designed to relieve entrapped air and to break a siphon in a pipeline regardless of flow direction.
2. All internal valve components shall be corrosion-resistant.
3. Manufacturer:
 - a. ValMatic, valve #201C.2,
 - b. Or approved equal.

2.02 PAINTING

A. Shop Painting

1. Clean and prime coat ferrous metal surfaces.
2. All interior wetted ferrous surfaces of valves and appurtenances except finished or bearing surfaces shall be shop-painted with an approved epoxy paint system certified to NSF/ANSI Standard 61 for potable water and applied in accordance with the paint system manufacturer's recommendations.
3. Coat machined, polished and non-ferrous surfaces including gears, bearing surfaces and similar unpainted surfaces with corrosion prevention compound listed in NSF/ANSI Standard 61 and applied in accordance with the manufacturer's recommendations. Maintain coating during storage and until equipment begins operation.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install valves and appurtenances as shown on the Drawings and in accordance with the manufacturer's recommendations.
- B. All valves shall be kept in the closed position until otherwise directed by the ENGINEER. Hydrant valves shall be opened during the hydrostatic testing and then closed until the watermain is placed into service.

SECTION 400560 - VALVES AND APPURTENANCES

- C. Install all valves so that handwheels, levers, or wrenches can be conveniently turned from operating area and as approved by the ENGINEER.
- D. Install all valves plumb and level unless otherwise approved. Valves shall be installed free from distortion and strain caused by misaligned piping, equipment, or other causes.
- E. CONTRACTOR shall operate each valve full open to full close in the presence of ENGINEER. The number of turns shall be recorded and provided to OWNER with the Record Drawings.

END OF SECTION

APPENDIX A

WOMEN AND MINORITY BUSINESS ENTERPRISE POLICY

ERIE COUNTY WATER AUTHORITY



APPENDIX A

WOMEN AND MINORITY BUSINESS ENTERPRISE POLICY

ERIE COUNTY WATER AUTHORITY

It is the policy of the Authority to foster and encourage minority business enterprise participation in the construction contracts of the Authority. Through the setting of Minority Business Enterprise goals and careful monitoring of CONTRACTOR compliance, the Authority will ensure the fullest possible participation in construction activities by qualified minority and women-owned firms.

Some of the federal and state laws that provide the basis for Equal Employment Opportunity and Affirmative Action are:

1. Title VII, Civil Rights Act of 1964 (as amended by the Equal employment Opportunity Act of 1972): Prohibits employment discrimination because of race, color, sex, religion or national origin.
2. Executive Order 11246 (as amended by the Executive Order 11375): Requires Affirmative Action by all Federal CONTRACTORS and subcontractors and requires that all firms with Contracts over \$50,000.00 and 50 or more employees develop and implement written programs.
3. Equal Act of 1963: Requires employers to provide equal pay for men and women performing similar work.
4. New York State Human Rights Law: Prohibits discrimination based on race, color, sex, age, creed, disability, national origin and marital status in employment matters.
5. Flynn Act: Guarantees disabled citizens protection against discrimination in housing, employment, public accommodations, training programs and non-sectarian education due to mental, physical or medical disability.
6. Title VI, Civil Rights Act of 1964: Prohibits discrimination based on race, color or national origin in all programs which receive Federal aid.
7. Title IX, Education Amendments Act of 1972: Prohibits sex discrimination against students of any educational institution receiving Federal financial aid.

A. MINORITY BUSINESS UTILIZATION COMMITMENT

The Erie County Water Authority has established the following business utilization rules which requires all prime CONTRACTORS awarded construction contracts let by the Erie County Water Authority to exemplify Affirmative Action to sub-contract to minority business enterprise (MBE). For the purpose of these regulations, the term "Minority Business Enterprise" refers to a business at least fifty-one percent (51%) of which is owned and controlled by minority group members. Minority group members are citizens of the United States who are Women, Blacks, Hispanics and Native Americans. MBE's must demonstrate current certification of a government agency.



The Authority has determined that a goal of ten percent (10%) of the total contract value represents a fair share of minority business utilization on each construction contract awarded.

Recipients of Authority construction Contracts must utilize minority-owned business sources for supplies, services and professional services, allowing these sources the maximum feasible opportunity to compete for Contracts, Subcontracts and third-tier Contracts to be performed. All prime CONTRACTORS awarded Authority Contracts estimated to exceed \$100,000.00 must take positive steps to "afford fair opportunities to MBE's". Positive steps shall include, but not be limited to, (a) utilizing a source list of bona fide minority business enterprises, (b) solicitations of bids from MBE's particularly of those located in Erie County, (c) giving minority firms sufficient time to submit proposals in response to solicitations and (d) maintaining records showing minority business enterprises and specific efforts to identify and award Contracts to these Companies.

Each CONTRACTOR bidding on an Erie County Water Authority contract is to contact MBE's and solicit bids for various aspects of each project. The CONTRACTOR is to supply the Authority with information regarding contracts for services and products with minority business enterprises and the dollar amount of each contract on the Minority Business Utilization Report.

The Successful Bidder shall submit to the Authority the Minority Business Enterprise Utilization Report - Part A within one week of the bid opening. Part A includes a list of MBE's from whom the CONTRACTOR has solicited bids, or with whom the CONTRACTOR has signed a binding contractual agreement. The Authority will not consider a CONTRACTOR's bid where the CONTRACTOR fails to submit this report or where an examination of the report evidences failure by the CONTRACTOR to comply with the affirmative action requirements of the Contract.

In the event of a joint venture participating in this MBE Program, the Joint Venture Disclosure Affidavit must be submitted with Part A by all parties involved. Only to the extent that a minority business enterprise contributes to and is paid for its participation in a joint venture will that dollar be credited towards the 10% goal of minority participation in the Erie County Water Authority MBE Program.

MBE's must be approved by the Erie County Water Authority before their participation may be credited toward the 10% goal. Where the proposed MBE is not approved by the Authority, an Authority MBE/Disclosure Affidavit must be filed with the Contract Compliance office. Forms and lists of certified MBE's can be obtained by calling Lavonya Lester, Director of Equal Employment Opportunity (ECWA) at (716) 685-8223.

A Minority Business Enterprise Utilization Waiver Request may be completed and submitted with the Minority Business Enterprise Utilization Report - Part A to the Authority within one week of the bid opening. Waivers shall be granted only where the availability of MBE's in the market area of the project is less than the 10% goal.

Sufficient information must be provided on the Minority Business Enterprise Utilization Waiver Request to ascertain whether a waiver should be approved, conditionally approved or rejected by advice of the Equal Opportunity Office.

A waiver approval limits the CONTRACTOR's obligation to solicit MBE's for this particular project. It does not relieve the CONTRACTOR of MBE utilization for any other Erie County Water Authority project on which he submits a bid.

Conditional approval of the waiver request makes it necessary for the CONTRACTOR to continue soliciting MBE's for contracting purposes, after he has been declared the low bidder.



A MBE Utilization Waiver Request will be rejected if the CONTRACTOR:

1. fails to provide information on the Minority Business Enterprise Utilization Report with his bid.
2. provides fraudulent information of the MBE reports.
3. fails to make an honest good faith effort to recruit and contract with MBE's or
4. takes any other action which is contrary to the spirit and intent of the law.

THE INFORMATION PROVIDED ON THE MBE WAIVER REQUEST AND THE MBE UTILIZATION REPORT WILL BE CONSIDERED CONCURRENTLY TO DETERMINE IF A WAIVER SHOULD BE APPROVED, CONDITIONALLY APPROVED OR REJECTED.

The low bidder shall submit to the Authority, within one week of the bid opening, a schedule for minority business enterprise participation, with whom the CONTRACTOR intends to subcontract, specifying the agreed price to be paid for such work, and identifying in detail the Contract item(s) or parts to be performed by each minority business enterprise. A letter of intent to enter into a Subcontract or purchase agreement, signed by the minority business, contingent upon the contract award, indicating the agreed upon price and scope of work, shall be provided, signed by both the CONTRACTOR and the minority business enterprise. The prime CONTRACTOR shall not substitute or delete the listed minority business enterprise without the written consent of the Erie County Water Authority.

In the event that the MBE goal for the contract is not met, the CONTRACTOR shall provide sufficient documentation to establish that every positive effort was made to identify, solicit and negotiate with MBE's in pursuit of the goal. Such documentation includes, but is not limited to, advertisement in minority-focused media, written contract with minority businesses indicating sufficient bidder's price along with evidence showing the work to be performed is the same, and not a reduced portion thereof.

The CONTRACTOR shall provide to the Erie County Water Authority copies of all subcontracts and/or purchase agreements with minority business enterprises within one week of the bid opening. A notice to proceed with construction shall not be issued until acceptable documentation is received.

When the project is thirty (30%) percent complete, the CONTRACTOR shall submit to the Authority the Minority Business Enterprise Utilization Report - Part B. Part B lists the MBE's on the project, the dollar amounts paid to that date and the estimated amount remaining to be spent.

The Minority Business Enterprise Utilization Report - Part C certifies the actual dollar amount expended to MBE's. Part C must be completed by the prime CONTRACTOR and submitted at the seventy-five (75%) percent payment level.

The Minority Business Enterprise Utilization Report - Part D certifies the total dollar amount expended to MBE's. Part D is to be submitted with the request for final payment.



In the event a CONTRACTOR fails to comply with these provisions the Authority may:

1. Summon the CONTRACTOR to a hearing
2. Withhold progress payments in part or in full
3. Cancel the contract.
4. Bar award of future Contracts until the CONTRACTOR can demonstrate that he will comply.

It is hereby the Erie County Water Authority's commitment to assure that on all contracts awarded, prime CONTRACTORS expend a fair share of the contract with bona fide minority businesses in accordance with the goals set forth by the Authority. Failure to comply with these provisions shall disqualify the bidder and shall constitute a breach of contract subject to all remedies available to the Authority.

The Prime CONTRACTOR and all minority Subcontractors are bound by all requirements as put forth in the Erie County Water Authority standard General Conditions and all modifications thereto contained in these Contract Specifications.



Listing of **AFFIRMATIVE ACTION FORMS ATTACHED:**

<u>NAME OF FORM</u>	<u>PAGE NUMBER(S)</u>
Minority Business Utilization Report- Part A	6 & 7
Waiver Request	8
Erie County Water Authority Minority Business Enterprise Joint Venture Disclosure Affidavit	9
Erie County Water Authority Minority Business Enterprise Utilization Report - Part B	10 & 11
Minority Business Enterprise Utilization Report - Part C	12
Minority Business Enterprise Utilization Report - Part D	13



**ERIE COUNTY WATER AUTHORITY
MINORITY BUSINESS ENTERPRISE
UTILIZATION REPORT - PART A**

This information must be submitted by the successful bidder within one week of bid opening.

COMPANY Ferguson Electric Construction Co., Inc.

AUTHORIZED REPRESENTATIVE Angelo A. Veanes, President

ADDRESS 333 Ellicott Street, Buffalo NY 14203

TELEPHONE NUMBER 716-852-2010

PROJECT NAME Erie County Water Authority Ball Pump Station

PROJECT NUMBER NC-35

I. List actions taken to identify, solicit, and contact Minority Business Enterprises (MBE) to bid on subcontracts on this project.

1. Requested quotes on materials from MBE. _____
2. Requested quotes on labor from MBE. _____
3. _____
4. _____
5. _____
6. _____

II. List all bona fide Minority Business Enterprise, subcontractors, professional personnel, solicited, contracted, or presently negotiating a contract in accordance with the minority business utilization goal set forth by the Erie County Water Authority. (Attach additional sheets if necessary.)

MINORITY OWNED FIRM	SUPPLY/ SERVICE	AMOUNT OF PROPOSAL	PRIOR CERTIFICATION	CONTRACT EXECUTED	REASON NOT AWARDED
American Rated Cable & Comm. NAME: _____ ADDRESS: 790 E. Delavan AV Buffalo NY 14215 TELE NO. 716-892-4240 IRS NO. 16-1422757	furnish and install electrical equipment	\$510,000.00		YES _____ NO <u>X</u>	contract not awarded yet
NAME: _____ ADDRESS: _____ TELE NO. _____ IRS NO. _____				YES _____ NO _____	
NAME: _____ ADDRESS: _____ TELE NO. _____ IRS NO. _____				YES _____ NO _____	
NAME: _____ ADDRESS: _____ TELE NO. _____ IRS NO. _____				YES _____ NO _____	



PART A CONTINUED

III. Assistance offered by CONTRACTOR to MBE's as to bonding, union requirements, obtaining work capital etc...

1. We established a mentoring/working relationship with American Rated Cable in 2003.
2. _____
3. _____
4. _____
5. _____
6. _____


IV. Total Dollar Amount to be subcontracted to Minority Business Enterprise(s): \$ 510,000.00

V. Total Amount of Bid: \$ 5,094,000.00

VI. MBE Percent (%) of project bid: 10%

VII. **YOU MUST ATTACH COPIES OF RELEVANT CORRESPONDENCE AND DOCUMENTS INCLUDING RETURN RECEIPTS.**

5/21/18
DATE


SIGNATURE OF AUTHORIZED REPRESENTATIVE
Angelo A. Veanes, President

Note: Within one week of the bid opening, this original form, together with a letter of intent to enter into a subcontract or purchase agreement, contingent upon the contract award, indicating the agreed upon price and scope of work, signed by both the CONTRACTOR and the Minority Business Enterprise, must be submitted to:

Lavonya Lester, Director of Equal Employment Opportunity (ECWA)
Erie County Water Authority
3030 Union Road
Buffalo, New York 14227



Letter of Intent

To: American Rated Cable & Communications, Inc.
970 E. Delavan Avenue
Buffalo NY 14215

Date: 5/22/18

Project Name and Number ECWA Ball Pump Station NC-35

Bid Amount: \$5,094,000.00 M/WBE Goal: 10%

Ferguson Electric Construction Co., Inc. agrees to enter into a contractual agreement
Prime Contractor
with American Rated Cable & Communications, Inc. who will provide the following goods/
MWBE Subcontractor
services in connection with the above referenced contract
furnish and install electrical equipment

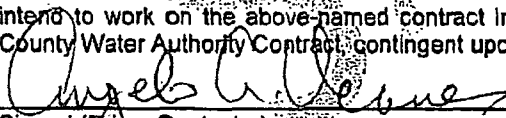
for an estimated amount of \$ 510,000.00 totaling 10 % of the total contract value.

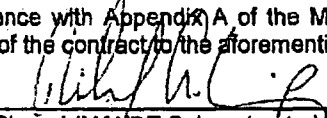
American Rated Cable & Communications, Inc. is currently certified with Erie County Joint Certification Committee
(MWBE Subcontractor) and is able to function in the aforementioned capacity.

Ferguson Electric Construction Co., Inc.
Prime Contractor

American Rated Cable & Communications, Inc.
MWBE Subcontractor

intend to work on the above named contract in accordance with Appendix A of the MWBE Section of the Erie
County Water Authority Contract, contingent upon award of the contract to the aforementioned Prime Contractor.


Signed (Prime Contractor)


Signed (MWBE Subcontractor)

Angelo A. Veanes
Printed Signature

Richard A. Cummings
Printed Signature

President 5/23/18
Title Date

VICE PRESIDENT 23 MAY 18
Title Date



WAIVER

COMPANY _____

ADDRESS _____

TELEPHONE NUMBER _____
(AREA CODE) (NUMBER)

1. CONTRACTOR has made a good faith effort to adopt subcontracting on this project to those trades, professions, supplies, etc. for which minority business enterprises bids could be solicited; and
2. The total percentage of the bids which could be Subcontracted in trades, professions, supplies, etc. for which minority business enterprises bids could be solicited is less than 10%.

A waiver, as provided for by the Erie County Water Authority is hereby requested on the grounds that there are no/insufficient (circle the appropriate term) minority business enterprise in the market area of this project which do subcontracting in the following fields (list all trades, professions, supplies, etc. which could be subcontracted on this project):

- | | |
|----------|-----------|
| 1. _____ | 6. _____ |
| 2. _____ | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

(use additional sheets if necessary)

If a partial waiver is granted the CONTRACTOR will make a good faith effort to meet the reduced goal.

DATE

SIGNATURE OF AUTHORIZED REPRESENTATIVE OF COMPANY

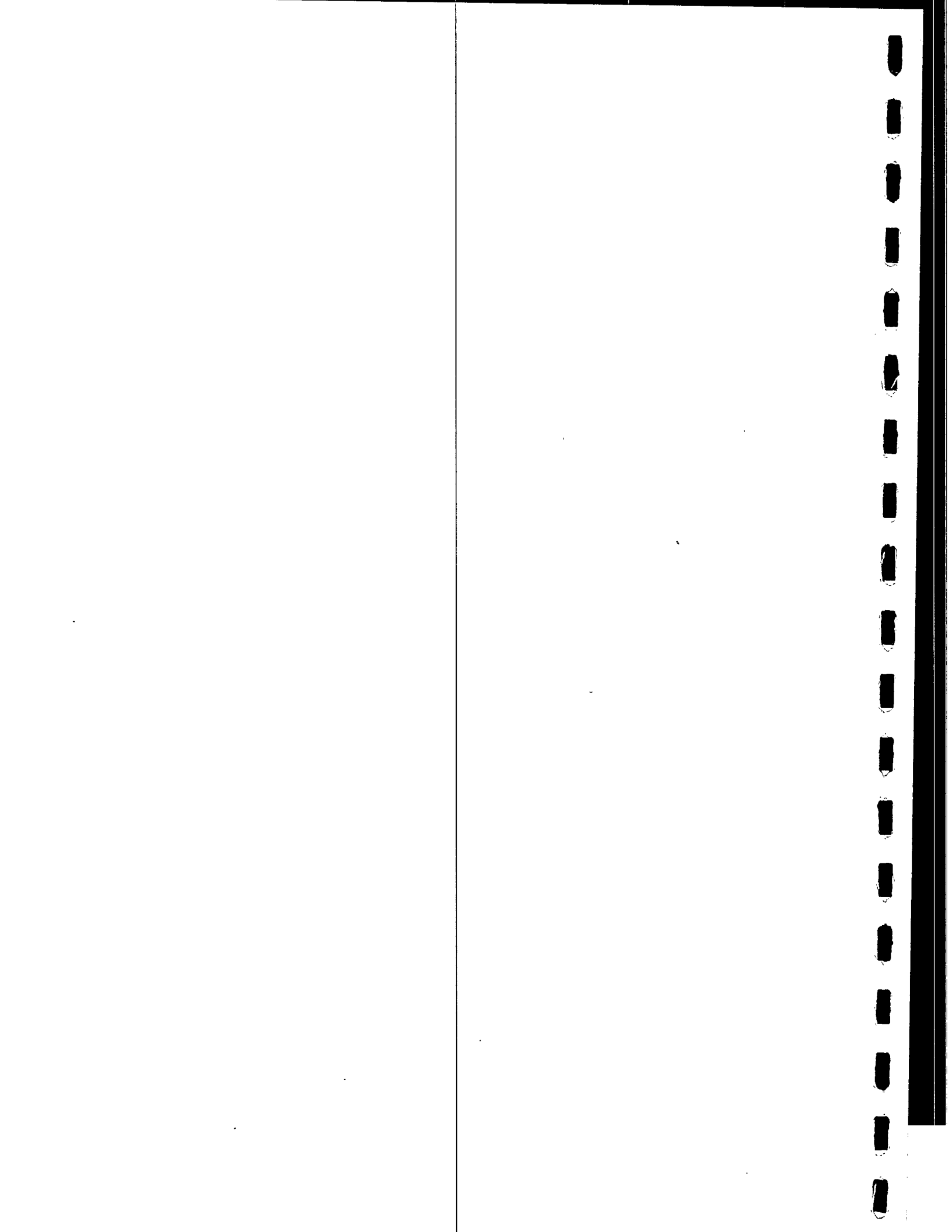
Granted in whole _____

Granted in part _____

Comments _____

_____ EQUAL OPPORTUNITY OFFICIAL	_____ TITLE	_____ DATE
-------------------------------------	----------------	---------------

_____ LETTING DEPARTMENT REPRESENTATIVE	_____ TITLE	_____ DATE
--	----------------	---------------



**ERIE COUNTY WATER AUTHORITY
MINORITY BUSINESS ENTERPRISE
JOINT VENTURE DISCLOSURE AFFIDAVIT**

To Be Submitted With Part A
Where Applicable

Joint Ventures: _____
Name: _____
Address: _____
Principal Office: _____
Office Phone: _____
Home Phone: _____

Percent of minority ownership in terms of profit and loss sharings:

Capital contributions by each joint venture and accounting therefore:

Equipment and supply contributions by each joint venturer and accounting therefore:

Any ownership options for ownership or loans between the joint venturers - identify terms thereof:

How and by whom the on-site work will be supervised and administered:

I, _____, as
representative of _____ Company,
do hereby swear or affirm that I am authorized to act on its behalf and that in this capacity and to
the best of my knowledge and belief, the information provided herewith relevant to the joint
venture of _____
is accurate, complete and current, and fairly represents the joint venture; further, that I have
personally reviewed the material and assured myself of its accuracy. It is recognized and
acknowledged that the statements herein are being given under oath and any material
misrepresentation will be grounds for terminating any contract which may be awarded in reliance
hereon.

SIGNATURE



**ERIE COUNTY WATER AUTHORITY
MINORITY BUSINESS ENTERPRISE UTILIZATION REPORT - PART B**

CONTRACTOR _____ CONTRACT NAME _____

- I. List all bona fide minority business enterprises, Subcontractors, suppliers, professional personnel, or joint venture firms, with whom you have entered into a binding agreement in accordance with the Minority Business Utilization Goal set forth by the Erie County Water Authority. Include minority trucking firms that will be utilized and included and estimated dollar amount. This information must be submitted to the Erie County Water Authority when the project is 30% complete.

(USE REVERSE SIDE IF MORE SPACE IS NEEDED) MINORITY OWNED FIRMS	TYPE OF WORK	DATE CONTRACT EXECUTED	TOTAL EXPENDED TO DATE	AMOUNT REMAINING
NAME: _____ ADDRESS: _____ _____ IRS #: _____				
NAME: _____ ADDRESS: _____ _____ IRS #: _____				

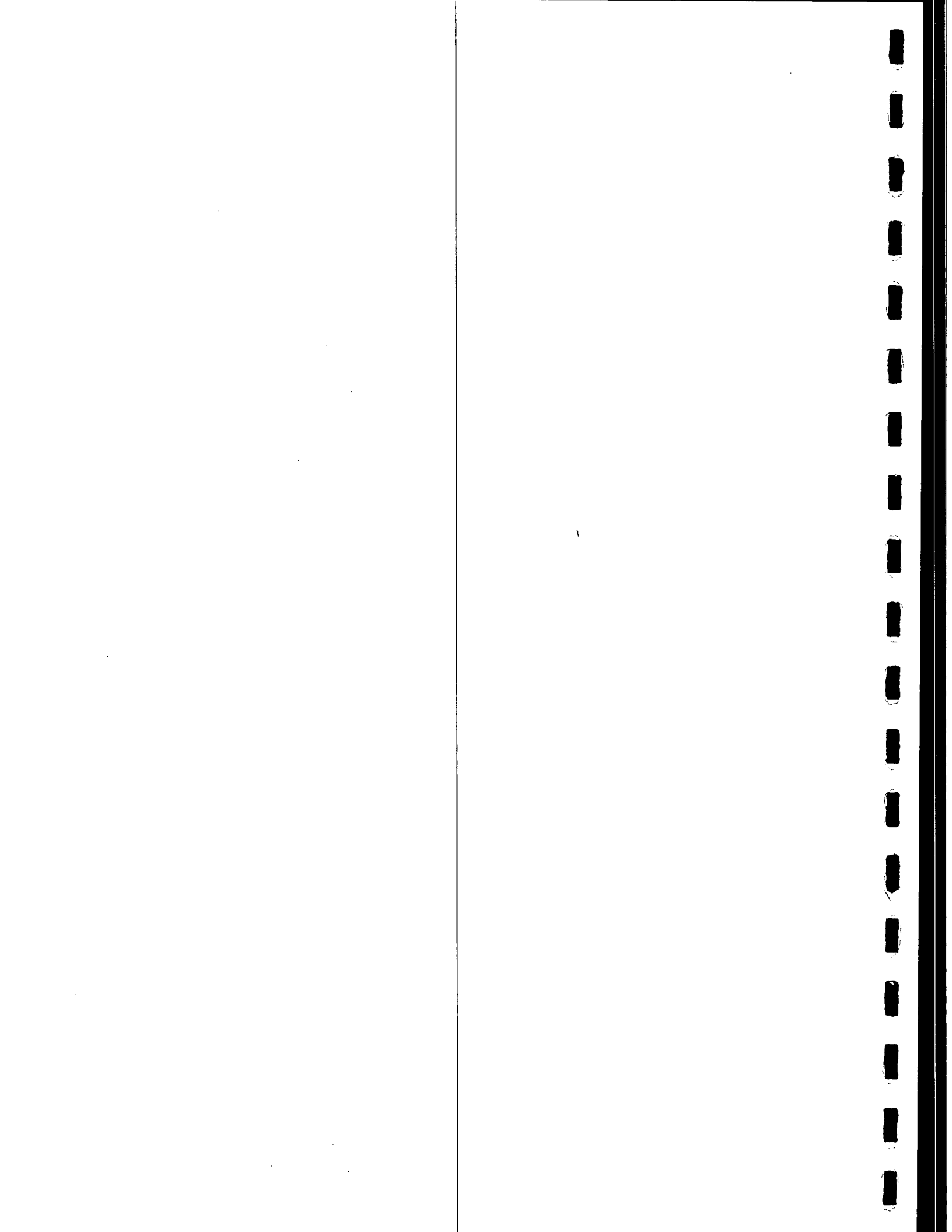
*Erie County Water Authority reserves the right to require documentation including, but not limited to, canceled checks to verify these amounts:

- II. Total Dollar Amount to be Subcontracted to minority Business Enterprise(s):
\$ _____
- III. Total dollar amount expended to date: \$ _____
- IV. Total amount of bid: \$ _____
- V. MBE Percent (%) of project bid: \$ _____

I, _____ as an official representative of _____, do hereby certify that the information listed above is correct and complete.

NAME TITLE

DATE



PART B CONTINUED

(USE REVERSE SIDE IF MORE SPACE IS NEEDED) MINORITY OWNED FIRMS	TYPE OF WORK	DATE CONTRACT EXECUTED	TOTAL EXPENDED TO DATE	AMOUNT REMAINING
NAME: _____ ADDRESS: _____ _____ IRS #: _____				
NAME: _____ ADDRESS: _____ _____ IRS #: _____				
NAME: _____ ADDRESS: _____ _____ IRS #: _____				
NAME: _____ ADDRESS: _____ _____ IRS #: _____				
NAME: _____ ADDRESS: _____ _____ IRS #: _____				
NAME: _____ ADDRESS: _____ _____ IRS #: _____				
NAME: _____ ADDRESS: _____ _____ IRS #: _____				
NAME: _____ ADDRESS: _____ _____ IRS #: _____				
NAME: _____ ADDRESS: _____ _____ IRS #: _____				



**MINORITY BUSINESS ENTERPRISE UTILIZATION REPORT - PART C
CERTIFICATION OF EXPENDITURES TO MBE's**

(To be completed by the prime CONTRACTOR and
submitted at the 75% payment level)

CONTRACTOR _____

CONTRACT: _____

MBE	PART B CONTRACT AMOUNT OF ESTIMATE	TOTAL EXPENDED TO DATE	ESTIMATED AMOUNT REMAINING

* Erie County Water Authority reserves the right to require documentation including, but not limited to, canceled checks to verify these amounts.

I, _____
_____ as an official representative of _____,

do hereby certify that the information listed above is correct and complete.

NAME

TITLE

DATE



MINORITY BUSINESS ENTERPRISE UTILIZATION REPORT - PART D

FINAL CERTIFICATION OF EXPENDITURES TO MBE's

(to be completed by the prime CONTRACTOR and submitted with the request for final payment)

CONTRACTOR: _____

CONTRACT: _____

MBE	TOTAL AMOUNT EXPENDED

TOTAL OF ALL MBE
SUB-CONTRACTS \$ _____

AMOUNT OF
CONTRACT _____

FINAL MBE
PERCENTAGE _____

I, _____, as an official
representative of _____,

do hereby certify that the information listed above is correct and complete.

NAME

TITLE

DATE



ACCOUNTABILITY

The CONTRACTOR shall be fully accountable for its performance under this contract and agrees to answer under oath all questions relevant to the performance thereof and to any transaction, act, or omission had, done or omitted in connection therewith if called before the Erie County Water Authority, any Judicial, County or State Officer or agency empowered to investigate the Contract or its performance.



APPENDIX B
INSURANCE REQUIREMENTS
ERIE COUNTY WATER AUTHORITY





CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
05/21/2018

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must have **ADDITIONAL INSURED** provisions or be endorsed. If **SUBROGATION** IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Walsh Duffield Companies, Inc. 301 Main St. Buffalo, NY 14203	CONTACT NAME: Beverly A. Zolnowski, CPCU PHONE (A/C, No, Ext): (716) 362-7324 FAX (A/C, No): (716) 847-1360 E-MAIL ADDRESS: bzolnowski@walshins.com
INSURED Ferguson Electric Construction Co Inc 333 Ellicott Street Buffalo, NY 14203	INSURER(S) AFFORDING COVERAGE
	INSURER A: Travelers Ind. Co. of America NAIC # 25666
	INSURER B: Phoenix Ins. Co. 25623
	INSURER C: Natl Union Fire Ins Co Pitt PA 19445
	INSURER D: Old Republic Insurance Co. 24147
	INSURER E: Travelers Prop Cas of America 25674
INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> Employee Benefits <input checked="" type="checkbox"/> CONTRACTUAL/XC&U INC GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC OTHER:	X	X	DTCO2J441682TIA18 04003 25666 A++ XV	04/01/2018	04/01/2019	EACH OCCURRENCE \$ 2,000,000 DAMAGE TO RENTED PREMISES (Ea. occurrence) \$ 300,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 2,000,000 GENERAL AGGREGATE \$ 4,000,000 PRODUCTS - COMP/OP AGG \$ 4,000,000
B	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY	X	X	DT1N8102J216558PHX18 02518 25623 A++ XV	04/01/2018	04/01/2019	COMBINED SINGLE LIMIT (Ea. accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
C	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTION \$ 10,000	X	X	BE019229883 02351 19445 AXV	04/01/2018	04/01/2019	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input checked="" type="checkbox"/> Y <input type="checkbox"/> N If yes, describe under DESCRIPTION OF OPERATIONS below	N/A	X	MWC3071090018	04/01/2018	04/01/2019	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER E.I. EACH ACCIDENT \$ 1,000,000 E.I. DISEASE - EA EMPLOYEE \$ 1,000,000 E.I. DISEASE - POLICY LIMIT \$ 1,000,000
E	Builders Risk			QT660182D9049TIL17 04461 25674 A++ XV	07/01/2017	07/01/2018	Special \$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
FEC JOB#65904. re: Ball Pump Station Electrical Substation. Erie County Water Authority, its officers, agents and employees are additional insured(s) on a primary and non-contributory basis with respect to work performed if required by signed written contract PER BLANKET ADDITIONAL INSURED FORM BELOW, to the extent provided therein. A Waiver of Subrogation applies in favor of Erie County Water Authority, its officers, agents and employees if required by signed written contract. PER FORM:

- General Liability:
 (1) CGD2460805- BLANKET ADDITIONAL INSURED (CONTRACTORS)
 (2) CGD3161111- CONTRACTORS XTEND ENDORSEMENT
 SEE ATTACHED ACORD 101

Project # 201600238-NC-35

APPROVED MAY 29 2018

CERTIFICATE HOLDER Erie County Water Authority Attn: Anthony Alessi 295 Main St., Suite 350 Buffalo, NY 14203	CANCELLATION. SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE Edward F. Walsh Jr.
--	--



AGENCY CUSTOMER ID: FERGELE-01

ATHOMAS

LOC #: 1

ADDITIONAL REMARKS SCHEDULE

Page 1 of 1

AGENCY
Walsh Duffield Companies, Inc.

NAMED INSURED
Ferguson Electric Construction Co Inc
333 Ellicott Street
Buffalo, NY 14203

POLICY NUMBER
SEE PAGE 1

CARRIER
SEE PAGE 1

NAIC CODE
SEE P 1

EFFECTIVE DATE: **SEE PAGE 1**

ADDITIONAL REMARKS

**THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,
FORM NUMBER: ACORD 25 FORM TITLE: Certificate of Liability Insurance**

Description of Operations/Locations/Vehicles:

Auto:

- (3) CAT4740215- BLANKET ADDITIONAL INSURED- PRIMARY & NON-CONTRIBUTORY WITH OTHER INSURANCE
- (4) CAT9600215- NEW YORK BUSINESS AUTO EXTENSION

Umbrella:

- (5) 80517 11 09 UMBRELLA PRIME
- (6) 86395 12-13 ADDITIONAL INSURED PRIMARY & NON-CONTRIBUTORY
- (7) 1059010710 PER PROJECT

Workers Compensation:

- (8) WC 00 03 13 WAIVER OF OUR RIGHTS TO RECOVER FROM OTHERS

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY

BLANKET ADDITIONAL INSURED (CONTRACTORS)

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

1. WHO IS AN INSURED – (Section II) is amended to include any person or organization that you agree in a "written contract requiring insurance" to include as an additional insured on this Coverage Part, but:
 - a) Only with respect to liability for "bodily injury", "property damage" or "personal injury"; and
 - b) If, and only to the extent that, the injury or damage is caused by acts or omissions of you or your subcontractor in the performance of "your work" to which the "written contract requiring insurance" applies. The person or organization does not qualify as an additional insured with respect to the independent acts or omissions of such person or organization.
2. The insurance provided to the additional insured by this endorsement is limited as follows:
 - a) In the event that the Limits of Insurance of this Coverage Part shown in the Declarations exceed the limits of liability required by the "written contract requiring insurance", the insurance provided to the additional insured shall be limited to the limits of liability required by that "written contract requiring insurance". This endorsement shall not increase the limits of insurance described in Section III – Limits Of Insurance.
 - b) The insurance provided to the additional insured does not apply to "bodily injury", "property damage" or "personal injury" arising out of the rendering of, or failure to render, any professional architectural, engineering or surveying services, including:
 - i. The preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders or change orders, or the preparing, approving, or failing to prepare or approve, drawings and specifications; and
 - ii. Supervisory, inspection, architectural or engineering activities.
- c) The insurance provided to the additional insured does not apply to "bodily injury" or "property damage" caused by "your work" and included in the "products-completed operations hazard" unless the "written contract requiring insurance" specifically requires you to provide such coverage for that additional insured, and then the insurance provided to the additional insured applies only to such "bodily injury" or "property damage" that occurs before the end of the period of time for which the "written contract requiring insurance" requires you to provide such coverage or the end of the policy period, whichever is earlier.
3. The insurance provided to the additional insured by this endorsement is excess over any valid and collectible "other insurance", whether primary, excess, contingent or on any other basis, that is available to the additional insured for a loss we cover under this endorsement. However, if the "written contract requiring insurance" specifically requires that this insurance apply on a primary basis or a primary and non-contributory basis, this insurance is primary to "other insurance" available to the additional insured which covers that person or organization as a named insured for such loss, and we will not share with that "other insurance". But the insurance provided to the additional insured by this endorsement still is excess over any valid and collectible "other insurance", whether primary, excess, contingent or on any other basis, that is available to the additional insured when that person or organization is an additional insured under such "other insurance".
4. As a condition of coverage provided to the additional insured by this endorsement:
 - a) The additional insured must give us written notice as soon as practicable of an "occurrence" or an offense which may result in a claim. To the extent possible, such notice should include:

COMMERCIAL GENERAL LIABILITY

- i. How, when and where the "occurrence" or offense took place;
 - ii. The names and addresses of any injured persons and witnesses; and
 - iii. The nature and location of any injury or damage arising out of the "occurrence" or offense.
- b) If a claim is made or "suit" is brought against the additional insured, the additional insured must:
- i. Immediately record the specifics of the claim or "suit" and the date received; and
 - ii. Notify us as soon as practicable.

The additional insured must see to it that we receive written notice of the claim or "suit" as soon as practicable.

- c) The additional insured must immediately send us copies of all legal papers received in connection with the claim or "suit", cooperate with us in the investigation or settlement of the claim or defense against the "suit", and otherwise comply with all policy conditions.
- d) The additional insured must tender the defense and indemnity of any claim or "suit" to

any provider of "other insurance" which would cover the additional insured for a loss we cover under this endorsement. However, this condition does not affect whether the insurance provided to the additional insured by this endorsement is primary to "other insurance" available to the additional insured which covers that person or organization as a named insured as described in paragraph 3. above.

5. The following definition is added to SECTION V. – DEFINITIONS:

"Written contract requiring insurance" means that part of any written contract or agreement under which you are required to include a person or organization as an additional insured on this Coverage Part, provided that the "bodily injury" and "property damage" occurs and the "personal injury" is caused by an offense committed:

- a. After the signing and execution of the contract or agreement by you;
- b. While that part of the contract or agreement is in effect; and
- c. Before the end of the policy period.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

CONTRACTORS XTEND ENDORSEMENT

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

GENERAL DESCRIPTION OF COVERAGE – This endorsement broadens coverage. However, coverage for any injury, damage or medical expenses described in any of the provisions of this endorsement may be excluded or limited by another endorsement to this Coverage Part, and these coverage broadening provisions do not apply to the extent that coverage is excluded or limited by such an endorsement. The following listing is a general coverage description only. Limitations and exclusions may apply to these coverages. Read all the provisions of this endorsement and the rest of your policy carefully to determine rights, duties, and what is and is not covered.

- A. Aircraft Chartered With Pilot
- B. Damage To Premises Rented To You
- C. Increased Supplementary Payments
- D. Incidental Medical Malpractice
- E. Who Is An Insured – Newly Acquired Or Formed Organizations
- F. Who Is An Insured – Broadened Named Insured – Unnamed Subsidiaries
- G. Blanket Additional Insured – Owners, Managers Or Lessors Of Premises
- H. Blanket Additional Insured – Lessors Of Leased Equipment
- I. Blanket Additional Insured – States Or Political Subdivisions – Permits
- J. Knowledge And Notice Of Occurrence Or Offense
- K. Unintentional Omission
- L. Blanket Waiver Of Subrogation
- M. Amended Bodily Injury Definition
- N. Contractual Liability – Railroads

PROVISIONS

A. AIRCRAFT CHARTERED WITH PILOT

The following is added to Exclusion g., **Aircraft, Auto Or Watercraft**, in Paragraph 2. of **SECTION I – COVERAGES – COVERAGE A BODILY INJURY AND PROPERTY DAMAGE LIABILITY**:

This exclusion does not apply to an aircraft that is:

- (a) Chartered with a pilot to any insured;
- (b) Not owned by any insured; and
- (c) Not being used to carry any person or property for a charge.

B. DAMAGE TO PREMISES RENTED TO YOU

1. The first paragraph of the exceptions in Exclusion j., **Damage To Property**, in Paragraph 2. of **SECTION I – COVERAGES – COVERAGE A BODILY INJURY AND PROPERTY DAMAGE LIABILITY** is deleted.
2. The following replaces the last paragraph of Paragraph 2., **Exclusions**, of **SECTION I – COVERAGES – COVERAGE A. BODILY**

INJURY AND PROPERTY DAMAGE LIABILITY:

Exclusions c. and g. through n. do not apply to "premises damage". Exclusion f.(1)(a) does not apply to "premises damage" caused by:

- a. Fire;
- b. Explosion;
- c. Lightning;
- d. Smoke resulting from such fire, explosion, or lightning; or
- e. Water;

unless Exclusion f. of Section I – Coverage A – Bodily Injury And Property Damage Liability is replaced by another endorsement to this Coverage Part that has Exclusion – All Pollution Injury Or Damage or Total Pollution Exclusion in its title.

A separate limit of insurance applies to "premises damage" as described in Paragraph 6. of **SECTION III – LIMITS OF INSURANCE**.

COMMERCIAL GENERAL LIABILITY

3. The following replaces Paragraph 6. of SECTION III – LIMITS OF INSURANCE:

Subject to 5. above, the Damage To Premises Rented To You Limit is the most we will pay under Coverage A for damages because of "premises damage" to any one premises. The Damage To Premises Rented To You Limit will apply to all "property damage" proximately caused by the same "occurrence", whether such damage results from: fire; explosion; lightning; smoke resulting from such fire, explosion, or lightning; or water; or any combination of any of these causes.

The Damage To Premises Rented To You Limit will be:

- a. The amount shown for the Damage To Premises Rented To You Limit on the Declarations of this Coverage Part; or
 - b. \$300,000 if no amount is shown for the Damage To Premises Rented To You Limit on the Declarations of this Coverage Part.
4. The following replaces Paragraph a. of the definition of "insured contract" in the DEFINITIONS Section:
- a. A contract for a lease of premises. However, that portion of the contract for a lease of premises that indemnifies any person or organization for "premises damage" is not an "insured contract";
5. The following is added to the DEFINITIONS Section:
- "Premises damage" means "property damage" to:
- a. Any premises while rented to you or temporarily occupied by you with permission of the owner; or
 - b. The contents of any premises while such premises is rented to you, if you rent such premises for a period of seven or fewer consecutive days.
6. The following replaces Paragraph 4.b.(1)(b) of SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS:
- (b) That is insurance for "premises damage"; or
7. Paragraph 4.b.(1)(c) of SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS is deleted.

C. INCREASED SUPPLEMENTARY PAYMENTS

1. The following replaces Paragraph 1.b. of SUPPLEMENTARY PAYMENTS – COVERAGES A AND B of SECTION I – COVERAGE:

b. Up to \$2,500 for the cost of bail bonds required because of accidents or traffic law violations arising out of the use of any vehicle to which the Bodily Injury Liability Coverage applies. We do not have to furnish these bonds.

2. The following replaces Paragraph 1.d. of SUPPLEMENTARY PAYMENTS – COVERAGES A AND B of SECTION I – COVERAGES:

d. All reasonable expenses incurred by the insured at our request to assist us in the investigation or defense of the claim or "suit", including actual loss of earnings up to \$500 a day because of time off from work.

D. INCIDENTAL MEDICAL MALPRACTICE

1. The following is added to the definition of "occurrence" in the DEFINITIONS Section:

"Occurrence" also means an act or omission committed in providing or failing to provide "incidental medical services", first aid or "Good Samaritan services" to a person.

2. The following is added to Paragraph 2.a.(1) of SECTION II – WHO IS AN INSURED:

Paragraph (1)(d) above does not apply to "bodily injury" arising out of providing or failing to provide:

(i) "Incidental medical services" by any of your "employees" who is a nurse practitioner, registered nurse, licensed practical nurse, nurse assistant, emergency medical technician or paramedic; or

(ii) First aid or "Good Samaritan services" by any of your "employees" or "volunteer workers", other than an employed or volunteer doctor. Any such "employees" or "volunteer workers" providing or failing to provide first aid or "Good Samaritan services" during their work hours for you will be deemed to be acting within the scope of their employment by you or performing duties related to the conduct of your business.

3. The following is added to Paragraph 5. of **SECTION III – LIMITS OF INSURANCE:**

For the purposes of determining the applicable Each Occurrence Limit, all related acts or omissions committed in providing or failing to provide "incidental medical services", first aid or "Good Samaritan services" to any one person will be deemed to be one "occurrence".

4. The following exclusion is added to Paragraph 2., **Exclusions**, of **SECTION I – COVERAGES – COVERAGE A BODILY INJURY AND PROPERTY DAMAGE LIABILITY:**

Sale Of Pharmaceuticals

"Bodily injury" or "property damage" arising out of the willful violation of a penal statute or ordinance relating to the sale of pharmaceuticals committed by, or with the knowledge or consent of, the insured.

5. The following is added to the **DEFINITIONS** Section:

"Incidental medical services" means:

- a. Medical, surgical, dental, laboratory, x-ray or nursing service or treatment, advice or instruction, or the related furnishing of food or beverages; or
- b. The furnishing or dispensing of drugs or medical, dental, or surgical supplies or appliances.

"Good Samaritan services" means any emergency medical services for which no compensation is demanded or received.

6. The following is added to Paragraph 4.b., **Excess Insurance**, of **SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS:**

The insurance is excess over any valid and collectible other insurance available to the insured, whether primary, excess, contingent or on any other basis, that is available to any of your "employees" or "volunteer workers" for "bodily injury" that arises out of providing or failing to provide "incidental medical services", first aid or "Good Samaritan services" to any person to the extent not subject to Paragraph 2.a.(1) of Section II – Who Is An Insured.

E. WHO IS AN INSURED – NEWLY ACQUIRED OR FORMED ORGANIZATIONS

The following replaces Paragraph 4. of **SECTION II – WHO IS AN INSURED:**

4. Any organization you newly acquire or form, other than a partnership, joint venture or limited liability company, of which you are the sole owner or in which you maintain the majority ownership interest, will qualify as a Named Insured if there is no other insurance which provides similar coverage to that organization. However:

- a. Coverage under this provision is afforded only:

- (1) Until the 180th day after you acquire or form the organization or the end of the policy period, whichever is earlier, if you do not report such organization in writing to us within 180 days after you acquire or form it; or
- (2) Until the end of the policy period, when that date is later than 180 days after you acquire or form such organization, if you report such organization in writing to us within 180 days after you acquire or form it, and we agree in writing that it will continue to be a Named Insured until the end of the policy period;

- b. Coverage A does not apply to "bodily injury" or "property damage" that occurred before you acquired or formed the organization; and
- c. Coverage B does not apply to "personal injury" or "advertising injury" arising out of an offense committed before you acquired or formed the organization.

F. WHO IS AN INSURED – BROADENED NAMED INSURED – UNNAMED SUBSIDIARIES

The following is added to **SECTION II – WHO IS AN INSURED:**

Any of your subsidiaries, other than a partnership, joint venture or limited liability company, that is not shown as a Named Insured in the Declarations is a Named Insured if you maintain an ownership interest of more than 50% in such subsidiary on the first day of the policy period.

No such subsidiary is an insured for "bodily injury" or "property damage" that occurred, or "personal injury" or "advertising injury" caused by an offense committed after the date, if any, during the policy period, that you no longer maintain an ownership interest of more than 50% in such subsidiary.

COMMERCIAL GENERAL LIABILITY

G. BLANKET ADDITIONAL INSURED – OWNERS, MANAGERS OR LESSORS OF PREMISES

The following is added to **SECTION II – WHO IS AN INSURED**:

Any person or organization that is a premises owner, manager or lessor and that you have agreed in a written contract or agreement to include as an additional insured on this Coverage Part is an insured, but only with respect to liability for "bodily injury", "property damage", "personal injury" or "advertising injury" that:

- a. Is "bodily injury" or "property damage" that occurs, or is "personal injury" or "advertising injury" caused by an offense that is committed, subsequent to the execution of that contract or agreement; and
- b. Arises out of the ownership, maintenance or use of that part of any premises leased to you.

The insurance provided to such premises owner, manager or lessor is subject to the following provisions:

- a. The limits of insurance provided to such premises owner, manager or lessor will be the minimum limits which you agreed to provide in the written contract or agreement, or the limits shown on the Declarations, whichever are less.
- b. The insurance provided to such premises owner, manager or lessor does not apply to:
 - (1) Any "bodily injury" or "property damage" that occurs, or "personal injury" or "advertising injury" caused by an offense that is committed, after you cease to be a tenant in that premises; or
 - (2) Structural alterations, new construction or demolition operations performed by or on behalf of such premises owner, lessor or manager.
- c. The insurance provided to such premises owner, manager or lessor is excess over any valid and collectible other insurance available to such premises owner, manager or lessor, whether primary, excess, contingent or on any other basis, unless you have agreed in the written contract or agreement that this insurance must be primary to, or non-contributory with, such other insurance, in which case this insurance will be primary to, and non-contributory with, such other insurance.

H. BLANKET ADDITIONAL INSURED – LESSORS OF LEASED EQUIPMENT

The following is added to **SECTION II – WHO IS AN INSURED**:

Any person or organization that is an equipment lessor and that you have agreed in a written contract or agreement to include as an insured on this Coverage Part is an insured, but only with respect to liability for "bodily injury", "property damage", "personal injury" or "advertising injury" that:

- a. Is "bodily injury" or "property damage" that occurs, or is "personal injury" or "advertising injury" caused by an offense that is committed, subsequent to the execution of that contract or agreement; and
- b. Is caused, in whole or in part, by your acts or omissions in the maintenance, operation or use of equipment leased to you by such equipment lessor.

The insurance provided to such equipment lessor is subject to the following provisions:

- a. The limits of insurance provided to such equipment lessor will be the minimum limits which you agreed to provide in the written contract or agreement, or the limits shown on the Declarations, whichever are less.
 - b. The insurance provided to such equipment lessor does not apply to any "bodily injury" or "property damage" that occurs, or "personal injury" or "advertising injury" caused by an offense that is committed, after the equipment lease expires.
 - c. The insurance provided to such equipment lessor is excess over any valid and collectible other insurance available to such equipment lessor, whether primary, excess, contingent or on any other basis, unless you have agreed in the written contract or agreement that this insurance must be primary to, or non-contributory with, such other insurance, in which case this insurance will be primary to, and non-contributory with, such other insurance.
- ### I. BLANKET ADDITIONAL INSURED – STATES OR POLITICAL SUBDIVISIONS – PERMITS
- The following is added to **SECTION II – WHO IS AN INSURED**:
- Any state or political subdivision that has issued a permit in connection with operations performed by you or on your behalf and that you are required

COMMERCIAL GENERAL LIABILITY

by any ordinance, law or building code to include as an additional insured on this Coverage Part is an insured, but only with respect to liability for "bodily injury", "property damage", "personal injury" or "advertising injury" arising out of such operations.

The insurance provided to such state or political subdivision does not apply to:

- a. Any "bodily injury," "property damage," "personal injury" or "advertising injury" arising out of operations performed for that state or political subdivision; or
- b. Any "bodily injury" or "property damage" included in the "products-completed operations hazard".

J. KNOWLEDGE AND NOTICE OF OCCURRENCE OR OFFENSE

The following is added to Paragraph 2., **Duties In The Event of Occurrence, Offense, Claim or Suit**, of SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS:

e. The following provisions apply to Paragraph a. above, but only for the purposes of the insurance provided under this Coverage Part to you or any insured listed in Paragraph 1. or 2. of Section II – Who Is An Insured:

(1) Notice to us of such "occurrence" or offense must be given as soon as practicable only after the "occurrence" or offense is known by you (if you are an individual), any of your partners or members who is an individual (if you are a partnership or joint venture), any of your managers who is an individual (if you are a limited liability company), any of your "executive officers" or directors (if you are an organization other than a partnership, joint venture or limited liability company) or any "employee" authorized by you to give notice of an "occurrence" or offense.

(2) If you are a partnership, joint venture or limited liability company, and none of your partners, joint venture members or managers are individuals, notice to us of such "occurrence" or offense must be given as soon as practicable only after the "occurrence" or offense is known by:

- (a) Any individual who is:
 - (i) A partner or member of any partnership or joint venture;

- (ii) A manager of any limited liability company; or
 - (iii) An executive officer or director of any other organization;
- that is your partner, joint venture member or manager; or
- (b) Any "employee" authorized by such partnership, joint venture, limited liability company or other organization to give notice of an "occurrence" or offense.

(3) Notice to us of such "occurrence" or of an offense will be deemed to be given as soon as practicable if it is given in good faith as soon as practicable to your workers' compensation insurer. This applies only if you subsequently give notice to us of the "occurrence" or offense as soon as practicable after any of the persons described in Paragraphs e. (1) or (2) above discovers that the "occurrence" or offense may result in sums to which the insurance provided under this Coverage Part may apply.

However, if this Coverage Part includes an endorsement that provides limited coverage for "bodily injury" or "property damage" or pollution costs arising out of a discharge, release or escape of "pollutants" which contains a requirement that the discharge, release or escape of "pollutants" must be reported to us within a specific number of days after its abrupt commencement, this Paragraph e. does not affect that requirement.

K. UNINTENTIONAL OMISSION

The following is added to Paragraph 6., **Representations**, of SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS:

The unintentional omission of, or unintentional error in, any information provided by you which we relied upon in issuing this policy will not prejudice your rights under this insurance. However, this provision does not affect our right to collect additional premium or to exercise our rights of cancellation or nonrenewal in accordance with applicable insurance laws or regulations.

L. BLANKET WAIVER OF SUBROGATION

The following is added to Paragraph 8., **Transfer Of Rights Of Recovery Against Others To Us**, of SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS:

COMMERCIAL GENERAL LIABILITY

If the insured has agreed in a contract or agreement to waive that insured's right of recovery against any person or organization, we waive our right of recovery against such person or organization, but only for payments we make because of:

- a. "Bodily injury" or "property damage" that occurs; or
- b. "Personal injury" or "advertising injury" caused by an offense that is committed; subsequent to the execution of that contract or agreement.

M. AMENDED BODILY INJURY DEFINITION

The following replaces the definition of "bodily injury" in the DEFINITIONS Section:

3. "Bodily injury" means bodily injury, mental anguish, mental injury, shock, fright, disability, humiliation, sickness or disease sustained by a person, including death resulting from any of these at any time.

N. CONTRACTUAL LIABILITY - RAILROADS

1. The following replaces Paragraph c. of the definition of "insured contract" in the DEFINITIONS Section:
 - c. Any easement or license agreement;
2. Paragraph f.(1) of the definition of "insured contract" in the DEFINITIONS Section is deleted.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**BLANKET ADDITIONAL INSURED – PRIMARY AND
NON-CONTRIBUTORY WITH OTHER INSURANCE**

This endorsement modifies insurance provided under the following:
BUSINESS AUTO COVERAGE FORM

PROVISIONS

1. The following is added to Paragraph A.1.c., **Who Is An Insured**, of SECTION II – **COVERED AUTOS LIABILITY COVERAGE**:

This includes any person or organization who you are required under a written contract or agreement between you and that person or organization, that is signed by you before the "bodily injury" or "property damage" occurs and that is in effect during the policy period, to name as an additional insured for Covered Autos Liability Coverage, but only for damages to which this insurance applies and only to the extent of that person's or organization's liability for the conduct of another "insured".

2. The following is added to Paragraph B.5., **Other Insurance** of SECTION IV – **BUSINESS AUTO CONDITIONS**:

Regardless of the provisions of paragraph a. and paragraph d. of this part 5. **Other Insurance**, this insurance is primary to and non-contributory with applicable other insurance under which an additional insured person or organization is the first named insured when the written contract or agreement between you and that person or organization, that is signed by you before the "bodily injury" or "property damage" occurs and that is in effect during the policy period, requires this insurance to be primary and non-contributory.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

NEW YORK BUSINESS AUTO EXTENSION ENDORSEMENT

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM

GENERAL DESCRIPTION OF COVERAGE – This endorsement broadens coverage. However, coverage for any injury, damage or medical expenses described in any of the provisions of this endorsement may be excluded or limited by another endorsement to the Coverage Part, and these coverage broadening provisions do not apply to the extent that coverage is excluded or limited by such an endorsement. The following listing is a general coverage description only. Limitations and exclusions may apply to these coverages. Read all the provisions of this endorsement and the rest of your policy carefully to determine rights, duties, and what is and is not covered.

- | | |
|---|---|
| <ul style="list-style-type: none"> A. BROAD FORM NAMED INSURED B. BLANKET ADDITIONAL INSURED C. EMPLOYEE HIRED AUTO D. EMPLOYEES AS INSURED E. SUPPLEMENTARY PAYMENTS – INCREASED LIMITS F. WAIVER OF DEDUCTIBLE – GLASS G. HIRED AUTO PHYSICAL DAMAGE – LOSS OF USE – INCREASED LIMIT | <ul style="list-style-type: none"> H. PHYSICAL DAMAGE – TRANSPORTATION EXPENSES – INCREASED LIMIT I. PERSONAL PROPERTY J. AIRBAGS K. NOTICE AND KNOWLEDGE OF ACCIDENT OR LOSS L. BLANKET WAIVER OF SUBROGATION M. UNINTENTIONAL ERRORS OR OMISSIONS |
|---|---|

PROVISIONS

A. BROAD FORM NAMED INSURED

The following is added to Paragraph A.1., **Who Is An Insured**, of **SECTION II – COVERED AUTOS LIABILITY COVERAGE**:

Any organization you newly acquire or form during the policy period over which you maintain 50% or more ownership interest and that is not separately insured for Business Auto Coverage. Coverage under this provision is afforded only until the 180th day after you acquire or form the organization or the end of the policy period, whichever is earlier.

B. BLANKET ADDITIONAL INSURED

The following is added to Paragraph c. in A.1., **Who Is An Insured**, of **SECTION II – COVERED AUTOS LIABILITY COVERAGE**:

Any person or organization who is required under a written contract or agreement between you and that person or organization, that is signed and executed by you before the "bodily injury" or "property damage" occurs and that is in effect during the policy period, to be named as an

additional insured is an "insured" for Covered Autos Liability Coverage, but only for damages to which this insurance applies and only to the extent that person or organization qualifies as an "insured" under the **Who Is An Insured** provision contained in Section II.

C. EMPLOYEE HIRED AUTO

1. The following is added to Paragraph A.1., **Who Is An Insured**, of **SECTION II – COVERED AUTOS LIABILITY COVERAGE**:

An "employee" of yours is an "insured" while operating an "auto" hired or rented under a contract or agreement in an "employee's" name, with your permission, while performing duties related to the conduct of your business.

2. The following replaces Paragraph b. in B.5., **Other Insurance**, of **SECTION IV – BUSINESS AUTO CONDITIONS**:

b. For **Hired Auto Physical Damage Coverage**, the following are deemed to be covered "autos" you own:

COMMERCIAL AUTO

- (1) Any covered "auto" you lease, hire, rent or borrow; and
- (2) Any covered "auto" hired or rented by your "employee" under a contract in an "employee's" name, with your permission, while performing duties related to the conduct of your business.

However, any "auto" that is leased, hired, rented or borrowed with a driver is not a covered "auto".

D. EMPLOYEES AS INSURED

The following is added to Paragraph A.1., **Who Is An Insured**, of SECTION II - COVERED AUTOS LIABILITY COVERAGE:

Any "employee" of yours is an "insured" while using a covered "auto" you don't own, hire or borrow in your business or your personal affairs.

E. SUPPLEMENTARY PAYMENTS - INCREASED LIMITS

1. The following replaces Paragraph A.2.a.(2), of SECTION II - COVERED AUTOS LIABILITY COVERAGE:

(2) Up to \$3,000 for cost of bail bonds (including bonds for related traffic law violations) required because of an "accident" we cover. We do not have to furnish these bonds.

2. The following replaces Paragraph A.2.a.(4), of SECTION II - COVERED AUTOS LIABILITY COVERAGE:

(4) All reasonable expenses incurred by the "insured" at our request, including actual loss of earnings up to \$500 a day because of time off from work.

F. WAIVER OF DEDUCTIBLE - GLASS

The following is added to Paragraph D., **Deductible**, of SECTION III - PHYSICAL DAMAGE COVERAGE:

No deductible for a covered "auto" will apply to glass damage if the glass is repaired rather than replaced.

G. HIRED AUTO PHYSICAL DAMAGE - LOSS OF USE - INCREASED LIMIT

The following replaces the last sentence of Paragraph A.4.b., **Loss Of Use Expenses**, of SECTION III - PHYSICAL DAMAGE COVERAGE:

However, the most we will pay for any expenses for loss of use is \$65 per day, to a maximum of \$750 for any one "accident".

H. PHYSICAL DAMAGE - TRANSPORTATION EXPENSES - INCREASED LIMIT

The following replaces the first sentence in Paragraph A.4.a., **Transportation Expenses**, of SECTION III - PHYSICAL DAMAGE COVERAGE:

We will pay up to \$50 per day to a maximum of \$1,500 for temporary transportation expense incurred by you because of the total theft of a covered "auto" of the private passenger type.

I. PERSONAL PROPERTY

The following is added to Paragraph A.4., **Coverage Extensions**, of SECTION III - PHYSICAL DAMAGE COVERAGE:

Personal Property

We will pay up to \$400 for "loss" to wearing apparel and other personal property which is:

- (1) Owned by an "insured"; and
- (2) In or on your covered "auto".

This coverage applies only in the event of a total theft of your covered "auto".

No deductibles apply to this Personal Property coverage.

J. AIRBAGS

The following is added to Paragraph B.3., **Exclusions**, of SECTION III - PHYSICAL DAMAGE COVERAGE:

Exclusion 3.a. does not apply to "loss" to one or more airbags in a covered "auto" you own that inflate due to a cause other than a cause of "loss" set forth in Paragraphs A.1.b. and A.1.c., but only:

- a. If that "auto" is a covered "auto" for Comprehensive Coverage under this policy;
- b. The airbags are not covered under any warranty; and
- c. The airbags were not intentionally inflated.

We will pay up to a maximum of \$1,000 for any one "loss".

K. NOTICE AND KNOWLEDGE OF ACCIDENT OR LOSS

The following is added to Paragraph A.2.a., of SECTION IV - BUSINESS AUTO CONDITIONS:

Your duty to give us or our authorized representative notice as soon as reasonably

Umbrella Prime[®]
Commercial Umbrella Liability Policy With CrisisResponse[®]

Various provisions in this policy restrict coverage. Read the entire policy carefully to determine rights, duties and what is and is not covered.

Throughout this policy the words "you" and "your" refer to the **Named Insured** shown in the Declarations and any other person or organization qualifying as a **Named Insured** under this policy. The words "we," "us" and "our" refer to the company providing this insurance.

The word **Insured** means any person or organization qualifying as such under Section VII. Definitions.

Except for headings, words that appear in bold print have special meaning. See Section VII. Definitions.

In consideration of the payment of the premium and in reliance upon the statements in the Declarations, we agree to provide coverage as follows:

I. INSURING AGREEMENT - COMMERCIAL UMBRELLA LIABILITY

A. We will pay on behalf of the **Insured** those sums in excess of the **Retained Limit** that the **Insured** becomes legally obligated to pay as damages by reason of liability imposed by law because of **Bodily Injury, Property Damage or Personal Injury and Advertising Injury** to which this insurance applies or because of **Bodily Injury or Property Damage** to which this insurance applies assumed by the **Insured** under an **Insured Contract**.

The amount we will pay for damages is limited as described in Section IV. Limits of Insurance.

B. This policy applies, only if:

1. the **Bodily Injury or Property Damage** is caused by an **Occurrence** that takes place anywhere, and the **Bodily Injury or Property Damage** occurs during the **Policy Period**; and
2. the **Personal Injury and Advertising Injury** is caused by an **Occurrence** that takes place anywhere arising out of your business, but only if the **Occurrence** was committed during the **Policy Period**.

C. 1. This policy applies to **Bodily Injury or Property Damage**, only if prior to the **Policy Period**, no **Insured** listed under subparagraphs 2a., 2b., 2c. or 2e. of Paragraph M. of Section VII., no executive officer or director listed under subparagraph 2d. of Paragraph M. of Section VII. and no employee authorized by you to give or receive notice of an **Occurrence**, claim or **Suit**, knew that the **Bodily Injury or Property Damage** had occurred, in whole or in part. If such an **Insured** or authorized employee knew, prior to the **Policy Period**, that the **Bodily Injury or Property Damage** had occurred, then any continuation, change or resumption of such **Bodily Injury or Property Damage** during or after the **Policy Period** will be deemed to have been known prior to the **Policy Period**.

2. **Bodily Injury or Property Damage** which occurs during the **Policy Period** and was not, prior to the **Policy Period**, known to have occurred by any **Insured** listed under subparagraphs 2a., 2b., 2c. or 2e. of Paragraph M. of Section VII., any executive officer or director listed under subparagraph 2d. of Paragraph M. of Section VII. or any employee authorized by you to give or receive notice of an **Occurrence** or claim, includes any continuation, change or resumption of that **Bodily Injury or Property Damage** after the end of the **Policy Period**.

D. **Bodily Injury or Property Damage** will be deemed to have been known to have occurred at the earliest time when any **Insured** listed under subparagraphs 2a., 2b., 2c. or 2e. of Paragraph M. of Section VII., any executive officer or director listed under subparagraph 2d. of Paragraph M. of Section VII. or any employee who was authorized by you to give or receive notice of an **Occurrence**, claim or **Suit**.

NOTICE
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1. reports all, or any part, of the **Bodily Injury or Property Damage** to us or any other insurer;
 2. receives a written or verbal demand or claim for damages because of the **Bodily Injury or Property Damage**;
or
 3. becomes aware by any other means that **Bodily Injury or Property Damage** has occurred or has begun to occur.
- E. Damages because of **Bodily Injury** include damages claimed by any person or organization for care, loss of services or death resulting at any time from the **Bodily Injury**.
- F. If we are prevented by law or statute from paying damages covered by this policy on behalf of the **Insured**, then we will indemnify the **Insured** for those sums in excess of the **Retained Limit**.

II. INSURING AGREEMENT-CRISISRESPONSE® AND EXCESS CASUALTY CRISISFUND®

A. CrisisResponse

We will advance **CrisisResponse Costs** directly to third parties on behalf of the **Named Insured**, regardless of fault, arising from a **Crisis Management Event** first commencing during the **Policy Period**, up to the amount of the **CrisisResponse Sublimit of Insurance**.

B. Excess Casualty CrisisFund

We will pay **Crisis Management Loss** on behalf of the **Named Insured** arising from a **Crisis Management Event** first commencing during the **Policy Period**, up to the amount of the **Excess Casualty CrisisFund Limit of Insurance**.

- C. A **Crisis Management Event** will first commence at the time during the **Policy Period** when a **Key Executive** first becomes aware of an **Occurrence** that gives rise to a **Crisis Management Event** and will end when we determine that a crisis no longer exists or when the **CrisisResponse Sublimit of Insurance** has been exhausted, whichever occurs first.
- D. There will be no **Retained Limit** applicable to **CrisisResponse Costs** or **Crisis Management Loss**.
- E. Any advancement of **CrisisResponse Costs** or payment of **Crisis Management Loss** that we make under the coverage provided by this Section II. will not be a determination of our obligations under this policy, nor create any duty to defend any **Suit** under any other part of this policy.

III. DEFENSE PROVISIONS

- A. We will have the right and duty to defend any **Suit** against the **Insured** that seeks damages for **Bodily Injury, Property Damage or Personal Injury and Advertising Injury** covered by this policy, even if the **Suit** is groundless, false or fraudulent when:
1. the total applicable limits of **Scheduled Underlying Insurance** have been exhausted by payment of **Loss** to which this policy applies and the total applicable limits of **Other Insurance** have been exhausted; or
 2. the damages sought because of **Bodily Injury, Property Damage or Personal Injury and Advertising Injury** would not be covered by **Scheduled Underlying Insurance** or any applicable **Other Insurance**, even if the total applicable limits of either the **Scheduled Underlying Insurance** or any applicable **Other Insurance** had not been exhausted by the payment of **Loss**.

obligations specified under this provision, we will pay any

NOTICE If we are prevented by law or statute from assuming the expenses incurred with our consent.

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- B. We will have no duty to defend the **Insured** against any **Suit** seeking damages for **Bodily Injury, Property Damage or Personal Injury and Advertising Injury** to which this insurance does not apply.
- C. When we assume the defense of any **Suit** against the **Insured** that seeks damages covered by this policy, we will:
1. investigate, negotiate and settle the **Suit** as we deem expedient; and
 2. pay the following supplementary payments to the extent that such payments are not covered by **Scheduled Underlying Insurance** or any applicable **Other Insurance**:
 - a. premiums on bonds to release attachments for amounts not exceeding the applicable Limits of Insurance of this policy, but we are not obligated to apply for or furnish any such bond;
 - b. premiums on appeal bonds required by law to appeal a judgment in a **Suit** for amounts not exceeding the applicable Limits of Insurance of this policy, but we are not obligated to apply for or furnish any such bond;
 - c. all court costs taxed against the **Insured** in the **Suit**;
 - d. pre-judgment interest awarded against the **Insured** on that part of the judgment within the applicable Limits of Insurance of this policy we pay. If we make an offer to pay the applicable limit of insurance, we will not pay any pre-judgment interest accruing after we make such offer;
 - e. post-judgment interest that accrues after entry of judgment on that part of the judgment within the applicable Limits of Insurance of this policy we pay and before we have paid, offered to pay or deposited in court that part of the judgment that is within the applicable Limits of Insurance of this policy; and
 - f. the **Insured's** expenses incurred at our request or with our consent.
- D. Except as provided in Paragraph A. above, we will have no duty to defend any **Suit** against the **Insured**. We will, however, have the right, but not the duty, to participate in the defense of any **Suit** and the investigation of any claim to which this policy may apply. If we exercise this right, we will do so at our own expense.
- E. We will not defend any **Suit**, or pay any attorney fees or litigation expenses including, without limitation, the expenses described in Paragraph C. above that accrue after the applicable Limits of Insurance of this policy have been exhausted by the payment of **Loss** and we will have the right to withdraw from the further defense of such **Suit** by tendering control of said defense to the **Insured**.

IV. LIMITS OF INSURANCE

- A. The Limits of Insurance shown in Item 3. of the Declarations and the rules below state the most we will pay for all damages under this policy regardless of the number of:
1. **Insureds**;
 2. claims made or **Suits** brought;
 3. persons or organizations making claims or bringing **Suits**; or
 4. coverages provided under this policy.
- B. The General Aggregate Limit stated in Item 3. of the Declarations is the most we will pay for all damages under this policy, except for:
1. damages included within the **Products-Completed Operations Hazard**; and

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Damage to which this policy applies, caused by an maintenance or use of an **Auto** covered under **Scheduled Underlying Insurance**.

- C. The Products-Completed Operations Aggregate Limit stated in Item 3C. of the Declarations is the most we will pay for all damages included in the **Products-Completed Operations Hazard**.
- D. Subject to Paragraphs B. and C. above, the Each Occurrence Limit stated in Item 3A. of the Declarations is the most we will pay for the sum of all damages arising out of any one **Occurrence**.
- E. Subject to Paragraphs B. and C. above, the most we will pay for damages under this policy on behalf of any person or organization to whom you are obligated by written **Insured Contract** to provide insurance such as is afforded by this policy is the lesser of the Limits of Insurance shown in Item 3. of the Declarations or the minimum Limits of Insurance you agreed to procure in such written **Insured Contract**.
- F. This policy applies only in excess of the **Retained Limit**. If however, a policy shown in the Schedule of Underlying Insurance forming a part of this policy has a limit of insurance:
1. greater than the amount shown in such schedule, this policy will apply in excess of the greater amount of valid and collectible insurance; or
 2. less than the amount shown in such schedule, this policy will apply in excess of the amount shown in the Schedule of Underlying Insurance forming a part of this policy.
- G. If the total applicable limits of **Scheduled Underlying Insurance** are reduced or exhausted by the payment of **Loss** to which this policy applies and the total applicable limits of applicable **Other Insurance** are reduced or exhausted, we will:
1. in the event of reduction, pay excess of the remaining total applicable limits of **Scheduled Underlying Insurance** and any applicable **Other Insurance**; and
 2. in the event of exhaustion, continue in force as underlying insurance.
- H. Expenses incurred to defend any **Suit** or to investigate any claim will be in addition to the applicable Limits of Insurance of this policy. Provided, however, that if such expenses reduce the applicable limits of **Scheduled Underlying Insurance**, then such expenses will reduce the applicable Limits of Insurance of this policy.
- I. The **CrisisResponse Sublimit of Insurance** is the most we will pay for all **CrisisResponse Costs** under this policy, regardless of the number of **Crisis Management Events** first commencing during the **Policy Period**. This **CrisisResponse Sublimit of Insurance** will be part of, not in addition to, the applicable Limit of Insurance.
- J. The **Excess Casualty CrisisFund Limit of Insurance** is the most we will pay for all **Crisis Management Loss** under this policy, regardless of the number of **Crisis Management Events** first commencing during the **Policy Period**. This **Excess Casualty CrisisFund Limit of Insurance** will be in addition to the applicable Limit of Insurance.
- K. We will have no obligation to advance **CrisisResponse Costs** when we determine that a **Crisis Management Event** has ended or when the **CrisisResponse Sublimit of Insurance** has been exhausted, whichever occurs first.
- L. The Limits of Insurance of this policy apply separately to each consecutive annual period and to any remaining period of less than twelve (12) months, beginning with the inception date of the **Policy Period** shown in the Declarations, unless the **Policy Period** is extended after issuance for an additional period of less than twelve (12) months. In that case, the additional period will be deemed part of the last preceding period for purposes of determining the Limits of Insurance of this policy.
- M. We will not make any payment under this policy unless and until:

Insurance have been exhausted by the payment of **Loss** to which this policy applies and any applicable, **Other Insurance** have been exhausted by the payment of **Loss**, or

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2. the total applicable **Self-Insured Retention** has been satisfied by the payment of **Loss** to which this policy applies.

When the amount of **Loss** has been determined by an agreed settlement or a final judgment, we will promptly pay on behalf of the **Insured** the amount of such **Loss** falling within the terms of this policy. An agreed settlement means a settlement and release of liability signed by us, the **Insured** and the claimant or the claimant's legal representative.

V. EXCLUSIONS

A. Aircraft and Watercraft

This insurance does not apply to **Bodily Injury** or **Property Damage** arising out of the ownership, maintenance, use or entrustment to others of any aircraft or watercraft owned or operated by or rented or loaned to any **Insured**. Use includes operation and loading and unloading.

This exclusion applies even if the claims against any **Insured** allege negligence or other wrongdoing in the supervision, hiring, employment, training or monitoring of others by that **Insured**, if the **Occurrence** which caused the **Bodily Injury** or **Property Damage** involved the ownership, maintenance, use or entrustment to others of any aircraft or watercraft that is owned or operated by or rented or loaned to any **Insured**.

This exclusion does not apply to a watercraft you do not own that is:

1. less than 26 feet long; and
2. not being used to carry persons or property for a charge.

B. Asbestos

This insurance does not apply to any liability arising out of:

1. the manufacture of, mining of, use of, sale of, installation of, removal of, distribution of or exposure to asbestos, asbestos containing products or materials, asbestos fibers or asbestos dust;
2. any obligation of the **Insured** to indemnify any party because of damages arising out of the manufacture of, mining of, use of, sale of, installation of, removal of, distribution of or exposure to asbestos, asbestos products, asbestos fibers or asbestos dust; or
3. any obligation to defend any **Suit** or claim against the **Insured** that seeks damages if such **Suit** or claim arises as the result of the manufacture of, mining of, use of, sale of, installation of, removal of, distribution of or exposure to asbestos, asbestos products, asbestos fibers or asbestos dust.

C. Contractual Liability

This insurance does not apply to any liability for which the **Insured** is obligated to pay damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for damages:

1. that the **Insured** would have in the absence of a contract or agreement; or
2. assumed in an **Insured Contract**, provided **Bodily Injury** or **Property Damage** occurs subsequent to the execution of the **Insured Contract**. Solely for the purposes of liability assumed in an **Insured Contract**, reasonable attorney fees and necessary litigation expenses incurred by or for a party other than an **Insured** are deemed to be damages because of **Bodily Injury** or **Property Damage** and included in the Limits of Insurance of this policy, provided:

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at party's defense has also been assumed in the same

- b. such attorney fees and litigation expenses are for the defense of that party against a civil or alternative dispute resolution proceeding in which damages to which this policy applies are alleged.

D. Damage to Impaired Property or Property Not Physically Injured

This insurance does not apply to **Property Damage to Impaired Property** or property that has not been physically injured, arising out of:

1. a defect, deficiency, inadequacy or dangerous condition in **Your Product** or **Your Work**; or
2. a delay or failure by you or anyone acting on your behalf to perform a contract or agreement in accordance with its terms.

This exclusion does not apply to the loss of use of other property arising out of sudden and accidental physical injury to **Your Product** or **Your Work** after it has been put to its intended use.

E. Damage to Property

This insurance does not apply to **Property Damage** to:

1. property you own, rent, or occupy, including any costs or expenses incurred by you, or any other person, organization or entity, for repair, replacement, enhancement, restoration or maintenance of such property for any reason, including prevention of injury to a person or damage to another's property;
2. premises you sell, give away or abandon, if the **Property Damage** arises out of any part of those premises;
3. property loaned to you;
4. personal property in the care, custody or control of the Insured;
5. that particular part of real property on which you or any contractors or subcontractors working directly or indirectly on your behalf are performing operations, if the **Property Damage** arises out of those operations; or
6. that particular part of any property that must be restored, repaired or replaced because **Your Work** was incorrectly performed on it.

Paragraph 2. of this exclusion does not apply if the premises are **Your Work** and were never occupied, rented or held for rental by you.

Paragraphs 3., 4., 5. and 6. of this exclusion do not apply to liability assumed under a sidetrack agreement.

Paragraph 6. of this exclusion does not apply to **Property Damage** included in the **Products-Completed Operations Hazard**.

F. Damage to Your Product

This insurance does not apply to **Property Damage to Your Product** arising out of it or any part of it.

G. Damage to Your Work

This insurance does not apply to **Property Damage to Your Work** arising out of it or any part of it and included in the **Products-Completed Operations Hazard**.

This exclusion does not apply if the damaged work or the work out of which the damage arises was performed on your behalf by a subcontractor.

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This insurance does not apply to **Personal Injury and Advertising Injury** arising out of an electronic chatroom or bulletin board the Insured hosts, owns, or over which the Insured exercises control. Additionally, this insurance does not apply to damages arising out of the loss of, loss of use of, damage to, corruption of, inability to access, or inability to manipulate electronic data.

As used in this exclusion, "electronic data" means information, facts or programs stored as or on, created or used on, or transmitted to or from computer software, including systems and applications software, hard or floppy disks, CD-ROMS, tapes, drives, calls, data processing devices or any other media which are used with electronically controlled equipment.

I. Employees and Volunteers

This insurance does not apply to liability of any employee or volunteer qualifying as an Insured under this policy arising out of **Bodily Injury, Property Damage or Personal Injury and Advertising Injury**:

1. to you, to your partners or members (if you are a partnership or joint venture), to your members (if you are a limited liability company), or to an employee of yours while in the course of his or her employment or performing duties related to the conduct of your business, or to another volunteer of yours while performing duties related to the conduct of your business;
2. to the spouse, child, parent, brother or sister of such injured employee or volunteer as a consequence of subparagraph 1. above;
3. for which there is any obligation to share damages with or repay someone else who must pay damages because of the injury described in subparagraphs 1. or 2. above; or
4. arising out of his or her providing or failing to provide professional health care services.

Paragraphs 1., 2. and 3. shall not apply to any liability arising out of **Bodily Injury or Personal Injury and Advertising Injury** if such coverage is provided by **Scheduled Underlying Insurance**. Coverage under this policy for **Bodily Injury or Personal Injury and Advertising Injury** will follow the terms, definitions, conditions and exclusions of **Scheduled Underlying Insurance**, subject to the **Policy Period, Limits of Insurance, premium** and all other terms, definitions, conditions and exclusions of this policy. Provided, however, that coverage provided by this policy will be no broader than the coverage provided by **Scheduled Underlying Insurance**.

J. Employment Practices

This insurance does not apply to any liability arising out of:

1. failure to hire any prospective employee or any applicant for employment;
2. dismissal, discharge or termination of any employee;
3. failure to promote or advance any employee; or
4. employment-related practices, policies, acts, omissions or misrepresentations directed at a present, past, future or prospective employee, including, but not limited to:
 - a. coercion, harassment, humiliation or discrimination;
 - b. demotion, evaluation, reassignment, discipline, or retaliation;
 - c. libel, slander, humiliation, defamation, or invasion of privacy; or
 - d. violation of civil rights.

This exclusion applies:

NOTICE: 1. whether the Insured may be liable as an employer or in any other capacity; and
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or in any other capacity; and
someone else who must pay damages because of the injury.

K. Expected or Intended Injury

This insurance does not apply to **Bodily Injury and Property Damage** expected or intended from the standpoint of the **Insured**. However, this exclusion does not apply to **Bodily Injury or Property Damage** resulting from the use of reasonable force to protect persons or property.

L. Infringement of Copyright, Patent, Trademark or Trade Secret

This insurance does not apply to **Personal Injury and Advertising Injury** arising out of the infringement of copyright, patent, trademark, trade secret or other intellectual property rights.

However, this exclusion does not apply to infringement, in your **Advertisement**, of copyright, trade dress or slogan.

M. Liquor Liability

This insurance does not apply to **Bodily Injury or Property Damage** for which any **Insured** may be held liable by reason of:

1. causing or contributing to the intoxication of any person;
2. the furnishing of alcoholic beverages to a person under the legal drinking age or under the influence of alcohol; or
3. any statute, ordinance or regulation relating to the sale, gift, distribution or use of alcoholic beverages.

However, this exclusion will not apply if coverage is provided for such **Bodily Injury or Property Damage** by **Scheduled Underlying Insurance**.

Coverage under this policy for such **Bodily Injury or Property Damage** will follow the terms, definitions, conditions and exclusions of **Scheduled Underlying Insurance**, subject to the **Policy Period**, Limits of Insurance, premium and all other terms, definitions, conditions and exclusions of this policy. Provided, however, that coverage provided by this policy will be no broader than the coverage provided by **Scheduled Underlying Insurance**.

N. Media and Internet Type Businesses

This insurance does not apply to **Personal Injury and Advertising Injury** committed by any **Insured** whose business is:

1. advertising, broadcasting, publishing or telecasting;
2. designing or determining content of web-sites for others; or
3. an Internet search, access, content or service provider.

However, this exclusion does not apply to Paragraphs U1., U2. and U3. of Section VII.

For the purposes of this exclusion, the placing of frames, borders or links, or advertising, for you or others anywhere on the Internet, is not by itself, considered the business of advertising, broadcasting, publishing or telecasting.

O. "No-Fault," "Uninsured Motorist" or "Underinsured Motorist" Laws

This insurance does not apply to any obligation of the **Insured** under any "No-Fault," "Uninsured Motorist" or "Underinsured Motorist" law, or any similar law.

P. Nuclear Liability

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- a. with respect to which the Insured is also an Insured under a nuclear energy liability policy issued by the Nuclear Energy Liability-Property Insurance Association, Mutual Atomic Energy Liability Underwriters or the Nuclear Insurance Association of Canada, or would be an Insured under any such policy but for its termination upon exhaustion of its limit of liability;
- b. resulting from the hazardous properties of nuclear material and with respect to which (1) any person or any organization is required to maintain financial protection pursuant to the Atomic Energy Act of 1954, or any amendment or revision thereto, or any similar law; (2) the Insured is, or had this policy not been available would be, entitled to indemnity from the United States of America or any agency thereof under any agreement entered into by the United States of America or an agency thereof with any person or organization;
- c. for Bodily Injury or Property Damage resulting from the hazardous properties of nuclear material if:
 - i) the nuclear material (1) is at any nuclear facility owned by the Insured or operated by the Insured or on the Insured's behalf or (2) has been discharged or dispensed therefrom;
 - ii) the nuclear material is contained in spent fuel or waste at any time possessed, handled, used, processed, stored, transported or disposed of by the Insured or on the Insured's behalf; or
 - iii) the Bodily Injury or Property Damage arises out of the furnishing by the Insured of services, materials, parts or equipment in connection with the planning, construction, maintenance, operation or use of any nuclear facility, but if such facility is located within the United States of America, its territories or possessions or Canada, this exclusion c. applies only to Property Damage to such nuclear facility and any property thereat.

2. As used in this exclusion:

- a. "hazardous properties" includes radioactive, toxic or explosive properties;
- b. "nuclear material" means source material, special nuclear material or by-product material;
- c. "source material," "special nuclear material" and "by-product material" have the meanings given them in the Atomic Energy Act of 1954 or any amendment or revision thereto ;
- d. "spent fuel" means any fuel element or fuel component, solid or liquid, which has been used or exposed to radiation in a nuclear reactor;
- e. "waste" means any waste material (1) containing by-product material and (2) resulting from the operation by any person or organization of a nuclear facility included within the definition of nuclear facility below;
- f. "nuclear facility" means:
 - i) any nuclear reactor;
 - ii) any equipment or device designed or used for (1) separating the isotopes of uranium or plutonium, (2) processing or utilizing spent fuel or (3) handling, processing or packaging wastes;
 - iii) any equipment or device used for the processing, fabricating or alloying of special nuclear material if at any time the total amount of such material in the Insured's custody at the premises where such equipment or device is located consists of or contains more than 25 grams of plutonium or uranium 233 or any combination thereof, or more than 250 grams of uranium 235; or

iv) any structure, basin, excavation, premises or place prepared or used for storage or disposal of waste,

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is located, all operations conducted on such site and all

g. "nuclear reactor" means any apparatus designed or used to sustain nuclear fission in a self-supporting chain reaction or to contain a critical mass of fissionable material;

h. **Property Damage** includes all forms of radioactive contamination of property.

Q. Pollution

This insurance does not apply to:

1. Any **Bodily Injury, Property Damage or Personal Injury and Advertising Injury** arising out of the actual, alleged or threatened discharge, dispersal, seepage, migration, release or escape of **Pollutants** anywhere at any time;
2. Any loss, cost or expense arising out of any request, demand, order or statutory or regulatory requirement that the **Insured** or others test for, monitor, clean up, remove, contain, treat, detoxify or neutralize, or in any way respond to, or assess the effects of **Pollutants**; or
3. Any loss, cost or expense arising out of any claim or **Suit** by or on behalf of a governmental authority for damages because of testing for, monitoring, cleaning up, removing, containing, treating, detoxifying or neutralizing or in any way responding to, or assessing the effects of **Pollutants**.

However, Paragraph 1 of this exclusion will not apply if coverage for such **Bodily Injury or Property Damage** as is described in subparagraphs 1) through 6) below is provided by **Scheduled Underlying Insurance**:

1) **Products-Completed Operations Hazard**

Paragraph 1. of this exclusion does not apply with respect to **Bodily Injury or Property Damage** included within the **Products-Completed Operations Hazard** provided that **Your Product or Your Work** has not at any time been:

- a) discarded, dumped, abandoned, thrown away; or
 - b) transported, handled, stored, treated, disposed of or processed as waste;
- by anyone.

2) **Hostile Fire**

Paragraph 1. of this exclusion does not apply with respect to **Bodily Injury or Property Damage** arising out of heat, smoke or fumes from a **Hostile Fire**.

3) **Equipment to Cool, Dehumidify, or Heat the Building and Contractor/Lessee Operations**

Paragraph 1. of this exclusion does not apply to:

- a) **Bodily Injury** sustained within a building and caused by smoke, fumes, vapor or soot produced by or originating from equipment that is used to heat, cool or dehumidify the building, or equipment used to heat water for personal use, by the building's occupants or their guests;
- b) **Bodily Injury or Property Damage** for which you may be held liable if you are a contractor and the owner or lessee of such premises, site or location has been added to your policy as an additional **Insured** with respect to your ongoing operations performed for that additional **Insured** at such premises, site or location, and such premises, site or location is not and never was owned or occupied by, or rented or loaned to, any **Insured**, other than the additional **Insured**.

4) **Fuels, Lubricants and Other Operating Fluids - Mobile Equipment**

NOTICE: THESE POLICY FORMS AND THE APPLICABLE RATES ARE EXEMPT FROM THE FILING REQUIREMENTS OF THE NEW YORK STATE INSURANCE DEPARTMENT. HOWEVER, SUCH FORMS AND RATES MUST MEET THE MINIMUM STANDARDS OF THE NEW YORK INSURANCE LAW AND REGULATIONS.

- a) **Bodily Injury or Property Damage** arising out of the escape of fuels, lubricants or other operating fluids that are needed to perform normal electrical, hydraulic or mechanical functions necessary for the operation of **Mobile Equipment** or its parts if such fuels, lubricants or other operating fluids escape from a vehicle part designed to hold, store or receive them. This exception does not apply if the **Bodily Injury or Property Damage** arises out of the intentional discharge, dispersal or release of the fuels, lubricants or other operating fluids, or if such fuels, lubricants or other operating fluids are brought on or to the premises, site or location with the intent that they be discharged, dispersed or released as part of the operations being performed by such insured contractor or subcontractor; or
- b) **Bodily Injury or Property Damage** sustained within a building and caused by the release of gases, fumes or vapors from materials brought into that building in connection with operations being performed by you or on your behalf by a contractor or subcontractor.

5) Fuels, Lubricants, Fluids, etc. - Auto

Paragraph 1. of this exclusion does not apply to fuels, lubricants, fluids, exhaust gases or other similar **Pollutants** that are needed for or result from the normal electrical, hydraulic or mechanical functioning of an **Auto** covered by **Scheduled Underlying Insurance** or its parts, if:

- a) the **Pollutants** escape, seep, migrate, or are discharged, dispersed or released directly from an **Auto** part designed by its manufacturer to hold, store, receive or dispose of such **Pollutants**; and
- b) the **Bodily Injury or Property Damage** does not arise out of the operation of any equipment shown in Paragraphs 6b and 6c of the definition of **Mobile Equipment**.

6) Upset, Overturn or Damage of an Auto

Paragraph 1. of this exclusion does not apply to **Occurrences** that take place away from premises owned by or rented to an **Insured** with respect to **Pollutants** not in or upon an **Auto** covered by **Scheduled Underlying Insurance** if:

- a) the **Pollutants** or any property in which the **Pollutants** are contained are upset, overturned or damaged as a result of the maintenance or use of an **Auto** covered by **Scheduled Underlying Insurance**; and
- b) the discharge, dispersal, seepage, migration, release or escape of the **Pollutants** is caused directly by such upset, overturn or damage.

Coverage under this policy for such **Bodily Injury or Property Damage** as is described in subparagraphs 1) through 6) above will follow the terms, definitions, conditions and exclusions of **Scheduled Underlying Insurance**, subject to the **Policy Period**, Limits of Insurance, premium and all other terms, definitions, conditions and exclusions of this policy. Provided, however, that coverage provided by this policy will be no broader than the coverage provided by **Scheduled Underlying Insurance**.

R. Recall of Your Product, Your Work or Impaired Property

This insurance does not apply to damages claimed for any loss, cost or expense incurred by you or others for the loss of use, withdrawal, recall, inspection, repair, replacement, adjustment, removal or disposal of:

- 1. **Your Product;**
- 2. **Your Work; or**
- 3. **Impaired Property;**

from the market or from use by any person or organization because of a known or suspected defect, deficiency, inadequacy or dangerous condition in it.

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This insurance does not apply to any liability arising out of:

1. any violation of any securities law or similar law or any regulation promulgated thereunder;
2. the purchase, sale, offer of sale or solicitation of any security, debt, insurance policy, bank deposit or financial interest or instrument;
3. any representations made at any time in relation to the price or value of any security, debt, insurance policy, bank deposit or financial interest or instrument; or
4. any depreciation or decline in price or value of any security, debt, insurance policy, bank deposit or financial interest or instrument.

T. Unauthorized Use of Another's Name or Product

This insurance does not apply to **Personal Injury and Advertising Injury** arising out of the unauthorized use of another's name or product in your e-mail address, domain name or metatag, or any other similar tactics to mislead another's potential customers.

U. Various Personal Injury and Advertising Injury

This insurance does not apply to **Personal Injury and Advertising Injury**:

1. caused by or at the direction of the **Insured** with the knowledge that the act would violate the rights of another and would inflict **Personal Injury and Advertising Injury**;
2. arising out of oral, written or electronic publication, in any manner, of material if done by or at the direction of any **Insured** with knowledge of its falsity;
3. arising out of oral, written or electronic publication, in any manner, of material whose first publication took place before the beginning of the **Policy Period**;
4. arising out of a criminal act committed by or at the direction of the **Insured**;
5. for which the **Insured** has assumed liability in a contract or agreement. This exclusion does not apply to liability for damages that the **Insured** would have in the absence of the contract or agreement;
6. arising out of a breach of contract, except an implied contract to use another's advertising idea in your **Advertisement**;
7. arising out of the failure of goods, products or services to conform with any statement of quality or performance made in your **Advertisement**; or
8. arising out of the wrong description of the price of goods, products or services stated in your **Advertisement**.

V. Various Laws

This insurance does not apply to any obligation of the **Insured** under any of the following:

1. the Employee Retirement Income Security Act of 1974 (including amendments relating to the Consolidated Omnibus Budget Reconciliation Act of 1985), or any amendment or revision thereto, or any similar law; or
2. any workers' compensation, disability benefits or unemployment compensation law, or any similar law.

W. Violation of Communication or Information Law

NOTICE: THESE POLICY FORMS AND THE APPLICABLE RATES ARE EXEMPT FROM THE FILING REQUIREMENTS OF THE NEW YORK STATE INSURANCE DEPARTMENT. HOWEVER, SUCH FORMS AND RATES MUST MEET THE MINIMUM STANDARDS OF THE NEW YORK STATE INSURANCE LAW AND REGULATIONS.

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This insurance does not apply to any liability arising out of any act that violates any statute, ordinance or regulation of any federal, state or local government, including any amendment of or addition to such laws, that prohibits or restricts the sending, transmitting or communicating of material or information.

X. War

This insurance does not apply to Loss, costs, injury, damage, claim, dispute and/or or suit arising therefrom, caused directly or indirectly, in whole or in part, as a result of or in connection with war, whether declared or not, or any act or condition incident to war. War includes:

1. Civil war; or
2. Armed conflict between two or more nations, armed conflict between military forces of any origin, or warlike action by a military force, including action in hindering or defending against an actual or expected attack, by any government, sovereign or other authority using military personnel or other agents; or
3. Insurrection, rebellion, revolution, usurped power, or action taken by governmental authority in hindering or defending against any of these.

VI. CONDITIONS

A. Appeals

If the Insured or the Insured's underlying insurers do not appeal a judgment in excess of the total applicable limits of Scheduled Underlying Insurance, we may elect to do so. If we appeal, we will be liable for, in addition to the applicable Limits of Insurance of this policy, all court costs, expenses incurred and interest on that amount of any judgment which does not exceed the applicable Limits of Insurance of this policy incidental to such an appeal.

B. Audit

We may audit and examine your books and records as they relate to this policy at any time during the period of this policy and for up to three (3) years after the expiration or termination of this policy.

C. Bankruptcy or Insolvency

Your bankruptcy, insolvency or inability to pay or the bankruptcy, insolvency or inability to pay of any of your underlying insurers will not relieve us from the payment of Loss covered by this policy. But under no circumstances will such bankruptcy, insolvency or inability to pay require us to drop down, replace or assume any obligation under Scheduled Underlying Insurance.

D. Cancellation

1. You may cancel this policy. You must mail or deliver advance written notice to us stating when the cancellation is to take effect.
2. We may cancel this policy. If we cancel because of non-payment of premium, we must mail or deliver to you not less than ten (10) days advance written notice stating when the cancellation is to take effect. If we cancel for any other reason, we must mail or deliver to you not less than ninety (90) days advance written notice stating when the cancellation is to take effect. Mailing that notice to you at your mailing address shown in Item 1 of the Declarations will be sufficient to prove notice.
3. The Policy Period will end on the day and hour stated in the cancellation notice.
4. If we cancel, final premium will be calculated pro rata based on the time this policy was in force. Final Premium will not be less than the pro rata share of the Minimum Premium shown in Item 6. of the Declarations.
5. If you cancel, final premium will be more than pro rata; it will be based on the time this policy was in force and increased by our short rate cancellation table and procedure. Final premium will not be less than the short rate share of the Minimum Premium shown in Item 6 of the Declarations.

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or our representative's check, mailed or delivered, will be sufficient tender of any refund due you.

7. The first **Named Insured** in Item 1. of the Declarations will act on behalf of all other **Insureds** with respect to the giving and receiving of notice of cancellation and the receipt of any refund that may become payable under this policy.
8. Any of these provisions that conflict with a law that controls the cancellation of the insurance in this policy is changed by this statement to comply with that law.

E. Change In Control

If during the **Policy Period**:

1. the first **Named Insured** designated in Item 1. of the Declarations consolidates with or merges into, or sells all or substantially all of its assets to any person or entity; or
2. any person or entity acquires an amount of the outstanding ownership interests representing more than 50% of the voting or designation power for the election of directors of the first **Named Insured** designated in Item 1. of the Declarations, or acquires the voting or designation rights of such an amount of ownership interests;

this policy will continue in full force and effect as to **Bodily Injury and Property Damage** that occur prior to the effective date of such transaction and **Personal Injury and Advertising Injury** caused by an **Occurrence** that takes place prior to the effective date of such transaction.

Coverage will be afforded by this policy for **Bodily Injury or Property Damage** that occurs on or after the effective date of such transaction and **Personal Injury and Advertising Injury** caused by an **Occurrence** that takes place on or after the effective date of such transaction if the **Named Insured** notifies us of the transaction no later than ninety (90) days after the effective date of the transaction.

If the **Named Insured** fails to notify us within ninety (90) days of the effective date of such transaction coverage afforded by this policy will cease on the ninetieth (90th) day after the effective date of such transaction at 12:01 am standard time of the address of the **Named Insured** shown in Item 1. of the Declarations or the end of the **Policy Period**, whichever is earlier.

The provisions of paragraph E. shall only apply to transactions with third parties not under control or ownership of the **Named Insured** on the inception date of this policy.

F. Changes

Notice to any agent or knowledge possessed by any agent or any other person will not effect a waiver or change in any part of this policy. This policy can be changed only by a written endorsement that we make to this policy.

G. Duties in the Event of an Occurrence, Claim or Suit

1. You must see to it that we are notified as soon as practicable of an **Occurrence** that may result in a claim or **Suit** under this policy. To the extent possible, notice should include:
 - a. how, when and where the **Occurrence** took place;
 - b. the names and addresses of any injured persons and any witnesses; and
 - c. the nature and location of any injury or damage arising out of the **Occurrence**.
2. If a claim is made or **Suit** is brought against any **Insured** which is reasonably likely to involve this policy, you

NOTICE: These forms and rates are mailed to:
For notice states, please contact your agent.

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AIG Claims, Inc.
Excess Casualty Claims Department
Segmentation Unit
175 Water Street, 22nd Floor
New York, NY 10038
Fax: (866) 743-4376
Email: excessfnol@AIG.com

3. You and any other involved Insured must:

- a. immediately send us copies of any demands, notices, summonses or legal papers received in connection with the claim or Suit;
 - b. authorize us to obtain records and other information;
 - c. cooperate with us in the investigation, settlement or defense of the claim or Suit; and
 - d. assist us, upon our request, in the enforcement of any right against any person or organization that may be liable to the Insured because of injury or damage to which this insurance may also apply.
4. No Insured will, except at that Insured's own cost, voluntarily make a payment, assume any obligation or incur any expense, other than for first aid, without our consent.

H. Headings

The descriptions in the headings of this policy are solely for convenience and form no part of the terms and conditions of coverage.

I. Inspection

We have the right, but are not obligated, to inspect your premises and operations at any time. Our inspections are not safety inspections. They relate only to the insurability of your premises and operations and the premiums to be charged. We may give you reports on the conditions that we find. We may also recommend changes. We do not, however, undertake to perform the duty of any person or organization to provide for the health or safety of your employees or the public. We do not warrant the health and safety conditions of your premises or operations or represent that your premises or operations comply with laws, regulations, codes or standards.

J. Legal Actions Against Us

No person or organization has a right under this policy:

1. to join us as a party or otherwise bring us into a Suit asking for damages from an Insured; or
2. to sue us under this policy unless all of its terms have been fully complied with.

A person or organization may sue us to recover on an agreed settlement or on a final judgment against an Insured; but we will not be liable for damages that are not payable under this policy or that are in excess of the applicable Limits of Insurance of this policy. An agreed settlement means a settlement and release of liability signed by us, the Insured and the claimant or the claimant's legal representative.

K. Maintenance of Scheduled Underlying Insurance

You agree that during the Policy Period:

will be in full force and effect;

the maintenance of Scheduled Underlying Insurance will not materially

NOTICE: THESE RATES, FORMS AND USES OF SCHEDULED UNDERLYING INSURANCE ARE EXEMPT FROM THE FILING REQUIREMENTS OF THE NEW YORK STATE INSURANCE DEPARTMENT. HOWEVER, SUCH FORMS AND RATES MUST MEET THE MINIMUM STANDARDS OF THE NEW YORK STATE INSURANCE LAW AND REGULATIONS.

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3. the total applicable limits of **Scheduled Underlying Insurance** will not decrease, except for any reduction or exhaustion of aggregate limits by payment of **Loss** to which this policy applies; and
4. any renewals or replacements of **Scheduled Underlying Insurance** will provide equivalent coverage to and afford limits of insurance equal to or greater than the policy being renewed or replaced.

If you fail to comply with these requirements, we will be liable only to the same extent that we would have, had you fully complied with these requirements.

L. Other Insurance

If other valid and collectible insurance applies to damages that are also covered by this policy, this policy will apply excess of the **Other Insurance**. However, this provision will not apply if the **Other Insurance** is specifically written to be excess of this policy.

M. Premium

The first **Named Insured** designated in Item 1. of the Declarations will be responsible for payment of all premiums when due.

The premium for this policy will be computed on the basis set forth in Item 6. of the Declarations. At the beginning of the **Policy Period**, you must pay us the **Advance Premium** shown in Item 6. of the Declarations.

When this policy expires or if it is cancelled, we will compute the earned premium for the time this policy was in force. If this policy is subject to audit adjustment, the actual exposure base will be used to compute the earned premium. If the earned premium is greater than the **Advance Premium**, you will promptly pay us the difference. If the earned premium is less than the **Advance Premium**, we will return the difference to you. But in any event, we will retain the **Minimum Premium** as shown in Item 6. of the Declarations for each twelve months of the **Policy Period**.

N. Separation of Insureds

Except with respect to the Limits of Insurance of this policy and rights or duties specifically assigned to the first **Named Insured** designated in Item 1. of the Declarations, this insurance applies:

1. as if each **Named Insured** were the only **Named Insured**; and
2. separately to each **Insured** against whom claim is made or **Suit** is brought.

O. Transfer of Rights of Recovery

1. If any **Insured** has rights to recover all or part of any payment we have made under this policy, those rights are transferred to us. The **Insured** must do nothing after loss to impair these rights and must help us enforce them.
2. Any recoveries will be applied as follows:
 - a. any person or organization, including the **Insured**, that has paid an amount in excess of the applicable Limits of Insurance of this policy will be reimbursed first;
 - b. we then will be reimbursed up to the amount we have paid; and
 - c. lastly, any person or organization, including the **Insured** that has paid an amount over which this policy is excess is entitled to claim the remainder.

NOTICE

Expenses incurred in the exercise of rights of recovery will be apportioned among the persons or organizations, including the Insured, in proportion to their respective recoveries as finally settled.

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3. If, prior to the time of an **Occurrence**, you waive any right of recovery against a specific person or organization for injury or damage as required under an **Insured Contract**, we will also waive any rights we may have against such person or organization

P. Transfer of Your Rights and Duties

Your rights and duties under this policy may not be transferred without our written consent.

If you die or are legally declared bankrupt, your rights and duties will be transferred to your legal representative, but only while acting within the scope of duties as your legal representative. However, notice of cancellation sent to the first **Named Insured** designated in Item 1 of the **Declarations** and mailed to the address shown in this policy will be sufficient notice to effect cancellation of this policy.

Q. Unintentional Failure to Disclose

Your failure to disclose all hazards existing as of the inception date of the policy will not prejudice you with respect to the coverage afforded by this policy, provided that any such failure or omission is not intentional.

R. Violation of Economic or Trade Sanctions

If coverage for a claim or **Suit** under this Policy is in violation of any United States of America economic or trade sanctions, including but not limited to, sanctions administered and enforced by the United States Treasury Department's Office of Foreign Assets Control ("OFAC"), then coverage for that claim or **Suit** will be null and void.

VI. DEFINITIONS

A. Advertisement means a notice that is broadcast or published to the general public or specific market segments about your goods, products or services for the purpose of attracting customers or supporters. For the purposes of this definition:

1. notices that are published include material placed on the Internet or on similar electronic means of communication; and
2. regarding web-sites, only that part of a web-site that is about your goods, products or services for the purposes of attracting customers or supporters is considered an advertisement.

B. Auto means:

1. a land motor vehicle, trailer or semitrailer designed for travel on public roads, including any attached machinery or equipment; or
2. any other land vehicle that is subject to a compulsory or financial responsibility law in the state where it is licensed or principally garaged.

However, **Auto** does not include **Mobile Equipment**.

C. Bodily Injury means bodily injury, sickness or disease sustained by any person, including death, mental anguish, mental injury, shock or humiliation resulting from any of these at any time.

D. Crisis Management Event means an **Occurrence** that in the good faith opinion of a **Key Executive** of the **Named Insured**, in the absence of **Crisis Management Services**, has or may result in:

1. damages covered by this policy that are in excess of the total applicable limits of **Scheduled Underlying Insurance or the Self-Insured Retention**; and

NOTICE: Significant adverse regional or national media coverage.

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Crisis Management Event will include, without limitation, man-made disasters such as explosions, major crashes, multiple deaths, burns, dismemberment, traumatic brain injury, permanent paralysis, or contamination of food, drink or pharmaceuticals, provided that any damages arising out of any of the aforementioned must be covered under this policy.

E. **Crisis Management Firm** means any firm that is shown in Schedule A, Approved Crisis Management Firms attached to and forming part of this policy, which is hired by you to perform **Crisis Management Services** in connection with a **Crisis Management Event**.

F. **Crisis Management Loss** means the following amounts incurred during a **Crisis Management Event**:

1. amounts for the reasonable and necessary fees and expenses incurred by a **Crisis Management Firm** in the performance of **Crisis Management Services** for the **Named Insured** solely arising from a covered **Crisis Management Event**; and
2. amounts for reasonable and necessary printing, advertising, mailing of materials, or travel by directors, officers, employees or agents of the **Named Insured** or a **Crisis Management Firm** incurred at the direction of a **Crisis Management Firm**, solely arising from a covered **Crisis Management Event**.

G. **Crisis Management Services** means those services performed by a **Crisis Management Firm** in advising the **Named Insured** on minimizing potential harm to the **Named Insured** from a covered **Crisis Management Event** by maintaining and restoring public confidence in the **Named Insured**.

H. **CrisisResponse Costs** means the following reasonable and necessary expenses incurred during a **Crisis Management Event** directly caused by a **Crisis Management Event**, provided that such expenses have been pre-approved by us and may be associated with damages that would be covered by this policy:

1. medical expenses;
2. funeral expenses;
3. psychological counseling;
4. travel expenses;
5. temporary living expenses;
6. expenses to secure the scene of a **Crisis Management Event**; and
7. any other expenses pre-approved by the Company.

CrisisResponse Costs does not include defense costs or **Crisis Management Loss**.

I. **CrisisResponse Sublimit of Insurance** means the **CrisisResponse Sublimit of Insurance** shown in Item 3D. of the Declarations.

J. **Excess Casualty CrisisFund Limit of Insurance** means the **Excess Casualty CrisisFund Limit of Insurance** shown in Item 3E of the Declarations.

K. **Hostile Fire** means a fire that becomes uncontrollable or breaks out from where it was intended to be.

L. **Impaired Property** means tangible property, other than **Your Product** or **Your Work**, that cannot be used or is less useful because:

of a defect in the New Product, Your Work, or a component known or thought to be defective, deficient, inadequate or dangerous; or

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if such property can be restored to use by:

1. the repair, replacement, adjustment or removal of **Your Product** or **Your Work**; or
2. your fulfilling the terms of the contract or agreement.

M. Insured means:

1. the **Named Insured**;
2. if you are designated in the declarations as:
 - a. an individual, you and your spouse are insureds, but only with respect to the conduct of a business of which you are the sole owner;
 - b. a partnership or joint venture, you are an insured. Your members, your partners, and their spouses are also insureds, but only with respect to the conduct of your business.
 - c. a limited liability company, you are an insured. Your members are also insureds, but only with respect to the conduct of your business. Your managers are insureds, but only with respect to their duties as your managers;
 - d. an organization other than a partnership, joint venture or limited liability company, you are an insured. Your executive officers and directors are insureds, but only with respect to their duties as your officers or directors. Your stockholders are also insureds, but only with respect to their liability as stockholders;
 - e. a trust, you are an insured. Your trustees are also insureds, but only with respect to their duties as trustees;
3. your employees other than your executive officers (if you are an organization other than a partnership, joint venture or limited liability company) or your managers (if you are a limited liability company), but only for acts within the scope of their employment by you or while performing duties related to the conduct of your business;
4. your volunteer workers only while performing duties related to the conduct of your business;
5. any person (other than your employee or volunteer worker) or organization while acting as your real estate manager;
6. your legal representative if you die, but only with respect to duties as such. That representative will have all your rights and duties under this policy;
7. any person or organization, other than the **Named Insured**, included as an additional insured under **Scheduled Underlying Insurance**, but not for broader coverage than would be afforded by such **Scheduled Underlying Insurance**.

Notwithstanding any of the above:

- a. no person or organization is an **Insured** with respect to the conduct of any current, past or newly formed partnership, joint venture or limited liability company that is not designated as a **Named Insured** in Item 1 of the **Declarations**; and
- b. no person or organization is an **Insured** under this policy who is not an **Insured** under applicable **Scheduled Underlying Insurance**. This provision shall not apply to any organization set forth in the definition of **Named Insured** in Paragraph R. 2 and 3.

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agreement pertaining to your business under which any liability for **Bodily Injury** or **Property Damage** to a third person would be imposed by law in the absence of any contract or

Insured Contract does not include that part of any contract or agreement:

1. that indemnifies a railroad for **Bodily Injury** or **Property Damage** arising out of construction or demolition operations, within 50 feet of any railroad property and affecting any railroad bridge or trestle, tracks, road-beds, tunnel, underpass or crossing;
 2. that indemnifies an architect, engineer or surveyor for injury or damage arising out of:
 - a. preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; or
 - b. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage; or
 3. under which the **Insured**, if an architect, engineer or surveyor, assumes liability for an injury or damage arising out of the **Insured's** rendering or failure to render professional services, including those shown in subparagraph 2. above and supervisory, inspection, architectural or engineering activities.
- O. **Key Executive** means the Chief Executive Officer, Chief Operating Officer, Chief Financial Officer, President, General Counsel or general partner (if the **Named Insured** is a partnership) of the **Named Insured** or sole proprietor (if the **Named Insured** is a sole proprietorship). A **Key Executive** also means any other person holding a title designated by you and approved by us, which title is shown in Schedule B, Additional Key Executives attached to and forming part of this policy.
- P. **Loss** means those sums actually paid as judgments or settlements, provided, however, that if expenses incurred to defend a **Suit** or to investigate a claim reduce the applicable limits of **Scheduled Underlying Insurance**, then **Loss** shall include such expenses.
- Q. **Mobile Equipment** means any of the following types of land vehicles, including any attached machinery or equipment:
1. bulldozers, farm machinery, forklifts and other vehicles designed for use principally off public roads;
 2. vehicles maintained for use solely on or next to premises you own or rent;
 3. vehicles that travel on crawler treads;
 4. vehicles, whether self-propelled or not, maintained primarily to provide mobility to permanently mounted:
 - a. power cranes, shovels, loaders, diggers or drills; or
 - b. road construction or resurfacing equipment such as graders, scrapers or rollers;
 5. vehicles not described in Paragraph 1., 2., 3. or 4. above that are not self-propelled and are maintained primarily to provide mobility to permanently attached equipment of the following types:
 - a. air compressors, pumps and generators, including spraying, welding, building cleaning, geophysical exploration, lighting and well servicing equipment; or
 - b. cherry pickers and similar devices used to raise or lower workers;
 6. vehicles not described in Paragraph 1., 2., 3. or 4. above maintained primarily for purposes other than the transportation of persons or cargo.

types of permanently attached equipment are not **Mobile Equipment**, but will be considered **Autos**:

NOTICE: THESE POLICY FORMS AND THE APPLICABLE RATES DERIVED THEREFROM FROM THE FILING REQUIREMENTS OF THE NEW YORK STATE INSURANCE DEPARTMENT. HOWEVER, SUCH FORMS AND RATES MUST MEET THE MINIMUM STANDARDS OF THE NEW YORK STATE INSURANCE LAW AND REGULATIONS.

- i) snow removal;
 - ii) road maintenance, but not construction or resurfacing; or
 - iii) street cleaning;
- b. cherry pickers and similar devices mounted on automobile or truck chassis and used to raise or lower workers; and
 - c. air compressors, pumps and generators, including spraying, welding, building cleaning, geophysical exploration, lighting and well servicing equipment.

However, **Mobile Equipment** does not include any land vehicle that is subject to a compulsory or financial responsibility law or other motor vehicle insurance law in the state where it is licensed or principally garaged. Land vehicles subject to a compulsory or financial responsibility law are considered **Autos**.

R. Named Insured means:

1. any person or organization designated in Item 1. of the Declarations;
2. as of the inception date of this policy, any organization, except for a partnership, joint venture or limited liability company, in which you maintain an interest of more than fifty percent (50%) as of the effective date of this policy, provided that coverage provided to such organization under this paragraph does not apply to any **Bodily Injury or Property Damage** that occurred or any **Personal Injury and Advertising Injury** that was caused by an **Occurrence** that was committed before you acquired or formed such organization or after you ceased to maintain an interest of more than fifty percent (50%) in such organization; and
3. after the inception date of this policy, any organization, except for a partnership, joint venture or limited liability company, that you acquire or form during the **Policy Period** in which you maintain an interest of more than fifty percent (50%), provided that:
 - a. coverage provided to such organization under this paragraph does not apply to any **Bodily Injury or Property Damage** that occurred or any **Personal Injury and Advertising Injury** that was caused by an **Occurrence** that was committed before you acquired or formed such organization or after you ceased to maintain an interest of more than fifty percent (50%) in such organization; and
 - b. you give us prompt notice after you acquire or form such organization.

Subject to the provisions of Paragraphs 3a. and 3b. above, a partnership, joint venture or limited liability company that you acquire or form during the **Policy Period** may be added as an **Insured** only by a written endorsement that we make a part of this policy.

We may, at our option, make an additional premium charge for any organization that you acquire or form during the **Policy Period**.

You agree that any organization to which paragraphs 2. and 3. above apply, will be required to be included as an **Insured** under applicable **Scheduled Underlying Insurance**. If you fail to comply with this requirement, coverage under this policy will apply as though the organization was included as an **Insured**, under the highest applicable limit of **Scheduled Underlying Insurance**.

S. Occurrence means:

1. as respects **Bodily Injury or Property Damage**, an accident, including continuous or repeated exposure to substantially the same general harmful conditions. All such exposure to substantially the same general harmful conditions will be deemed to arise out of one **Occurrence**.

NOTICE: THESE POLICY FORMS AND THE APPLICABLE RATES ARE EXEMPT FROM THE FINANCIAL REQUIREMENTS OF THE NEW YORK STATE INSURANCE DEPARTMENT. HOWEVER, SUCH FORMS AND RATES MUST MEET THE MINIMUM STANDARDS OF THE NEW YORK STATE INSURANCE LAW AND REGULATIONS.

As respects **Personal Injury and Advertising Injury**, an offense arising out of your business that causes damages that arise from the same, related or repeated injurious

material or act will be deemed to arise out of one **Occurrence**, regardless of the frequency or repetition thereof, the number and kind of media used and the number of claimants.

T. **Other Insurance** means a valid and collectible policy of insurance providing coverage for damages covered in whole or in part by this policy.

However, **Other Insurance** does not include **Scheduled Underlying Insurance**, the **Self-Insured Retention** or any policy of insurance specifically purchased to be excess of this policy affording coverage that this policy also affords.

U. **Personal Injury and Advertising Injury** means injury arising out of your business, including consequential **Bodily Injury**, arising out of one or more of the following offenses:

1. false arrest, detention or imprisonment;
2. malicious prosecution;
3. the wrongful eviction from, wrongful entry into, or invasion of the right of private occupancy of a room, dwelling or premises that a person occupies committed by or on behalf of its owner, landlord or lessor;
4. oral or written publication, in any manner, of material that slanders or libels a person or organization, or disparages a person's or organization's goods, products or services;
5. oral or written publication, in any manner, of material that violates a person's right of privacy;
6. the use of another's advertising idea in your **Advertisement**; or
7. infringement upon another's copyright, trade dress or slogan in your **Advertisement**.

V. **Policy Period** means the period of time from the inception date shown in Item 2. of the Declarations to the earlier of the expiration date shown in Item 2. of the Declarations or the effective date of termination of this policy.

W. **Pollutants** means any solid, liquid, gaseous or thermal irritant or contaminant including smoke, vapor, soot, fumes, acids, alkalis, chemicals and waste. Waste includes materials to be recycled, reconditioned or reclaimed.

X. **Products-Completed Operations Hazard** means all **Bodily Injury** and **Property Damage** occurring away from premises you own or rent and arising out of **Your Product** or **Your Work** except:

1. products that are still in your physical possession; or
2. work that has not yet been completed or abandoned. However, **Your Work** will be deemed completed at the earliest of the following times:
 - a. when all of the work called for in your contract has been completed;
 - b. when all of the work to be done at the job site has been completed if your contract calls for work at more than one job site; or
 - c. when that part of the work done at a job site has been put to its intended use by any person or organization other than another contractor or subcontractor working on the same project.

Work that may need service, maintenance, correction, repair or replacement, but which is otherwise complete, will be treated as completed.

~~Products-Completed Operations Hazard does not include Bodily Injury or Property Damage arising out of:~~

NOTICE If transportation of property under the injury or damage arises out of a condition in or on a vehicle not owned or operated by you and that condition was created by the loading or unloading of that vehicle by any Insured; APPLICABLE RATES ARE EXEMPT FROM THE MINIMUM

REQUIREMENTS OF THE NEW YORK STATE INSURANCE DEPARTMENT. HOWEVER, SUCH FORMS AND RATES MUST MEET THE MINIMUM STANDARDS OF THE NEW

2. the existence of tools, uninstalled equipment or abandoned or unused materials.

Y. Property Damage means:

1. physical injury to tangible property, including all resulting loss of use of that property. All such loss of use will be deemed to occur at the time of the physical injury that caused it; or
2. loss of use of tangible property that is not physically injured. All such loss of use will be deemed to occur at the time of the **Occurrence** that caused it.

For the purposes of this insurance, electronic data is not tangible property.

As used in this definition, electronic data means information, facts or programs stored as or on, created or used on, or transmitted to or from computer software, including systems and applications software, hard or floppy disks, CD-ROMS, tapes, drives, cells, data processing devices or any other media which are used with electronically controlled equipment.

Z. Retained Limit means:

1. the total applicable limits of **Scheduled Underlying Insurance** and any applicable **Other Insurance** providing coverage to the **Insured**; or
2. the **Self-Insured Retention** applicable to each **Occurrence** that results in damages not covered by **Scheduled Underlying Insurance** nor any applicable **Other Insurance** providing coverage to the **Insured**.

AA. Scheduled Underlying Insurance means:

1. the policy or policies of insurance and limits of insurance shown in the Schedule of Underlying Insurance forming a part of this policy; and
2. automatically any renewal or replacement of any policy in Paragraph 1. above, provided that such renewal or replacement provides equivalent coverage to and affords limits of insurance equal to or greater than the policy being renewed or replaced.

Scheduled Underlying Insurance does not include a policy of insurance specifically purchased to be excess of this policy affording coverage that this policy also affords.

BB. Self-Insured Retention means the amount that is shown in Item 5. of the Declarations.

CC. Suit means a civil proceeding in which damages because of **Bodily Injury, Property Damage, or Personal Injury and Advertising Injury** to which this policy applies are alleged. **Suit** includes:

1. an arbitration proceeding in which such damages are claimed and to which the **Insured** must submit or does submit with our consent; or
2. any other alternative dispute resolution proceeding in which such damages are claimed and to which the **Insured** submits with our consent.

DD. Your Product means:

1. any goods or products, other than real property, manufactured, sold, handled, distributed or disposed of by:

a. you;

b. others trading under your name or

NOTICE

person or organization whose business assets you have acquired; and
these policy forms and the
APPLICABLE RATES ARE EXEMPT FROM THE FILING
REQUIREMENTS OF THE NEW YORK STATE INSURANCE
DEPARTMENT. HOWEVER, SUCH FORMS AND RATES
MUST MEET THE MINIMUM STANDARDS OF THE NEW

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of equipment furnished in connection with such goods or

products.

Your Product includes:

1. warranties or representations made at any time with respect to the fitness, quality, durability, performance or use of **Your Product**; and
2. the providing of or failure to provide warnings or instructions.

Your Product does not include vending machines or other property rented to or located for the use of others but not sold.

EE. Your Work means:

- 1 work or operations performed by you or on your behalf; and
2. materials, parts or equipment furnished in connection with such work or operations.

Your Work includes:

1. warranties or representations made at any time with respect to the fitness, quality, durability, performance or use of **Your Work**; and
2. the providing of or failure to provide warnings or instructions.

IN WITNESS WHEREOF, the Insurer has caused this Policy to be signed by its President, Secretary and Authorized Representative.

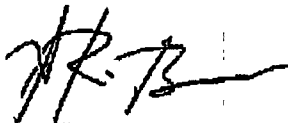


SECRETARY



PRESIDENT

This Policy shall not be valid unless signed below at the time of issuance by an authorized representative of the insurer.



Authorized Representative

NOTICE: THESE POLICY FORMS AND THE APPLICABLE RATES ARE EXEMPT FROM THE FILING REQUIREMENTS OF THE NEW YORK STATE INSURANCE DEPARTMENT. HOWEVER, SUCH FORMS AND RATES MUST MEET THE MINIMUM STANDARDS OF THE NEW

30517K11A00
AH2709

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Page 2 of 24
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Endorsement # 5

This endorsement effective 12:01 a.m. April 1, 2018

Forms a part of Policy No: BE 019229883

Issued to: FERGUSON ELECTRIC CONSTRUCTION CO., INC.

By: NATIONAL UNION FIRE INSURANCE COMPANY OF PITTSBURGH, PA.

Commercial Umbrella Liability Policy with CrisisResponse®

Additional Insured Endorsement -- Primary and Non-Contributory

This policy is amended as follows:


Section VII. DEFINITIONS, Paragraph M. is amended to include the following additional provision:

Insured means:

Any person or organization for whom you have agreed in writing in a contract or agreement that such person or organization is an additional insured on your policy, but only if such person or organization is included under the coverage provided by **Scheduled Underlying Insurance**. Such person or organization is an additional insured only with respect to liability arising out of **Your Work** at the location designated.

This provision does not apply to liability arising out of the sole negligence of such person or organization for its own acts or omissions or those of its employees or anyone else acting on its behalf. Coverage afforded to these additional insured parties, when required by written contract, will be primary to, and non-contributory with, any **Other Insurance** purchased and issued to that person or organization.

All other terms, definitions, conditions, and exclusions of this policy remain unchanged.


NOTICE: THESE POLICY FORMS AND THE
ADDITIONAL ENDORSEMENTS ARE EXEMPT FROM THE FILING
REQUIREMENTS OF THE NEW YORK STATE INSURANCE
DEPARTMENT. HOWEVER, SUCH FORMS AND RATES
MUST MEET THE MINIMUM STANDARDS OF THE NEW
YORK INSURANCE LAW AND REGULATIONS.
2 - 13000

ENDORSEMENT No. 20

This endorsement, effective 12:01 AM: April 1, 2018

Forms a part of policy no: BE 019229883

Issued to: FERGUSON ELECTRIC CONSTRUCTION CO., INC.

By: NATIONAL UNION FIRE INSURANCE COMPANY OF PITTSBURGH, PA.

Commercial Umbrella Liability Policy with CrisisResponse®

**General Aggregate Limit of Insurance Per Project Endorsement
(Limits Capping)**

This policy is amended as follows:

Section IV. LIMITS OF INSURANCE, Paragraph B. is amended to include the following additional provision:

The General Aggregate Limit of Insurance shown in Item 3B. of the **DECLARATIONS** applies separately to each project for which coverage applies under this policy if:

1. You are obligated by written contract to procure a separate Limit of Insurance for such project(s); and
2. **Scheduled Underlying Insurance** also provides a separate Limit of Insurance for such project(s).

However, the insurance provided under this policy for all projects will not exceed 4 (four) times the Limits of Insurance of this policy. However, the **Products-Completed Operations Aggregate** will not exceed the Limits of Insurance shown in item 3B of the Declarations.

All other terms, definitions, conditions, and exclusions of this policy remain unchanged.

POLICY NUMBER: MWC 307109 0018

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Schedule

WHERE REQUIRED BY WRITTEN CONTRACT OR AGREEMENT

DATE OF ISSUE: 4/1/2018

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

NEW YORK BUSINESS AUTO EXTENSION ENDORSEMENT

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM

GENERAL DESCRIPTION OF COVERAGE – This endorsement broadens coverage. However, coverage for any injury, damage or medical expenses described in any of the provisions of this endorsement may be excluded or limited by another endorsement to the Coverage Part, and these coverage broadening provisions do not apply to the extent that coverage is excluded or limited by such an endorsement. The following listing is a general coverage description only. Limitations and exclusions may apply to these coverages. Read all the provisions of this endorsement and the rest of your policy carefully to determine rights, duties, and what is and is not covered.

- | | |
|---|--|
| <p>A. BROAD FORM NAMED INSURED</p> <p>B. BLANKET ADDITIONAL INSURED</p> <p>C. EMPLOYEE HIRED AUTO</p> <p>D. EMPLOYEES AS INSURED</p> <p>E. SUPPLEMENTARY PAYMENTS – INCREASED LIMITS</p> <p>F. WAIVER OF DEDUCTIBLE – GLASS</p> <p>G. HIRED AUTO PHYSICAL DAMAGE – LOSS OF USE – INCREASED LIMIT</p> | <p>H. PHYSICAL DAMAGE – TRANSPORTATION EXPENSES – INCREASED LIMIT</p> <p>I. PERSONAL PROPERTY</p> <p>J. AIRBAGS</p> <p>K. NOTICE AND KNOWLEDGE OF ACCIDENT OR LOSS</p> <p>L. BLANKET WAIVER OF SUBROGATION</p> <p>M. UNINTENTIONAL ERRORS OR OMISSIONS</p> |
|---|--|

PROVISIONS

A. BROAD FORM NAMED INSURED

The following is added to Paragraph A.1., **Who Is An Insured**, of **SECTION II – COVERED AUTOS LIABILITY COVERAGE**:

Any organization you newly acquire or form during the policy period over which you maintain 50% or more ownership interest and that is not separately insured for Business Auto Coverage. Coverage under this provision is afforded only until the 180th day after you acquire or form the organization or the end of the policy period, whichever is earlier.

B. BLANKET ADDITIONAL INSURED

The following is added to Paragraph c. in A.1., **Who Is An Insured**, of **SECTION II – COVERED AUTOS LIABILITY COVERAGE**:

Any person or organization who is required under a written contract or agreement between you and that person or organization, that is signed and executed by you before the "bodily injury" or "property damage" occurs and that is in effect during the policy period, to be named as an

additional insured is an "insured" for Covered Autos Liability Coverage, but only for damages to which this insurance applies and only to the extent that person or organization qualifies as an "insured" under the **Who Is An Insured** provision contained in Section II.

C. EMPLOYEE HIRED AUTO

1. The following is added to Paragraph A.1., **Who Is An Insured**, of **SECTION II – COVERED AUTOS LIABILITY COVERAGE**:

An "employee" of yours is an "insured" while operating an "auto" hired or rented under a contract or agreement in an "employee's" name, with your permission, while performing duties related to the conduct of your business.

2. The following replaces Paragraph b. in B.5., **Other Insurance**, of **SECTION IV – BUSINESS AUTO CONDITIONS**:

b. For **Hired Auto Physical Damage Coverage**, the following are deemed to be covered "autos" you own:

Letter of Intent

To: American Rated Cable & Communications, Inc.
970 E. Delavan Avenue
Buffalo NY 14215

Date: 5/22/18

Project Name and Number ECWA Ball Pump Station NC-35

Bid Amount: \$5,094,000.00 M/WBE Goal: 10%

Ferguson Electric Construction Co., Inc. agrees to enter into a contractual agreement
Prime Contractor
with American Rated Cable & Communications, Inc. who will provide the following goods/
M/WBE Subcontractor
services in connection with the above referenced contract
furnish and install electrical equipment

for an estimated amount of \$ 510,000.00 totaling 10 % of the total contract value.

American Rated Cable & Communications, Inc. is currently certified with Erie County Joint Certification Committee
(M/WBE Subcontractor) and is able to function in the aforementioned capacity.

Ferguson Electric Construction Co., Inc.
Prime Contractor

American Rated Cable & Communications, Inc.
M/WBE Subcontractor

Intend to work on the above-named contract in accordance with Appendix A of the M/WBE Section of the Erie
County Water Authority Contract, contingent upon award of the contract to the aforementioned Prime Contractor.

Angelo A. Veanes
Signed (Prime Contractor)

Richard A. Cummings
Signed (M/WBE Subcontractor)

Angelo A. Veanes
Printed Signature

Richard A. Cummings
Printed Signature

President 5/23/18
Title Date

VICE PRESIDENT 23 MAY 18
Title Date

The Travelers Indemnity Company of America

A.M. Best #: 004003 NAIC #: 25666 FEIN #: 586020487

Domiciliary Address

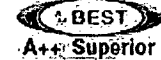
One Tower Square
Hartford, CT 06183
United States

Web: www.travelers.com

Phone: 860-277-0111

Fax: 860-277-7002

Financial Strength Rating



Assigned to insurance companies that have, in our opinion, a superior ability to meet their ongoing insurance obligations.

View additional news, reports and products for this company.

Based on A.M. Best's analysis, 058470 - The Travelers Companies, Inc. is the **AMB Ultimate Parent** and identifies the topmost entity of the corporate structure. View a list of operating insurance entities in this structure.

Best's Credit Ratings

Financial Strength Rating View Definition

Rating:	A++ (Superior)
Affiliation Code:	g (Group)
Financial Size Category:	XV (\$2 Billion or greater)
Outlook:	Stable
Action:	Affirmed
Effective Date:	October 05, 2017
Initial Rating Date:	June 30, 1951

Long-Term Issuer Credit Rating View Definition

Long-Term:	aa+
Outlook:	Stable
Action:	Affirmed
Effective Date:	October 05, 2017
Initial Rating Date:	April 18, 2005

The Phoenix Insurance Company

A.M. Best #: 002518 NAIC #: 25623 FEIN #: 060303275

Domiciliary Address

One Tower Square
 Hartford, CT 06183
 United States

Web: www.travelers.com

Phone: 860-277-0111

Fax: 860-277-7002

Financial Strength Rating



A++ Superior

Assigned to insurance companies that have, in our opinion, a superior ability to meet their ongoing insurance obligations.

View additional news, reports and products for this company.

Based on A.M. Best's analysis, 058470 - The Travelers Companies, Inc. is the **AMB Ultimate Parent** and identifies the topmost entity of the corporate structure. View a list of operating insurance entities in this structure.

Best's Credit Ratings

Financial Strength Rating View Definition

Rating: A++ (Superior)
Affiliation Code: g (Group)
Financial Size Category: XV (\$2 Billion or greater)
Outlook: Stable
Action: Affirmed
Effective Date: October 05, 2017
Initial Rating Date: December 31, 1907

Long-Term Issuer Credit Rating View Definition

Long-Term:	aa+
Outlook:	Stable
Action:	Affirmed
Effective Date:	October 05, 2017
Initial Rating Date:	April 18, 2005

National Union Fire Insurance Company of Pittsburgh, Pa.

A.M. Best #: 002351 NAIC #: 19445 FEIN #: 250687550

Administrative Office
175 Water Street 18th Floor
New York, NY 10038
United States

[View Additional Address Information](#)

Web: www.aig.com
Phone: 212-770-7000



Assigned to insurance companies that have, in our opinion, an excellent ability to meet their ongoing insurance obligations.

[View additional news, reports and products for this company.](#)

Based on A.M. Best's analysis, 058702 - American International Group, Inc. is the **AMB Ultimate Parent** and identifies the topmost entity of the corporate structure. [View a list of operating insurance entities in this structure.](#)

Best's Credit Ratings

Financial Strength Rating View Definition

Rating: A (Excellent)
Affiliation Code: p (Pooled)
Financial Size Category: XV (\$2 Billion or greater)
Outlook: Stable
Action: Affirmed
Effective Date: May 23, 2017
Initial Rating Date: December 31, 1907

Long-Term Issuer Credit Rating View Definition

Long-Term: a
Outlook: Stable
Action: Affirmed
Effective Date: May 23, 2017

Travelers Property Casualty Company of America

A.M. Best #: 004461 NAIC #: 25674 FEIN #: 362719165

Domiciliary Address

One Tower Square
Hartford, CT 06183
United States

Web: www.travelers.com

Phone: 860-277-0111

Fax: 860-277-7002

Financial Strength Rating



Assigned to insurance companies that have, in our opinion, a superior ability to meet their ongoing insurance obligations.

View additional news, reports and products for this company.

Based on A.M. Best's analysis, 058470 - The Travelers Companies, Inc. is the **AMB Ultimate Parent** and identifies the topmost entity of the corporate structure. View a list of operating insurance entities in this structure.

Best's Credit Ratings

Financial Strength Rating View Definition

Rating: A++ (Superior)
Affiliation Code: g (Group)
Financial Size Category: XV (\$2 Billion or greater)
Outlook: Stable
Action: Affirmed
Effective Date: October 05, 2017
Initial Rating Date: June 30, 1972

Long-Term Issuer Credit Rating View Definition

Long-Term: aa+
Outlook: Stable
Action: Affirmed
Effective Date: October 05, 2017
Initial Rating Date: April 18, 2005



CERTIFICATE OF NYS WORKERS' COMPENSATION INSURANCE COVERAGE

<p>1a. Legal Name & Address of Insured (use street address only)</p> <p>Ferguson Electric Construction Co Inc. 333 Ellicott Street Buffalo, NY 14203</p> <p>Work Location of Insured. (Only required if coverage is specifically limited to certain locations in New York State, i.e., a Wrap-Up Policy)</p>	<p>1b. Business Telephone Number of Insured (716) 852-2010</p> <p>1c. NYS Unemployment Insurance Employer Registration Number of Insured</p> <p>1d. Federal Employer Identification Number of Insured or Social Security Number: 16-0430730</p>
<p>2. Name and Address of Entity Requesting Proof of Coverage (Entity Being Listed as the Certificate Holder)</p> <p>Erie County Water Authority 295 Main St., Suite 350 Buffalo, NY 14203</p> <p>RE: FEC JOB#65904, Ball Pump Station Electrical Substation.</p>	<p>3a. Name of Insurance Carrier Old Republic Insurance Co.</p> <p>3b. Policy Number of Entity Listed in Box "1a" MWC3071090018</p> <p>3c. Policy effective period 4/1/2018 to 4/1/2019.</p> <p>3d. The Proprietor, Partners or Executive Officers are</p> <p><input checked="" type="checkbox"/> included. (Only check box if all partners/officers included) <input type="checkbox"/> all excluded or certain partners/officers excluded.</p>

00733
24147
A + XII

This certifies that the insurance carrier indicated above in box "3" insures the business referenced above in box "1a" for workers' compensation under the New York State Workers' Compensation Law. (To use this form, New York (NY) must be listed under Item 3A on the INFORMATION PAGE of the workers' compensation insurance policy). The Insurance Carrier or its licensed agent will send this Certificate of Insurance to the entity listed above as the certificate holder in box "2".

Will the carrier notify the certificate holder within 10 days of a policy being cancelled for non-payment of premium or within 30 days if cancelled for any other reason or if the insured is otherwise eliminated from the coverage indicated on this certificate prior to the end of the policy effective period?

YES NO

This certificate is issued as a matter of information only and confers no rights upon the certificate holder. This certificate does not amend, extend or alter the coverage afforded by the policy listed, nor does it confer any rights or responsibilities beyond those contained in the referenced policy.

This certificate may be used as evidence of a Workers' Compensation contract of insurance only while the underlying policy is in effect.

Please Note: Upon cancellation of the workers' compensation policy indicated on this form, if the business continues to be named on a permit, license or contract issued by a certificate holder, the business must provide that certificate holder with a new Certificate of Workers' Compensation Coverage or other authorized proof that the business is complying with the mandatory coverage requirements of the New York State Workers' Compensation Law.

Under penalty of perjury, I certify that I am an authorized representative or licensed agent of the insurance carrier referenced above and that the named insured has the coverage as depicted on this form.

APPROVED MAY 29 2018

Approved by: Edward F. Walsh, Jr.
(Print name of authorized representative or licensed agent of insurance carrier)

Approved by: Edward F. Walsh Jr.
(Signature) 5/22/2018
(Date)

Title: President

Telephone Number of authorized representative or licensed agent of insurance carrier: 716-853-3820

Please Note: Only insurance carriers and their licensed agents are authorized to issue Form C-105.2. Insurance brokers are NOT authorized to issue it.

Old Republic Insurance Company

A.M. Best #: 000733 NAIC #: 24147 FEIN #: 250410420

Mailing Address

P.O. Box 789
Greensburg, PA 15601-0789
United States

[View Additional Address Information](#)

Web: www.oldrepublic.com

Phone: 724-834-5000

Fax: 724-834-8204

Financial Strength Rating



Assigned to insurance companies that have, in our opinion, a superior ability to meet their ongoing insurance obligations.

[View additional news, reports and products for this company.](#)

Based on A.M. Best's analysis, 058439 - Old Republic International Corporation is the **AMB Ultimate Parent** and identifies the topmost entity of the corporate structure. [View a list of operating insurance entities in this structure.](#)

Best's Credit Ratings

Financial Strength Rating View Definition

Rating: A+ (Superior)
Financial Size Category: XII (\$1 Billion to \$1.25 Billion)
Outlook: Stable
Action: Affirmed
Effective Date: April 25, 2018
Initial Rating Date: June 30, 1940

Long-Term Issuer Credit Rating View Definition

Long-Term: aa-
Outlook: Stable
Action: Affirmed
Effective Date: April 25, 2018
Initial Rating Date: June 20, 2005



CERTIFICATE OF INSURANCE COVERAGE
DISABILITY AND PAID FAMILY LEAVE BENEFITS LAW

PART 1. To be completed by Disability and Paid Family Leave Benefits Carrier or Licensed Insurance Agent of that Carrier

<p>1a. Legal Name & Address of Insured (use street address only)</p> <p>Ferguson Electric Construction Co., Inc. 333 Ellicott Street Buffalo, New York 14203.</p>	<p>1b. Business Telephone Number of Insured</p> <p>1c. Federal Employer Identification Number of Insured or Social Security Number 16-0430730</p>
<p>2. Name and Address of Entity Requesting Proof of Coverage (Entity Being Listed as the Certificate Holder)</p> <p>Erie County, Water Authority 295 Main Street, Suite 350 Buffalo, New York 14203</p> <p>RE: FEC JOB#65904: Ball Pump Station Electrical Substation.</p>	<p>3a. Name of Insurance Carrier AETNA LIFE INSURANCE COMAPANY</p> <p>3b. Policy Number of Entity Listed in Box "1a" GS-888470-315</p> <p>3c. Policy effective period 01/01/2018 to 01/01/2019</p> <p style="text-align: right;">06006 60064 A XV</p>

4. Policy provides the following benefits:

A. Both disability and paid family leave benefits.
 B. Disability benefits only.
 C. Paid family leave benefits only.

5. Policy covers:

A. All of the employer's employees eligible under the NYS Disability and Paid Family Leave Benefits Law.
 B. Only the following class or classes of employer's employees:

Under penalty of perjury, I certify that I am an authorized representative or licensed agent of the insurance carrier referenced above and that the named insured has NYS Disability and/or Paid Family Leave Benefits insurance coverage as described above.

Date Signed May 24, 2018 By Anaal Bhatt
(Signature of insurance carrier's authorized representative or NYS Licensed Insurance Agent of that insurance carrier)

Telephone Number (860) 273-1237 Name and Title AANAAL BHATT, COMPLIANCE CONSULTANT

IMPORTANT: If Boxes 4A and 5A are checked, and this form is signed by the insurance carrier's authorized representative or NYS Licensed Insurance Agent of that carrier, this certificate is COMPLETE. Mail it directly to the certificate holder. If Box 4B, 4C or 5B is checked, this certificate is NOT COMPLETE for purposes of Section 220, Subd. 8 of the NYS Disability and Paid Family Leave Benefits Law. It must be mailed for completion to the Workers' Compensation Board, Plans Acceptance Unit, PO Box 5200, Binghamton, NY 13902-5200.

PART 2. To be completed by the NYS Workers' Compensation Board (Only if Box 4C or 5B of Part 1 has been checked)

**State of New York
Workers' Compensation Board**

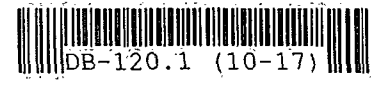
According to information maintained by the NYS Workers' Compensation Board, the above-named employer has complied with the NYS Disability and Paid Family Leave Benefits Law with respect to all of his/her employees.

Date Signed _____ By _____
(Signature of Authorized NYS Workers' Compensation Board Employee)

Telephone Number _____ Name and Title _____

Please Note: Only insurance carriers licensed to write NYS disability and paid family leave benefits insurance policies and NYS licensed insurance agents of those insurance carriers are authorized to issue Form DB-120.1. Insurance brokers are NOT authorized to issue this form.

APPROVED MAY 29 2018



Aetna Life Insurance Company

A.M. Best #: 006006 NAIC #: 60054 FEIN #: 066033492

Mailing Address

151 Farmington Avenue RT21
Hartford, CT 06156
United States

[View Additional Address Information](#)

Web: www.aetna.com

Phone: 860-273-0123

Fax: 860-273-1303

Financial Strength Rating



Assigned to insurance companies that have, in our opinion, an excellent ability to meet their ongoing insurance obligations.

[View additional news, reports and products for this company.](#)

Based on A.M. Best's analysis, 058700 - Aetna Inc. is the **AMB Ultimate Parent** and identifies the topmost entity of the corporate structure. [View a list of operating insurance entities in this structure.](#)

Best's Credit Ratings	
Financial Strength Rating View Definition	
Rating:	A u (Excellent)
Affiliation Code:	g (Group)
Financial Size Category:	XV (\$2 Billion or greater)
Implication:	Negative
Action:	Under Review
Effective Date:	December 06, 2017
Initial Rating Date:	June 30, 1928
Long-Term Issuer Credit Rating View Definition	
Long-Term:	a u
Implication:	Negative
Action:	Under Review
Effective Date:	December 06, 2017
Initial Rating Date:	March 04, 2005

Erie County Water Authority Insurance Requirements for Contracting Services

Project Number:: 201600238 - NC-35

Description: Ball Pump Station Electrical Substation

The following minimum insurance requirements shall apply to contractors providing services to the Erie County Water Authority (ECWA). If a service or project, in the opinion of ECWA, represents an unusual or exceptional risk, ECWA may establish additional insurance requirements for that service or project. All insurance required herein shall be obtained at the sole cost and expense of the contractor, including deductibles and self-insured retentions, and shall be in full force and effect on the contract commencement date and for the duration of the contract. These requirements include but are not limited to the minimum insurance requirements.

An X indicates insurance coverage is required.

X **Commercial General Liability Insurance:** (including, but not limited to, Bodily (Personal) Injury, Premises Operations, Property Damage Liability (broad form), Contractual Liability, Advertising Injury, Independent Contractors, Product Liability, Completed Operations Liability and Explosion, Collapse and Underground Coverage) – in an amount not less than \$1,000,000 combined single limit and \$2,000,000 in the aggregate:

 Per Policy

 X Per Project or Job

 Per Location

There should be no exclusions for any claims filed, actual or alleged, for violation of any applicable statute including, but not limited to, the New York State or federal labor laws, ordinances, administrative orders, executive orders, rules, regulations, or decrees of any court of competent jurisdiction.

X **Commercial Business Automobile Insurance** in an amount of not less than \$1,000,000 each accident and shall cover liability arising out of any automobile owned, leased, hired, borrowed and non-owned automobiles. Additionally, if vehicles are used for transporting hazardous materials, the contractor shall obtain and maintain the “broadened” coverage (endorsement CA 99 48), as well as proof of MCS 90 04 00.

X **Excess Umbrella Liability Insurance** in an amount of not less than:

___ \$1,000,000 in the aggregate

___ \$2,000,000 in the aggregate

___ \$3,000,000 in the aggregate

___ \$4,000,000 in the aggregate

X \$5,000,000 in the aggregate

___ **Per Policy**

X **Per Project or Job**

___ **Per Location**

X **All-Risk Installation Floater:** Builder's risk completed value form based on the total value of the project, providing coverage for work performed, equipment, supplies and materials at the project location, as well as any off-site storage location.

X **Pollution Legal Liability Insurance** in an amount of not less than:

___ \$1,000,000 in the aggregate

___ \$2,000,000 in the aggregate

___ \$3,000,000 in the aggregate

___ \$4,000,000 in the aggregate

X \$5,000,000 in the aggregate

___ **Per Policy**

X **Per Project or Job**

___ **Per Location**

And, if disposal of materials is involved, the disposal site operator must carry

Pollution Legal Liability Insurance in an amount of not less than:

___ \$1,000,000 in the aggregate

___ \$2,000,000 in the aggregate

___ \$3,000,000 in the aggregate

___ \$4,000,000 in the aggregate

X \$5,000,000 in the aggregate

___ Per Policy

X Per Project or Job

___ Per Location

X **Cyber and Privacy & Security Coverage:**

All vendors with access to confidential records and/or access to any of ECWA's communication networks, servers, etc. must carry Cyber Liability coverage for damages arising from a failure of computer security, or wrongful release of private information including expenses for notification as required by local, state or federal guidelines. Limit of liability must be at least One Million and 00/100 Dollars (\$1,000,000.00) per claim and One Million and 00/100 Dollars (\$1,000,000.00) in the aggregate. Any retroactive date or prior acts exclusion must predate both the date of this agreement and any earlier commencement of any services. If coverage is on a "claims made basis", a 2 to 5 year extended reporting provision must be included.

X **Workers' Compensation and Employers' Liability and New York State Disability Benefits Insurances**, as required by New York State statute. If employees of the contractor will be working on or near navigable waters, US Longshore and Harbor Workers Compensation Act endorsement must be included.

Certificates of Insurance, on forms approved by the New York State Department of Insurance, must be submitted to ECWA prior to the award of contract. Renewals of Certificates of Insurance, on forms approved by the New York State Department of Insurance, must be received by ECWA 30 days prior to the expiration of the insurance policy period.

Certificates of Insurance and renewals, on forms approved by the New York State Department of Insurance, must be submitted to ECWA prior to the award of contract. Each insurance carrier issuing a Certificate of Insurance shall be rated by A. M. Best no lower than "A-" with a Financial Strength Code (FSC) of at least VII. The professional service provider shall name ECWA, its officers, agents and employees as additional insured on a Primary and Non-Contributory Basis, including a Waiver of Subrogation endorsement (form CG 20 26 11 85 or equivalent), on all applicable liability policies. Any liability coverage on a "claims made" basis should be designated as such on the Certificate of Insurance.

To avoid confusion with similar insurance company names and to properly identify the insurance company, please make sure that the insurer's National Association of Insurance Commissioners (N.A.I.C.) identifying number or A. M. Best identifying number appears on the Certificate of Insurance. Also, at the top of the Certificate of Insurance, please list the project number.

Acceptance of a Certificate of Insurance and/or approval by ECWA shall not be construed to relieve the outside vendor of any obligations, responsibilities or liabilities.

Certificates of Insurance should be e-mailed to AALESSI@ECWA.ORG. or mailed to Mr. Anthony Alessi, ECWA Claims Representative/Risk Manager, Erie County Water Authority, 295 Main Street – Room 350, Buffalo, New York 14203-2494, or If you have any questions you can contact Mr. Alessi by e-mail or phone (716) 849-8477.

Please refer to the bid and the contract document(s) for additional information regarding insurance requirements.

APPENDIX C

PREVAILING WAGE RATE SCHEDULE





Andrew M. Cuomo, Governor

Roberta Reardon, Commissioner

Erie County Water Authority

Richard Rosenberry, Project Engineer
Nussbaumer & Clarke, Inc.
3556 Lake Shore Road
Suite 500
Buffalo NY 14219-1494

Schedule Year 2016 through 2017
Date Requested 06/14/2017
PRC# 2017006324

Location Ball Pump Station
Project ID# 16J1-0091
Project Type Ball Pump Station Electrical Substation Contract No. NC-35

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 2016 through June 2017. 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.state.ny.us. 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 "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.state.ny.us.

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.state.ny.us.

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.state.ny.us.

Payrolls and Payroll Records

Every contractor and subcontractor MUST keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. Payrolls must be maintained for at least Five (5) years from the project's date of completion. See Spota Bill Notice. 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 journeyworkers 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 journeyworker's wage rate for the classification of work the employee is actually performing.

NYS DOL 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

Erie County Water Authority
Richard Rosenberry, Project Engineer
Nussbaumer & Clarke, Inc.
3556 Lake Shore Road
Suite 500
Buffalo NY 14219-1494

Schedule Year 2016 through 2017
Date Requested 06/14/2017
PRC# 2017006324

Location Ball Pump Station
Project ID# 16J1-0091
Project Type Ball Pump Station Electrical Substation Contract No. NC-35

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



IMPORTANT NOTICE

FOR

CONTRACTORS & CONTRACTING AGENCIES

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' concerns with regard to 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.*

NOTE: This change does not affect the Department's ability to request and receive the entire social security number from employers during the course of its public work / prevailing wage investigations.

**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.

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.

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.state.ny.us .



New York State Department of Labor
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 such as
 - unemployment benefits, if 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 required by New York State and Federal Law.

Penalties for paying 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, 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 1(866)435-1499 or send an email to dol.misclassified@labor.state.ny.us. All complaints of fraud and violations are taken seriously and you can remain anonymous.

Employer Name:

WORKER NOTIFICATION

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

Effective February 24, 2008

This provision is an addition to the existing prevailing 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 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 particular job classification. The required notification will be provided with each wage schedule, may be downloaded from our website www.labor.state.ny.us or made available upon request by contacting the Bureau of Public Work at 518-457-5589.

* In the event that the required information will not fit on the pay stub, an accompanying sheet or attachment of the information will suffice.

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: _____



OSHA 10-hour Construction Safety and Health Course – S1537-A

Effective July 18, 2008

This provision is an addition to the existing prevailing wage rate law, Labor Law §220, section 220-h. It requires that on all public work projects of at least \$250,000.00, all laborers, workers and mechanics working on the site, be certified as having successfully completed the OSHA 10-hour construction safety and health course. It further requires that the advertised bids and contracts for every public work contract of at least \$250,000.00, contain a provision of this requirement.

NOTE: The OSHA 10 Legislation only applies to workers on a public work project that are required, under Article 8, to receive the prevailing wage.

Where to find OSHA 10-hour Construction Course

1. NYS Department of Labor website for scheduled outreach training at:

www.labor.state.ny.us/workerprotection/safetyhealth/DOSH_ONSITE_CONSULTATION.shtm

2. OSHA Training Institute Education Centers:

Rochester Institute of Technology OSHA Education Center

Rochester, NY

Donna Winter

Fax (585) 475-6292

e-mail: dlwtpo@rit.edu

(866) 385-7470 Ext. 2919

www.rit.edu/~outreach/course.php3?CourseID=54

Atlantic OSHA Training Center

UMDNJ – School of Public Health

Piscataway, NJ

Janet Crooks

Fax (732) 235-9460

e-mail: crooksje@umdnj.edu

(732) 235-9455

<https://ophp.umdnj.edu/wconnect/ShowSchedule.awp?~GROUP~AOTCON~10~>

Atlantic OSHA Training Center

University at Buffalo

Buffalo, New York

Joe Syracuse

Fax (716) 829-2806

e-mail: japs@buffalo.edu

(716) 829-2125

http://www.smbs.buffalo.edu/CENTERS/trc/schedule_OSHA.php

Keene State College

Manchester, NH

Leslie Singleton

e-mail: lsingleton@keene.edu

(800) 449-6742

www.keene.edu/courses/print/courses_oshafm

3. List of trainers and training schedules for OSHA outreach training at:

www.OutreachTrainers.org

Requirements for OSHA 10 Compliance

Chapter 282 of the Laws of 2007, codified as Labor Law 220-h took effect on July 18, 2008. The statute provides as follows:

The advertised specifications for every contract for public work of \$250,000.00 or more 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 of 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 518-485-5696.

WICKS Reform 2008

(For all contracts advertised or solicited for bid on or after 7/1/08)

- Raises the threshold for public work projects subject to the Wicks Law requiring separate specifications and bidding for the plumbing, heating and electrical work. The total project's threshold would increase from \$50,000 to: \$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 work 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 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.
- Reduces from 15 to 7 days the period in which contractors must pay subcontractors.

IMPORTANT INFORMATION

**Regarding Use of Form PW30.1
(Previously 30R)**

“Employer Registration for Use of 4 Day / 10 Hour Work Schedule”

To use the ‘4 Day / 10 Hour Work Schedule’:

There **MUST** be a *Dispensation of Hours (PW30)* in place on the project

AND

You **MUST** register your intent to work 4 / 10 hour days, by completing the PW30.1 Form.

REMEMBER...

The ‘4 Day / 10 Hour Work Schedule’ applies **ONLY** to Job Classifications and Counties listed on the PW30.1 Form.

Do not write in any additional Classifications or Counties.

(Please note : For each Job Classification check the individual wage schedule for specific details regarding their 4/10 hour day posting.)

Instructions for Completing Form PW30.1

(Previously 30R)

“Employer Registration for Use of 4 Day / 10 Hour Work Schedule”

Before completing Form PW30.1 check to be sure ...

- There is a *Dispensation of Hours* in place on the project.
- The 4 Day / 10 Hour Work Schedule applies to the Job Classifications you will be using.
- The 4 Day / 10 Hour Work Schedule applies to the County / Counties where the work will take place.

Instructions (Type or Print legibly):

Contractor Information:

- Enter the Legal Name of the business, FEIN, Street Address, City, State, Zip Code; the Company's Phone and Fax numbers; and the Company's email address (if applicable)
- Enter the Name of a Contact Person for the Company along with their Phone and Fax numbers, and the personal email address (if applicable)

Project Information:

- Enter the Prevailing Rate Case number (PRC#) assigned to this project
- Enter the Project Name / Type (i.e. Smithtown CSD – Replacement of HS Roof)
- Enter the Exact Location of Project (i.e. Smithtown HS, 143 County Route #2, Smithtown, NY; Bldgs. 1 & 2)
- If you are a Subcontractor, enter the name of the Prime Contractor for which you work
- On the Checklist of Job Classifications -
 - Go to pages 2 and 3 of the form
 - Place a checkmark in the box to the right of the Job Classification you are choosing
 - Mark all Job Classifications that apply

Do not write in any additional Classifications or Counties.

Requestor Information:

- Enter the name of the person submitting the registration, their title with the company, and the date the registration is filled out

Return Completed Form:

- Mail the completed PW30.1 form to: NYSDOL Bureau of Public Work, SOBC – Bldg.12 – Rm.130, Albany, NY 12240 -OR-
- Fax the completed PW30.1 form to: NYSDOL Bureau of Public Work at (518)485-1870



Department of Labor

Bureau of Public Work Harriman
State Office Campus
Building 12, Room 130
Albany, New York 12240
Phone: (518) 457-5589 | Fax: (518) 485-1870
www.labor.ny.gov

Employer Registration for Use of 4 Day / 10 Hour Work Schedule

Before completing this form, make sure that:

- There is a **Dispensation of Hours** in place on the project.
- The 4 Day / 10 Hour Work Schedule applies to the Job Classifications you will be using.
- The 4 Day / 10 Hour Work Schedule applies to the County / Counties where the work will take place.

Please **type or print** the requested information and then **mail or fax** to the address above.

Contractor Information

Company Name: _____ FEIN: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Phone No: _____ Fax No: _____ Email: _____

Contact Person: _____

Phone No: _____ Fax No: _____ Email: _____

Project Information

Project PRC#: _____ Project Name/Type: _____

Exact Location of Project: _____ County: _____

(If you are Subcontractor)

Prime Contractor Name: _____

Job Classification(s) to Work 4/10 Schedule: *(Choose all that apply on Job Classification Checklist - Pages 3-8)*
*** Do not write in any additional Classifications or Counties***

Requestor Information

Name: _____

Title: _____ Date: _____

Please use the list below with the number assigned to each county as a reference to the corresponding numbers listed in the following pages under **Entire Counties & Partial Counties**.

- | | | | |
|-----|-----------------------------|-----|---------------------------------|
| 1. | Albany County | 33. | Oneida County |
| 2. | Allegany County | 34. | Onondaga County |
| 3. | Bronx County | 35. | Ontario County |
| 4. | Broome County | 36. | Orange County |
| 5. | Cattaraugus County | 37. | Orleans County |
| 6. | Cayuga County | 38. | Oswego County |
| 7. | Chautauqua County | 39. | Otsego County |
| 8. | Chemung County | 40. | Putnam County |
| 9. | Chenango County | 41. | Queens County |
| 10. | Clinton County | 42. | Rensselaer County |
| 11. | Columbia County | 43. | Richmond County (Staten Island) |
| 12. | Cortland County | 44. | Rockland County |
| 13. | Delaware County | 45. | Saint Lawrence County |
| 14. | Dutchess County | 46. | Saratoga County |
| 15. | Erie County | 47. | Schenectady County |
| 16. | Essex County | 48. | Schoharie County |
| 17. | Franklin County | 49. | Schuyler County |
| 18. | Fulton County | 50. | Seneca County |
| 19. | Genesee County | 51. | Steuben County |
| 20. | Greene County | 52. | Suffolk County |
| 21. | Hamilton County | 53. | Sullivan County |
| 22. | Herkimer County | 54. | Tioga County |
| 23. | Jefferson County | 55. | Tompkins County |
| 24. | Kings County (Brooklyn) | 56. | Ulster County |
| 25. | Lewis County | 57. | Warren County |
| 26. | Livingston County | 58. | Washington County |
| 27. | Madison County | 59. | Wayne County |
| 28. | Monroe County | 60. | Westchester County |
| 29. | Montgomery County | 61. | Wyoming County |
| 30. | Nassau County | 62. | Yates County |
| 31. | New York County (Manhattan) | | |
| 32. | Niagara County | | |

Job Classification Checklist

(Place a checkmark by all classifications that will be using the 4/10 schedule)

*** Do not write in any additional Classifications or Counties***

Job Classification	Tag #	Entire Counties	Partial Counties	Check Box
Carpenter – Building	276B-All	7	2, 5	
Carpenter – Building	276B-Cat	15	5	
Carpenter – Building	276-B-LIV	26, 28, 35, 59	61	
Carpenter – Building	276B-Gen	19, 32, 37	61	
Carpenter – Heavy & Highway	276HH-All	2, 5, 7		
Carpenter – Heavy & Highway	276HH-Erie	15		
Carpenter – Heavy & Highway	276HH- Gen	19, 32, 37, 61		
Carpenter – Heavy & Highway	276HH-Liv	26, 28, 35, 59		
Carpenter – Residential	276R-All	7	2, 5	
Carpenter – Building	277B-Bro	4, 54		
Carpenter – Building	277B-CAY	6, 50, 62		
Carpenter – Building	277B-CS	8, 12, 49, 51, 55	2	
Carpenter – Building	277 JLS	23, 25, 45		
Carpenter – Building	277 omh	22, 27, 33		
Carpenter – Building	277 On	34		
Carpenter – Building	277 Os	38		
Carpenter – Building	277CDO Bldg	9, 13, 39		
Carpenter – Heavy & Highway	277CDO HH	9, 13, 39		
Carpenter – Heavy & Highway	277HH-BRO	4, 6, 8, 12, 22, 23, 25, 27, 33, 34, 38, 45, 49, 50, 51, 54, 55, 62		
Carpenter – Building	291B-Alb	1, 18, 20, 29, 42, 47, 48		
Carpenter – Building	291B-Cli	10, 16, 17		
Carpenter – Building	291B-Ham	21, 57, 58		
Carpenter – Building	291B-Sar	46		
Carpenter – Heavy & Highway	291HH-Alb	1, 10, 16, 17, 18, 20, 21, 29, 42, 46, 47, 48, 57, 58		
Electrician	25m	30, 52		
Electrician – Teledata Cable Splicer	43	12, 22, 27, 33, 38	6, 9, 34, 39, 55, 59	

Job Classification Checklist

(Place a checkmark by all classifications that will be using the 4/10 schedule)

*** Do not write in any additional Classifications or Counties***

Job Classification	Tag #	Entire Counties	Partial Counties	Check Box
Electrician	86	26, 28	19, 35, 37, 59, 61	
Electrician	840 Teledata and 840 Z1	62	6, 34, 35, 50, 59	
Electrician	910	10, 16, 17, 23, 25, 45		
Electrical Lineman	1049Line/Gas	30, 41, 52		
Electrical Lineman	1249a	1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 32, 33, 34, 35, 36, 37, 38, 39, 40, 42, 44, 46, 47, 48, 49, 50, 45, 51, 53, 54, 55, 56, 57, 58, 59, 61, 62		
Electrical Lineman	1249a West	60		
Electrical Lineman	1249a-LT	1, 2, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 32, 33, 34, 35, 37, 38, 39, 42, 46, 47, 48, 49, 50, 45, 51, 53, 54, 55, 57, 58, 59, 61, 62		
Electrical Lineman	1249aREG8LT	11, 14, 36, 40, 44, 56		
Electrical Lineman	1249aWestLT	60		
Elevator Constructor	138	11, 14, 20, 36, 40, 53, 56	13, 44, 60	
Elevator Constructor	14	2, 5, 7, 15, 19, 32, 37, 61		
Elevator Constructor	27	8, 26, 28, 35, 49, 50, 51, 59, 62		
Elevator Constructor	35	1, 10, 16, 18, 21, 22, 29, 39, 42, 46, 47, 48, 57, 58		
Elevator Constructor	62.1	4, 6, 9, 12, 23, 25, 27, 33, 34, 38, 45, 54, 55	13	
Glazier	201	1, 10, 11, 16, 17, 18, 20, 21, 29, 42, 46, 47, 48, 57, 58		
Glazier	660r	2, 5, 7, 15, 19, 32, 37, 61		
Glazier	660	2, 5, 7, 15, 19, 32, 37, 61		
Glazier	677.1	23, 25, 26, 28, 35, 45, 50, 59, 62		
Glazier	677Z-2	6, 12, 22, 27, 33, 34, 38		
Glazier	677z3	4, 8, 9, 13, 39, 49, 51, 54, 55		
Glazier	677r.2	6, 12, 22, 27, 33, 34, 38		
Insulator – Heat & Frost	30-Syracuse	4, 6, 8, 9, 12, 22, 23, 25, 27, 33, 34, 38, 39, 49, 50, 45, 54, 55		
Laborer – Building	621b	2, 7	5	
Laborer – Building	633 bON	34		

Job Classification Checklist

(Place a checkmark by all classifications that will be using the 4/10 schedule)

*** Do not write in any additional Classifications or Counties***

Job Classification	Tag #	Entire Counties	Partial Counties	Check Box
Laborer – Building	633b Cay	6		
Laborer – Building	633bOS	38		
Laborer – Building	785(7)	4	9, 13, 54	
Laborer – Building	785B-CS	8, 51	49	
Laborer – Building	7-785b	12, 55	49, 54	
Laborers – Heavy & Highway	157h/h	47	18, 29, 46	
Laborers – Heavy & Highway	190 h/h	1, 42, 58	11, 20, 46	
Laborers – Heavy & Highway	35/2h	21, 22, 27, 33	18, 29	
Laborer – Residential	621r	2, 7	5	
Laborers – Tunnel	157	47	18, 29, 46	
Laborers – Tunnel	35T	21, 22, 27, 33	18, 29	
Laborers – Tunnel	190	1, 42, 58	11, 20, 46	
Mason – Building	2TS.1	1, 10, 11, 16, 17, 18, 20, 21, 29, 42, 46, 47, 48, 57, 58		
Mason – Building	2TS.2	22, 23, 25, 33, 45	27	
Mason – Building	2TS.3	6, 34, 38	27	
Mason – Building	2b-on	34		
Mason – Building	2b.1	1, 11, 18, 20, 21, 29, 42, 46, 47, 48, 58	57	
Mason – Building	2b.2	22, 33	25	
Mason – Building	2b.3	6, 34	27	
Mason – Building	2b.4	38		
Mason – Building	2b.5	23	25	
Mason – Building	2b.6	45		
Mason – Building	2b.8	10, 16, 17	57	
Mason – Building	3b-Co-Z2	8, 49, 51	2	
Mason – Building	3B-Z1	19, 26, 28, 35, 50, 59, 61, 62		
Mason – Building – Residential	3B-Z1R	19, 26, 28, 35, 50, 59, 61, 62		
Mason – Building	3B-Bing-Z2	4, 9, 13, 39, 54		
Mason – Building	3B-lth-Z2	12, 55		

Job Classification Checklist

(Place a checkmark by all classifications that will be using the 4/10 schedule)

*** Do not write in any additional Classifications or Counties***

Job Classification	Tag #	Entire Counties	Partial Counties	Check Box
Mason – Building	3B-Jam-Z2	7	2, 5	
Mason – Building – Residential	3B-Jam-Z2R	2, 4, 8, 7, 9, 12, 39, 13, 49, 51, 54, 55	5	
Mason – Building	3B-Z3	15, 32	5	
Mason – Building	3B-Z3.Orleans	37		
Mason – Residential	3B-Z3R	15, 32	5	
Mason – Residential	3B-z3R.Orleans	37		
Mason - Heavy & Highway	3h	2, 4, 8, 7, 9, 12, 13, 19, 26, 28, 35, 37, 39, 49, 50, 51, 54, 55, 59, 61, 62	5, 15, 32	
Mason – Tile Finisher	3TF-Z1	19, 26, 28, 35, 50, 59, 61, 62		
Mason – Tile Finisher	3TF-Z2	2, 4, 8, 7, 9, 12, 13, 39, 49, 51, 54, 55	5	
Mason – Tile Finisher	3TF-Z3	15, 32, 37	5	
Mason – Tile Finisher	3TF-Z1R	19, 26, 28, 35, 50, 59, 61, 62		
Mason – Tile Finisher	3TF-Z2R	2, 4, 7, 9, 12, 13, 39, 49, 51, 54, 55	5	
Mason – Tile Finisher	3TF-Z3R	15, 32, 37	5	
Mason – Tile Setter	3TS-Z1	19, 26, 28, 35, 50, 59, 61, 62		
Mason – Tile Setter Residential	3TS-Z1R	19, 26, 28, 35, 50, 59, 61, 62		
Mason – Tile Setter	3TS-Z2	2, 4, 7, 8, 9, 12, 13, 39, 49, 51, 54, 55	5	
Mason – Tile Setter Residential	3TS-Z2R	2, 4, 7, 8, 9, 12, 13, 39, 49, 51, 54, 55	5	
Mason – Tile Setter	3TS-Z3	15, 32, 37	5	
Mason – Tile Setter Residential	3TS-Z3R	15, 32, 37	5	
Mason – Building/Heavy & Highway	780	3, 24, 30, 31, 41, 43, 52		
Operating Engineer - Heavy & Highway	137H/H	40, 60	14	
Operating Engineer – Heavy & Highway	158-832H	2, 8, 26, 28, 35, 49, 51, 59, 62	19	
Operating Engineer – Heavy & Highway	158-H/H	1, 4, 9, 10, 11, 14, 16, 17, 18, 20, 21, 22, 29, 39, 42, 46, 47, 48, 54, 57, 58		
Operating Engineer – Heavy & Highway	158-545h	6, 12, 23, 25, 27, 33, 38, 45, 50, 55		
Painter	1456-LS	1, 3, 10, 11, 14, 16, 17, 18, 20, 21, 24, 29, 30, 31, 36, 40, 41, 42, 43, 44, 46, 47, 48, 52, 53, 56, 57, 58, 60		
Painter	150	28, 59, 62	26, 35	

Job Classification Checklist

(Place a checkmark by all classifications that will be using the 4/10 schedule)

*** Do not write in any additional Classifications or Counties***

Job Classification	Tag #	Entire Counties	Partial Counties	Check Box
Painter	178 B	4, 9, 54		
Painter	178 E	8, 49	51	
Painter	178 I	12, 55		
Painter	178 O	13, 39		
Painter	31	6, 22, 27, 33, 34, 50	25, 35, 38	
Painter	38.O		38	
Painter	38.W	23, 45	25	
Painter	4- Buf,Nia,Olean	2, 15, 19, 32, 37, 61	5, 7, 26, 51	
Painter	4-Jamestown		5, 7	
Sheetmetal Worker	46	26, 28, 35, 50, 59, 62		
Sheetmetal Worker	46r	26, 28, 35, 50, 59, 62		
Teamsters – Heavy & Highway	294h/h	1, 11, 18, 20, 29, 42, 46, 47, 48, 58	57	
Teamsters – Heavy & Highway	317bhh	6, 12, 50, 51, 55, 62	2	
Teamsters - Building/Heavy & Highway	456	40, 60		

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.

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. In most cases the payment or provision of supplements is for each hour worked (noted in the schedule as 'Per hour worked'). Some classifications require the payment or provision of supplements for each hour paid (noted in the schedule as 'Per hour paid'), which require supplements to be paid or provided at a premium rate for premium hours worked. Some classifications may also require the payment or provision of supplements for paid holidays on which no work is performed.

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.state.ny.us) 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

Erie County General Construction

Boilermaker

06/01/2017

JOB DESCRIPTION Boilermaker

DISTRICT 12

ENTIRE COUNTIES

Allegany, Cattaraugus, Chautauqua, Chemung, Erie, Genesee, Livingston, Monroe, Niagara, Ontario, Orleans, Schuyler, Steuben, Wayne, Wyoming, Yates

WAGES

Per hours:	07/01/2016	01/01/2017
Boilermaker	\$ 32.25	\$ 33.50

The wage rate will be 90% of the above for Maintenance work on boilers less than 100,000 pph.

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:	\$ 27.99*	\$ 27.99*
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*NOTE: \$26.00 of this amount is for every Hour "Paid"

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

1st Term 12 Months, Terms 3-8 at 6 Months

Per Hour:

1st	\$ 21.96	\$ 22.77
3rd	\$ 23.57	\$ 24.45
4th	\$ 25.93	\$ 26.12
5th	\$ 26.80	\$ 27.80
6th	\$ 28.41	\$ 28.47
7th	\$ 29.03	\$ 30.15
8th	\$ 30.64	\$ 31.83

Supplemental Benefits per hour:

1st to 6th	\$ 26.99**
7th to 8th	\$27.99***

**NOTE: \$25.00 of this amount is for every Hour "Paid"

***NOTE: \$26.00 of this amount is for every Hour "Paid"

12-7

Carpenter - Building

06/01/2017

JOB DESCRIPTION Carpenter - Building

DISTRICT 12

ENTIRE COUNTIES

Erie

PARTIAL COUNTIES

Cattaraugus: Only the Township of Perrysburg and the Village of Gowanda.

WAGES

Per hour:	07/01/2016
Building:	
Carpenter	\$ 31.80

FloorLayer	31.80
Certified Welder	32.80
Hazardous Waste Worker	33.30
Diver-Dry Day	32.80
Diver Tender	32.80
Diver-Wet Day***	61.25

Hazardous Waste Worker: Hazardous sites requiring personal protective equipment.

*** Diver rate applies to all hours worked on the day of dive.

Depth pay for divers:	0' to 80'	no additional fee
	81' to 100'	additional \$0.50 per foot
	101' to 150'	additional \$0.75 per foot
	151' and deeper	additional \$1.25 per foot

Penetration pay:	0' to 50'	no additional fee
	51' to 100'	additional \$0.75 per foot
	101' and deeper	additional \$1.00 per foot

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 worked:

Carpenter(s)	\$ 27.43
Diver(s)	27.43

OVERTIME PAY

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

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

One year terms at the following percentage of Journeyman's base wage:

1st	2nd	3rd	4th
50%	60%	70%	80%

Supplemental Benefits per hour worked:

1st	2nd	3rd	4th
\$10.90	\$10.90	\$13.50	\$13.50

12-276B-Cat

Carpenter - Building / Heavy&Highway

06/01/2017

JOB DESCRIPTION Carpenter - Building / Heavy&Highway

DISTRICT 2

ENTIRE COUNTIES

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

PARTIAL COUNTIES

Orange: The area lying on Northern side of Orange County demarcated by a line drawn from the Bear Mountain Bridge continuing east to the Bear Mountain Circle, continue North on 9W to the town of Cornwall where County Road 107 (also known as Quaker Rd) crosses under 9W, then east on County Road 107 to Route 32, then north on Route 32 to Orrs Mills Rd, then west on Orrs Mills Rd to Route 94, continue west and south on Route 94 to the Town of Chester, to the intersection of Kings Highway, continue south on Kings Highway to Bellvale Rd, west on Bellvale Rd to Bellvale Lakes Rd, then south on Bellvale Lakes Rd to Kain Rd, southeast on Kain Rd to Route 17A, then north and southeast along Route 17A to Route 210, then follow Route 210 to NJ Border.

WAGES

Wages per hour:

	07/01/2016	07/01/2017	07/01/2018
Carpenter - ONLY for		Additional	Additional

Artificial Turf/Synthetic Sport Surface \$ 29.10 \$ 1.50 \$ 1.50

Note - Does not include the operation of equipment. Please see Operating Engineers rates.

SUPPLEMENTAL BENEFITS

Per hour worked plus paid holidays:

Journeyman \$ 20.73

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (2, 17) on HOLIDAY PAGE

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

Notes:

When a holiday falls upon a Saturday, it shall be observed on the preceding Friday. When a holiday falls upon a Sunday, it shall be observed on the following Monday.

An employee taking an unexcused day off the regularly scheduled day before or after a paid Holiday shall not receive Holiday pay.

REGISTERED APPRENTICES

Wages per hour:

One year terms at the following percentage of Journeyman's wage:

1st	2nd	3rd	4th
50%	60%	70%	80%

Supplemental Benefits per hour paid:

1st year term	\$ 10.70
2nd year term	10.70
3rd year term	13.30
4th year term	13.30

2-42AtSS

Carpenter - Heavy&Highway

06/01/2017

JOB DESCRIPTION Carpenter - Heavy&Highway

DISTRICT 12

ENTIRE COUNTIES

Erie

WAGES

Per hour: 07/01/2016

Carpenter	\$ 33.14
Certified Welder	34.64
Diver-Dry Day	34.14
Diver-Wet Day**	58.14
Diver Tender	34.14
Hazardous Material Worker	35.14
Piledriver	33.14
Millwright	34.64
Effluent & Slurry Diver-Wet Day	87.21

Hazardous Waste Worker: Hazardous sites requiring personal protective equipment.

** Diver rate applies to all hours worked on the day of dive.

Depth pay for divers:	0' to 50'	no additional fee
	51' to 100'	additional \$0.50 per foot
	101' to 150'	additional \$0.75 per foot
	151' to 200'	additional \$1.25 per foot
Penetration pay:	0' to 50'	no additional fee
	51' to 100'	additional \$0.75 per foot
	101' to deeper	additional \$1.00 per foot

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 worked:

Carpenter(s) \$ 27.82
Diver(s) 27.82

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (2, 17) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

One year terms at the following percentage of Journeyman's wage:

1st 2nd 3rd 4th
50% 60% 70% 80%

Supplemental benefits per hour worked:

1st 2nd 3rd 4th
\$10.70 \$10.70 \$13.30 \$13.30

12-276HF-Erie

Electrician

06/01/2017

JOB DESCRIPTION Electrician

DISTRICT 3

ENTIRE COUNTIES

Erie

PARTIAL COUNTIES

Cattaraugus: Only the Townships of Ashford, East Otto, Ellicottville, Farmersville, Freedom, Franklinville, Lyndon, Machias, Mansfield, New Albion, Otto, Perrysburg, Persia and Yorkshire.
Genesee: Only the Townships of Alabama, Alexander, Darien, Oakfield, Pembroke and that portion of the Towns of Batavia and Elba that are west of Little Tonawanda Creek; Tonawanda Creek; the City limits of Batavia (in effect prior to Feb. 1, 1970) and State Highway 98 north of the City of Batavia, then north on Highway 98 to the Orleans County line.
Wyoming: Only the Townships of Arcade, Attica, Bennington, Eagle, Java, Orangeville, Sheldon and Wethersfield.

WAGES

Per hour: 07/01/2016 05/29/2017
Electrician* \$ 34.14 Additional \$ 1.85

* Includes teledata work

When shift work is mandated either in the job specification or by the contracting agency the following premiums apply:

17.3% for work from 4:30PM - 1:00AM

31.4% for work from 12:30AM - 9:00AM

Additional \$0.50/hr in shafts over 25 ft. deep and in underground tunnels over 75 ft. long.

Additional \$0.75/hr for work on toothpicks, structural steel, temporary platforms, swinging scaffolds, boatswain chairs, smoke stacks or water towers 30 ft above the floor or for work on rolling scaffolds and ladders over 50 ft.

Additional \$1.50/hr for Cable Splicers on such work as lead, and shielded cable and splices or terminations on cable 5KV and above.

Additional \$1.00/hr for Hot work (Atomic plants).

Additional \$2.00/hr for work on radio, TV, light towers and floating platforms or climbing ladders in excess of 100 ft. high.

SUPPLEMENTAL BENEFITS

Per hour worked:

\$ 24.75*

* NOTE - add 3% of the posted straight time or applicable premium wage rate.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

Hour terms at the following wages:

0 to 1000 to 2000 to 3500 to 5000 to 6500 to 8000
 \$ 12.65 \$ 13.65 \$ 15.35 \$ 18.80 \$ 23.90 \$ 27.30

Supplemental benefits per hour worked:

0 to 2000 to 6500 to 8000
 \$ 11.86* \$ 21.05* \$ 24.75*

* NOTE - add 3% of the posted straight time or applicable premium wage rate.

3-41

Elevator Constructor

06/01/2017

JOB DESCRIPTION Elevator Constructor

DISTRICT 3

ENTIRE COUNTIES

Allegany, Cattaraugus, Chautauqua, Erie, Genesee, Niagara, Orleans, Wyoming

WAGES

Per hour:	07/01/2016	01/01/2017
Elevator Constructor	\$ 45.78	\$ 46.80
Helper	32.05	32.76

** IMPORTANT NOTICE - EFFECTIVE 04/01/2009 **

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday.

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:	\$ 29.99*	\$ 31.59*
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* Note - add 6% of regular hourly rate for all hours worked.

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

REGISTERED APPRENTICES

Wages per hour:

One year terms at the following percentage of Journeyman's wage:

1st*	2nd	3rd	4th
55%	65%	70%	80%

Supplemental benefits per hour worked:

\$ 29.99**	\$ 31.59**
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* Note - 0-6 months of the 1st year term is paid at 50% of Journeyman's wage with no Supplemental benefits.

** Note - add 6% of regular hourly rate for all hours worked.

3-14

Glazier

06/01/2017

JOB DESCRIPTION Glazier

DISTRICT 3

ENTIRE COUNTIES

Allegany, Cattaraugus, Chautauqua, Erie, Genesee, Niagara, Orleans, Wyoming

WAGES

Per hour:	07/01/2016	05/01/17
Glazier	\$ 26.25	Additional \$ 1.35
Working off Suspended Scaffold (Swing Stage)	27.25	1.35
Maintenance	12.80*	1.00

* Note - This rate to be used only for all repair and replacement work such as glass breakage, glass replacement, door repair and board ups.

**** IMPORTANT NOTICE ****

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 worked:
 Journeymen Glazier \$ 19.77
 Maintenance 12.54

OVERTIME PAY

See (B, E2, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE for Glazier and Glazier Apprentices.
 Paid: See (5, 6) on HOLIDAY PAGE for Maintenance
 Overtime: See (5, 6) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wages per hour:

Glazier: 1000 hour terms at the following percentage of Journeyman's wage:

1st	2nd	3rd	4th	5th	6th	7th	8th
40%	45%	50%	55%	60%	70%	80%	90%

Supplemental benefits per hour worked:

1st & 2nd terms \$ 7.50
 3rd & 4th terms 8.35
 All other terms 9.25

3-660

Insulator - Heat & Frost

06/01/2017

JOB DESCRIPTION Insulator - Heat & Frost

DISTRICT 3

ENTIRE COUNTIES

Allegany, Cattaraugus, Chautauqua, Erie, Niagara, Wyoming

PARTIAL COUNTIES

Genesee: Only the Townships of Alabama, Alexander, Darien, Oakfield and Pembroke.

WAGES

Per Hour:	07/01/2016	05/01/2017	05/01/2018
		Additional	Additional
Heat & Frost Insulator	\$ 32.15	\$ 1.40	\$ 1.40

SUPPLEMENTAL BENEFITS

Per hour worked:
 \$ 21.39

OVERTIME PAY

See (B, *E, **Q) on OVERTIME PAGE
 * Note - Double time after 10 hours on Saturday.
 ** Note - Triple time on Labor Day if WORKED.

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

One year terms at the following percentage of Journeyman's wage:

1st	2nd	3rd	4th
50%	60%	70%	80%

Supplemental Benefits per hour worked:

1st and 2nd \$ 16.99

All other terms 21.39

3-4

Ironworker

06/01/2017

JOB DESCRIPTION Ironworker

DISTRICT 3

ENTIRE COUNTIES

Cattaraugus, Chautauqua

PARTIAL COUNTIES

Allegany: Entire county except the Towns of Birdsall, Burns and Grove.

Erie: All except the Town of Grand Island north of Whitehaven Road.

Genesee: Only the Townships of Alabama, Alexander, Darien and Pembroke

Steuben: Only the Townships of Canisteo, Freemont, Greenwood, Hartsville, Hornell, Hornellsville, Howard, Jasper, Troupsburg and West Union

Wyoming: Only the Townships of Arcade, Attica, Bennington, Eagle, Gainsville, Java, Orangeville, Pike, Sheldon, Warsaw and Wethersfield.

WAGES

Per hour:	07/01/2016	05/01/2017
		Additional
Structural	\$ 30.00	\$ 1.25
Ornamental	30.00	1.25
Layout	30.00	1.25
Rodmen	30.00	1.25
Reinforcing	30.00	1.25
Welders	30.00	1.25
Riggers & Mach. Movers	30.00	1.25
Curtain Wall Erector	30.00	1.25
Window Erector	27.65	1.25
Fence Erector	28.57	1.25

SUPPLEMENTAL BENEFITS

Per hour worked:

Fence erectors	\$ 24.50
All others	26.00

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

One year terms at the following wage:

1st	2nd	3rd	4th
\$ 16.50	\$ 18.50	\$ 20.50	\$ 22.50

Supplemental benefits per hour worked:

1st	2nd	3rd	4th
\$ 11.06	\$ 19.92	\$ 21.18	\$ 22.45

3-6

Ironworker

06/01/2017

JOB DESCRIPTION Ironworker

DISTRICT 3

ENTIRE COUNTIES

Niagara

PARTIAL COUNTIES

Erie: Only that portion of the Township of Grand Island north of Whitehaven Road.

Orleans: Only the Townships of Ridgeway, Shelby and Yates.

WAGES

Per hour:	07/01/2016	05/01/2017
		Additional
Structural	\$ 30.22	\$ 1.25
Ornamental	30.22	1.25
Reinforcing	30.22	1.25
Rigger & Mach. Mover	30.22	1.25

Pre-Engineered	30.22	1.25
Fence Erector	30.22	1.25
Pre-Cast Erector	30.22	1.25
Welder	30.22	1.25
Window Erector	30.22	1.25
Sheeter	33.12	1.25

SUPPLEMENTAL BENEFITS

Per hour worked:
 \$ 26.03

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

One year terms at the following wage:

1st term	\$ 16.50
2nd term	18.50
3rd term	20.50
4th term	22.50

Supplemental benefits per hour worked:

1st term	\$ 10.50
2nd term	17.18
3rd term	18.14
4th term	19.09

3-9

Laborer - Building

06/01/2017

JOB DESCRIPTION Laborer - Building

DISTRICT 3

ENTIRE COUNTIES

Erie

PARTIAL COUNTIES

Cattaraugus: Only the Townships of Perrysburg and the Village Gowanda.

WAGES

CLASS A: Basic, Safety Man, Flagman, Tool Room Man, Nurseryman, Demolition Worker, Top Man, Wrecker, IBC Barriers Except on Structures, Guard Rail, Asphalt Shovelers, Foundation Laborer over 8' in Depth, Hod Carriers, Plaster Tender, Plaster Scaffold Builder, Pneumatic Gas, Electric Tool Operator including all forms of Busters, Jackhammers and Chipping Guns, Steel Burners.

CLASS B: Mortar Mixer, Asphalt Smoothers, Pneumatic Gas, Electric Tool Operator including all forms of Busters, Jackhammers and Chipping Guns over 8' in depth.

CLASS C: Worker on any Swing Scaffold, Blaster, Plumbing Laborer, Wagon Drill Operator, Bottomman (caisson or cofferdam), Laser Setter, Asphalt Rakers, Asphalt Screed Man.

CLASS D: Stone Cutter, Curb Setter and Flag Layer.

CLASS E: Asbestos Removal, Deleader.

CLASS F: Hazardous Waste Worker.

Per hour:	07/01/2016	07/01/2017	07/01/2018	07/01/2019
Building Laborer:		Additional	Additional	Additional
CLASS A	\$ 26.38	\$ 1.25	\$ 1.25	\$ 1.25
CLASS B	26.55	1.25	1.25	1.25
CLASS C	26.66	1.25	1.25	1.25
CLASS D	27.13	1.25	1.25	1.25
CLASS E	27.88	1.25	1.25	1.25
CLASS F	28.38	1.25	1.25	1.25

SUPPLEMENTAL BENEFITS

Per hour worked:

\$ 23.65

OVERTIME PAY

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

HOLIDAY

Paid: See (22) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

Hour terms at the following percentage of Journeyman's wage:

0 to 500 to 1000 to 1500 to 2000 to 2500 to 3000 to 4000
55% 60% 65% 70% 75% 80% 90%

Supplemental benefits per hour worked:

\$ 23.65

3-210b

Laborer - Heavy&Highway

06/01/2017

JOB DESCRIPTION Laborer - Heavy&Highway

DISTRICT 3

ENTIRE COUNTIES

Erie

WAGES

Heavy/Highway Laborer:

GROUP A: Basic, Drill Helper, Flagman, Outboard and Hand Boats, Demolition Worker, Nurseryman, IBC Barriers (except on structures), Guard Rails, Road Markers.

GROUP B: Grade Checker, Chain Saw, Concrete Aggregate Bin, Concrete Bootmen, Gin Buggy, Hand or Machine Vibrator, Jack Hammer, Mason Tender, Mortar Mixer, Pavement Breaker, Handlers of Steel Mesh, Small Generators for Laborers' Tools, Pipe Layers, Vibrator Type Rollers, Tamper, Drill Doctor, Tail or Screw Operator on Asphalt Paver, Water Pump Operators (2" and Single Diaphragm), Nozzle (Asphalt, Gunit, Seeding, and Sand Blasting), Laborers on Chain Link Fence Erection, Rock Splitter and Power Unit, Pusher Type Concrete Saw and all other Gas, Electric, Oil and Air Tool Operators, Wrecking Laborer and Laser Man.

GROUP C: All Rock or Drilling Machine Operators (Except Quarry Master and Similar Type), Acetylene Torch Operators, Asphalt Raker, Powderman and Welder.

GROUP D: Blasters, Curb and Flatwork Formsetter not on structures, Stone or Granite Curb Setters and Stone Cutter.

Per hour: 07/01/2016

Heavy/Highway Laborer:

GROUP A \$ 28.66

GROUP B 28.86

GROUP C 29.06

GROUP D 29.26

For all Deleader & Asbestos work add \$1.00 to Group A rate.

For all Hazardous waste work add \$2.00 to Group A rate.

An additional \$3.00 per hour is required when a single irregular work shift starting any time from 5:00PM to 1:00AM is mandated either in the job specification or by the contracting agency.

Sewer/Water Laborer:

GROUP A: Basic, Flagman, Top man, Wreckers.

GROUP B: Foundation, Plaster tender, Scaffold bootman, Pneumatic, gas, electric, tool operator, jackhammer, chipping guns.

GROUP C: Mortar Mixer, over 8 ft. in depth.

GROUP D: Pavement formsetter, Steelburner, Caisson, Wagon Drill Oper., PipeLayer, Swing Scaffold.

GROUP E: Utility pave driver, Laser operator.

GROUP F: Blaster.

Per hour: 07/01/2016

Sewer/Water Laborer:

GROUP A	\$ 28.66
GROUP B	28.76
GROUP C	28.81
GROUP D	28.91
GROUP E	29.26
GROUP F	29.66

For all Deleader & Asbestos work add \$1.00 to Group A rate.

For all Hazardous waste work add \$2.00 to Group A rate.

An additional \$3.00 per hour is required when a single irregular work shift starting any time from 5:00PM to 1:00AM is mandated either in the job specification or by the contracting agency.

SUPPLEMENTAL BENEFITS

Per hour worked:
\$ 24.15

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

Hour terms at the following percentage of Journeyman's wage:

0 to 500	to 1000	to 1500	to 2000	to 2500	to 3000	to 4000
55%	60%	65%	70%	75%	80%	90%

Supplemental benefits per hour worked:

\$ 24.15

3-210h

Laborer - Tunnel

06/01/2017

JOB DESCRIPTION Laborer - Tunnel

DISTRICT 3

ENTIRE COUNTIES

Erie

WAGES

CLASS A: Mole Nipper, Powder Handler, Changehouse Attendant and Top Laborer.

CLASS B: Air Spade, Jackhammer, Pavement Breaker.

CLASS C: Top Bell.

CLASS D: Bottom Bell, Side or Roofbelt Driller, Maintenance men, Burners, Block Layers, Rodmen, Caulkers, Miners helper, Trackmen, Nippers, Derailmen, Electrical Cablemen, Hosemen, Groutmen, Gravelmen, Form Workers, Movers and Shaftmen, Conveyor men.

CLASS E: Powder Monkey.

CLASS F: Blasters, Ironmen and Cement Worker, Miner, Welder, Heading Driller.

CLASS G: Steel Erectors, Piledriver, Rigger.

Per hour: 07/01/2016

Tunnel Laborer:

CLASS A	\$ 29.16
CLASS B	29.31
CLASS C	29.41
CLASS D	29.91
CLASS E	30.01
CLASS F	30.41
CLASS G	30.66

For all Deleader & Asbestos work add \$1.00 to Class A rate.

For all Hazardous waste add \$2.00 to Class A rate.

An additional \$3.00 per hour is required when a single irregular work shift starting any time from 5:00PM to 1:00AM is mandated either in the job specification or by the contracting agency.

SUPPLEMENTAL BENEFITS

Per hour worked: \$ 24.15

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

Hour terms at the following percentage of Journeyman's wage:

0	to	500	to	1000	to	1500	to	2000	to	2500	to	3000	to	4000
		55%		60%		65%		70%		75%		80%		90%

Supplemental benefits per hour worked:

\$ 24.15

3-210t

Lineman Electrician

06/01/2017

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)

07/01/2016

Lineman, Technician	\$ 47.95
Crane, Crawler Backhoe	47.95
Welder, Cable Splicer	47.95
Digging Machine Operator	43.16
Tractor Trailer Driver	40.76
Groundman, Truck Driver	38.36
Equipment Mechanic	38.36
Flagman	28.77

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	\$ 47.95
Crane, Crawler Backhoe	47.95
Cable Splicer	52.75
Cert. Welder-Pipe Type Cable	50.35
Digging Machine Operator	43.16
Tractor Trailer Driver	40.76
Groundman, Truck Driver	38.36
Equipment Mechanic	38.36
Flagman	28.77

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, Technician, Welder	\$ 49.27
Crane, Crawler Backhoe	49.27
Cable Splicer	54.20
Cert. Welder-Pipe Type Cable	51.73
Digging Machine Operator	44.34
Tractor Trailer Driver	41.88
Groundman, Truck Driver	39.42
Equipment Mechanic	39.42
Flagman	29.56

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, Technician, Welder	\$ 50.46
Crane, Crawler Backhoe	50.46
Cable Splicer	50.46
Digging Machine Operator	45.41
Tractor Trailer Driver	42.89
Groundman, Truck Driver	40.37
Equipment Mechanic	40.37
Flagman	30.28

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 %

**** IMPORTANT NOTICE ****

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.
*Effective 05/06/2013, 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):

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

Journeyman	\$ 21.75
	*plus 7.25% of hourly wage

*The 7.25% 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.

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

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

SUPPLEMENTAL BENEFITS: Same as Journeyman

6-1249a

Lineman Electrician - Teledata

06/01/2017

JOB DESCRIPTION Lineman Electrician - Teledata

DISTRICT 6

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, 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.

	07/01/2016	01/01/2017
Cable Splicer	\$ 30.29	\$ 30.90
Installer, Repairman	28.75	29.33
Teledata Lineman	28.75	29.33
Technician, Equipment Operator	28.75	29.33
Groundman	15.25	15.56

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

SUPPLEMENTAL BENEFITS

Per hour worked:

Journeyman	\$ 4.43	\$ 4.43
	*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

HOLIDAY

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

6-1249LT - Teledata

Lineman Electrician - Traffic Signal, Lighting

06/01/2017

JOB DESCRIPTION Lineman Electrician - Traffic Signal, Lighting

DISTRICT 6

ENTIRE COUNTIES

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

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, chain saws, 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/groundman truck driver may assist in installing conduit, pipe, cables and equipment.

A flagger's duties shall consist of traffic control only.

(Ref #14.01.01)

Per hour:

07/01/2016

Lineman, Technician	\$ 41.65
Crane, Crawler Backhoe	41.65
Certified Welder	43.73
Digging Machine	37.49
Tractor Trailer Driver	35.40
Groundman, Truck Driver	33.32
Equipment Mechanic	33.32
Flagman	24.99

Above rates applicable on all Lighting and Traffic Signal Systems with the installation, testing, operation, maintenance and repair of all traffic control and illumination projects, traffic monitoring systems, road weather information systems and the installation of Fiber Optic Cable.

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%

**** IMPORTANT NOTICE ****

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.
*Effective 05/06/2013, 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	\$ 21.75
	*plus 7.25% of hourly wage

*The 7.25% 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

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.

1st	2nd	3rd	4th	5th	6th	7th
\$ 24.99	\$ 27.07	\$ 29.16	\$ 31.24	\$ 33.32	\$ 35.40	\$ 37.49

SUPPLEMENTAL BENEFITS: Same as Journeyman

6-1249a-LT

Lineman Electrician - Tree Trimmer

06/01/2017

JOB DESCRIPTION Lineman Electrician - Tree Trimmer
ENTIRE COUNTIES

DISTRICT 6

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:

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.

	07/01/2016	01/01/2017
Tree Trimmer	\$ 23.37	\$ 23.95
Equipment Operator	20.61	21.13
Equipment Mechanic	20.61	21.13
Truck Driver	17.26	17.52
Groundman	14.15	14.36
Flag person	10.08	10.23

SUPPLEMENTAL BENEFITS

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

Journeyman	\$ 9.56	\$ 9.98
	*plus 3% of hourly wage	*plus 3% of hourly wage

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

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

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

06/01/2017

JOB DESCRIPTION Mason - Building

DISTRICT 5

ENTIRE COUNTIES

Erie, Niagara

PARTIAL COUNTIES

Cattaraugus: Only the Township of Perrysburg and the Village of Gowanda.

WAGES

	07/01/2016
Per Hour:	
Building:	
Bricklayer	\$ 31.05
Stone Mason	31.05
Tuck Pointer	31.05

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 worked:

Journeyman	\$ 24.53
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OVERTIME PAY

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

*Note - Or other conditions beyond the employer's control such as fire or natural disaster.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

1250 hour terms at the following wage:

1st	2nd	3rd	4th
\$ 17.90	\$ 18.07	\$ 21.34	\$ 25.23

Supplemental benefits per hour worked:

1st	2nd	3rd	4th
\$ 9.82	\$ 16.61	\$ 18.25	\$ 19.87

5-3B-Z3

Mason - Building

06/01/2017

JOB DESCRIPTION Mason - Building

DISTRICT 3

ENTIRE COUNTIES

Erie, Niagara

PARTIAL COUNTIES

Cattaraugus: Only the Township of Perrysburg and the Village of Gowanda.

WAGES

Per hour: 07/01/2016
Plasterer \$ 28.65
Additional \$2.00/hr for work on swing stage over 20 feet.

SUPPLEMENTAL BENEFITS

Per hour worked:
\$ 18.49

OVERTIME PAY

Exterior work only See (B, E, E2, Q) on OVERTIME PAGE.
All other work See (B, E, Q) on OVERTIME PAGE.

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

Hour terms at the following dollar amounts:

0 to 1000	to 2000	to 3000	to 4000	to 4700	to 5400	to 6000	to 7000	to 8000
\$ 12.00	\$ 14.00	\$ 15.00	\$ 16.00	\$ 17.00	\$ 18.00	\$ 19.00	\$ 20.00	\$ 21.00

Supplemental benefits per hour worked:

Hour terms at the following dollar amounts:

0 to 4000	to 4700	to 5400	to 6000	to 8000
\$ 2.50	\$ 3.50	\$ 4.50	\$ 5.50	\$ 7.50

3-9-Pltr

Mason - Building / Heavy&Highway

06/01/2017

JOB DESCRIPTION Mason - Building / Heavy&Highway

DISTRICT 3

ENTIRE COUNTIES

Erie

PARTIAL COUNTIES

Cattaraugus: Only the Township of Perrysburg and the Village of Gowanda.

WAGES

Per hour: 07/01/2016 07/01/2017 07/01/2018
Cement Mason \$ 30.00 Additional \$ 1.75 Additional \$ 1.00
Additional \$0.25 per hr for Swing scaffold or exterior scaffold 42' or higher.
Additional \$1.00 per hr when required to wear respirator.

SUPPLEMENTAL BENEFITS

Per hour paid: \$ 27.92

OVERTIME PAY

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

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

750 hour terms at the following dollar amounts:

1st	2nd	3rd	4th	5th	6th
\$ 13.65	\$ 14.65	\$ 17.65	\$ 19.65	\$ 21.65	\$ 23.65

Supplemental benefits per hour paid:

1st	2nd	3rd	4th	5th	6th
\$ 7.33	\$ 10.15	\$ 11.96	\$ 15.08	\$ 17.34	\$ 20.61

3-111Erie

Mason - Heavy&Highway

06/01/2017

JOB DESCRIPTION Mason - Heavy&Highway

DISTRICT 5

ENTIRE COUNTIES

Allegany, Broome, Chautauqua, Chemung, Chenango, Cortland, Delaware, Genesee, Livingston, Monroe, Ontario, Orleans, Otsego, Schuyler, Seneca, Steuben, Tioga, Tompkins, Wayne, Wyoming, Yates

PARTIAL COUNTIES

Cattaraugus: Entire county except in the Township of Perrysburg and the Village of Gowanda only the Bricklayer classification applies.
Erie: Only the Bricklayer classification applies.
Niagara: Only the Bricklayer classification applies.

WAGES

Per hour: 07/01/2016
Heavy & Highway:
Cement Mason \$30.39
Bricklayer 30.39

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 worked:

Journeyman \$ 20.37

OVERTIME PAY

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

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

1500 hour terms at the following percentage of Journeyman's wage:

1st	2nd	3rd	4th
50%	60%	70%	80%

Supplemental benefits per hour worked:

1st term \$ 13.42
2nd - 4th term 20.37

5-3h

Mason - Tile Finisher

06/01/2017

JOB DESCRIPTION Mason - Tile Finisher

DISTRICT 5

ENTIRE COUNTIES

Erie, Niagara, Orleans

PARTIAL COUNTIES

Cattaraugus: Only the Township of Perrysburg and the Village of Gowanda.

WAGES

Per hour: 07/01/2016
Building:
Marble, Slate, Terrazzo \$ 29.08
and Tile Finisher 29.08

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 worked: \$ 15.60

OVERTIME PAY

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

*Note - Or other conditions beyond the employer's control such as fire or natural disaster.

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

1200 hours 1st and 2nd term and 1300 hours 3rd term at the following wage:

1st	2nd	3rd
\$ 15.21	\$ 17.81	\$ 23.84

Supplemental benefits per hour worked:

1st	2nd	3rd
\$ 7.06	\$ 8.94	\$ 11.87

5-3TF- Z3

Mason - Tile Setter

06/01/2017

JOB DESCRIPTION Mason - Tile Setter

DISTRICT 5

ENTIRE COUNTIES

Erie, Niagara, Orleans

PARTIAL COUNTIES

Cattaraugus: Only in the Township of Perrysburg and the Village of Gowanda.

WAGES

Per hour: 07/01/2016
Building:
Marble, Slate, Terrazzo \$ 31.40
and Tile Setter 31.40

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 worked: \$ 23.68

OVERTIME PAY

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

*Note - Or other conditions beyond the employer's control such as fire or natural disaster.

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

1250 hour terms at the following wage:

1st	2nd	3rd	4th
\$ 17.58	\$ 17.96	\$ 21.19	\$ 25.28

Supplemental benefits per hour worked:

1st	2nd	3rd	4th
\$ 9.89	\$ 16.41	\$ 18.04	\$ 19.42

5-3TS - Z3

Millwright

06/01/2017

JOB DESCRIPTION Millwright

DISTRICT 12

ENTIRE COUNTIES

Erie, Genesee, Niagara, Orleans, Wyoming

WAGES

Per hour:	07/01/2016	07/01/2017
Millwright	\$ 31.30	Additional \$ 1.40/Hr
Certified Welder	32.55	
Hazardous Waste Work	32.55	
Field Machinist	32.55	

SUPPLEMENTAL BENEFITS

Per hour Paid: \$ 26.40

OVERTIME PAY

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

*Note - Saturday may be used as a make-up day and worked at the straight time rate of pay during a work week when conditions such as weather, power failure, fire, or natural disaster prevent the performance of work on a regular scheduled work day.

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

1300 hour terms at the following percentage of Journeyman's wage:

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

Supplemental Benefits per hour worked:

1st	2nd	3rd	4th
\$10.45	\$ 21.62	\$ 23.21	\$ 24.81

12-1163-Gen/Nia/Orl/Wyo

Operating Engineer - Building

06/01/2017

JOB DESCRIPTION Operating Engineer - Building

DISTRICT 12

ENTIRE COUNTIES

Cattaraugus, Chautauqua, Erie, Orleans, Wyoming

PARTIAL COUNTIES

Genesee: Only that portion of the county that lies west of a line down the center of Route 98 excluding that area that lies within the City of Batavia.

WAGES

CLASS A: Air Hoist, All Boom Type Equipment, All Pans and Carry-Alls, Archer Hoist, Asphalt Curb and Gutter Machines, Asphalt Roller, Asphalt Spreader or Paver, Automatic Fine Grade Machine (CMI or similar, first and second operator), Backhoe and Pullhoe, Backhoe and Pullhoe (tractor mounted, rubber tired), Back Filling Machine, Belt Placer (CMI or similar type), Bending Machine (Pipe), Bituminous Spreader and Mixer, Blacktop Plants (Automated and Non-automated), Blast or Rotary Drill (Truck or Track Mounted), Blower for Burning Brush, Boiler (when used for power), Boom Truck (excluding pick-up and delivery), Boring Machine, Bulldozer, Cableway, Cage Hoist, Caisson Auger, Central Mix Plant (and all concrete batching plants), Cherry Picker, Concrete Cleaning Decontamination Machine Operator, Concrete Curb and Gutter Machine, Concrete Curing Machine, Concrete Cutters (Vermeer or Similar Type), Concrete Mixer (over 1/2 cu. yd.), Concrete Pavement Spreaders and Finishers, Concrete Paver, Concrete Pump, Conveyor, Core Drill, Crane, Crusher, Decon of Equipment, Derrick, Dragline, Dredge, Drill Rig (Tractor Mounted), Dual Drum Paver, Electric Pump used in conjunction with Well Point Systems, Elevating Grader (self propelled or towed), Elevator, Excavator (all purpose, hydraulically operated), Farm Tractor with Accessories, Fine Grade Machine, Forklift, Front End Loader, Generator (10 outlets or more), Gradall, Grader, Grout or Guniting Machine, Head Tower, Heavy Equipment Robotics Operator/Mechanic, Helicopter (when used for hoisting), Hoist (one drum), Hoisting Engine, Horizontal Directional Drill Locator, Horizontal Directional Drill Operator, Hydraulic Boom, Hydraulic Hammer (self-propelled), Hydraulic Pipe Jack Machine (or similar type machine), Hydraulic Rock Expander (or similar type machine), Hydraulic System Pumps, Hydro Crane, Hydro Hammer (or similar type), Industrial Tractor, Jersey Spreader, Kolman Plant Loader (and similar type loaders), Laser Screed, Locomotive, Lubrication Truck, Maintenance Engineer, Maintenance, Lubrication Unit or Truck, Mine Hoist, Mixer for Stabilized Base (self-propelled), Monorail, Motorized Hydraulic Pin Puller, Motorized Hydraulic Seeder, Mucking Machine, Mulching Machine, Multiple Drum Hoist (more than one drum in use), Overhead Crane, Peine Crane (or similar type), Pile Driver, Plant Engineer, Pneumatic Mixer, Post Hole Digger and Driver, Power Broom, Pumpcrete, Push Button Hoist, Push or Snatch Cat, Quarry Master or equivalent, Road Widener, Rock Bit Sharpener (all types), Roller (all), Rolling Machine (pipe), Rotomill, Scissors Trucks, Lift, or Boom Lift of any type (when used for hoisting), Scoopmobile, Shovel, Sideboom, Skidsteer/Bobcat (Similar Type), Skimmer, Slip Form Paver (CMI or similar type), Snorkel/Vacuum Truck, Strato-Tower, Stump Chipping Machine, Tire Truck and Drivers performing tire repair (exclude outside vendor), Towed Roller, Tractor Drawn Belt-Type Grader/Loader, Tractor Shovel, Tractor with Towed Accessories, Tractor (when using winch power), Tractors, Trencher, Truck Crane, Truck Mechanic and Helper (exclude Teamsters when repairing their own trucks), Tunnel Shovel, Tube Finisher (CMI and similar type), Ultra High Pressure Waterjet Cutting Tool System Operator/Mechanic, Vacuum Blasting Machine Operator/Mechanic, Vibratory Compactor, Vibro Tamp, Well Drilling Machine, Well Point, Winch, Winch Truck with A Frame.

CLASS B: Aggregate Bin, Aggregate Plant, Apprentice Engineer, Apprentice Engineer Driver, Articulated Off Road Material Hauler, Boiler (used in conjunction with production), CMI and similar type Concrete Spreads (Apprentice Engineer), Cement Bin, Chipping Machine and Chip Spreader, Compressors (4 or less), Compressors (any size, but subject to other provisions for Compressors, Dust Collectors, Generators, Mechanical Heaters, Pumps, Welding Machines - four of any type or combination), Concrete Mixer (1/2 cu. yd. and under), Fireman, Form Tamper, Form Trucks (excluding Teamster or delivery), Fuel Truck or Drivers (exclude Teamster or delivery), Heaters, Heating Boiler (used for temporary heat), Helper on Lubrication Unit or Truck, Jeep Trencher, Power Heaterman, Power Plant in excess of 10 K.W., Pumps, Revinus Widener, Steam Boilers (if manning or license by local law is required), Steam Cleaner (when used for cleaning equipment on the job site), Welding Machine (1 machine over 300 amps or 2 or 3 machines regardless of amps).

Operating Engineer- Building:

Per hour:	07/01/2016
Master Mechanic	\$ 37.56
Asst.Master Mechanic	36.92
Crane(boom over 100ft)	37.24
" (boom over 200ft)	37.49
" (boom over 300ft)	37.99
CLASS A	36.49
CLASS B	31.99

Additional \$1.00 per hour for tunnel work.

Additional \$2.50 per hour for CHEMICAL, HAZARDOUS OR TOXIC WASTE projects.

Additional \$3.00 per hour for all lattice boom cranes and any hydraulic crane over 60 ton capacity.

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyman \$ 29.14*

*Note: Overtime rate is \$39.83 per hour

OVERTIME PAY

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

Note: Code W* Excludes a portion of the package at overtime rate, equaling to \$39.83 and \$39.44(Apprentices)for supplemental benefit.

HOLIDAY

Paid: See (5, 6) on HOLIDAY PAGE

Overtime: See (1) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

New Apprentices, after date of signing, receive the follow wage rates:

First Year: 87.5% of wage rate for the job being performed
 Second Year: 90% of wage rate for the job being performed
 Third Year: 92.5% of wage rate for the job being performed
 Fourth Year: 95% of wage rate for the job being performed

Supplemental benefits Per Hour:

Apprentice Engineers \$ 28.74*

*Note: Overtime rate is \$39.44 per hour.

12-17b

Operating Engineer - Heavy&Highway

06/01/2017

JOB DESCRIPTION Operating Engineer - Heavy&Highway

DISTRICT 12

ENTIRE COUNTIES

Cattaraugus, Chautauqua, Erie, Orleans, Wyoming

PARTIAL COUNTIES

Genesee: Only that portion of the county that lies west of a line down the center of Route 98 excluding that area that lies within the City of Batavia.

WAGES

CLASS A: Air Hoist, All Boom Type Equipment, All Pans and Carry-Alls, Asphalt Curb and Cutter Machines, Asphalt Roller, Asphalt Spreader or Paver, Automatic Fine Grade Machine (CMI or similar, first and second operator), Backhoe and Pullhoe (all), Back Filling Machine, Belt Placer (CMI or similar type), Bending Machine (pipe), Bituminous Spreader and Mixer, Blacktop Plant (all), Blast or Rotary Drill (Truck or Track Mounted), Blower for Burning Brush, Boiler (when used for power), Boom Truck, Boring Machine, Bulldozer, Cableway, Cage Hoist, Caisson Auger, Central Mix Plant (and all Concrete Batching Plants), Cherry Picker, Concrete Cleaning Decontamination Machine, Concrete Curb and Gutter Machine, Concrete Curing Machine, Concrete Mixer (over 1/2 cu. yd.), Concrete Pavement Spreaders and Finishers, Concrete Paver, Concrete Pump, Concrete Saw (self propelled), Conveyor, Convoing Vehicles Convoing Engineer's Equipment, Core Drill, Crane, Crusher, Decontamination of Equipment, Derrick, Dragline, Dredge, Drill Rig (Tractor Mounted), Dual Drum Paver, Electric Pump used in conjunction with Well Point Systems, Elevating Grader (self propelled or towed), Elevator, Excavator (all purpose, hydraulically operated), Farm Tractor with Accessories, Fine Grade Machine, Forklift, Front End Loader, Gradall, Grader, Grout or Guniting Machine, Head Tower, Heavy Equipment Robotics Operator/Mechanic, Hoist (all types), Hoisting Engine, Horizontal Directional Drill Locator, Horizontal Directional Drill Operator, Hydraulic Boom, Hydraulic Hammer (self propelled), Hydraulic Pipe Jack Machine, (or similar type machine), Hydraulic Rock Expander (or similar type machine), Hydraulic System Pumps, Industrial Tractor, Jersey Spreader, Kolman Plant Loader (and similar type Loaders), Laser Screed, Locomotive, Log Skidder (similar type), Maintenance Engineer, Maintenance, Lubrication Unit or Truck, Mine Hoist, Mixer for Stabilized Base (self propelled), Monorail, Motorized Hydraulic Pin Puller, Motorized Hydraulic Seeder, Mucking Machine, Mulching Machine, Overhead Crane, Parts Chasing, Peine Crane (or similar type), Pile Driver, Plant Engineer, Pneumatic Mixer, Post Hole Digger and Post Driver, Power Broom, Pump Crete, Push Button Hoist, Push or Snatch Cat, Quarry Master (or equivalent), Road Widener, Rock Bit Sharpener (all types), Roller (all), Rolling Machine (Pipe), Rotomill, Scoopmobile, Shovel, Side Boom, Skidsteer/Bobcat (similar type), Skimmer, Slip Form Paver (CMI or similar, first and second operator), Snorkel/Vacuum Truck, Strato-Tower, Tire Truck & Repair, Towed Roller, Tractor Drawn Belt-Type Grader/Loader, Tractor Shovel, Tractor with Towed Accessories, Tractors (when using winch power), Trencher, Truck Crane, Tug Boats, Tunnel Shovel, Tube Finisher (CMI and similar), Vacuum Blasting Machine Operator/Mechanic, Vibratory Compactor, Vibro Tamp, Waterjet Cutting Tool System Operator/Mechanic (Ultra High Pressure), Well Drilling Machine, Well Point, Winch, Winch Truck with A Frame.

CLASS B: Aggregate Bin, Aggregate Plant, Apprentice Engineer, Apprentice Engineer Driver, Articulated Off Road Material Hauler, CMI and similar type Concrete Spreads (Apprentice Engineer), Cement Bin, Chipping Machine and Chip Spreader, Compressors (4 or less), Compressors: any size, but subject to other provisions for Compressors, Dust Collectors, Generators, Mechanical Heaters, Pumps, Welding Machines (four of any type or combination), Concrete Mixer (1/2 cu. yd. and under), Fireman, Form Tamper, Fuel Truck, Heating Boiler (used for temporary heat), Helper on Lubrication Unit or Truck, Jeep Trencher, Power Heaterman, Power Plant in excess of 10 K.W., Pumps (4" or over), Revinius Widener, Steam Cleaner, Stump Chipping Machine, Welding Machine (1 machine over 300 amps or 2 or 3 machines regardless of amps).

Operating Engineer- Building Site, Heavy/Highway, Sewer/Water, Tunnel:

Per hour:	07/01/2016	07/01/2017
Master Mechanic	\$ 37.56	\$ 39.20
Asst. Master Mechanic	36.92	38.56
Crane(boom over 100ft)	37.24	38.88
" (boom over 200ft)	37.49	39.13
" (boom over 300ft)	37.99	39.63
CLASS A	36.49	38.13
CLASS B	31.99	33.63

Additional \$1.00 per hour for tunnel work

Additional \$2.50 per hour for CHEMICAL, HAZARDOUS OR TOXIC WASTE projects.

Additional \$3.00 per hour for all lattice boom cranes and any hydraulic crane over 60 ton capacity.

For work bid after 07/01/2014 an additional \$3.00 per hour when shift work is mandated either in the job specifications or by the contracting agency.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 28.94	\$ 28.94
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*Note: Overtime rate is \$39.64 per hour.

OVERTIME PAY

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

Note: Code W* Excludes a portion of package at the overtime rate, equaling package to \$ 39.64 and \$ 39.14(Apprentices) for supplements.

HOLIDAY

Paid: See (5, 6) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

Apprentices at 1 year terms

1st Term	\$27.99	\$29.42
2nd Term	28.79	30.26
3rd Term	29.59	31.10
4th Term	30.39	31.94

Supplemental Benifits

All Terms	\$28.54	\$28.54
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Note: Overtime rate is \$ 39.14 per hour.

12-17 hh/sw/t

Operating Engineer - Marine Dredging

06/01/2017

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 barge mounted cranes and other equipment are only for marine dredging work in navigable waters found in the counties listed above.

Per Hour:
 DREDGING OPERATIONS 07/01/2016

CLASS A
 Operator, Leverman, \$ 35.63
 Lead Dredgeman

CLASS A1 To conform to Operating Engineer
 Dozer,Front Loader Prevailing Wage in locality where work
 Operator is being performed including benefits.

CLASS B \$ 30.81
 Spider/Spill Barge Operator,
 Tug Operator(over1000hp),
 OperatorII, Fill Placer,
 Derrick Operator, Engineer,
 Chief Mate, Electrician,
 Chief Welder,
 Maintenance Engineer

Certified Welder, \$ 29.01
 Boat Operator(licensed)

CLASS C

Drag Barge Operator, \$ 28.22
Steward, Mate,
Assistant Fill Placer,

Welder (please add)\$ 0.06

Boat Operator \$ 27.30

CLASS D
Shoreman, Deckhand, \$ 22.68
Rodman, Scowman, Cook,
Messman, Porter/Janitor

Oiler(please add)\$ 0.09

SUPPLEMENTAL BENEFITS

Per Hour:
THE FOLLOWING SUPPLEMENTAL BENEFITS APPLY TO ALL CATEGORIES

All Classes A & B 07/01/2016
\$ 9.99 plus 8%
of straight time
wage, Overtime hours
add \$ 0.63

All Class C \$ 9.69 plus 8%
of straight time
wage, Overtime hours
add \$ 0.48

All Class D \$ 9.39 plus 8%
of straight time
wage, Overtime hours
add \$ 0.33

OVERTIME PAY
See (B, 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 - Survey Crew

06/01/2017

JOB DESCRIPTION Operating Engineer - Survey Crew

DISTRICT 12

ENTIRE COUNTIES
Cattaraugus, Chautauqua, Erie, Orleans, Wyoming

PARTIAL COUNTIES
Genesee: Only that portion of the county that lies west of a line down the center of Route 98 excluding that area that lies within the City of Batavia.

WAGES
These rates apply to Building and Heavy Highway.

Per hour:
SURVEY CLASSIFICATIONS:

Party Chief - One who directs a survey party.
Instrument Person - One who operates the surveying instruments.
Rod Person - One who holds the rods and assists the Instrument Person.

07/01/2016
Party Chief \$ 38.09
Instrument Person 35.95
Rod Person 25.63

Additional \$3.00 per hr. for work in a Tunnel.
Additional \$2.50 per hr. for EPA or DEC certified toxic or hazardous waste work.

SUPPLEMENTAL BENEFITS

Per hour worked:

Journeyman \$ 24.10

OVERTIME PAY

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

HOLIDAY

Paid: See (5, 6) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

WAGES: 1000 hour terms for at percentage of Wage:

07/01/2016

0-1000 Hrs	60%
1001-2000 Hrs	70%
2001-3000 Hrs	80%

SUPPLEMENTAL BENEFITS per hour worked:

0-1000 Hrs	\$15.33
1001-2000 Hrs	\$17.89
2001-3000 Hrs	\$20.45

12-17D Sur

Operating Engineer - Survey Crew - Consulting Engineer

06/01/2017

JOB DESCRIPTION Operating Engineer - Survey Crew - Consulting Engineer

DISTRICT 12

ENTIRE COUNTIES

Cattaraugus, Chautauqua, Erie, Orleans, Wyoming

PARTIAL COUNTIES

Genesee: Only that portion of the county that lies west of a line down the center of Route 98 excluding that area that lies within the City of Batavia.

WAGES

These rates apply to feasibility and preliminary design surveying, line of grade surveying for inspection or supervision of construction when performed under a Consulting Engineer Agreement.

Per hour:

SURVEY CLASSIFICATIONS:

Party Chief - One who directs a survey party.

Instrument Person - One who operates the surveying instruments.

Rod Person - One who holds the rods and assists the Instrument Person.

07/01/2016

Party Chief	\$ 38.09
Instrument Person	35.95
Rod Person	25.63

SUPPLEMENTAL BENEFITS

Per hour worked:

Journeyman \$ 24.10

OVERTIME PAY

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

HOLIDAY

Paid: See (5, 6) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

WAGES: 1000 hour terms based on the Percentage of Rod Persons Wage:

07/01/2016

0-1000	60%
1001-2000	70%

2001-3000 80%

SUPPLEMENTAL BENEFITS per hour worked:

0-1000 \$15.33
 1001-2000 \$17.89
 2001-3000 \$20.45

12-17D Con Eng

Painter **06/01/2017**

JOB DESCRIPTION Painter

DISTRICT 3

ENTIRE COUNTIES

Allegany, Erie, Genesee, Niagara, Orleans, Wyoming

PARTIAL COUNTIES

Cattaraugus: Entire County except the Townships of Conewango, Leon, Napoli, New Albion, Randolph and South Valley.

Chautauqua: Only the Townships of Awkright, Dunkirk, Hanover, Pomfret, Portland, Sheridan and Villenova.

Livingston: Only the Townships of North Dansville, Nunda, Ossian, Portage, Sparta, Spring Water and West Sparta.

Steuben: Only the Townships of Avoca, Canisteo, Cohocton, Dansville, Fremont, Greenwood, Hartsville, Hornellsville, Howard, Jasper, Prattsburg, Pulteney, Troupsburg, Tuscarora, Urbana, Wayland, Wayne, Woodhull, West Union, Wheeler, and the City of Hornell.

WAGES

Per hour: 07/01/2016
 Basic Rate (Brush & Roll) \$ 25.95
 Spray painting, wallcovering 26.20
 Abrasive and hydroblasting 26.20
 Taping/DryWall Finisher 26.45
 Skeleton Steel* 26.70

* Skeleton Steel: No floors, walls or ceiling are constructed, including radio and television towers, flagpoles, smokestacks, cranes and the abatement of coatings with lead, asbestos and/or arsenic, etc. All work within the confines of a plant shall be paid the skeleton steel rate (except in-plant tank work (see Tank Rate)).

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 worked:
\$ 22.84

OVERTIME PAY

Exterior work only See (B, E4, F*, R) on OVERTIME PAGE.

All other work See (B, F*, R) on OVERTIME PAGE.

* Note - Saturday is payable at straight time if the employee misses work, except where a doctor's or hospital verification of illness is produced Monday through Friday when work was available to the employee.

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

Painter/Decorator: 750 hour terms at the following percentage of Journeyman's Basic wage rate:
 1st 2nd 3rd 4th 5th 6th 7th 8th
 50% 55% 60% 65% 70% 75% 80% 90%

Taper/Drywall Finisher: 750 hour terms at the following percentage of Journeyman's Taper wage:
 1st 2nd 3rd 4th 5th 6th
 50% 55% 60% 65% 75% 85%

Supplemental benefits per hour worked:

Painter/Decorator and Taper/Drywall Finisher:
 1st & 2nd terms \$ 2.27
 3rd & 4th terms 5.27
 All other terms 6.27

3-4-Buf, Nia, Olean

Painter **06/01/2017**

JOB DESCRIPTION Painter **DISTRICT 3**

ENTIRE COUNTIES

Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Cortland, Delaware, Erie, Genesee, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Niagara, Oneida, Onondaga, Ontario, Orleans, Oswego, Otsego, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Wayne, Wyoming, Yates

WAGES

Per hour:	07/01/2016	05/01/2017 Additional	05/01/2018 Additional
Bridge*	\$ 38.00	\$ 1.25	\$ 1.25
Tunnel*	38.00	1.25	1.25
Tank*	36.00	1.25	1.25

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.

Tank rate applies to indoor and outdoor tanks, tank towers, standpipes, digesters, waste water treatment tanks, chlorinator tanks, etc. Covers all types of tanks including but not limited to steel tanks, concrete tanks, fiberglass tanks, etc.

* Note an additional \$1.00 per hour is required when the contracting agency or project specification requires any shift to start prior to 6:00am or after 12:00 noon.

SUPPLEMENTAL BENEFITS

Per hour worked:
 \$ 25.65

OVERTIME PAY

Exterior work only See (B, E4, F*, R) on OVERTIME PAGE.

All other work See (B, F*, R) on OVERTIME PAGE.

*Note - Saturday is payable at straight time if the employee misses work, except where a doctor's or hospital verification of illness is produced Monday through Friday when work was available to the employee.

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

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

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

Supplemental benefits per hour worked:

1st & 2nd terms	\$ 5.30
3rd & 4th terms	5.30
5th & 6th terms	6.30

3-4-Bridge, Tunnel, Tank

Painter - Metal Polisher **06/01/2017**

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, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

	07/01/2016	06/01/2017
Metal Polisher	\$ 28.88	\$ 29.73
Metal Polisher**	29.83	30.68
Metal Polisher***	32.38	33.23

**Note: Applies on New Construction & complete renovation

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

SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2016 06/01/2017

Journeyworker:
 All classification \$ 9.26 \$ 9.41

OVERTIME PAY
 See (B, E, E2, 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:

	07/01/2016
1st year	\$ 11.75
2nd year	13.00
3rd year	15.75

Supplemental benefits:
 Per hour paid:

1st year	\$ 6.26
2nd year	6.37
3rd year	6.51

8-8A/28A-MP

Plumber 06/01/2017

JOB DESCRIPTION Plumber

DISTRICT 3

ENTIRE COUNTIES
 Erie, Niagara, Wyoming

PARTIAL COUNTIES
 Allegany: Only the Townships of Allen, Angelica, Belfast, Caneadea, Centerville, Granger, Hume, New Hudson and Rushford
 Cattaraugus: Only the Townships of Ashford, Dayton, East Otto, Ellicottville, Farmersville, Franklinville, Freedom, Leon, Lyndon, Machias, Mansfield, New Albion, Otto, Perrysburg, Persia and Yorkshire.
 Chautauqua: Only the Townships of Arkwright, Charlotte, Cherry Creek, Hanover, Pomfret, Portland, Ripley, Sheridan, Stockton, Villenova, Westfield, City of Dunkirk and Village of Fredonia.
 Genesee: Only the Townships of Alabama, Alexander, Batavia, Darien, Elba, Oakfield, Pembroke and the City of Batavia.
 Orleans: Only the Townships of Ridgeway, Shelby and Yates.

WAGES

Per hour:	07/01/2016	05/01/2017	04/30/2018
		Additional	Additional
Plumber	\$ 33.55*	\$ 1.45	\$ 1.45
Steamfitter	33.55*	1.45	1.45

*Note - Add 10% (ten-percent) to wage when HAZMAT training is required or when OSHA compliant respirator protection is required.

SUPPLEMENTAL BENEFITS

Per hour worked:
 \$ 23.51*

* Note - \$2.76 of this amount must be paid at the same premium as the wage.

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

* Double time after 11 hours per day on Weekdays.
 ** Double time after 10 hours per day on Saturday.

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

REGISTERED APPRENTICES

Wages per hour:
 One year terms at the following percentage of Journeyman's wage:

1st	2nd	3rd	4th	5th
45%*	55%*	65%*	75%*	90%*

*Note - Add 10% (ten-percent) to wage when HAZMAT training is required or when OSHA compliant respirator protection is required.

Supplemental benefits per hour worked:

\$ 19.32*

* Note - \$2.76 of this amount must be paid at the same premium as the wage.

3-22-Buffalo, Niagara

Roofer

06/01/2017

JOB DESCRIPTION Roofer

DISTRICT 3

ENTIRE COUNTIES

Erie, Genesee, Niagara, Orleans, Wyoming

WAGES

Per hour:	07/01/2016
Asbestos Removal	\$ 30.25
Slate, Tile	27.40
Precast tile / slabs	27.40
Crete / gypsum planks	27.40
Damp and waterproofer	27.25
Composition, spayers,	27.25
Asphalt mastic,	27.25
Steep roofers	27.25

SUPPLEMENTAL BENEFITS

Per hour worked: \$ 20.72

OVERTIME PAY

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

* and ** Double time after 8 hours on Saturday.

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

Hour terms at the following percentage of Journeyman's wage:

0 to 1000	to 2000	to 2500	to 3000	to 3500	to 4000	to 4500
50%	55%	60%	65%	70%	75%	80%

Supplemental benefits per hour worked:

0 to 500	to 1000	to 2000	to 2500	to 3000	to 3500	to 4000	to 4500
\$ 0.00	\$ 7.01	\$ 9.80	\$ 15.01	\$ 15.60	\$ 16.18	\$ 16.76	\$ 17.35

3-74

Sheetmetal Worker

06/01/2017

JOB DESCRIPTION Sheetmetal Worker

DISTRICT 3

ENTIRE COUNTIES

Erie, Genesee, Niagara, Orleans, Wyoming

WAGES

Per hour:	07/01/2016
Sheet Metal Worker	\$ 33.73

Additional \$0.50 per hour for work more than 30' above floor on boatswain chair.

Additional \$1.00 per hour for work in "Hot" areas of atomic laboratories, atomic plants, or any premises where radio-active materials are stored or handled and personal protective equipment is required.

SUPPLEMENTAL BENEFITS

Per hour worked: \$ 22.69*

* Note - \$16.99 of this amount must be paid at the same premium as the wages per overtime hours.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

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

REGISTERED APPRENTICES

Wages per hour:

One year terms at the following wage:

1st term	\$ 15.18
2nd term	19.74
3rd term	21.14
4th term	25.33
5th term	28.13

Supplemental benefits per hour:

1st term	\$ 13.09	Note - \$7.39 of this amount must be paid at the same premium as the wage.
2nd term	15.97	Note - \$10.27 of this amount must be paid at the same premium as the wage.
3rd term	20.10	Note - \$14.40 of this amount must be paid at the same premium as the wage.
4th term	20.97	Note - \$15.27 of this amount must be paid at the same premium as the wage.
5th term	21.54	Note - \$15.84 of this amount must be paid at the same premium as the wage.

3-71

Sprinkler Fitter

06/01/2017

JOB DESCRIPTION Sprinkler Fitter

DISTRICT 1

ENTIRE COUNTIES

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

WAGES

Per hour 07/01/2016
 Sprinkler \$ 31.66
 Fitter

SUPPLEMENTAL BENEFITS

Per hour worked

Journeyman \$ 21.02

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

For Apprentices HIRED PRIOR TO 04/01/2010:

One Half Year terms at the following percentage of journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
50%	50%	55%	60%	65%	70%	75%	80%	85%	90%

Supplemental Benefits per hour worked

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 8.15	\$ 8.15	\$ 15.12	\$ 15.12	\$21.02	\$21.02	\$21.02	\$21.02	\$21.02	\$21.02

For Apprentices HIRED ON OR AFTER 04/01/2010:

One Half Year terms at the following percentage of journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
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45%	50%	55%	60%	65%	70%	75%	80%	85%	90%
Supplemental Benefits per hour worked									
1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 8.56	\$ 8.60	\$ 15.37	\$ 15.41	\$ 15.96	\$ 16.00	\$ 16.05	\$ 16.09	\$ 16.14	\$ 16.18

For Apprentices HIRED ON OR AFTER 04/01/2013:

One Half Year terms at the following percentage of journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
45%	50%	55%	60%	65%	70%	75%	80%	85%	90%
Supplemental Benefits per hour worked									
1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 7.90	\$ 7.90	\$ 15.12	\$ 15.12	\$ 15.37	\$ 15.37	\$ 15.37	\$ 15.37	\$ 15.37	\$ 15.37

1-669

Teamster - Building / Heavy&Highway **06/01/2017**

JOB DESCRIPTION Teamster - Building / Heavy&Highway

DISTRICT 3

ENTIRE COUNTIES

Erie, Niagara

PARTIAL COUNTIES

Genesee: Only in the Townships of Alabama, Darien and Pembroke.
 Orleans: Only the Townships of Ridgeway, Shelby and Yates.
 Wyoming: Only in the Townships of Arcade, Bennington, Java and Sheldon.

WAGES

GROUP 1: Warehousemen, Yardmen, Truck Helpers, Pickups, Panel Trucks, Flatboy Material Trucks (straight jobs), Single Axle Dump Trucks, Dumpsters, Material Checkers and Receivers, Greasers, Truck Tirmen, Mechanics Helpers and Parts Chasers.

GROUP 2: Tandems and Batch Trucks, Mechanics, Dispatcher.

GROUP 3: Semi-Trailers, Low-Boy Trucks, Asphalt Distributor Trucks and Agitator, Mixer Trucks and dumpcrete type vehicles, Truck Mechanic, Fuel Trucks

GROUP 4: Specialized Earth Moving Equipment, Euclid type, or similar off-highway, where not self-loading, Straddle (Ross) Carrier, and self-contained concrete mobile truck.

GROUP 5: Off-highway Tandem Back-Dump, Twin Engine Equipment and Double-Hitched Equipment where not self-loading.

Per hour:	07/01/2016	07/01/2017
All GROUPS	\$ 35.59	\$ 37.00

Add \$2.00 when required to use personal protection when performing hazardous waste removal work.

An additional \$1.00 per hour is required when a single irregular work shift starting any time from 5:00PM to 1:00AM is mandated either in the job specification or by the contracting agency.

SUPPLEMENTAL BENEFITS

Per hour worked:	\$ 12.75*	\$ 13.03*
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*Note - Only \$ 6.00 per hour needs to be paid for overtime hours.

OVERTIME PAY

See (B, G, P) on OVERTIME PAGE

HOLIDAY

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

3-449

Teamster - Building / Heavy&Highway **06/01/2017**

JOB DESCRIPTION Teamster - Building / Heavy&Highway

DISTRICT 3

ENTIRE COUNTIES

Erie, Niagara

PARTIAL COUNTIES

Genesee: Only in the Townships of Alabama, Darin and Pembroke.
Orleans: Only the Townships of Ridgeway, Shelby and Yates.
Wyoming: Only in the Townships of Arcade, Bennington, Java and Sheldon.

WAGES

Per hour: 07/01/2016
Dump Truck Operator* \$ 18.95

*Does not include Single Axle Dump Trucks (see Teamster Group 1).
*Does not include Off-highway Dump Trucks (see Teamster Groups 2-5).

SUPPLEMENTAL BENEFITS

Per hour worked:
\$ 1.44

OVERTIME PAY

See (B, J) on OVERTIME PAGE
Note - Time and one half shall be paid for work in excess of five (5) days per week.

HOLIDAY

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

3-449d-DT

Welder

06/01/2017

JOB DESCRIPTION Welder

DISTRICT 1

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, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

Per hour 07/01/2016

Welder: To be paid the same rate of the mechanic performing the work.*

*EXCEPTION: If a specific welder certification is required, then the 'Certified Welder' rate in that trade tag will be paid.

OVERTIME PAY

HOLIDAY

1-As Per Trade

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, if worked

- (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, if worked
- (U) Four times the hourly rate for Holidays, if worked
- (V) Including benefits at SAME PREMIUM as shown for overtime
- (W) Time and one half for benefits on all overtime hours.

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







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

NOTE: The agency issuing the determination and providing the information, is denoted under the heading 'Fiscal Officer'. DOL = NYS Dept. of Labor; NYC = New York City Comptroller's Office; AG = NYS Attorney General's Office; DA = County District Attorney's Office.

A list of those barred from bidding, or being awarded, any public work contract or subcontract with the State, under section 141-b of the Workers' Compensation Law, may be obtained at the following link, on the NYS DOL Website:

<https://dbr.labor.state.ny.us/EDList/searchPage.do>



NYS DOL Bureau of Public Work Debarment List 05/17/2017

Article 8

AGENCY	Fiscal Officer	FEIN	EMPLOYER NAME	EMPLOYER DBA NAME	ADDRESS	DEBARMENT START DATE	DEBARMENT END DATE
DOL	DOL		4618 FOSTER AVE LLC		C/O KAHAN & KAHAN 225 BROADWAY-SUITE 715NEW YORK NY 10007	02/05/2013	02/05/2018
DOL	DOL	****0996	A-1 CONSTRUCTION & RENOVATION INC		1973 81ST ST - SUITE A-5 BROOKLYN NY 11214	01/08/2015	01/08/2020
DOL	NYC	****4486	ABBEY PAINTING CORP		21107 28TH AVENUE BAYSIDE NY 11360	07/02/2012	07/02/2017
DOL	DOL	****9095	ABDO TILE CO		6179 EAST MOLLOY ROAD EAST SYRACUSE NY 13057	06/25/2010	07/02/2017
DOL	DOL	****9095	ABDO TILE COMPANY		6179 EAST MOLLOY ROAD EAST SYRACUSE NY 13057	06/25/2010	07/02/2017
DOL	NYC		ABDUL KARIM		C/O NORTH AMERICAN IRON W 1560 DECATUR STREETRIDGWOOD NY 11385	05/15/2015	05/15/2020
DOL	DOL	****8488	ABELCRAFT OF NEW YORK CORP		640 ASHFORD AVENUE ARDSLEY NY 10502	08/27/2013	08/27/2018
DOL	DOL	****1219	ABSOLUTE GENERAL CONTRACTING INC		1229 AVENUE U BROOKLYN NY 11229	01/28/2013	01/28/2018
DOL	DOL	****4539	ACCOMPLISHED WALL SYSTEMS INC		112 OSCAWANA HEIGHTS ROAD PUTNAM VALLEY NY 10542	08/27/2013	08/27/2018
DOL	DOL	****8018	ACCURATE MECHANICAL LLC		9547 BUSTLETON AVENUE PHILADELPHIA PA 19115	02/05/2014	02/05/2019
DOL	DOL		ACCURATE MECHANICAL OF PHILADELPHIA LLC		9547 BUSTLETON AVENUE PHILADELPHIA PA 19115	02/05/2014	02/05/2019
DOL	DOL	****3344	ACT INC		6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020
DOL	NYC		ADRIANA SELA	C/O COLONIAL ROOFING COMPANY INC	247 48TH STREET BROOKLYN NY 11220	02/05/2014	02/05/2019
DOL	DOL	****6367	ADVANCED METALS		387 RIVERSIDE DRIVE JOHNSON CITY NY 13790	10/01/2012	10/01/2017
DOL	DOL	****1687	ADVANCED SAFETY SPRINKLER INC		261 MILL ROAD P O BOX 296EAST AURORA NY 14052	07/29/2015	07/29/2020
DOL	DOL	****2538	AGG MASONRY INC		160 72ND ST - SUITE 721 BROOKLYN NY 11209	03/19/2013	03/19/2018
DOL	DOL		AJ TORCHIA		10153 ROBERTS RD SAUQUOIT NY 13456	08/09/2016	08/09/2021
DOL	DOL		ALISHER KARIMOV		C/O AGG MASONRY INC 7105 3RD AVENUEBROOKLYN NY 11209	03/19/2013	03/19/2018
DOL	DOL	****3344	ALL CATASTROPHE CONSTRUCTION TEAM INC	ACT INC	6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020
DOL	DOL	****8740	ALLSTATE ENVIRONMENTAL CORP		C/O JOSE MONTAS 27 BUTLER PLACEYONKERS NY 10710	03/18/2011	03/19/2020
DOL	DOL		AMADEO J TORCHIA	TORCHIA'S HOME IMPROVEMEN T	10153 ROBERTS RD SAUQUOIT NY 13456	08/09/2016	08/09/2021
DOL	DOL	****4274	AMERICAN STEEL MECHANICAL INC		693 PAINTER STREET MEDIA PA 19063	02/20/2013	02/20/2018
DOL	DOL		ANDREW DIPAUL		C/O CONSOLIDATED INDUSTRI 2051 ROUTE 44/55MODENA NY 12548	12/11/2012	12/11/2017
DOL	NYC		ANDRZEJ WROBEL		24 CONGRESS LANE SOUTH RIVER NJ 08882	05/01/2013	05/01/2018
DOL	NYC		ANISUL ISLAM		C/O RELIANCE GENERAL CONS 644 OCEAN PARKWAYBROOKLYN NY 11230	09/02/2015	09/02/2020
DOL	DOL	****7004	ANNEX CONTRACTING LTD		3005 WYNSUM AVENUE MERRICK NY 11566	08/18/2014	08/18/2019
DOL	DOL	****7004	ANNEX GENERAL CONTRACTING INC		3005 WYNSUM AVENUE MERRICK NY 11566	08/18/2014	08/18/2019
DOL	DA		ANTHONY CARDINALE		58-48 59TH STREET MASPETH NY 11378	05/16/2012	05/08/2020
DOL	DOL		ANTHONY J MINGARELLI JR		C/O T & T CONCRETE INC 2560 HAMBURG TURNPIKELACKAWANNA NY 14218	07/08/2015	07/08/2020
DOL	DOL		ANTHONY PERGOLA		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10323	01/23/2017	01/23/2022

NYS DOL Bureau of Public Work Debarment List 05/17/2017

Article 8

DOL	DOL	*****3020	APCO CONTRACTING CORP		24 SOUTH MARYLAND AVENUE PORT WASHINGTON NY 11050	09/24/2012	09/02/2020
DOL	DOL	*****3219	APOLLO CONSTRUCTION SERVICES CORP	APOLLO PAINTING CO	157 TIBBETTS ROAD YONKERS NY 10705	03/12/2014	03/12/2019
DOL	DOL		APOLLO PAINTING CO		157 TIBBETTS ROAD YONKERS NY 10705	03/12/2014	03/12/2019
DOL	DOL	*****3295	APOLLO PAINTING CORP		3 ALAN B SHEPART PLACE YONKERS NY 10705	03/12/2014	03/12/2019
DOL	AG	*****0194	APPLIED CONSTRUCTION INC		46 RUGBY ROAD WESTBURY NY 11590	11/20/2013	11/20/2018
DOL	NYC	*****8403	AQUA JET PAINTING CORP		10 VIKING DRIVE WEST ISLIP NY 11795	04/16/2014	04/16/2019
DOL	NYC	*****9232	ARKAY CONSTRUCTION INC		102-104 GREYLOCK AVENUE BELLEVILLE NJ 07109	07/15/2015	07/15/2020
DOL	DOL	*****3953	ASCAPE LANDSCAPE & CONSTRUCTION CORP		634 ROUTE 303 BLAUVELT NY 10913	07/26/2012	11/19/2018
DOL	NYC	*****4779	ASTORIA GENERAL CONTRACTING CORP		35-34 31ST STREET LONG ISLAND CITY NY 11106	09/02/2015	09/02/2020
DOL	NYC	*****7217	ASTRO COMMUNICATIONS OF NY CORP		79 ALEXANDER AVE- STE 36A BRONX NY 10454	10/30/2015	10/30/2020
DOL	NYC	*****6046	ATLANTIC SUN CONSTRUCTION CORP		58-46 59TH AVENUE MASPETH NY 11378	05/08/2015	05/08/2020
DOL	NYC		AUDLEY O'BRIEN		1273 NORTH AVENUE/#1 CP NEW ROCHELLE NY 10804	04/07/2015	04/07/2020
DOL	DOL		AVIS R HILL		3510 HICKORY WALK LANE ELLENWOOD GA 32094	01/22/2015	01/22/2020
DOL	AG		AVTAR SINGH		116-24 127TH STREET SOUTH OZONE PARK NY 11420	12/22/2015	12/22/2020
DOL	AG		BALDEV SINGH		116-24 127TH STREET SOUTH OZONE PARK NY 11420	12/22/2015	12/22/2020
DOL	DOL		BARBARA CASSIDY		7 BLENIS PLACE VALHALLA NY 10595	04/02/2015	04/02/2020
DOL	DOL		BARRY KINNEY		6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020
DOL	NYC	*****3915	BEACON RESTORATION INC		SUITE B-8 782 PELHAM PARKWAY SOUTHBRONX NY 10462	04/21/2016	04/21/2021
DOL	DOL		BEVERLY F WILLIAMS		1238 PRESIDENT STREET BROOKLYN NY 11225	11/18/2013	11/18/2018
DOL	DOL	*****8551	BRANDY'S MASONRY		216 WESTBROOK STREET P O BOX 304SAYRE PA 18840	08/09/2016	08/09/2021
DOL	NYC	*****6555	BROOKLYN WELDING CORP		1273 NORTH AVENUE/ #1 CP NEW ROCHELLE NY 10804	04/07/2015	04/07/2020
DOL	DOL	*****1449	BRRESTORATION NY INC		140 ARCADIA AVENUE OSWEGO NY 13126	09/12/2016	09/12/2021
DOL	DOL		BRUCE MORSEY		C/O KENT HOLLOW SIDING LL 29A BRIDGE STREET NEW MILFORD CT 06776	01/15/2016	01/15/2021
DOL	DOL	*****6156	C & J LANDSCAPING & MAINTENANCE INC		520 PINE HILL ROAD CHESTER NY 10940	06/23/2014	06/23/2019
DOL	DOL		CARIBBEAN POOLS		C/O DOUGLAS L MALARKEY 64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	NYC	*****9172	CASSIDY EXCAVATING INC		14 RAILROAD AVENUE VALHALLA NY 10595	05/15/2014	04/02/2020
DOL	DOL	*****6745	CATSKILL FENCE INSTALLATIONS INC		5445 ROUTE 32 CATSKILL NY 12414	08/22/2014	08/22/2019
DOL	DOL	*****8530	CAZ CONTRACTING CORP		37-11 35TH AVENUE LONG ISLAND CITY NY 11101	08/26/2013	08/26/2018
DOL	DOL	*****8809	CBE CONTRACTING CORP		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL	*****5556	CERTIFIED INSTALLERS INC		113 N MAPLE AVENUE GREENSBURG PA 15601	02/21/2013	02/21/2018
DOL	DOL	*****7655	CHAMPION CONSTRUCTION SERVICES CORP		2131 SCHENECTADY AVENUE BROOKLYN NY 11234	11/18/2015	11/18/2020
DOL	NYC		CHARLES CASSIDY JR		14 RAILROAD AVENUE VALHALLA NY 10595	05/15/2014	04/02/2020
DOL	DOL		CHARLES ZIMMER JR		216 WESTBROOK STREET P O BOX 304SAYRE PA 18840	08/09/2016	08/09/2021
DOL	DOL		CHRISTINE J HEARNE		C/O CJ-HEARNE CONSTRUCTIO 131 PONCE DE LEON AVE NEATLANTA GA 30308	12/01/2015	12/01/2020

NYS DOL Bureau of Public Work Debarment List 05/17/2017

Article 8

DOL	DOL	*****3360	CITY LIMITS GROUP INC		2279 HOLLERS AVENUE BRCNX NY 10475	01/07/2014	06/23/2019
DOL	DOL	*****0671	CJ-HEARNE CONSTRUCTION CO		SUITE 204 131 PONCE DE LEON AVENUE ATLANTA GA 30308	12/01/2015	12/01/2020
DOL	NYC	*****2905	COLONIAL ROOFING COMPANY INC		247 48TH STREET BROOKLYN NY 11220	02/05/2014	02/05/2019
DOL	NYC	*****3182	COLORTECH INC		5990 58TH AVENUE MASPETH NY 11378	11/18/2013	11/18/2018
DOL	DOL	*****2703	CONKLIN'S TECH- MECHANICAL INC		5 PARKER AVENUE POUGHKEEPSIE NY 12601	03/25/2014	03/25/2019
DOL	DOL	*****4175	CONSOLIDATED INDUSTRIAL SERVICES INC		2051 ROUTE 44/55 MODENA NY 12548	12/11/2012	01/28/2018
DOL	DOL		CONSTANTINOS ZERVAS		37-11 35TH AVENUE LONG ISLAND CITY NY 11101	08/26/2013	08/26/2018
DOL	NYC	*****4468	CRAFT CONTRACTING GROUP INC		3256 BRUNER AVENUE BRONX NY 10469	07/29/2014	07/29/2019
DOL	NYC	*****8507	CRAFT FENCE INC		3256 BRUNER AVENUE BRONX NY 10469	07/29/2014	07/29/2019
DOL	NYC	*****2164	CREATIVE TRUCKING INC		58-83 54TH STREET MASPETH NY 11378	02/26/2016	02/26/2021
DOL	DOL	*****7761	D L MALARKEY CONSTRUCTION		64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL	*****7888	D L MALARKEY CONSTRUCTION INC		64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL	*****5629	DAKA PLUMBING AND HEATING LLC		2561 ROUTE 55 POUGHQUAG NY 12570	02/19/2016	02/19/2021
DOL	DOL		DARYL T RIEKS		C/O RIEKS CONTRACTING LLC 4804 GAHWILER ROAD AUBURN NY 13021	05/01/2015	05/01/2020
DOL	NYC	*****7707	DASSLE CONTRACTING INC		213-37 39TH AVE/SUITE 120 BAYSIDE NY 11360	05/08/2015	05/08/2020
DOL	DOL		DAVID MARTINEZ		C/O EMPIRE TILE INC 6 TREMONT COURTHUNTINGTON STATION NY 11746	03/08/2016	03/08/2021
DOL	NYC		DAWN AVILA AKA DAWN BECHTOLD		1ST FLOOR STORE FRONT 88-10 LITTLE NECK PARKWAY FLORAL PARK NY 11001	06/24/2014	06/24/2019
DOL	NYC		DAWN BECHTOLD AKA DAWN AVILA		1ST FLOOR STORE FRONT 88-10 LITTLE NECK PARKWAY FLORAL PARK NY 11001	06/24/2014	06/24/2019
DOL	DOL		DEAN ROBBINS III		212 OXFORD WAY SCHENECTADY NY 12309	12/11/2012	09/16/2018
DOL	DOL		DEBBIE STURDEVANT		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	NYC	*****3865	DECOMA BUILDING CORPORATION		134 EVERGREEN PL/STE 101 EAST ORANGE NJ 07018	12/30/2013	12/30/2018
DOL	DOL		DEDA GAZIVODAN		C/O DAKA PLUMBING AND H 2561 ROUTE 55 POUGHQUAG NY 12570	02/19/2016	02/19/2021
DOL	DOL	*****1446	DELTA CONTRACTING PAINTING AND DECORATING INC		437 SUNRISE HIGHWAY WEST BABYLON NY 11707	08/12/2013	08/12/2018
DOL	DOL	*****3538	DELTA CONTRACTING PAINTING AND DESIGN INC		75 MCCULLOCH DRIVE DIX HILLS NY 11746	10/19/2010	08/12/2018
DOL	DOL		DEMETRIOS KOUTSOURAS		530 BEECH STREET NEW HYDE PARK NY 11040	07/02/2012	07/02/2017
DOL	DOL		DENNIS SCHWANDTNER		C/O YES SERVICE AND REPAI 145 LODGE AVE HUNTINGTON STATION NY 11476	08/09/2016	08/09/2021
DOL	DOL	*****9868	DESANTIS ENTERPRISES		161 OSWEGO RIVER ROAD PHOENIX NY 13135	09/24/2013	11/18/2018
DOL	NYC	*****8234	DEWATERS PLUMBING AND HEATING LLC		30 COLUMBUS CIRCLE EASTCHESTER NY 10709	08/21/2012	08/21/2017
DOL	DOL	*****9252	DI BERNARDO TILE AND MARBLE CO INC		15 WALKER WAY ALBANY NY 12205	03/21/2014	03/21/2019
DOL	DOL		DIANE DEEVER		731 WARWICK TURNPIKE HEWITT NJ 07421	06/25/2012	12/11/2017
DOL	NYC		DIMITRIOS KOUTSOUKOS		C/O ASTORIA GENERAL CONTR 35-34 31ST STREET LONG ISLAND CITY NY 11106	09/02/2015	09/02/2020
DOL	DA	*****6789	DOL	DBA NAME QMC	BUILDING 12 ALBANY NY 12240	12/01/2017	12/01/2018

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DOL	DOL		DORIS SKODA		C/O APCO CONTRACTING CORP 24 SOUTH MARYLAND AVENUE PORT WASHINGTON NY 11050	09/24/2012	09/02/2020
DOL	NYC	*****7404	DOSANJH CONSTRUCTION CORP		9439 212TH STREET QUEENS VILLAGE NY 11428	02/25/2016	02/25/2021
DOL	DOL		DOUGLAS L MALARKEY	MALARKEY CONSTRUCTION	64 VICTORIA DRIVE B INGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL	*****6982	DUFOUR GROUP INC	DUFOUR MASONRY	353 WEST 56TH STREET #7M NEW YORK NY 10019	06/10/2014	06/10/2019
DOL	DOL		DUFOUR MASONRY		353 WEST 56TH ST #7M NEW YORK NY 10019	06/10/2014	06/10/2019
DOL	DOL		DUFOUR MASONRY & RESTORATION INC		353 WEST 56TH STREET #7M NEW YORK NY 10019	06/10/2014	06/10/2019
DOL	DOL	*****5840	DYNA CONTRACTING INC		363 88TH STREET BROOKLYN NY 11209	11/18/2013	11/18/2018
DOL	DOL		E C WEBB		6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020
DOL	DOL		EARL GALBREATH		640 ASHFORD AVENUE ARDSLEY NY 10502	08/27/2013	08/27/2018
DOL	DOL		EARL L WILSON	WILSON BROTHER DRYWALL CONTRACTORS	36 ABERSOLD STREET ROCHESTER NY 14621	08/31/2015	08/31/2020
DOL	DOL	*****1496	EAST COAST DRYWALL INC		1238 PRESIDENT STREET BROOKLYN NY 11225	11/18/2013	11/18/2018
DOL	DOL		EDWARD L GAUTHIER		C/O IMPERIAL MASONRY . REST 141 ARGONNE DRIVE KENMORE NY 14217	10/03/2012	10/03/2017
DOL	NYC		EDWARD MENKEN		C/O AQUA JET PAINTING 10 VIKING DRIVE WEST ISLIP NY 11795	04/16/2014	04/16/2019
DOL	NYC	*****0900	EF PRO CONTRACTING INC		147 BROOME AVENUE ATLANTIC BEACH NY 11509	03/03/2014	03/03/2019
DOL	NYC		EFSTRATIOS BERNARDIS		23-73 48TH STREET LONG ISLAND CITY NY 11103	04/24/2014	04/24/2019
DOL	DOL		ELIZABETH RAMADANI		C/O RAMADA CONSTRUCTION 80 SAVO LOOP STATEN ISLAND NY 10309	01/07/2014	01/07/2019
DOL	DOL		ELLEN DESANTIS	DESANTIS ENTERPRISES	161 OSWEGO RIVER ROAD PHOENIX NY 13135	09/24/2013	11/18/2018
DOL	DOL	*****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002
DOL	AG		EMILIO FRANZA		90 JUNIUS STREET BROOKLYN NY 11212	01/23/2014	01/23/2019
DOL	DOL		EMPIRE CONCRETE SERVICES LLC		101 SULLYS TRAIL/SUITE 20 PITTSFORD NY 14534	11/18/2013	01/07/2019
DOL	DOL	*****0511	EMPIRE CONCRETE SYSTEMS LLC		101 SULLYS TRAIL/ SUITE 2 PITTSFORD NY 14534	11/18/2013	01/07/2019
DOL	DOL	*****2353	EMPIRE CONSTRUCTORS LLC		101 SULLYS TRAIL/SUITE 20 PITTSFORD NY 14534	11/18/2013	01/07/2019
DOL	DOL		EMPIRE PRECAST LLC		101 SULLYS TRAIL/SUITE 20 PITTSFORD NY 14534	11/18/2013	01/07/2019
DOL	DOL	*****3270	EMPIRE TILE INC		6 TREMONT COURT HUNTINGTON STATION NY 11746	03/08/2016	03/08/2021
DOL	DOL		ERIKA BARNETT		253 BEACH BREEZE LANE UNIT BARVERNE NY 11692	02/05/2013	02/05/2018
DOL	DOL		ESTEVEES & FRAGA CONSTRUCTION CO INC		986 MADISON AVENUE PATERSON NJ 07501	01/03/2013	01/03/2018
DOL	DOL		ESTEVEES & FRAGA INC		986 MADISON AVENUE PATERSON NJ 07501	01/03/2013	01/03/2018
DOL	DOL		EVELIO ELLEDIAS		114 PEARL STREET PORT CHESTER NY 10573	08/15/2012	08/15/2017
DOL	NYC		EVERTON CARLESS		134 EVERGREEN PL/STE 101 EAST ORANGE NJ 07018	12/30/2013	12/30/2018
DOL	DOL	*****7403	F & B PAINTING CONTRACTING INC		2 PARKVIEW AVENUE HARRISON NY 10604	09/26/2016	09/26/2021
DOL	DOL		F KALAFATIS		2279 HOLLERS AVENUE BRONX NY 10475	01/07/2014	06/23/2019
DOL	DOL		FANTASTIC PAINTING		493 LANSING ROAD FULTONVILLE NY 12072	11/18/2013	11/18/2018

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DOL	DOL		FAY MATTHEW		C/O CHAMPION CONSTRUCTION 2131 SCHENECTADY AVENUE BROOKLYN NY 11234	11/18/2015	11/18/2020
DOL	DOL		FAZIA GINA ALI-MOHAMMED	C/O CHAMPION CONSTRUCTION	2131 SCHENECTADY AVENUE BROOKLYN NY 11234	11/18/2015	11/18/2020
DOL	DOL	*****1311	FLOZ-ON PAINTING & DECORATING INC		12 DUNDERBERG ROAD TOMKINS NY 10986	10/16/2013	10/16/2018
DOL	DOL	*****8961	FLOZ-ON PAINTING INC		12 DUNDERBERG ROAD TOMKINS NY 10986	10/16/2013	10/16/2018
DOL	DOL		FMS		4 LEGHORN COURT NEW YORK NY 11746	11/28/2012	11/28/2017
DOL	DOL	*****8067	FORTH SPORT FLOORS INC		P O BOX 74 EAST GREENBUSH NY 12061	02/28/2012	10/01/2017
DOL	DOL		FRAN MICELI		2279 HOLLERS AVENUE BRONX NY 10475	01/07/2014	06/23/2019
DOL	DOL		FRANCES KALAFATIS		2279 HOLLERS AVENUE BRONX NY 10475	01/07/2014	06/23/2019
DOL	DOL		FRANCES KALAFATIS-MICELI		2279 HOLLERS AVENUE BRONX NY 10475	01/07/2014	06/23/2019
DOL	DOL		FRANK BENEDETTO		C/O F & B PAINTING CONTRA 2 PARKVIEW AVENUE HARRISON NY 10604	09/26/2016	09/26/2021
DOL	DOL		FRANK DEMARTINO		101-61 99TH STREET OZONE PARK NY 11416	02/15/2017	02/15/2022
DOL	DOL		FRANK J MERCANDO		134 MURRAY AVENUE YONKERS NY 10704	12/11/2009	02/03/2019
DOL	DOL		FRANK MICELI JR	C/O FRANK MICELI JR CONTRACTING INC	19 CLIFF STREET NEW ROCHELLE NY 10801	10/16/2013	10/16/2018
DOL	DOL	*****1321	FRANK MICELI JR CONTRACTING INC		19 CLIFF STREET NEW ROCHELLE NY 10801	10/16/2013	10/16/2018
DOL	DOL		FRED ABDO	ABDO TILE COMPANY AKA ABDO TILE CO	6179 EAST MOLLOY ROAD EAST SYRACUSE NY 13057	06/25/2010	07/02/2017
DOL	DOL	*****2724	FRESH START PAINTING CORP		157 TIBBETS ROAD YONKERS NY 10705	03/12/2014	03/12/2019
DOL	DOL		G FUCCI CONSTRUCTION SERVICES		3 ALAN B SHEPARD PLACE YONKERS NY 10705	03/12/2014	03/12/2019
DOL	DOL	*****3767	G FUCCI PAINTING INC		C/O SPIEGEL & UTRERA 1 MAIDEN LANE - 5TH FL NEW YORK NY 10038	03/12/2014	03/12/2019
DOL	DOL	*****4546	GAF PAINTING LLC		157 TIBBETS ROAD YONKERS NY 10705	03/12/2014	03/12/2019
DOL	DOL		GALINDA ROTENBERG		C/O GMDV TRANS INC 67-48 182ND STREET FRESH MEADOWS NY 11365	06/24/2016	06/24/2021
DOL	DOL		GARDEN STATE PAINTING		157 TIBBETS ROAD YONKERS NY 10705	03/12/2014	03/12/2019
DOL	DOL		GARY MCDOWELL	GM CONSTRUCTION & LAWN CARE SERVICE	76 PLEASANT STREET WELLSVILLE NY 14895	06/11/2013	06/11/2018
DOL	DOL		GEORGE DI BERNARDO		C/O DI BERNARDO TILE 15 WALKER WAY ALBANY NY 12205	03/21/2014	03/21/2019
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	DOL	*****1075	GLOBAL TANK CONSTRUCTION LLC		P O BOX 1238 SALINA OK 74365	11/28/2012	11/28/2017
DOL	DOL	*****0878	GM CONSTRUCTION & LAWN CARE SERVICE		76 PLEASANT STREET WELLSVILLE NY 14895	06/11/2013	06/11/2018
DOL	DOL	*****5674	GMDV TRANS INC		67-48 182ND STREET FRESH MEADOWS NY 11365	06/24/2016	06/24/2021
DOL	DOL	*****0090	GOLDS FLOORING INSTALLATIONS INC		25 HAMILTON ROAD MONTICELLO NY 12701	10/16/2013	10/16/2018
DOL	DOL		GREGORY A FUCCI		C/O PAF PAINTING SERVICES 157 TIBBETS ROAD YONKERS NY 10705	03/12/2014	03/12/2019
DOL	DOL		GREGORY FUCCI JR		C/O APOLLO CONSTRUCTION 157 TIBBETS ROAD YONKERS NY 10705	03/12/2014	03/12/2019
DOL	DOL	*****9456	GUILLO CONTRACTING CORP		P O BOX 229 CALVERTON NY 11933	07/08/2013	07/08/2018

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DOL	NYC	****0346	H N H CONTRACTORS CORP	4558 BROADWAY # 6 NEW YORK NY 10040	08/04/2014	08/04/2019
DOL	DOL		HALSSAM FOSTOK	5 HANSEN PLACE WAYNE NJ 07470	09/18/2013	09/18/2018
DOL	NYC		HAMEEDUL HASAN	240 HOME STREET TEANECK NJ 07666	08/04/2014	08/04/2019
DOL	AG	****9918	HARA ELECTRIC CORP	2461 47TH STREET ASTORIA NY 11103	09/26/2013	09/26/2018
DOL	NYC		HARMEL SINGH	15 CLINTON LANE HICKSVILLE NY 11801	02/25/2016	02/25/2021
DOL	NYC		HAROLD KUEMMEL	58-83 54TH STREET MASPETH NY 11378	02/26/2016	02/26/2021
DOL	AG		HARVINDER SINGH PAUL	90 JUNIUS STREET BROOKLYN NY 11212	01/23/2014	01/23/2019
DOL	DOL		HENRY VAN DALRYMPLE	2663 LANTERN LANE ATLANTA GA 30349	12/01/2015	12/01/2020
DOL	DOL		HI-TECH CONTRACTING CORP	114 PEARL STREET PORT CHESTER NY 10573	08/15/2012	08/15/2017
DOL	DOL	****6370	HILLIANO CONSTRUCTION & ELECTRICAL INC	354 MAGNOLIA STREET ROCHESTER NY 14611	01/22/2015	01/22/2020
DOL	DOL	****8282	IDEMA DEVELOPMENT INC	91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	DOL	****8282	IDEMA GENERAL CONTRACTORS INC	91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	DOL	****8426	IMPERIAL MASONRY RESTORATION INC	141 ARGONNE DRIVE KENMORE NY 14217	10/03/2012	10/03/2017
DOL	DOL	****7001	INTEGRATED CONSTRUCTION & POWER SYSTEMS INC	SUITE 100 2105 W GENESEE STREETS YRACUSE NY 13219	01/06/2016	01/06/2021
DOL	DOL		ISABEL FRAGA	C/O THREE FRIENDS CONSTR 986 MADISON AVENUE PATERSON NJ 07501	01/03/2013	01/03/2018
DOL	AG	****0000	J A M CONSTRUCTION CORP	SUITE 125 265 SUNRISE HIGHWAY ROCKVILLE CENTRE NY 10457	04/07/2016	04/07/2021
DOL	DOL	****7598	J M RICH LLC	P O BOX 268 STILLWATER NY 12170	09/16/2013	03/21/2019
DOL	DOL	****3478	J N P CONSTRUCTION CORP	50 LOUIS COURT P O BOX 1907 SOUTH HACKENSACK NY 07606	03/21/2014	03/21/2019
DOL	DOL		J N RICH LLC	P O BOX 268 STILLWATER NY 12170	09/16/2013	03/21/2019
DOL	DOL	****9368	J TECH CONSTRUCTION	PO BOX 64782 ROCHESTER NY 14624	09/24/2012	09/24/2017
DOL	DOL		J THE HANDYMAN		09/24/2012	09/24/2017
DOL	DOL	****4910	J V MAGIC TOUCH CORPORATION	94-25 57TH AVENUE, APT 5G ELMHURST NY 11373	01/12/2015	01/12/2020
DOL	DOL		JACQUELINE HOWE	C/O FLOZ-ON PAINTING INC 12 DUNDERBERG ROAD TOMKINS NY 10986	10/16/2013	10/16/2018
DOL	DOL	****8627	JAG I LLC	635 LUZERNE ROAD QUEENSBURY NY 12804	09/16/2013	09/16/2018
DOL	DOL	****2868	JAG INDUSTRIES INC	175 BROAD ST - SUITE 320 GLENS FALLS NY 12801	09/16/2013	09/16/2018
DOL	DOL		JAMES B RHYNDERS	91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	DOL		JAMES BOYCE	C/O EMPIRE CONCRETE SYST 101 SULLYS TRAIL/SUITE 20 PITTSFORD NY 14534	11/18/2013	01/07/2019
DOL	DOL		JAMES E RHYNDERS	91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	AG		JAMES FALCONE	SUITE 125 265 SUNRISE HIGHWAY ROCKVILLE CENTRE NY 10457	04/07/2016	04/07/2021
DOL	DOL		JAMES RHYNDERS SR	91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	DOL		JAMES SICKAU	3090 SHIRLEY ROAD NORTH COLLINS NY 14111	04/19/2011	07/08/2020
DOL	DOL		JASON M RICH	P O BOX 268 STILLWATER NY 12170	09/16/2013	03/21/2019
DOL	DOL		JASON W MILLIMAN	C/O ROCHESTER ACOUSTICAL P O BOX 799 HILTON NY 14468	02/19/2016	02/19/2021

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DOL	DOL		JAY PRESUTTI		C/O CONSOLIDATED INDUSTRI 2051 ROUTE 44/55MODENA NY 12548	01/28/2013	01/28/2018
DOL	DOL		JEFF P BRADLEY		520 PINE HILL ROAD CHESTER NY 10940	06/23/2014	06/23/2019
DOL	NYC		JEFFREY CASSIDY		14 RAILROAD AVENUE VALHALLA NY 10595	05/15/2014	04/02/2020
DOL	DOL		JERALD HOWE		C/O FLOZ-ON PAINTING INC 12 DUNDERBERG ROADTOMKINS NY 10986	10/16/2013	10/16/2018
DOL	DOL		JEROME LACITIGNOLA		C/O CATSKILL FENCE INSTAL 5445 ROUTE 32 CATSKILL NY 12414	08/22/2014	08/22/2019
DOL	NYC		JERRY DEWATERS		30 COLUMBUS CIRCLE EASTCHESTER NY 10709	08/21/2012	08/21/2017
DOL	DOL		JESSICA WHITESIDE		C/O BRRESTORATION NY INC 140 ARCADIA AVENUEOSWEGO NY 13126	09/12/2016	09/12/2021
DOL	DOL		JOHN DESCUL		437 SUNRISE HIGHWAYA WEST BABYLON NY 11704	08/12/2013	08/12/2018
DOL	DOL		JOHN H LEE	JOHN LEE QUALITY PAVING	67 WILER ROAD HILTON NY 14468	01/28/2013	01/28/2018
DOL	DOL	*****1749	JOHN LEE QUALITY PAVING		67 WILER ROAD HILTON NY 14468	01/28/2013	01/28/2018
DOL	DOL		JON E DEYOUNG		261 MILL ROAD P O BOX 296EAST AURORA NY 14052	07/29/2015	07/29/2020
DOL	DOL	*****9368	JORGE I DELEON	J TECH CONSTRUCTI ON	PO BOX 64782 ROCHESTER NY 14624	09/24/2012	09/24/2017
DOL	DOL		JORGE VILLALOBOS		94-25 57TH AVENUE - APT 5 ELMHURST NY 11373	01/12/2015	01/12/2020
DOL	DOL		JOSE MONTAS		27 BUTLER PLACE YONKERS NY 10710	03/18/2011	03/19/2020
DOL	AG		JOSEPH FALCONE		SUITE 125 265 SUNRISE HIGHWAYROCKVILLE CENTRE NY 10457	04/07/2016	04/07/2021
DOL	DOL	*****9273	JOSEPH M LOVETRO		P O BOX 812 BUFFALO NY 14220	08/09/2016	08/09/2021
DOL	DOL		JOSEPH MARTONE		112 OSCAWANA HEIGHTS ROAD PUTNAM VALLEY NY 10542	08/27/2013	08/27/2018
DOL	DOL		JOSHUA DEBOWSKY		9547 BUSTLETON AVENUE PHILADELPHIA PA 19115	02/05/2014	02/05/2019
DOL	DOL		JOYA MUSCOLINO		10 ST CHARLES STREET THORNWOOD NY 10594	09/03/2013	09/03/2018
DOL	DOL		JUANA MARTINEZ		C/O LEAD CONSTRUCTION 27 BUTLER PLACEYONKERS NY 10710	03/19/2015	03/19/2020
DOL	DOL	*****4340	JUBCO SITE DEVELOPMENT LLC		462 LAKEVIEW AVENUE VALHALLA NY 10595	12/16/2013	12/16/2018
DOL	DOL		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/30C2
DOL	DOL	*****5062	K R F SITE DEVELOPMENT INC		375 LAKE SHORE DRIVE PUTNAM VALLEY NY 10579	01/23/2017	01/23/2022
DOL	DOL		KAREN HARTMAN		C/O GUILLO CONTRACTING P O BOX 229CALVERTON NY 11933	07/08/2013	07/08/2018
DOL	NYC		KATHLEEN SELA	C/O COLONIAL ROOFING COMPANY INC	247 48TH STREET BROOKLYN NY 11220	02/05/2014	02/05/2019
DOL	DOL		KEITH SCHEPIS		C/O KJS HAULING AND HOME 95 MAPLE AVENUENEW CITY NY 10956	04/15/2013	04/15/2018
DOL	DOL		KEN DEAVER		731 WARWICK TURNPIKE HEWITT NJ 07421	06/25/2012	12/11/2017
DOL	DOL		KENNETH FIORENTINO		375 LAKE SHORE DRIVE PUTNAM VALLEY NY 10579	01/23/2017	01/23/2022
DOL	DOL	*****9732	KENT HOLLOW SIDING LLC		29A BRIDGE STREET NEW MILFORD CT 06776	01/15/2016	01/15/2021
DOL	DOL		KEVIN BABCOCK JR		P O BOX 46 THOMPSON RIDGE NY 10985	08/22/2014	08/22/2019
DOL	DOL		KEVIN M BABCOCK		P O BOX 46 THOMPSON RIDGE NY 10985	08/22/2014	08/22/2019
DOL	DOL		KIM SOROCENSKI		C/O SOLUTION MATTERS INC 198 NORWOOD ROADPORT JEFFERSON NY 11776	11/19/2015	11/19/2020

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DOL	DOL	*****2463	KJS HAULING AND HOME IMPROVEMENT INC		95 MAPLE AVENUE NEW CITY NY 10956	04/15/2013	04/15/2018
DOL	AG		KOSTAS "GUS" ANDRIKOPOULOS		2461 47TH STREET ASTORIA NY 11103	09/26/2013	09/26/2018
DOL	DOL	*****6033	KUSNIR CONSTRUCTION		2677 ANAWALK ROAD KATONAH NY 10536	08/03/2012	08/03/2017
DOL	DA	*****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL	*****6224	LAKESIDE FIRE SPRINKLERS LLC		125 CHAUTAUQUA AVENUE LAKEWOOD NY 14750	06/24/2015	06/24/2020
DOL	DOL	*****4505	LARAPINTA ASSOCIATES INC		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	DOL		LARRY DOMINGUEZ		114 PEARL STREET PORT CHESTER NY 10573	08/15/2012	08/15/2017
DOL	DOL		LAURA A. GAUTHIER		C/O IMPERIAL MASONRY REST 141 ARGONNE DRIVE KENMORE NY 14217	10/03/2012	10/03/2017
DOL	DOL		LAURI MARTONE		112 OSCAWANA HEIGHTS ROAD PUTNAM VALLEY NY 10542	08/27/2013	08/27/2018
DOL	DOL		LAVERN GLAVE		C/O RAW POWER ELECTRIC 3 PARK CIRCLE MIDDLETOWN NY 10940	09/15/2014	09/15/2019
DOL	DOL		LAWRENCE J RUGGLES		P O BOX 371 ROUND LAKE NY 12151	05/12/2014	05/12/2019
DOL	DOL	*****1364	LEAD CONSTRUCTION SERVICES INC		3 ALAN B SHEPARD PLACE YONKERS NY 10705	03/19/2015	03/19/2020
DOL	DOL	*****0597	LEED INDUSTRIES CORP	HI-TECH CONTRACTING CORP	114 PEART STREET PORT CHESTER NY 10573	08/15/2012	08/15/2017
DOL	DOL	*****4388	LEN J CONSTRUCTION LLC		P O BOX 10007 ALBANY NY 12201	06/24/2016	01/30/2022
DOL	AG		LEONID FRIDMAN		APT 5 200 BRIGHTON, 15TH ST BROOKLYN NY 11235	01/23/2014	01/23/2019
DOL	DOL		LEROY NELSON JR		C/O LEN J CONSTRUCTION LL P O BOX 10007 ALBANY NY 12201	06/24/2016	01/30/2022
DOL	DOL		LINDSEY R CRILL		143 FILLMORE AVENUE BUFFALO NY 14210	01/08/2015	01/08/2020
DOL	DOL	*****8453	LINPHILL ELECTRICAL CONTRACTORS INC		523 SOUTH 10TH AVENUE MOUNT VERNON NY 10553	01/07/2011	04/15/2018
DOL	DOL		LINVAL BROWN		523 SOUTH 10TH AVENUE MOUNT VERNON NY 10553	01/07/2011	04/15/2018
DOL	NYC	*****2850	M A 2 FLAGS CONTRACTING CORP		25-18 100TH STREET EAST ELMHURST NY 11369	08/21/2013	08/21/2018
DOL	DOL		M ANVER BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	AG	*****6957	M B DIN CONSTRUCTION INC		8831 20TH AVENUE/SUITE 6E BROOKLYN NY 11214	11/17/2015	11/17/2020
DOL	NYC	*****6317	M S QUALITY CONSTRUCTION LLC		27 MAPLEWOOD AVENUE COLONIA NJ 07067	02/04/2015	02/04/2020
DOL	NYC		MACIEJ SONTOWSKI		27 MAPLEWOOD AVENUE COLONIA NJ 07067	02/04/2015	02/04/2020
DOL	NYC	*****9590	MACK GLASSNAUTH IRON WORKS INC		137 LIBERTY AVENUE BROOKLYN NY 11212	12/21/2015	12/21/2020
DOL	NYC	*****3141	MACKAY REED ELECTRIC INC		1ST FLOOR STORE FRONT 88-10 LITTLE NECK PARKWAY FLORAL PARK NY 11001	06/24/2014	06/24/2019
DOL	DOL	*****1784	MADISON AVE CONSTRUCTION CORP		39 PENNY STREET WEST ISLIP NY 11795	11/02/2016	11/02/2021
DOL	DOL		MALARKEY'S BAR & GRILL LLC		64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL	*****0705	MALARKEY'S PUB & GRUB LLC		64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
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	DOL		MAR CONTRACTING CORP		620 COMMERCE STREET THORNWOOD NY 10594	09/24/2012	09/24/2017
DOL	DOL		MARGARET FORTH		P O BOX 74 EAST GREENBUSH NY 12061	02/28/2012	10/01/2017

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DOL	DOL		MARIA ESTEVES AKA MARIA MARTINS		C/O THREE FRIENDS CONSTR 986 MADISON AVENUE PATERSON NJ 07501	01/03/2013	01/03/2018
DOL	DOL		MARIA MARTINS AKA MARIA ESTEVES		C/O THREE FRIENDS CONSTR 986 MADISON AVENUE PATERSON NJ 07501	01/03/2013	01/03/2018
DOL	DOL		MARIACHI'S PIZZERIA		C/O DOUGLAS L MALARKEY 64 VICTORIA DRIVE BINGHAMTON NY 13904	02/04/2016	02/04/2021
DOL	DOL		MARIO LUIS		31 DURANT AVENUE BETHEL CT 06801	07/02/2012	07/02/2017
DOL	DOL		MARK MIONIS		6409 LAND O LAKES BLVD LAND O LAKES FL 34638	11/10/2015	11/10/2020
DOL	DOL	*****5333	MARQUISE CONSTRUCTION & DEVELOPMENT CORP		10 ST CHARLES STREET THORNWOOD NY 10594	09/03/2013	09/03/2018
DOL	DOL	*****8910	MARQUISE CONSTRUCTION ASSOCIATES INC		20 BOSWELL ROAD PUTNAM VALLEY NY 10579	09/03/2013	09/03/2018
DOL	DOL	*****1134	MARQUISE CONSTRUCTION CORP		10 ST CHARLES STREET THORNWOOD NY 10594	09/03/2013	09/03/2018
DOL	DOL		MARVIN A STURDEVANT		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	DOL		MATTHEW IDEMA GENERAL CONTRACTORS INC		91 COLLEGE AVENUE POUGHKEEPSIE NY 12603	12/04/2015	12/04/2020
DOL	DOL	*****6416	MCCALL MASONRY		P O BOX 304 SAYRE PA 18840	08/09/2016	08/09/2021
DOL	DOL	*****9028	MCINTOSH INTERIORS LLC		8531 AVENUE B BROOKLYN NY 11236	02/05/2013	02/05/2018
DOL	DOL	*****4259	MERCANDO CONTRACTING CO INC		134 MURRAY AVENUE YONKERS NY 10704	12/11/2009	02/03/2019
DOL	DOL	*****327	MERCANDO INDUSTRIES LLC		134 MURRAY AVENUE YONKERS NY 10704	12/11/2009	02/03/2019
DOL	NYC	*****5330	METRO DUCT SYSTEMS INC		1219 ASTORIA BOULEVARD LONG ISLAND CITY NY 11102	04/16/2014	11/19/2020
DOL	DOL	*****3368	MICEK CONSTRUCTION CO INC		20 CROSS STREET FALCONER NY 14733	12/02/2014	12/02/2019
DOL	DOL		MICHAEL A PASCARELLA		SUITE 100 2105 WEST GENESEE STREET SYRACUSE NY 13219	01/06/2016	01/06/2021
DOL	DOL	*****9198	MICHAEL CZECHOWICZ	OCTAGON CO	37-11 35TH AVENUE-2ND FL LONG ISLAND CITY NY 11101	01/08/2013	01/08/2018
DOL	DOL		MICHAEL F LEARY JR		3813 SNOWDEN HILL ROAD NEW HARTFORD NY 13413	06/19/2013	06/19/2018
DOL	DOL		MICHAEL F LEARY JR METAL STUD & DRYWALL		3813 SNOWDEN HILL ROAD NEW HARTFORD NY 13413	06/19/2013	06/19/2018
DOL	NYC		MICHAEL HIRSCH		C/O MZM CORP 163 S MAIN STREET NEW CITY NY 10956	01/28/2016	01/28/2021
DOL	DOL		MICHAEL KTISTAKIS		363 88TH STREET BROOKLYN NY 11209	11/18/2013	11/18/2018
DOL	DOL	*****6033	MICHAEL KUSNIR	KUSNIR CONSTRUCTION	2677 ANAWALK ROAD KATONAH NY 10536	08/03/2012	08/03/2017
DOL	DOL		MICHAEL MARGOLIN		4 LEGHORN COURT NEW YORK NY 11746	11/28/2012	11/28/2017
DOL	DOL		MICHAEL WILSON	WILSON BROTHER DRYWALL CONTRACTORS	36 ABERSOLD STREET ROCHESTER NY 14621	08/31/2015	08/31/2020
DOL	DOL		MICHELLE L BARBER		635 LUZERNE ROAD QUEENSBURY NY 12804	09/16/2013	09/16/2018
DOL	NYC		MIGUEL ACOSTA		25-18 100TH STREET EAST ELMHURST NY 11369	08/21/2013	08/21/2018
DOL	NYC		MILANCE HADZIC		22 CALIFORNIA AVE - STE 1 PATERSON NJ 07503	03/11/2015	03/11/2020
DOL	AG		MOHAMMAD RIAZ		46 RUGBY ROAD WESTBURY NY 11590	11/20/2013	11/20/2018
DOL	AG		MOHAMMED N CHATHA		8831 20TH AVENUE/SUITE 6E BROOKLYN NY 11214	11/17/2015	11/17/2020
DOL	DOL	*****2737	MOUNTAIN'S AIR INC		2471 OCEAN AVENUE- STE 7A BROOKLYN NY 11229	09/24/2012	09/18/2020
DOL	DOL		MUHAMMAD BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL		MUHAMMAD PERVAIZ		C/O CHAMPION CONSTRUCTION 2131 SCHENECTADY AVENUE BROOKLYN NY 11234	11/18/2015	11/18/2020

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DOL	DOL		MURRAY FORTH		P O BOX 74 EAST GREENBUSH NY 12061	02/28/2012	10/01/2017
DOL	DOL		MUZAFFAR HUSSAIN		C/O ABSOLUTE GENERAL CONT 1129 AVENUE UBROOKLYN NY 11229	01/28/2013	01/28/2018
DOL	NYC	*****3613	MZM CORP		163 S MAIN STREET NEW CITY NY 10956	01/28/2016	01/28/2021
DOL	NYC	*****1284	NEW AMERICAN RESTORATION INC		22 CALIFORNIA AVE - STE 1 PATERSON NJ 07503	03/11/2015	03/11/2020
DOL	DA	*****6988	NEW YORK INSULATION INC		58-48 59TH STREET MASPETH NY 11378	05/16/2012	05/08/2020
DOL	NYC	*****4839	NEW YORK RIGGING CORP		58-83 54TH STREET MASPETH NY 11378	02/26/2016	02/26/2021
DOL	DOL		NICHOLAS DEGREGORY JR	NJ DEGREGORY & COMPANY	1698 ROUTE 9 GLENS FALLS NY 12801	05/23/2013	05/23/2018
DOL	NYC		NICHOLAS PROVENZANO		147 BROOME AVENUE ATLANTIC BEACH NY 11509	03/03/2014	03/03/2019
DOL	NYC		NICHOLAS PROVENZANO		147 BROOME AVENUE ATLANTIC BEACH NY 11509	03/03/2014	03/03/2019
DOL	DOL	*****5279	NJ DEGREORY & COMPANY		1698 ROUTE 9 GLENS FALLS NY 12801	05/23/2013	05/23/2018
DOL	DOL		NJ DEGREGORY & SONS CONSTRUCTION		1698 ROUTE 9 GLENS FALLS NY 12801	05/23/2013	05/23/2018
DOL	NYC	*****1968	NORTH AMERICAN IRON WORKS INC		1560 DECATUR STREET RIDGWOOD NY 11385	05/15/2015	05/15/2020
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	*****9198	OCTAGON CO		37-11 35TH AVENUE-2ND FL LONG ISLAND CITY NY 11101	01/08/2013	01/08/2018
DOL	NYC	*****8337	OPTIMUM CONSTRUCTION INC		23-73 48TH STREET LONG ISLAND CITY NY 11103	04/24/2014	04/24/2019
DOL	NYC		ORSON ARROYO		C/O METRO DUCT SYSTEMS 12-19 ASTORIA BOULEVARDLONG ISLAND CITY NY 11102	04/16/2014	11/19/2020
DOL	DOL	*****4546	PAF PAINTING CORP		161 TIBBETTS ROAD YONKERS NY 10705	03/12/2014	03/12/2019
DOL	DOL	*****5242	PAF PAINTING SERVICES INC	GARDEN STATE PAINTING	157 TIBBETTS ROAD YONKERS NY 10103	03/12/2014	03/12/2019
DOL	DOL		PAF PAINTING SERVICES OF WESTCHESTER INC		C/O SPIEGEL & UTRERA 1 MAIDEN LANE - 5TH FLNEW YORK NY 10038	03/12/2014	03/12/2019
DOL	DOL	*****8802	PAT'S HEATING AND AIR CONDITIONING LTD		P O BOX 371 ROUND LAKE NY 12151	05/12/2014	05/12/2019
DOL	DOL		PATRICIA M RUGGLES		P O BOX 371 ROUND LAKE NY 12151	05/12/2014	05/12/2019
DOL	DOL		PAUL VERNA		C/O AMERICAN STEEL MECHA 693 PAINTER STREETMEDIA PA 19063	02/20/2013	02/20/2018
DOL	DOL	*****9569	PERFORM CONCRETE INC		31 DURANT AVENUE BETHEL CT 06801	07/02/2012	07/02/2017
DOL	NYC		PETER LUSTIG		30 COLUMBUS CIRCLE EASTCHESTER NY 10709	08/21/2012	08/21/2017
DOL	DOL		PETER M PERGOLA		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10523	01/23/2017	01/23/2022
DOL	NYC		PETER TRITARIS		5990 58TH AVENUE MASPETH NY 11378	11/18/2013	11/18/2018
DOL	DOL	*****2989	PROFESSIONAL ESTIMATING & BUSINESS CORP		157 TIBBETS ROAD YONKERS NY 10705	03/12/2014	03/12/2019
DOL	DOL	*****6895	PROLINE CONCRETE OF WNY INC		3090 SHIRLEY ROAD NORTH COLLINS NY 14111	04/19/2011	07/08/2020
DOL	DA	*****6817	QUADRANT METAL BUILDINGS LLC		2740 SW MARTIN DOWNS BLVD PALM CITY FL 34990	08/25/2016	08/25/2021
DOL	DOL	*****0015	RAMADA CONSTRUCTION CORP		80 SAVO LOOP STATEN ISLAND NY 10309	01/07/2014	01/07/2019
DOL	NYC		RAMESHWAR ASU		137 LIBERTY AVENUE BROOKLYN NY 11212	12/21/2015	12/21/2020
DOL	DOL		RANA A KAHN		1973 81ST ST - SUITE A-5 BROOKLYN NY 11214	01/08/2015	01/08/2020
DOL	NYC		RANTIK PARIKH		13 LORIANN ROAD WARREN NJ 07059	07/15/2015	07/15/2020

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DOL	DOL	*****2633	RAW POWER ELECTRIC CORP		3 PARK PLACE MIDDLETOWN NY 10940	09/16/2013	09/15/2019
DOL	NYC		RAYMOND PEARSON		P O BOX 957 PORT JEFFERSON STA NY 11776	03/12/2014	03/12/2019
DOL	DOL		REBECCA THORNE		113 N MAPLE AVENUE GREENSBURG PA 15601	02/21/2013	02/21/2018
DOL	DOL		REGINALD WARREN		C/O RAW POWER ELECTRIC 3 PARK CIRCLE MIDDLETOWN NY 10940	09/15/2014	09/15/2019
DOL	NYC	*****3461	RELIANCE GENERAL CONSTRUCTION INC		644 OCEAN PARKWAY BROOKLYN NY 11230	09/02/2015	09/02/2020
DOL	DOL		REVOLUTIONARY FLOORS LLC		P O BOX 268 STILLWATER NY 12170	09/16/2013	03/21/2019
DOL	DOL		RHINO CONCRETE LLC		101 SULLYS TRAIL/SUITE 20 PITTSFORD NY 14534	11/18/2013	01/07/2019
DOL	DA		RIANN MULLER		2740 SW MARTIN DOWNS BLVD PALM CITY FL 34990	08/25/2016	08/25/2021
DOL	DOL		RICHARD WILSON		C/O DUFOUR GROUP INC 353 WEST 56TH STREET #7MNEW YORK NY 10019	06/10/2014	06/10/2019
DOL	DOL	*****8518	RIEKS CONTRACTING LLC		4804 GAHWILER ROAD AUBURN NY 13021	05/01/2015	05/01/2020
DOL	DOL		ROBBYE BISSESAR		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003
DOL	DOL	*****1855	ROBERT D BISHOP JR	ROBERT D BISHOP JR	P O BOX 112 MORRISONVILLE NY 12962	07/15/2014	07/15/2019
DOL	DOL		ROBERT D BISHOP JR		P O BOX 112 MORRISONVILLE NY 12962	07/15/2014	07/15/2019
DOL	NYC		ROBERT GUIDO		3256 BRUNER AVENUE BRONX NY 10469	07/29/2014	07/29/2019
DOL	DOL		ROBERT L EVANS		128A NORTH STAMFORD ROAD STAMFORD CT 06903	05/23/2013	05/23/2018
DOL	DOL		ROBERT TORDELLA		125 CHAUTAUQUA AVENUE LAKEWOOD NY 14750	06/24/2015	06/24/2020
DOL	DOL		ROCCO ESPOSITO		C/O ROCMAR CONTRACTING CO 620 COMMERCE STREET THORNWOOD NY 10594	09/24/2012	09/24/2017
DOL	DOL	*****3859	ROCHESTER ACOUSTICAL CORP		P O BOX 799 HILTON NY 14468	02/19/2016	02/19/2021
DOL	DOL		ROCMAR CONSTRUCTION CORP		620 COMMERCE STREET THORNWOOD NY 10594	09/24/2012	09/24/2017
DOL	DOL	*****7083	ROCMAR CONTRACTING CORP		620 COMMERCE STREET THORNWOOD NY 10594	09/24/2012	09/24/2017
DOL	NYC		RODNEY SCOTT		201 HEMPSTEAD AVENUE WEST HEMPSTEAD NY 11552	10/30/2015	10/30/2020
DOL	DOL		ROMEO WARREN		C/O RAW POWER ELECTR CORP 3 PARK PLACE MIDDLETOWN NY 10940	09/16/2013	09/15/2019
DOL	DOL		ROSS J MUSCOLINO		10 ST CHARLES STREET THORNWOOD NY 10594	09/03/2013	09/03/2018
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		S & S ELECTRIC		235 BROADWAY SCHENECTADY NY 12306	06/19/2013	06/19/2018
DOL	NYC		SABIR MUHAMMED		SUITE B-8 782 PELHAM PARKWAY SOUTHBRONX NY 10462	04/21/2016	04/21/2021
DOL	NYC		SAEED HASAN		4558 BROADWAY #6 NEW YORK NY 10040	08/04/2014	08/04/2019
DOL	DOL	*****4923	SCHENLEY CONSTRUCTION INC		731 WARWICK TURNPIKE HEWITT NJ 07421	06/25/2012	12/11/2017
DOL	NYC	*****2117	SCOTT ELECTRICAL LLC		201 HEMPSTEAD AVENUE WEST HEMPSTEAD NY 11552	10/30/2015	10/30/2020
DOL	DOL		SCOTT LEONARD	GLOBAL TANK CONSTRUCTI ON LLC	P O BOX 1238 SALINA OK 74365	11/28/2012	11/28/2017
DOL	DOL	*****9751	SCW CONSTRUCTION		544 OLD ROUTE 23 ACRE NY 12405	02/14/2017	02/14/2022
DOL	DOL		SEAKCO CONSTRUCTION COMPANY LLC		128A NORTH STAMFORD ROAD STAMFORD CT 06903	05/23/2013	05/23/2018

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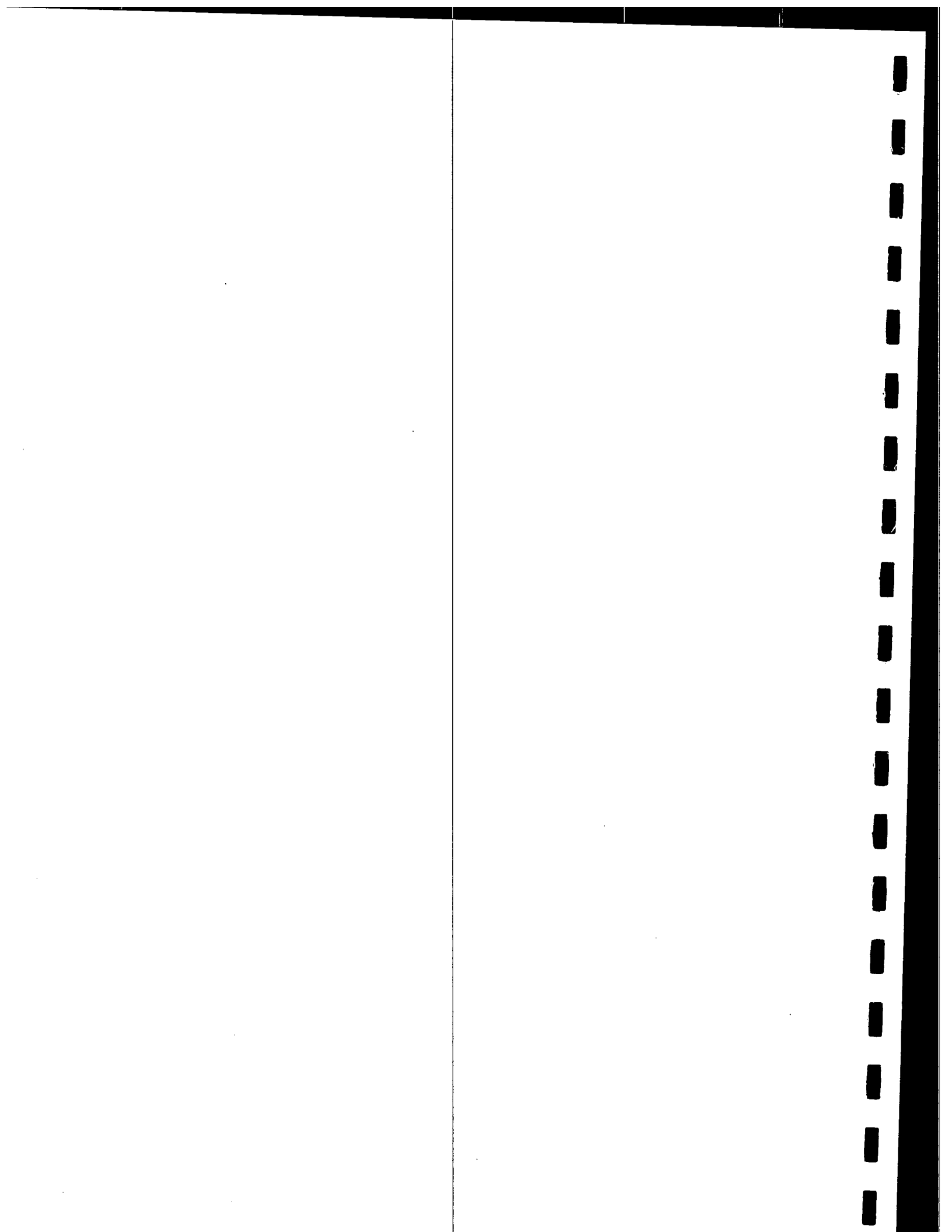
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DOL	DOL	*****9030	SEAKCO NEW YORK LLC	SEAKCO CONSTRUCTION COMPANY	128A NORTH STAMFORD ROAD STAMFORD CT 06903	05/23/2013	05/23/2018
DOL	DOL		SEAN BURBAGE	C/O SEAN BURBAGE CORP	445 ROOSA GAP ROAD BLOOMINGBURG NY 12721	04/14/2014	04/14/2019
DOL	DOL	*****6586	SEAN BURBAGE CORP		445 ROOSA GAP ROAD BLOOMINGBURG NY 12721	04/14/2014	04/14/2019
DOL	NYC		SHAHZAD ALAM		21107 28TH AVE BAYSIDE NY 11360	07/02/2012	07/02/2017
DOL	DOL	*****6904	SIGNING STAR LIMITED LIABILITY COMPANY		5 HANSEN PLACE WAYNE NJ 07470	09/18/2013	09/18/2018
DOL	DOL	*****4025	SOLUTION MATTERS INC		198 NORWOOD ROAD PORT JEFFERSON NY 11776	11/19/2015	11/19/2020
DOL	NYC	*****4934	SPHINX CONTRACTING CORP		240 HOME STREET TEANECK NJ 07666	08/04/2014	08/04/2019
DOL	DOL		SPORTSCRAFTERS INC		113 N MAPLE AVENUE GREENSBURG PA 15601	02/21/2013	02/21/2018
DOL	DOL	*****3496	STAR INTERNATIONAL INC		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	08/11/2003	08/11/3003
DOL	DOL		STEPHEN BIANCHI		462 LAKEVIEW AVENUE VALHALLA NY 10595	12/16/2013	12/16/2018
DOL	DOL	*****9751	STEPHEN C WAGAR		544 OLD ROUTE 23 ACRE NY 12405	02/14/2017	02/14/2022
DOL	DOL		STEPHEON SHELTON	FANTASTIC PAINTING	493 LANSING ROAD FULTONVILLE NY 12072	11/18/2013	11/18/2018
DOL	DOL		STEVEN P SUCATO		15-68 208TH STREET BAYSIDE NY 11360	06/23/2016	06/23/2021
DOL	DOL		STEVEN SAGGESE		3005 WYNSUM AVENUE MERRICK NY 11566	08/18/2014	08/18/2019
DOL	DOL		STEVEN TESTA		50 SALEM STREET - BLDG B LYNNFIELD MA 01940	01/23/2017	01/23/2022
DOL	DOL		STUART CHAITIN		634 ROUTE 303 BLAUVET NY 10913	07/26/2012	11/19/2018
DOL	NYC	*****9432	SUBLINK LTD		346 THIRD AVENUE PELHAM NY 10803	11/19/2015	11/19/2020
DOL	DOL	*****3210	SUPER SWEEP	FMS	4 LEGHORN COURT NEW YORK NY 11746	11/28/2012	11/28/2017
DOL	DOL		SUZANNE G GOLD	C/O GOLDS FLOORING INSTALLATION S INC	25 HAMILTON ROAD MONTICELLO NY 12701	10/16/2013	10/16/2018
DOL	DOL	*****7441	T & T CONCRETE INC		2560 HAMBURG TURNPIKE P O BOX 367LACKAWANNA NY 14218	07/08/2015	07/08/2020
DOL	DOL	*****9676	T D CONTRACTORS CORP	T D CONTRACTOR S INC	113 N MAPLE AVENUE GREENSBURG PA 15601	02/21/2013	02/21/2018
DOL	DOL		T D CONTRACTORS INC		113 N MAPLE AVENUE GREENSBURG PA 15601	02/21/2013	02/21/2018
DOL	DOL		TADCO CONSTRUCTION		101-61 99TH STREET OZONE PARK NY 11416	02/15/2017	02/15/2022
DOL	DOL	*****7417	TADCO CONSTRUCTION CORP		101-61 99TH STREET OZONE PARK NY 11416	02/15/2017	02/15/2022
DOL	DOL		TAMMY LACITIGNOLA		C/O CATSKILL FENCE INSTAL 5445 ROUTE 32CATSKILL NY 12414	08/22/2014	08/22/2019
DOL	DOL	*****9852	TAP STEEL INC		ROUTE 26 3101 P O BOX 457CONSTABLEVILLE NY 13325	01/28/2016	01/28/2021
DOL	DOL		TECH-MECHANICAL FAB DC INC		5 PARKER AVENUE POUGHKEEPSIE NY 12601	03/25/2014	03/25/2019
DOL	DOL	*****5570	TESTA CORP		50 SALEM STREET - BLDG B LYNNFIELD MA 01940	01/23/2017	01/23/2022
DOL	DOL	*****0887	THE BRINSON PAINTING CORPORATION		72 TAUNTON PLACE BUFFALO NY 14216	04/14/2015	04/14/2020
DOL	DOL	*****8174	THE DALRYMPLE CORPORATION		UNIT 278 541 10TH STREET NWTALANTA GA 30318	12/01/2015	12/01/2020
DOL	DOL	*****8174	THE DALRYMPLE GROUP LLC		289 JONESBORO RD/ STE 216 MCDONOUGH GA 30253	12/01/2015	12/01/2020
DOL	DOL		THE THORNE GROUP INC		113 N MAPLE AVENUE GREENSBURG PA 15601	02/21/2013	02/21/2018
DOL	DOL	*****2070	THE UNIVERSAL GROUP OF NEW YORK INC		212 OXFORD WAY SCHENECTADY NY 12309	12/11/2012	09/16/2018
DOL	DOL	*****9243	THE WELCOME MAT PROPERTY MANAGEMENT LLC		P O BOX 268 STILLWATER NY 12170	09/16/2013	03/21/2019

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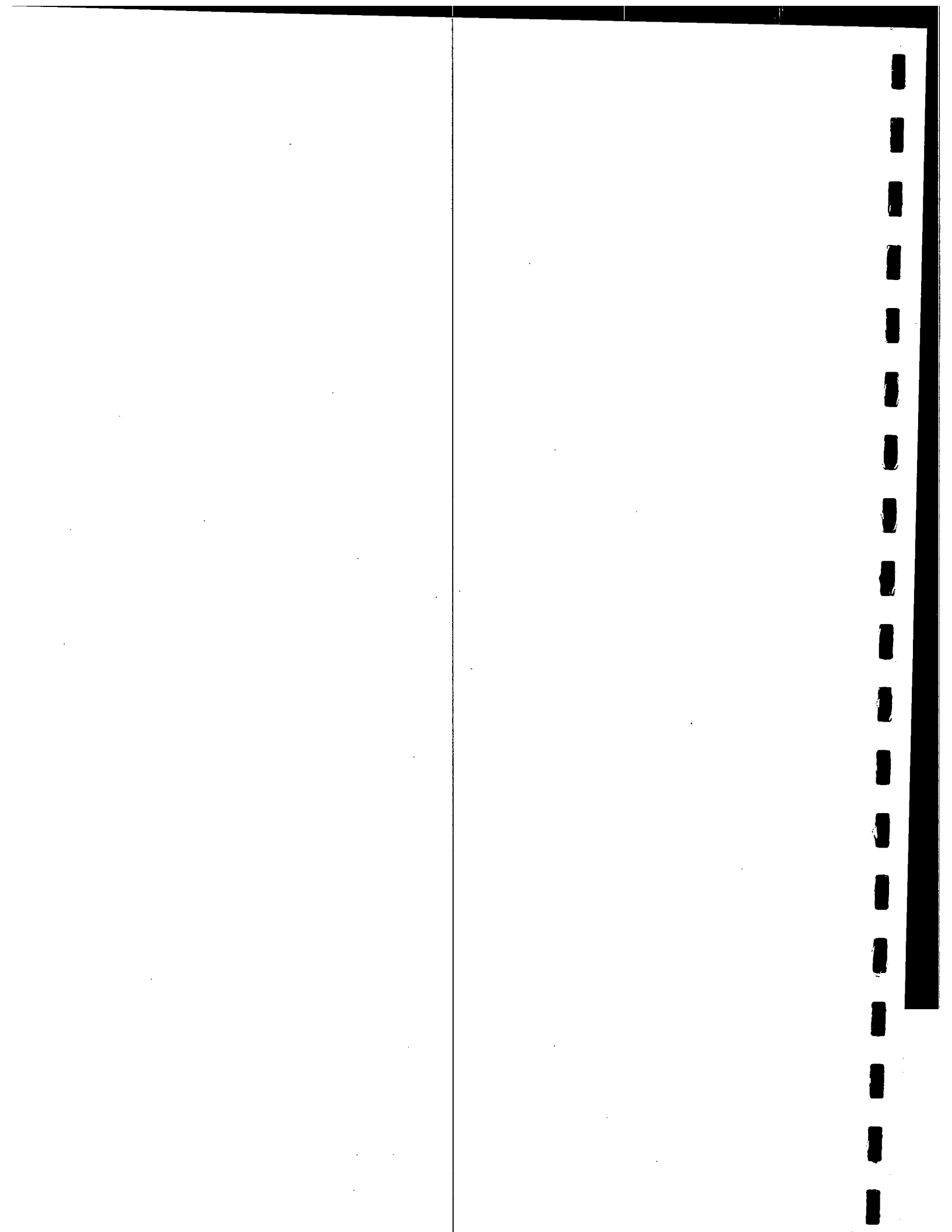
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DOL	DOL		THOMAS DESANTIS	DESANTIS ENTERPRISES	161 OSWEGO RIVER ROAD PHOENIX NY 13135	09/24/2013	11/18/2018
DOL	NYC		THOMAS SCARINCI		130-43 92ND AVENUE RICHMOND HILLS NY 11418	11/27/2013	11/27/2018
DOL	DOL	*****2734	THREE FRIENDS CONSTRUCTION CORP		986 MADISON AVENUE PATERSON NJ 07501	01/03/2013	01/03/2018
DOL	NYC	*****6253	THUNDER BROTHERS CORP		24 CONGRESS LANE SOUTH RIVER NJ 08882	05/01/2013	05/01/2018
DOL	DOL		TIMOTHY A PALUCK		C/O TAP STEEL INC RTE 26 3101/ P O BOX 457CONSTABLEVILLE NY 13325	01/28/2016	01/28/2021
DOL	DOL		TIMOTHY F BARBER		635 LUZERNE ROAD QUEENSBURY NY 12804	09/16/2013	09/16/2018
DOL	NYC	*****1523	TM MECHANICAL CORP		130-43 92ND AVENUE RICHMOND HILLS NY 11418	11/27/2013	11/27/2018
DOL	DOL	*****0600	TOMSON ALLOYS RECYCLING INC		143 FILLMORE AVENUE BUFFALO NY 14210	01/08/2015	01/08/2020
DOL	DOL	*****3453	TORCHIA'S HOME IMPROVEMENT		10153 ROBERTS RD SAUQUOIT NY 13456	08/09/2016	08/09/2021
DOL	DOL	*****6914	TRI-COUNTY RESTORATIONS & CONSTRUCTION INC		13 SUMMERSET DRIVE WALLKILL NY 12589	08/22/2014	08/22/2019
DOL	DOL		TRI-COUNTY RESTORATIONS INC		392 ROCK CUT ROAD WALDEN NY 12586	08/22/2014	08/22/2019
DOL	DOL		TROY D CLARKE	ADVANCED METALS	387 RIVERSIDE DRIVE JOHNSON CITY NY 13790	10/01/2012	10/01/2017
DOL	DOL	*****9407	TURBO GROUP INC		15-68 208TH STREET BAYSIDE NY 11360	06/23/2016	06/23/2021
DOL	AG	*****6490	UNIVERSAL STEEL FABRICATORS INC		90 JUNIUS STREET BROOKLYN NY 11212	01/23/2014	01/23/2019
DOL	NYC	*****7174	V&R CONTRACTING		P O BOX 957 PORT JEFFERSON STA NY 11776	03/12/2014	03/12/2019
DOL	NYC		VALERIE VISCONTI		346 THIRD AVENUE PELHAM NY 10803	11/19/2015	11/19/2020
DOL	NYC		VEAP SELA	C/O COLONIAL ROOFING COMPANY INC	247 48TH STREET BROOKLYN NY 11220	02/05/2014	02/05/2019
DOL	DOL	*****3273	VEZANDIO CONTRACTING CORP		530 BEECH STREET NEW HYDE PARK NY 11040	07/02/2012	07/02/2017
DOL	NYC		VICK CONSTRUCTION		21 DAREWOOD LANE VALLEY STREAM NY 11581	12/31/2013	12/31/2018
DOL	NYC		VICKRAM MANGRU	VICK CONSTRUCTION	21 DAREWOOD LANE VALLEY STREAM NY 11581	12/31/2013	12/31/2018
DOL	DOL		VICTOR ROTENBERG		C/O GMDV TRANS INC 67048 182ND STREET FRESH MEADOWS NY 11365	06/24/2016	06/24/2021
DOL	NYC		VINCENT PIZZITOLA		P O BOX 957 PORT JEFFERSON STA NY 11776	03/12/2014	03/12/2019
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		WESLEY J STAROBA		206 TALLY HO COURT SCHENECTADY NY 12303	06/19/2013	06/19/2018
DOL	DOL	*****0076	WESLEY J STAROBA INC	S & S ELECTRIC	235 BROADWAY SCHENECTADY NY 12306	06/19/2013	06/19/2018
DOL	DOL		WILLIAM CONKLIN		5 PARKER AVENUE POUGHKEEPSIE NY 12601	03/25/2014	03/25/2019
DOL	DOL		WILLIAM DEAK		C/O MADISON AVE CONSTR CO 39 PENNY STREET WEST ISLIP NY 11795	11/02/2016	11/02/2021
DOL	DOL		WILLIAM MAZZELLA		134 MURRAY AVENUE YONKERS NY 10704	02/03/2014	02/03/2019
DOL	DOL		WILLIAM THORNE		113 N MAPLE AVENUE GREENSBURG PA 15601	02/21/2013	02/21/2018
DOL	DOL		WILLIE BRINSON		72 TAUNTON PLACE BUFFALO NY 14216	04/14/2015	04/14/2020
DOL	DOL	*****6195	WILSON BROTHER DRYWALL CONTRACTORS		36 ABERSOLD STREET ROCHESTER NY 14621	08/31/2015	08/31/2020
DOL	DOL	*****7345	YES SERVICE AND REPAIRS CORPORATION		145 LODGE AVE HUNTINGTON STATION NY 11476	08/09/2016	08/09/2021
DOL	DOL		YURIY IVANIN		C/O MOUNTAIN'S AIR INC 2471 OCEAN AVENUE-STE 7 BROOKLYN NY 11229	09/24/2012	09/18/2020



APPENDIX D

NYSDOT WORK PERMIT APPLICATION



NEW YORK STATE DEPARTMENT OF TRANSPORTATION

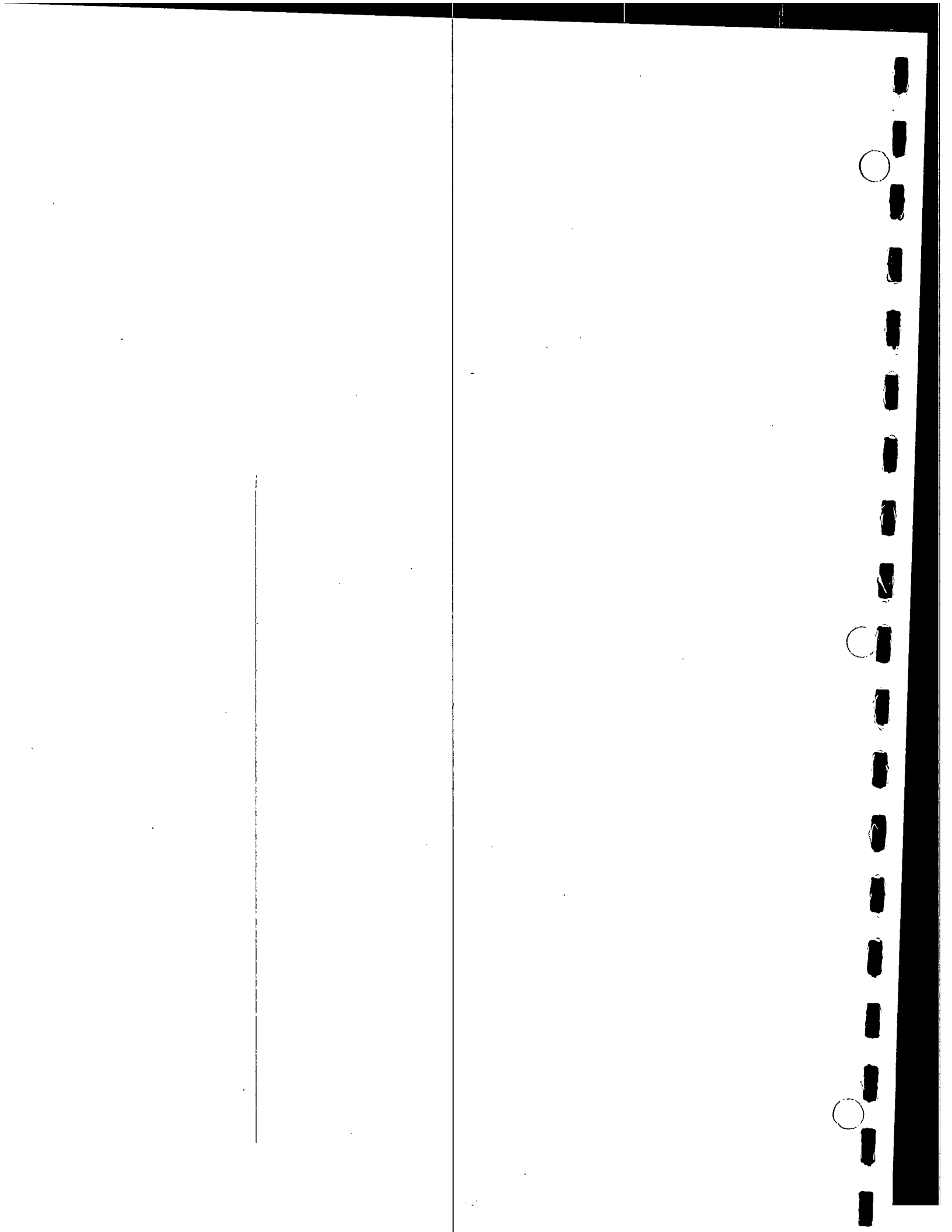
INSTRUCTIONS TO APPLICANTS FOR HIGHWAY WORK PERMITS

An applicant requesting a Highway Work Permit must obtain and complete those forms which have been checked below according to the type of work to be performed.

- (1) Highway Work Permit Application for Utility Work (Form PERM 32)
- (2) Highway Work Permit Application for Non-utility Work (Form PERM 33)
- (3) ACORD 25 Certificate of Liability Insurance (with ACORD 855 Addendum)
- (4) Application for Charge Account Agreement (Form PERM 10)
- (5) Inspection and/or Supervision Payment Agreement (Form PERM 50 or PERM 52)
- (6) Payment Agreement for Highway Work Permit Design Review (Form PERM 51)

INSTRUCTIONS FOR COMPLETING ABOVE FORMS

- (1) PERM 32: Detailed instructions are included with the application.
- (2) PERM 33: Detailed instructions are included with the application.
- (3) ACORD 25 Certificate of Liability insurance (with ACORD 855 New York Construction Addendum): These forms are obtained from your insurance professional. Specific details on insurance requirements are provided in the PERM 32 and PERM 33 application under Submission Package Requirements.
- (4) APPLICATION FOR CHARGE ACCOUNT AGREEMENT (FORM PERM 10): This form may be used by utilities to request a charge account for Highway Work Permits. The form should be accompanied by a \$50.00 payment to cover administrative costs of establishing the charge account.
- (5) INSPECTION AND/OR SUPERVISION PAYMENT AGREEMENT (FORM PERM 50 OR PERM 52): This form is required for all permits where inspection and/or supervision by Department employees will exceed one work hour. A separate consultant inspection agreement may also be required.
- (6) PAYMENT AGREEMENT FOR HIGHWAY WORK PERMITS DESIGN REVIEW (FORM PERM 51): This form is required for all major commercial permits for projects that have a 100,000 square foot or greater gross building area.
- (7) SPECIAL CONDITIONS FOR COMMERCIAL-MAJOR NON-UTILITY PERMITS (FORM PERM 55) This form describes prevailing wage and public letting requirements for major commercial permits where the estimated cost of work in the State highway right-of-way of \$250,000 or greater.





Department of
Transportation

Form PERM 32 (December 2015)
Highway Work Permit Application for Utility
Work Instructions and Form

INSTRUCTIONS FOR COMPLETING THE APPLICATION

FRONT OF APPLICATION

Three (3) copies of the entire application, work plans and all other supporting documents must be submitted. At the time of application, certain information relative to fees and deposits may be contingent upon determinations to be made by the Department. In such cases, the information may be left blank and remittance withheld until a determination is made.

Please complete the following:

- Permittee name, address, phone and email address. Provide joint applicant contact information, if appropriate. If there are additional applicants, attach contact information on a separate sheet.
- Name and phone number(s) of emergency contact person.
- If permit is to be returned to someone other than the applicant, complete this section.
- If the guarantee deposit or bond is to be returned to someone other than applicant, complete this section.
- Estimate the cost of work being performed in the state highway right-of-way and provide this figure.
- Indicate anticipated duration of work to be performed with starting date and ending date.
- Indicate the form of insurance coverage to be provided.
- Give a brief description of the work that is proposed to be done under this permit.
- Indicate whether any overhead and/or underground work (5 foot or greater depth) is included in the proposed work.
- Plans and specifications should accompany this application for any work that involves construction within the state highway right-of-way. Place a check mark on the lines for plans and specifications if they are attached to this application.
- Location of the project should be identified by State Route, highway reference marker(s), and the municipality and county in which work area is located.
- In regard to State Environmental Quality Review (SEQR), indicate the type of action, the name of the Lead Agency, and what date the final determination was made, if available.
- Signature of applicant and date.
- Signature of second applicant, if any, and date.

BACK OF APPLICATION

- Check type of work that will be performed.
- In the appropriate column, indicate total amount of permit fees
- Indicate Utility Charge Account Number if applicable
- Indicate type of performance security provided (bond, deposit, letter of credit), if required.
- Indicate check number of deposit or bond number.

**RESPONSIBILITIES OF PERMITTEE
PURSUANT TO UTILITY HIGHWAY WORK PERMITS**

NOTE: FAILURE TO OBTAIN A PERMIT OR FAILURE TO COMPLY WITH THE TERMS OF A PERMIT MAY RESULT IN THE DEPARTMENT HALTING THE ACTIVITY FOR WHICH A PERMIT IS REQUIRED UNTIL ADEQUATE CORRECTIONS HAVE BEEN MADE.

1. LIMITATIONS ON USE: The specific site identified in this Highway Work Permit, and only that site identified, will be available for use by Permittee only for the purpose stated in this Permit and only on the date(s) and for the duration designated in this permit. This Permit does not authorize any infringement of federal, state or local laws or regulations, is limited to the extent of the authority of NYSDOT and is transferable and assignable only with the written consent of the Commissioner of Transportation. The Commissioner reserves the right to modify fees and to revoke or annul the Permit at any time, at his/her discretion without a hearing or the necessity of showing cause.

2. CONDITIONS OF USE: NYSDOT makes no affirmation that the state-owned site used for the work has been designed, constructed, or maintained for the purpose of the conduct of the work. The Permittee assumes full responsibility for planning and conducting a safe and orderly project that does not expose workers or the public to any unreasonable hazards and that involves a minimal disruption of the normal uses of the state and local highway systems. **It shall be the sole obligation of the Permittee to determine whether the site is suitable for the purpose of safely conducting the work.** The Permittee assumes all responsibility for assuring that the use of the highway/property conforms to applicable requirements of law, including, but not limited to those set forth herein.

Permittee agrees to assure compliance with New York Labor Law, industrial regulations, and OSHA regulations, and to assure the safety of all workers who will be engaged to do the permitted work.

3. INSURANCE COVERAGE: Permittee must have the insurance that is required for the type and extent of the work being performed.

Permittee agrees to maintain liability insurance in full force and effect throughout the term of the highway work permit. Expiration of, or lack of, liability insurance automatically terminates the permit.

To comply with this requirement, an applicant must furnish the Department with one of the following:

- A completed **Certificate of Insurance** evidencing the required types and limits of insurance coverage, with New York State Department of Transportation named as an additional insured on the commercial general liability policy. An industry standard **ACORD 25** form with an **ACORD 855** Addendum is acceptable evidence of the required coverage. Certificate Holder should be indicated as New York State Department of Transportation, with the address of the issuing office.
- A fully executed **Undertaking Agreement** may be provided by Municipalities, Public Utilities, Transportation Corporations, Public Service Corporations or Railroads, as an alternative to providing proof of commercial general liability the insurance.

See PERM 32 Submission Package Requirements on page 4 for more detailed guidance on insurance coverage.

4. COMPENSATION AND DISABILITY INSURANCE COVERAGE: Permittee is required to have compensation insurance and disability coverage as noted in the provisions of the Worker's Compensation Law and Acts amendatory thereof for the entire period of the permit, or the permit will be invalid. Applicant must provide proof of coverage (Form C-105.2, U-26.3 or SI-12 for Worker's Compensation, and DB-120.1 or DB-155 for Disability Benefits), or provide proof of exemption from this requirement (Form CE-200).

5. INDEMNIFICATION: Permittee agrees that, in addition to any protection afforded to NYSDOT under any available insurance, NYSDOT shall not be liable for any damage or injury to the Permittee, its agents, employees, or to any other person, or to any property, occurring on the site or in any way associated with Permittee's activities or operations; whether undertaken by Permittee's own forces or by contractor or other agents working on Permittee's behalf. To the fullest extent permitted by law, the Permittee agrees to defend, indemnify and hold harmless the State of New York, NYSDOT and their agents from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of any claim, including but not limited to claims for personal injuries, property damage or wrongful death and/or environmental claims, in any way associated with the Permittee's activities or operations, no matter how caused.

6. NOTIFICATION: The following should be notified at the appropriate time as shown below:

- Commissioner of Transportation, through the NYSDOT regional office, one week prior to commencing work.
- Area gas distributors, 72 hours prior to any blasting.
- Utility companies with facilities in work areas, before starting work (in accordance with Industrial Code 53).
- Permission from utility company must be obtained before commencing work affecting the utilities' facilities.
- NYSDOT regional signal maintenance shop, 3 days prior to starting work (traffic signal work).
- NYSDOT regional office, at conclusion of work, and return original copy of permit to Resident Engineer.

NOTIFICATION FOR ANNUAL MAINTENANCE PERMITS: (1) Except in emergencies, the applicant will notify the regional director and resident engineer in writing, at least 72 hours before work is started. This notice will contain a complete description of the work to be done, including sketches where essential. (2) In emergencies, telephone notice will be immediately given the resident engineer, and the full requirements outlined above will be met as soon as possible, and not later than the first working day following the emergency notice.

7. SITE CARE AND RESTORATION: A bond, deposit (bank cashier's check), or a Letter of Credit, in an amount designated by the Department of Transportation, may be required before a permit is issued, in order to guarantee restoration of the site to its original condition. A fully executed Undertaking Agreement may be accepted as an alternative security, where applicable. If the Department is obliged to restore the site to its original condition, the costs to the Department will be deducted from the amount of the permittee's deposit at the conclusion of the work. Costs in excess of the bond/deposit on file will be billed directly to the permittee. If permittee posts a Letter of Credit, the Department may elect to have a contractor restore the site, and issue a draft drawn against the Letter of Credit as payment.

- Anyone working within state highway right-of-way must wear **high visibility apparel and hard hat** meeting ANSI Class 2 requirements.
- No unnecessary obstruction is to be left on the pavement or the state highway right-of-way, or in such a position as to block warning signs during non-working hours.
- No work shall be done to obstruct drainage or divert creeks, water courses or sluices onto the state highway right-of-way.
- All false work must be removed and all excavations must be filled in and restored to the satisfaction of the Regional Maintenance Engineer.

8. COSTS INCURRED BY ISSUANCE OF THIS PERMIT: All costs beyond the limits of any liability insurance, surety deposits, etc. are the responsibility of the permittee. The State shall be held free of any costs incurred by the issuance of this permit, direct or indirect.

9. SUBMITTING WORK PLANS: The applicant will submit three (3) copies of work plans and/or maps as required by the Department. This shall include (but not be limited to) such details as: measurements of driveways with relation to nearest property corner; location of existing and proposed poles, guide rail, signal equipment, trees or drainage structures; positions of guys supporting poles; a schedule of the number of poles and feet of excavation necessary for completion of work on the State right-of-way. A description of the proposed method of construction will be included.

- Plan work with future adjustments in mind, as any relocation, replacement or removal of the installation authorized by this permit and made necessary by future highway maintenance, reconstruction or new construction, will be the responsibility of the permittee.
- The permittee must coordinate the work with any State construction being conducted.

10. TRAFFIC MAINTENANCE: A plan detailing how the permittee intends to maintain and protect traffic shall be submitted with work plans. Traffic shall be maintained on the highway in a safe manner during working and non-working hours until construction is completed. The permittee is responsible for traffic protection and maintenance, including adequate use of signs, barriers, and flag persons during working and non-working hours until construction is completed. All sketches will be stamped with "MAINTENANCE OF TRAFFIC SHALL BE IN CONFORMANCE WITH THE NATIONAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."

11. COST OF INSPECTION AND SUPERVISION: Prior to issuance of the Highway Work Permit, the permittee may be required to sign an INSPECTION PAYMENT AGREEMENT FOR HIGHWAY WORK PERMITS (FORM PERM 50) agreeing to the payment of construction inspection charges, based on the number of work days involved.

12. SCOPE:

- **Areas Covered:** Permits issued are for highways, bridges and culverts over which the New York State Department of Transportation has jurisdiction. (Local governments issue permits for highways under their jurisdiction.) Work locations must be approved by the Department.
- **Maintenance:** Unless noted otherwise, applicant shall be fully responsible for the maintenance of all items installed and/or altered as shown on the approved permit plans and documents. Property owners having access to a state highway shall be fully responsible for the maintenance of their driveway in accordance with POLICY AND STANDARDS FOR ENTRANCES TO STATE HIGHWAYS.
- **Work Commencement:** The Permittee shall have a copy of the permit available at the site during the construction period. Work should start within 30 days from validation date of permit or said permit may be revoked.

13. REPORTING ACCIDENTS: Permittee is required to report any accidents that occur during the course of the permit work to their insurance company, and to provide the Department with a copy of any such report.

14. COMPLETION OF PROJECT: Upon completion of the work within the State highway right-of-way authorized by the work permit, the person and his or its successors in interest shall be responsible for the maintenance and repair of such work or portion of such work as set forth within the Terms and Conditions of the Highway Work Permit.

15. USE AND OCCUPANCY: A Use & Occupancy agreement may be a requirement of this permit. If required, Applicant agrees to enter into a Use & Occupancy agreement with the department, and to pay all fees associated with ongoing occupancy of state right-of-way, and all other conditions required under the Use & Occupancy agreement.

PERM 32 Submission Package Requirements

Submit three (3) copies of the final submission package: Submission package must include the entire PERM 32 with all work plans and supporting documents, including the following (check all that apply):

<input type="checkbox"/>	Stamped Final Plans – Submit in PDF file format on CD, with three (3) paper copies (1" = 50'), or as requested
<input type="checkbox"/>	ACORD 25 - Certificate of Insurance, with NYSDOT named as Additional Insured (See line 3 below).
<input type="checkbox"/>	ACORD 855 - New York Construction Certificate of Liability Insurance Addendum (See line 3 below).
<input type="checkbox"/>	PERM 1, 2, 6 or 16 - Undertaking Agreement, if applicable (See line 4 below).
<input type="checkbox"/>	PERM 36 - Attachment to Highway Work Permit – Consultant Inspection, if applicable
<input type="checkbox"/>	PERM 44 - Surety Bond – Performance bond in Applicant's name, or deposit (Bank cashier's check required)
<input type="checkbox"/>	PERM 50 – Inspection/Supervision Payment Agreement, if applicable
<input type="checkbox"/>	Proof of Worker's Compensation Insurance (Form C-105.2, U-26.3 or SI-12), or proof of exemption (Form CE-200)
<input type="checkbox"/>	Proof of Disability Benefits Coverage (Form DB-120.1 or DB-155), or proof of exemption (Form CE-200)
<input type="checkbox"/>	Permit Fees
<input type="checkbox"/>	Other (specify): _____

Insurance Requirements

- 1) In most cases, Permittee must provide proof of **Commercial General Liability** insurance coverage with limits of liability not less than **\$1,000,000** per claim/occurrence, unless any of the following circumstances exist, in which case the limits of liability shall not be less than **\$5,000,000** per claim/occurrence:
 - (a) The estimated value of permitted work in state right-of-way is \$250,000 or more (see line 5 below);
 - (b) The permitted work requires or includes the construction, alteration or maintenance of underground features at any depth five feet or more below grade;
 - (c) The permitted work requires or includes the construction, alteration or maintenance of overhead features that include, but are not limited to, traffic signals, overhead sign structures, retaining walls or other grade separation structures.
- 2) Exceptions to the above liability limits include: (a) Annual maintenance permits require limits of liability not less than \$5,000,000 per claim/occurrence; (b) Permits for vegetation control activities require limits of liability not less than \$1,000,000 per claim/occurrence; (c) Residential driveway permits require limits of liability not less than \$500,000 per claim/occurrence; and (d) Adopt-a-Highway permits are exempt.
- 3) **ACORD 25** with **ACORD 855** (New York Construction Addendum) shall be submitted as an acceptable proof of liability coverage. New York State Department of Transportation should be named as Additional Insured and as the Certificate Holder at the address of the issuing office.
- 4) Municipalities, public utilities, public authorities and railroads may elect to provide a fully executed **Undertaking Agreement** as a substitute for providing proof of insurance coverage, or any other financial security otherwise required.
- 5) When the estimated cost of work being performed in the right-of-way equals or exceeds \$250,000, Permittee must additionally provide proof of a **Protective Liability (OCP)** insurance policy with a minimum liability limit of \$1,000,000 per occurrence, with New York State Department of Transportation as Named Insured.

Permittee agrees to maintain liability insurance in full force and effect throughout the term of the highway work permit. Expiration of, or lack of, liability insurance coverage automatically terminates the permit.

For more information on insurance requirements, go to: www.dot.ny.gov/permits-insurance

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION
HIGHWAY WORK PERMIT APPLICATION FOR UTILITY WORK

Application is hereby made for a highway work permit:

For Joint application, name and address of Applicant 2 below:

Name _____

Name _____

Address _____

Address _____

City _____ State _____ Zip _____

City _____ State _____ Zip _____

Applicant Phone (____) _____

Applicant 2 Phone (____) _____

Applicant Email Address _____

Applicant 2 Email Address _____

Emergency Contact _____

Emergency Phone (____) _____

RETURN PERMIT TO: (If different from Permittee)

RETURN DEPOSIT/BOND TO: (If different from Permittee)

Name _____

Name _____

Address _____

Address _____

City _____ State _____ Zip _____

City _____ State _____ Zip _____

DESCRIPTION OF PROPOSED WORK:

Estimated cost of work being performed in highway right-of-way: \$ _____

Anticipated duration of work: From _____ to _____ (applies to the operations indicated on the reverse side)

WILL OVERHEAD OR UNDERGROUND (5'+) OPERATIONS BE INVOLVED IN THE PROPOSED WORK? YES NO

ATTACHED: Plans Specifications

LOCATION: State Route: _____ Located Between Reference Markers _____ and _____

City/Town/Village of _____ County of _____

SEQR REVIEW (select one)

Type II Type I Unlisted LEAD AGENCY: _____ DATE OF DETERMINATION: _____

Insurance (check one): General Liability Insurance Undertaking

NOTE: PERMIT IS ISSUED CONTINGENT UPON ALL LOCAL REQUIREMENTS BEING SATISFIED

ACKNOWLEDGMENT: ON BEHALF OF THE APPLICANT, I HEREBY REQUEST A HIGHWAY WORK PERMIT, AND DO ACKNOWLEDGE AND AGREE TO THE RESPONSIBILITIES OF PERMITTEE AND THE OTHER OBLIGATIONS SET FORTH IN THIS PERMIT AND WARRANT COMPLIANCE THEREWITH.

Applicant Signature _____ Date _____

Applicant 2 Signature _____ Date _____

Approval recommended by Resident Engineer _____ Res No _____ Date _____

Approved by Regional Traffic Engineer _____ Reg No _____ Date _____

Operational Type and Description			PERMIT FEES				
			Base Fee	QTY	Unit Rate	Sub Total	Total Fees
ORIGINAL INSTALLATION			Number of feet/poles				
<input type="checkbox"/>	1a1	Underground - excavation, tunneling, boring, installing, etc.	32		.32/foot	0	
<input type="checkbox"/>	1a2	Underground - Commercial subsurface connection	32		.32/foot	0	
<input type="checkbox"/>	1a3	Underground - Residential subsurface connection	32		.32/foot	0	
<input type="checkbox"/>	1b1	Overhead - Erecting poles, towers	63		2.50/unit	0	
<input type="checkbox"/>	1b2	Overhead - Running new lines	63				
<input type="checkbox"/>	1b3	Overhead - Commercial service connection	19				
<input type="checkbox"/>	1b4	Overhead - Residential service connection	19				
<input type="checkbox"/>	1c1	Installation on bridge or culvert	63				
<input type="checkbox"/>	1c2	Installation on bridge or culvert requiring structural changes	625				
MAINTENANCE			Number of regions/counties				
<input type="checkbox"/>	2a	Maintenance, single job	32				
<input type="checkbox"/>	2b1	Annual maintenance per region			2500		0
<input type="checkbox"/>	2b2	Annual maintenance per county			625		0
<input type="checkbox"/>	2c	Repair of water or sewer lines	32				
<input type="checkbox"/>	2d	DOT requested maintenance	N/C				
AFTER ORIGINAL CONSTRUCTION			Number of regions/counties				
<input type="checkbox"/>	3a1	Annual - includes overhead connections - per region			2500		0
<input type="checkbox"/>	3a2	Annual - includes overhead connections - per county			625		0
<input type="checkbox"/>	3b	DOT requested relocation	N/C				
<input type="checkbox"/>	3c	Commercial subsurface service connection	32				
<input type="checkbox"/>	3d	Commercial overhead service connection	19				
<input type="checkbox"/>	3e	Residential subsurface service connection	32				
<input type="checkbox"/>	3f	Residential overhead service connection	19				
MISCELLANEOUS UTILITY WORK							
<input type="checkbox"/>	4	Miscellaneous (describe below)	32				

UTILITY CHARGE ACCOUNT NUMBER: _____

WORK ORDER/REF NO: _____

PERFORMANCE SECURITY (Select One): Guarantee Deposit - Cash Performance Bond Letter of Credit

Guarantee Deposit Amount: _____

Guarantee Deposit Check Number or Bond Number: _____

(To be completed by NYSDOT issuing office)

Project Identification Number _____

Highway Work Permit No. _____

State Highway (SH) Number _____

Record ID Number _____

ATTACHMENT TO HIGHWAY WORK PERMIT – CONSULTANT INSPECTION AGREEMENT

This is an attachment to Highway Work Permit No. _____ issued to _____ (Permittee) pursuant to Section 52 of the Highway Law for work on State Highway right-of-way. This attachment, the application submitted by the Permittee, and all plans and other documents submitted as part of the application or subsequently approved by the New York State Department of Transportation (NYSDOT) are a part of and are incorporated into the Permit described above. The Permittee agrees to the following conditions, requirements, and obligations which are in addition to, not in lieu of, any requirements contained in Title 17 of the New York Code of Rules and Regulations (NYCRR), Parts 125-130 and/or any requirements stated in the application submitted by the Permittee.

1. All work on State Highway right-of-way shall be according to plans and specifications entitled _____ prepared by _____ and dated _____, which plans and specifications were approved by NYSDOT on _____, and are attached to and are made part of this permit as Schedule A (Plans). No modifications will be made to the Plans without the express written permission of NYSDOT.

It is understood that alterations to the plans may be necessary to meet unforeseen field conditions or to provide for inadvertent errors or omissions. These alterations will be made by the Permittee, with the approval of and to the satisfaction of NYSDOT. The intent of this requirement is not to alter the scope of the work as approved by NYSDOT, but to provide flexibility to make alterations, additions, and subtractions necessary to complete the work within the original intent and scope of the Plans.

2. Permittee agrees that, in addition to any protection afforded to NYSDOT under any available insurance, NYSDOT shall not be liable for any damage or injury to the Permittee, its agents, employees, or to any other person, or to any property, occurring on the site or in any way associated with Permittee's activities or operations; whether undertaken by Permittee's own forces or by contractor or other agents working on Permittee's behalf. To the fullest extent permitted by law, the Permittee agrees to defend, indemnify and hold harmless the State of New York, NYSDOT and all employees or officers of the State and their agents from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of any claim, including but not limited to claims for personal injuries, property damage or wrongful death and/or environmental claims, in any way associated with the Permittee's activities or operations, no matter how caused.

3. All authority granted by this Permit relates solely to that authority within the discretion of the Commissioner of Transportation. All other permits and approvals required for the project shall be the responsibility of the Permittee. There shall be no liability or obligation placed upon NYSDOT with respect to such other requirements.

4. This Permit shall not be construed as conveying to the Permittee or to any other person, the right to enter upon or trespass upon the lands of parties not party to this agreement for any purpose, nor shall this Permit be construed as authorizing the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to this agreement.

5. In the event that Permittee fails to comply with the terms of the Permit, NYSDOT has the right to cancel this approval at any time. NYSDOT may decide to continue, rescind, or modify this Permit in such a manner as it finds just and equitable.

6. The Permittee shall retain, at its own cost, the services of a reputable engineering firm ("Consultant"), to inspect and monitor the work performed under the Permit. The Consultant shall monitor the work of the Permittee and the Permittee's Contractors to ensure that the work performed under the permit is done in accordance with the plans, the Standard Specifications, and all other requirements of the permit. As necessary, the Consultant will inform, orally and in writing, the Permittee and NYSDOT of deficiencies in workmanship, material quality, Work Zone Traffic Control, Safety, etc. Failure of the Permittee to properly respond to a notice of deficiency shall be deemed a breach of the Permit and shall be grounds for denial of NYSDOT's approval of the entire work or portions of the work under the permit. Inspection of the work by the Consultant shall not relieve the Permittee of responsibility for compliance with all of the conditions of the permit.

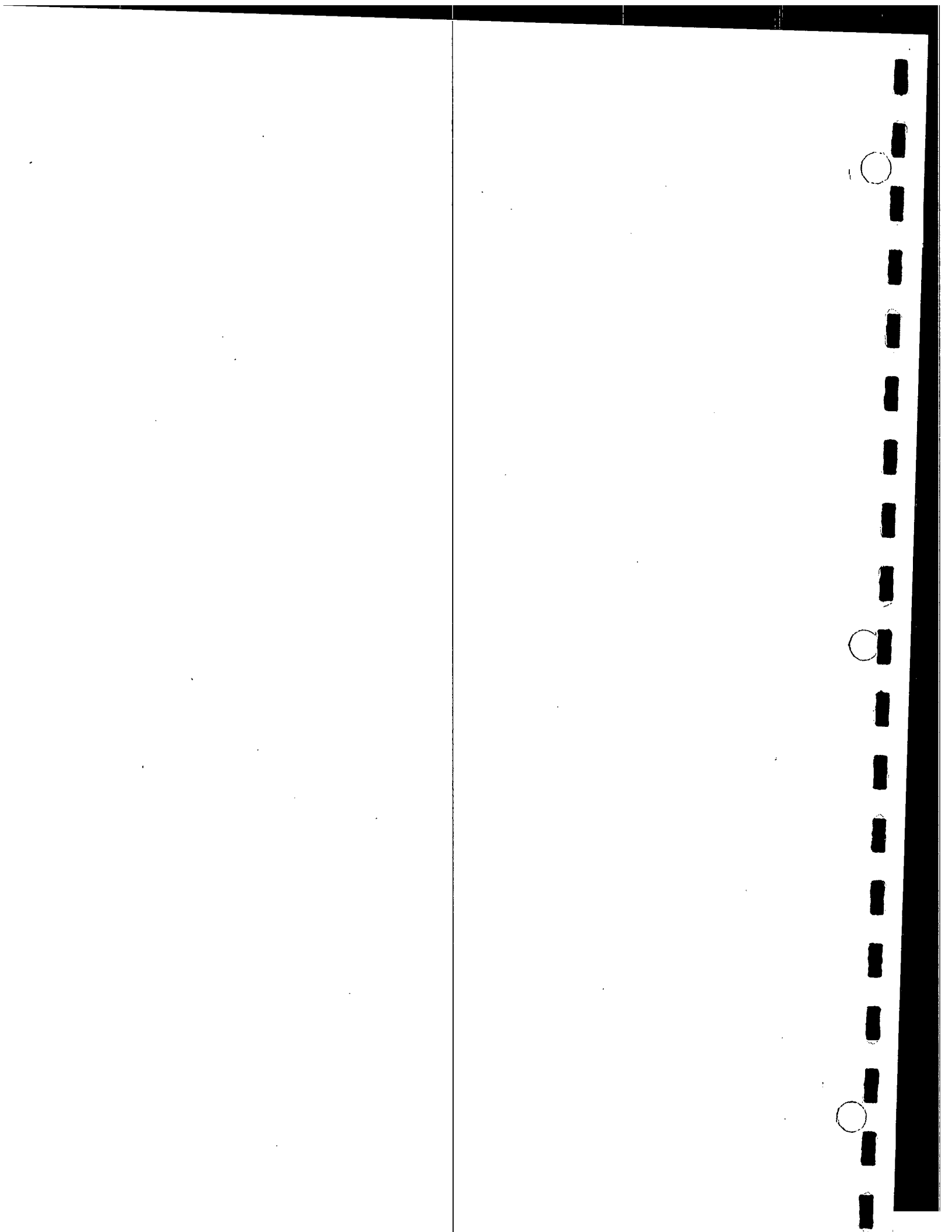
The engineering firm (Consultant) and its inspector(s) retained by the Permittee shall be approved in writing by NYSDOT prior to the start of the work. The firm shall be registered to practice professional engineering in New York State, and experienced in inspection of highway, structural, utility, and traffic signal work, in accordance with the scope of the work to be performed under the permit. The primary inspector shall be certified at NICET Level II or above, or the equivalent.

No work shall be performed under this permit before the Consultant and its inspector(s) have been approved by NYSDOT, and has assigned sufficient staff to the project to carry out the necessary project duties as described below. If NYSDOT determines that the personnel assigned to this work are insufficient, the Permittee shall promptly make arrangements to provide sufficient personnel. If the Permittee fails to make such arrangements within a reasonable time, NYSDOT may order the project shut down until sufficient personnel are provided. NYSDOT shall have the right to approve or reject the individual employees to be assigned to inspection of the work authorized by the Permit before their employment on the project.

7. The services to be performed by the Consultant shall include but shall not be limited to the following:

A. Construction inspection in accordance with the standard practices of NYSDOT. The Consultant is to certify that each item of work conforms to the Plans.

B. Maintenance of records in accordance with the current NYSDOT Manual of Uniform Record Keeping on Highway Contracts. For more information, refer to <https://www.dot.ny.gov/main/business-center/contractors/construction-division/forms-manuals-computer-applications-general-information>



ATTACHMENT TO HIGHWAY WORK PERMIT – CONSULTANT INSPECTION AGREEMENT – Page 2

C. Obtaining all necessary material samples and conducting all necessary material tests in accordance with NYSDOT's Materials methods. If NYSDOT determines that plant inspections for hot mix asphalt and portland cement concrete will be required, the Permittee shall make arrangements with a testing laboratory approved by NYSDOT to perform such inspections according to NYSDOT's Standards. The Permittee will be responsible for all costs associated with obtaining and testing of samples.

D. Preparation of all drawings, sketches, and plans necessary for changes to meet actual field conditions.

E. Providing three sets of Record (As-Built) Plans upon completion of the work.

F. Reviewing and inspecting compliance with all aspects of the Work Zone Traffic Control provisions of the Plans, the Permit, MUTCD and NYSDOT Standard Specifications and notifying NYSDOT of any noncompliance issues.

G. The Consultant shall notify NYSDOT, Permittee and Contractor of a circumstance or condition of the work observed by and known to the Consultant per required training to be a violation of a Federal, State or local law, ordinance or regulation. The Consultant shall inform NYSDOT of any violations in the performance of the work on this permit which are not immediately corrected. In the event the Consultant recognizes a Contractor's oversight or a Contractor's disregard of project safety requirements which poses an immediate risk of serious personal injury and/or property damage, the Consultant shall have the authority to immediately issue a Stop-Work Order, and then the Consultant shall promptly notify NYSDOT and the Permittee of such order. Notification and/or issuance of a Stop-Work Order by the Consultant shall not relieve the Contractor from sole responsibility for job site safety and compliance with all applicable Federal, State or local laws, ordinances and regulations.

NYSDOT reserves the right to inspect the work, but is under no obligation to perform such inspections and assumes no responsibility for lack of any compliance on the part of the Contractor. If NYSDOT determines that there are serious or persistent violations of applicable Federal, State or local laws, ordinances and regulations in the work of this Permit, NYSDOT may issue a Stop-Work Order and all Permit work will cease immediately. In addition, the Permit may be revoked if the safety issues are not resolved to NYSDOT's satisfaction.

The Consultant is responsible for monitoring the Contractor's efforts to maintain traffic and protect the public from damage to person or property in accordance with plans and specifications, within the limits of, and for the duration of, the permit work.

8. The Permittee shall reimburse the State for all reasonable Permit engineering review costs, and for any NYSDOT completed inspections which may be necessary due to negligence on the part of the Permittee, its Contractors, or the Consultant. These costs shall include, but not be limited to, salaries and fringe benefits for NYSDOT staff performing inspections, and for material inspectors, travel costs, etc. All work performed by the Permittee shall be at no cost to the State. If costs are incurred by NYSDOT, NYSDOT will bill the Permittee monthly, and the Permittee agrees to pay all such bills within 30 calendar days of the billing date. Failure to pay such bills promptly shall be deemed a breach of the Permit.

9. Prior to the intended commencement of work, the Permittee shall develop a schedule from the contractors' work programs for the accomplishment of all work authorized by the Permit and shall submit this schedule to the Consultant and NYSDOT for informational purposes. The Permittee shall promptly notify the Consultant and NYSDOT of any changes to the schedule.

10. The Permittee shall designate in writing to NYSDOT the Contractor's on-site person who will be responsible for all construction activities covered by this Permit, and shall immediately notify the Consultant and NYSDOT in writing if there is any change of the person so designated. The Permittee shall also designate one or more persons as emergency contacts and shall establish an emergency telephone list. This list shall be kept current by the Permittee and shall be provided to the Consultant, to NYSDOT, and to local public safety agencies.

11. Prior to the commencement of work the Permittee shall arrange a pre-construction meeting with NYSDOT staff, the Consultant, the Permittee, and the Permittee's contractors. The purpose of this meeting is to ensure that there is a clear understanding, especially on the part of the Contractors and Consultant, of the requirements imposed by the terms and conditions of the Permit. The Permittee shall notify the Regional Permit Engineer a minimum of 10 days prior to the meeting date.

Consultant Authorized Signature *

Permittee Signature

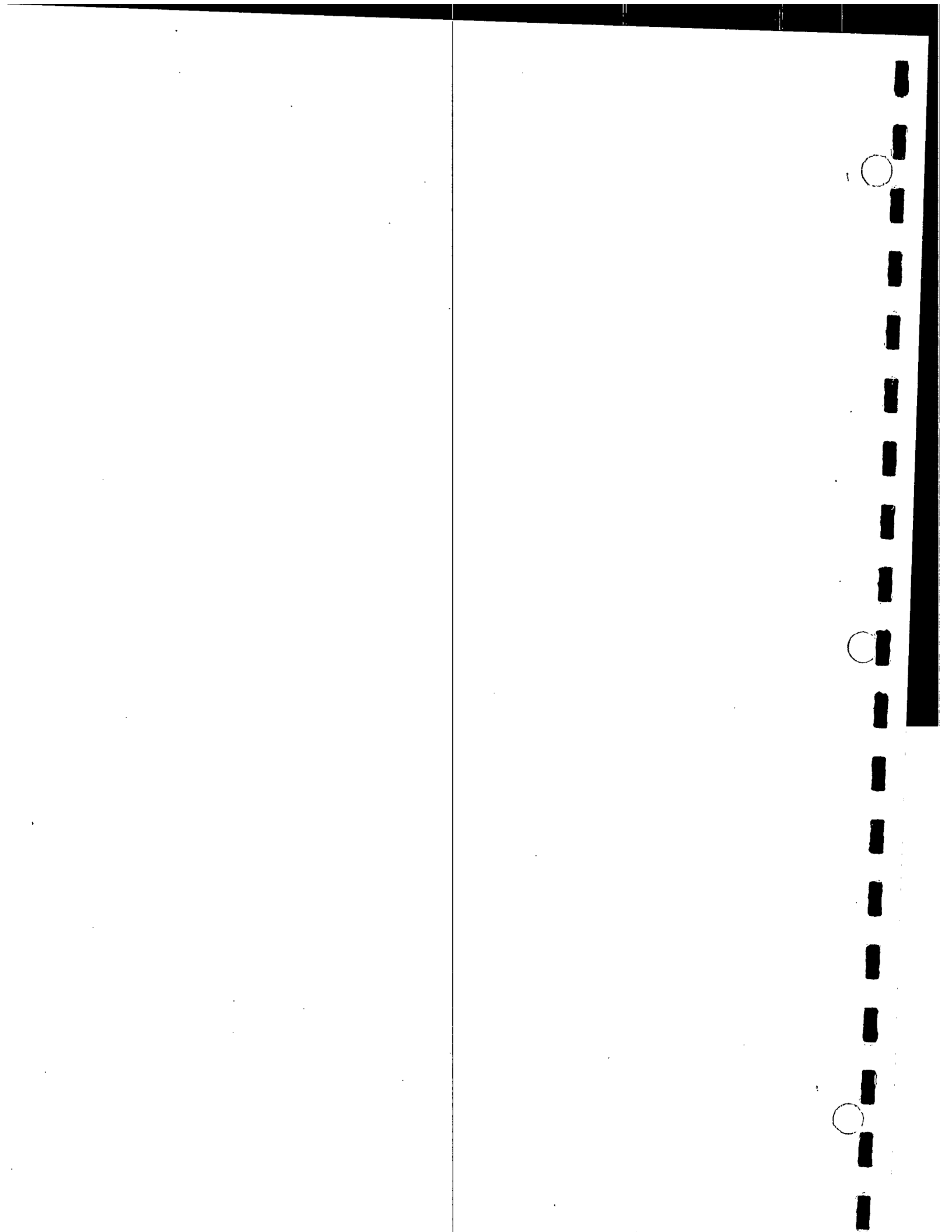
Title

Title

Consulting Firm

Corporation

*Consultant authorized signature must be by person who can legally commit the consulting firm to the requirements of this agreement.



**New York State Department of Transportation
Highway Work Permit Application Agreements**

Inspection and/or Supervision Payment Agreement

As a condition of the attached permit application and in consideration of the issuance of the attached permit, _____ as permittee, hereby agrees as follows: The permittee will reimburse the New York State Department of Transportation for inspection and/or supervision of the permit work by Department employees which exceeds four work hours.

If the Department determines that the proposed work on a specific permit project will exceed five (5) workdays of inspection, the permittee will be required to secure the services of a reputable consulting engineering firm. This firm, upon approval by the Department, will be responsible for all inspection and/or supervision of the permit work.

It is estimated that _____ Work Days of inspection time will be required and that the cost per Work Day to be reimbursed, will be \$370.00. These estimates are not intended to be final and the permittee agrees to pay reimbursement for all reasonable expenses incurred by the Department of Transportation in necessary inspection and/or supervision of work performed pursuant to this permit, including supervising work inspected by consultants. The Department of Transportation shall be the sole judge of whether such inspection and/or supervision are necessary.

The permittee will be billed on a monthly basis and the permittee agrees to pay the charges as billed within thirty days of the date of billing. Failure to pay as billed within the specified time limit may result in the revocation of this permit.

Indemnity Agreement

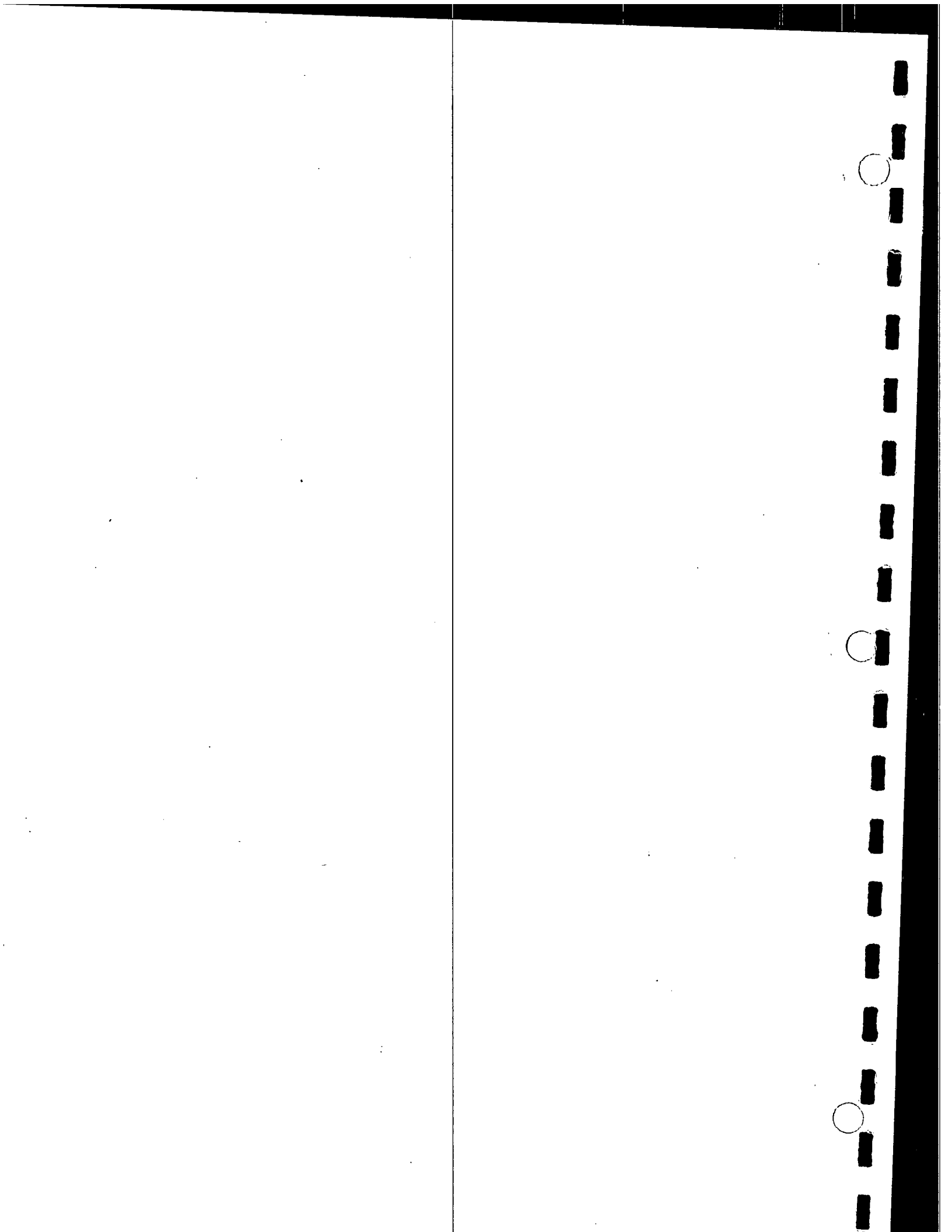
In addition to the protection afforded to NYSDOT under any available insurance, NYSDOT shall not be liable for any damage or injury to the Permittee, its agents, employees, or to any other person, or to any property, occurring on the site or in any way associated with Permittee's activities or operations; whether undertaken by Permittee's own forces or by contractors or other agents working on Permittee's behalf. To the fullest extent permitted by law, the Permittee agrees to defend, indemnify and hold harmless the State of New York, NYSDOT, and their agents from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of any claim, including but not limited to claims for personal injuries, property damage or wrongful death and/or environmental claims, in any way associated with the Permittee's, activities or operations, no matter how caused.

By signing you have read and agree to abide by the above requirements and conditions.

Signature of Permittee or Authorized Representative

Print name, if a corporation or business include position/title

Date





UNDERTAKING

For the benefit of

The New York State Department of Transportation

In connection with work affecting state highways

(For use by Utility and Public Utility Companies and Transportation Corporations)

WHEREAS, the undersigned _____ (name of company) is a "Public Utility" or a "Transportation Corporation" subject to the regulation of the public service commission (Public Service Law Section 5), and/or having the power to transport gas, electricity, water, steam, or communications cables pursuant to the Transportation Corporations Law Section 11 (hereinafter referred to as "Permittee") from time to time receives permits from the New York State Department of Transportation (hereinafter referred to as the "NYSDOT") and otherwise conducts activities and operations upon highways and/or within right-of-way controlled by the State of New York for such purposes as the obstruction, installation, construction, maintenance and/or operation of facilities; and

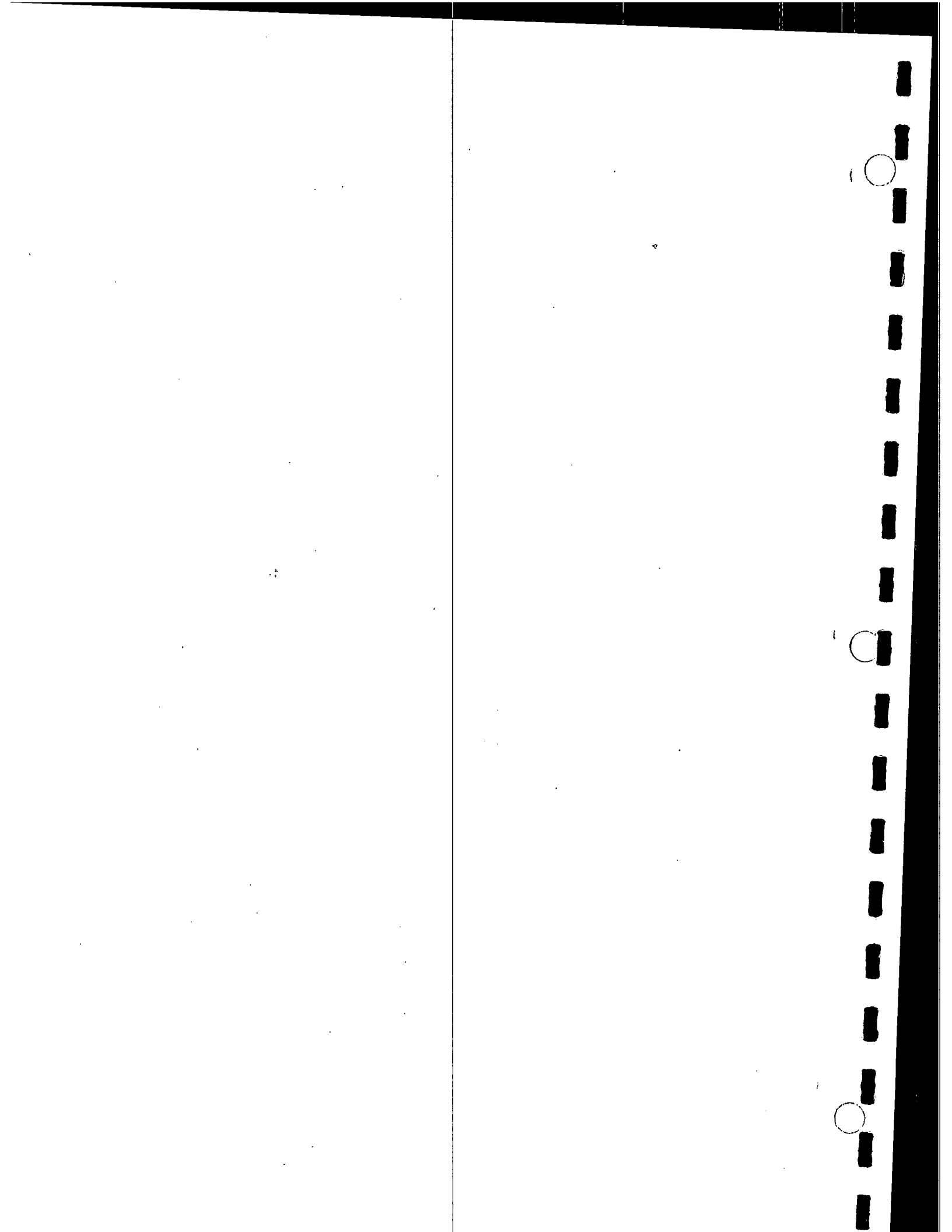
WHEREAS, Permittee's access and operation upon state right-of-way is conditioned upon compliance with Highway Law Sections 52, and/or 234, including the conditions that Permittee assume all responsibility for (a) the temporary control of all modes of traffic (including motorized and non-motorized travel) affected by Permittee's operations, (b) complete restoration of state facilities to their condition prior to permitted use or activity, and (c) all claims, damages, losses and expenses,

NOW, THEREFORE, in relation to all operations and/or actions undertaken within state right-of-way, Permittee hereby agrees to the following terms and conditions:

1. Permit Applications. Excepting only activities undertaken to protect public safety because of emergency conditions or incidents, Permittee shall provide timely written notice to NYSDOT of operations or activities affecting state right-of-way. Under normal circumstances, a minimum of five business days notice shall be provided. Notification of emergency activities shall be provided to NYSDOT as soon as practicable after the activity. The Permittee shall apply for project-specific permits for activities not allowed under any existing annual permit. Such application shall identify proposed project locations, desired dates/hours, proposed work/activities, traffic control, and site restoration.

2. Applicable Rules, Regulations & Conditions. Permittee shall comply with all of the laws, rules and regulations applicable to construction, maintenance activities and operations and shall further comply with such terms and conditions that may be imposed by NYSDOT in connection with permitted activity or operations. Temporary Traffic Control, highway safety appurtenances, and restoration of state facilities shall be completed in accordance with NYSDOT regulations and standards.

3. Site Restoration. Permittee shall, at its own expense, promptly complete the work allowed under each permit and within a reasonable time restore State property damaged by its work/activities to substantially the same or equivalent condition as existed before such work was begun as determined by the Commissioner or his/her designee. In the event that the Permittee fails to so restore damaged State property within what the Commissioner deems to be a reasonable time, the Commissioner, after giving written notice to the Permittee may restore the property to substantially the same or equivalent condition as existed before the Permittee's work/activities, in which case, Permittee agrees to reimburse the reasonable expenses in connection therewith.



4. Payment & Release of Liens. Permittee shall be responsible for the payment of all costs and materials relating to its work in the public right-of-way, and agrees to defend and save harmless NYSDOT against any and all lien claims made by persons supplying services or materials to Permittee in connection with Permittee's work.

5. Indemnity. In addition to the protection afforded to NYSDOT under any available insurance, NYSDOT shall not be liable for any damage or injury to the Permittee, its agents, employees, or to any other person, or to any property, occurring on the site or in any way associated with Permittee's activities or operations, whether undertaken by Permittee's own forces or by contractors or other agents working on Permittee's behalf. To the fullest extent permitted by law, the Permittee agrees to defend, indemnify and hold harmless the State of New York, NYSDOT, and their agents from and against all claims, damages, losses and expenses, including but not limited to, claims for personal injuries, property damage, wrongful death, and/or environmental claims and attorney fees arising out of any such claim, that are in any way associated with the Permittee's, activities or operations under any and all permits issued using this Undertaking.

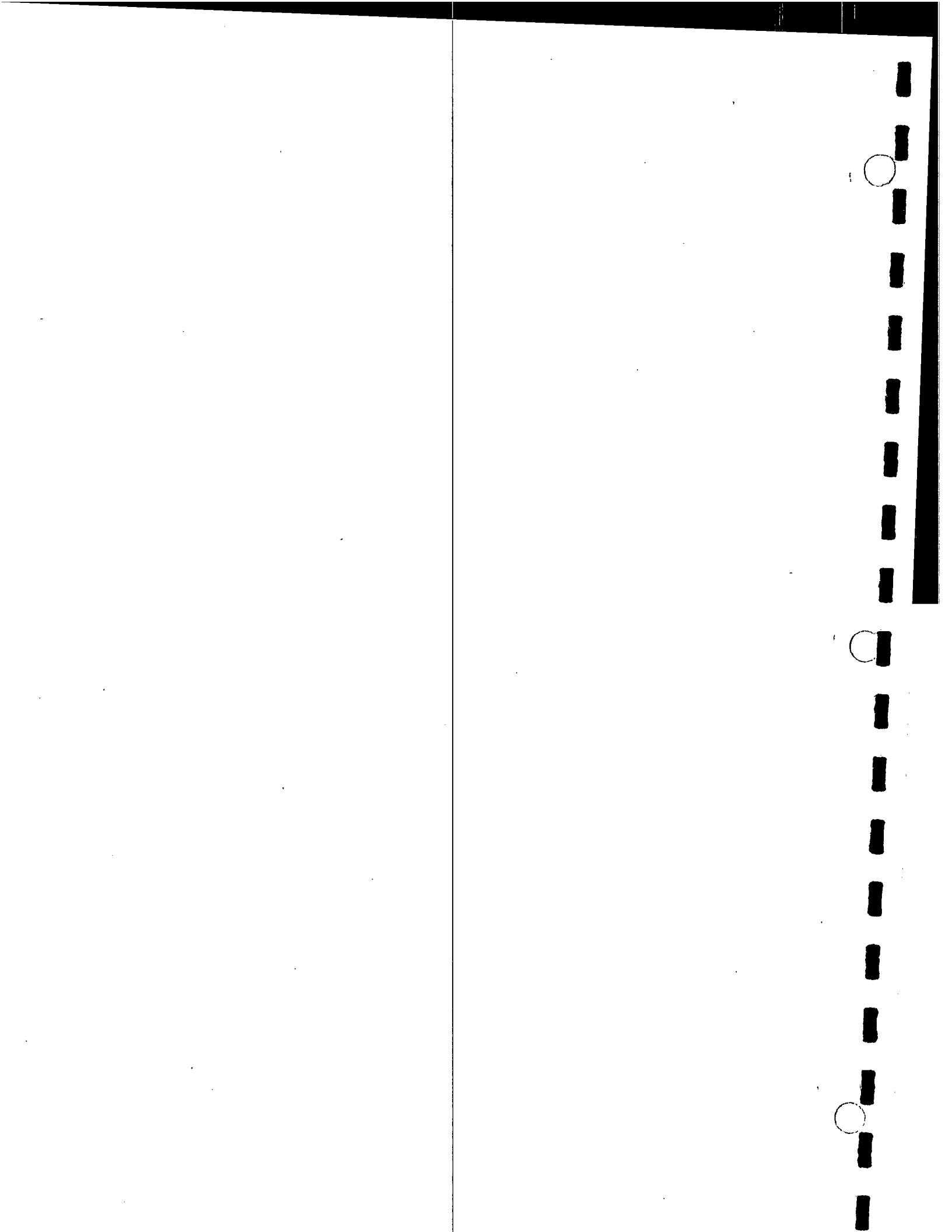
FURTHERMORE, Permittee hereby warrants that the obligations of this Undertaking are backed by the full faith and credit of Permittee. Permittee may insure or bond any of the obligations set forth herein, or may rely upon self-insurance, budgeted funds, or funds for general operations.

This Undertaking shall be applicable to all permitted activities and operations undertaken after the date of execution and work initiated while this Undertaking is in effect. This Undertaking may be revoked by the Permittee or rejected by NYSDOT upon thirty days written notice but will continue to apply to all permitted activities/operations that were permitted by virtue of this Undertaking. Unless terminated for the purpose of future activities/operations, this Undertaking shall have a term of twenty (20) years and shall be kept on file to facilitate the issuance of future permits to which it will apply.

IN WITNESS WHEREOF, _____ (Public Utility or Transportation Corporation) agrees to the terms of this Undertaking, and has caused its execution by the authorized officer or employee (attach Resolution of Approval).

_____	_____
Authorized Agent	Date

Print Name/Title	
_____	() _____
Address	Phone number
_____	_____
Address	e-mail



SURETY BOND (PERFORMANCE)

For the benefit of
The New York State Department of Transportation
In connection with work affecting state highways

(SURETY-INSURANCE AND INDEMNITY COMPANY NAME)

BOND NO. _____ AMOUNT: \$ _____

KNOWN ALL BY THESE PRESENTS, That we, _____ (PRINCIPAL'S
NAME), having its principal place of business at _____, as
Principal, and _____ (INSURANCE AND INDEMNITY
COMPANY), as Surety, having an office and usual place of business at _____

_____ are held and firmly bound unto the NEW
YORK STATE DEPARTMENT OF TRANSPORTATION ("NYSDOT"), in the full and just sum of
_____ Dollars (\$ _____) to the payment of which, well
and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, to
jointly and severally, firmly by these presents.

WHEREAS, said Principal will submit and has submitted plans and specifications for work, within a State
highway, deemed necessary by the Commissioner of Transportation, or his duly authorized delegate, and

WHEREAS, said Principal has received and will apply from time to time for permits for the purpose of
constructing or maintaining drive entrances, sewer lines, water mains, gas mains, utility lines and poles, street
intersections, curb, sidewalk, drainage and excavating for miscellaneous structures, etc., on or within the right
of way of highways under the jurisdiction of the State of New York, Department of Transportation,

WHEREAS, this obligation is for the purpose of insuring and guaranteeing the timely and workmanlike
completion of such work as reasonably determined by the Commissioner of Transportation or his duly
authorized delegate,

IT IS AGREED and understood among the parties hereto that upon the reasonable determination that such
work is not being timely performed or is not being or has not been performed in a workmanlike manner by
said Principal, the Commissioner of Transportation or his duly authorized delegate may require said Surety to
promptly complete said work in a timely and workmanlike manner, or the Commissioner of Transportation or
his duly authorized delegate may direct completion of said work with forces chosen by the Commissioner, the

PERM 44 (9/10)

costs of which work will be reimbursed by said Surety up to the amount designated above, all of which determinations shall be within the sole and exclusive discretion of the Commissioner of Transportation or his duly authorized delegate.

IT IS FURTHER AGREED that said Principal and said Surety shall indemnify and save harmless the State of New York, Department of Transportation, from all liability, damages and expenses of every kind and nature, resulting directly or indirectly to persons or property and arising from and in consequence of any license or permit, and shall well, truly and faithfully perform the duties and privileges pertaining to any license or permit and shall restore such State highways to their original conditions.

IT IS FURTHER AGREED that said Principal and said Surety shall further indemnify, save harmless and pay the New York State Department of Transportation, any damages, loss, charges or expenses which shall, in any way, be sustained or incurred by it in relation to or in connection with any and all such claims, actions, suits or proceedings at law or in equity.

IN TESTIMONY WHEREOF, said Principal has hereunto set his hand and seal and said Surety has caused this instrument of writing to be executed. SIGNED, sealed and dated this _____ Day of _____ (month), 20____ (year).

This Bond takes effect _____ (date) and shall remain in full force until the work is satisfactorily completed and accepted.

PRINCIPAL

(NOTE: If DBA also provide Name of Legal Entity and Copy of "Certificate of Conducting Business under an assumed Name" that was filed in County Clerk's Office, e.g. John Jones dba Jones Trucking)

BY: _____

(Company Seal)

Address: _____

Telephone No.: _____

SURETY

BY: _____
Attorney-in-Fact

Address: _____

Note: Attach Power of Attorney, Financial Statement and acknowledgement by representative of the Surety showing his/her powers to execute such instrument.

Telephone No.: _____

APPENDIX E

SHOP DRAWINGS FOR 48-INCH TRANSMISSION MAIN

PIPE LAYING SCHEDULE

ERIE COUNTY, NEW YORK
 RICHARD F. BALL PUMPING STATION
 48" SP-5 & 60" SP-12
 JOB NO. HU-73-47 & PE-73-61



LOCK JOINT PIPE PRODUCTS

DATE: 11-15-73
 BY: SRM:ML
 Rev. A 3-20-74 SRM:ml
 SHEET: 07

LINE "B" - 48" SP-5

PIECE NO.	PCS	DESCRIPTION	AVG. LL	HOR. LL	STATION	ANGLE	TANGENT	CHANGE	C/L
		BEGIN AT SOUTH TANK AT STATION 0+03.03 & LAY BELLS AHEAD UP STATION TOWARDS NORTH TANK							ELEV
B-1-1	1	VICTAULIC END x LJB ADAPTER W/76 BELL BOLTS AT BELL END	0.94	0.94	0+03.03				588.50
B-1-2	2	STRAIGHTS W/76 BELL BOLTS AT EACH END W/0.0996" CYL. (CODE-YELLOW)	40.00	40.00	0+03.97				
B-1-3	1	SHORT (4.68' OA) W/76 BELL BOLTS AT EACH END W/0.0996" CYL. (CODE-YELLOW)	4.36	4.36	0+43.97				
B-1-4	1	LJS x VICTAULIC END ADAPTER W/76 BELL BOLTS AT SPIGOT END	0.59	0.59	0+48.33				
		VALVE 11A (BY OTHERS)	2.16	2.16	0+48.92				
B-N-1	1	48" VICTAULIC END x 60" LJB REDUCER W/72 BELL BOLTS AT BELL END	5.88	5.88	0+51.08				
B-N-2	1	60" SP-12	4.34	4.34	0+56.96				
		60" LJS x 60" LJB x 60" LJS TEE BRANCH RIGHT W/72 BELL BOLTS AT EACH S END OF RUN & W/92 BOLTS ON BRANCH (OA ON BR. = 4.50', LL = 4.19') ROTATE LJS BRANCH IN FIELD DOWN 30°	4.65	4.65	0+61.30	PI			
B-N-3	1	60" LJS x 48" VICT. END REDUCER W/72 BELL BOLTS AT SPIGOT END	5.57	5.57	0+65.95				
		VALVE 11B (BY OTHERS)	2.16	2.16	0+71.52				
B-1-1	1	VICTAULIC END x LJB ADAPTER W/76 BELL BOLTS AT BELL END	0.94	0.94	0+73.68				
B-1-2	3	STRAIGHTS W/76 BELL BOLTS AT EACH END W/0.0996" CYL. (CODE-YELLOW)	60.00	60.00	0+74.62				
B-1-5	2	STRAIGHTS W/38 BELL BOLTS AT EACH END W/0.0710" CYL. (CODE-RED)	40.00	40.00	1+34.62				
B-1-6	1	STRAIGHTS W/38 BELL BOLTS AT EACH END	80.00	80.00	1+74.62				
B-1-7	1	FIELD WELDED CLOSURE (BELL TO SPIGOT)	4.26	4.26	2+54.62				
B-1-4	1	LJS x VICT. END ADAPTER W/38 BELL BOLTS AT SPIGOT END	0.59	0.59	2+58.88				
		VALVE 11C (BY OTHERS)	2.16	2.16	2+59.47				588.50

ALL LAYING INSTRUCTIONS SHOWN ON THIS SCHEDULE ARE SUBJECT TO THE LATEST EDITION OF THE SCHEDULE SUPERSEDES ALL PREVIOUS EDITIONS.



PIPE LAYING SCHEDULE

ERIE COUNTY, NEW YORK
 RICHARD T. Bell Pumping Station
 48" SP-9 & 50" SP-12
 JOB NO. HU-73-47 & PE-73-61



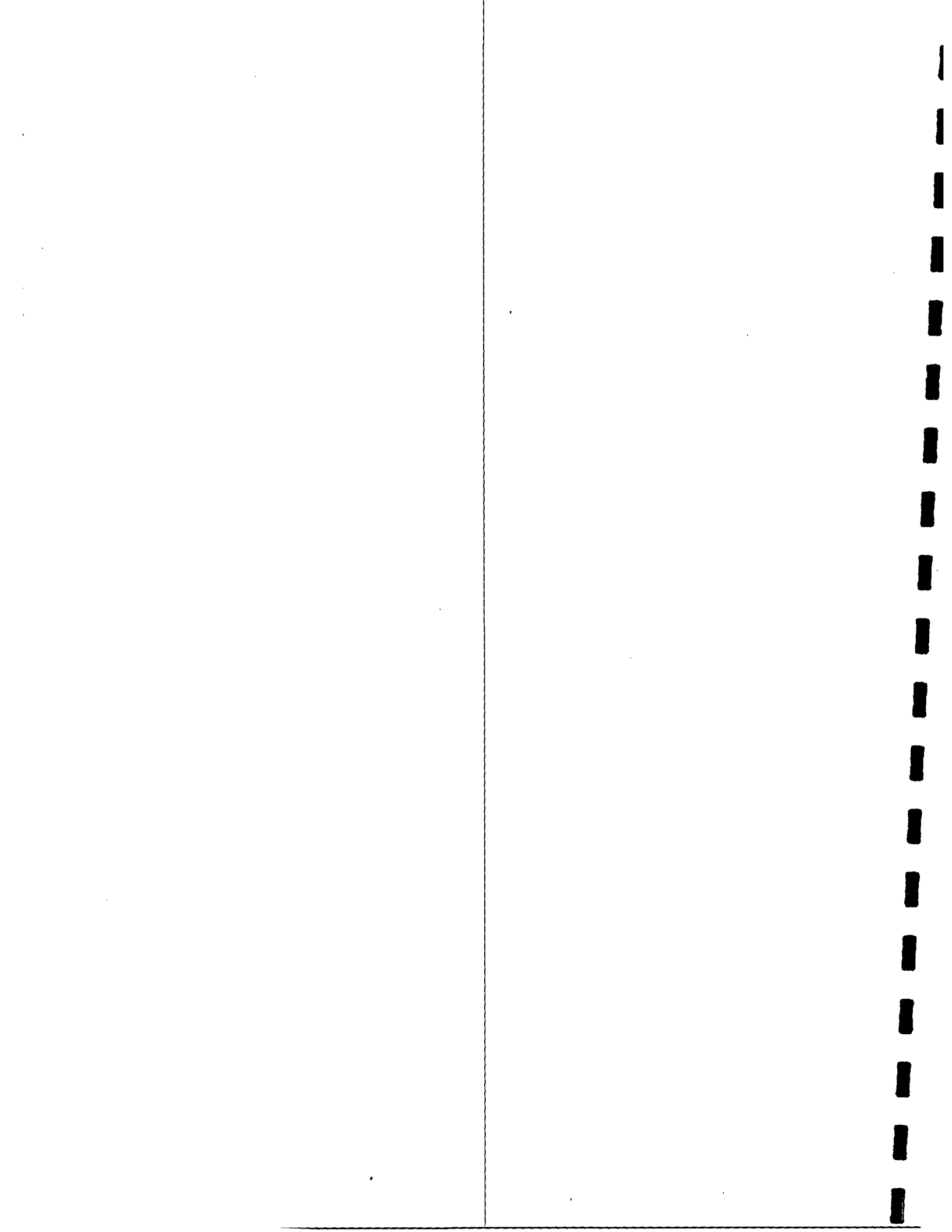
LOCK JOINT PIPE PRODUCTS
 DATE: 11-13-73
 BY: SRW:ml
 SHEET: 08

LINE B1 - 60" SP-12

PIECE NO.	PCS	DESCRIPTION	AVG LL	HOR LL	STATION	ANGLE	TANGENT	ELEV CHANGE	C/L ELEV
B1-0-1	1	BEGIN AT INSIDE FACE OF PUMP STATION WALL AND LAY BELLS-AHEAD TOWARDS LINE B. BEGINNING STATION IS 0+44.50 AND PIPE IS LAID DOWN STATION			0+44.50	0°-00'	.00000		582.00
B1-0-2	1	LJB x TAPPED-FLG WALL FITTING W/92 BELL BOLTS AT BELL END	2.04	2.04	0+42.46				
B1-0-3	1	STRAIGHT W/92 BELL BOLTS AT EACH END W/0.1875" CYL. (CODE-WHITE)	20.04	20.04	0+22.42				
B1-0-4	1	FIELD WELDED CLOSURE (LONG BELL x BELL BOLT SPIGOT) W/0.1875" CYL. (CODE-WHITE) (HOLD FOR FIELD MEASUREMENT)	9.93	9.93	0+12.49				
B1-0-5	1	30°-00' ELBOW UP W/92 BELL BOLTS AT EACH END	1.49	1.49	0+11.00	30°-00'	.57735		582.00
B-N-2	1	SHORT (7.08' OA) W/92 BELL BOLTS AT EACH END W/0.1875" CYL. (CODE-WHITE)	6.77	5.86	0+09.49				
B-N-2	1	60" BELL BOLT SPIGOT BRANCH OF TEE	4.19	3.63	0+03.63			+ 6.50	588.50

* THESE PIECES TO BE LAID UP STATION BEFORE CLOSURE

ALL LAYING INSTRUCTIONS GIVEN ARE TO BE FOLLOWED IN THE FIELD BY THE DIRECTOR OF LAYING. THIS SCHEDULE SUPPLIES ONLY A GUIDE FOR THE LAYING OF THE PIPE.



APPENDIX G

TOWN OF AMHERST STORMWATER INSPECTION SERVICES PERMIT





FOR OFFICIAL USE
DATE RECEIVED: _____
RECEIVED BY: _____

APPLICATION FOR PERMIT FOR STORMWATER INSPECTION SERVICES

Town of Amherst, Erie County, NY

Application is Hereby Made to the Town of Amherst Stormwater Management Officer
for Permission to Disturb Soils within the Town of Amherst

Project Location _____

Project Description (include total area of soil disturbance) _____

Town of Amherst Site Plan Number _____ Planning Board Approval Date _____
SWPPP Submitted with Site Plan Y N Maintenance Agreement Required Y N
Maintenance Easement Required Y N
Construction Completion Guarantee Method: Bond Cash Escrow Irrevocable Letter of Credit
Bond by (if applicable) _____

Maintenance Guarantee (if applicable), Irrevocable Letter of Credit by _____

Owner's Name _____

Consulting Engineer's Name _____

Contractor's Name _____ Phone _____

Contractor's Address _____

This application must be submitted in along with one (1) copy of the approved Storm Water Pollution Prevention Plan (SWPPP) and appropriate bonding or irrevocable letter of credit documentation, which will be incorporated into and made part of this application. This application is for the performance of inspection services which are independent of the SWPPP review fees which are included in the Site Plan review process.
Work under this permit shall be started within 60 days from the date of approval thereof. Work under this permit shall be completed within one (1) year from the date of approval thereof. Any request for extension shall be addressed in writing to the Stormwater Management Officer of the Town of Amherst.
Fees from this permit and cost of inspection shall be paid by check made payable to the Town of Amherst at amounts set forth by resolution of the Town Board. The inspection fee is to cover all work under this permit and shall be at no additional cost to the Town of Amherst.
In consideration of the granting of this permit hereby petitioned for, the undersigned hereby agrees that if such a permit is granted he/she will comply with the terms thereof, the Laws of the State of New York, the Ordinances of the Town of Amherst and Regulations of the various departments of the Town and the State of New York, and that he/she shall notify the Engineering Department a minimum of three (3) working days in advance of commencing any work under this permit.
The undersigned hereby certifies that all of the information contained in this petition is correct and true.

Area of Soil Disturbance	Fee
1 - 4.99 Acres	\$1,800
5 - 10 Acres	\$3,200
>10 Acres	\$5,600
Fee Paid	

_____ Owner Signature

_____ Please Print Name

_____ Address & Phone

Subscribed and sworn to before me this _____ day of _____ of 20 _____

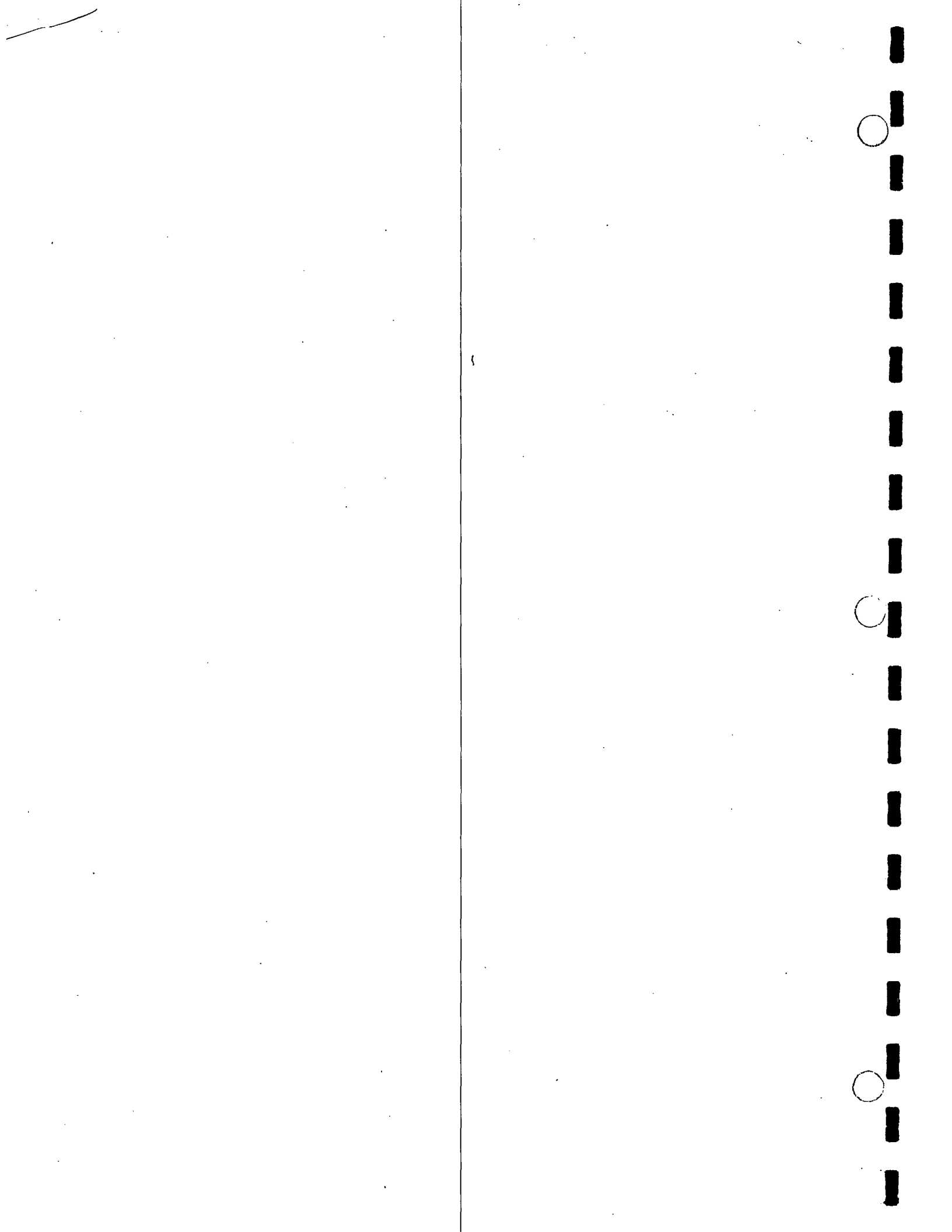
_____ Notary Public, Erie County, New York

I do certify that I have examined the foregoing petition and Stormwater Pollution Prevention Plan and certify that they conform to Ordinances of the Town of Amherst

_____ Stormwater Management Officer

Receipt is hereby acknowledged of the sum of \$ _____, being the required fees established by the Town Board of the Town of Amherst, NY.

Stormwater Inspection Permit No. _____
Stormwater Inspection Firm Assigned: _____





Erie County Water Authority

295 Main Street, Rm. 350 • Buffalo, NY 14203-2494
716-849-8484 • Fax 716-849-8467

July 12, 2018

Mr. Angelo A. Veanes, President
Ferguson Electric Construction Co., Inc.
333 Ellicott Street
Buffalo, New York 14203

Re: Contract No. NC-35
Ball Pump Station Electrical
Project No. 201600238
Contract No. 18-19-07

Dear Mr. Veanes:

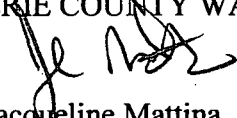
Enclosed herewith please find an executed contract with the Erie County Water Authority for the above-referenced project in the contract award price of \$5,094,600.00.

Receipt of this contract constitutes your authority to commence work on this project. Please contact Len Kowalski, Sr. Distribution Engineer two working days prior to commencement.

On all future invoices, kindly refer to the contract number listed above which is reflected on the first page of the contract document.

Sincerely,

ERIE COUNTY WATER AUTHORITY

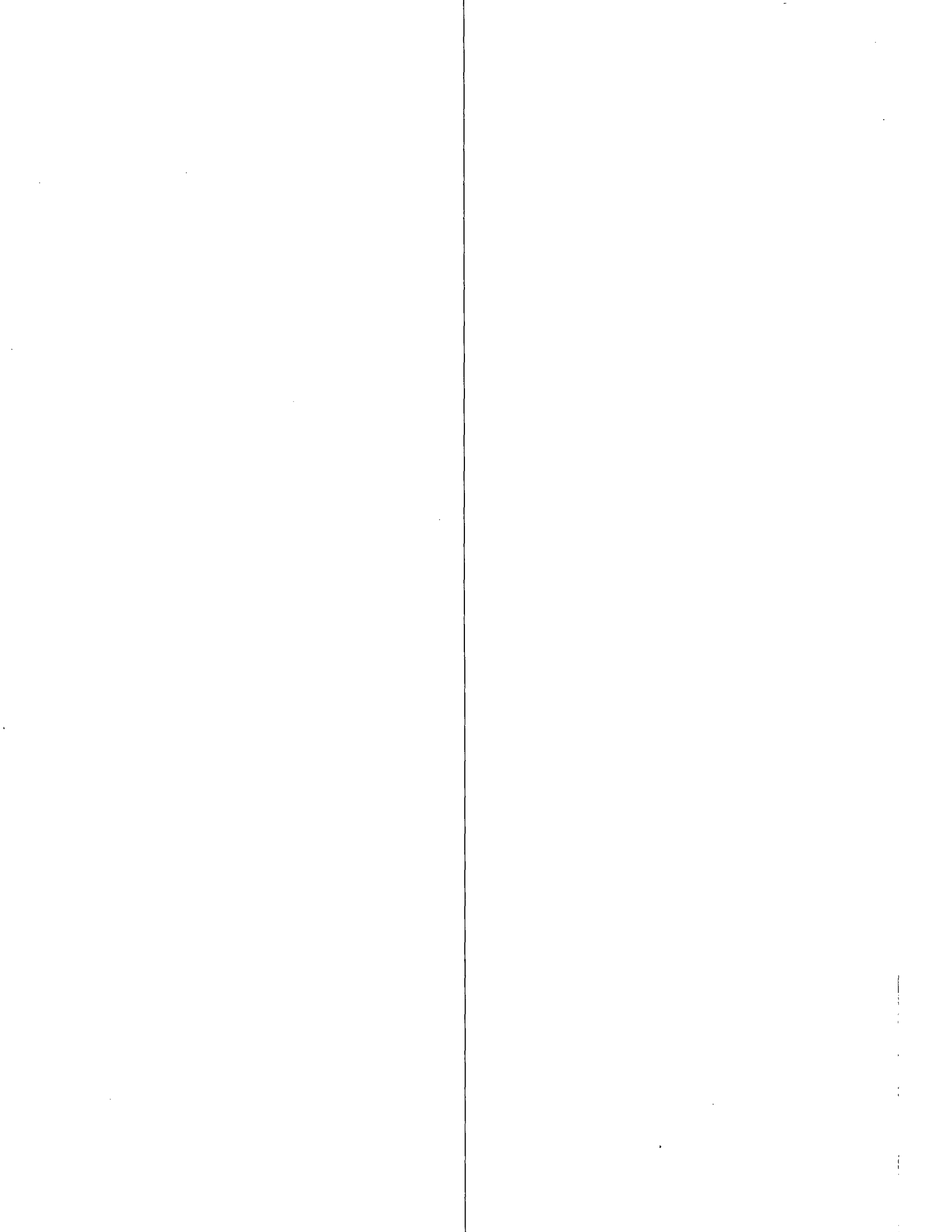

Jacqueline Mattina
Deputy Associate Attorney

JC:tf

Enclosure

cc: Russ Stoll
Len Kowalski
Lori Molina
Trish Fabozzi
Shari Zajdel
Mike Chirico, Nussbaumer & Clarke, Inc.





ERIE COUNTY WATER AUTHORITY
 AUTHORIZATION FORM
 For Approval/Execution of Documents
 (check which apply)

Contract: NC-035 **Project No.:** 201600238
Project Description: Ball Pump Station Electrical Substation

Item Description:

Agreement Professional Service Contract Amendment Change Order
 BCD NYSDOT Agreement Contract Documents Addendum
 Recommendation for Award of Contract Recommendation to Reject Bids
 Request for Proposals
 Other _____

Action Requested:

Board Authorization to Execute Legal Approval
 Board Authorization to Award Execution by the Chairman
 Board Authorization to Advertise for Bids Execution by the Secretary to the Authority
 Board Authorization to Solicit Request for Proposals
 Other _____

Approvals Needed:

APPROVED AS TO CONTENT:

Department Head *Joseph F. Kavalec* Date: 7/6/18
 Risk Manager *[Signature]* Date: 07/10/2018
 Director of Administration _____ Date: _____
 Executive Engineer *Russell Stolt* Date: 7/6/18

APPROVED AS TO FORM:

Legal *Margaret A. Murphy* Date: 7/10/18

APPROVED FOR BOARD RESOLUTION:

Secretary to the Authority *[Signature]* Date: 7/10/18

Remarks: Please execute contract on July 12, 2018.

Resolution Date: _____ **Item No:** _____