ERIE COUNTY WATER AUTHORITY

INTEROFFICE MEMORANDUM

February 14, 2022

To: Terrence D. McCracken, Secretary to the Authority

From: Michael J. Quinn, Senior Distribution Engineer

Subject: Contract MP-084
Water System Improvements
Transmission Main Installation, Town of Tonawanda
ECWA Project No. 202000084

The following documents are attached:

- ECWA Authorization Form – this form provides the project name and project number, the action that is being requested of the Board (resolution to advertise for bids) and a list of approvals that are required prior to being acted on by the Board.
- One Project Manual.

The above referenced project was designed by Arcadis of New York, Inc. (Arcadis)

Contract MP-084 consists of the construction of a new 48-inch diameter transmission main from the southernmost point on Brookside Terrace West (in the City of Tonawanda) easterly to a point approximately 325 feet west of Military Road in the Town of Tonawanda (approximate length of 4,250 LF). The new transmission main will parallel the existing 48-inch transmission main in that area, adding a redundant pipe to the distribution system.

Budget Information:

Unit: 2595 Eng/Const Transmission Mains
Item 101521 MP-084 Transmission Main Replacement

- 2022 Budget – Engineering Services and Construction

MJQ:jmf
Attachments
cc: R.Stoll
L.Kowalski
S.Denzler
L.Lester
CONT-MP-084-2001-X-012

ERIE COUNTY WATER AUTHORITY
AUTHORIZATION FORM
For Approval/Execution of Documents
(check which apply)

Contract: MP-084 **Project No.:** 202000084
Project Description: Water System Improvements, Transmission Main Installation, Town of Tonawanda.

Item Description:

- [ ] Agreement
- [ ] Professional Service Contract
- [ ] Amendment
- [ ] Change Order
- [ ] BCD
- [ ] NYSDOT Agreement
- [X] Contract Documents
- [ ] Addendum
- [ ] Recommendation for Award of Contract
- [ ] Recommendation to Reject Bids
- [ ] Request for Proposals
- [ ] Other

Action Requested:

- [ ] Board Authorization to Execute
- [X] Legal Approval
- [ ] Board Authorization to Award
- [ ] Execution by the Chairman
- [X] 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:

- [X] Sr. Distribution Engineer — Date: 2/15/2022
- [X] Chief Operating Officer — Date: 2/15/2022
- [X] Executive Engineer — Date: 02/15/2022
- [X] Director of Administration — Date: 02/15/2022
- [X] Risk Manager — Date: 2/15/2022
- [X] Chief Financial Officer — Date: 02/15/2022
- [X] Legal — Date: 2/15/2022

APPROVED FOR BOARD RESOLUTION:

- [X] Secretary to the Authority — Date: 2/15/22

Remarks: Unit price contract.

Resolution Date: _____ **Item No:** _____

Set No: _____

Project Manual

Contract No.: MP-084

Water System Improvements
Transmission Main Installation
Town of Tonawanda

Project No. 202000084

February 2022

Erie County Water Authority

3030 Union Road
Cheektowaga, New York 14227

THIS PAGE INTENTIONALLY LEFT BLANK

ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA
PROJECT NO. 202000084
CONTRACT NO. MP-084

SEALS AND CERTIFICATIONS

ENGINEER: Arcadis of New York, Inc., 50 Fountain Plaza, Suite 600, Buffalo, New York 14202, Phone: (716) 667-0900.

Daniel J. Seider, PE License No. PE 080030 	The seal and signature to the left applies to the following Specifications Divisions and Sections of this Project Manual: • Division 01 • Division 02 • Division 03 • Division 15

Engineer's seal and signature does not apply to the documents that comprise Division 00, Bidding and Contracting Requirements.

It is a violation of applicable laws and regulations governing professional licensing and registration for any person, unless acting under the direction of the licensed and registered design professional(s) indicated above, to alter in any way the Specifications in this Project Manual.

+ + END OF SEALS AND CERTIFICATIONS + +

THIS PAGE INTENTIONALLY LEFT BLANK

ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA
PROJECT NO: 202000084

TABLE OF CONTENTS

APPENDICES

LIST OF DRAWINGS

END OF TABLE OF CONTENTS

ERIE COUNTY WATER AUTHORITY
3030 UNION ROAD
CHEEKTOWAGA, NEW YORK 14227

CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA, NY
PROJECT NO: 202000084

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 or services for the ERIE COUNTY WATER AUTHORITY, Water System Improvements, Transmission Main Installation, Town of Tonawanda. The Work consists of a single contract for the installation of approximately 4100 linear feet of 48 inch PCCP pipe and appurtenances between Brookside Terrace West and Military Road, Town of Tonawanda.

Bids must be received by the Erie County Water Authority no later than (Time) a.m. EST, on (Day of week, Date) at the Service Center Front Desk, Erie County Water Authority, 3030 Union Road, Cheektowaga, New York 14227.

All bid openings are recorded and posted on the ECWA website, along with the bids results.

When permitted, members of the public may be present to observe the bid opening. All attendees must bring a government-issued photo identification (driver's license preferred) and check-in with the ECWA receptionist before being allowed entry to the bid opening.

Whenever the Erie County Water Authority is operating under a Declaration of Emergency due to a pandemic or other general state of emergencies, members of the public may be precluded from being present at such bid opening.

ANYONE ENTERING THE SERVICE CENTER OR OTHER AUTHORITY FACILITIES IS SUBJECT TO SUCH RESTRICTIONS OR LIMITATIONS IN PLACE AT THE TIME OF ENTRY.

All bids being mailed (including FedEx, UPS, Priority Mail, etc.) or delivered shall be directed to the "SERVICE CENTER FRONT DESK" 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, Water System Improvements, Town of Tonawanda, Between Brookside Terrace West and Military Road, Town of Tonawanda.

Beginning at 9:00 a.m., on (Day of week, Date), if bidders wish to purchase printed copies of the Contract Documents, they must be obtained through Avalon. The fee paid to Avalon is non-refundable. **Only official planholders will be allowed to bid on the project.** Bidders acknowledge that they are responsible for review of all components of the Contract Documents,

including all specification sections and drawings, regardless of how many drawings they print and in which format/size they are printed.

The Contract Documents may be examined at the following locations:

Avalon Plan Room
www.avalonplanroom.com

Construction Exchange of Buffalo and WNY
2660 William Street
Cheektowaga, New York 14227

The Contract Document may be viewed online and ordered through Avalon Plan Room at: www.avalonplanroom.com in the "Public Bid" section. If you do not have internet access or have questions on ordering, please contact Avalon Document Services at 716-998-7777.

A pre-bid meeting will be held at (Time), EST, on (Day of week, Date), at (Location). Attendance at the pre-bid meeting is recommended but is not mandatory.

Due to the Declaration of Emergency currently in effect, a pre-bid informational meeting to discuss the project will be held via teleconference call with online video conference. Prospective Bidders who wish to access the pre-bid meeting teleconference call may request the required login information by emailing the designated contact person listed below, email subject "ECWA Contract (Contract Number), Pre-bid Meeting, Conference Call Request". All requests for the login information shall be before (Time), EST, on (Day of week, Date). All prospective bidders are strongly encouraged to partake in the pre-bid meeting teleconference call.

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 Tim Shafer, ARCADIS, 50 Fountain Plaza, Suite 600, Buffalo, NY 14202, telephone 716-667-6666, email Tim.Shafer@arcadis.com.

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

TERRENCE D. McCRACKEN
Secretary to the Authority

Engineer:

Arcadis of New York, Inc.
50 Fountain Plaza, Suite 600
Buffalo, NY 14202
Phone: 716-667-0900
Fax: 716-667-0279

ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT NO.: MP-084
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA
PROJECT NO.: 202000084

SECTION 00200

INSTRUCTIONS TO BIDDERS

TABLE OF ARTICLES

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 01100 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 Service Center Front Desk of the Erie County Water Authority, 3030 Union Road, Cheektowaga, New York 14227.

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. The Town of Tonawanda Landfill is in close proximity to the pipeline routing. There are no known contaminants within the excavation limits.

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 01630 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. State Finance Law Requirements.

F. Section 139-L of the State Finance Law, Statement relating to Sexual Harassment Policy.

G. 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.

H. 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.

29.02 Refer to Supplementary Conditions Paragraph SC-18.06 for information on OWNER'S Apprenticeship policy.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA
PROJECT NO: 202000084

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 SJB Services, Inc. dated August 7, 2020 and December 10, 2020 and is 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

THIS PAGE INTENTIONALLY LEFT BLANK

ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT NO: 202000084
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA
PROJECT NO: 202000084

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. NYSDOT Highway Work Permit

1.02 OWNER shall apply for and is responsible for complying with all requirements of the following permits.

1. CSX Encroachment Permit

1.03 CONTRACTOR shall include all permit fees and permit requirements in his 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 in Apppendix E.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA
PROJECT NO: 202000084

(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: MP-084
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA
Project No. 202000084

BID TO:

Service Center Front Desk
Erie County Water Authority
3030 Union Road
Cheektowaga, New York 14227

BID FROM: _____

(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.

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.

Addendum No.	Date Received	Addendum No.	Date Received
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

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, 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.

5.01 Bidder will complete the Work in accordance with the Contract Documents for:

Description	Estimated Quantities	Computed Totals
Item 1 - Watermain		
Item 1A – Ductile Iron Pipe (DIP)		
Item 1A1- For furnishing and installing 6-inch Ductile Iron Pipe (DIP) Watermain at the Unit Price of _____ Dollars and _____ Cents ($) Per Linear Foot	40 LF	$_____
Item 1A2- For furnishing and installing 8-inch Ductile Iron Pipe (DIP) Watermain at the Unit Price of _____ Dollars and _____ Cents ($) Per Linear Foot	20 LF	$_____

Item 1B – Prestressed Concrete Cylinder Pipe (PCCP)

Item 1B1- For furnishing and installing
48-inch Prestressed Concrete Cylinder Pipe (PCCP)
Watermain at the Unit Price of
_____ Dollars

and _____ Cents
($) Per Linear Foot 4100 LF $_____

Item 2 - Valves

Item 2A – Gate Valve

Item 2A1- For furnishing and installing
6-inch Gate Valve at the Unit Price of
_____ Dollars

and _____ Cents
($) Per Each 4 Ea $_____

Item 2A2- For furnishing and installing
8-inch Gate Valve at the Unit Price of
_____ Dollars

and _____ Cents
($) Per Each 2 Ea $_____

Item 2B – Butterfly Valve

Item 2B1- For furnishing and installing
48-inch Butterfly Valve with Concrete Chamber
at the Unit Price of
_____ Dollars

and _____ Cents
($) Per Each 3 Ea $_____

Item 2C – Combination Air/Vacuum Release Valve

Item 2C1 - For furnishing and installing 8"
Combination Air and Vacuum Release Valve with Concrete Chamber
at the Unit Price of
_____ Dollars

and _____ Cents
($) Per Each 2 Ea $_____

Item 3 – Fire Hydrant Assemblies

Item 3A – For furnishing and installing
Permanent Fire Hydrant Blow-Off Assembly at the Unit Price of
_____ Dollars

and _____ Cents
($) Per Each 2 Ea $_____

Item 4 – Test Pit Excavation and Backfill

Item 4A – For furnishing and installing
Test Pit Excavation and Backfill
(Fixed Minimum Unit Price of $200.00/Ea.) at the Unit Price of
_____ Dollars

and _____ Cents
($) Per Each 5 Ea $_____

Item 5 – Rock Excavation

Item 5A – For Rock Excavation at the Unit Price of
_____ Dollars

and _____ Cents
($) Per Cubic Yard 20 CY $_____

Item 6 – Select Backfill

Item 6A – For furnishing and installing
Select Backfill (Fixed Minimum Unit Price of $20.00/CY)
at the Unit Price of
_____ Dollars

and _____ Cents
($) Per Cubic Yard 200 CY $_____

Item 7 – Interconnections

Item 7A – For Interconnection No. 1
at (Station 0+00)
at the Lump Sum Price of
_____ Dollars

and _____ Cents
($) Lump Sum 1 LS $_____

Item 7B – For Interconnection No. 2

at (Station 40+98)
at the Lump Sum Price of
_____ Dollars

and _____ Cents
($) Lump Sum 1 LS $_____

Item 8 – Water Service Connections – NOT USED

Item 9 – Casing Pipe

Item 9A –For furnishing and installing
72-inch Diameter Casing Pipe at the Unit Price of
_____ Dollars

and _____ Cents
($) Per Linear Foot 151 LF $_____

Item 10 – Abandonments – NOT USED

Item 11 – Restoration

Item 11A – Landscape Restoration
(Fixed Minimum Unit Price of $3.00/LF)
at the Unit Price of
_____ Dollars

and _____ Cents
($) Per Linear Foot 4100 LF $_____

Item 12 – Testing and Disinfection

Item 12A – Testing and Disinfection,
(Fixed Minimum Unit Price of $3.00/LF),
at the Unit Price of
_____ Dollars

and _____ Cents
($) Per Linear Foot 4100 LF $_____

Item 13 – Extra Work Items

Item 13A – For Extra Excavation (8 to 10 feet deep),
(Fixed Minimum Unit Price of $10.00/LF),
at the Unit Price of
_____ Dollars

and _____ Cents
($) Per Linear Foot 3900 LF $_____

Item 13B – For Extra Excavation (10 to 12 feet deep),
(Fixed Minimum Unit Price of $10.00/LF),
at the Unit Price of
_____ Dollars

and _____ Cents

($) Per Linear Foot 360 LF $_____

Item 13C – For furnishing and installing Extra Concrete, (Fixed Minimum Unit Price of $100.00/CY), at the Unit Price of

_____ Dollars

and _____ Cents

($) Per Cubic Yard 10 CY $_____

Item 14 – Repair Crew Labor and Equipment

Item 14A – For Repair Crew Labor and Equipment (Fixed Minimum Unit Price of $150.00/LF) At the Unit Price of

_____Dollars

and _____ Cents

($) Per Hour 24 Hr $_____

Item 15 – Vacuum Truck and Labor

Item 15A – For Vacuum Truck and Labor (Fixed Minimum Unit Price of $125.00/LF) At the Unit Price of

_____Dollars

and _____ Cents

($) Per Hour 24 Hr $_____

Item 16 – All-Stop Work Order

Item 16A – For Work Stoppage due to "ALL STOP" Order (Fixed Minimum Unit Price of $100.00/Hr) At the Unit Price of

_____Dollars

and _____ Cents

($) Per Hour 24 Hr $_____

ERIE COUNTY WATER AUTHORITY
CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS, TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA

Item 17 – Electrically Qualified Person

Item 17A – For Third Party Electrically Qualified Person
on National Grid Property
At the Unit Price of
_____Dollars

and _____ Cents
($) Per Hour 1,200 Hr $_____

Item 18 – CSX Flagging/Construction Monitoring Person

Item 18A – For CSX Flagging/Construction Monitoring Person
In close proximity to CSX Tracks
At the Unit Price of
_____Dollars

and _____ Cents
($) Per Hour 120 Hr $_____

Item 19 – Contingency Allowance

Item 19A – Contingency Allowance
At the stipulated price of
One Hundred Thousand Dollars

and 00 Cents
($ 200,000.00) Per Lump Sum 1 LS $ 200,000.00

TOTAL BASE BID AMOUNT (This total is for convenience in comparing Bids and is not an official part of this Bid.) $_____ (Figures)

_____

_____Dollars and _____ Cents

ERIE COUNTY WATER AUTHORITY
CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS, TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA

(Written Amount)

ERIE COUNTY WATER AUTHORITY
CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS, TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA

Unit prices have been computed in accordance with paragraph 11.03.B of the General Conditions.

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 _____ Dollars ($_____).

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. State Finance Law Requirements

F. Section 139-L of the State Finance Law, Statement relating to Sexual Harassment Policy.

G. Required Bidder Qualifications Statement with supporting data.

H. 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 _____, 20__.

ERIE COUNTY WATER AUTHORITY
CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS, TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA

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.: _____

ERIE COUNTY WATER AUTHORITY
CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS, TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA

A Corporation

By _____
(Corporation Name)

_____
(State of Incorporation)

By _____
(Signature of Officer Authorized to Sign)

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

(CORPORATE

SEAL)

Attest _____
(Secretary)

License or Registration Number: _____

Business Address: _____

_____

Phone No.: _____ FAX No.: _____

ERIE COUNTY WATER AUTHORITY
CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS, TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA

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.: _____

ERIE COUNTY WATER AUTHORITY
CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS, TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA

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

CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
PROJECT NO: 202000084

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

State Finance Law Requirements

Statement Regarding Prevention of Unlawful Discriminatory Practices

BID SECURITY FORM

BIDDER (Name and Address):

_____
_____
_____

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

_____
_____
_____

OWNER:

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

BID

BID DUE DATE:_____

PROJECT:
Contract No: MP-084
WATER SYSTEM IMPROVEMENTS, TRANSMISSION MAIN INSTALLATION, TOWN OF TONAWANDA
Project No: 202000084

BOND

BOND NUMBER:_____
DATE: (Not later than Bid due date):_____
PENAL SUM: _____ _____
(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	SURETY
_____(Seal)	_____(Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By:_____	By:_____
Signature and Title	Signature and Title (Attach Power of Attorney)
Attest:_____	Attest:_____
Signature and Title	

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

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.

_____
(Name of Individual, Partnership or Corporation)

By _____
(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.

_____

(Name of Individual, Partnership, or Corporation)

By _____

(SEAL)

FORMS A, B, and C

STATE FINANCE LAW REQUIREMENTS

The Erie County Water Authority (the "Authority") is a government entity, as that term is defined in State Finance Law §§ 139-j(1)(a) and 139-k(1)(a). When the Authority seeks to procure goods or services by means of an Invitation or Notice to Bid, or a Request for Proposals, the State Finance Law imposes certain restrictions on anyone who may wish to offer goods or services to the Authority as an Offerer, as that term is defined in §§ 139-j(1)(h) and 139-k(1)(h).

During the Restricted Period, as defined in §§ 139-j(1)(f) and 139-k(1)(f), when bids or proposals are being solicited, the Authority will designate a contact person with whom the Offerer may contact for information and other authorized purposes as set forth in §139-j of the State Finance Law. The designated contact is identified in the Notice to Bidders, or in the Request for Proposal. An Offerer is authorized to contact the Authority's designated contact for such purposes as set forth in § 139-j(3).

Pursuant to the State Finance Law, the Authority is also required to make certain findings before making any determinations as to the qualifications and eligibility of those seeking a procurement contract, as that term is defined in State Finance Law §§ 139-j(1)(g) and 139-k(1)(g). Certain findings of non-responsibility can result in rejection for contract award and in the event of two findings of non-responsibility occurring within a 4-year period, the Offerer will be debarred from obtaining procurement contracts with the Authority. 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.

The following forms will be used by the Authority to make such findings:

Form A - Offerer's Affirmation of Understanding of, and Agreement to Comply with, the Authority's Permissible Contact Requirements During the Restricted Period.

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

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

FORM A

Offerer's Affirmation of Understanding of, and Agreement to Comply with, the Permissible Contact Requirements During the Restricted Period

Instructions:

The Erie County Water Authority (the "Authority") is a government entity, as that term is defined in State Finance Law §§ 139-j(1)(a) and 139-k(1)(a). The Authority must obtain a written affirmation of understanding and agreement to comply with procedures regarding permissible contacts with the Authority 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 Authority relative to permissible contacts as required by State Finance Law §139−j(3) and §139−j(6)(b).

By: _____ Date: _____

Name: _____

Title: _____

Contractor Name: _____

Contractor Address: _____

_____

_____

FORM B

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

Instructions:

The Erie County Water Authority (the "Authority") is a government entity, as that term is defined in State Finance Law §§ 139-j(1)(a) and 139-k(1)(a). The Authority must obtain a Certification that the information submitted for a procurement contract 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 sign the Certification, under penalty of perjury, and to provide the Certification to the Authority. The Certification should 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 Authority relating to the awarding of a procurement contract is complete, true, and accurate.

By: _____ Date: _____

Name: _____

Title: _____

Contractor Name: _____

Contractor Address: _____

_____

_____

FORM C

Offerer's Disclosure of Prior Non-Responsibility Determinations

Background:

The Erie County Water Authority (the "Authority") is a government entity, as that term is defined in State Finance Law §§ 139-j(1)(a) and 139-k(1)(a). New York State Finance Law §139−k(2) obligates the Authority 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−j(1). and §139−k(1), These sections also set 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, as that term is defined in State Finance Law §§ 139-j(1)(b) and 139-k(1)(b), within the necessary timeframe. See State Finance Law §139−j(10)(b) and §139−k(3).

Instructions:

The Authority 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 Authority 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:

_____

Address: _____

_____

Name and Title of Person Submitting this Form: _____

_____

Contract Procurement Number: _____

Date: _____

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 Erie County Water Authority with respect to State Finance Law §139−k is complete, true, and accurate.

By: _____ Date: _____
Signature

Name: _____

Title: _____

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 j(1) and 139−k(l).

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 Erie County Water Authority, as a 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 Erie County Water Authority, as a 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 Authority may exercise its termination right by providing written notification to the Offerer in accordance with the written notification terms of this contract.

OFFERER'S STATEMENT REGARDING PREVENTION OF UNLAWFUL DISCRIMINATORY PRACTICES

The Erie County Water Authority (the "Authority"), as an employer in New York State, is subject to the Human Rights Law, codified as Executive Law §290, *et. seq.*, and Labor Law §201-g. The Authority seeks to provide a work environment that is free from unlawful discriminatory practices as they are defined in Executive Law §296, as well as from inappropriate harassing conduct even if not deemed unlawful, to its employees, contractors, subcontractors, vendors, consultants, and any other person providing services on Authority premises. Pursuant to the Human Rights Law, it shall be unlawful to discriminate against an individual, or to subject an individual to harassment, due to age, race, creed, color, national origin, sexual orientation, gender identity or expression, military status, sex, disability, predisposing genetic characteristics, familial status, marital status, or status as a victim of domestic violence. Accordingly, the Authority requires that any Offeror of a proposal or bid, agree to sign the following statement regarding unlawful discriminatory practices, including, but not limited to sexual harassment, under penalty of perjury. This statement should be provided to the Authority as early as possible in the procurement process, but not later than at the time of execution of a contract with the Authority. Failure to agree to sign the statement may result in the Authority deeming the bid or proposal withdrawn by the Offerer.

Offerer Statement:

I certify, under penalty of perjury, that the following statements are accurate:

- *Offerer is aware of its obligations under the Human Rights Law (Executive Law §290, et. seq.*
- *Offerer complies with the provisions of Executive Law §290, et. seq., including Executive Law §296, and does not permit unlawful discriminatory practices or harassment based on an individual's age, race, creed, color, national origin, sexual orientation, gender identity or expression, military status, sex, disability, predisposing genetic characteristics, familial status, marital status, or status as a victim of domestic violence in its workplace.*
- *Offerer complies with the provisions of Labor Law §201-g, has implemented a written policy addressing sexual harassment in the workplace which meets the minimum standards of Labor Law §201-g, and provides annual sexual harassment prevention training to all of its employees.*

By: _____ Date: _____

Name: _____

Title: _____

Offerer Name: _____

Offerer Address: _____

_____

END OF BID FORM SUPPLEMENTS

THIS PAGE INTENTIONALLY LEFT BLANK

ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA
PROJECT NO: 202000084

SECTION 00450

BIDDER'S QUALIFICATION STATEMENT

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

SUBMITTED TO:

Service Center Front Desk
Erie County Water Authority
3030 Union Road
Cheektowaga, New York 14227

SUBMITTED FOR:

Erie County Water Authority
Contract No: MP-084
Water System Improvements, Transmission Main Installation, Town of Tonawanda
ECWA Project No. 202000084

SUBMITTED BY:

Name of Organization: _____
(Print or Type Name of Bidder)

Name of Individual: _____

Title: _____

Business Address: _____

_____

Telephone No.: _____

Fax No.: _____

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:

_____

_____

B. List of Executive Officers:

Name	Title

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 contractor? _____

3.0 Has your organizational structure changed within the past five years? □ Yes □ No

If the answer to this question is "yes", provide data as listed above in Item 1.0 for your previous organization.

_____
_____
_____
_____

4.0 We normally perform _____ percent of the work with our own forces. List work normally subcontracted.

_____
_____

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?

□ Yes □ No

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.

_____
_____
_____
_____

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?

□ Yes □ No

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.

_____
_____
_____
_____

7.0 In the last five years, has your organization, or any predecessor organization, failed to substantially complete a project in a timely manner?

□ Yes □ No

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.

_____
_____
_____
_____

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.

_____

_____

12.0 Provide the following for your surety:

12.1 Surety Company: _____

12.2 Agent: _____

A. Address: _____

B. Telephone No.: _____

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: _____

13.2 Address: _____

13.3 Account Manager: _____

13.4 Telephone No.: _____

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:

_____

_____

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: _____

15.2 Name of firm preparing statement: _____

16.0 Dated at _____, this _____ day of _____, 20_____.

Bidder: _____
(Print or Type Name of Bidder)

By: _____

_____

Title: _____

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)----------

_____ being duly sworn, deposes and says that: a) he/she is _____ of _____; (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)----------

_____ being duly sworn, deposes and says that he/she is _____ of _____; (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; ( ) said corporation.

Sworn to before me this _____ day of _____, 20_____, in the County of _____, State of _____.

_____
(Notary Public)

My commission expires _____

(Seal)

END OF BIDDER QUALIFICATIONS STATEMENT

ATTACHMENT A

SCHEDULE A
PROJECTS IN PROGRESS

Name, Location and Description of Project	Owner	Architect or Engineer	Contract Price	Percent Complete	Scheduled Completion	Reference/Contract Include Address and Phone

ATTACHMENT B

SCHEDULE B
PROJECTS COMPLETED

Name, Location and Description of Project	Owner	Architect or Engineer	Date Completed	Contract Price	Percent with Own Forces	Reference/Contract Include Address and Phone

ATTACHMENT C

SCHEDULE C
PERSONNEL

Name	Position	Date Started With This Organization	Date Started In Construction	Prior Positions and Experience In Construction

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.

_____

_____

_____

_____

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. _____

_____

_____

_____

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

EXPERIENCE IN THE INSTALLATION OF
TAPPING SADDLES & VALVES
ON
PRESTRESSED CONCRETE CYLINDER PIPE

When this Contract includes the Installation of Tapping Saddles and Valves on Prestressed Concrete Cylinder Pipe, 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. _____

2. _____

3. _____

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

_____

Who has the following experience*:

1. _____

2. _____

3. _____

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

_____ 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.

EXPERIENCE WORKING ON
PRESTRESSED CONCRETE CYLINDER PIPE (PCCP)

This Contract includes the removal and installation of Prestressed Concrete Cylinder Pipe, fittings and adapters. The Bidder:

- must have knowledge of the manufacture and use of PCCP pipe, fitting and adapters;
- must possess prior experience of the disassembly of restrained PCCP joints on existing PCCP transmission mains;
- must have prior experience with successful installations of new PCCP transmission mains, adapters and fittings.

The Bidder is required to complete one of the following to the satisfaction of the ENGINEER, in addition to the qualifications required by Section 15109:

A. Our firm has PCCP experience* similar to the Work expected in this project within the past 5 years as follows:

1. _____

2. _____

3. _____

Who has the following experience*:

_____

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

_____

Who has the following experience*:

1. _____

2. _____

3. _____

C. We will have a representative of a manufacturer of prestressed concrete cylinder pipe

_____ perform the above noted work.
(Insert manufacturer's name)

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

THIS PAGE INTENTIONALLY LEFT BLANK

ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA
PROJECT NO: 202000084

SECTION 00500

AGREEMENT

THIS AGREEMENT is dated as of the _____ day of _____ in the year _____, by and between the ERIE COUNTY WATER AUTHORITY (hereinafter called OWNER) and _____ (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 installation of 48 inch PCCP Pipe and appurtenances in the Town of Tonawanda. The Work includes all borings, valves, hydrants, interconnections, abandonments, restoration, and all related work as shown on the drawings and described in the specifications. The Work is generally described in Section 01100 of the General Requirements.

ARTICLE 2 - ENGINEER

2.01 The Project has been designed by Arcadis, 50 Fountain Plaza, Suite 600, Buffalo, NY 14202 who is hereinafter called the ENGINEER. Arcadis 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 Days to Achieve Milestones, Substantial Completion and Final Payment

A. The Work shall be substantially completed by August 31, 2023 and completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions by December 31, 2023.

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, if the Work is not substantially completed within the time specified in Article 3 for each Milestone and 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. Substantial Completion: $ 750.00 for each calendar day after the Substantial Completion date as specified in Article 3.02 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 Liquidated Damages for Deficiencies in Maintenance and Protection of Traffic:

Calendar days during which there are substantial deficiencies in compliance with the requirements of Section 01550 Maintenance and Protection of Traffic and on applicable Contract Drawings will be considered deficient days for Maintenance and Protection of Traffic. The CONTRACTOR shall pay OWNER $400.00 per day for each calendar day determined to be substantially deficient by ENGINEER. The cost for the proper maintenance and protection of traffic as defined in SECTION 01550 and on the applicable Contract Drawings is to be included under various items of the contract; no separate bid item is included for maintenance and protection of traffic.

4.04 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 (10) 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 - Easements

K. Appendix E – Permits

L Appendix F - National Grid Requirements

M. Appendix G – CSX Requirements

N. Appendix H – ECWA Forms

O. The Drawings comprising a set entitled: Contract No: MP-084, Water System Improvements, Transmission Main Installation, Town of Tonawanda and including Cover Sheet and Sheets C-01 through C-15.

P. Addenda consisting of Numbers____ to ____, inclusive.

Q. Exhibits to the Agreement enumerated as follows:

1. Exhibit 1, Bid Form 15 pages.

R. 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 _____, 20_____.

OWNER: Erie County Water Authority	CONTRACTOR: _____
By: _____	By: _____
Title: _____	Title: _____
[CORPORATE SEAL]	[CORPORATE SEAL]
Attest _____	Attest _____
Address for giving notices	Address for giving notices
_____	_____
_____	_____
(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. _____ (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:	Designated Representative:
Name: _____	Name: _____
Title: _____	Title: _____
Address: _____	Address: _____
Phone No.: _____	Phone No.: _____
Fax No.: _____	Fax No.: _____

END OF AGREEMENT

Performance Bond

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

CONTRACTOR (Name and Address):

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

OWNER (Name and Address):

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

CONTRACT
Date:
Amount:
Description: ERIE COUNTY WATER AUTHORITY
CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA
PROJECT No. 202000084

BOND
Date (Not earlier than Contract Date):
Amount:
Modifications to this Bond Form:

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.

CONTRACTOR AS PRINCIPAL		SURETY	
Company:	(Corp. Seal)	Company:	(Corp. Seal)
Signature: _____		Signature: _____	
Name and Title:		Name and Title: (Attach Power of Attorney)	

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

CONTRACTOR AS PRINCIPAL		SURETY	
Company:	(Corp. Seal)	Company:	(Corp. Seal)
Signature: _____		Signature: _____	
Name and Title:		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 pliability, 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 be 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):

Payment Bond

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

CONTRACTOR (Name and Address):

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

OWNER (Name and Address):

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

CONTRACT
Date:
Amount:
Description: ERIE COUNTY WATER AUTHORITY
CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA
PROJECT No. 202000084

BOND
Date (Not earlier than Contract Date):
Amount:
Modifications to this Bond Form:

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.

CONTRACTOR AS PRINCIPAL
Company: (Corp. Seal)

Signature: _____
Name and Title:

SURETY
Company: (Corp. Seal)

Signature: _____
Name and Title:
(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):

ERIE COUNTY WATER AUTHORITY
BUFFALO, NEW YORK

CONTRACT NO: MP-084
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA
PROJECT NO: 202000084

SECTION 00700

GENERAL CONDITIONS

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

[This page was left blank intentionally.]

TABLE OF CONTENTS

Page

TABLE OF CONTENTS (CONTINUED)

Page

TABLE OF CONTENTS (CONTINUED)

Page

[This page was left blank intentionally.]

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 adaption 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 ENGNEER 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 or 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 paragraph 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, expediters, 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 01270, 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 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: MP-084
WATER SYSTEM IMPROVEMENTS
TRANSMISSION MAIN INSTALLATION
TOWN OF TONAWANDA
PROJECT NO: 202000084

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 for a watermain shall be achieved at such time as the watermain, or portion thereof, has been installed, tested, disinfected, issuance of Completed Works Approval by the Erie County Water Authority, all of the services transferred, if applicable, all the hydrants installed, all of the interconnections made, and all of the abandonments performed.

SC-4.01 Add new paragraph immediately after paragraph 4.01.B which is to read as follows:

SC-4.01.C The Erie County Water Authority will provide easements to the extent shown on the contract drawings.

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. Soil Boring investigations were conducted by SJB Services, Inc., Buffalo, NY June 17, through June 25, 2020 and November 30, 2020. Reports with subsurface logs are dated August 7, 2020 and December 10, 2020.

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. HW-5 - Van De Water Treatment Plant to Ball Pumping Station 48" Transmission Main, September, 1994.
b. Contract No. DG-8B – Water System Improvements, Van De Water to Ball Transmission Main, March 1990.
c. Contract No. 30B – Van De Water Plant to Ball Pump Station, May 1977.
d. EnSol, Inc. Environmental Solutions, Town of Tonawanda Landfill NMPC ROW Waste Relocation Project Phase I, December 2013.
e. US Army Corps of Engineers, Tonawanda Landfill and Mudflats Area GIS-Based Historical Photographic Analysis, Julp 2009.

Copies of the reports and drawings listed are available for review at the office of Arcadis at 50 Fountain Plaza, Suite 600, Buffalo, NY 14202, upon 48 hours 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 two, new paragraphs immediately after Paragraph 5.03, which are to read as follows:

SC-5.03 *Insurance Requirements*

SC-5.03.A. Contractor shall procure and maintain insurance in accordance with Insurance Requirements, as set forth in the attached Appendix B-1 and hereby made a part of these General Conditions.

SC-5.03.B. Contractor shall require all direct and indirect subcontractors to procure and maintain insurance in accordance with the Insurance Requirements, as set forth in the Addendum Agreement attached as Appendix B-2 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 Before Work commences, the Owner must review and approve any proposed subcontracting agreement prior to its execution. All Work performed by any Subcontractor must be performed under the supervision and control of the Contractor. As used in this paragraph, a subcontractor is defined in GC 1.01.A.42. Any subcontracting agreement must contain an Addendum Agreement, in the form set forth in Appendix B-2.

SC-6.06.I Add the following new paragraph immediately following paragraph 6.06.H, which is to read as follows:

SC-6.06.I The Contractor's 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 own 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.

SC-18.06 Erie County Water Authority Apprenticeship Policy

A. During the performance of this Contract, the CONTRACTOR, its assigns, and designees, agree that it will abide by and will require its Subcontractors to abide by the Erie County Water Authority's Apprenticeship Policy, as stated in paragraph B of this Section.

B. That pursuant to New York State Labor Law §816-B, the Erie County Water Authority hereby mandates that all contractors and subcontractors entering into any construction contracts with the Erie County Water Authority shall have established apprenticeship agreements appropriate for the type and scope of work to be performed under the contract, that have been approved by the New York State Commissioner of Labor and shall require the employment of apprentices on Erie County Water Authority construction projects.

END OF SUPPLEMENTARY CONDITIONS

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01100

SUMMARY OF WORK

PART 1 - GENERAL

1.01 LOCATION AND SCOPE OF WORK

A. The Work consists of the installation and site restoration of a new 48-inch transmission main and appurtenances from the southernmost point on Brookside Terrace West (in the City of Tonawanda) easterly to a point approximately 325 feet west of Military road in the Town of Tonawanda. The new transmission main will parallel an existing ECWA 48-inch transmission main, adding a redundant pipe to the distribution system.

B. The Work is located in the Town of Tonawanda and City of Tonawanda between Military Road (East) and Brookside Terrace West (West) in Erie County, New York.

C. The summary of the Work described in the Section 01100 is an overall summary of the responsibilities of the CONTRACTOR and his relation to the OWNER. It does not supersede the specific requirements of the other Contract Documents.

1.02 CONTRACTS

A. The Work shall be constructed under one prime contract.

1.03 WORK BY OTHERS

A. Work by OWNER:
   1. The Authority will operate all utility water system valves and hydrants of existing watermains and of newly installed watermains once placed into service.

B. Coordinate as required with the property owner, National Grid, CSX and other Utility owners which operate and maintain various facilities along the project alignment on a regular basis.

1.04 NOT USED

1.05 NOT USED

1.06 SEQUENCE OF WORK

A. General

1. The Work generally shall be constructed without disruption to the normal operation of the Authority, National Grid, CSX, Town of Tonawanda Landfill and other utility/property owners along and adjacent to the watermain alignment except as noted in Section 01311, and 01731, and as otherwise approved by the OWNER.
2. It is hereby understood that Time is of Essence in performing all work, but especially in the time that service is interrupted to the customer.
3. Work performed in the vicinity of existing restaurants, police or fire stations, health care facilities, industries, businesses, day care facilities, municipal buildings, places of worship, schools, senior centers, hotels, or other facilities identified as requiring consistent water service shall be performed in the least disruptive time (off hours) and shall be coordinated with the affected establishments and the ENGINEER prior to work being performed. Off hour work shall be performed at no additional cost to OWNER.
4. Prior to any interconnection or abandonment, the CONTRACTOR shall schedule a water shut-down with the Erie County Water Authority through the ENGINEER.

B. Customer Notification

The CONTRACTOR is responsible to notify all customers 48 hours in advance of when work is to take place at their address. The Authority shall also be notified 72 hours in advance in accordance with Sections 01731 and 15051. The CONTRACTOR is required to complete a Customer Notification Form conforming to the requirements of Erie County Water Authority.

C. Construct the Work in the following sequence:

1. The CONTRACTOR is advised that the work shall follow the sequence specified herein. Work in a specific area shall be performed in a manner such that once started, progress shall continue to a point where the testing, disinfection, acceptance by the Erie County Water Authority, and restoration has been completed prior to starting work on another area.
2. Complete and submit shop drawings to ENGINEER.
3. Obtain all necessary permits and submit copies to the ENGINEER.
4. Install Pipeline Crossing Protection Areas as shown or noted on the plans or as determined in the field.
5. Install erosion and sediment control devices as indicated on the contract drawings.
6. The CONTRACTOR shall dig all test pits as shown on the plans and as necessary to verify pipe location, depth, condition, outside diameter, location of joints, existing or abandoned-in-place utilities, sub-surface obstructions and any other conditions that may affect the design/construction of the proposed work. Test pits shall be backfilled, compacted, and temporary restoration (including pavement) shall be

installed prior to the applicable work being performed on the various mains. CONTRACTOR shall document the findings determined during each test pit and submit the information to the ENGINEER and OWNER on the 'ECWA Test Pit Inspection Form'.

7. CONTRACTOR shall supply laying schedule for pipe based on results of test pits. After approval of materials submittals and laying schedule, order pipe and related materials.
8. CONTRACTOR shall order any "special" fittings/materials that take extensive time to acquire.
9. Construct the new water transmission main in the following sequence:
    a. Construct temporary construction access roads and entrances.
    b. Delivered and stored materials will be subject to inspection by the OWNER and ENGINEER prior to installation.
    c. Excavate and install 48-inch butterfly valve with concrete chamber and inspection chamber as shown on interconnection No.1.
    d. Install 10-inch tapping saddle, RPZ and associated temporary piping used for filling, flushing, testing and disinfection as shown on interconnection No.1.
    e. Begin installation of new 48-inch PCCP transmission watermain generally from west to east, with pipe bells ahead (facing east). Each pipe section shall be cleaned per specification 15207 and photographed per section 01322.
    f. Continue installing 48-inch watermain, fittings, valves & chambers, air release valves to the western side of the CSX tracks per Contract drawings and specifications.
    g. Install casing pipe underneath the CSX tracks per Contract drawings and specifications.
    h. Install remaining 48-inch watermain, fittings, valves & chambers.
    i. Install transmission main hydrant blowoff at east end.
    j. Provide and install all temporary piping and other measures required to dispose of water used for filling, flushing, testing and disinfection from the new blow-off hydrant to the existing 12" storm sewer located along the west side of Military road. Maximum allowed discharge into the existing 12" storm sewer is 800 GPM.
    k. Fill and flush the new watermain from the temporary connection on the west end near station 0+00 through the RPZ manifold under the direction of and with the assistance of the OWNER's personnel during the time periods allowed, as determined by the OWNER, and as per the specifications.
    l. Perform pressure and leakage testing of the new watermains during the time periods allowed, as determined by the OWNER, and perform any repairs necessary.
    m. Upon acceptable pressure and leakage testing results, disinfect the new watermain during the time periods allowed, as determined by

the OWNER, perform required laboratory testing, and provide results to the ENGINEER.

n. After approval and acceptance by the Health Department, the OWNER and the ENGINEER: .
   1) Disconnect the temporary source connection and pressure testing and disinfection apparatus at the west end during the timeframe allowed, as determined by the OWNER.
   2) Perform Interconnection No. 1 to the 48-inch watermain at the west end at station 0+00 during the timeframe allowed, as determined by the OWNER.
   3) Perform Interconnection No. 2 to the 48-inch watermain at the east end at station 41+00 during the timeframe allowed, as determined by the OWNER.
   4) Remove and cap all sample points.

m. Remove all excess materials and equipment from the project site.

n. Restore the project site to pre-construction conditions or as noted or required by the Contract Documents.

1.07 CONTRACTOR'S USE OF PREMISES

A. CONTRACTOR'S use of the premises shall be confined to the areas shown.

B. The full use of the premises for storage, the operations of workmen and all other required construction activities will not be available to the CONTRACTOR.

C. CONTRACTOR must share use of the premises with the Property Owner, National Grid, CSX and other contractors specified in Article 1.03.

D. National Grid, their subcontractors, and other utility owners maintaining facilities within the National Grid property must be afforded full access to all areas of the project site at all times during construction activities.

E. CONTRACTOR shall:
   1. Assume full responsibility for protection and safekeeping of products stored on or off premises.
   2. Move stored products that interfere with the operations of OWNER or other contractor.
   3. Obtain and pay for all additional storage or work areas required for his operations.
   4. Obtain and pay for all permits and satisfy all permit requirements.
   5. Comply with all requirements defined in other specification sections.

F. Limits on CONTRACTOR'S use of site are:
   1. OWNER, Town of Tonawanda, and National Grid will designate the area available for field offices and equipment/material storage.

G. See General Conditions for additional requirements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01140

USE OF OWNER'S FACILITIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. CONTRACTOR may use existing facilities or equipment in the new Work for construction purposes only if the OWNER'S written permission is obtained.

B. Restore existing facilities 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 or equipment used for construction purposes and shall repair or replace any damaged facilities or equipment at CONTRACTOR'S cost.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01210

ALLOWANCES

PART 1 - GENERAL

1.01 SCOPE

A. This Section includes administrative and procedural requirements governing the following types of allowances:
   1. Cash allowances.
   2. Contingency allowances.

B. Authorization of Allowances:
   1. Work that will be done and paid under an allowance will be authorized in OWNER'S written instruction to CONTRACTOR.
   2. Do not provide Work under an allowance without written authorization of OWNER.

1.02 CASH ALLOWANCES

A. Cash allowances are stipulated amounts for purchase of products, systems, or services. In addition to this Section, refer to General Conditions, as may be modified by the Supplementary Conditions; and individual Specification Sections for CONTRACTOR'S costs to be covered by allowances, and CONTRACTOR'S costs, including overhead and profit, to be included elsewhere in the Contract Price.

B. At earliest practical date after Notice to Proceed, advise ENGINEER of date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

C. Consult with ENGINEER in selecting suppliers and obtain proposals for price and time from selected suppliers. Submit proposals to ENGINEER along with recommendations relevant to furnishing and installing products covered in the allowance.

D. Purchase products or systems from suppliers selected by ENGINEER.

E. Submit invoices or delivery slips to show actual cost and quantity of products or systems delivered to Site and used in fulfilling each allowance.

F. Properly dispose of unused products and systems purchased under cash allowance.

G. For each allowance, submit to ENGINEER a Change Order proposal to adjust Contract Price for difference between specified allowance amount and actual cost.

Prepare Change Order proposal in accordance with General Conditions as may be modified by the Supplementary Conditions, except that payment within limit of a cash allowance shall exclude cost of bond and insurance premiums. No subcontractor markup is allowed under allowance work.

1.03 CONTINGENCY ALLOWANCE

A. Contingency allowances are stipulated amounts available as reserve for sole use by OWNER to cover unanticipated costs.

B. 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.

C. For each allowance, submit to ENGINEER a Change Order proposal to adjust Contract Price for difference between specified allowance amount and actual cost. Prepare Change Order in accordance with General Conditions as may be modified by the Supplementary Conditions, except that payment within limit of a cash allowance shall exclude cost of bond and insurance premiums.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 SCHEDULE OF ALLOWANCES

A. Cash Allowances: NOT USED

B. Contingency Allowances: Include a stipulated contingency allowance of $200,000.00 for Bid Item 19A, Contingency Allowance, for use in accordance with the OWNER'S instruction to perform miscellaneous work.

END OF SECTION

SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. The items listed below beginning with Article 1.05, 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, shop drawings and samples, 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 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 clearing and grubbing, earth excavation, rock excavation, disposal of excess excavated material, handling of all water, dewatering, earth backfill, select backfill, pipe bedding and encasement, concrete cradle, concrete encasement, concrete cover, concrete anchor collars, concrete blocking, piping, service tubing and accessories, saddles, curb stops, curb boxes, bends, reducers, tees, valves, mechanical thrust restraints valve boxes, hydrants, and all other fittings, traffic control, permits, test pits, replacement of sidewalks, driveways, and pavements, curbs, underdrains, drainage, curb receivers, ditches, rip rap, driveway culverts, headwalls, temporary resurfacing, all final restoration, connections to existing watermains, testing, disinfection, all abandonments, and maintaining water service to customers.

D. Each of the bid items shall also include the cost required in supporting and protecting existing utilities while working under, over, or alongside or near the utility. Also included, is the protection of overhead telephone, cable, electric power or other lines and the supporting of poles, if required.

1. The utilities likely to be encountered include:
    a. Storm and sanitary sewers.
    b. Gas, water, electric, telephone, fiber optic, and cable TV house service connections.
    c. Overhead and underground telephone, fiber optic, cable TV and electric power lines.
    d. Other watermains.
2. The cost of repairing any damage to the various utilities done during the installation of the work shall be included in the various bid items.

E. Where fixed minimum unit prices are called for under an item heading, the bidder shall include a price not less than the stated minimum. Bidder's Proposals received which include a unit price less than the stated minimum shall be adjusted to meet the minimum unit price.

1.02 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 1.03, 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.

1.03 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 01290 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.

1.04 RELATED PROVISIONS

A. Payments to CONTRACTOR: Refer to General Conditions and Agreement.

B. Changes in Contract Price: General Conditions.

C. Schedule of Values: Section 01290.

1.05 BID ITEMS

A. ITEM 1 - WATERMAIN

1. Work Included:

a. This item includes all labor, materials, equipment, sampling and testing, and incidentals required to furnish and install watermain and fittings of the size, class, depth and materials shown on the drawings and specified herein, except that specifically included under other items of the Contract. Earth excavation, and disposal of excess excavated material required for this project are included in this item.

b. This item includes pipe harnessing, gaskets, bolts and glands for pipe and fittings, pipe bedding, thrust blocks, temporary and permanent blocking, concrete anchor collars, polyethylene encasement for Prestressed Concrete Cylinder Pipe (PCCP) and ductile iron pipe and fittings, magnetic pipe marking tape, tracer/locate wire, waterline marker posts, cathodic protection test stations, backfilling, compaction, sampling points, clearing and grubbing, topsoil stripping, tree trimming as required for equipment access to perform work adjacent to existing trees, tree removal and disposal, dewatering, shoring, sheeting, tree boring (including casing pipe, annular fill stone, skids and spacers), fencing & gate modifications, removal, and repair or replacement, existing drainage structure & piping modifications, removal, and repair or replacement, and all other materials and requirements not specifically defined in other bid items.

c. This item includes rock excavation unless a rock excavation item is included in the proposal.

d. This item includes all fittings, such as tees, elbows, Temporary bulkheads, reducers, bevels, and shorts.

e. This item does not include select backfill, which is included for payment under Item 6.

f. This item includes furnishing and installing temporary sampling points. Also included is the removal of the temporary sampling points after completion of test and replacing the corporation stop with plug.

g. This item includes installation of watermain up to 8 feet deep where shown on the Drawings.

h. This item includes all excavation required and the furnishing and installing temporary construction entrances to complete the watermain installation. Removal of temporary entrances is included in this item. Restoration is included elsewhere.

i. Permanent restoration of sidewalk, driveways, pavement, and landscaping is included for payment elsewhere.

j. This item includes all items and work necessary for the proper maintenance and protection of traffic as defined in section 01550.

k. This item includes the wrapping of all PCCP and ductile iron pipes and fittings with approved polyethylene wrap, including covering and taping at all joints and along the pipes as defined on Contract Drawings. Pipes which are not wrapped properly are considered incomplete and payment shall be withheld.

l. This item includes the use of excavator operators who have completed the training and education programs provided by the One-Call Notification System or other authorized provider pursuant to New York State Senate Bill S.6756A. No excavator operators are permitted to perform any excavation without receiving the proper training and education program and supplying documentation of completed training to the ENGINEER.

m. This item includes the installation and removal of all temporary sampling points at diameters necessary for proper testing. This item also includes all work and materials necessary to daylight temporary sampling points out of the roadway, sidewalk or travelled area.

n. This item includes all temporary erosion and sediment control devices required for the duration of the project as indicated on the Contract Drawings and adhering to the provisions outlined in the storm water pollution prevention plan (SWPPP) contained in Appendix I, Preparing SWPPP Revisions and other documents listed as being the CONTRACTOR's responsibility in the SWPPP, Installing and maintaining structural and non-structural items used in complying with SWPPP and its revisions, Clean-up, disposal, and repairs following wet weather events or spills caused by CONTRACTOR, Implementing and maintaining "best management practices", as defined in applicable permits, to comply with requirements that govern storm water discharges at the Site,

o. This item includes the installation of inspection chambers. This item includes all materials and work necessary to install the components as shown on the Contract Drawings.

p. This item includes installation, maintenance, and removal & restoration of Pipeline Crossing Protection Areas.

q. This item includes the coordination with National Grid and the Tonawanda Landfill to permanently relocate the existing power pole and underground electric to the landfill.

2. Measurement:

a. The quantity of watermain in place paid for under this item shall be the number of linear feet of each size installed within the limits shown, specified, or directed. The lengths shall be measured along the centerline of the pipe without deduction for line valves and or fittings.

3. Payment:

a. The unit prices bid per linear foot shall be full compensation for furnishing all labor, materials, equipment, and incidentals necessary to furnish, deliver, install, and place into service the watermain as shown, specified, or directed.

b. The subdivisions of this item are:

1A Ductile Iron Pipe (DIP)
- 1A1 6-inch
- 1A2 8-inch

1B Prestressed Concrete Cylinder Pipe (PCCP)
- 1B1 48-inch

B. ITEM 2 - VALVES

1. Work Included:

a. This item includes all labor, material, equipment and incidentals required to furnish, install, flush, test, disinfect, and place into service the valves, chambers and appurtenances as shown, specified, or directed.

b. This item includes valves for permanent flushing hydrants.

c. This item includes all excavation required and the furnishing and installing of earth backfill and temporary pavement for all disturbed streets, driveways, and sidewalks to complete the valve or appurtenances installation.

d. For permanent blow-offs, this item includes all materials and work necessary to install the components as shown on the Drawings.

e. For air release valves with concrete chambers, this item includes all materials and work necessary to install the components as shown on the Drawings.

f. Select backfill and permanent restoration is included for payment elsewhere except for permanent blow-off assemblies, where select backfill is included under this item.

2. Measurement:
   a. The quantity to be paid for under this item shall be the actual number of valves of various types and sizes installed as shown, specified, or directed.
3. Payment:
   a. The unit prices bid for this item shall be full compensation for furnishing all labor, materials, equipment, and incidentals to furnish, install, and place into service the valves of various types and sizes installed as shown, specified, or directed.
   b. The subdivisions of this item are:
      2A Gate Valve
         2A1 6-inch
         2A2 8-inch
      2B Butterfly Valve
         2B1 48-inch Butterfly Valve with Concrete Chamber
      2C Combination Air/Vacuum Release Valve
         2C1 8" Combination Air and Vacuum Release Valve with Concrete Chamber

C. ITEM 3 - FIRE HYDRANT ASSEMBLIES
1. Work Included:
   a. The new fire hydrant assemblies item includes all labor, materials, equipment, and incidentals required to furnish and place into service new fire hydrant blow-off's and appurtenances as shown, specified, or directed.
   b. The relocate/reconnect existing fire hydrant item includes all labor, materials equipment, and incidentals required to relocate and reconnect existing fire hydrants and appurtenances to the new watermain as shown, specified, or directed.
   c. This item shall include field painting of hydrants after installation, and the furnishing and installation of vertical extensions where required.
   d. Pipe and fittings at hydrant installations are not included in this item.
   e. This item includes all excavation required and furnishing and installing temporary pavement for all disturbed streets, driveways, and sidewalks etc., as required.
   f. Landscape restoration is included with this item. Concrete and asphalt restoration are included for payment elsewhere.
   g. This item includes temporary support of nearby utility poles.
   h. This item includes the removal and return of all abandoned hydrants to the Erie County Water Authority as directed. This

includes calling 24 hours in advance to schedule the delivery, careful handling to prevent damage to hydrants, proper trucking to the delivery site, and unloading of hydrants at the designated location at the Erie County Water Authority.

i. This item includes concrete blocking, washed No. 1 stone for weep hole drainage, and earth backfill as required. Select backfill is not included in this item.

j. This item includes the installation of hydrant markers

2. Measurement:

a. The quantity to be paid for under this item shall be the actual number of fire hydrants installed, removed, or relocated and reconnected as shown, specified, or directed.

3. Payment:

a. The unit price bid per this item shall be full compensation for all labor, materials, equipment, and incidentals required to furnish, install, disinfect, test, and place into service the fire hydrants including gate valves for fire hydrant shut-off; to remove, relocate, reconnect, test, and place into service existing fire hydrants; and to abandon existing fire hydrants (including capping and plugging) as shown, specified, or directed.

b. The subdivisions of this item are:

3A Permanent Fire Hydrant Blow-Off Assembly

D. ITEM 4 - TEST PIT EXCAVATION AND BACKFILL

1. Work Included:

a. This work shall include all labor, materials, equipment and incidentals required to perform test pit excavations (and backfill same) at the locations shown, specified, or directed unless specially included for payment elsewhere.

b. This item includes furnishing and installing temporary restoration for all disturbed streets, driveways, and sidewalks, including select backfill and temporary pavement to maintain pedestrian and vehicular traffic.

c. Permanent restoration is included for payment elsewhere.

d. The cost for a test pit for service replacements/installations are not included in this bid item since the costs for any test pits required at those locations shall be included in the service replacement/installation bid item.

e. This item includes documenting utilities and dimensions of the test pit results on the 'ECWA Test Pit Inspection Form' and submitting this form to the ENGINEER and OWNER for review.

2. Measurement:

a. Test pit excavations which shall be paid for under this item shall be the actual number of test pit excavations performed as shown, specified, or directed.

b. The test pit shall be five (5) feet by five (5) feet by eight (8) feet deep.

3. Payment:

a. The unit price bid for test pit excavation and backfill shall be full compensation for all labor, materials, equipment and incidentals necessary to perform test pit excavations and backfill as shown, specified or directed, and submit test pit findings on the 'ECWA Test Pit Inspection Form' to the ENGINEER and OWNER.

b. The subdivisions of this item are:

4A Test Pit Excavation and Backfill

E. ITEM 5 - 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.

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 or directed.

b. The subdivisions of this item are:

5A Rock Excavation

F. ITEM 6 - SELECT BACKFILL

1. Work Included:

a. This item includes all labor, material sampling and testing, plant equipment, and incidentals required to furnish and install the select backfill material as shown, specified, or directed.

b. This item does not include pipe bedding and encasement, since the cost for pipe bedding and encasement shall be included under the watermain bid items.

c. This item does not include select backfill at water service reconnections, extensions, replacement/installations, or blow-off assemblies, since the cost for select backfill at those locations shall

be included under the water service reconnection, extensions, replacement/installations or blow-off assembly bid item.

2. Measurement:
   a. The quantity to be paid for under this item shall be the number of cubic yards of select backfill placed as shown, specified, or directed to the limits shown on the trench detail.
   b. Measurement shall not be based upon loose or truck-ticket quantities.
3. Payment:
   a. The unit prices bid per cubic yard for this item shall be full compensation for all labor, material, plant, sampling and testing, equipment, compaction, and incidentals necessary to furnish and install the select backfill material within the pay limits shown on the drawing as shown, specified, or directed.

   b. The subdivisions of this item are:
      6A Select Backfill.

G. ITEM 7 - INTERCONNECTIONS

1. Work Included:
   a. This item includes all labor, materials, equipment, and incidentals required to furnish, install, disinfect and place into service the interconnections between the proposed system and the existing system as shown, specified, or directed.
   b. Pipe used at the interconnection shall be paid for under the watermain item for the appropriate pipe size and type.
   c. This item includes all cost related to furnishing and installing couplings, concrete blocking, removals, plugging, harnessing, dewatering, etc.
   d. Valves and tapping sleeves and valves, etc., shall be paid for under their respective bid items.
   e. This item also includes abandoning existing main line valves and valve boxes as shown, specified, or directed.
   f. This item includes installation and removal of temporary tapping sleeve, RPZ and associated piping, valves and appurtenances required for filling and pressure testing.
   g. Where valves, etc., are to be removed, they shall be removed and properly stored, protected, and delivered to the Erie County Water Authority, if required and the cost shall be included herein.
   h. This item includes all excavation required and the furnishing and installing temporary pavement for all disturbed streets, driveways, and sidewalks, as required.
   i. Earth backfill is included in this item. Select backfill and permanent restoration is not included in this item.

j. This item includes all costs for working at night or on off-hours. Included herein is all lighting, traffic protection, etc.

k. The interconnection items include all costs to comply with permits, regulatory agencies, etc., not included in other bid items.

2. Measurement:

a. The quantity to be paid for under this item shall be for the completed interconnections as shown, specified, or directed.

3. Payment:

a. The lump sum price bid for each interconnection shall be full compensation for furnishing all labor, material equipment, and incidentals required to furnish, install, test, disinfect and place into service the interconnection as shown, specified, or directed.

b. The subdivisions of this item are as follows:

7A Interconnection No.1 – Station 0+00

7B Interconnection No.2 – Station 40+98

H. ITEM 8 - WATER SERVICE CONNECTIONS – NOT USED

I. ITEM 9 - CASING PIPE

1. Work Included:

a. This item includes all labor, material, equipment, and incidentals required to furnish and install casing pipes as shown, specified, or directed. This item also includes exterior coating, furnishing and installing select backfill for the receiving and boring pits, annular fill within the casing pipe, bulkheads, anodes for cathodic protection, boring pits, sheeting (permanent or temporary), dewatering, skids or spacers, protection of existing structures and utilities and all other work required for a complete installation.

b. This item includes making the necessary arrangements to obtain work permits and complying with its requirements of conducting traffic maintenance.

2. Measurement:

a. The quantity to be paid for under this item shall be the linear foot of casing pipe installed as shown, specified, or directed.

3. Payment:

a. The unit price bid per linear foot for this item shall be the full compensation for furnishing all labor, material, equipment, and incidentals required to furnish and install casing pipe.

b. The subdivisions of this item are:

9A 72-inch Diameter Casing Pipe.

J. ITEM 10 – ABANDONMENTS – NOT USED

K. ITEM 11 - RESTORATION

1. Work Included:
    a. This item includes all labor, materials, equipment, sampling, testing and incidentals necessary to restore asphalt, concrete, stone or gravel surfaces, landscaping, rip-rap drainage channels, drainage ditches, curbs/gutters, lawn areas, and other features disturbed, damaged or destroyed during the performance of the work.
    b. This item includes the replacement of rip-rap drainage channels and stone roads where roads and rip-rap channels have been removed, disturbed or damaged as a result of performance of this contract as shown, specified or directed.
    c. For asphalt restoration, this item shall include the application of a bituminous tack coat at all sawcut areas and between asphalt pavement layers as shown, specified or directed.
    d. This item shall include any sawcutting of asphalt or concrete as shown, specified, or requested.
    e. This item shall include the proper consolidation of subgrade before installing pavement or sidewalk.
    f. This item shall include the permanent and final repaving of all streets, driveways and similar surfaces, where pavement has been removed, disturbed, settled or damaged by or as a result of performance of this Contract. This item shall also include the application of permanent pavement markings as required by the appropriate highway jurisdiction.
    g. This item shall include maintenance of all lawn areas until establishment of a good stand of grass and the first mowing.
    h. Restoration of all areas outside the payment limits is the responsibility of the CONTRACTOR and shall conform to the Contract Requirements which apply.
2. Measurement:
    a. The quantity of concrete restoration (except for curb/gutter restoration) and asphalt restoration for which payment will be made will be computed using the payment dimension on the trench payment limits detail without regard to the actual dimension or quantities required and the number of linear feet of watermain installed as measured along the centerline of the pipe without regard for valves or fittings. The area shall be figured on the basis of square yardage within the trench limits as shown, specified, or directed.
    b. The quantity of cold milling shall be the number of square yards of pavement surface milled to a depth as detailed on the plans or as directed. In no case will a deduction be made for minor unmilled areas due to catch basins, manholes or minor low areas in pavement from the measured surface areas that has been milled. Minor unmilled or low areas are those areas of 3 square yards or less.

c. The quantity of concrete curb/gutter restoration shall be the number of linear feet of curb/gutter installed within the limits shown, specified, or directed.

d. The quantity of landscape restoration shall be the number of linear feet of watermain installed within the limits shown, specified, or directed. The length shall be measured along the centerline of the pipe without regard for valves or fittings.

e. The quantity of tree removals and tree replacements shall be the number of trees removed or installed as shown, specified, or directed.

f. The quantity of ditch and stone road restoration shall be the number of Linear feet restored.

3. Payment:

a. The unit prices bid for restoration items shall be at the fixed minimum unit price established by the OWNER where shown in the Bid Proposal or as modified by the CONTRACTOR, whichever is greater, as stated in the Bidder's Proposal. The prices bid for these items shall be full compensation for all labor, material, equipment, sampling, testing and incidentals necessary for restoration as shown, specified, or directed and within the pay limits shown specified, or directed.

b. The unit prices bid for restoration items that are not at fixed minimum unit prices shall be full compensation for furnishing all labor, materials, and equipment required to furnish and install restoration items within the pay limits as shown, specified, or directed.

c. The subdivisions of this item are:

11A Landscape Restoration

L. ITEM 12 - TESTING AND DISINFECTION

1. Work Included:

a. This item includes flushing, sampling and testing, pressure and leakage testing, and disinfection of the watermain and fittings prior to placing the watermains into service. The watermain and valves are not considered pressure or leakage tested until the pipe complies with the specifications. All necessary retesting will be at the CONTRACTOR'S expense. The CONTRACTOR shall adhere to the application procedures outlined in the specification for disinfection and flushing. All sampling and testing shall be at the points specified and in accordance with the latest Health Department requirements.

2. Measurement:

a. The quantity of disinfection and testing shall be the number of linear feet of watermain installed within the limits shown,

specified, or directed. The length shall be measured along the centerline of the pipe without regard for valves, fittings or hydrant assemblies.

3. Payment:
   a. The unit prices bid for testing and disinfection items shall be at the fixed minimum unit price established by the OWNER or as modified by CONTRACTOR, whichever is greater, as stated in the Bidder's Proposal and shall be full compensation for all labor, materials, equipment, sampling, testing, and incidentals necessary to test and place into service new watermain as shown, specified, or directed.
   b. The subdivisions of this item are:
      12A Testing and Disinfection

M. ITEM 13 - EXTRA WORK ITEMS

1. 13A and 13 B Extra Excavation (8 feet to 10 feet deep) and Extra Excavation (10 feet to 12 feet deep).
   a. Work Included:
      1) This item includes all labor, materials, equipment and incidentals required to perform extra trench excavations, as directed. This item also includes dewatering, backfilling, and compaction of the excavation.
      2) This item includes disposal of excavated material, when directed.
      3) This item does not include excavation associated with other items in the Contract such as watermain and test pit excavation and backfill.
   b. Measurement:
      1) The quantity to be paid for under this item shall be the number of linear feet of trench excavated, as directed.
   c. Payment:
      1) The unit price bid per linear foot shall be at the fixed minimum unit prices established by OWNER or as modified by CONTRACTOR, whichever is greater, as stated in the Bidder's Proposal and shall be full compensation for all labor, material, equipment and incidentals required to perform excavations.
      2) The subdivisions of this item are:
         13A Extra Excavation (8 to 10 feet deep)
         13B Extra Excavation (10 to 12 feet deep)
2. 13C Extra Concrete
   a. Work Included:
      1) This item includes all labor, materials, sampling and testing, equipment and incidentals required to furnish and install

extra concrete such as encasement at water line and sewer line crossings, as directed.

2) This item includes reinforcing steel, as directed or specified.

3) This item does not include concrete for restoration or thrust blocks or for any other concrete that is shown on the drawings or required by the specifications.

b. Measurement:

1) The quantity to be paid for under this item shall be the actual cubic yards furnished, placed and measured.

c. Payment:

1) The unit price bid per cubic yard shall be at the fixed minimum unit price established by OWNER or as modified by CONTRACTOR, whichever is greater, as stated in the Bidder's Proposal and shall be full compensation for all labor, materials, sampling and testing, equipment and incidentals required to furnish concrete, as directed.

2) The subdivisions of this item are:

13C Extra Concrete.

N. ITEM 14 - REPAIR CREW LABOR AND EQUIPMENT

1. Work included:

a. This item includes providing a crew consisting of labor and equipment and incidentals as specified and required to make improvements, modifications or repairs to water domestic and fire service lines, distribution mains, transmission mains, and appurtenances.

b. The use of crew labor and equipment will be ordered by ENGINEER when it is determined that additional work is required to be performed.

c. Additional payment shall not be made if CONTRACTOR provides additional labor or equipment beyond what is specified herein or ordered.

d. This item includes disposal of excavated material, when directed.

e. This item does not include excavation, or any other work associated with other items in the Contract such as watermain, valve, and test pit excavation and backfill.

f. This item includes all related costs of CONTRACTOR, including, but not limited to, supervision, wages, benefits, operating costs, overhead, profit, fuel, insurance, permits, licenses, etc.

g. Under these items, Authority personnel shall coordinate the work at the site, but the CONTRACTOR shall be responsible for all county, state, and federal safety codes (OSHA) and any costs involved for this shall be included in this item.

2. Measurement:

a. The quantity to be paid for under this item shall be the actual number of crew labor and equipment hours performed by CONTRACTOR as ordered by ENGINEER.

b. Payment for Item 14 shall start when the crew and equipment arrives at the site and ends when the crew and equipment leaves the site when the Work is completed. There shall be no payment for travel time to or from the CONTRACTOR'S place of business. Payment will be made for travel time between two Work sites for the equipment necessary for the second or succeeding work.

3. Payment:

a. The unit price bid per hour for this item shall be at the fixed minimum unit price established by OWNER or as modified by CONTRACTOR, whichever is greater, as stated in the Bidder's Proposal and shall be full compensation for furnishing all labor, equipment, and incidentals required to perform the work as ordered or necessary.

b. The subdivisions of this item are:

14A Repair Crew Labor and Equipment

O. ITEM 15 – VACUUM TRUCK AND LABOR

1. Work included:

a. This item includes providing all labor, equipment, and incidentals as specified and required to perform vacuum excavations, as requested.

b. The use of vacuum truck and labor will be ordered by ENGINEER when it is determined that vacuum excavation work is required to be performed.

c. Additional payment shall not be made if CONTRACTOR provides additional labor or equipment beyond what is specified herein or ordered.

d. This item includes disposal of excavated material, when directed.

e. This item does not include excavation, or any other work associated with other items in the Contract such as watermain, valves, and test pit excavation and backfill.

f. This item includes all related costs of CONTRACTOR, including, but not limited to, supervision, wages, benefits, operating costs, overhead, profit, fuel, insurance, permits, licenses, etc.

g. Under these items, Authority personnel shall coordinate the work at the site, but the CONTRACTOR shall be responsible for all county, state, and federal safety codes (OSHA) and any costs involved for this shall be included in this item.

2. Measurement:

a. The quantity to be paid for under this item shall be the actual number vacuum truck excavation hours performed by CONTRACTOR as ordered by ENGINEER.

b. Payment for Item 15 shall start when the labor and equipment arrives at the site and ends when the labor and equipment leaves the site when the Work is completed. There shall be no payment for travel time to or from the CONTRACTOR'S place of business. Payment will be made for travel time between two Work sites for the equipment necessary for the second or succeeding work.

3. Payment:

a. The unit price bid per hour for this item shall be at the fixed minimum unit price established by OWNER or as modified by CONTRACTOR, whichever is greater, as stated in the Bidder's Proposal and shall be full compensation for furnishing all labor, equipment, and incidentals required to perform the work as ordered or necessary.

b. The subdivisions of this item are:
15A Vacuum Truck and Labor

P. ITEM 16 – WORK STOPPAGE DUE TO AN "ALL STOP" ORDER

1. Work included:
   a. This item includes providing all labor, equipment, and incidentals as specified and required when a work stoppage due to an "ALL STOP" order is identified by National Grid or CSX and enforced by OWNER.
   b. The "ALL STOP" item is only to be used when written notification is given to CONTRACTOR by ENGINEER or OWNER, and the CONTRACTOR's entire crew and equipment are on-site and standing by to resume work.
   c. Payment shall not be made if CONTRACTOR is able to easily move to other job site areas and perform work applicable to this contract.
   d. This item includes all related costs of CONTRACTOR, including, but not limited to, supervision, wages, benefits, operating costs, overhead, profit, fuel, insurance, permits, licenses, etc.
   e. All costs for securing the construction site including, but not limited to signage, erection of safety fencing, placement of steel plates, moving of equipment, personnel and/or materials, and security briefings/training shall be included in this item. All costs for remobilization after the "ALL STOP" order is lifted are also included in this item.
2. Measurement:
   a. The quantity to be paid for under this item shall be the actual number of "ALL STOP" hours where the CONTRACTOR could not work and remained on stand-by as ordered by ENGINEER.
   b. Payment for Item 12 shall start when the ENGINEER or OWNER defines the "ALL STOP" order and ends when the ENGINEER or OWNER defines that the "ALL STOP" order has been lifted.

c. For an “ALL STOP” issued during normal business hours, payment for this item shall be limited to normal business work hours only. For an “ALL STOP” issued during off-hours, payment under this item shall be measured from the time work was suspended, and at the discretion of the ENGINEER up to a maximum of eight (8) hours.

3. Payment:
   a. The unit price bid per hour for Work Stoppage Due To An “ALL STOP” Order shall be at the fixed minimum unit price established by OWNER or as modified by CONTRACTOR, whichever is greater, as stated in the Bidder’s Proposal and shall be full compensation for all labor, materials, equipment and incidentals necessary to provide Work Stoppage Due To An “ALL STOP” Order as shown, specified, or directed.
   b. The subdivisions of this item are:
      16A Work Stoppage due to “ALL STOP” Order

Q. ITEM 17 – ELECTRICALLY QUALIFIED PERSON

1. Work included:
   a. This item includes all costs associated with providing an electrically qualified person (spotter) on site to monitor all construction activities and Work whenever in close proximity to high voltage overhead and/or buried electric lines, cables, conduits, or facilities within National Grid property, or as required by National Grid.
   b. The qualified person must be approved by National Grid, the OWNER, and the ENGINEER.
   c. The use of a third party, electrically qualified person will be as ordered by the ENGINEER when it is determined that one is required to be present at the direction of the utility owner/operator, National Grid.
   d. Additional payment shall not be made if CONTRACTOR provides additional services beyond what is specified herein or ordered.
   e. This item includes all related costs of CONTRACTOR, including, but not limited to, supervision, wages, benefits, operating costs, overhead, profit, fuel, insurance, permits, licenses, etc.
2. Measurement:
   a. The quantity to be paid for under this item shall be the actual number hours that the third party, electrically qualified person is on site as ordered by ENGINEER.
   b. Payment for Item 13 shall start when the third party electrically qualified person arrives at the site and ends when the third party electrically qualified person leaves the site when the services are no longer needed. There shall be no payment for travel time by the qualified person to or from the project site.

3. Payment:
   a. The unit price bid for this item shall be full compensation for furnishing all labor, equipment, and incidentals required to perform the work as ordered or necessary.
   b. This item does not include any other Work associated with other items in the Contract.
   c. The subdivisions of this item are:
      17A Electrically Qualified Person for Work on National Grid Property

R. ITEM 18 – CSX FLAGGING/CONSTRUCTION MONITORING PERSON
1. Work included:
   a. This item includes all costs associated with a qualified person (CSX Provided flagger/Construction Monitor) on site to monitor all construction activities and Work whenever in close proximity to CSX tracks or as required by CSX.
   b. The qualified person will be provided by CSX.
   c. The use of a flagging/construction monitoring person will be as ordered and determined that one is required to be present at the direction of CSX.
   d. Additional payment shall not be made if CONTRACTOR provides additional services beyond what is specified herein or ordered.
   e. This item includes all related costs of CONTRACTOR, including, but not limited to, supervision, wages, benefits, operating costs, overhead, profit, fuel, insurance, permits, licenses, etc.
4. Measurement:
   c. The quantity to be paid for under this item shall be the actual number hours that the flagger/construction monitor person is on site as ordered by ENGINEER and CSX.
   d. Payment for Item 14 shall start when the flagger/construction monitor person arrives at the site and ends when the flagger/construction monitor person leaves the site when the services are no longer needed. There shall be no payment for travel time by the qualified person to or from the project site.
5. Payment:
   d. The unit price bid for this item shall be full compensation for furnishing all labor, equipment, and incidentals required to perform the work as ordered or necessary.
   e. This item does not include any other Work associated with other items in the Contract.
   f. The subdivisions of this item are:
      18A CSX Flagger/Construction Monitoring Person.

S. ITEM 19 - CONTINGENCY ALLOWANCE

1. Work Included:
   a. Section 01210, Allowances, includes a stipulated amount available as reserve for sole use by OWNER to cover unanticipated costs.
2. Measurement:
   a. OWNER shall authorize contingency allowances for required work not covered in other bid items and as specified or directed by ENGINEER.
3. Payment:
   a. Payment for Work authorized under Item 11 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.
   b. The subdivisions of this item are:
      19A Contingency Allowance

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01290

SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 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.

1.02 PREPARATION

A. Schedule shall show breakdown of labor, materials, equipment, 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 Specifications.

C. CONTRACTOR may include an item for bond, insurance, temporary facilities and job mobilization on lump sum project only. This item will be included for payment at a rate of 25 percent per month for the first four months.

D. Schedule of Values shall be prepared on 8-½-inch by 11-inch white paper.

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.

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 as described in Section 01720, Survey Data.

1.03 SUBMITTAL

A. Submit two copies 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 01310

PROJECT COORDINATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. As more fully set forth in Article 6 of the General Conditions, CONTRACTOR shall be solely responsible for coordination of all of the Work. He shall supervise, direct and cooperate fully with all Subcontractors, manufacturers, fabricators, suppliers, distributors, installers, testing agencies and all others whose services, materials or equipment are required to ensure completion of the Work within the Contract Time.

B. As more fully set forth in Article 7 of the General Conditions, CONTRACTOR shall cooperate with and coordinate his Work with the work of any other contractor, utility service company or OWNER'S employees performing additional work related to the Project at the site.

C. CONTRACTOR shall not be responsible for damage done by contractors not under his jurisdiction. He will not be liable for any such loss or damage unless it is through the negligence of CONTRACTOR.

D. CONTRACTOR shall maintain sufficient competent personnel, drafting equipment and supplies at the site for the purpose of preparing layout and coordination drawings. These drawings shall supplement the contract documents, and the Shop Drawings, as necessary to correlate the work of various trades. Where such drawings are to be prepared by the mechanical, electrical, or plumbing Subcontractors, CONTRACTOR will ensure that each Subcontractor maintains the required personnel and facilities at the site.

E. CONTRACTOR shall also coordinate his Work with the work of others to assure compliance with schedules.

F. CONTRACTOR shall attend and participate in all project coordination or progress meetings and report on the progress of all Work and compliance with schedules.

PART 2 - PRODUCT (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01311

COORDINATION WITH OWNER'S OPERATIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. CONTRACTOR shall carry out all operations to avoid interference with the operations of the existing facilities.

B. The CONTRACTOR shall not have exclusive possession of the sites of the work to be done under this contract.

C. In the performance of the work, the CONTRACTOR shall schedule and cooperate fully with the OWNER and other Contractors, affording them facilities for the performance of their work even though it interferes with his own.

D. Related Work Specified Elsewhere:
   1. Section 01731, Connections to Existing Facilities.
   2. Divisions 2-15, Technical Specifications.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01312

PRECONSTRUCTION CONFERENCE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Date, Time, and Location: Conference will be held after execution of the Agreement and before construction is started at the site. ENGINEER will fix the date, time and location of the meeting in accordance with the General Conditions.

B. ENGINEER shall prepare agenda, preside at meeting, and prepare and distribute a transcript of proceedings to all parties.

C. CONTRACTOR(S) shall provide data required, contribute appropriate items for discussion, and be prepared to discuss all items on agenda.

D. CONTRACTOR shall prepare and distribute a preliminary construction schedule.

1.02 REQUIRED ATTENDANCE

A. CONTRACTOR(S) and major Subcontractors.

B. OWNER'S representative.

C. ENGINEER.

D. Representatives of governmental agencies and fire departments having any degree of control or responsibility, if available.

1.03 AGENDA

A. Agenda will include, but will not necessarily be limited to, the following:
   1. Designation of responsible personnel.
   2. Subcontractors.
   3. Coordination with other contractors.
   4. Construction schedule.
   5. Review preliminary construction schedule.
   6. Processing of Shop Drawings.
   7. Schedule of Shop Drawing submittals.
   8. Processing of Field Orders and Change Orders.
   9. Requirements for copies of Contract Documents.
   10. Insurance in force.
   11. Schedule of Values.

12. Processing of progress payments.
13. Cash flow.
14. Use of premises.
15. CONTRACTOR(S) responsibility for safety and first aid procedures.
16. Security.
17. Housekeeping.
18. Field Offices.
19. Record Drawings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01313

PROGRESS MEETINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Date and Time:
   1. Regular bi-weekly meetings: As mutually agreed upon by OWNER, ENGINEER, and CONTRACTOR.
   2. Other Meetings: On call.
   3. Final Inspection on project completion.

B. Place: Mutually agreed upon location to be determined.

C. ENGINEER shall prepare agenda, preside at meetings, and prepare and distribute a transcript of proceedings to all parties.

D. CONTRACTOR shall provide data required and be prepared to discuss all items on agenda.

1.02 MINIMUM ATTENDANCE

A. CONTRACTOR:
   1. When needed for the discussion of a particular agenda item, CONTRACTOR shall require representatives of Subcontractors or suppliers to attend a meeting.

B. ENGINEER.

C. OWNER'S representative, if required.

D. Others as appropriate.

E. Representatives present for each party shall be authorized to act on their behalf.

1.03 AGENDA

A. Agenda will include, but will not necessarily be limited to, the following:
   1. Transcript of previous meeting.
   2. Progress since last meeting.
   3. Planned progress for next period.
   4. Problems, conflicts and observations.
   5. Change Orders.

6. Status of Shop Drawings.
7. Quality standards and control.
8. Schedules, including off-site fabrication and delivery schedules. Corrective measures, if required.
9. Coordination between parties.
10. Safety concerns.
11. Other business.

1.04 FINAL INSPECTION

A. A Final Inspection shall not be scheduled until the ENGINEER is satisfied that all requirements of the contract have been met and the Work is acceptable.

B. ENGINEER shall schedule final inspection at least 72 hours in advance, and shall notify CONTRACTOR and OWNER.

C. The ENGINEER, OWNER and CONTRACTOR shall be present during the final inspection.

D. CONTRACTOR shall provide sufficient manpower during final inspection.

E. CONTRACTOR shall furnish necessary equipment to demonstrate the new Work; including for new watermain, all new pipeline, hydrants, valves, curb stops, etc., to ENGINEER and OWNER for approval.

F. ENGINEER shall itemize deficiencies and provide list to OWNER and CONTRACTOR.

G. CONTRACTOR shall rectify any items identified by ENGINEER prior to final payment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01321

CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Provide construction schedule, which conforms to the requirements below, unless otherwise approved by ENGINEER.

B. Update schedules every month and for progress meetings unless otherwise specified or directed by ENGINEER.

C. Submit cash flow schedule with each updated construction schedule.

1.02 CONTENT

A. Shop Drawing submittal dates and required approval dates.

B. Product delivery dates.

C. Factory and field testing dates.

D. Dates for beginning and completing each phase of the Work by activity and by trades.

E. Cash flow schedule shall be based on monthly cash flow.

1.03 FORMAT

A. Schedule will be created on computer using Microsoft Project, latest version.

B. Type: Horizontal bar chart.

C. Sheet Size: 8-½" x 11".

D. Time Scale: Indicate first date in each work week.

E. Organization:
1. Group Shop Drawing submittals and reviews into a separate subschedule.
2. Group product deliveries into a separate subschedule.
3. Group construction work into a separate subschedule by activity.
4. Group critical activities which dictate the rate of progress into a separate subschedule.

5. Organize each subschedule by Specification Section number.

F. Activity Designations: Show title and related Specification Section number.

G. Provide electronic copies of project schedule to ENGINEER on a compact disc (CD) as requested.

1.04 SUBMITTALS

A. Submit initial schedule 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. Subsequent schedule updates shall be submitted concurrently with monthly payment applications.

B. Submit updated schedules at progress meetings. If a schedule remains unchanged from one period to the next, submit a written notice to that effect. Updated schedules shall show progress completed to date.

C. Make submittals to ENGINEER, three copies of all requirements.

D. Unless otherwise specified, submit four sepia copies of each schedule and one CD. One copy each will be reviewed by the OWNER and ENGINEER and returned. The other copy will be retained by the ENGINEER.

E. Attach a letter of transmittal to each submittal and include the following information in the letter:
1. A listing of items which have changed since the last submittal.
2. Discussion of problems causing delays, anticipated length of delays, and proposed countermeasures.

F. Submit updated cash flow schedule based on each updated schedule.

G. Payment of partial estimates shall not be made unless the CONTRACTOR has, in force, an approved construction schedule.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01322

PHOTOGRAPHS

PART 1 – GENERAL

1.01 DESCRIPTION

A. CONTRACTOR shall utilize a qualified individual to take all photographs.

B. For outside construction projects, take photographs during the day in good weather with sufficient ambient light. For inside construction projects, use a flash as necessary in low-light conditions.

C. All photographs taken are to be in color.

1.02 DIGITAL PHOTOS

A. If acceptable to OWNER and ENGINEER, CONTRACTOR shall provide digital, color photographs having a minimum resolution of 12 megapixels each.

B. CONTRACTOR shall furnish one (1) compact disk (CD) and one (1) flash drive with each photograph in JPEG (Joint Photographic Experts Group) format and project title identified.

C. Filenames of digital photographs will be the project number followed by date and by either a sequential number or description of view.

D. A log will be included identifying for each photo:
1. Filename.
2. Date photograph was taken.
3. Description of view shown in photograph.
4. Name of photographer.

1.03 PRE-CONSTRUCTION PHOTOGRAPHS

A. CONTRACTOR shall be responsible for taking a sufficient number of preconstruction photographs so as to resolve any disputes which may arise regarding the conditions prior to and subsequent to construction.

B. If a dispute arises where no preconstruction photographs were taken, the disputed area shall be restored by the CONTRACTOR to the extent directed by the ENGINEER and to the complete satisfaction of the ENGINEER, at no additional cost to the OWNER.

C. The CONTRACTOR must provide one full set of preconstruction photographs electronically to both the ENGINEER and OWNER and be prepared to share files with other parties as necessary.

D. The ENGINEER may, at his option, take additional preconstruction photographs which may be used to settle disputes, but he will not be required to make these photographs available to the CONTRACTOR.

E. Preconstruction photographs taken by the CONTRACTOR will not be considered as part of the required number of construction photographs required in Paragraphs 1.04 or 1.05 below.

1.04 CONSTRUCTION PHOTOGRAPHS

A. Take a minimum of 5 color photographs each week during the construction period.

B. Photographs shall be taken periodically and as requested by the ENGINEER.

C. A minimum of three (3) photographs shall be taken for each interconnection and abandonment at differing viewing angles and prior to backfilling, showing the pipe connections established.

1.05 POST-CONSTRUCTION PHOTOGRAPHS

A. CONTRACTOR shall take photographs of the project site and work areas identifying final site conditions, including final paving, landscape restoration, flush hydrant locations, pump station improvements, anode testing station locations, and any other views requested by the ENGINEER or OWNER.

B. A minimum of 25 photographs are to be taken detailing the full limits of the project area.

1.06 PRINTS

A. If requested by ENGINEER or OWNER, furnish two (2) prints of each photograph to the ENGINEER within 5 business days of the request.

B. Furnish additional photographs or prints requested by ENGINEER or OWNER at cost.

C. Provide high quality 5-inch by 7-inch standard weight prints with a glossy finish.

D. Place the following information on the back of each print:
   1. Date photograph was taken.
   2. Title of Project.
   3. Description of view shown in photograph.
   4. Name and address of photographer.
   5. Photographer’s numbered identification of exposure.

1.07 VIDEO

A. CONTRACTOR shall be responsible for taking video, which includes all areas of construction, so as to resolve any disputes which may arise regarding the conditions prior to and after the construction is complete.

B. Provide one (1) video disk (in DVD format) and one (1) flash drive of the construction area both prior to and post construction. Each video must be a minimum of 15 minutes long with verbal narration while walking the project site to depict the existing or new condition of all areas affected by the construction.

C. For outside construction projects, take videos during the day in good weather with sufficient ambient light.

D. Videos to be submitted as AVI files or other format pre-approved by the OWNER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01331

SHOP DRAWING PROCEDURES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Shop Drawing procedures shall conform to requirements of General Conditions and as described in this Section.

1.02 PROCEDURE

A. Submittals of Shop Drawings shall be made to the ENGINEER at the address listed in the Notice to Bidders.

B. 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.

C. Copies of submittals shall be sent to the ERIE COUNTY WATER AUTHORITY at the Service Center Address at 3030 Union Road, Cheektowaga, New York 14227 at the time CONTRACTOR submits to ENGINEER.

D. 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. _____

E. If a Shop Drawing deviates from the requirements of the Contract Documents, CONTRACTOR shall specifically note each variation in his letter of transmittal.

F. All Shop Drawings submitted for approval shall have a title block with complete identifying information satisfactory to ENGINEER.

G. 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: _____

H. 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.

I. The CONTRACTOR shall initially submit to ENGINEER a minimum of 4 copies of all submittals that are on 8-½-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 8-½-inch by 11-inch. The OWNER and ENGINEER shall receive one copy only of each submittals which will be stamped "Preliminary - Not For Construction."

J. 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.

K. 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.

L. 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.

M. 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.”

N. 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”

O. 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.

P. 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.

Q. 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 approved. CONTRACTOR shall assume the risk for all materials or equipment, which are fabricated or delivered prior to the approval of Shop Drawings. Materials or equipment will not be included in periodic progress payments until approval thereof has been obtained in the specified manner.

R. 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 approved Shop Drawings to CONTRACTOR.

S. 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.

T. CONTRACTOR shall furnish required submittals with complete information and accuracy in order to achieve required approval of an item within three submittals. All costs to ENGINEER involved with subsequent submittals of Shop Drawings, Samples or other items requiring approval, 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 approved item, all of ENGINEER'S costs in the reviewing and approval of the substitution will be backcharged to CONTRACTOR unless the need for such substitution is beyond the control of CONTRACTOR.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01332

SAMPLES

PART 1 - GENERAL

1.01 DESCRIPTION

A. The submittal of Samples shall conform to the requirements of the General Conditions and to procedures described in the Section.

B. Samples and Shop Drawings which are related to the same unit of Work or Specification Section shall be submitted at the same time. If related Shop Drawings and Samples are submitted at different times, they cannot be reviewed until both are furnished to the ENGINEER.

1.02 PROCEDURE

A. CONTRACTOR shall review, approve and submit all Samples promptly. Samples shall be identified with correct reference to Specification Section, page, article and paragraph number, the Drawing No. when applicable. Samples shall clearly illustrate functional characteristics of the product and all related parts and attachments, and full range of color, texture, pattern and material. Samples shall be furnished so as not to delay fabrication, allowing the ENGINEER reasonable time for the consideration of the Samples submitted.

B. CONTRACTOR shall submit at least two Samples of each item required for the ENGINEER'S approval. Submission of Samples shall conform to all applicable provisions under Shop Drawing Submittal and Correspondence procedure. One of the Samples shall be delivered to the ENGINEER'S main office unless otherwise authorized by the ENGINEER. One Sample shall be delivered to the ENGINEER'S field office. If the CONTRACTOR requires a Sample for his use he shall notify the ENGINEER in writing.

C. The CONTRACTOR shall make all corrections required and shall resubmit the required number of new Samples until acceptable to the ENGINEER.

1.03 SAMPLES FOR TESTS

A. CONTRACTOR shall furnish such Samples of material as may be required for examination and test. All Samples of materials for tests shall be taken according to standard methods and as required by the Contract Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01421

REFERENCE STANDARDS

PART 1 - GENERAL

1.01 DESCRIPTION

A. When a reference standard is specified, comply with requirements and recommendations stated in that standard, except when they are modified by the Contract Documents, or when applicable laws, ordinances, rules, regulations or codes establish stricter standards. The latest provisions of applicable standards shall apply to the Work, unless otherwise specified. Reference standards include, but are not necessarily limited to, the following:

1. American Association of State Highway and Transportation Officials.
2. American Concrete Institute.
3. American Gear Manufacturers Association.
4. American Institute of Steel Construction.
5. American Iron and Steel Institute.
6. American National Standards Institute.
7. American Society of Heating, Refrigerating and Air Conditioning Engineers.
8. American Society of Mechanical Engineers.
9. American Society for Testing and Materials.
10. American Water Works Association.
11. American Welding Society.
12. Concrete Reinforcing Steel Institute.
13. Factory Mutual Research Corporation.
14. Institute of Electrical and Electronics Engineers.
15. National Electrical Manufacturer’s Association.
16. Occupational Safety and Health Administration.
17. National Fire Protection Association.
18. Prestressed Concrete Institute.
19. Underwriters’ Laboratories, Inc.
20. NSF International.
21. International Organization for Standardization (ISO).
22. SSPC: The Society for Protective Coatings.
23. American Petroleum Institute.
24. NACE International.
25. All other applicable standards listed in the Specifications, and the standards of utility service companies, where applicable.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01422

ABBREVIATIONS AND SYMBOLS

PART 1 - GENERAL

1.01 ABBREVIATIONS

A. Common abbreviations which may be found in the Specifications are:

alternating current	a-c	flange	flg
ante meridiem	am	foot-pound	ft-lb
ampere	A	gallon	gal
average	avg	gallons per minute	gpm
		gallons per second	gps
biochemical oxygen demand	BOD	gram	g
brake horsepower	bhp		
British thermal unit	Btu	Hertz	Hz
		hour	hr
Centigrade	°C	horsepower	hp
Company	Co		
cubic inch	cu in	inch	in.
cubic foot	cu ft	inch-pound	in.-lb
cubic yard	cu yd	inside diameter	id
cubic feet per minute	cfm		
cubic feet per second	cfs	kilovolt-ampere	kva
		kilowatt	kw
decibel	db	kilowatt-hour	hwhr
degree Centigrade			
(or Celsius) (say)	20°C	linear foot	lin ft
degree Fahrenheit (say)	68°F	liter	l
diameter	diam		
direct current	d-c	maximum	max
dollars	$	mercury	Hg
		milligram	mg
each	ea	milligrams per liter	mg/l
efficiency	eff	milliliter	ml
		millimeter	mm
Fahrenheit	EF	million gallon	mil
feet	ft	million gallons per day	mgd
feet per hour	fph	minimum	min
feet per minute	fpm		
feet per second	fps	net positive suction head	npsh
Figure	Fig	number	No.

National Pipe Threads	NPT	second	sec
		specific gravity	sp gr
ounce	oz	square	sq
outside diameter	od	square foot	sq ft
		square inch	sq in
parts per million	ppm	square yard	sq yd
post meridiem	pm	standard	std
pound	lb	standard cubic feet per minute	scfm
pounds per square foot	psf		
pounds per square inch absolute	psia	total dynamic head	tdh
pounds per square inch gage	psig	totally-enclosed-fan-cooled	tefc
revolutions per minute	rpm	volt	v

1.02 ORGANIZATION ABBREVIATIONS

A. Abbreviations of organizations which may be used in these Specifications are:

ACS	American Chemical Society
ACI	American Concrete Institute
AGMA	American Gear Manufacturers Association
AIChE	American Institute of Chemical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
APHA	American Public Health Association
API	American Petroleum Institute
AREA	American Railway Engineering Association
ASTM	American Society for Testing and Materials
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
AWWA	American Water Works Association
AWS	American Welding Society
CRSI	Concrete Reinforcing Steel Institute
ECWA	Erie County Water Authority
EPA	Environmental Protection Agency
FM	Factory Mutual Research Corporation
HEW	Department of Health, Education and Welfare
HUD	Department of Housing and Urban Development
IEEE	Institute of Electrical and Electronic Engineers
IRI	Industrial Risk Insurance

NAAMM	National Association of Architectural Metal Manufacturers
NACE	NACE International
NARUC	National Association of Railroad and Utilities Commissioners
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NSF	National Sanitation Foundation
OSHA	Occupational Safety and Health Administration
PCI	Precast Concrete Institute
SMACNA	Sheet Metal and Air Conditioning National Association
SSPC	Steel Structures Painting Council
UL	Underwriters' Laboratories, Inc.
USGS	United States Geological Survey
USPHS	United States Public Health Service
WWEMA	Water and Wastewater Equipment Manufacturers Association

1.03 MISCELLANEOUS ABBREVIATIONS

ACP	Asbestos Cement Pipe
DIP	Ductile Iron Pipe
mj	mechanical joint
PCCP	Prestressed Concrete Cylinder Pipe
pe	plain end
PVC	Polyvinyl Chloride Pipe
s	spigot
w/	with

1.04 SYMBOLS

A. Refer to Drawings for symbols used on the Contract Drawings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01450

TESTING LABORATORY SERVICES FURNISHED BY CONTRACTOR

PART 1 - GENERAL

1.01 DESCRIPTION

A. CONTRACTOR shall employ and pay for an independent testing laboratory to perform the specified services. Laboratory selected shall be subject to approval by the ENGINEER.

B. Inspection, sampling and testing shall be as specified in the Technical Sections.

1.02 QUALIFICATIONS OF LABORATORY

A. Where applicable, meet "Recommended Requirements for Independent Laboratory Qualification", latest edition, published by American Council of Independent Laboratories and the basic requirements of ASTM E329, Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

B. The laboratory shall be certified by New York State for testing potable water. A NYS ELAP number shall be referenced on all test results.

C. Submit copies of ELAP certificates for all potable water testing.

D. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during most recent tour of inspection; with memorandum of remedies of any deficiencies reported by inspection.

E. Testing Equipment:
   1. Calibrated at maximum 12 month intervals by devices of accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.
   2. Submit copy of certificate of calibration, made by accredited calibration agency.

1.03 LABORATORY DUTIES

A. Cooperate with ENGINEER and provide qualified personnel promptly on notice.

B. Perform specified inspections, sampling and testing of materials and methods of construction; comply with applicable standards; ascertain compliance with requirements of Contract Documents.

C. Promptly notify ENGINEER and CONTRACTOR of irregularities or deficiencies of Work, which are observed during performance of services.

D. Promptly submit 5 copies of reports of inspections and tests to ENGINEER including:
   1. Date issued.
   2. Project title and number.
   3. Testing laboratory name and address.
   4. Name and signature of inspector.
   5. Date of inspection or sampling.
   6. Record of temperature and weather.
   7. Date of test.
   8. Identification of product and Specification Section.
   9. Location in Project.
   10. Type of inspection or test.
   11. Results of tests and observations regarding compliance with Contract Documents.

E. Perform additional tests and services as required to assure compliance with the Contract Documents.

1.04 CONTRACTOR'S COORDINATION WITH LABORATORY

A. Cooperate with laboratory personnel, provide access to Work and to manufacturer's operations.

B. Provide to laboratory, representative samples of materials to be tested, in required quantities.

C. Furnish labor and facilities:
   1. To provide access to Work to be tested.
   2. To obtain and handle samples at the site.
   3. To facilitate inspections and tests.
   4. For laboratory's exclusive use for storage and curing of test samples.
   5. Forms for preparing concrete test beams and cylinders.

D. Notify laboratory and ENGINEER sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests.

E. Arrange with laboratory and pay for, additional samples and tests required for CONTRACTOR'S convenience.

1.05 PRODUCT TEST REPORTS

A. Furnish copies of product test reports where required by the Specifications or requested by ENGINEER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01520

TEMPORARY CONSTRUCTION FACILITIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. CONTRACTOR shall be responsible for all temporary construction facilities required for the Work. CONTRACTOR shall make all arrangements with utility service companies for temporary services and shall pay all costs associated therewith.

B. Temporary construction facilities include:
1. Water.
2. Electricity and Lighting.
3. Telephone.
4. Heat, Weather Protection and Ventilation.
5. Fire Protection.
6. Sanitary and First Aid Facilities.

C. CONTRACTOR shall abide by all rules and regulations of the utility service company, OWNER or authority having jurisdiction. CONTRACTOR shall coordinate and schedule all utilization and tie-in work of existing electric, lighting and water service and shall provide OWNER and ENGINEER written notice at least 48 hours before utilizing existing electric, lighting and water service. CONTRACTOR shall carry out all operations to avoid interference with operations of the existing facilities.

D. Sufficient temporary heat and ventilation shall be provided to assure safe working conditions and that no damage will occur to any of the Work.

E. Provide all materials, equipment and power required for temporary electricity and lighting. Include continuous power for construction site offices. Provide all outlets with circuit breaker protection and comply with ground fault protection requirements of NEC. Provide minimum of one 300 watt lamp each 20 feet in work areas.

F. Suitably enclosed chemical or self-contained toilets shall be provided for the use of the men employed on the Work. Toilets shall be located near the Work site and secluded from observation insofar as possible. Toilets shall be serviced at regular intervals, kept clean and supplied throughout the course of the Work.

G. CONTRACTOR shall furnish and maintain a safe drinking water supply readily available to all workers.

H. CONTRACTOR shall be responsible for all utility service costs if constructing a building or facility until the Work is substantially complete. Included are all fuel, power, light, heat and other utility services necessary for execution, completion, testing, and initial operation of the Work.

I. CONTRACTOR shall:
   1. Comply with applicable requirements specified in the Technical Specifications.
   2. Maintain and operate systems to assure continuous service.
   3. Modify and extend systems as Work progress requires.
   4. Completely remove temporary materials and equipment when their use is no longer required.
   5. Clean and repair damage caused by temporary installations or use of temporary facilities.
   6. Restore existing facilities used for temporary services to specified or to original condition.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01523

ENGINEER'S MOBILE FIELD OFFICE

PART 1 - GENERAL

1.01 DESCRIPTION

A. An ENGINEER'S field office structure will not be required for this Contract. In lieu of a field office structure, the CONTRACTOR shall provide the following items:

1. CONTRACTOR shall establish a charge account with a printing/fax/reproducing center with at least two (2) branch locations such as Office Depot, FedEx Office, or approved equal. This account shall be for the use of the ENGINEER for project related services during construction. These services shall include reproduction of specifications, letters, and other applicable 8½" x 11", 8½" x 14", or 11" x 17" material, faxing and receiving faxes, and printing of electronic computer files. ENGINEER shall be provided with a personal card to access the account. The account shall be in service until final completion of the project and shall be for a value not to exceed $500.00.
2. CONTRACTOR shall furnish one (1) cellular smartphone with two (2) rechargeable batteries, battery changing station, and car adapter for a standard cigarette lighter interface. The smartphone shall have internet access, email, and voicemail capabilities. Smartphone shall be for the exclusive use of the ENGINEER and not listed on any shutdown notices to homeowners/businesses.
3. CONTRACTOR shall furnish one (1) digital camera and accessories. Camera shall have a minimum 12 megapixel minimum resolution, 10x minimum zoom range and be equipped with a flash and carrying case. Camera shall be furnished complete with all necessary cables, software, and have at least 16 gigabytes of storage capacity. Camera shall include two (2) sets of rechargeable batteries and battery charging station. Camera shall be for the exclusive use of the ENGINEER.
4. CONTRACTOR shall furnish to the ENGINEER a wireless internet connection for the duration of the project. ENGINEER will provide their own laptop computer. CONTRACTOR shall provide Verizon 4G LTE Jetpack or approved equal. A smartphone configured to provide WiFi service may be used for both telephone and internet service as long as all cables are included.
5. CONTRACTOR shall furnish to the ENGINEER one (1) USB flash drive with minimum capacity of 16 gigabytes.

1.02 PROJECT COMPLETION

A. Remove charge account and cellular phone service upon final acceptance of the Work or when directed by ENGINEER. Smartphone, camera, wireless internet card, flash drive, and all accessories specified herein shall be returned to CONTRACTOR.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01525

EMERGENCY TELEPHONE NUMBERS

PART 1 - GENERAL

1.01 EMERGENCY TELEPHONE NUMBERS

A. The CONTRACTOR shall, at the CONTRACTOR'S expense, 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.

B. The list should include, but not be limited to:
1. CONTRACTOR'S office representative,
2. CONTRACTOR'S field superintendent,
3. CONTRACTOR'S foreman,
4. OWNER'S main office,
5. OWNER'S 24 hour emergency number,
6. PROJECT ENGINEER,
7. PROJECT INSPECTOR,
8. Utility companies such as gas, water, electric, sewer, oil, telephone, cable, TV, etc.,
9. Highway Departments,
10. Fire Departments serving the project limits,
11. Police Emergency number,
12. New York State Department of Environmental Conservation (NYSDEC) Spill Response Hotline,
13. Other involved agencies.

C. CONTRACTOR shall add names and numbers given to him by ENGINEER and resubmit to ENGINEER as requested.

D. Emergency phone list must be submitted and considered acceptable to ENGINEER and OWNER prior to the start of construction.

E. Phone list must be neatly typed or word processed and submitted on 8-½ x 11 inch paper.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01550

MAINTENANCE AND PROTECTION OF TRAFFIC

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified
The work specified shall include all labor, material, equipment, services and incidentals necessary to maintain and protect vehicular and pedestrian traffic through all construction areas.

B. Related Work Specified Elsewhere
1. Division 2-15, Technical Specifications,
2. Section 15051 - Buried Piping Installation

1.02 QUALITY ASSURANCE

A. Reference Standards
New York State Department of Transportation Standard Specifications, latest revision.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. This work shall consist of maintaining traffic and protecting the public from damage to person and property within the limits of and for the duration of the Contract.

B. All existing site roads, streets, sidewalks, and traffic ways shall be kept open for the passage of traffic and pedestrians during the construction period unless otherwise approved by the OWNER, ENGINEER or authority having jurisdiction over same.

C. When required to cross, obstruct or temporarily close a existing site road, street, sidewalk or trafficway, CONTRACTOR shall provide and maintain suitable detours or other approved temporary expedient for the accommodation of traffic. Closings shall be for the shortest time practical, and passage shall be restored immediately after completion of backfill and temporary paving or bridging.

D. CONTRACTOR shall give 48 hours advance notice to the fire and police departments of his proposed operations including temporary shutdowns.

E. CONTRACTOR shall provide signs, signals, barricades, flares, lights and all other equipment, service and personnel required to regulate and protect all traffic, and warn of hazards. All such work shall conform to requirements of the OWNER or authority having jurisdiction. Remove temporary equipment and facilities when no longer required, restore grounds to original, or to specified conditions.

F. Traffic shall be maintained over a reasonably smooth traveled way which shall be so marked by signs, delineators, guiding devices and other methods, that a person who has no knowledge of conditions may safely, and with a minimum of discomfort and inconvenience, ride, drive or walk, day or night, over all or any portion of the street under construction where traffic is to be maintained. All work shall conform to the requirements of the current New York State Manual of Uniform Traffic Control Devices.

G. CONTRACTOR shall control dust and keep the traveled way free from materials spilled from hauling equipment.

H. CONTRACTOR shall provide the necessary traffic control equipment and flagmen for adequate traffic control on the traveled way. Flaggers shall be used where opposing traffic is restricted to one (1) lane or where other conditions require, or as required by permit conditions.

I. CONTRACTOR shall provide ingress and egress to and from intersecting streets, homes, businesses and commercial establishments.

J. CONTRACTOR shall provide adequate protection for pedestrian traffic during all phases of construction.

K. CONTRACTOR shall maintain existing bus stops, if any, so passengers are reasonably accommodated.

L. CONTRACTOR shall make the necessary repairs to existing pavement as required to provide a reasonable smooth traveled way where vehicle operation is maintained.

M. The CONTRACTOR’S responsibility to the public is to protect the public from damage to person and property, which may result directly or indirectly from any construction operation.

N. The CONTRACTOR shall provide temporary markings in accordance with provisions of the New York State Manual of Uniform Traffic Control Devices, as

required by the agency having jurisdiction, as shown in the plans and specifications and/or as ordered by the ENGINEER

O. The CONTRACTOR shall schedule work to keep to a minimum and consistent with the physical requirements of the contract, the amount of existing pavement and/or facilities that are destroyed or substantially torn up at any one time.

P. The CONTRACTOR shall at all times conduct his operations in a manner to insure the convenience of the motorist, the pedestrians and the abutting property owners and their safety as well as the safety of his own employees.

Q. The CONTRACTOR shall furnish, install, move, remove and maintain all signs and barricades and lighting for construction barricades as shown on the plans or as ordered by the ENGINEER, and in accordance with the NYS Manual of Uniform Traffic Control Devices.

R. The CONTRACTOR shall provide and maintain delineation and guiding devices which shall include: delineators, barrels, flashers, railing, temporary curb of any kind, pavement markings, and other similar materials or methods acceptable to the ENGINEER

S. The CONTRACTOR shall construct, move or remove, as directed, temporary structures, approaches, detours, pavements and necessary appurtenances.

T. The CONTRACTOR will be responsible to prepare a maintenance and protection of traffic plan and submit the plan to the ENGINEER for information and the Erie County Highway Department and/or NYS DOT (as required) for approval. The maintenance and protection of traffic plan shall be prepared by an engineer licensed to practice in the State of New York.

3.02 PARKING CONTROL

A. Control all CONTRACTOR related vehicular parking within the limits of the Work to preclude interference with public traffic or parking, access by emergency vehicles, OWNER'S operations, or construction operations. Provide temporary parking facilities as may be required because of construction or operations.

B. Monitor parking of all construction and private vehicles:
1. Maintain free vehicular access to and through parking areas.
2. Prohibit parking on or adjacent to access roads, or in non-designated areas.
3. Parking will not be allowed in areas which limit sight distance of passing motorists.
4. CONTRACTOR is responsible for his vehicles while on-site.

3.03 HAUL ROUTES

A. Consult with governing authorities and establish thoroughfares which will be used as haul routes and site access.

B. Provide traffic control of haul routes to expedite traffic flow and to minimize interference with normal traffic.

3.04 ADDITIONAL REQUIREMENTS

A. The CONTRACTOR shall maintain the traveled way reasonable smooth and hard at all times, and shall be well drained and free of potholes, bumps, irregularities and depressions that hold or retain water. Construction operations shall be conducted to insure a minimum of delay to traffic. Stopping traffic for more than five minutes shall not be permitted unless specifically authorized, in writing, by the ENGINEER. The necessary equipment and personnel to attain and maintain a satisfactory riding surface shall be available and used as needed at all times when work is under way and when work is temporarily suspended for any period of time. Special attention to maintenance of a satisfactory traveled way shall be given during weekends, holidays and the winter season.

B. The CONTRACTOR shall provide a sufficient number of competent flagmen in areas where traffic exists, particularly where construction equipment is operating. Each flagger shall use an orange safety vest. The vest shall be worn outside all other clothing worn by the flagger.

C. Traffic shall be maintained in accordance with the details shown in conformance with the New York State Manual of Uniform Traffic Control Devices.

D. Fencing

1. The CONTRACTOR shall completely enclose all open excavations and all other potentially hazardous location, at the end of each working day by temporary fences. Fencing shall be not less than four feet in height, mounted in steel angles or other satisfactory means of support rigidly driven into the ground and spaced at intervals not to exceed eight feet. A minimum of one flasher per fifteen feet of fencing will be required. In areas where an excavation is to remain open in excess of 14 calendar days, rigid fencing will be required having supports at intervals not to exceed four feet. Snow fence, cyclone fence, or wire fabric with rectangular mesh are considered minimally acceptable fencing materials.
2. The ENGINEER in charge may limit, extend, include or exclude areas to be fenced as conditions warrant.

E. Where sidewalk has been removed by the CONTRACTOR, he will be responsible for establishing a temporary stabilized walk for pedestrian traffic within 24 hours

after removal of the sidewalk. This sidewalk may be located in the location of the original sidewalk or adjacent to the original sidewalk, providing there is an adequate right-of-way and the new location is safe for pedestrian traffic. The minimum width of the walkway is 4 feet. No additional Payment will be made for installing and/or maintaining this walkway by the CONTRACTOR.

F. All existing highway signs and supports within the Contract limits are to remain and are to be maintained for the duration of the Contract by the CONTRACTOR.

G. On postal routes, mailboxes serviced from motor vehicles shall be maintained by the CONTRACTOR in a usable location during construction. The CONTRACTOR should not move any mailbox which contains mail. He will advise the property owner to remove such mail before he moves the box. Before acceptance of the work, any mailbox which has been disturbed or removed shall be replaced in size, kind and type by the CONTRACTOR in a location acceptable to the property owner and the ENGINEER.

H. CONTRACTOR must provide access to all school buses and emergency vehicles including ambulances, police cars, fire engines, etc., traveling through or stopping at any part of the construction site. At his expense, CONTRACTOR will yield to these vehicles and cease construction activities, as necessary.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01561

SECURITY

PART 1 - GENERAL

1.01 DESCRIPTION

A. CONTRACTOR shall safely guard all Work, materials, equipment and property from loss, theft, damage and vandalism. CONTRACTOR'S duty to safely guard property shall include the OWNER'S property and other private property from injury or loss in connection with the performance of the Contract.

B. He shall employ watchmen as needed to provide the required security and prevent unauthorized entry.

C. CONTRACTOR may make no claim against the OWNER for damage resulting from trespass.

D. Party responsible for security shall make good all damage to property of OWNER and others arising from failure to provide adequate security.

E. If existing fencing or barriers are breached or removed for purposes of construction, CONTRACTOR shall provide and maintain temporary security fencing equal to the existing in a manner satisfactory to the ENGINEER and OWNER.

F. Security measures taken by the CONTRACTOR shall be at least equal to those usually provided by OWNER to protect his existing facilities during normal operation.

G. Maintain security program throughout construction until OWNER'S acceptance and occupancy precludes need for CONTRACTOR'S security program.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01562

PROTECTION OF THE WORK AND PROPERTY

PART 1 - GENERAL

1.01 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, 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

1.02 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.

1.03 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 a nursery product 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.

1.04 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.
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 Article 11 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.

1.05 PROTECTION OF FLOORS, ROOFS, AND CEILINGS

A. CONTRACTOR shall protect floors, roofs and ceilings during the entire construction period.

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.

1.05 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 01563

TEMPORARY CONTROLS

PART1 - GENERAL

1.01 DESCRIPTION

A. Provide and maintain methods, equipment, and temporary construction, as necessary to provide controls over environmental conditions at the construction site and adjacent areas. Remove physical evidence of temporary facilities at completion of Work.

1.02 NOISE CONTROL

A. CONTRACTOR'S vehicles and equipment shall be such as to minimize noise to the greatest degree practicable. Noise levels shall conform to the latest OSHA standards and in no case will noise levels be permitted which interfere with the work of the OWNER or others.

1.03 DUST CONTROL

A. CONTRACTOR shall be responsible for controlling objectionable dust caused by his operation of vehicles and equipment, clearing or for any reason whatever. CONTRACTOR shall apply water or use other methods subject to the ENGINEER'S approval which will keep dust in the air to a minimum.

1.04 PEST AND RODENT CONTROL

A. Provide rodent and pest control as necessary to prevent infestation of construction or storage area.
   1. Employ methods and use materials which will not adversely affect conditions at the site or on adjoining properties.

1.05 WATER CONTROL

A. Provide methods to control surface water and water from excavations and structures to prevent damage to the Work, the site, or adjoining properties
   1. Control fill, grading and ditching to direct water away from excavations, pits, tunnels and other construction areas; and to direct drainage to proper runoff courses so as to prevent any erosion, damage or nuisance.

B. Provide, operate and maintain equipment and facilities of adequate size to control surface water.

C. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas and in conformance with all environmental requirements.

1.06 POLLUTION CONTROL

A. Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations.

B. Provide equipment and personnel, perform emergency measures required to contain any spillages, and to remove contaminated soils or liquids.
   1. Excavate and dispose of any contaminated earth offsite, and replace with suitable compacted fill and topsoil.

C. Take special measures to prevent harmful substances from entering public waters.
   1. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.

D. Provide systems for control of atmospheric pollutants.
   1. Prevent toxic concentrations of chemicals.
   2. Prevent harmful dispersal of pollutants into the atmosphere.

E. All CONTRACTOR'S equipment used during construction shall conform to all current federal, state and local laws and regulations.

F. The CONTRACTOR is responsible to abide by the Storm Water Pollution Prevention Plan (SWPPP) and Notice of Intent (NOI) prepared by ENGINEER to the New York State Department of Environmental Conservation (NYSDEC) prior to the start of construction of this project. Certifications are to be signed by the CONTRACTOR and all subcontractors. The SWPPP and a copy of the NOI shall be submitted to the Highway Department of jurisdiction along with a Highway Permit Application for approval.

1.07 EROSION CONTROL

A. Plan and execute construction and earthwork by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.
   1. Hold the areas of bare soil exposed at one time to a minimum.
   2. Provide temporary control measures such as berms, dikes, and drains.

B. Construct fills and waste areas by selective placement to eliminate surface silts or clays, which will erode.

C. Periodically inspect earthwork to detect any evidence of the start of erosion, apply corrective measures as required to control erosion.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01575

RESPIRABLE CRYSTALLINE SILICA

PART 1 - GENERAL

1.01 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).

B. Related Work Specified Elsewhere.
1. Section 03300 – Concrete
2. Section 03480 – Precast Concrete Vault
3. Section 15051 – Buried Piping Installation
4. Section 15106 – Ductile Iron Pipe
5. Section 15109 – Prestressed Concrete Cylinder Pipe
6. Section 15140 – Testing and Disinfection

1.02 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).
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).

1.03 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.

1.04 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.

1.05 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.

1.06 PERSONAL PROTECTIVE EQUIPMENT

A. All use of Personal Protective Equipment (PPE) shall be in compliance with applicable OSHA regulations and procedures.

1.07 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.

1.08 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.

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 01585

PIPELINE PROTECTION SUBMITTAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. The project work is in close proximity to existing utilities of a critical nature. As such, CONTRACTOR shall provide a Pipeline Protection Submittal identifying the steps necessary to provide proper protection for these utilities. Utilities include, but are not limited to, existing large diameter waterline (16-inch diameter and greater), electrical duct banks, pressurized gas or petroleum pipelines, sanitary trunk sewers, storm trunk sewers, underground electrical facilities, and any other facility which requires protection from truck traffic and/or construction equipment.

B. CONTRACTOR shall provide a Pipeline Protection Submittal which conforms to the requirements herein for review by the ENGINEER and OWNER.

C. Critical utilities are identified on the drawings which require inclusion in the Pipeline Protection Submittal.

D. CONTRACTOR shall include all utilities in his submittal which might be affected by his operations. This includes all utilities that he intends to either cross over or work in close proximity to.

E. The Pipeline Protection Submittal is to be prepared by a licensed engineer in the State of New York and shall contain the seal and signature of the engineer. The licensed engineer shall be qualified to perform the calculations and provide recommendations.

F. Site mobilization cannot start until this submittal is reviewed and approved by ENGINEER and OWNER.

1.02 CONTENT

A. Signed cover letter from firm/individual summarizing the scope of work and results.

B. Plan and details showing the requirements to provide proper pipeline protection during construction.

C. Calculations identifying all assumptions, field data, and results of computations.

D. Profiles, graphs, charts, reference information, or any other needed information to provide a complete calculation set.

E. Required maintenance for protection systems, operational data, special conditions, and site restoration requirements shall be included in the submittal.

1.03 FORMAT

A. Pipeline Protection Submittal shall be either a letter format or bound report.

B. Engineer's seal and signature shall be included in the submittal.

1.04 SUBMITTALS

A. Provide three copies of all requirements with original seal and signature to ENGINEER for review.

B. ENGINEER will review the submittal for compliance with the contract documents only. Calculations presented in the report will not be verified by the ENGINEER or OWNER.

C. Submit updates to the submittal as requested by the ENGINEER or OWNER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01630

SUBSTITUTIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Requests for review of a substitution shall conform to the requirements of the General Conditions and shall contain complete data substantiating compliance of proposed substitution with Contract Documents.

1.02 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.

1.03 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.

B. Submit 5 copies of request for substitution. Submit separate request for each substitution. In addition to requirements set forth in Article 6.05 of General Conditions, 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.

C. 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.

D. 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.

E. 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.

F. Approval of a substitution will not relieve CONTRACTOR from the requirement for submission of Shop Drawings as set forth in the Contract Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01640

TRANSPORTATION AND HANDLING OF MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. CONTRACTOR shall make all arrangements for transportation, delivery and handling of equipment and materials required for prosecution and completion of the Work. Included in CONTRACTOR'S work shall be acceptance of consignment and coordination of equipment deliveries for equipment purchased by OWNER.

B. Shipments of materials to CONTRACTOR or Subcontractors shall be delivered to the site only during regular working hours. Shipments shall be addressed and consigned to the CONTRACTOR giving name of Project, street number and city. Shipments shall not be delivered to OWNER except where otherwise directed.

C. If necessary to move stored materials and equipment during construction, CONTRACTOR shall move or cause to be moved materials and equipment without any additional compensation.

1.02 DELIVERY

A. Arrange deliveries of products in accordance with construction schedules and in ample time to facilitate inspection prior to installation.

B. Coordinate deliveries to avoid conflict with Work and conditions at site and to accommodate the following:
   1. Work of other contractors, or OWNER.
   2. Limitations of storage space.
   3. Availability of equipment and personnel for handling products.
   4. OWNER'S use of premises.
   5. Work under other construction projects on OWNER'S site.

C. Do not have products delivered to project site until related Shop Drawings have been approved by the ENGINEER.

D. Do not have products delivered to site until required storage facilities have been provided.

E. Have products delivered to site in manufacturer's original, unopened, labeled containers. Keep ENGINEER informed of delivery of all equipment to be incorporated in the Work.

F. Partial deliveries of component parts of equipment shall be clearly marked to identify the equipment, to permit easy accumulation of parts and to facilitate assembly.

G. Immediately on delivery, inspect shipment to assure:
   1. Product complies with requirements of Contract Documents and reviewed submittals.
   2. Quantities are correct.
   3. Containers and packages are intact, labels are legible.
   4. Products are properly protected and undamaged.

1.03 PRODUCT HANDLING

A. Provide equipment and personnel necessary to handle products by methods to prevent soiling or damage to products or packaging.

B. Provide additional protection during handling as necessary to prevent scraping, marring or otherwise damaging products or surrounding surfaces.

C. Handle products by methods to prevent bending or overstressing.

D. Lift heavy components only at designated lifting points.

E. Materials and equipment shall at all times be handled in a safe manner and as recommended by manufacturer or supplier so that no damage will occur to them. Do not drop, roll or skid products off delivery vehicles. Hand carry or use suitable materials handling equipment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01660

STORAGE OF MATERIAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Store and protect materials in accordance with manufacturer's recommendations and requirements of Specifications.

B. CONTRACTOR shall make all arrangements and provisions necessary for the storage of materials and equipment. All excavated materials, construction equipment, and materials and equipment to be incorporated into the Work shall be placed so as not to injure any part of the Work or existing facilities and so that free access can be had at all times to all parts of the Work and to all public utility installations in the vicinity of the Work. Materials and equipment shall be kept neatly and compactly stored in locations that will cause a minimum of inconvenience to other contractors, public travel, adjoining owners, tenants and occupants. Arrange storage in a manner to provide easy access for inspection.

C. CONTRACTOR shall be consigned responsibility for scheduling, coordination of delivery and manufacturer's representatives' services, on-site storage, and handling of equipment items purchased directly by OWNER for this project. CONTRACTOR shall make provisions for temporary storage, if required, and all handling of said equipment items.

D. Areas available on the construction site for storage of material and equipment shall be as shown or approved by the ENGINEER.

E. Materials and equipment which are to become the property of the OWNER shall be stored to facilitate their inspection and insure preservation of the quality and fitness of the Work, including proper protection against damage by freezing and moisture. They shall be placed inside storage areas unless otherwise acceptable to OWNER.

F. Lawns, grass plots or other private property shall not be used for storage purposes without written permission of the property owner or other person in possession or control of such remises.

G. CONTRACTOR shall be fully responsible for loss or damage to stored materials and equipment.

H. Do not open manufacturer's containers until time of installation unless recommended by the manufacturer or otherwise specified.

I. Do not store products in the structures being constructed unless approved in writing by the ENGINEER.

1.02 UNCOVERED STORAGE

A. The following types of materials may be stored out-of-doors without cover:
   1. Reinforcing steel.
   2. Precast concrete items.
   3. Masonry block and brick.
   4. Castings.
   5. Manholes and exterior buried pipe.

B. Store the above materials on wood blocking so there is no contact with the ground.

1.03 COVERED STORAGE

A. The following types of materials may be stored out-of-doors if covered with material impervious to water:
   1. Rough lumber.
   2. Piping.

B. Tie down covers with rope and slope to prevent accumulation of water on covers.

C. Store materials on wood blocking.

1.04 FULLY PROTECTED STORAGE

A. Store all products not named above in buildings or trailers which have a concrete or wooden floor, a roof, and fully closed walls on all sides.

B. Provide heated storage space for materials which would be damaged by freezing.

C. Protect mechanical and electrical equipment from being contaminated by dust, dirt and moisture.

D. Maintain humidity at levels recommended by manufacturers for electrical and electronic equipment.

1.05 MAINTENANCE OF STORAGE

A. Maintain periodic system of inspection of stored products on scheduled basis to assure that:

1. State of storage facilities is adequate to provide required conditions.
2. Required environmental conditions are maintained on continuing basis.
3. Products exposed to elements are not adversely affected.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01720

SURVEY DATA

PART 1 - GENERAL

1.01 DESCRIPTION

A. CONTRACTOR shall keep neat legible notes of all measurements and calculations made by him while surveying and laying out the Work. Furnish copies of notes to ENGINEER every two weeks or as requested.

B. When any survey monument or property marker, whether of stone, concrete, wood, or metal, or a mark on the pavement, designating the lines of private property, is in the line of any trench or other construction work and may have to be removed, the CONTRACTOR shall notify the ENGINEER in writing at least 24-hours in advance of removal. Under no circumstances shall such monument or marker be removed or disturbed by the CONTRACTOR or by any of his subcontractors, employees, or agents, without a written order from the ENGINEER. The CONTRACTOR shall furnish the necessary labor and materials required in resetting any monument or property marker under the direct supervision of the ENGINEER. Should any monument be destroyed through accident, neglect or other cause, the CONTRACTOR will be required at his own expense to employ a licensed surveyor acceptable to the ENGINEER to reestablish the monument or marker.

1.02 PIPELINE ELEVATIONS

A. CONTRACTOR shall take survey elevation of the top of the newly installed pipeline at all tees; changes in vertical alignment; and, at 100 foot intervals.

B. Survey elevations shall be performed to NAVD88 datum.

1.03 SUBMITTALS

A. One copy of all notes shall be furnished to the ENGINEER and one copy furnished to the OWNER with Record Drawings.

PART 2 - MATERIALS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01730

INSTALLATION DATA

PART 1 - GENERAL

1.01 DESCRIPTION

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.

1.02 SUBMITTAL

A. 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

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 01731

CONNECTIONS TO EXISTING FACILITIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Perform all construction necessary to complete connections and tie-ins to existing facilities.

B. Keep existing facilities in operation unless otherwise specifically permitted in these Specifications or approved by OWNER.

C. CONTRACTOR shall perform all construction activities so as to avoid interference with operations of the facility and the work of others, and the safety and quality of the finished water.

D. Related work specified elsewhere:
   1. Section 01311, Coordination with OWNER'S Operations.
   2. Divisions 2-15, Technical Specifications.

1.02 GENERAL INFORMATION

A. Construction of interconnections is subject to CONTRACTOR'S submittal of materials, detailed procedures, schedules, etc. required by the contract. The following is for information only and the CONTRACTOR is responsible for all interconnections and abandonments.

B. The CONTRACTOR shall not operate existing valves. Once a new watermain is placed into service, CONTRACTOR shall not operate those valves.

C. The OWNER only shall operate existing valves. The CONTRACTOR is advised that watertight conditions may not exist when existing valves are closed. The CONTRACTOR shall consider this in his bid.

D. The CONTRACTOR shall perform test pits at existing pipes, valves, etc. as shown on the drawings or directed. Watermain installation and the pipe laying schedule should reflect the field information obtained by the test pits. The stationing of tees, fittings and valves should be coordinated with the test pit information in order to facilitate construction of the new watermains and construction of the interconnections.

E. The CONTRACTOR shall submit to the ENGINEER his proposed interconnection details, procedures and schedules.

F. The CONTRACTOR shall notify all affected customers of any shut-down at least 48 hours in advance.

G. The CONTRACTOR shall notify appropriate fire stations 48 hours in advance prior to taking any fire hydrants out of service. Any hydrant not in service shall be bagged in burlap.

H. Any shut-down shall be limited to 4 consecutive hours.

I. The CONTRACTOR shall have all equipment, manpower, and materials required for the construction on site and ready for use and/or prior to commencing any shut-down or removing any existing facilities.

J. The CONTRACTOR shall schedule and coordinate his work with others in accordance with the specifications and shall coordinate all proposed shut-downs with the ENGINEER and OWNER. The work shall be scheduled through the ENGINEER so that the OWNER has a minimum of three (3) working days advance notice.

K. Only one interconnection will be allowed until the proposed watermain and end of line valves (if applicable) have been installed, tested and disinfected and the ENGINEER authorizes the interconnections.

L. Caps (or plugs) on iron pipe shall be mechanically restrained watertight caps (or plugs) compatible with the pipe being capped and suitable to resist thrusts due to operating pressures.

M. Temporary caps shall be watertight and shall remain in place until the actual interconnections are made.

N. In unpaved areas, all interconnection joints shall remain exposed and tested under operating pressure for a 24-hour period.

O. If no leaks occur, the exposed interconnection piping can, upon ENGINEER'S authorization, be backfilled.

P. The CONTRACTOR shall dewater trenches, existing mains, etc. as required to perform the interconnections.

Q. The CONTRACTOR shall submit his detailed procedures for his interconnection sequence to the ENGINEER.

R. If the CONTRACTOR wishes to propose construction of several interconnections at one time, he shall submit a written, detailed proposal to the ENGINEER.

S. No work shall begin on the interconnections until the ENGINEER authorizes the work.

T. Firms performing taps on existing waterlines shall be acceptable to the OWNER.

U. All joints at interconnections shall be mechanically restrained.

V. New hydrants shall remain bagged in burlap (except for flushing and/or testing) until placed into service.

W. The interconnections and abandonment items include all costs to comply with permits, regulatory agencies, etc., not included under other bid items.

X. Removals shall be made with caution to prevent damage to hydrants, valves, etc., being removed.

Y. At all valves being abandoned: locate the valve, close the valve, remove the valve box, backfill and restore as required.

Z. CONTRACTOR will provide a temporary bypass for water service for all businesses, schools, and other establishments as defined by ENGINEER. No disruption in water service for these establishments will be permitted at any time during construction.

1.03 SCHEMATIC DRAWINGS

A. The schematic drawings included on the plans are not to scale and only indicate the general arrangement of the interconnections and abandonments.

B. In general, heavy lines indicate proposed improvements, pipe, fittings, etc. and light lines indicate existing facilities.

C. The schematic drawings do not show other features (such as other underground utilities, etc.) which could affect the work.

D. The CONTRACTOR shall, at his expense, verify all field conditions.

E. Restrained mechanical joint solid sleeves or restrained flexible sleeve type couplings will be required to connect the proposed pipe to existing pipe, where applicable.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01780

RECORD DOCUMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. CONTRACTOR shall assist the ENGINEER in generating record documents as specified below, except where otherwise specified or modified in Divisions 2-15.

B. Maintenance of Documents:
   1. Maintain in CONTRACTOR'S field office in clean, dry, legible condition complete sets of the following: Drawings, Specifications, Addenda, approved Shop Drawings, Samples, photographs, Change Orders, other modifications of Contract Documents, test records, survey data, Field Orders, and all other documents pertinent to CONTRACTOR'S Work.
   2. Provide files and racks for proper storage and easy access. File in accordance with filing format of Construction Specification Institute (CSI), unless otherwise approved by ENGINEER.
   3. Make documents available at all times for inspection by ENGINEER and OWNER.
   4. Record documents shall not be used for any other purpose and shall not be removed from the CONTRACTOR'S office without ENGINEER'S approval.
   5. Record Drawings may be reviewed anytime by the ENGINEER and processing of Application may be withheld if documents are not current.

C. Marking System: Provide colored pencils or felt tipped pens for marking changes, revisions, additions and deletions, to the record set of Drawings. Use following color code unless otherwise approved by the ENGINEER:
   1. Process and Mechanical: Red
   2. Architectural: Blue
   3. Structural: Purple
   4. Plumbing: Brown
   5. HVAC: Green
   6. Other Printed Notations: Black

D. Recording:
   1. Label each document "PROJECT RECORD" in 2-inch high printed letters.
   2. Keep record documents current.
   3. Do not permanently conceal any Work until required information has been recorded.

4. Drawings: Legibly mark to record actual construction including:
    a. Depths of various elements of foundation in relation to datum.
    b. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
    c. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
    d. Field changes of dimensions and details.
    e. Changes made by Change Order or Field Order.
    f. Details not on original Drawings.
5. Specifications and Addenda: Legibly mark up each Section to record:
    a. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
    b. Changes made by Change Order or Field Order.
    c. Other matters not originally specified.

E. Submittal:
1. Upon Substantial Completion of the Work, CONTRACTOR will deliver record documents to ENGINEER. Final payment to the CONTRACTOR will not be made until satisfactory record documents are received and approved by the ENGINEER.
2. CONTRACTOR shall submit to ENGINEER, accompanied with a transmittal letter, the following:
    a. Date.
    b. Project title and number.
    c. CONTRACTOR'S name and address.
    d. Title and number of each record document.
    e. Certification that each document as submitted is complete and accurate.
    f. Signature of CONTRACTOR, or his authorized representative.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01781

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 DESCRIPTION

A. Provide operation and maintenance data in the form of instructional manuals for use by the OWNER'S personnel for:
   1. All equipment and systems furnished under this Contract.
   2. All valves, gates and related accessories furnished under this Contract.
   3. All instruments and control devices furnished under this Contract.
   4. All electrical gear.

B. Definitions:
   1. Operation and Maintenance Data:
      a. The term "operation and maintenance data" includes all product related information and documents which are required for preparation of the plant operation and maintenance manual. It also includes all data which must accompany said manual as directed by current regulations of any participating government agency.
      b. Required operation and maintenance data includes, but is not limited to, the following:
         1) Complete, detailed written operating instruction for each product or piece of equipment including: equipment function; operating characteristics; limiting conditions; operating instructions for startup, normal and emergency conditions; regulation and control; and shutdown.
         2) Complete, detailed written preventive maintenance instructions as defined below.
         3) Recommended spare parts lists and local sources of supply for parts.
         4) Written explanations of all safety considerations relating to operation and maintenance procedures.
         5) Name, address and phone number of manufacturer, manufacturer's local service representative, and Subcontractor or installer.
         6) Copy of all approved Shop Drawings, and copy of warranty bond and service contract as applicable.
   2. Preventive Maintenance Instructions:
      a. The term "preventive maintenance instructions" includes all information and instructions required to keep a product or piece of

equipment properly lubricated, adjusted and maintained so that the item functions economically throughout its full design life.

b. Preventive maintenance instructions include, but are not limited to, the following:
   1) A written explanation with illustrations for each preventive maintenance task.
   2) Recommended schedule for execution of preventive maintenance tasks.
   3) Lubrication charts.
   4) Table of alternative lubricants.
   5) Trouble shooting instructions.
   6) List of required maintenance tools and equipment.

C. Submittals:
   1. General: Submit operations and maintenance data to the ENGINEER within 30 days prior to either start up or substantial completion.
   2. Number of copies: Six of each item.
   3. Letter of Transmittal: Provide a letter of transmittal with each submittal and include the following in the letter:
      a. Date of submittal.
      b. Contract title and number.
      c. CONTRACTOR'S name and address.
      d. A list of the attachments and the Specification Sections to which they relate.
      e. Reference to or explanation of related submittals already made or to be made at a future date
   4. Format Requirements:
      a. Use 8-$^1/_2$ inch by 11 inch paper of high rag content and quality. Larger drawings or illustrations are acceptable if neatly folded to the specified size in a manner which will permit easy unfolding without removal from the finder. Provide reinforced punched binder tab. Or provide fly-leaf for each product.
      b. All text must be legible typewritten or machine printed originals or high quality copies of same.
      c. Each page shall have a binding margin of approximately 1-$^1/_2$ inches and be punched for placement in a three ring loose-leaf or triple post binder. Provide binders. Identify each binder with the following:
         1) Title "OPERATING AND MAINTENANCE INSTRUCTIONS".
         2) Title of project.
         3) Identity of building or structure as applicable.
         4) Identity of general subject matter covered.

d. Use dividers and indexed tabs between major categories of information such as operating instructions, preventive maintenance instructions, or other. When necessary, place each major category in a separate binder.
e. Provide a table of contents for each binder.
f. Identify products by their functional names in the table of contents and at least once in each chapter or section. Thereafter, abbreviations and acronyms may be used if their meaning is explained in a table in the back of each binder. Use of model or catalog numbers or letters for identification is not acceptable.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 02080

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 02316 - Select Granular Materials
2. Section 02351 - Excavation, Backfill and Trenching
3. Section 15051 - Buried Piping Installation
4. Section 15106 - Ductile Iron Pipe, Fittings and Accessories
5. Section 15109 – Prestressed Concrete Cylinder Pipe
6. Section 15110 - Valves and Appurtenances
7. Section 15140 - Testing and Disinfection

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

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.

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 15110, 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.

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. Polyeurethane 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

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.

C. CONTRACTOR will replace fire hydrant assemblies, which are leaking or are considered suspect by the ENGINEER.

END OF SECTION

SECTION 02316

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 02351 - Excavation, Backfill and Trenching
2. Section 15051 - 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 Item No. 703.0201 or crushed gravel conforming to the requirements of NYSDOT Item No. 703.0202, having the following gradation by weight:

% Passing	Sieve
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.
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:

% Passing	Sieve
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 Item No. 703.07, having the following gradation by weight:

% Passing	Sieve
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:

% Passing	Sieve
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 Item No. 703.0203 and have the following gradation by weight:

% Passing	Sieve
100	1/2-inch
90 - 100	1/4-inch
0 - 15	1/8-inch

D. Follow NYSDOT Standard Specifications if gradation data varies from those listed above.

E. Recycled concrete or asphalt pavement shall not be allowed.

F. Slag of any type shall not be allowed.

G. Flowable fill shall comply with NYSDOT Item 733-0102 – Controlled Low Strength Material (No Fly Ash).

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 02351 - Excavation, Backfill and Trenching and Section 15051 - Buried Piping Installation.
2. Select backfill where specified or directed shall be placed in accordance with the backfilling provisions of Section 02351 - Excavation, Backfill & Trenching.
3. Flowable Fill (Controlled Low Strength Material) shall only be used where defined on the contract drawings and approved for use by the ENGINEER and OWNER.

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

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 02351

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 02316 - Select Granular Materials
   2. Section 02900 - Restoration
   3. Section 15051 - Buried Piping Installation

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
   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 02900, Restoration.

D. Explosives

1. Explosives are not allowed to be used nor allowed on site.

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 $^{3}/_{8}$-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, 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 02317 - Rock Excavation (requiring drilling, jack-hammering and hand removal), the rock shall be removed as specified in Section 02317.

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 unsolidified 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 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 02316 – 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.

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.

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.
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.

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.

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 $^{3}/_{4}$-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.

K. Placement:

1. Place pipe bedding, select backfill and/or earth backfill or borrow materials, as specified herein and in Section 15051- 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.

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.
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 Section 02900 - Restoration, and to the satisfaction of the ENGINEER.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 02900

RESTORATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

The work specified shall include all labor, material, equipment, services and incidentals necessary to restore surfaces, pavements, sidewalks, driveways, curbs, gutters, lawns, culverts, and other features disturbed, damaged, or destroyed during the performance of the work under or as a result of the operations of the Contract.

B. Related Work Specified Elsewhere

1. Section 02316 - Select Granular Materials
2. Section 02351 - Excavation, Backfill, and Trenching
3. Section 03300 - Concrete
4. Section 15051 - Buried Piping Installation

1.02 QUALITY ASSURANCE

A. The quality of materials and the performance of work used in the restoration shall produce a surface or feature equal to the condition of each before the work began.

B. Reference Standards

1. American Association of Nurserymen (AAN)
2. ASTM D698, Standard Compaction Test
3. ASTM D2487, Classification of Soils for Engineering
4. ASTM D2974, Standard Test Method for Moisture, Ash and Organic Matter of Peat and Other Organic Soils
5. New York State Department of Transportation Standard Specifications, latest revision

1.03 SUBMITTALS

A. CONTRACTOR shall submit the following submittals:

1. The location of source and data for off-site topsoil.
2. Analysis of the seed.
3. Should a hydroseeder be used, the CONTRACTOR shall submit all data including material and application rates.
4. Mix designs for asphalt.

1.04 SCHEDULE OF RESTORATION

A. A schedule of restoration operations shall be submitted by the CONTRACTOR for review.
   1. After an accepted schedule has been agreed upon it shall be adhered to unless otherwise revised by the ENGINEER.

B. In general, permanent restoration of traveled surfaces will not be permitted until one month time has elapsed after excavations have been completely backfilled as specified.

C. The replacement of surfaces at any time, as scheduled or as directed, shall not relieve the CONTRACTOR of responsibility to repair damages by settlement or other failures.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Topsoil shall be unfrozen friable clayey loam free from clay lumps, stones, roots, sticks, stumps, brush, hazardous materials, or foreign objects.

B. Fertilizer shall be a standard quality commercial carrier of available plant food elements. A complete prepared and packaged material containing a minimum of 10 percent nitrogen, 10 percent phosphoric acid and 10 percent potash.
   1. Each bag of fertilizer shall bear the manufacturer's name and guaranteed statement of analysis.

C. Seed mixtures shall be of commercial stock of the current season's crop and shall be delivered in unopened containers bearing the guaranteed analysis of the mix.
   1. All seed shall meet the New York State Department of Transportation 713-04 standard specifications for germination and purity.

D. Seed Mixtures:

Specia	Lawn Areas*	Non-maintained Areas*
Kentucky Bluegrass	50	20
Creeping Red Fescue	30	20
Manhattan or Pennfine Ryegrass	20	60

* % by weight

E. Mulch shall be stalks of oats, wheat, rye or other acceptable crops which are free from noxious weeds.

2.02 MATERIALS

A. Paving Materials: The source and gradation of materials shall be acceptable to the ENGINEER. Materials shall conform to the following:

1. Pavement Sub-Base Course Material: The sub-base course materials shall be select backfill material as specified in Section 02316 of the Specifications.
2. Tack Coat: The tack coat shall be NYSDOT Section 702, Item 702-3401 Asphalt Emulsion (HFMS-2H).
3. Bituminous Base Course: Base course where required shall be placed in accordance with the NYSDOT Specifications, Section 403 – Hot Mix Asphalt Concrete Pavement. The material shall be NYSDOT, Item 403.12, Type 2, Base Course.
4. Bituminous Binder Course: Binder course pavement where required shall be placed in accordance with NYSDOT Specifications, Section 403 – Hot Mix Asphalt Concrete Pavement. The binder course pavement material shall be NYSDOT Item No. 403.13, Type 3, Binder Course.
5. Bituminous Surface Course: The bituminous concrete surface course shall be a hot mix bituminous material consisting of a mixture of mineral aggregate and asphalt cement as approved by ENGINEER. The surface course shall be NYSDOT Item No. 403.19, Type 7F, Top Course.

B. Concrete Materials: Concrete used for road bases, roads, driveways, sidewalks, curbs, or similar items shall be a 4,000 psi mix. Concrete and reinforcing materials shall be as specified in Section 03300 of these Specifications.

2.03 MATERIALS TESTING.

A. All materials must be tested and approved prior to delivery to the site. Samples of materials proposed for use shall be submitted by the CONTRACTOR to the ENGINEER and the testing laboratory. Samples of the materials shall be submitted at least ten days in advance of its anticipated use.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Temporary Pavement

1. Immediately upon completion of backfilling of the trench or excavation, the CONTRACTOR shall place a temporary pavement over all disturbed areas of streets, driveways, sidewalks, and other traveled places where the original surface has been disturbed as a result of his operations.
2. The temporary pavement shall consist of compacted select backfill surfaced with cold patch to such a depth as required to withstand the traffic to which it will be subjected.

3. The surface of the temporary pavement shall conform to the slope and grade of the area being restored.
4. For dust prevention, the CONTRACTOR shall treat all surfaces, not covered with cold patch, as frequently as may be required
5. The temporary pavement shall be maintained by the CONTRACTOR in a safe and satisfactory condition until such time as the permanent paving is completed. The CONTRACTOR shall immediately remove and restore all pavement as shall become unsatisfactory.

B. Permanent Pavement Replacement

1. The permanent and final re-paving of all streets, driveways and similar surfaces where pavement has been removed, disturbed, settled or damaged by or as a result of performance of the Contract shall be repaired and replaced by the CONTRACTOR, by a new and similar pavement, consisting of base, binder, and/or top courses each having the same depth as existing pavement or as required by the local community or Highway Permit.
    a. The top surface shall conform with the grade of existing adjacent pavement and the entire replacement shall meet the current specifications of the local community for the particular types of pavement.
    b. Where the local community has no specification for the type of pavement, the work shall be done in conformity with the New York State Department of Transportation Standard which conforms the closest to the type of surfacing being replaced, as determined by the ENGINEER and with the following specifications:
        1) Unless specified otherwise, replacement of existing roads under the jurisdiction of New York State, Counties or Cities, shall be constructed to the following requirements:
            a) Pavement subbase as outlined under Section 02316.
            b) Base Course Pavement – 8 inches minimum compacted thickness or combination of concrete base where encountered.
            c) Binder Course Pavement – 1-$^1/_2$ inches minimum compacted thickness.
            d) Surface Course Pavement – 1 inch minimum compacted thickness.
        2) Unless specified otherwise, replacement of existing roads under the jurisdiction of Towns or Villages shall be constructed to the following requirements:
            a) Pavement subbase as outlined under Section 02316.
            b) Binder Course Pavement – 4 inches minimum compacted thickness.

c) Surface Course Pavement – 2 inches minimum compacted thickness.

c. All required permits for local governing bodies shall be obtained.

d. Install or reinstall pavement striping in accordance with NYSDOT Standard Specifications.

C. Preparation for Permanent Pavement

1. When scheduled and within the time specified, the temporary pavement shall be removed and base prepared, at the depth required by the local community or Highway Permit, to receive the permanent pavement.
   a. The base shall be brought to the required grade and cross-section and thoroughly compacted before placing the permanent pavement.
   b. Any base material which has become unstable for any reason shall be removed and replaced with compacted base materials.
   c. Cuts which are not straight will require another saw-cutting further from the trench. Additional select backfill and pavement needed for restoration outside the defined pay limits will be installed and paid for by the CONTRACTOR.
2. Prior to placing the permanent pavement, all service boxes, manhole frames and covers and similar structures within the area shall be adjusted to the established grade and cross-section.
3. The edges of existing asphalt pavement shall be cut a minimum of one foot beyond the excavation or disturbed base whichever is greater.
   a. All cuts shall be parallel or perpendicular to the centerline of the street.
   b. All cuts will be made in straight continuous lines by saw-cutting or other acceptable technique.
   c. Additional one-foot saw cut may be required for top course if shown on the drawings or required by permit.
4. Install or reinstall traffic inductance loops in accordance with NYSDOT Standard Specifications by a firm which is qualified by the NYSDOT.

D. Bituminous Tack Coat

1. The tack coat shall be uniformly applied by a pressure distributor to a prepared clean pavement. The tack coat shall be applied as approved by the ENGINEER to offer the least inconvenience to traffic and to permit one-way traffic, where practical, to prevent pickup or tracking of the bituminous material.
2. Tack coat shall not be applied on a wet pavement surface or when the surface temperature is below 45 degrees F. The temperature and areas to be treated shall be approved by the ENGINEER prior to application. The application rate shall be 0.03 to 0.07 gallons per square yard as approved by the ENGINEER.

E. Asphalt Pavement

1. The permanent asphalt pavement replacement for streets, driveways and parking area surfaces shall be replaced with bituminous materials of the same depth and kind as the existing unless otherwise specified.
2. Prior to placing of any bituminous pavement tack coat shall be applied to the edges of the existing pavement and other features.
3. The furnishing, handling and compaction of all bituminous materials shall be in accordance with the New York State Department of Transportation Standards latest edition.

F. Cold Milling

1. Cold milling of existing surfaces shall follow New York State Department of Transportation Standard Specifications, latest edition.
2. Material removed during the milling process will become the property of the CONTRACTOR and shall be disposed of at an acceptable location off-site.
3. CONTRACTOR must maintain drainage into all gutters and catch basins during the milling operation.

G. Concrete Pavement and Pavement Base

1. Concrete pavements and concrete bases for asphalt, brick or other pavement surfaces shall be replaced with Class “B” concrete, air-entrained as specified in Section 03300.
2. Paving slabs or concrete bases shall be constructed to extend one foot beyond each side of the trench and be supported on undisturbed soil. Where such extension of the pavement will leave less than two feet of original pavement slab or base, the repair of the pavement slab or base shall be extended to replace the slab to the original edge of the pavement or base unless otherwise indicated on the Contract Drawings.
3. Where the edge of the pavement slab or concrete base slab falls within the excavation, the excavation shall be backfilled with Select Backfill compacted to 95 percent maximum dry density as determined by ASTM D698 up to the base of the concrete.
4. The new concrete shall be of the same thickness as the slab being replace and shall contain reinforcement equal to the old pavement.
    a. New concrete shall be placed and cured in accordance with the applicable provisions of the State Department of Transportation Standards.

H. Stone or Gravel Pavement

1. All pavement and other areas surfaced with stone or gravel shall be replaced with material to match the existing surface unless otherwise specified.
    a. The depth of the stone or gravel shall be at least equal to the existing or at least 6 inches.

b. After compaction, the surface shall conform to the slope and grade of the area being replaced.

c. Stone material used shall comply with the New York State Department of Transportation Standard Specifications, latest edition.

I. Driveways

1. Asphalt Driveways

a. After the watermain has been installed and the trench properly backfilled, the CONTRACTOR shall cut back the drive one foot each side of the trench. The asphalt shall be cut with carborundum saw or other device to give a uniform and continuous straight edge. Where watermains or service piping are installed under drive aprons the ENGINEER may specify the replacement of the entire apron and the CONTRACTOR shall remove and replace same to its base.

b. The cut edge shall be painted with a bituminous seal coat and asphalt shall then be replaced to equal or exceed the existing asphalt in quality and depth.

1) In no case shall the finished thickness of the asphalt driveway be less than four (4) inches, a minimum of three (3) inches of binder and one (1) inch of top to match the existing driveway.

2) Courses shall be laid in one (1) inch lifts and compacted with a minimum two (2) ton roller or other mechanical means specified by the ENGINEER.

3) If the existing drive was in the opinion of the ENGINEER recently sealed, then the CONTRACTOR shall apply one (1) coat of coal tar emulsion sealer over the top lift. In no case shall cold patch be considered pavement, but may be used temporarily as an expedient, the cost of which will be borne by the CONTRACTOR.

2. Concrete Driveways

a. The CONTRACTOR shall be responsible for the proper consolidation of the sub-grade before laying the new driveway, and any settlement or failure of the new driveway shall be repaired or replaced by the CONTRACTOR to the satisfaction of the ENGINEER.

b. Where drives are encountered, the CONTRACTOR shall cut the concrete each side of the trench limits using a concrete saw at breaks in the drive or at expansion joints at the direction of the ENGINEER. Any concrete broken beyond the cut or break line will be replaced at the CONTRACTOR'S expense.

c. The drive shall then be replaced to equal or exceed the existing drive in quality and depth.

1) Reinforcing shall be installed in all replacements, tieing it to existing reinforcing where it protrudes from the cut edge. 6 x 6 x 6 welded wire mesh or equal shall be used. The CONTRACTOR shall then install Transit Mix Concrete meeting NYSDOT specifications to the depth of the original base, or a minimum of six (6") inches, whichever is more.

2) The surface shall be finished to match the existing surface. The CONTRACTOR shall properly cure all concrete after placing and shall protect it from damage from all types of traffic and harm prior to final setting.

J. Concrete Walks, Curbs and Gutter Replacement

1. Concrete walks, curbs and gutters removed or damaged in connection with or as a result of the construction operations shall be replaced with new construction.
   a. The minimum replacement will be a flag or block of sidewalk and five feet of curb or gutter.
2. Walks shall be constructed of concrete, air-entrained with NYSDOT No.1 stone aggregate on a 4-inch base of compacted gravel or stone.
   a. The walk shall be not less than 4 inches in thickness or to match the thickness of the replaced walk, shall have construction joints spaced to match the existing walks, and shall have expansion joints spaced not more than 50 feet apart and shall be sloped at right angles to the longitudinal centerline approximately $^1/_8$-inch per foot of width.
3. One-half inch expansion joint material shall be placed around all objects within the sidewalk area as well as objects to which the new concrete will abut, such as valve boxes, manhole frames, curbs, buildings and others.
4. Walks shall be hand-floated and broom-finished, edged and grooved at construction joints and at intermediate intervals matching those intervals of the walk being replaced.
   a. The intermediate grooves shall be scored a minimum of $^1/_4$ of the depth of the walk.
   b. The lengths of blocks formed by the grooving tool, and distances between construction and expansion joints shall be uniform throughout the length of the walk in any one location.
5. The minimum length of curb or gutter to be left in place or replaced shall be 5 feet. Where a full section is not being replaced, the existing curb or gutter shall be saw cut to provide a true edge.
   a. The restored curb or gutter shall be the same shape, thickness and finish as being replaced and shall be built of the same concrete and have construction and expansion joints as stated above for sidewalks.

6. All concrete shall be placed and cured as specified in Section 03300, Concrete.

K. Lawns and Improved Areas

1. The area to receive topsoil shall be graded to a depth of not less than 4 inches or as specified, below the proposed finished surface. If the depth of existing topsoil prior to construction was greater than 4 inches, topsoil shall be replaced to that depth.
   a. All debris and inorganic material shall be removed and the surface loosened for a depth of 2 inches prior to the placing of the topsoil.
   b. The topsoil shall not be placed until the subgrade is in suitable condition and shall be free of excessive moisture and frost.
   c. Topsoil placed in areas of earth excavation will not be placed until suitable earth compaction has been performed.
2. Satisfactory topsoil removed from the excavations shall be placed on the prepared subgrade to the depth required.
   a. In the event the topsoil removed during excavation is unsatisfactory or inadequate to obtain the required finish grades, the CONTRACTOR shall furnish the required quantity of satisfactory topsoil from specified sources off site.
   b. All topsoil shall be free from stones, roots, sticks and other foreign substances and shall not be placed in a frozen or muddy condition.
   c. The finished surface shall conform to the lines and grades of the area before disturbed or as shown on the Contract Drawings. Any irregularities shall be corrected before the placement of fertilizer and seed.
3. The fertilizer shall be applied uniformly at the rate of 20 pounds per 1000 square feet.
   a. Following the application of the fertilizer and prior to application of the seed, the topsoil shall be scarified to a depth of at least 2 inches with a disc or other suitable method traveling across the slope if possible.
4. When the topsoil surface has been fine graded, the seed mixture shall be uniformly applied upon the prepared surface with a mechanical spreader at a rate of not less than 5 pounds per 1000 square feet.
   a. The seed shall be raked lightly into the surface and rolled with a light hand lawn roller.
   b. Seeding and mulching shall not be done during windy weather.
5. The mulch shall be hand or machine spread to form a continuous blanket over the seed bed, approximately 2 inches uniform thickness at loose measurement. Excessive amounts or bunching of mulch will not be permitted.
   a. Mulch shall be anchored by an acceptable method.
   b. Unless otherwise specified, mulch shall be left in place and allowed to disintegrate.

c. Any anchorage or mulch that has not disintegrated at time of first mowing, shall be removed. Anchors may be removed or driven flush with ground surface.

6. Seeded areas shall be watered as often as required to obtain germination and to obtain and maintain a satisfactory sod growth. Watering shall be in such a manner as to prevent washing out of seed. Any washout or damage which occurs shall be regraded and reseeded until a good sod is established.
7. Hydroseeding may be accepted as an alternative method of applying fertilizer, seed and mulch. The CONTRACTOR must submit all data regarding materials and application rates to the ENGINEER for review.
8. The CONTRACTOR shall maintain the newly seeded areas, including regrading, reseeding, watering and mowing, in good condition, until the development of an established cover.

L. Cultivated Area Replacement

1. Areas of cultivated lands shall be graded to a depth to receive topsoil of not less than the depth of the topsoil before being disturbed. All debris and inorganic material shall be removed prior to placing of the topsoil.
2. After the topsoil has been placed and graded, the entire area disturbed during construction shall be cultivated to a minimum depth of 12 inches with normal farm equipment.
   a. Any debris or inorganic materials appearing shall be removed.
   b. The removal of stones shall be governed by the adjacent undisturbed cultivated area.
3. Grass areas shall be re-seeded using a mixture equal to that of the area before being disturbed, unless otherwise specified.

M. Other Types of Restoration

1. Shrubs and landscape items damaged or destroyed as a result of the construction operations shall be replaced in like species and size.
   a. All planting and care thereof shall meet the standards of the American Association of Nurserymen.
2. Water courses shall be reshaped to the original grade and cross-section and all debris removed. Where required to prevent erosion, the bottom and sides of the water course shall be protected.
3. Culverts destroyed or removed as a result of the construction operations shall be replaced in like size and material and shall be replaced at the original location and grade. When there is minor damage to a culvert and with the consent of the ENGINEER, a repair may be undertaken, if satisfactory results can be obtained.
4. Should brick pavements be encountered in the work, the restoration shall be as set forth in the General Requirements or as directed.
5. Items removed for construction such as mailboxes, signposts, reflector markers, and the like shall be replaced in as good or better condition than

existing. Items damaged by the CONTRACTOR shall be replaced at his expense. Privately owned items, such as mailboxes, shall be reinstalled to the satisfaction of the OWNER and ENGINEER.

N. Lawn Maintenance

1. All lawn areas shall be mowed by the CONTRACTOR before the new grass reaches a height of 4 inches.
    a. Following the establishment of a good stand of grass and the first mowing, the CONTRACTOR'S obligation shall end except for the repair of settlement or damage
2. Any lawn area which does not develop an established cover shall be re-seeded and maintained at the CONTRACTOR'S expense until an established cover is present.

O. Tree Plantings

1. Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate, as required, to minimize possibility of damage to underground utilities. Maintain grade stakes until removal is mutually agreed upon by all parties concerned.
2. Trees replaced by the CONTRACTOR will be a minimum of 6 feet high and 3 inches in trunk diameter. CONTRACTOR must fertilize and water tree appropriately after planting and will guarantee tree for a period of two years. All issues regarding tree planting including type, size, and final location must be approved by the ENGINEER prior to payment.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 03300

CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified
   1. All cast-in-place concrete used in the construction of watermains and appurtenances including cradles, encasements, thrust blocks, anchors, and manholes.
   2. All cast-in-place concrete used in the construction of sidewalks, gutters, curbs and other sections of restoration.
   3. Reinforcing steel, form work, and items of concrete accessories required for the completion of the work.

B. Related Work Specified Elsewhere
   1. Section 01450 - Testing Laboratory Services Furnished by Contractor
   2. Section 02351 - Excavation, Backfill and Trenching
   3. Section 02900 - Restoration

1.02 QUALITY ASSURANCE

A. References
   1. ACI 211, Proportioning Concrete Mixtures
   2. ACI 304, Measuring, Mixing, Transporting, and Placing Concrete
   3. ACI 305R, Hot Weather Concreting
   4. ACI 306, Cold Weather Concreting
   5. ACI 309R, Consolidation of Concrete
   6. ASTM A185, Standard Specifications for Steel Welded Wire Fabric, Plain for Concrete Reinforcement
   7. ASTM A615, Standard Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
   8. ASTM C33, Standard Specifications for Concrete Aggregates
   9. ASTM C94, Standard Specifications for Ready-Mixed Concrete
   10. ASTM C150, Standard Specifications for Portland Cement
   11. ASTM C260, Standard Specifications for Air-Entraining Admixtures for Concrete
   12. ASTM C309, Standard Specifications for Liquid Membrane-Forming Compounds for Curing Concrete
   13. ASTM C494, Standard Specifications for Chemical Admixtures for Concrete

14. ASTM D1751, Standard Specifications for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction

B. Tests
1. All previous testing of non-concrete materials incorporated in the concrete mix shall be performed within the past twelve months. Make test reports available to the ENGINEER upon request.
2. For each day when concrete is being placed, provide one slump test and three cylinders for compression testing. One cylinder shall be tested at 7 days and two (2) cylinders at 28 days. Submit all copies of test results to ENGINEER for review.

1.03. SUBMITTALS

A. Name and location of concrete supplier.

B. Concrete mix design indicating amount of all ingredients for concrete to be used in the Work.

C. Manufacturer's literature for curing compounds, joint materials, admixtures, form coatings, manufactured form systems, ties, etc.

D. Laboratory test results; compression cylinder test results from previous projects may be used for verification of design.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cement
1. Conform to ASTM C150, Type II.
2. Type I or III may be employed with the ENGINEER'S approval.

B. Fine and Coarse Aggregates
1. Comply in all respects to ASTM C33.
2. Maximum size of coarse aggregate: 1 – 2 inches; ¾-inch for precast structures.
3. Coarse aggregate for concrete used for sidewalks, curbs, and gutters shall be crushed limestone or approved equal.

C. Water: Potable and complying with ASTM C94

D. Admixtures
1. Water Reducing - conform to ASTM C494, Type A.
2. Air-Entraining - conform to ASTM C260.

E. Reinforcing steel bars shall be deformed new billet steel conforming to ASTM A615, Grade 60. Welded wire fabric shall be cold drawn steel conforming to ASTM A185.

F. Expansion joint material shall be ASTM D1751, asphalt-saturated cellulosic fiber, $^1/_2$ inch thickness and of the width required for full depth joints.

G. Membrane curing compound shall be pigmented and conform to the requirements of ASTM C309, Type 1, Class B.

H. Grout - All grout shall be non-shrink, non-metallic, non-gas forming, preblended and ready for use requiring only the addition of water. Minimum 28 day compressive strength must be 5000 psi.

2.02 CONCRETE MIX DESIGN

A. Mix design shall be established by the concrete supplier based on a proven strength record for concrete made with similar ingredients.

B. Conform to ACI 211, except as specified herein, using approved materials.

C. The various classes of concrete are designated as follows:

Class	Design Compressive Strength at 28 Day, psi	Maximum Water/Cement Ratio by Weights	Minimum Weight of Cement Per Cubic Yard
A (air-entrained)	4000	0.45	600 lbs

D. Maximum Slump
1. General - 4 inches
2. Sidewalks, curbs and gutters - 3 inches
3. Use minimum water possible subject to workability.

E. Except where otherwise specified, all concrete shall be air-entrained in the range of 5% to 7%.

2.03 BATCHING AND MIXING

A. Batching
1. The CONTRACTOR shall have a modern and dependable batch plant within a reasonable distance from the work at his disposal.
2. Comply with ACI 304.
3. Use only approved materials.

B. Mixing and Delivery
   1. Comply with ASTM C94, and furnish batch ticket information.

2.04 SOLID CONCRETE BLOCKS

A. Solid concrete blocks used for support or restraint shall be of nominal sizes conforming to ASTM C55.

B. Units shall have a minimum compressive strength of 3500 psi.

PART 3 - EXECUTION

3.01 CONCRETE PLACEMENT

A. Forms shall be substantially free from surface defects and sufficiently tight to prevent leakage of mortar. They shall be properly braced and tied so as to maintain position and shape during and after placing of concrete.

B. The CONTRACTOR shall build into the concrete reinforcing steel, sleeves, waterstops, etc., as shown on the Contract Drawings, or in restoration work, reinforcing steel and other embedded items equal to that found in the concrete being replaced.

C. All concrete shall be thoroughly consolidated by the use of vibrators or by spading or puddling sticks and tampers in accordance with ACI 309R.
   1. No concrete shall be deposited under water without written permission of the ENGINEER and then only in accordance with proper tremie techniques.

D. Cold weather placement: Comply with ACI 306.1.

E. Hot weather placement: Comply with ACI 305R.

F. At locations where replacing section of existing concrete driveway or walkway, sawcut existing concrete to provide a clean edge at the nearest adjacent construction joint, provided that the joint is beyond one foot from the edge of the trench or excavation.

3.02 FINISHING

A. All formed concrete surfaces to be exposed shall be given a rubbed finish. In the case of restoration, the rubbed finish shall be equal to that of the concrete surface being replaced.

B. Inverts, benchwalls, floors or structures and similar surfaces shall be given a float finish.

C. Sidewalks and driveways shall be hand floated using a magnesium float and given a broom finish perpendicular to traffic, edges of slabs to be tooled.

3.03 CURING

A. Concrete shall be maintained in a moist condition for seven (7) days using methods that will insure complete and continuous saturation.

B. Sidewalks, curbs and gutters may be cured by the use of a membrane curing compound applied in accordance with the manufacturer's directions.

3.04 NON-SHRINK GROUTING

A. For openings that are left in new concrete or where made in existing concrete for the insertion of wall castings, pipes or other fixtures, the space around these items shall be made watertight by completely filling with a non-shrink grout unless another means is specified elsewhere in the Contract Documents.

B. All work shall be done in strict accordance with the manufacturer's recommendations.

3.05 QUALITY CONTROL

A. The CONTRACTOR shall be solely responsible for the quality control of all concrete.

B. Concrete which does not meet the requirements of these specifications may be rejected by the ENGINEER.

C. Field Inspection: Testing shall be performed in accordance with Section 01450, Testing Laboratory Services Furnished by Contractor.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 03480

PRECAST CONCRETE VAULTS AND CHAMBERS

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 valve and meter vaults, air release manholes, surface water inlets, and similar structures, complete with frames and covers, manhole steps and appurtenances as shown on the Contract Drawings.

B. Related Work Specified Elsewhere

1. Section 02316 - Select Granular Materials
2. Section 02351 - Excavation, Backfill, and Trenching
3. Section 03300 - Concrete
4. Section 15051 - Buried Piping Installation
5. Section 15106 - Ductile Iron pipe, Fittings, and Accessories
6. Section 15109 – Prestressed Concrete Cylinder Pipe
7. Section 15110 - Valves and Appurtenances
8. Section 15120 - Piping Specialties and Accessories

1.02 QUALITY ASSURANCE

A. Reference Standards

1. ASTM A48 - Standard Specification for Grey Iron Castings
2. ASTM C62 - Standard Specification for Building Brick (solid Masonry Units made from Clay or Shale)
3. ASTM C91 - Standard Specification for Masonry Cement
4. ASTM C139 - Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes
5. ASTM C144 - Standard Specification for Aggregate for masonry Mortar
6. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections
7. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures
8. AWWA Standards identified in other related sections
9. ASTM Standards identified in other related sections
10. ANSI Standards identified in other related sections
11. Occupational Safety and Health Administration (OSHA)

1.03 SUBMITTALS

A. Shop Drawings

1. Prior to any field construction, the CONTRACTOR shall submit review drawings and conformance data for materials to be used in the construction of vaults and inlets for review.

PART 2 - PRODUCTS

2.01 PRECAST CONCRETE STRUCTURES

A. General: the following requirements apply to all precast concrete structures, chambers, and vaults 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 ¾-inch 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.
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.

2.02 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.

2.03 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.

2.04 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. For Valve Vaults and Air Release Chambers, 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. Hatch Cover Assembly (valve chamber and air release chambers).

1. Hatch cover assembly shall be furnished with a riser for each precast concrete structure. Riser shall be manufactured from concrete meeting the requirements as outlined above for precast concrete vaults.
2. Hatch cover shall be a single leaf type assembly with extruded aluminum angle style frame and continuous anchor flange. Hatch cover and assembly shall be manufactured from 6061-T6 aluminum for bars, angles, and extrusions.
3. Hatch leaf shall be manufactured from diamond plate and shall be 5086 aluminum. Each hatch shall be furnished with an aluminum hold open arm.
4. Door lock shall open in 90º position and shall be supplied with an exposed padlock clip.
5. Hinges shall be heavy-duty type, brass alloy, with 65,000 psi tensile strength, and a ¾-inch Grade 316 stainless steel pin.
6. Each hatch shall be furnished with an aluminum lift handle flush with top of diamond plate leaf. All aluminum shall have mill finish.
7. Hatch cover assembly shall be as manufactured by Bilco.
8. Where noted, hatch covers shall be insulated.

D. 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.

PART 3 - EXECUTION

3.01 INSPECTION

A. Precast Sections
1. Precast section shall be installed level on a flat stable subgrade. Where an unstable condition exists, the CONTRACTOR shall excavate the unstable material and replace with compacted granular material.
2. All joints shall be filled inside and out with mortar to provide a smooth and continuous surface.

B. Benchwalls and Inverts
Mortar surfaces of benchwalls and concrete floors shall be given a broom finish. Where inverts are required they shall be lined with a half section of pipe of the same type used for the sewer or shall be constructed of Class "B" concrete, shaped and troweled to produce a smooth circular cross-section.

C. Frames and Castings
Frames and castings shall be set in a full bed of mortar a maximum of $^1/_2$" thick. Where required to adjust the frames and castings to grade there shall be installed to a maximum of four brick courses.

D. Steps
1. Steps shall be installed in vertical alignment spaced 12-inches on center.
2. In concrete sections the steps shall be cast into the section or secured with cadmium plated bolts to threaded inserts which are precast into the concrete.
3. In masonry construction the steps shall be built into the masonry walls.

E. Plastering
1. Plaster shall be with mortar not less than 2-inch thick and troweled smooth.
2. Outside of masonry structures.
3. Inside and outside of brick courses under frames and castings.

F. Sumps
Sumps of the size specified shall be built into the floors of vaults and similar structures. Floors shall be sloped to the sump.

G. 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.

H. 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.

I. Grading at chambers:

1. All precast concrete structures in unpaved areas shall be constructed as shown or directed to an elevation 6 inches higher than the original ground.
2. The ground surface shall be graded to drain away from structure. Fill shall be placed around them to a level of the upper rim of the frame and cover, and the surface evenly graded on 1 to 5 slope to the existing surrounding ground. The slope shall be covered with 4 inches of topsoil, seeded, and maintained.
3. All precast structures installed with or under pavement areas shall be constructed to an elevation, which permits the frame and cover to be set flush with the final paving grade.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 15051

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 02080 - Fire Hydrants
2. Section 02316 - Select Granular Materials
3. Section 02351 - Excavation, Backfill, and Trenching
4. Section 15106 - Ductile Iron Pipe and Fittings
5. Section 15107 - Copper Pipe
6. Section 15109 - Prestressed Concrete Cylinder Pipe
7. Section 15110 - Valves and Appurtenances
8. Section 15120 - Piping Specialties and Accessories
9. Section 15140 - Testing and Disinfection

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

1.03 SUBMITTALS

A. 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.

B. 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.

C. 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.

D. 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.

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. Detectable Pipe Marking Tape

Detectable pipe marking tape as manufactured by C. H. Hanson Products or approved equal shall be installed above all new watermains.

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.
3. Tape shall have a minimum thickness of 5 mils as per ASTM D2103.

E. Locate/Tracer Wire

1. Locate/tracer wire shall be placed above the full length of all new watermains as shown on the drawings.

2. Locate/tracer wire shall be minimum #12 AWG solid copper conductor THHN, THWN, or oil and gasoline resistant.
3. Locate/tracer wire coating shall be blue in color.
4. Locate/tracer wire shall be adhered to the waterline and fittings at appropriate intervals as applicable, valve bodies, hydrant assemblies, casing pipe ends, and other appurtenances as required for proper installation and as detailed on the drawings.
5. 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 tracer/locating not continuous or that is undetectable shall be removed and replaced at the CONTRACTOR'S expense.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General

1. Excavation and backfilling shall be in accordance with the applicable provisions of Section 02351 - 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 02080 - 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 02351 - 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.

E. Bedding

Bedding shall be deposited and compacted in accordance with Section 02351 - 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 02316, 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 15120, Piping Specialties and Accessories.

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. Detectable Pipe Marker
1. Detectable pipe marker tape shall be placed above all new watermains as shown on the Drawings.
2. Detectable 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 present 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 01731, Connections to Existing Facilities.

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.
   3. Perform the abandonments as shown on Contract Drawings and in accordance with Section 01731, Connections to Existing Facilities.

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 15121, 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 silt fences 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.
14. Watermain markers shall be provided on both sides of the creek crossings. Markers shall be flexible, impact resistant fiberglass and royal blue in color. Labels shall be self-adhesive and waterproof.
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 15140 - 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 15140.
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 15140 - 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.
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 02351 - Excavation, Backfill & Trenching, Section 15051 - Buried Piping Installation and Section 15107 - Copper Pipe.
2. Bedding for service connection tubing shall be furnished, installed and coordinated with Section 02316 - 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 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 15140 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

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 15106

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 53.
    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 54.
    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 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 02080 - Fire Hydrants
2. Section 15051 - Buried Piping Installation
3. Section 15110 - Valves and Appurtenances
4. Section 15120 - Piping Specialties and Accessories
5. Section 15140 - Testing and Disinfection

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
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.

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 15051, 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 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.

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.

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.

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, $^1/_8$-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, $^1/_8$-inch thick, full face; and, nuts, bolts and washers, unless otherwise specified.

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.

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.
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. Two layers (double) of 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 Driectional 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.

PART 3 - EXECUTION

3.01 GENERAL

A. Refer to Section 15051 for buried piping installation.

END OF SECTION

SECTION 15107

COPPER PIPE

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 new copper pipe and fittings as shown, specified and required.

B. Related Work Specified Elsewhere

1. Section 15051 - Buried Piping Installation
2. Section 15120 - Piping Specialties and Accessories
3. Section 15140 - Testing and Disinfection

1.02 QUALITY ASSURANCE

A. Manufacturer's Qualifications

1. Manufacturer shall have a minimum of 5 years experience producing copper 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.

B. Reference Standards

1. ASTM B32, Specification for Solder Metal
2. ASTM B42, Specification for Standard Size Seamless Copper Pipe
3. ASTM B68, Specification for Bright Annealed Seamless Copper Tube
4. ASTM B75, Specification for Seamless Copper Tube
5. ASTM B88, Specification for Seamless Copper Water Tube
6. ASTM B302, Specification for Threadless Copper Pipe
7. ASTM B306, Specification for Copper Drainage Tube (DWV)
8. NSF/ANSI Standard 61
9. Underwriter's Laboratories (UL)
10. International Organization for Standardization (ISO)
11. Factory Mutual Research Corporation
12. National Fire Protection Association
13. ASME, Boiler and Pressure Vessel Code
14. Federal Specification WW-P-377D(1), Pipe, Copper, Seamless Standard Sizes (S/S by ASTM B42)

15. ANSI B16.22, Wrought Copper and Bronze Solder - Joint Pressure Fittings
16. 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.
   3. Any operations and maintenance information for copper pipe.

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, including interior coatings, by an independent, authorized laboratory.

D. 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. The materials shall be inspected before unloading. Materials that are found to be cracked, gouged, chipped, dented, or otherwise damaged will not be accepted.

C. Interiors of pipe, fittings and appurtenances shall be kept free from dirt and foreign matter.

D. Store pipe and fittings so they are not in contact with the ground.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All products, including interior coatings, shall be suitable for use in a potable water system.

B. All products, including wetted parts, shall be certified to meet NSF/ANSI Standard 61.

C. All piping and fittings shall be designed for a working pressure and field hydrostatic test pressure as shown in Section 15051, Buried Piping Installation.

D. Copper pipe: Copper pipe shall conform to the requirements of ASTM B88 and Federal Specification WW-T-799a. Buried copper piping to maximum 2-inch diameter shall be type K, soft temper, suitable for use with flared fittings. Exposed copper piping shall be Type L hard temper tubing. Fittings shall conform to ANSI B16.22.

E. All copper piping and accessories must be new materials in first-class condition. Used or recycled materials will not be allowed, regardless of condition.

2.02 MARKING

A. All items shall be marked or labeled with the following information:
   1. Metal or alloy designation.
   2. Temper.
   3. Size and schedule.
   4. ASTM specification number.
   5. Name and location of supplier.

2.03 JOINTING

A. All joints shall conform to manufacturer's recommendations and shall be made by skilled workmen.

B. Joints shall develop full strength and shall be stronger than the pipe joined.

PART 3 - EXECUTION

3.01 GENERAL

A. Refer to Section 15051 for copper piping installation.

B. All connections to copper piping shall be watertight at operating pressure.

C. Copper Tubing
   1. Copper tubing shall be installed in accordance with the applicable provisions of Section 02351, Excavation, Backfill and Trenching and Section 15051, Buried Piping Installation.
      a. Flared connections shall only be allowed for all buried fittings.

b. No coupling shall be allowed, especially under paved areas. Exception shall be based on the length of the service and the size of the coil of tubing provided and shall be only as allowed by ENGINEER.

c. Installation shall be suitable for open-cut or push or drill methods.

2. Exposed copper tubing shall be carefully erected and neatly arranged.
   a. Copper tubing shall be run parallel with walls inside structures and shall be pitched to drain.
   b. Drain valves shall be installed at the low points of liquid filled systems.
   c. Joints shall be soldered suitable for the pressure intended.
3. Unions shall be provided on copper tubing systems with soldered joints.
   a. Unions shall be located at control valves, solenoid valves, moisture and steam traps, other items of connected equipment and as shown on the Drawings.
   b. Unions shall be of cast bronze or brass construction.
   c. Dielectric unions shall be used when connecting copper tubing to ferrous metals.

END OF SECTION

SECTION 15109

PRESTRESSED CONCRETE CYLINDER PIPE

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 prestressed concrete cylinder water piping and fittings as shown, specified and required.

B. Related Work Specified Elsewhere

1. Section 15051 - Buried Piping Installation
2. Section 15110 - Valves and Appurtenances
3. Section 15140 - Testing and Disinfection

1.02 QUALITY ASSURANCE

A. CONTRACTOR'S Qualifications

1. CONTRACTOR shall have a minimum of 5 years experience installing prestressed concrete cylinder pipe, fittings, and appurtenances.
2. A list of qualifications must be presented 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 years and all projects completed for the Authority specifically within the last five years.
   c. List the names of any company that has operated under the umbrella of your organization and the projects that they have completed.

B. 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 qualified or requalified within the past three (3) years.

C. 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 always 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.

D. 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 manufacture 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.

E. Reference Standards

1. AWWA C301, Prestressed Concrete Pressure Pipe, Steel-Cylinder Type, for Water and Other Liquids
2. AWWA C304, Design of Prestressed Concrete Cylinder Pipe
3. AWWA Manual M9, Concrete Pressure Pipe
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. Design calculations (for information only) per AWWA C301 and AWWA C304. The CONTRACTOR shall submit to the ENGINEER the design calculations for each size and class of pipe. Along with each design, the CONTRACTOR shall include the calculated, explicit safety factor of 2.0 times working pressure plus 100 psi surge, including working external loads, where the maximum tensile stress in prestressing wire shall not exceed its yield strength, f_{sy}.
6. The manufacturer is solely and fully responsible for pipe manufacture in accordance with the design criteria contained in the plans and specifications.
7. Affidavit that all materials conform to AWWA C301 and any modifications included in this specification section.
8. Affidavit that all tests called for in AWWA C301 and any modifications included in this specification section have been performed and that all results indicate conformance to AWWA C301 and any modifications included in this specification section.
9. A complete indexed booklet (for information only) containing all data, design mixes, certified test (and certified retests, if any), reports, etc. for the pipe components (concrete, steel, wire, mortar, etc.) and the pipe fittings and specials. This booklet shall also include production information for each piece of pipe-by-pipe identification number.
10. Pipe repair procedures, if procedures different than AWWA C301 are to be used.
11. Written procedures for field repairs of pipe.
12. Submit certificate of compliance with NSF/ANSI Standard 61 for all products under this section, including interior coatings, by an independent, authorized laboratory.
13. Product information on polyethylene encasement.

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 of 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.

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 PRESTRESSED CONCRETE CYLINDER PRESSURE PIPE

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. Prestressed concrete cylinder pipe shall consist of a steel shell with steel bell and spigot end-rings welded to the ends of the cylinder.
4. Joint O-ring gaskets shall be interchangeable with other pipe of same size of other manufacturers. The composition of the rubber shall be either natural or synthetic rubber. Gaskets removed from existing pipe shall not be reused.
5. Restrained joints shall be designed for working pressure (P_w) plus surge pressure (P_t).
6. All necessary fittings, outlets, bevels, bevel adapters, restrained joints, closure pieces shall be provided when specified.
7. All prestressed concrete cylinder pipe, fittings, and accessories must be new materials in first-class condition. Used or recycled materials will not be allowed, regardless of condition. Pipe shall not be supplied from inventory, but shall be manufactured specifically for this Contract.
8. Manufacturer of prestressed concrete cylinder pipe, fittings, and appurtenances shall be:
   a. Thompson Pipe Group
   b. Or approved equal.

B. Prestressed Concrete Steel Cylinder Pipe (Lined Cylinder and Embedded Cylinder Pipe).

1. Steel cylinders shall meet the requirements of AWWA C301 and shall be of sufficient thickness such that the stress in the cylinder at the specified working pressure plus surge is no greater than 50% of the specified minimum yield of the material as stated in AWWA C301 section 4.4.7.1; and in no case shall the cylinder thickness be less than 0.0747" (14 gauge).
2. The required area of steel for prestressed concrete pipe shall have a single layer of prestressing. Any design with multiple layers of prestressing wire shall not be acceptable.
3. All prestressed concrete pipe shall be manufactured in nominal 20-foot laying lengths. Concrete cores for pipe shall be manufactured per AWWA 301.
4. The pipe "Class" shall be clearly marked per AWWA C301. Markings indicating the pipe class and identifying each pipe in reference to the laying schedule shall also be included. Each pipe shall have an

identification number to correlate production information such as concrete core placement, prestressing and mortar coating. A record of this production information shall be furnished. Each length of straight and special pipe and each fitting shall be plainly marked on the interior on the bell end.

5. Transient pressures, earth loads, and live loads above the design pressure shall be accounted for as outlined in AWWA C301. All highway live loads (including impact) shall be American Association of State Highway Transportation Officials HS-20 loading. Where specified, the live load for railroad crossing shall be Cooper E-80 loading.

C. Design Conditions

1. Prestressed concrete cylinder pipe and fittings shall have a single design for each size of pipe furnished. There shall be no circumstance where multiple designs will be acceptable for any given size with the exceptions of: a design for restrained areas where heavier cylinders will be required; and, a design for deep stream/road/railroad crossings. The single design per size shall be in accordance with AWWA C304 for the following parameters:
   a. Pipe inside diameter (d_i): As shown on plans.
   b. Operating pressure (P_w): See Section 15051, Buried Piping Installation.
   c. Surge pressure (P_t): 100 psi, minimum, or as otherwise specified.
   d. Total design pressure: (cumulative sum of b and c), minimum, or as otherwise specified.
   e. Field hydrostatic test pressure (P_{ft}): See Section 15051, Buried Piping Installation (as measured at the lowest point in the pipeline gradient), or as otherwise specified.
   f. Safety Factor: 2.0 (based on conditions described in 1.03.A.5.)
   g. Laying Condition: As shown on plans.
   h. Depth of cover (H): As shown on plans (8 feet minimum).
   i. Soil weight: 120 lbs per cubic foot.
   j. Live loading: AASHTO H20.
   k. In combination with the internal pressures, pipe, fittings, and specials shall be designed for the external condition listed below which results in a single class of pipe for each size of pipe:
      1) Earth cover for existing grade as shown on Drawings, plus all applicable transient and live loads.
      2) Earth cover for proposed grade as shown on Drawings plus all applicable transient and live loads. All combinations of earth cover between the existing and proposed grades as shown on the drawings plus the applicable live loads (highway or railroad).

D. Joints for Prestressed Concrete Steel Cylinder Pipe

1. Prestressed concrete cylinder pipe joints shall be sealed by a rubber gasket so that the joint will remain tight under all conditions of service, including movement due to expansion, contraction, and normal settlement. Exposed portions of the joint rings shall be protected by a coating as specified in 2.01.H. following.
2. Exterior joints shall be protected with cement grout (1 part cement to 3 parts sand) poured into a joint grout band or "diaper" after the pipe is firmly bedded and at least partially backfilled to avoid movement after the joint has been grouted. All joint grout bands shall be a minimum of 12-inch wide and be lined with earthfoam®.
3. All watermains shall require mechanically restrained joints at each fitting causing a change in direction of 7-$^1/_2$ degrees or greater. The restrained joint shall provide uniform retainage 360 degrees around the pipe joint. Prestressed concrete cylinder pipe shall be restrained where specified or indicated on the drawings with a harness clamp ring or with a snap ring. These types of joints shall allow flexibility.
4. Bonded joints may be required in areas where the ENGINEER has evaluated soil conditions and has recommended that corrosion protection is required at locations shown on the drawings. The pipe manufacturer shall supply all joint bonding materials, including #4 AWG stranded insulated copper wires bonding jumpers, to be field CAD welded to the joint rings when specified.
5. Where joints on existing pipe are required to be restrained, such restraint shall be accomplished by welding the joint. Extreme care should be taken when restraining multiple lengths of any existing prestressed concrete cylinder pipe that have not been designed to resist axial thrust loads. The CONTRACTOR shall verify the steel cylinder thickness prior to restraining the existing pipe by welding joints.
6. Steel cylinder design for all areas requiring restrained joints shall be based on the type of fitting (i.e. deflection angle of bend, valve, or tee), working pressure plus surge, and an allowable longitudinal stress of 13,500 psi (14-gauge minimum).
7. All PCCP installed within casing pipe shall be supplied with double gasketed, air testable joints. The spigot rings for these joints shall have two equal sized grooves for gaskets separated sufficiently to allow an air pressure test of the small annular space between the gaskets once the joint is assembled. A test port shall be provided through the spigot for introducing air pressure into the area between the gaskets. The contractor shall test each of these joints after it is assembled to a gauge pressure 50 psi for a minimum of 5 minutes. Once the pressure has stabilized, a valve in the air supply line shall be closed. The joint is acceptable if the pressure drop is less than 5 psi. If the joint does not pass this air test, it must be

disassembled, re-assembled using new gaskets, and re-tested. All testing to be performed in the presence of the ENGINEER.

E. Fittings, Outlets, Caps and Bevels

1. Outlets, connections, and appurtenances shall be of a size and class suitable for the pipe with which they are intended to be used.
2. Suitable watertight end caps or plugs, approved by the ENGINEER, shall be furnished for the purpose of capping the ends of pipe when pipe laying is not actually in progress.
3. Bevel pipe and/or bevel adapters shall be used where the required deflection of the pipeline is more than what is allowed by the joint opening method for straight pipe or as specified.
4. Other accessories not included under AWWA C301 shall be in accordance with the appropriate standard.

F. Harnessed Bulkheads, Plugs, and Caps

1. Harnessed dished bulkheads, plugs, and caps shall be provided as shown and/or required and shall be designed for the conditions stated herein. Plugs and caps shall be flat steel plates for temporary protection. The flat plates shall be reinforced with stiffeners. Permanent bulkheads shall be dish-shaped steel plates protected by concrete. Two, outlets with plugs, sized as shown on the plans (2-inch minimum), shall be provided in each bulkhead for pipe filling/testing purposes.

G. Construction and Materials

1. All pipe, fittings, specials, bends, closure pieces, joints, gaskets, etc., shall conform to the requirements of AWWA C301.
2. Physical Features of Pipe:
   a. Steel cylinder shall be formed by spiral-welding steel coil with a full penetration lap-seam weld.
   b. Steel bell and spigot end-rings shall be welded to the ends of the cylinder.
   c. O-ring gasket shall be natural or synthetic rubber gasket conforming to AWWA C301.
   d. Concrete cores for all prestressed concrete pipe shall be manufactured per AWWA C301.
   e. Minimum steel cylinder thickness to be used in fittings and specials shall be $^{3}/_{8}$-inch
   f. Prestressing wire for precompression of the concrete core shall be a minimum of 6 gauge and shall have yield and tensile strengths equal to or less than that of Class II meeting the requirements of ASTM A648. Cement mortar coating per AWWA C301 shall be a a minimum of ¾ inch over the prestressing wire.

H. Coatings, Linings, and Polyethylene Encasement For Prestressed Concrete Cylinder Pipe

1. Exposed Steel Joint Rings:
   a. Exposed portions of the joint rings shall be protected by a zinc metallized coating having a minimum thickness of 0.004 inch with a grout or cement mortar placed after installation in accordance with the pipe manufacturer's recommendation.
2. All coatings shall be applied in accordance with the coating manufacturer's instructions. All surface preparation and primers required to ensure a lasting coating and lining shall be provided.
3. All linings shall be applied by the pipe manufacturer at the pipe manufacturing facility.
4. Repair Damaged Protective Coatings: prepare surfaces and apply coatings in accordance with manufacturer's instructions. Use coating material and application rate specified in this Section.
5. Polyethylene Encasement For Prestressed Concrete Cylinder Pipe and Fittings.
   a. Polyethylene encasement shall be used for Prestressed Concrete Cylinder Pipe and fittings, conforming to AWWA Specification C105.
   b. 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.
   c. Polyethylene film shall have a tensile strength of 1,200 psi minimum and shall allow elongation of 300 percent and have a dielectric strength of 800 V/mil thickness minimum.
   d. Polyethylene film shall have a minimum nominal thickness of 0.008 inch (8 mils). The minus tolerance of thickness shall not exceed 10 percent of the nominal thickness.
   e. Tape required to complete the installation shall be approximately two (2) inches wide, plastic backed adhesive type, such as Polyken #900, Scotchrap #50, or approved equal.
   f. Tube size or sheet width for each size of pipe shall be in accordance with AWWA C-105.
6. Raised Mortar Coating Skids:
   a. Where prestressed concrete cylinder pipe is installed within a casing pipe, raised mortar coating skids shall be provided to assist in insertion as follows:
      1) Diameter of the raised mortar coating skids shall be two-inches (2") minimum greater than the outside diameter of the pipe spigot;

2) Width of the coating skids shall be twelve-inches (12") typical;
3) The first and last pipes inserted into the casing pipe shall have raised mortar coating skids at each end;
4) Each subsequent pipe shall have one coating skid;
5) The layeing schedule will indicate locations and dimensions of raised mortar coating skids as per manufacturer's recommendations.

I. Additional Piping Required

1. In addition to pipe shown on the Drawings and necessary to complete Work, CONTRACTOR shall furnish additional prestressed concrete cylinder pipe pieces. This includes having a number of shorts and bends on hand in the event that there is a need for correction in line of work due to unforeseen errors or obstructions. As a minimum, the following shall be supplied for each size of pipe:
   a. Two (2) half bevel adapters,
   b. Two (2) full bevel adapters,
   c. One (1) short,
   d. One (1) closure,
   e. One (1) PCCP Bell x DIP (MJ Spigot)
   f. One (1) PCCP Bell x DIP (MJ Bell)
2. If any of the above pieces are used in the Work, CONTRACTOR shall install the additional fittings, shorts, and closures at no additional cost to OWNER.
3. In the event fittings, shorts, and/or closure pieces are not utilized, the OWNER may purchase them at the CONTRACTOR'S invoice price plus a 10% handling fee. If the OWNER chooses not to purchase these additional items, they shall be returned and the OWNER shall only be responsible for a restocking fee.
4. Included are all necessary restraints, adapters, bolts, grout, and other appurtenances necessary for installation of the pieces as specified.

J. Closure Pieces

1. Follower ring type closure pieces shall be furnished and installed where required by the CONTRACTOR. These shall be furnished by the pipe manufacturer.
   a. The pipe layout submitted by the manufacturer shall reflect the CONTRACTOR'S planned schedule for operations and the schedule of construction. Pipe closures shall be designed by the manufacturer for the pressure required and shall be located in straight runs of pipe. The number, design, and location of all

closure pieces shall be as shown or subject to the approval of the ENGINEER. All closure pieces shall be restrained.

b. The CONTRACTOR may elect either to cut the closure cylinder to the required length in the field, or if timing permits, to have the pipe manufacturer supply the required length base upon exact field measurements.

c. All closures, including concrete required for protection of the cylinder and joint rings, shall be provided.

d. Coat exterior steel portions of closure piece with two coats each eight-mils minimum dry film thickness, of high-build epoxy or bituminous coating as manufactured and recommended by Tnemec, or equal.

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. Long radius curves may be accomplished by opening one side of the joint between straight sections of pipe. Before the joint is opened, the pipe must be brought straight “home” and then deflected toward the inside of the curve. Deflection of joint openings shall not exceed 50% of the manufacturer’s recommendations. Long radius curves can also be achieved by the use of half and full bevel pipe joints and/or adapters.

E. 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.

F. 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 into the joint recess beneath the diaper and rodded to assure complete filling of the entire diaper and recess.

G. 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 15051, 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 15051, 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 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.

C. Testing shall be done as soon as the line is installed as determined by the ENGINEER.

D. 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 15140, 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 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 15140, Testing and Disinfection.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 15110

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 02080 - Fire Hydrants
2. Section 15051 - Buried Piping Installation
3. Section 15106 - Ductile Iron Pipe and Fittings
4. Section 15109 – Prestressed Concrete Cylinder Pipe
5. Section 15140 - Testing and Disinfection

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
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.

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 15051, Buried Piping Installation.
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. $2^1/_2$ 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.

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 15106, 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.
   b. Valves for buried applications shall have mechanical joint ends and be restrained per Section 15106, 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 flourocarbon 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 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.

3. 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.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. Thompson Pipe Group,
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. $2^1/_2$-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.
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 (2-inch)
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.

I. Combination Air and Vacuum Release Valves (8-inch)

4. General:
   a. Air/Vacuum Valve shall be designed to allow air to escape out of an orifice when filling a pipeline, and to shut and provide a water-tight seal when liquid enters the valve. The Air/Vacuum Valve shall permit air to enter through the orifice when the pipeline is being drained.
   b. Valve shall not blow shut under any conditions.
   c. Air Valves shall comply with ANSI/AWWA C512.
5. Details:
   a. Valve Design Pressure: Unless otherwise specified, valve rated working pressure shall be equal to or exceed design pressure of pipe or equipment on which the valve is installed.
   b. Valve shall consist of a float guided at each end with stems. Stems shall be guided through steel bushings inside the valve body and cover. Seat shall be fastened to the cover without distortion and be field-removable.
   c. The discharge orifice area shall be equal to or greater than the area of the inlet of the valve.
   d. Valve body: Ductile iron.
   e. Float, stems, bushings and springs, shoulder screws: Stainless steel.
   f. Valve seat: Buna-N.
   g. Ends: Flanged, ANSI B16.42, Class 150.
   h. Comply with valve connection requirements in Section 4.3 of ANSI/AWWA C512.
6. Markings:
   a. Mark valves per Section 6.1 of ANSI/AWWA C512

7. Coatings: Interior Surfaces
   a. Extent: Paint ferrous surfaces except stainless steel surfaces.
   b. Paint: Paint shall be as normally provided by Air Valve manufacturer for the specified application, except for potable water service valves which shall be coated with paint complying with ANSI/AWWA C550 and ANSI/NSF-61.

8. Testing:
   a. Test and inspect Air Valves per Section 5 of ANSI/AWWA C512. Do not ship valves that are not successfully tested.
9. Manufacturers:
   a. Val-Matic, valve # 208C.
   b. Or 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.

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

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 15120

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 02316 - Select Granular Materials
2. Section 02351 - Excavation, Backfill and Trenching
3. Section 15106 - Ductile Iron Pipe and Fittings
4. Section 15107 - Copper Pipe
5. Section 15109 - Prestressed Concrete Cylinder Pipe
6. Section 15110 - Valves and Appurtenances
7. Section 15140 - Testing and Disinfection

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
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.

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 15051, 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 15051, 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.

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	$1\text{-}^{1}/_{2}$	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.
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.

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.

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 ¾-inch meters,
       Ford Pit Setter – PD VHH-488-20-60 for 1-inch meters,
    c. Or approved equal.

K. 1 ½-inch and 2-inch Water Meter Tile Set.
1. The water meter tile set shall be suitable diameter to allow for 1 ½-inch and 2-inch meters and shall be constructed of rigid PVC 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. 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) $^{3}/_{4}$-inch through 2-inch copper to copper: B25204.
        2) $^{3}/_{4}$-inch through 2-inch copper to iron: B25174.
    b. Ford:
        1) $^{3}/_{4}$-inch through 2-inch copper to copper: B22.
        2) $^{3}/_{4}$-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 H20 loadings.
2. Boxes shall be two-piece adjustable depth with arch pattern base. An extension stem will not be allowed.
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 $^{3}/_{4}$-inch and 1-inch; 2 $^{1}/_{2}$-inch shaft: V-009, size 95E,
        2) For $1^{1}/_{2}$-inch and 2-inch; 4 $^{1}/_{4}$-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-$^{1}/_{4}$" shaft with No. 6 base and a valve box cover.
4. Valve boxes for butterfly valves shall be two piece screw type, 5-$^{1}/_{4}$" shaft, with integrated base and a valve box cover.
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 for gate, V652 for butterfly valves),
    b. Bass & Hays, BH39605,
    c. Tyler Union - a division of McWane, Inc. (6860 for gate, 6850 for butterfly valves),
    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.

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 15051, Buried Piping Installation.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 15121

CASING PIPE

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 new casing pipe and incidentals as shown, specified and required.

B. Related Work Specified Elsewhere:

1. Section 02316 - Select Granular Materials
2. Section 02351 - Excavation, Backfill and Trenching
3. Section 15106 - Ductile Iron Pipe and Fittings
4. Section 15109 - Prestressed Concrete Cylinder Pipe
5. Section 15110 - Valves and Appurtenances

1.02 QUALITY ASSURANCE

A. All materials shall be new, of first quality and in first class condition. They shall be of the type and manufacturer shown or specified, and substitutions will not be permitted unless specified by the ENGINEER.

B. Reference Standards:

1. ASTM A123, Zinc (Hot Galvanized) Coatings of Products Fabricated from Rolled, Pressed and Forged Steel Shapes, Bars, Plate Bars and Strips
2. ASTM A139, Electric Fusion (ARC) Welding Steel Pipe
3. ASTM A153, Zinc Coating (Hot Dip) on Iron and Steel Hardware
4. ASTM A307, Low Carbon Steel Externally and Internally Threaded Standard Fasteners
5. ASTM A252, Welded and Seamless Pipe Piles
6. ASTM A570, Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality
7. ASTM C32, Standard Specification for Sewer and Manhole Brick (made from clay or shale)
8. ASTM C207, Standard Specification for Hydrated Lime for Masonry Purposes

C. Steel casing pipe and all incidentals shall be furnished by one supplier.

D. Requirements of Regulatory Agencies:

1. The CONTRACTOR shall be responsible for obtaining all required permits and shall comply with all provisions thereof at his own expense.
2. The CONTRACTOR shall, in addition to #1 above, obtain all additional permits, provide insurance, bonds and guarantees, and all else required by the governing authorities at his own expense. The CONTRACTOR'S responsibility under this paragraph may include, but not be limited to the following:
    a. Constructing and removing temporary facilities or structures.
    b. Providing details of construction methods.
    c. Providing detailed construction schedules.
    d. Reimbursing the applicable authority for any and all expenses incurred by them in connection with the Work.
    e. Traffic maintenance.
    f. Coordination of scheduling with the Authority.
    g. Necessary clean-up and restoration.

E. Tolerances:

1. The casing pipe shall be installed on the lines and grades shown on the Drawings and within tolerances required to allow the carrier pipe to pass through the crossing in accordance with the lines and grades shown, specified, or directed.

F. Welding:

1. Welding shall be done in strict accordance with manufacturer's written requirements.
2. Welding operators shall be prequalified in accordance with the standard qualification procedure of the American Welding Society, and certificates attesting thereto shall be delivered to the ENGINEER prior to beginning of any welding operations.

1.03 SUBMITTALS

A. Shop Drawings identifying the casing pipe materials and installation procedure.

B. Certifications for welding operators.

C. All permits necessary for county highway crossings.

D. The CONTRACTOR shall submit certificates of compliance with the applicable referenced standards.

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 will not be accepted.

D. Interiors of materials shall be kept free from dirt and foreign matter.

E. Store casing pipe on heavy wood blocking or platforms so they are not in contact with the ground.

F. Casing pipe shall be unloaded opposite to or as close to the place where they are to be laid as is practical to avoid unnecessary handling.

1.05 JOB CONDITIONS

A. Provide guardrails, fences, signs, lights, barricades, barrels, and all other protective items necessary in accordance with the requirements of all applicable permits, laws, regulations, and ordinances, and as necessary to prevent damage or injury to private or public property or to workmen or the general public.

PART 2 - PRODUCTS

2.01 PROPERTIES OF STEEL CASING PIPE

A. Design Criteria: Steel Casing Pipe
   1. Minimum Tensile Strength - 60,000 PSI
   2. Minimum Yield Strength - 35,000 PSI
   3. Minimum Wall Thickness as Follows:

Carrier Pipe	Casing Diameter	Minimum Wall Thickness
4"	12"	0.188"
6"	16"	0.219"
8"	18"	0.250"
10"	20"	0.281"
12"	24"	0.312"
16"	30"	0.406"
20"	36"	0.469"
24"	42"	0.562"
30"	48"	0.625"
36"	60"	0.781"
42"	66"	0.875"
48”	72”	0.938"

B. Casing pipe diameter shall be nominal outside diameter.

C. Steel casing pipe shall be in accordance with ASTM A139, Grade B or ASTM A252, Grade 2.

2.02 MATERIALS

A. Steel Casing Pipe

1. Steel casing pipe shall be fabricated in accordance with the above listed specifications to the lengths and diameters shown on the Contract Drawings.
2. For casing pipes 30-inches in diameter and smaller, grout holes will not be required. For casing pipes larger than 30-inches in diameter, provide an adequate number of 1-$^1/_2$ inch holes, furnished three feet on center alternating 30 degrees with the top of the casing pipe. This shall be provided before installation to check for voids in the space between the ground and the outside of the casing pipe after the casing pipe is installed.
3. The 1-$^1/_2$ inch holes in steel casing pipe shall be tapped to receive 1-$^1/_2$" pipe plugs.
4. Grouting or other methods approved by the ENGINEER shall be used to fill such voids as uncovered.
5. All steel casing pipe must be new in first-class condition. Used or recycled casing pipe will not be allowed, regardless of condition.
6. Coat exterior steel portions of casing pipe as manufactured by Sherwin Williams, or equal. Surface preparation shall be as directed by coating manufacturer.
    a. Primer: Macropoxy 5500 LT @ 4.0-6.0 mils dry film thickness.

b. Topcoat: Poly-Cote 115 @ 40.0-50.0 mils dry film thickness.

B. Brick Bulkheads
1. Brick shall meet the requirements of ASTM C32, Grade MS.
2. Mortar shall be composed of Portland Cement, hydrated lime and sand in which the volume of sand shall not exceed three times the sum of the volumes of cement and lime.
a. Cement shall be type II Portland Cement.
b. Hydrated lime shall be types conforming to ASTM C207.

C. Cathodic Protection
1. 12 (6 on each side of the casing pipe) forty pound magnesium anode shall be provided and installed for each end of each casing for cathodic protection. On each side of the casing pipe, the six shall be distributed as two groups of three on either side of the pipe
2. Follow manufacturer's recommendations for attaching to casing pipe and proper burial procedures.

D. Casing Spacers for Ductile Iron Pipe
1. Stainless Steel
a. All casing spacers shall be made of 14 gauge Type 304 stainless steel with $^{5}/_{16}$" Type 304 stainless steel fasteners.
b. Runners shall be high molecular weight polyethylene.
c. Spacers shall electrically insulate watermain from casing pipe to provide proper cathodic protection.
d. Acceptable manufacturers:
1) Smith-Blair,
2) Approved equal.

E. Casing Spacers for Prestressed Concrete Cylinder Pipe
1. Raised Mortar Coating Skids
a. Where prestressed concrete cylinder pipe is installed within a casing pipe, raised mortar coating skids shall be provided to assist in insertion as follows:
1) Diameter of the raised mortar coating skids shall be two-inches (2") minimum greater than the outside diameter of the pipe spigot;
2) Width of the coating skids shall be twelve-inches (12") typical;
3) The first pipe and last pipe inserted into the casing pipe shall have raised mortar coating skids at each end;
4) Each subsequent pipe shall have one coating skid;

5) The laying schedule will indicate locations and dimensions of raised mortar coating skids as per manufacturer's recommendations.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General

1. Installation of the casing pipes shall include installation of the steel casing pipe by either the boring and/or jacking method in both earth and/or rock wherever it is encountered.
2. Bulkheads shall be installed at each end of the casing pipe of sufficient strength and quality to support the filling operation and to support annular fill. Vents shall be provided as required to assure complete filling of annular space as required by applicable authorities.
3. When a carrier pipe is installed inside a casing pipe, the entire annular space around the carrier pipe shall be filled with sand or pea gravel.
4. Recovery pits shall be excavated at each bore or jack location to determine possible conflicts in alignment with existing utilities not shown on the plans.
5. The CONTRACTOR is responsible for proper line and grade at each crossing. Misalignment or improper grade, as compared to the Contract Drawings, will require extra work to be performed at no additional cost to the OWNER.
6. Tight vertical sheeting shall be driven before excavating for bore and receiving pits as required. Sheeting shall be for the full length, width, and depth of the excavation. Sheeting shall conform to the applicable requirements of Section 02351, Excavation, Backfill, and Trenching.
7. Sheeting details shall be submitted by the CONTRACTOR to any affected agency for approval in advance of performing the Work.

B. Boring

1. The boring method shall consist of pushing the casing pipe into the fill with a boring auger rotating inside the pipe to remove the spoil.
2. The front of the casing pipe shall be provided with suitable mechanical arrangements or devices that will positively prevent the auger and cutting head from leading the pipe so that there will be no unsupported excavation ahead of the pipe.
3. The equipment and mechanical arrangements or devices used to bore and remove the earth and/or rock shall be removable from within the casing pipe in the event an obstruction is encountered.

4. The face of the cutting edge shall be arranged to provide reasonable obstruction to the free flow of soft or poor soil.
5. Water or other liquids shall not be used to facilitate casing emplacement or spoil removal.
6. The diameter of the boring hole shall be essentially the same as the outside diameter of the casing pipe.
7. If voids develop around the casing pipe as it is bored, cement grout will be pumped to fill all such voids; or fill by other means acceptable to the ENGINEER. All voids shall be filled as soon as possible after completion of the boring operation.

C. Jacking

1. The steel casing pipe installed by the jacking method shall be weldable steel pipe.
2. No type of auger, boring or drilling equipment shall be used.
3. Bracing and backstops shall be designed of sufficient rating such that jacking can be accomplished in a continuous manner until the leading edge of the pipe reaches the final position shown on the Contract Drawings.
4. The diameter of the boring hole shall be essentially the same as the outside diameter of the pipe.
5. If voids develop around the casing pipe as it is jacked, cement grout will be pumped to fill all such voids; or fill be other means acceptable to the ENGINEER. All voids shall be filled as soon as possible after completion of the jacking operation.
6. Jacking operations shall be in accordance with the American Railway Engineering Association Specifications, Chapter 1, Part 4, "Jacking Culvert Pipe Through Fills".

D. Obstruction

If an obstruction is encountered during installation by jacking or boring and it is impossible to advance the casing pipe, the CONTRACTOR shall choose one of the following:

1. Abandon the casing pipe in place and fill completely with grout. Provide whatever bulkheading is necessary to accomplish the grouting operation. The crossing will be moved to another location acceptable to the ENGINEER and the crossing rebored at the CONTRACTOR'S expense.
2. As acceptable to the ENGINEER and authority having jurisdiction, the CONTRACTOR may continue the casing pipe by tunneling and installation of liner plates. This continuation by the tunneling method shall be at the CONTRACTOR'S expense.

E. Welding

1. Welding shall be done in accordance with the manufacturer's written requirements.
2. Welding operators shall be prequalified in accordance with the standard qualification procedure of the American Welding Society, and certification attesting thereto shall be delivered to the ENGINEER prior to beginning of any welding operation.

F. Inspection
1. All casing pipe will be inspected by the ENGINEER prior to installation.
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.

G. Installation of Carrier Pipe in Steel Casing.
1. Verify that casing is installed to the proper lines and grades.
2. Joints for all carrier pipes 24-inches and larger in diameter shall be made within the casing pipe unless otherwise permitted by the ENGINEER.
3. Push or pull each length of pipe into casing, adjust line and grade as necessary without disturbing adjacent joints.
4. All carrier pipe joints falling within the steel casing pipe shall be restrained whether or not the pipe section falls within a restrained section of pipe as shown on the Drawings.

H. 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.

I. Blasting
1. Blasting is not allowed.

J. Annular Fill and Bulkhead
1. Provide vents as required to assure complete filling of annular space and as required by the applicable authorities.
2. Prior to the filling of the annular space, carrier pipe shall be properly and sufficiently secured against flotation and against all movement which would disturb joints.
    a. The CONTRACTOR shall be responsible for all improper joints including all joints disturbed by placing annular fill.

b. The CONTRACTOR shall repair, replace or take whatever action is necessary to properly install casing pipe at no additional expense to the OWNER.

3. After the carrier pipe is installed in casing, fill annular space with pea gravel between carrier pipe and casing and construct brick and mortar bulkheads as specified herein.
4. Fill annular space in three (3) stages in the presence of the ENGINEER to his/her satisfaction.
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 will remove pea gravel and reinstall, at his expense, if so ordered by the ENGINEER.
6. Install bulkheads at pipe joints at each end of the casing of sufficient strength and quality to support the filling operation, and to support annular fill.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 15122

MAGNESIUM ANODE

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 prepackaged magnesium (sacrificial) anodes to cathodically protect a portion of new or existing cast iron pipe or ductile iron pipe, steel casing pipe, service or hydrant branch pipe, and/or new ductile iron fittings and copper water services on new or existing pipe.

B. Related Work Specified Elsewhere:

1. Section 02316 – Select Granular Materials
2. Section 02351 – Excavation, Backfill and Trenching
3. Section 15106 – Ductile Iron Pipe and Fittings
4. Section 15109 – Prestressed Concrete Cylinder Pipe
5. Section 15110 – Valves and Appurtenances
6. Section 15121 – Casing Pipe

1.02 QUALITY ASSURANCE

A. All materials shall be new, of first quality and in first class condition. They shall be of the type and manufacturer shown or specified, and substitutions will not be permitted unless specified by the ENGINEER.

B. Reference Standards:

1. ASTM B843, Standard Specification for Magnesium Alloy Anodes for Cathodic Protection.
2. ASTM G97 – 97(2013), Standard Test Method for Laboratory Evaluation of Magnesium Sacrificial Anode Test Specimens for Underground Applications.

C. Magnesium anodes pipe and all incidentals shall be furnished by one supplier.

D. Requirements of Regulatory Agencies:

1. The CONTRACTOR shall be responsible for obtaining all required permits and shall comply with all provisions thereof at his own expense.
2. The CONTRACTOR shall, in addition to #1 above, obtain all additional permits, provide insurance, bonds and guarantees, and all else required by the governing authorities at his own expense. The CONTRACTOR'S responsibility under this paragraph may include, but not be limited to the following:
   a. Constructing and removing temporary facilities or structures.

b. Providing details of construction methods.
c. Providing detailed construction schedules.
d. Reimbursing the applicable authority for any and all expenses incurred by them in connection with the Work.
e. Traffic maintenance.
f. Coordination of scheduling with the Authority.
g. Necessary clean-up and restoration.

E. Thermite Welding:
1. Thermite welding shall be done in strict accordance with manufacturer's written requirements.
2. Welding operators shall be prequalified in accordance with the standard qualification procedure of the American Welding Society, and certificates attesting thereto shall be delivered to the ENGINEER prior to beginning of any welding operations.

1.03 SUBMITTALS

A. Shop Drawings identifying the magnesium anode materials and installation procedure.

B. Certifications for thermal welding operators.

C. The CONTRACTOR shall submit certificates of compliance with the applicable referenced standards.

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 anodes 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 wet, torn, contain broken wires, loss of anode salts or otherwise damaged will not be accepted.

D. Store anodes on heavy wood blocking or platforms with a waterproof tarp so they are not in contact with the ground and stay dry.

PART 2 - PRODUCTS

2.01 PROPERTIES OF MAGNESIUM (SACRIFICIAL) ANODES

A. Anodes shall be high potential magnesium anode ingots with prepackaged backfill.

B. Anode ingot shall meet or exceed ASTM B843, Grade M1C for high-potential magnesium anodes, with the following chemical composition:

Element	**Percent By Weight**
Aluminum	0.01 maximum
Manganese	0.5 – 1.3
Zinc	0.05 maximum
Copper	0.02 maximum
Silicon	0.05 maximum
Iron	0.03 maximum
Nickel	0.001 maximum
Other metallic elements	0.05 maximum or 0.3 total
Magnesium	Remainder

C. Laboratory tests shall be performed by a third party, in accordance with ASTM G97 (Laboratory Evaluation of Magnesium Test Specimens for Underground Application) requirements. Test results shall demonstrate a minimum open circuit potential of -1.70 volts with respect to a saturated Calomel electrode (-1.774 volts with respect to a copper/copper sulfate electrode) and a minimum current efficiency of 50% or 500 amp-hours per pound.

D. Anode shall come furnished with minimum 10 feet of coiled #12 AWG solid copper wire with insulation, firmly attached to the galvanized steel core of the anode. The core cavity shall be filled with electrical sealing compound to assure a fully insulated and protected connection.

E. Each magnesium anode ingot shall be a 40-pound magnesium bar in a prepackaged backfill-enclosed, permeable cloth bag. Total weight of the anode and backfill enclosed bag shall be approximately 45 pounds.

F. Backfill in each magnesium anode bag shall contain 75 percent Hydrated Gypsum, 20 percent Bentonite, and 5 percent Sodium Sulfate.

2.02 THERMITE WELD EQUIPMENT

A. Thermite Weld
1. Connection of anode lead wire to cast iron, steel or ductile iron pipe or fittings shall be made by the thermite weld method.
2. Thermite weld materials shall consist of wire sleeves, weld mold and weld cartridges according to the weld manufacturer’s recommendations for the specific wire and pipe sizes and materials.
3. Weld materials from different manufacturers shall not be interchanged.
4. Weld molds shall be graphite molds.
5. Ceramic ‘one-shot’ molds will not be acceptable.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General

1. Spacing and location of magnesium anodes will be as specified in Contract Documents.
2. Each anode shall be placed in a horizontal position parallel with the pipe, with centerline axis of the anode at least 6 inches below the bottom of the water or steel casing pipe. The centerline axis of the anode shall also be placed at least 6 inches from the exterior wall of the water pipe.
3. Care shall be taken to ensure that the cloth bag is not damaged and no backfill is lost during installation.
4. Each anode shall be centered in the cloth bag. It may be necessary to re-center the anode in the cloth bag by rolling it on the ground prior to installation.
5. Each prepackaged anode shall be lowered into the trench using a sling or rope. The anode shall not be lowered, transported, handled, or lifted by the lead wire. The anode shall not be dropped into the excavation.
6. The anode lead wire shall be long enough to reach from the pipe to the anode without a splice.
7. The anode lead wire shall be attached to the pipe using the thermite weld process.

B. Cathodic Protection Test Station

1. Anodes that are installed at cathodic protection test stations are not to be directly connected to the water pipe or fitting.
2. When the anode lead wire is not long enough to reach the test station terminal board with sufficient slack, the lead wire may be lengthened by splicing on an additional length of lead wire. Splice shall be made using an approved splice connector suitable for buried applications.

C. Polyethylene Wrap

1. To connect anode lead wire to ductile iron pipes that are encased in a polyethylene wrap, the CONTRACTOR shall first cut back the polyethylene wrap to expose the pipe.
2. The CONTRACTOR shall make an “X” shaped cut in the polyethylene wrap and temporarily fold back the polyethylene wrap at the point where the anode lead wire will be connected to the pipe.

D. Surface Preparation and Anode Connection

1. Using a mechanical grinder, remove the minimum area of coating from pipe or fitting surface required for placement of weld mold, creating a bright, shiny surface.
2. Prepare the anode lead wire and pipe surface for thermite welding by assuring that they are dry. Wire and pipe surface shall be free of dirt, grease, and other foreign products.

3. Remove insulation at end to be welded in a manner that will avoid damage to wire.
4. Install adapter sleeves for anode lead wire as recommended by thermite weld manufacturer prior to welding.
5. Hold wire at an approximate 30 degree angle to pipe surface when welding.
6. When weld has cooled, remove weld slag and test weld for strength by striking a sharp blow to the weld with a hammer while pulling firmly on the wire.
7. Re-weld unsound welds and retest weld.
8. Thoroughly clean mold and mold covers after completion of each weld to remove all excess slag.
9. After soundness of weld has been verified, thoroughly clean with a stiff wire brush and brush with an approved bitumastic coating over entire weld area.
10. Lift wire away from pipe and apply bitumastic coating completely around and underneath the wire. Push wire back down on the pipe. Apply a protective bitumastic coating where any original pipe coatings have been disturbed.
11. After the anode lead wire is connected to the pipe, the CONTRACTOR shall repair the polyethylene wrap using polyethylene compatible adhesive tape. The polyethylene wrap shall be folded back against the pipe and the repair tape shall be applied on anode lead wire. The repair tape shall completely cover the area of the polyethylene wrap that was cut and shall completely cover all exposed ductile iron pipe.
12. Extra anode lead wire for each anode shall be coiled. The wire shall have sufficient slack to allow for pipe and anode movement and to protect against undue stress during backfilling.
13. Prior to backfilling the anode, water shall be applied to the anode to moisten its pre-packed backfill.
14. The area immediately surrounding the anode shall be backfilled with native soil. Cushion sand shall be backfilled around the water pipe or fitting so that the sand covers the pipe or fitting to a minimum depth of 12 inches on top, and along both sides of the pipe or fitting.
15. The excavation shall be backfilled in stages using select granular backfill (water) material free from stone, rocks, roots, organic material, trash, or other debris, and carefully tamped to ensure that no voids exist around the bag and that the bag and wire are not damaged.

E. Anodes on Copper Water Service on PVC, DIP, and PCCP Watermains
1. If designated in the Contract Documents, one 17-pound anode shall be connected to new copper water services on PVC, DIP, and PCCP watermains.
2. For copper services 1-inch diameter and less, anode lead wire shall be attached to thaw wire type copper tube nut at outlet end of corporation

stop. For copper services larger than 1-inch diameter, anode lead wire is to be attached to copper service using bronze ground clamp.

F. Anodes on Existing Ductile and Cast Iron Watermains

1. Magnesium anodes shall be installed as designated in the Contract Documents or directed by the ENGINEER, on existing cast and ductile iron watermain pipe to cathodically protect both pipes on either side of the joint.
2. At each excavated joint, an area shall be excavated that is large enough to expose top and one or both sides of existing watermain pipe and safely install anodes in one operation.
3. Basic general size of the area to be excavated will be dependent on the depth and location of the watermain.
4. Magnesium anodes are not required to be installed on existing watermain fittings or valves encountered in an excavation, unless otherwise required in the Contract Documents or directed by the ENGINEER.

G. Anodes on Existing Ductile and Cast Iron Hydrant Branches and Water Services

1. If designated in the Contract Documents, hydrant branches shall be excavated along the branch pipe with the branch gate valve centered in the trench. One 17-pound anode shall be attached to the branch pipe between the watermain and the gate valve and one 17-pound anode on the branch pipe between the gate valve and the hydrant.
2. Water services 4-inch diameter and larger shall be excavated along the service pipe with the curb shut off valve centered in the excavation. One anode shall be connected to the service pipe between the watermain and the curb valve and a second anode shall be connected to the service pipe between the curb valve and the customer's property. For services with no curb valve, one anode shall be connected to the service pipe in the vicinity of the curb.
3. Anode sizes shall be based on the service diameter, with one 17-pound anode installed on 4-inch and 6-inch diameter services; two 17-pound anodes installed on 8-inch and 10-inch diameter services; and three 17-pound anodes installed on services 12-inch diameter and larger.

H. Inspection

1. All casing pipe will be inspected by the ENGINEER prior to installation.
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.

I. 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.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 15123

CATHODIC PROTECTION TESTING STATION

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 cathodic protection testing stations to protect a portion of new or existing cast iron pipe or ductile iron pipe, steel casing pipe, service or hydrant branch pipe, and/or new ductile iron fittings and copper water services on new or existing pipe.

B. Related Work Specified Elsewhere:

1. Section 02316 – Select Granular Materials
2. Section 02351 – Excavation, Backfill and Trenching
3. Section 15106 – Ductile Iron Pipe and Fittings
4. Section 15109 – Prestressed Concrete Cylinder Pipe
5. Section 15110 – Valves and Appurtenances
6. Section 15121 – Casing Pipe
7. Section 15122 – Magnesium Anode

1.02 QUALITY ASSURANCE

A. All materials shall be new, of first quality and in first class condition. They shall be of the type and manufacturer shown or specified, and substitutions will not be permitted unless specified by the ENGINEER.

B. Reference Standards:

1. ASTM B843, Standard Specification for Magnesium Alloy Anodes for Cathodic Protection.
2. ASTM G97 – 97(2013), Standard Test Method for Laboratory Evaluation of Magnesium Sacrificial Anode Test Specimens for Underground Applications.

C. Thermite Welding:

1. Thermite welding shall be done in strict accordance with manufacturer's written requirements.
2. Welding operators shall be prequalified in accordance with the standard qualification procedure of the American Welding Society, and certificates attesting thereto shall be delivered to the ENGINEER prior to beginning of any welding operations.

1.03 SUBMITTALS

A. Shop Drawings identifying the cathodic protection testing station and installation procedure.

B. Certifications for thermal welding operators.

C. The CONTRACTOR shall submit certificates of compliance with the applicable referenced standards.

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. The materials shall be inspected before installation. Materials that are damaged will not be accepted.

PART 2 - PRODUCTS

2.01 PROPERTIES OF CATHODIC PROTECTION TESTING STATION

A. Testing stations shall meet the following minimal requirements:
   1. All materials for testing stations shall be new materials and supplied by one supplier.
   2. Cathodic protection testing stations shall be composed of a minimum 3-inch diameter polyethylene or polycarbonate riser with screw-type protective cap.
   3. Test stations shall be blue in color and include proper labeling identifying it as a waterline testing station.
   4. Test stations shall be equipped with a circuit testing board, mounted at the top of the station, capable of being used to monitor voltage in the system.
   5. Each test station shall be installed with a base anchor, minimizing the chance of settlement or heaving of the station.
   6. All wiring within the test station shall be 12-gauge insulated wire or as required by the station manufacturer.
   7. Test station label shall identify that it is a waterline testing station and include the name and contact number for the Erie County Water Authority.

B. Acceptable manufacturers:
   1. Pro-Mark,
   2. Brentsen,
   3. GMC,
   4. Or approved equal.

2.02 THERMITE WELD EQUIPMENT

A. Thermite Weld
   1. Connection of lead wires to cast iron, ductile iron, or steel pipe or fittings shall be made by the thermite weld method.
   2. Thermite weld materials shall consist of wire sleeves, weld mold and weld cartridges according to the weld manufacturer's recommendations for the specific wire and pipe sizes and materials.
   3. Weld materials from different manufacturers shall not be interchanged.
   4. Weld molds shall be graphite molds.
   5. Ceramic 'one-shot' molds will not be acceptable.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General
   1. Spacing and location of the cathodic protection testing station shall be as specified in the Contract Documents and approved by the ENGINEER.
   2. Test stations shall be installed in areas where they will not be disturbed by vehicular traffic and will not interfere with trees, plantings, hydrants, valve boxes, or other utilities.
   3. Comply with manufacturer's recommendations for testing station installation.

B. Magnesium (sacrificial) Anode Installation.
   1. Anodes that are installed at cathodic protection test stations are not to be directly connected to the water pipe or fitting.
   2. When the anode lead wire is not long enough to reach the test station terminal board with sufficient slack, the lead wire may be lengthened by splicing on an additional length of lead wire. Splice shall be made using an approved splice connector suitable for buried applications.
   3. Comply with Technical Specification Section 15122 for installation of magnesium anodes.

C. Pipe Surface Preparation and Thermite welding
   1. Using a mechanical grinder, remove the minimum area of coating from pipe or fitting surface required for placement of weld mold, creating a bright, shiny surface.
   2. Prepare the lead wires and pipe surface for thermite welding by assuring that they are dry. Wire and pipe surface shall be free of dirt, grease, and other foreign products.
   3. Remove insulation at end to be welded in a manner that will avoid damage to wire.
   4. Install adapter sleeves for lead wire as recommended by thermite weld manufacturer prior to welding.

5. Hold wire at an approximate 30 degree angle to pipe surface when welding.
6. When weld has cooled, remove weld slag and test weld for strength by striking a sharp blow to the weld with a hammer while pulling firmly on the wire.
7. Re-weld unsound welds and retest weld.
8. Thoroughly clean mold and mold covers after completion of each weld to remove all excess slag.
9. After soundness of weld has been verified, thoroughly clean with a stiff wire brush and brush with an approved bitumastic coating over entire weld area.
10. Lift wire away from pipe and apply bitumastic coating completely around and underneath the wire. Push wire back down on the pipe. Apply a protective bitumastic coating where any original pipe coatings have been disturbed.
11. After the lead wires are connected to the pipe, the CONTRACTOR shall repair the polyethylene wrap using polyethylene compatible adhesive tape. The polyethylene wrap shall be folded back against the pipe and the repair tape shall be applied on the lead wires. The repair tape shall completely cover the area of the polyethylene wrap that was cut and shall completely cover all exposed ductile or cast iron pipe.
12. Extra lead wire shall be coiled. The wire shall have sufficient slack to allow for pipe, test board, and anode movement and to protect against undue stress during backfilling.
13. The number of anodes may vary and are shown on contract drawings. If multiple anodes are defined, connect anodes in series and to test board accordingly.
14. Prior to backfilling the anode(s), water shall be applied to the anode(s) to moisten its pre-packed backfill.
15. Test wires shall be installed in continuous length. Test wires shall be provided with sufficient slack at the pipe and at the test station box to prevent the test wire from being unduly stressed or broken during backfilling operations and future excavating. Sufficient test wire shall be provided to coil below ground within the test box so that the terminal board and test wires can extend approximately 3 feet above ground level.
16. Test wires shall be handled with care. Damage to wire insulation shall be repaired by spirally wrapping (minimum of 50 percent overlap) with two layers of high voltage rubber splicing tape and two layers of vinyl electrical tape or using an approved splice connector suitable for buried applications.
17. The terminal end of the lead wire for reference electrodes shall be color coded as indicated on the drawings depending on the type of element required for the soil conditions. If necessary, color coding shall be achieved by wrapping colored vinyl tape several times around the end of the lead wire.
18. All test boxes shall be installed on a solid concrete block foundation.

19. Sand embedment shall be required around the wires and conduit. There shall be a minimum of 6 inches along each side, top, and bottom of the wires and conduit.
20. Upon completion of the Work, the CONTRACTOR shall check all wiring for electrical continuity. The test box/valve box shall be backfilled with the top soil being flush with the surrounding finished grade and the surface restore.
21. The area immediately surrounding the anode shall be backfilled with native soil. Cushion sand shall be backfilled around the water pipe or fitting so that the sand covers the pipe or fitting to a minimum depth of 12 inches on top, and along both sides of the pipe or fitting.
22. The excavation shall be backfilled in stages using select granular backfill (water) material free from stone, rocks, roots, organic material, trash, or other debris, and carefully tamped to ensure that no voids exist around the bag and that the bag and wire are not damaged.

D. Inspection of Testing System
1. CONTRACTOR shall demonstrate to the ENGINEER and OWNER that the station is functioning properly after installation is complete.
2. CONTRACTOR shall measure the voltage across the completed test station using an approved multimeter and provide the results to the ENGINEER.
3. If no reading can be obtained, CONTRACTOR shall verify that all wiring is properly installed by excavating the station and inducing current from pipe to anode to demonstrate conductivity. CONTRACTOR shall be responsible for all trouble-shooting measures necessary until it can be shown that test station is operational.
4. CONTRACTOR shall correct any deficiencies regarding the test station at his expense until test system is operational and results are satisfactory to the ENGINEER and OWNER.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 15140

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.
      c. This Section applies to the testing and disinfection of Ductile Iron Pipe (DIP), Polyvinyl Chloride (PVC) Pipe, Prestressed Concrete Cylinder Pipe (PCCP), and High Density Polyethylene (HDPE) Pipe.

B. Related Work Specified Elsewhere
   1. Section 02080 – Fire Hydrants
   2. Section 15051 – Buried Piping Installation
   3. Section 15106 – Ductile Iron Pipe and Fittings
   4. Section 15109 – Prestressed Concrete Cylinder Pipe
   5. Section 15110 – Valves and Appurtenances
   6. Section 15120 – Piping Specialties and Accessories

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
   7. AWWA C600, Standard for Installation of Ductile Iron Watermains and Their Construction
   8. AWWA C605, Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe and Fittings
   9. AWWA C651, Standard for Disinfecting Water Mains
   10. AWWA C900 Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch Through 12-inch for Water Distribution
   11. NSF/ANSI Standard 60 and 61 (as applicable)
   12. AWWA C906, Polyethylene (PE) Pressure Pipe and Fittings, 4 In. (100 mm) Through 63 In. (1,600 mm) in Water Distribution and Transmission.
   13. AWWA manual of Water supply Practices M55: PE Pipe – Design and Installation.
   14. Standard Methods for the Examination of Water and Wastewater, latest edition
   15. 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.

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. 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 C301, C600, C605, C651, and C906, 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 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 for DIP, and PCCP

1. Pressure test shall not be performed until all concrete anchor collars and poured concrete has had sufficient time to cure. A minimum cure time of seven (7) days is required after the last concrete anchor collar or thrust block has been cast before testing may begin, but might be longer as determined by ENGINEER.
2. Pressure test apparatus must be installed as shown on the Drawings.
3. Test pressure shall be as specified in Section 15051, Buried Piping Installation, at the lowest point in the line.
4. 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.
5. Pressure gauge must be in good working condition and must be demonstrated to be accurate to the ENGINEER prior to any testing.
6. 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.
7. 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.
8. ENGINEER may tap pressure gauge at each reading to ensure needle is measuring pressure accurately.
9. 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.
10. ENGINEER shall record pressure at 15 or 30 minute intervals to help determine if the pressure loss is stabilizing.
11. The CONTRACTOR will inform the ENGINEER when to begin the test.
12. 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.
13. 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.

14. The ENGINEER shall make a preliminary determination if the test passes or fails based on the pressure and volume losses recorded during testing.
15. 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.
16. 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.
17. 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 E Leakage Test below, for additional information.

D. Pressure Test for HDPE Pipe

1. Pressure test shall not be performed until all concrete anchor collars and poured concrete has had sufficient time to cure. A minimum cure time of seven (7) days is required after the last concrete anchor collar or thrust block has been cast before testing may begin, but might be longer as determined by ENGINEER.
2. For High Density Polyethylene (HDPE) pipe, pressure test cannot start for 24 hours after the line is initially filled with water. This is to allow the pipe to thermally stabilize before testing.
3. HDPE pipe is not to be pressure tested with other pipe materials in the test section.
4. Pressure test apparatus must be installed as shown on the Drawings.
5. Test pressure shall be as specified in Section 15051, Buried Piping Installation, at the lowest point in the line.
6. Pre-test pressure to be 10 psi higher than test pressure. Pre-test pressure shall be applied for four (4) continuous hours prior to the start of the test to allow for initial pipeline expansion. The pressure test may begin within the following two (2) hour window. Slowly reduce to test pressure at beginning of pressure/leakage test.
7. Under no circumstances should the total time for initial pressurization and time at test pressure exceed eight (8) consecutive hours. If the test is not completed because of leakage, equipment failure, or any other reason within this total time, the test section shall be fully depressurized and allowed to "relax" for at least eight (8) hours before starting the next testing sequence.
8. Test pressure shall be held on the piping for a period of at least two (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.
9. Acceptable pressure loss on HDPE pipe is 2 psi or less.
10. Pressure gauge must be in good working condition and must be demonstrated to be accurate to the ENGINEER prior to any testing.

11. 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.
12. 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.
13. ENGINEER may tap pressure gauge at each reading to ensure needle is measuring pressure accurately.
14. 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.
15. ENGINEER shall record pressure at 15 or 30 minute intervals to help determine if the pressure loss is stabilizing.
16. The CONTRACTOR will inform the ENGINEER when to begin the test.
17. If the pressure drop is greater than 2 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.
18. The ENGINEER shall make a preliminary determination if the test passes or fails based on the pressure and volume losses recorded during testing.
19. 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.
20. 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.
21. 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 E, Leakage Test below, for additional information.

E. 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 furthermost 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 15051, Buried Piping Installation:

Pipe Diameter	Pipe Material	ECWA Allowable Leakage*
4"	PVC, DIP	0.26
6"	PVC, DIP, HDPE	0.40
8"	PVC, DIP, HDPE	0.53
10"	PVC, DIP, HDPE	0.66
12"	PVC, DIP, HDPE	0.79
16"	DIP, PCCP, HDPE	1.06
20"	DIP, PCCP, HDPE	1.32
24"	DIP, PCCP	1.59
30"	DIP, PCCP	1.98
36"	DIP, PCCP	2.38
42"	DIP, PCCP	2.78
48"	DIP, PCCP	3.17

* 75% of allowable leakage per AWWA C600-17.

5. For HDPE Pipe, retesting can be performed after fully depressurizing the pipeline and allowing the pipeline to relax for at least eight (8) hours.

6. Regardless of the above allowables, any visible leaks shall be permanently stopped.

7. 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.

8. 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 15051, 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.

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 15051, 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 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 nor be in contact with either rubberized pipe gaskets or HDPE Pipe.

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 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. For HDPE Pipe, the

maximum length of contact time with chlorinated water is 72 hours. After 72 hours, line shall be purged and re-flushed as necessary.

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 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, but not longer than eight (8) hours for HDPE pipe or fittings.

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.

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 1,200-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 15207

CLEANING NEW TRANSMISSION WATERMAIN

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified
   1. The Work under this section shall include all labor, materials, supplies, and equipment necessary to clean the interior surfaces of new transmission watermain which are not expected to be flushed per AWWA requirements (minimum 3 feet per second scour velocity).
   2. Watermains to be cleaned include all transmission mains (24-inch diameter or greater) shown on the drawings.
   3. CONTRACTOR shall use one or multiple methods defined within this specification to clean new watermain to the satisfaction of the OWNER and ENGINEER.
   4. All pipe cleaning shall occur on individual pipe segments at ground level before pipe segments are lowered into the excavation.

B. Related Work Specified Elsewhere
   1. Section 02351 – Excavation, Backfill, and Trenching
   2. Section 15051 – Buried Piping Installation
   3. Section 15106 – Ductile Iron Pipe and Fittings
   4. Section 15109 – Prestressed Concrete Cylinder Pipe (PCCP)
   5. Section 15140 – Testing and Disinfection

C. The principal methods of cleaning interiors of pipes shall include, but not be limited to, the following:
   1. Broom sweeping to remove dust and light debris.
   2. Wet mops or other hand-held bristled devices to remove mud or other semi-solid debris.
   3. Pressurized water to power-wash solid debris.
   4. Polyurethane PIGs (Pipeline Intervention Gadget) to physically remove mud and other debris after waterline is charged.
   5. Other methods suggested by the CONTRACTOR and pre-approved by the ENGINEEER, OWNER, and Health Department.

1.02 QUALITY ASSURANCE

A. Reference Standards
   1. AWWA M28 – Cleaning and Lining Water Mains.
   2. AWWA C651 – Disinfecting Water Mains.

1.03 SUBMITTALS

A. The CONTRACTOR shall provide a “Pipe Cleaning Submittal” identifying how the new watermain will be cleaned during installation and how it will be maintained in a clean condition prior to pressure testing.

B. The Pipe Cleaning Submittal shall also include a description of measures the CONTRACTOR plans on using to minimize contamination of the new waterline prior to pressure testing and his proposed procedures to clean installed watermain which has become contaminated with mud, debris, bugs, animals, bacteria, or other foreign agents.

C. For using PIGs:
   1. The CONTRACTOR shall submit evidence of qualifications including a list of three (3) projects of equal or greater scope completed within the past 5 years.
   2. Submit a written plan of operations including identification of access points, cleaning methodology, type and number of PIGs to be used with locations of entry and exit, and how to dispose or treat flushed water containing contaminants from cleaning operations.

PART 2 – PRODUCTS

2.01 CLEANING TOOLS

A. All cleaning tools (mops, brooms, etc.) to be used for cleaning purposes are to be new materials for this project. All brooms shall have bristles capable of removing sand, dust, and dried mud from the inside of the pipe. Cleaning tools shall be replaced when worn or ineffective.

B. Hoses, water tanks, and pressure washers shall be in a clean condition, free of any chemicals or cleaning agents.

C. Cleaning agents, surfactants, soaps, or other chemicals shall not be used at any time.

D. Aqueous sodium hypochlorite may be used to disinfect cleaning tools and/or internal pipe surfaces if bacterial contamination is suspected. Concentration of solution is not to exceed 100 ppm at any time.

2.02 POLYURETHANE PIPELINE PIGS

A. The PIGs shall be manufactured of polyurethane foam with an open cell structure. The PIG shall have a bullet shaped nose with an exterior coating of closed cell urethane and shall be suitable for use in water systems. All PIGs shall be purchased new for this project.

B. The peripheral surface on the PIG shall also be capable of scratching, scraping, plowing, and jetting. The selection of the type and quantity of the PIGs to be utilized shall be at the discretion of the CONTRACTOR in order to achieve the level of cleanliness specified, however, at least one watermain-diameter size PIG is to be used.

PART 3 - EXECUTION

3.01 GENERAL

A. Prior to installation, CONTRACTOR shall broom sweep the inside surface of the watermain with a daily-sterilized, new broom to the satisfaction of the ENGINEER and OWNER. CONTRACTOR shall remove all sweepings prior to waterline installation.

B. If broom sweeping is ineffective in the opinion of the ENGINEER or OWNER, CONTRACTOR shall mop or use a bristle-laden brush with potable water only to scrub mud/debris from the pipe interiors. No cleaning chemicals or soaps shall be utilized during this operation.

C. If mopping or hand-cleaning is ineffective in the opinion of the ENGINEER or OWNER, the CONTRACTOR shall use a water-spray power washer to clean pipe interiors. No cleaning chemicals or soaps shall be utilized during this operation.

D. If power washing is ineffective in the opinion of the ENGINEER or OWNER, the CONTRACTOR shall utilize polyurethane PIGs or other methods to clean pipe interiors. CONTRACTOR shall be responsible for installing PIG launchers at appropriate locations and removing launchers as required by ENGINEER and contract drawings.

E. The CONTRACTOR shall have readily available on site the manpower, equipment, and materials required to track and locate and dislodge any PIG that may become lodged in the pipeline.

F. The CONTRACTOR shall conduct their operations to minimize any impact to natural waterways and shall not permit silt, clay, or mud to enter any drainage system, stream, creek, waterway, or wetland area.

G. CONTRACTOR shall comply with all OSHA confined space requirements for workers entering pipelines. Any worker who enters a pipe segment at ground level shall wear a clean ‘cleanroom’ suit to minimize contamination.

H. Once watermain is installed, CONTRACTOR shall take all necessary precautions to minimize contamination of the new waterline. This includes, but is not limited to:

1. Capping the end of the new watermain with a watertight cap/plug at the end of each workday,

2. Redirecting surface runoff from entering the excavation,
3. Maintaining a sump in the excavation at all times with a pump of adequate size to remove groundwater from the excavation,
4. Using tarps or end caps on cleaned pipe to be installed, and
5. Entering waterline that has already been installed in the ground shall not be allowed.

I. If the installed waterline is suspected of contamination, CONTRACTOR shall, at his expense, video the waterline to prove contamination has not occurred and provide a DVD of this video to ENGINEER for review.

3.02 COORDINATION

A. Scheduling of flushing, cleaning, and testing operations shall be coordinated with and agreed to by the ENGINEER and OWNER.

3.03 PIPELINE CLEANING WITH PIGS

A. The CONTRACTOR shall make at least three (3) passes with the PIG through the entire length of the watermain.

B. The CONTRACTOR shall be responsible to select sizes, quantities, and types of PIGs to efficiently clean the pipeline, however, at least one watermain-diameter sized PIG shall be used for cleaning.

C. The CONTRACTOR may provide additional water pressure and volume that may be required to launch and propel the PIGs through the pipeline.

D. The CONTRACTOR shall launch PIGs and monitor their progress through the pipeline until retrieval occurs. ENGINEER shall be present during all operations using PIGs.

E. The CONTRACTOR shall coordinate with the OWNER when filling and flushing existing watermains.

F. The use of PIGs shall continue until CONTRACTOR, ENGINEER, and OWNER agree that additional passes will not be effective in removing additional debris.

3.04 FLUSHING PRIOR TO PRESSURE TESTING

A. Regardless of cleaning procedure used, the CONTRACTOR shall flush the watermain a minimum of one pipe volume at maximum flow velocity possible. CONTRACTOR shall measure and record the outlet pressure using a pitot gauge and report these results to the ENGINEER to determine velocity achieved.

B. The turbidity and free chlorine of the effluent shall be monitored while flushing. Flushing shall continue until free chlorine levels are greater than 0.5 mg/l and turbidity is less than 0.5 NTU.

C. Coordinate with ENGINEER and OWNER for flushing times and durations. If approved by ENGINEER and OWNER, watermains with intermediate valves can be flushed in sections to minimize discharge volumes.

3.05 REPORTING OF RESULTS

A. Upon successful completion of cleaning operations, submit a report containing at a minimum, the following information:
   1. General statement describing the type and amount of sedimentation removed and the level of cleanliness of the system.
   2. Certification that all of the underground pipes on the attached drawings have been cleaned in accordance with this specification.
   3. Any laboratory test results for chlorine levels and turbidity.
   4. Any photographs taken of the cleaning process shall be submitted to the ENGINEER and OWNER for record-keeping purposes.

3.06 CLEANING COSTS

A. All costs for cleaning new transmission main shall be included in the Bid items. No separate payment shall be made for any labor, materials, or procedures defined in this specification.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 15600

ALL-STOP ORDER

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Since the project is being performed on property owned and operated by National Grid and CSX, CONTRACTOR shall be subject to requirements of an 'ALL STOP' order.
   2. When an issue regarding electrical distribution or service is identified by National Grid or CSX at any of their properties, an 'ALL STOP' order may be issued. This order temporarily halts construction work on all National Grid and CSX properties until the issue is resolved.
   3. An 'ALL STOP' order is independent of a temporary work stoppage defined by an Electrically Qualified Person due to safety reasons.
   4. CONTRACTOR shall be required to comply with any 'ALL STOP' orders issued, temporarily halting construction operations until authorization to proceed is given.
   5. This item does not include any other work associated with other items in the Contract.

B. Location of the Work:
   1. 'ALL-STOP' orders only apply to property owned and operated by National Grid and CSX. Work within the public right-of-way is not affected by this order.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

A. When an 'ALL STOP' order is issued by National Grid or CSX, the OWNER or ENGINEER will notify the CONTRACTOR both verbally and in writing.

B. The CONTRACTOR shall immediately stop all work on National Grid or CSX property, shut down all unnecessary equipment, and gather at an approved location on site as directed.

C. The CONTRACTOR shall be entitled to payment under the 'ALL STOP' bid item if his entire crew remains on site and standing by to resume work. No payments will be made if the CONTRACTOR resumes work on another part of the project site or leaves the site to perform other work.

D. CONTRACTOR shall be required to move his equipment on site as directed by National Grid or CSX, OWNER or ENGINEER at no additional expense to OWNER. All costs for moving equipment and personnel shall be included in the 'ALL STOP' bid item.

E. When the 'ALL STOP' order is lifted, ENGINEER shall advise the CONTRACTOR both verbally and in writing that the work may proceed.

END OF SECTION

SECTION 15700

ELECTRICALLY QUALIFIED PERSON

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:
   1. CONTRACTOR shall provide the services of a third party, electrically qualified person (spotter) as specified and required to monitor all construction activities and Work in close proximity to high voltage overhead or buried electric lines, cables, conduits, or facilities.
   2. The use of an electrically qualified person (spotter) will be as ordered by ENGINEER at the direction of the utility owner/operator, National Grid.
   3. This item does not include any other work associated with other items in the Contract.

B. Location of the Work:
   1. When ordered, the Work shall be performed within the National Grid owned properties or rights-of-way, the Erie County Water Authority's easements and franchised area, and all water districts that the OWNER operates.

C. Adequate Personnel Required:
   1. The CONTRACTOR is to provide, as hereafter set forth, an electrically qualified person as may be required to perform the ordered work.
   2. Additional qualified person(s) will be required on the project site as ordered by the ENGINEER if conditions warrant such as: multiple CONTRACTOR work crews and equipment; multiple work locations throughout the project site; etc.
   3. The electrically qualified person(s) must first be approved by the OWNER, ENGINEER, and National Grid to perform the required services prior to rendering those services for the CONTRACTOR.

D. Time Is of the Essence:
   1. When required, the CONTRACTOR is obligated to provide the qualified person as expeditiously as possible and prior to commencing any Work that requires those services.

E. Materials to be Supplied:
   1. Not Applicable.

1.02 ELECTRICALLY QUALIFIED PERSON

A. Qualified Person:
   1. The qualified person shall be knowledgeable in the construction and operation of electric power generation, transmission, substation, and/or distribution apparatus involved along with the associated hazards in specific duties pertaining to electric operations.
   2. The electrically qualified person determines the minimum clearance distance that must be maintained to prevent electrical contact in light of the on-site conditions. The factors that must be considered in making this determination include, but are not limited to:
      a. Conditions affecting atmospheric conductivity.
      b. Time necessary to bring the equipment, load line, and load (including rigging and lifting accessories) to a complete stop.
      c. Wind conditions.
      d. Degree of sway in the power line.
      e. Lighting conditions.
      f. Other conditions affecting the ability to prevent electrical contact.

1.03 SUBMITTALS

A. The CONTRACTOR shall provide a submittal identifying all electrically qualified persons to be used during this contract, including resumes, professional qualifications, experience, and availability.

B. Electrically qualified persons shall be acceptable to OWNER, ENGINEER, and National Grid.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

A. The electrically qualified person shall be on site at all times that the CONTRACTOR is performing any Work in close proximity to high voltage overhead or buried electric lines, cables, conduits, or facilities, or whenever determined by the ENGINEER or National Grid that the services are required.

B. The electrically qualified person shall be responsible for checking in and out with the ENGINEER when they arrive or depart the site.

C. The electrically qualified person shall be responsible to monitor the on-site activities of the CONTRACTOR'S personnel and equipment to ensure that they adhere to all safety requirements and regulations of National Grid. The electrically qualified person shall comply with all regulations defined in 1926.1408 through 1926.1411 of the Code of Federal Regulations.

D. If the electrically qualified person identifies any safety issue on site related to CONTRACTOR'S operations, he is to notify both, the CONTRACTOR and ENGINEER immediately.

E. Stoppage of work due to a safety issue shall not be considered an "all stop" order, nor qualify for payment under that bid item.

F. The electrically qualified person shall have continuous contact with the operator and be provided equipment, as necessary, that enables the dedicated spotter to communicate directly with the operator. All equipment for this communication shall be provided.

G. The CONTRACTOR shall be responsible for all County, State, and Federal safety requirements and codes including requirements of OSHA and code rule 16NYCRR Part 753.

END OF SECTION

THIS PAGE INTENTIONALLY LEFT BLANK

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 Country 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:**

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 _____

AUTHORIZED REPRESENTATIVE _____

ADDRESS _____

TELEPHONE NUMBER _____

PROJECT NAME _____

PROJECT NUMBER _____

I. List actions taken to identify, solicit, and contact Minority Business Enterprises (MBE) to bid on subcontracts on this project.
1. _____
2. _____
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 CERTI-FICATION	CONTRACT EXECUTED	REASON NOT AWARDED
NAME:_____ ADDRESS:_____ TELE NO._____ IRS NO._____				YES _____ NO _____	
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. _____
2. _____
3. _____
4. _____
5. _____
6. _____

IV. Total Dollar Amount to be subcontracted to Minority Business Enterprise(s): $ _____

V. Total Amount of Bid: $ _____

VI. MBE Percent (%) of project bid: _____

VII. YOU MUST ATTACH COPIES OF RELEVANT CORRESPONDENCE AND DOCUMENTS INCLUDING RETURN RECEIPTS.

_____ DATE

_____ SIGNATURE OF AUTHORIZED REPRESENTATIVE

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
Cheektowaga, New York 14227

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.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B-1

INSURANCE REQUIREMENTS

ERIE COUNTY WATER AUTHORITY

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix B-1

The following minimum insurance requirements shall apply to vendors providing services to the Erie County Water Authority (the Authority). If a service or project, in the opinion of the Authority, represents an unusual or exceptional risk, the Authority 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 lifetime use of vendors "Product" and/or applicable statute of limitation. These requirements include but are not limited to the minimum insurance requirements.

Insurance Requirements:

a. Workers Compensation:
Part 1: Workers Compensation: Statutory
Part 2: Employers Liability: $1,000,000.
Note: If New York State domiciled employees are used, coverage to be New York Statutory for both Parts 1 and 2

b. **New York Disability Benefits Liability:** Statutory coverage if New York State domiciled employees are used.

c. Commercial General Liability:
- $2,000,000. General Aggregate
- $2,000,000. Products/Completed Operations Aggregate
- $1,000,000. Each Occurrence
- $1,000,000. Personal Injury/Advertising Liability
- Per Project/Job Aggregate Limit Required
- Erie County Water Authority to be scheduled as an Additional Insured for both on-going and completed operations (attach Additional Insured endorsement to Certificate of Insurance)
- Insurance to be primary and non-contributory

d. Automobile Liability:
- $1,000,000. Each Accident
- Erie County Water Authority to be scheduled as an Additional Insured.

e. Umbrella Liability:
- $5,000,000. Each Occurrence
- $5,000,000. Aggregate
- Per Project/Job Aggregate Limit Required
- Erie County Water Authority to be scheduled as an Additional Insured

f. **Railroad Protective Liability:** Railroad Protective Liability ("RPL") Insurance policy (AASHO Form), in accordance with U.S. Department of Commerce, Bureau of Public Roads, Policy and Procedure Memorandum 20-12, dated March 5, 1959 and any subsequent amendments thereto, with limits of liability of $2,000,000/each occurrence $6,000,000/aggregate with respect to bodily injury, death or destruction of property.

g. Contractor's Pollution Liability:

- $5,000,000. Per Claim
- $5,000,000. Aggregate
- Erie County Water Authority to be scheduled as an Additional Insured

h. **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.

Certificates of Insurance to be provided to the Authority prior to start of work as follows:

ACORD 25 including copy of Additional Insured Endorsement
Note: If coverage provided for NYS domiciled employees require Forms C 105.2 and DB 120.1 for Workers Compensation and NYS DBL.

Certificates of Insurance, on forms approved by the New York State Department of Insurance, must be submitted to the Authority 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 the Authority 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 the Authority 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 the Authority, 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. Such insurance shall continue through the term of this Agreement and vendor shall purchase at his sole expense either 1) an Extended Reporting Endorsement (also, known as Tail Coverage); or 2) Prior Acts Coverage from new insurer with a retroactive date back to the date of, or prior to, the inception of this Agreement; or 3) demonstrate through Certificates of Insurance that vendor has Maintained continuous coverage with the same or original insurer. Coverage provided under items; 1), 2), or 3) will continue as long as the law allows.

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 the Authority shall not be construed to relieve the outside vendor of any obligations, responsibilities or liabilities.

Certificates of Insurance should be e-mailed to mmusarra@ecwa.org or mailed to Ms. Molly Jo Musarra, Claim 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 Ms. Musarra by e-mail or phone (716) 849-8465.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B-2

Subcontractor Addendum Agreement

APPENDIX B-2

[THIS FORM IS INTENDED TO BE USED AS AN EXHIBIT OR ADDENDUM TO ANY SUBCONTRACT—IT SHOULD NOT BE USED BY ITSELF AS A SOLE CONTRACT DOCUMENT]

ADDENDUM AGREEMENT

This Addendum to the Agreement ("Addendum Agreement") between **[Insert name of Upstream Contractor or Upstream Subcontractor]** (hereinafter referenced as "Contractor") and **[Insert name of Downstream Subcontractor]** (hereinafter referenced as "Subcontractor") is being entered into by the parties for any and all work done for, with, or on behalf of **the Erie County Water Authority** (hereinafter the "Authority") under the Primary Contract No. ___, Project No. _____ [**Insert Project Description**] with **[Insert name of Contractor]**, a copy of which may be obtained from **[Insert name and contract information of the entity]**.

In accordance with the terms and conditions of the Primary Contract No. _____ entered into with the Erie County Water Authority, an **ACORD25-Certificate of Liability Insurance** and **ACORD 855 NY-NY Construction Certificate of Liability Addendum** shall be provided evidencing the following insurance is currently maintained and in force with an insurance carrier approved to do business in the State of New York and maintaining an A.M. Best Rating of A- or better showing the Authority as Certificate Holder and additional insured. You should share these requirements with your current insurance agent, broker or insurance company.

Insurance Requirements

Prior to the commencement of any work designated in any contract or agreement to which this Addendum Agreement is attached, and until at least the final completion and acceptance of the work under the contract or agreement to which this Addendum Agreement is attached, the Subcontractor, at its sole expense, shall maintain the following minimum insurance on its own behalf, and furnish to the Authority certificates of insurance evidencing same and reflecting the effective date of such coverage as listed below. In no event shall the failure to provide this proof, prior to the commencement of the work, be deemed a waiver by the Authority of the Subcontractor's obligation to maintain the insurance set forth herein. The insurance required shall not be canceled, not renewed or materially changed after the issuance of the certificate of insurance required by this Addendum Agreement.

A. Worker's Compensation, Occupational Disease & Employer's Liability Insurance:

Worker's Compensation, Occupational Disease & Employer's Liability Insurance in accordance with the applicable laws and statutes to cover any injuries or illness to employees and any other person eligible for compensation, and the liability of the employer thereof to any person or organization, as follows:

Worker's Compensation & Occupational Disease: Statutory

Employer's Liability: $1,000,000 bodily injury by accident or disease, except for work work/employers subject to the New York Worker's Compensation Law, in which this insurance shall be unlimited.

All such coverage shall: not contain any exclusion for injuries to sole proprietors, partners, members of limited liability companies or executive officers of any corporate entity; and provide for a "Waiver of Subrogation" endorsement in favor of the Owner/Contractor.

Any Contractor/Subcontractor with a principal place of business located outside of the State of New York must include New York under Part 3A of the policy.

B. <u>Commercial General Liability</u>:

Commercial general liability insurance as provided under the ISO Commercial General Liability Coverage Form, CG 00 01, or its equivalent, for claims of Bodily Injury, Property Damage and Personal and Advertising Injury, with limits of not less than:

Per Occurrence and Personal & Advertising Injury-	$1,000,000.00
General Aggregate & Products/Completed Operations Aggregate-	$2,000,000.00
Fire Damage Legal Liability/Damage to Rented Property-	$100,000.00
Medical Payment (per-person)	$5,000.00

The coverage must include the following:

1. Liability assumed by the insured in an "insured contract" as that term is defined in the ISO Commercial General Liability Coverage Form, CG 00 01.

2. Products/Completed Operations liability for a period of three years after acceptance of the work.

3. A per project aggregate of $ <u>2,000,000.00</u>.

4. A "Waiver of Subrogation" Endorsement in favor of the Owner/Contractor.

5. Exterior Insulation Finish System ("EFIS") coverage must be specifically included or provided separately where the Contractor/Subcontractor work under this Agreement or in any contract or agreement to which this Addendum is attached in any way involves EFIS.

6. **The coverage shall not include any provision, definition, exclusion or endorsement which in any way would serve to eliminate the insurance to any insured or additional insured for liability for bodily injury or property damage arising from work performed in New York State, for claims made under the New York Labor Law or for claims made by employees, subcontractors and employees of subcontractors hired to perform work by any insured or additional insured pursuant to work that is subject to this Addendum Agreement or in any contract or agreement to which this Addendum Agreement is attached.**

7. The insurance is to be provided through insurers licensed and admitted to do business in the State of New York, with an A. M. Best financial rating of "A-" or better, or otherwise specifically approved by the Owner.

The Authority, its officers, directors, partners, representatives, agents and employees must be named as Additional Insureds on a primary and non-contributory basis on both the ongoing and completed operations coverage required herein utilizing the ISO endorsements:

CG 2010 04 13 or CG 2038 04 13 (or their equivalent) for ongoing operations; and CG 2037 04 13 (or its equivalent) for completed operations. The Additional Insured coverage shall contain no special limitation or limitation on the scope of the protection afforded to the Additional Insureds.

C. Commercial Automobile Liability Insurance:

Commercial Automobile Liability insurance covering the ownership, maintenance and use of all Owned, Non-Owned and Hired Vehicles by the Subcontractor with combined Bodily Injury and Property Damage limits including pollution transit coverage of $1,000,000.00 per accident. The Authority, its officers, directors, partners, representatives, agents and employees must be named as Additional Insureds on a primary and non-contributory basis. A "Waiver of Subrogation" in favor of the Authority must be included.

D. Commercial Umbrella/Excess Liability Insurance:

Commercial Umbrella/Excess Liability Insurance with limits of $5,000,000.00 per occurrence and a $5,000,000.00 aggregate. The Authority, its officers, directors, partners, representatives, agents and employees must be named as Additional Insureds on a primary and non-contributory basis. A "Waiver of Subrogation" in favor of the Authority must be included.

E. Pollution Liability:

Where the Subcontractor is performing work that is subject to this Addendum Agreement or to any contract or agreement to which this Addendum Agreement is attached, that involves abatement or remediation of hazardous substances or any manner of environmental work, pollution liability coverage applicable to the type of work/operations being performed in the amount of $5,000,000.00 per occurrence and $5,000,000.00 aggregate limit. The Authority, its officers, directors, partners, representatives, agents and employees must be named as Additional Insureds on a primary and non-contributory basis. A "Waiver of Subrogation" in favor of the Authority must be included.

F. Builder's Risk/Installation Floater:

"All Risk" Property Insurance coverage afforded by a Builder's Risk/Installation Floater or its equivalent insuring all materials, equipment and supplies provided by the Subcontractor and intended to become a permanent part of the construction, whether stored on the premises, away from the project site and/or while in transit, in an amount equal to the replacement cost of such materials, equipment and supplies. A "Waiver of Subrogation" in favor of the Authority must be included.

G. Owned and/or Rented Tools or Equipment:

Property insurance covering all owned, rented, leased and/or borrowed tools or equipment of the Subcontractor or used by the Subcontractor in connection with the work that is subject to this Agreement or to any contract or agreement to which this Addendum is attached, in an amount equal to the replacement cost of such tools or equipment. A "Waiver of Subrogation"

in favor of the Authority must be included.

JOB-SITE SAFETY:

The Authority makes no representation with respect to the physical conditions or safety of the Project Site. The Subcontractor shall, at its own expense, protect from injury its employees engaged in the performance of the Work. The prevention of accidents to all workers engaged in the Subcontractor's work and others affected by the Subcontractor's work is the responsibility of the Subcontractor. Subcontractor shall comply with all applicable federal, state, labor and local laws, regulations and codes concerning safety.

For purposes of this Addendum Agreement, "Project Site" means the entire construction site or the various separately identifiable part of the site described in any contract or agreement to which the Addendum Agreement is attached, and as described in the Primary Contract with the Authority.

WORKERS COMP IMMUNITY WAIVER:

In any and all claims against the Authority by any employee of the Subcontractor, anyone directly or indirectly employed by the Subcontractor (including any of the Subcontractor's subcontractors) or anyone for whose acts the Subcontractor may be liable, the indemnification obligation shall not be limited by any limitation on the amount or type of damages, compensation or benefits payable by or for the Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

HOLD HARMLESS / INDEMNIFICATION:

To the fullest extent permitted by law, Subcontractor shall defend, indemnify and hold harmless Authority and its heirs, executors, administrators, successors, assigns, affiliates, employees and agents (hereinafter referenced as "Owner Indemnitees") from and against any and all actions, claims, liabilities, damages, losses and expenses, including but not limited to bodily injury, death and property damage, and reasonable attorney's fees and costs (including those incurred in the defense of any such underlying claim, as well as those incurred in the enforcement of this Addendum Agreement and/or in the prosecution of any claim for indemnification by Authority) arising out of or resulting from, or alleged to arise out of or result from, the Subcontractor's work (including the work by any of the Subcontractor's subcontractors), except to the extent caused by the negligence or willful misconduct of any Owner Indemnitees.

MISCELLANEOUS:

If any term or provision of this Addendum Agreement conflicts with or is otherwise inconsistent with any term or provision in the Primary Contract or any prior written agreement entered between the parties, the terms and provisions contained herein shall govern and control.

This Addendum Agreement shall be binding upon and inure to the benefit of the parties hereto and their successors and permitted assigns. This Addendum Agreement, its terms and any claims arising therefrom, shall be interpreted and construed in accordance with the laws of the State of New York.

This Addendum Agreement may be executed via facsimile or email in any number of counterparts, all of which taken together shall constitute one and the same agreement. No waiver by a party of any

breach by the other party of any of the provisions of this Agreement shall be deemed a waiver of any preceding or succeeding breach of the same or any other provisions hereof. No such waiver shall be effective unless in writing and then only to the extent expressly set forth in writing.

No modification or amendment of this Addendum Agreement shall be effective unless in writing and signed by both parties and approved in writing by the Authority. If any term or provision of this Addendum Agreement shall to any extent be invalid or unenforceable, the remainder of this Addendum Agreement shall not be affected thereby, and each provision of this Addendum Agreement shall be valid and enforceable to the fullest extent permitted by law.

[Insert name of Upstream Contractor or Upstream Subcontractor]	**[Insert name of Downstream Subcontractor**
[Insert Name of Representative]	[Insert Name by Representative]
(Print name and title)	(Print name and title)
Date:	Date:

Rev. 12/2020

APPENDIX C

PREVAILING WAGE RATE SCHEDULE

ERIE COUNTY WATER AUTHORITY

INSTRUCTIONS AND SCHEDULE OF MINIMUM WAGE RATES ISSUED BY NEW YORK STATE LABOR DEPARTMENT

No laborer, worker or mechanic in the employ of the CONTRACTOR or a Subcontractor or other person doing or contracting to do a whole or a part of the work contemplated by this agreement, shall be permitted or required to work more than eight (8) hours in any calendar day, or more than five (5) days in any one week, except in cases of extraordinary emergency caused by fire, flood, or damages to life and property.

The wages to be paid for a legal day's work to laborers, workmen or mechanics under this agreement, shall not be less than the prevailing rate of wages as defined and determined by the Industrial Commissioner of the State of New York, a schedule of which is attached to this contract and made a part thereof, with the same force and effect as though set forth in full herein.

In the performance of the work the CONTRACTOR shall give preference to citizens of the State of New York who have been residents for at least twelve (12) months immediately prior to the commencement of their employment, and persons other than citizens may be employed when citizens of the State of New York are not available. If the above provisions of this contract and the provisions of Sec. 222 of the Law of the State of New York are not complied with, this contract Labor shall be void.

In the hiring of employees for the performance of work under this contract or by subcontract hereunder, the CONTRACTOR or subcontractor, or any persons acting on behalf of the CONTRACTOR or subcontractor, shall not by any reason of race or color discriminate against or intimidate any employee hired for the performance of work under this contract on account of race or color.

There may be deducted from the amount payable to the CONTRACTOR by the Water Authority, under this contract, a penalty of five dollars ($5.00) for each person for each calendar day during which such person was discriminated against or intimidated in violation of the provisions of this contract.

This contract may be cancelled or terminated by the Water Authority and all monies due or to become due hereunder may be forfeited for a second or subsequent violation of the terms or conditions of the preceding paragraph of this contract.

PUBLIC WORKS - FAILURE TO PAY PREVAILING WAGE

EXCLUSION FROM CONTRACTING OR SUBCONTRACTING

CHAPTER 147

A. 7314-A

Memorandum relating to this chapter, see Legislative Memoranda, post.

Approved may 24, 1991, effective as provided in Section 3.

An act to amend the labor law, in relation to debarment of public building service CONTRACTORS

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1:

Paragraph b of Subdivision 3 of Section 220-b of the Labor Law, as amended by Chapter 651 of the Laws of 1989, is amended to read as follows:

b. When two final determinations have been rendered against a CONTRACTOR or subcontractor and/or its successor within any consecutive six-year period determining that such CONTRACTOR or subcontractor and/or its successor has willfully failed to pay the prevailing rate of wages or to provide supplements in accordance with this article, whether such failures were concurrent or consecutive and whether or not such final determinations concerning separate public work projects are rendered simultaneously, such CONTRACTOR or subcontractor and/or its successor shall be ineligible to submit a bid on or be awarded any public work contract with the state, any municipal corporation or public body for a period of five years from the second final determination. For purposes of this article, a successor shall mean an employer engaged in work substantially similar to that of the predecessor, where there is substantial continuity of operation with that of the predecessor.

SECTION 2:

Subdivision 7 of Section 235 of the labor Law, as added by Chapter 777 of the Laws of 1971, is amended to read as follows:

7. When, pursuant to the provisions of this section two final orders have been entered against a CONTRACTOR or subcontractor and/or its successor within any consecutive six-year period determining that such CONTRACTOR or subcontractor and/or its successor has willfully failed to pay the prevailing wages in accordance with the provisions of this article, whether such failures were concurrent or consecutive and whether or not such final determinations concerning separate public building service contracts are rendered simultaneously, such CONTRACTOR or subcontractor and/or its successor, and if the CONTRACTOR or subcontractor and/or its successor is a corporation, any officer of such corporation who knowingly participated in such failure, shall be ineligible to submit a bid on or be awarded any public building service work for a period of five years from the date of the second order. For purposes of this article, a successor shall mean an employer engaged in work substantially similar to that of the predecessor, where there is substantial continuity of operation with that of the predecessor. Nothing of this subdivision shall be construed as affecting any provision of any other law or regulation relating to the awarding of public contracts.

SECTION 3:

This act shall take effect 60 days after the date upon which it shall have become a law and shall apply to any conduct occurring after such date.

STATE OF NEW YORK
DEPARTMENT OF LABOR

NOTICE TO ALL PUBLIC OFFICIALS IN CHARGE OF
PUBLIC WORK CONSTRUCTION AND ALL CONTRACTORS
AND SUBCONTRACTORS ENGAGED IN PUBLIC WORKS
CONSTRUCTION IN THE STATE OF NEW YORK

Article 8, Section 220 of the Labor Law, as amended by Chapter 750 of the Laws of 1956, provides, among other things, that it shall be the duty of the fiscal officer to make a determination of the schedule of wages to be paid to all laborers, workmen and mechanics employed on public work projects including supplements for welfare, pension, vacation and other benefits. These supplements may include hospital, surgical or medical insurance or benefits; life insurance or death benefits; accidental death or dismemberment insurance; and pension or retirement benefits. If the amount of supplements provided by the employer is less than the total supplements shown on the wage schedule, the difference shall be paid in cash to employees.

Article 8, Section 220 of the Labor Law, as amended by Chapter 750 of the Laws of 1956, also provides that the supplements to be provided to laborers, workmen and mechanics upon public works "shall be in accordance with the prevailing practices in the locality..." The amount for supplements listed on the enclosed schedule does not necessarily include all types of prevailing supplements in the locality, and a future determination of the Industrial Commissioner may require the CONTRACTOR to provide additional supplements.

The CONTRACTOR shall provide statutory benefits for disability benefits, workmen's compensation, unemployment insurance and Social Security.

The substance of this notice should be included in your contract.

Signed - Dr. Philip Ross
INDUSTRIAL COMMISSIONER

PW-39 (5-56)

Article 8 of the New York State Labor Law was amended on July 15, 1983 to provide that wages for Public Projects are to be paid pursuant to the existing Bargaining Agreement in the area where the work is to be performed.

Wages are to be paid on this project as hereinafter set forth or pursuant to the Collective Bargaining Agreement in effect in Erie County, whichever are higher.

During the performance of this contract, the CONTRACTOR agrees as follows:

(a) The CONTRACTOR will not discriminate against any employee or applicant for employment because of race, creed, sex, age, color or national origin, and will take affirmative action to insure that they are afforded equal employment opportunities without discrimination because of race, creed, sex, age, color or national origin or because a person has opposed any practices forbidden under these sections or because he filed a complaint, testified, or assisted in any proceeding under these sections. Such action shall be taken with reference, but not limited to: recruitment, employment, classification, job assignment, promotion, upgrading, demotion, transfer, layoff, discharge, expulsion or termination, rates of pay or other forms of compensation, and selection for training or retraining, including apprenticeship and on-the-job training.

(b) The 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 (a) through (h) (hereinafter called "non-discrimination clauses") and requesting such labor union or representative to agree in writing, whether in such collective bargaining or other agreement or understanding or otherwise, that such labor union or representative will not discriminate against any member or applicant for membership because of race, creed, sex, age, color or national origin, and will take affirmative action to insure that they are afforded equal membership opportunities without discrimination because of race, creed, sex, age, color or national origin. Such action shall be taken with reference, but not limited to: recruitment, employment, job assignment, promotion, upgrading, classification, demotion, transfer, layoff, discharge, expulsion or termination, rates of pay or other forms of compensation, and selection for training or retraining, including apprenticeship and on-the-job training. Such notice shall be given by the CONTRACTOR prior to the commencement of performance of this contract. Such written agreement shall be made by such labor union or representative prior to the commencement of performance of this contract, unless such labor union or representative fails or refuses so to agree in writing, in which event the CONTRACTOR shall promptly notify the State Commission for Human Rights of such failure or refusal.

(c) The CONTRACTOR will post and keep posted in conspicuous places, available to employee's and applicants for employment, notices to be provided by the State Commission for Human Rights setting forth the substance of the provisions of clauses (a) and (b) and such provisions of the State's laws against discrimination as the State Commission for Human Rights shall determine.

(d) The CONTRACTOR will state, in all solicitations or advertisements for employees placed by or on behalf of the CONTRACTOR, that all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, sex, age, color or national origin.

(e) The CONTRACTOR will comply with the provisions of Sections 291-299 of the Executive Law and the Civil Rights Law, 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 and the Industrial Commissioner for purposes of investigation to ascertain compliance with these non-discrimination clauses and such sections of the Executive Law and Civil Rights Law.

(f) This contract may be forthwith cancelled, terminated or suspended, in whole or in part, by the contracting agency upon the basis of a finding made by the State Commission for Human Rights that the CONTRACTOR has not complied with these non-discrimination clauses, and the 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, until he satisfied the State Commission for Human Rights that he has established and is carrying out a program in conformity with the provisions of these non-discrimination clauses. Such finding shall be made by 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 the 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.

(g) If this contract is cancelled or terminated under clause (f), in addition to other rights of the Erie County Water Authority provided in this contract upon its breach by the CONTRACTOR, the CONTRACTOR will hold the Erie County Water Authority harmless against any additional expenses or costs incurred by the Authority in completing the work or in purchasing the services, materials, equipment or supplies contemplated by this contract, and the Erie County Water Authority may withhold payments from the CONTRACTOR in an amount sufficient for this purpose and recourse may be had against the surety on the performance bond if necessary.

(h) The CONTRACTOR will include the provisions of clauses (a) through (g) in every subcontract or purchase order in such manner that provisions will be binding upon each subcontractor or vendor as to operations to be performed within the State of New York. The CONTRACTOR will take such action in enforcing such provisions of such subcontract or purchase order as the contracting agency may direct, including sanctions or remedies for noncompliance. If the CONTRACTOR becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by

the contracting agency, the CONTRACTOR shall promptly so notify the Attorney General and Attorney for the Erie County Water Authority, requesting them to intervene and protect the interest of the State of New York and the Erie County Water Authority.

Kathy Hochul, Governor

Roberta Reardon, Commissioner

Erie County Water Authority

Tim Shafer, Project Designer
50 Fountain Plaza
Suite 600
Buffalo NY 14202

Schedule Year	2021 through 2022
Date Requested	12/03/2020
PRC#	2020012018

Location	Tonawanda, NY
Project ID#	MP-084
Project Type	Installation of a new 48-inch PCCP Transmission Main

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 2021 through June 2022. All updates, corrections, posted on the 1st business day of each month, and future copies of the annual determination are available on the Department's website www.labor.ny.gov. Updated PDF copies of your schedule can be accessed by entering your assigned PRC# at the proper location on the website.

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

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

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

NOTICE OF COMPLETION / CANCELLATION OF PROJECT

Date Completed: _____ Date Cancelled: _____

Name & Title of Representative: _____

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

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

Introduction

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

Responsibilities of the Department of Jurisdiction

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

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

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

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

Both the PW 16 and PW 200 forms are available for completion online.

Hours

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

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

Wages and Supplements

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

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

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

Payrolls and Payroll Records

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

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

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

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

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

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

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

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

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

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

Withholding of Payments

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

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

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

Summary of Notice Posting Requirements

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

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

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

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

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

Apprentices

Employees cannot be paid apprentice rates unless they are individually registered in a program registered with the NYS Commissioner of Labor. The allowable ratio of apprentices to 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.

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

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

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

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

Interest and Penalties

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

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

Debarment

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

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

Criminal Sanctions

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

Discrimination

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

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

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

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

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

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

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

Workers' Compensation

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

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

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

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

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

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

Unemployment Insurance

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

Kathy Hochul, Governor

Roberta Reardon, Commissioner

Erie County Water Authority

Tim Shafer, Project Designer
50 Fountain Plaza
Suite 600
Buffalo NY 14202

Schedule Year 2021 through 2022
Date Requested 12/03/2020
PRC# 2020012018

Location Tonawanda, NY
Project ID# MP-084
Project Type Installation of a new 48-inch PCCP Transmission Main

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: $_____

Approximate Starting Date: ____/____/____

Approximate Completion Date: ____/____/____

Contract Type:
[ ] (01) General Construction
[ ] (02) Heating/Ventilation
[ ] (03) Electrical
[ ] (04) Plumbing
[ ] (05) Other : _____

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

Social Security Numbers on Certified Payrolls:

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

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

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

Construction industry employers must post the "Construction Industry Fair Play Act" notice in a prominent and accessible place on the job site. Failure to post the notice can result in penalties of up to $1,500 for a first offense and up to $5,000 for a second offense. The posting is included as part of this wage schedule. Additional copies may be obtained from the NYS DOL website, www.labor.ny.gov. https://labor.ny.gov/formsdocs/ui/IA999.pdf
If you have any questions concerning the Fair Play Act, please call the State Labor Department toll-free at 1-866-435-1499 or email us at: dol.misclassified@labor.ny.gov .

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

Effective June 23, 2020

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

(12.20)

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.

NEW YORK STATE OF OPPORTUNITY. 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. These include:

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

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

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

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

- **Civil Penalty** — First offense: Up to $2,500 per employee

  Subsequent offense(s): Up to $5,000 per employee

- **Criminal Penalty** — First offense: Misdemeanor - up to 30 days in jail, up to a $25,000 fine and debarment from performing public work for up to one year.

  Subsequent offense(s): Misdemeanor - up to 60 days in jail or up to a $50,000 fine and debarment from performing public work for up to 5 years.

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

Employer Name:

IA 999 (09/16)

New York State Department of Labor
Bureau of Public Work

Attention Employees

THIS IS A:

PUBLIC WORK PROJECT

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

Chapter 629 of the Labor Laws of 2007:

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

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

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

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

Contractor Name: _____

Project Location: _____

Requirements for OSHA 10 Compliance

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

The Bureau will enforce the statute as follows:

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

Proof of completion may include but is not limited to:

- Copies of bona fide course completion card (*Note: Completion cards do not have an expiration date.)*
- Training roster, attendance record 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 518-457-5589.

WICKS

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

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

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

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

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

Contractors must pay subcontractors within a 7 days period.

(07.19)

Introduction to the Prevailing Rate Schedule

Information About Prevailing Rate Schedule

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

Classification

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

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

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

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

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

Payrolls and Payroll Records

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

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

Paid Holidays

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

Overtime

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

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

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

Supplemental Benefits

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

Effective Dates

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

Apprentice Training Ratios

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

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

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

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

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

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

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

Erie County General Construction

Boilermaker — 09/01/2021

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:	07/01/2021
Boilermaker	$ 35.10

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: $ 31.04*

*NOTE: $29.85 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 at 12 Months
Terms 3-8 at 6 Months
Per Hour:
1st 65%
3rd 70% 4th 75% 5th 80% 6th 85% 7th 90% 8th 95%

Supplemental Benefits per hour:

All Terms $ 31.04**

**NOTE: $29.85 of this amount is for every Hour "Paid"

12-7

Carpenter - Building — 09/01/2021

JOB DESCRIPTION Carpenter - Building **DISTRICT** 12

ENTIRE COUNTIES
Erie

PARTIAL COUNTIES
Cattaraugus: Townships of Persia and Perrysburg

WAGES

Per hour:	07/01/2021
Building:	
Carpenter	$ 33.05
FloorLayer	33.05
Certified Welder	34.05
Hazardous Waste Worker	34.55
Diver-Dry Day	34.05
Diver Tender	34.05
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)	$ 28.73
Diver(s)	28.73

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:

Floorlayer Apprentices:

1st	2nd	3rd	4th
55%	60%	70%	80%

Carpenter Apprentices:

1st	2nd	3rd	4th	5th
55%	60%	65%	70%	80%

Supplemental Benefits per hour worked:

1st	2nd	3rd	4th	5th
$12.40	$12.40	$15.05	$15.05	$15.05

12-276B-Cat

Carpenter - Building / Heavy&Highway — 09/01/2021

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, Steuben, 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 west 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:	07/01/2021
Carpenter - ONLY for Artificial Turf/Synthetic Sport Surface	$ 32.08

Note - Does not include the operation of equipment. Please see Operating Engineers rates.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	$ 24.20

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

HOLIDAY
Paid: See (5) 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. Whan 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
55%	60%	70%	80%

Supplemental Benefits per hour:

1st year term	$ 12.15
2nd year term	12.15
3rd year term	14.80
4th year term	14.80

2-42AtSS

Carpenter - Heavy&Highway — 09/01/2021

JOB DESCRIPTION Carpenter - Heavy&Highway **DISTRICT** 12

ENTIRE COUNTIES
Erie

WAGES
Per hour:

	07/01/2021
Carpenter	$ 36.39
Certified Welder	37.89
Diver-Dry Day	37.39
Diver-Wet Day**	61.39
Diver Tender	37.39
Hazardous Material Worker	38.39
Piledriver	36.39
Effluent & Slurry Diver-Dry Day	56.08
Effluent & Slurry Diver-Wet Day	92.08

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)	$ 29.89
Diver(s)	29.89

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:

Carpenter Apprentice:

1st	2nd	3rd	4th	5th
55%	60%	65%	70%	80%

Pile Driver Apprentice(1300hour terms at percentage of Pile Driver Rate)

1st	2nd	3rd	4th
55%	60%	70%	80%

Supplemental benefits per hour worked:

1st	2nd	3rd	4th	5th
$12.15	$12.15	$14.80	$14.80	$14.80

12-276HH-Erie

Electrician — 09/01/2021

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:	07/01/2021	05/30/2022 Additional
Electrician*	$ 37.49	$ 2.00

* 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:
$ 30.05*
* 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
$ 13.85 $ 15.00 $ 16.85 $ 20.60 $ 26.25 $ 30.00

Supplemental benefits per hour:

0 to 2000 to 6500 to 8200
$ 13.51* $ 24.30* $ 30.05*
* NOTE - add 3% of the posted straight time or applicable premium wage rate.

3-41

Elevator Constructor — 09/01/2021

JOB DESCRIPTION Elevator Constructor **DISTRICT** 3

ENTIRE COUNTIES
Allegany, Cattaraugus, Chautauqua, Erie, Genesee, Niagara, Orleans, Wyoming

WAGES

Per hour:	07/01/2021
Elevator Constructor	$ 53.16
Helper	37.21

** IMPORTANT NOTICE - EFFECTIVE 04/01/2009 **
Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday or Tuesday thru Friday.

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:
$ 35.83
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 (1,700 hour each) terms at the following percentage of Journeyman's wage:

1st*	2nd	3rd	4th
55%	65%	70%	80%

Supplemental benefits per hour:
$ 35.83

* 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 — 09/01/2021

JOB DESCRIPTION Glazier **DISTRICT** 3

ENTIRE COUNTIES
Allegany, Cattaraugus, Chautauqua, Erie, Genesee, Niagara, Orleans, Wyoming

WAGES

Per hour:	07/01/2021
Glazier	$ 27.88
Working off Suspended Scaffold (Swing Stage)	28.88
Maintenance	17.50*

* 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:

Journeymen Glazier	$ 24.19
Maintenance	15.49

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
50%	55%	60%	65%	70%	75%	80%	90%

Supplemental benefits per hour:

1st & 2nd terms	$ 8.00
3rd & 4th terms	8.85
All other terms	10.25

3-660

Insulator - Heat & Frost — 09/01/2021

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:	07/01/2021
Heat & Frost Insulator	$ 34.15

SUPPLEMENTAL BENEFITS
Per hour:

$ 26.14

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:

1st and 2nd	$ 21.09
All other terms	$ 26.14

3-4

Ironworker **09/01/2021**

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:	07/01/2021
Structural	$ 31.90
Ornamental	31.90
Layout	31.90
Rodmen	31.90
Reinforcing	31.90
Welders	31.90
Riggers & Mach. Movers	31.90
Curtain Wall Erector	31.90
Window Erector	29.55
Fence Erector	30.47

When shift work is mandated either in the job specification or by the contracting agency the following premiums apply:
10% for second shift work from 2:00PM - 7:00PM
15% for third shift work from 7:00PM - 12:00AM

When a single irregular shift is worked outside the standard workday with the start times based on second and third shifts, a 10% premium on hours worked applies.

SUPPLEMENTAL BENEFITS

Per hour:	
Fence erectors	$ 29.13
All others	30.63

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
$ 19.50	$ 21.50	$ 23.50	$ 25.50

Supplemental benefits per hour:

1st	2nd	3rd	4th
$ 13.38	$ 23.18	$ 24.58	$ 25.98

3-6

Ironworker **09/01/2021**

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: 07/01/2021

Structural	$ 31.00
Ornamental	31.00
Reinforcing	31.00
Rigger & Mach. Mover	31.00
Pre-Engineered	31.00
Fence Erector	31.00
Pre-Cast Erector	31.00
Welder	31.00
Window Erector	31.00

When shift work is mandated either in the job specification or by the contracting agency the following premiums apply:
10% for second shift work from 2:00PM - 7:00PM
15% for third shift work from 7:00PM - 12:00AM

When a single irregular shift is worked outside the standard workday with the start times based on second and third shifts, a 10% premium on hours worked applies.

SUPPLEMENTAL BENEFITS
Per hour:

$ 31.78

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	$ 19.50
2nd term	21.50
3rd term	23.50
4th term	25.50

Supplemental benefits per hour:

1st term	$ 12.28
2nd term	19.98
3rd term	21.08
4th term	22.18

3-9

Laborer - Building — 09/01/2021

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: Wearing of replaceable cartridge respirator.

CLASS F: Asbestos Removal, Deleader.

CLASS G: Hazardous Waste Worker.

Per hour:	07/01/2021	07/01/2022
Building Laborer:		Additional
CLASS A	$ 29.13	$ .60
CLASS B	29.30	.60
CLASS C	29.41	.60
CLASS D	29.88	.60
CLASS E	30.13	.60
CLASS F	30.63	.60
CLASS G	31.13	.60

SUPPLEMENTAL BENEFITS
Per hour:
$ 27.65

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:

$ 27.65

3-210b

Laborer - Heavy&Highway **09/01/2021**

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, Gunite, 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:	07/01/2021
Heavy/Highway Laborer:	
GROUP A	$ 31.41
GROUP B	31.61
GROUP C	31.81
GROUP D	32.01

For all Deleader & Asbestos work add $1.50 to Group A rate.
For all Hazardous waste work add $2.00 to Group A rate.
For use of replaceable cartridge respirator add $1.00 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:	07/01/2021
Sewer/Water Laborer:	
GROUP A	$ 31.41
GROUP B	31.51
GROUP C	31.56
GROUP D	31.66
GROUP E	32.01
GROUP F	32.41

For all Deleader & Asbestos work add $1.50 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:
$ 27.65

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:

$ 27.65

3-210h

Laborer - Tunnel — 09/01/2021

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:	07/01/2021
Tunnel Laborer:	
CLASS A	$ 32.91
CLASS B	33.06
CLASS C	33.16
CLASS D	33.66
CLASS E	33.76
CLASS F	34.16
CLASS G	34.41

For all Deleader & Asbestos work add $1.50 to Class A rate.
For all Hazardous waste add $2.00 to Class A rate.
For use of replaceable cartridge respirator add $1.00 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:
$ 27.65

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:

$ 27.65

3-210t

Lineman Electrician — 09/01/2021

JOB DESCRIPTION Lineman Electrician **DISTRICT** 6

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

WAGES
Per hour:

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

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

	07/01/2021	05/02/2022	05/01/2023	05/06/2024
Lineman, Technician	$ 54.70	$ 56.00	$ 57.40	$ 58.90
Crane, Crawler Backhoe	54.70	56.00	57.40	58.90
Welder, Cable Splicer	54.70	56.00	57.40	58.90
Digging Mach. Operator	49.23	50.40	51.66	53.01
Tractor Trailer Driver	46.50	47.60	48.79	50.07
Groundman, Truck Driver	43.76	44.80	45.92	47.12
Equipment Mechanic	43.76	44.80	45.92	47.12
Flagman	32.82	33.60	34.44	35.34

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	$ 54.70	$ 56.00	$ 57.40	$ 58.90
Crane, Crawler Backhoe	54.70	56.00	57.40	58.90
Cable Splicer	60.17	61.60	63.14	64.79
Certified Welder -				
Pipe Type Cable	57.44	58.80	60.27	61.85
Digging Mach. Operator	49.23	50.40	51.66	53.01
Tractor Trailer Driver	46.50	47.60	48.79	50.07
Groundman, Truck Driver	43.76	44.80	45.92	47.12
Equipment Mechanic	43.76	44.80	45.92	47.12
Flagman	32.82	33.60	34.44	35.34

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

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

Lineman, Tech, Welder	$ 56.02	$ 57.32	$ 58.72	$ 60.22
Crane, Crawler Backhoe	56.02	57.32	58.72	60.22
Cable Splicer	61.62	63.05	64.59	66.24
Certified Welder -				
Pipe Type Cable	58.82	60.19	61.66	63.23
Digging Mach. Operator	50.42	51.59	52.85	54.20
Tractor Trailer Driver	47.62	48.72	49.91	51.19
Groundman, Truck Driver	44.82	45.86	46.98	48.18
Equipment Mechanic	44.82	45.86	46.98	48.18
Flagman	33.61	34.39	35.23	36.13

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

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

Lineman, Tech, Welder	$ 57.21	$ 58.51	$ 59.91	$ 61.41
Crane, Crawler Backhoe	57.21	58.51	59.91	61.41
Cable Splicer	57.21	58.51	59.91	61.41
Digging Mach. Operator	51.49	52.66	53.92	55.27
Tractor Trailer Driver	48.63	49.73	50.92	52.20
Groundman, Truck Driver	45.77	46.81	47.93	49.13
Equipment Mechanic	45.77	46.81	47.93	49.13
Flagman	34.33	35.11	35.95	36.85

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

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

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

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day.
NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

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

	$25.40 *plus 7% of hourly Wage	$ 25.90 *plus 7% of hourly wage	$ 26.40 *plus 7% of hourly wage	$ 26.90 *plus 7% of hourly wage
Journeyman Lineman or Equipment Operators with Crane License	$ 26.40 *plus 7% of hourly wage	$ 27.90 *plus 7% of hourly wage	$ 29.40 *plus 7% of hourly wage	$ 30.90 *plus 7% of hourly wage

*The 7% is based on the hourly wage paid, straight time or premium time.

OVERTIME PAY
See (B, E, Q,) on OVERTIME PAGE. *Note* Double time for all emergency work designated by the Dept. of Jurisdiction.
NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

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

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

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

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

SUPPLEMENTAL BENEFITS per hour:

07/01/2021	05/02/2022	05/01/2023	05/06/2024
$25.40 *plus 7% of hourly Wage	$ 25.90 *plus 7% of hourly wage	$ 26.40 *plus 7% of hourly wage	$ 26.90 *plus 7% of hourly wage

*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249a

Lineman Electrician - Teledata — 09/01/2021

JOB DESCRIPTION Lineman Electrician - Teledata **DISTRICT** 6

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

WAGES
Per hour:

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

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

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

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

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

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 5.14 *plus 3% of wage paid

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

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE
NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

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

6-1249LT - Teledata

Lineman Electrician - Traffic Signal, Lighting — 09/01/2021

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, chainsaws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator equipment operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a groundman/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:	07/01/2021	05/02/2022	05/01/2023	05/06/2024
Lineman, Technician	$ 47.15	$ 48.19	$ 49.32	$ 50.54
Crane, Crawler Backhoe	47.15	48.19	49.32	50.54
Certified Welder	49.51	50.60	51.79	53.07
Digging Machine	42.44	43.37	44.39	45.49
Tractor Trailer Driver	40.08	40.96	41.92	42.96
Groundman, Truck Driver	37.72	38.55	39.46	40.43
Equipment Mechanic	37.72	38.55	39.46	40.43
Flagman	28.29	28.91	29.59	30.32

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

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

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

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. Tuesday thru Friday may be worked with no make-up day.
NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

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

$25.40 *plus 7% of hourly Wage	$ 25.90 *plus 7% of hourly wage	$ 26.40 *plus 7% of hourly wage	$ 26.90 *plus 7% of hourly wage

Journeyman Lineman or Equipment Operators with Crane License	$ 26.40 *plus 7% of hourly wage	$ 27.90 *plus 7% of hourly wage	$ 29.40 *plus 7% of hourly wage	$ 30.90 *plus 7% of hourly wage

*The 7% is based on the hourly wage paid, straight time or premium time.

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE. *Note* Double time for all emergency work designated by the Dept. of Jurisdiction.
NOTE: WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

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

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

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

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

SUPPLEMENTAL BENEFITS per hour:

07/01/2021	05/02/2022	05/01/2023	05/06/2024
$25.40 *plus 7% of hourly Wage	$ 25.90 *plus 7% of hourly wage	$ 26.40 *plus 7% of hourly wage	$ 26.90 *plus 7% of hourly wage

*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249a-LT

Lineman Electrician - Tree Trimmer — 09/01/2021

JOB DESCRIPTION Lineman Electrician - Tree Trimmer **DISTRICT** 6

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

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

Per hour:	07/01/2021	01/02/2022	12/31/2023
Tree Trimmer	$ 27.36	$ 28.25	$ 29.80
Equipment Operator	24.19	24.98	26.35
Equipment Mechanic	24.19	24.98	26.35
Truck Driver	20.15	20.80	21.94
Groundman	16.59	17.13	18.07
Flag person	12.50*	12.50*	13.03*

*NOTE: Subject to change due to any minimum wage increases.

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

Journeyman	$ 9.98 *plus 3% of hourly wage	$ 10.23 *plus 3% of hourly wage	$ 10.48 *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

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

HOLIDAY
Paid: See (5, 6, 8, 15) 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 09/01/2021

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:	07/01/2021
Plasterer	$ 30.15

Additional $3.00/hr for work on swing stage over 20 feet.

SUPPLEMENTAL BENEFITS
Per hour:
$ 22.49

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
$ 12.50	$ 14.00	$ 15.00	$ 16.00	$ 17.00	$ 18.00	$ 19.00	$ 20.00	$ 21.00

Supplemental benefits per hour:

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 09/01/2021

JOB DESCRIPTION Mason - Building **DISTRICT** 5

ENTIRE COUNTIES
Erie, Niagara

PARTIAL COUNTIES
Cattaraugus: Only the Township of Perrysburg and the Village of Gowanda.

WAGES

Per Hour:	07/01/2021
Building:	
Bricklayer	$ 32.57
Stone Mason	32.57
Tuck Pointer	32.57

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:

Journeyman $ 31.26

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
$ 25.87	$ 26.01	$ 27.72	$ 30.21

Supplemental benefits per hour:

1st	2nd	3rd	4th
$ 12.35	$ 18.61	$ 23.30	$ 27.22

5-3B-Z3

Mason - Building / Heavy&Highway — 09/01/2021

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:	07/01/2021	07/01/2022 Additional
Cement Mason	$ 31.00	$ 1.15

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:
$ 33.07

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
$ 15.63	$ 17.19	$ 20.25	$ 23.31	$ 26.44	$ 29.56

Supplemental benefits per hour:

1st	2nd	3rd	4th	5th	6th
$ 8.86	$ 11.86	$ 11.80	$ 15.05	$ 17.21	$ 20.54

3-111Erie

Mason - Heavy&Highway — 09/01/2021

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: Enitre 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:	07/01/2021
Heavy & Highway:	
Cement Mason	$ 32.53
Bricklayer	32.53

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:

Journeyman	$ 23.13

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:

1st term	$ 14.13
2nd - 4th term	23.13

5-3h

Mason - Tile Finisher — 09/01/2021

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:	07/01/2021
Building:	
Marble, Slate, Terrazzo and Tile Finisher	$ 29.46

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: $ 16.47

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
$ 18.84	$ 21.38	$ 24.23

Supplemental benefits per hour:

1st	2nd	3rd
$ 8.64	$ 10.71	$ 12.47

5-3TF - Z3

Mason - Tile Setter — 09/01/2021

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: 07/01/2021
Building:
Marble, Slate, Terrazzo and Tile Setter $ 32.60

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: $ 30.73

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
$ 25.75	$ 25.84	$ 27.33	$ 30.52

Supplemental benefits per hour:

1st	2nd	3rd	4th
$ 12.17	$ 18.43	$ 23.29	$ 26.46

5-3TS - Z3

Millwright — 09/01/2021

JOB DESCRIPTION Millwright **DISTRICT** 12

ENTIRE COUNTIES
Erie, Genesee, Niagara

WAGES
Per hour: 07/01/2021

Building	$ 34.25
Heavy & Highway*	36.25

*All Heavy & Highway Millwright construction will be paid at the rate indicated above. H/H work performed on hazardous waste sites where employees are required to wear protective gear shall receive an additional $2.00 per hour over the Millwright H/H rate for all hours worked on the day protective gear was worn.

NOTE ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount subject to any overtime premiums):
- Certified Welders shall receive $1.75 per hour in addition to the current Millwright's rate provided he/she is directed to perform certified welding.
- If a building work site has been declared a hazardous site by the Owner and the use of protective gear (including, as a minimum, air purifying canister-type chemical respirators) are required, then that employee shall receive a $1.50 premium per hour.
- An employee performing the work of a machinist shall receive $2.00 per hour in addition to the current Building Millwright's rate. For the purposes of this premium to apply, a "machinist" is a person who uses a lathe, Bridgeport, milling machine or similar type of tool to make or modify parts.
- When performing work underground at 500 feet and below, the employee shall receive an additional $1.00 per hour.

SUPPLEMENTAL BENEFITS
Per hour Paid:

All Classifications	$ 30.35

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:

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
$12.26	$ 24.92	$ 26.73	$ 28.54

12-1163-Gen/Nia/Orl/Wyo

Operating Engineer - Building — 09/01/2021

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 Gunite 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, 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, 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, Revinius 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:	07/01/2021
Class A	$ 38.51
Class B	34.03
Crane(Up to 60 Tons)	40.01
" (61 to 199 Tons)	42.01
" (200 to 399 Tons)	42.51
" (400 Tons or more)	43.01

Additional $5.00/hr. for Any Tower Crane
Additional $2.50/hr. for Hazardous Work Site
Additional $1.00/hr. for Tunnel Work

SUPPLEMENTAL BENEFITS
Per Hour:

Journeyman	$ 31.55**

**Note: For Overtime Hours $23.35 of this amount is paid a straight time, the remaining balance of $8.20 is paid at the same premium as the wage.

OVERTIME PAY
See (B, E, *E2, P, **V) on OVERTIME PAGE
* Only Saturdays between October 15th and April 15th.

HOLIDAY

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

REGISTERED APPRENTICES
Wages per hour:
1 year Terms

1st	2nd	3rd	4th
$28.35	$29.24	$30.12	$31.01

Supplemental benefits Per Hour:
All Apprentices $30.65**

**Note: For Overtime Hours $23.35 of this amount to be paid a straight time rate remaining balance of $7.30 is paid at same premium as the wage.

12-17b

Operating Engineer - Heavy&Highway **09/01/2021**

JOB DESCRIPTION Operating Engineer - Heavy&Highway **DISTRICT** 12

ENTIRE COUNTIES
Chautauqua, Erie, Niagara, Orleans

WAGES
Marine Construction/Dredging

Class 1: Diver/Wet Tender, Engineer, Engineer(hydraulic dredge), Blaster.

Class 2(A): Crane, Backhoe Operator, Material Handler, ALL Self-propelled Drill Rigs, Mechanic/Welder, Asst. Engineer(hydraulic dredge), Leverman(hydraulic dredge), Diver/Dry Tender.

Class 2(B): Friction, Lattice Boom, or Crane License Certificate, Endorse Tug or Tow Boat Operator.

Class 3: Deck Equipment Operator, (Machineryman), Maintenance of Crane, Tug/Launch Operator, Loader/Dozer on Barge.

Class 4: Deck Equipment Operator and Machineryman/Fireman on 4 equipment units or more, Off Road Trucks, Deck Hand, Tug Engineer, Crane Maintenance(50 tons and under/ backhoe 115,000lbs or less), Asst. Tug Operator, Blaster Helper.

Per hour:	07/01/2021
Class 1	$ 48.80
Class 2(A)	47.30
Class 2(B)	50.30
Class 3	42.10
Class 4	35.00

Hazardous/Toxic Waste based on EAP Levels
Additional:
Level A - $2.50/Hr.
Level B - 2.00/Hr.
Level C - 1.00/Hr.
Level D - 0.50/Hr.

SUPPLEMENTAL BENEFITS
Per Hour Paid:

ALL CLASSES	$ 32.04

OVERTIME PAY
See (B, E, I, *S) on OVERTIME PAGE
* If the Holiday is Worked

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

12-17 Marine

Operating Engineer - Heavy&Highway **09/01/2021**

JOB DESCRIPTION Operating Engineer - Heavy&Highway **DISTRICT** 12

ENTIRE COUNTIES
Cattaraugus, Chautauqua, Erie, Niagara, 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, Convoying Vehicles Convoying 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 Gunite 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- Heavy/Highway, Sewer/Water, Tunnel:

Per hour:	07/01/2021
Class A	$ 40.64
Class B	36.14
Crane 5 to 60 tons	43.64
" 61 to 199 tons	44.14
" 200 to 399 tons	44.64
" 400 and over	45.14

Additional $2.50/hr. for Hazardous Work Site
Additional $1.00/hr. for Tunnel Work
Additional $4.00/hr. for Mandated Off-Shift Work

SUPPLEMENTAL BENEFITS
Per hour:

Journeymen	$ 33.16*

*Note: For Overtime Hours $25.21 of the amount paid at straight time, the remaining balance of 7.95 is paid at the same premium as the wage.

OVERTIME PAY
See (B, E, Q, W) on OVERTIME PAGE

HOLIDAY
Paid: See (*5, **6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
*Saturday Holidays will be recognized on the Friday before
**Sunday Holidays will be recognized on the Monday after

REGISTERED APPRENTICES
Wages per hour:
Apprentices at 1 year terms

1st	2nd	3rd	4th
$33.14	$34.14	$35.14	$36.14

Supplemental Benefits

All Apprentices $ 32.76*

*Note: For Overtime Hours $25.21 of the amount paid at straight time, the remaining balance of $7.55 is paid at same premium as the wage.

12-17 hh/sw/t

Operating Engineer - Survey Crew 09/01/2021

JOB DESCRIPTION Operating Engineer - Survey Crew **DISTRICT** 12

ENTIRE COUNTIES
Cattaraugus, Chautauqua, Erie, Niagara, 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, Heavy and Highway Construction.

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.

	07/01/2021
Party Chief	$ 44.09
Instrument Person	41.57
Rod Person	28.75

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 $ 28.75

OVERTIME PAY
See (B, E, Q, *X) on OVERTIME PAGE
*Note: $23.75 Only for "ALL" premium hours when worked.

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 Person wage:

	07/01/2021
0-1000 Hrs	60%
1001-2000 Hrs	70%
2001-3000 Hrs	80%

SUPPLEMENTAL BENEFITS per hour worked:

0-1000 Hrs	$ 17.25 / PHP $13.29
1001-2000 Hrs	20.13 / " 15.51
2001-3000 Hrs	23.00 / " 18.12

NOTE: PHP is premium hours paid when worked.

12-17D Sur

Operating Engineer - Survey Crew - Consulting Engineer 09/01/2021

JOB DESCRIPTION Operating Engineer - Survey Crew - Consulting Engineer **DISTRICT** 12

ENTIRE COUNTIES
Cattaraugus, Chautauqua, Erie, Niagara, 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.

	07/01/2021
Party Chief	$ 44.09
Instrument Person	41.57
Rod Person	28.75

SUPPLEMENTAL BENEFITS
Per hour worked:

Journeyman	$ 28.75

OVERTIME PAY
See (B, E, Q, *X) on OVERTIME PAGE
*Note: $23.75 Only for "ALL" premium hours paid.

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:

	07/01/2021
0-1000	60%
1001-2000	70%
2001-3000	80%

SUPPLEMENTAL BENEFITS per hour worked:

0-1000	$ 17.25 / PHP $13.29
1001-2000	20.13 / " 15.51
2001-3000	23.00 / " 18.12

NOTE: PHP is premium hours paid when worked.

12-17D Con Eng

Painter — 09/01/2021

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:	07/01/2021
Basic Rate (Brush & Roll)	$ 28.00
Spray painting, wallcovering	28.00
Abrasive and hydroblasting	28.00
Taping/DryWall Finisher	28.50

Skeleton Steel* 28.75

* 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:

$ 25.79

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:

Painter/Decorator and Taper/Drywall Finisher:

1st	2nd	3rd	4th	5th	6th	7th	8th
$ 2.35	$ 4.35	$ 5.35	$ 5.85	$ 6.35	$ 6.85	$ 7.35	$ 7.60

3-4-Buf, Nia, Olean

Painter 09/01/2021

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: 07/01/2021

Bridge	$ 40.00
Tunnel	40.00
Tank*	38.00

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:

$ 29.20

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:

1st & 2nd terms	$ 5.50	$ 5.51
3rd & 4th terms	5.50	5.51
5th & 6th terms	6.50	6.51

3-4-Bridge, Tunnel, Tank

Painter - Metal Polisher — 09/01/2021

JOB DESCRIPTION Painter - Metal Polisher **DISTRICT** 8

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

WAGES

	07/01/2021
Metal Polisher	$ 37.13
Metal Polisher*	38.23
Metal Polisher**	41.13

*Note: Applies on New Construction & complete renovation
** Note: Applies when working on scaffolds over 34 feet.

SUPPLEMENTAL BENEFITS
Per Hour: 07/01/2021

Journeyworker:
All classification $ 10.64

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

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

REGISTERED APPRENTICES
Wages per hour:
One (1) year term at the following wage rates:

	07/01/2021
1st year	$ 16.00
2nd year	17.00
3rd year	18.00
1st year*	$ 16.39
2nd year*	17.44
3rd year*	18.54
1st year**	$ 18.50
2nd year**	19.50
3rd year**	20.50

*Note: Applies on New Construction & complete renovation
** Note: Applies when working on scaffolds over 34 feet.

Supplemental benefits:
Per hour:

1st year	$ 7.39
2nd year	7.39
3rd year	7.39

8-8A/28A-MP

Plumber — 09/01/2021

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, Dunkirk, 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: 07/01/2021

Plumber	$ 37.15
Steamfitter	$ 37.15

Note - Add 10% (ten-percent) to wage when HAZMAT training is required or when OSHA compliant respirator protection is required.

SUPPLEMENTAL BENEFITS
Per hour:

$ 27.51

Note - $4.38 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:

$ 22.82

Note - $4.38 of this amount must be paid at the same premium as the wage.

3-22-Buffalo, Niagara

Roofer — 09/01/2021

JOB DESCRIPTION Roofer **DISTRICT** 3

ENTIRE COUNTIES
Erie, Genesee, Niagara, Orleans, Wyoming

WAGES
Per hour: 07/01/2021

Asbestos Removal	$ 33.96
Slate, Tile	31.11
Precast tile / slabs	31.11
Crete / gypsum planks	31.11
Damp and waterproofer	30.96
Composition, sprayers,	30.96
Aspalt mastic,	30.96
Steep roofers	30.96

When shift work is mandated either in the job specification or by the contracting agency the following premiums apply:
15.0% for work from 4:30PM - 1:00AM or second shift
20.0% for work from 12:30AM - 9:00AM or third shift

SUPPLEMENTAL BENEFITS
Per hour:

$ 23.01

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 499	to 999	to 1499	to 1999	to 2499	to 2999	to 3499	to 4499
60%	65%	70%	75%	80%	85%	90%	95%

Supplemental benefits per hour:

0 to 499	to 999	to 1499	to 1999	to 2499	to 2999	to 3499	to 4499
$ 8.21	$ 8.21	$ 12.34	$ 12.54	$ 20.32	$ 20.99	$ 21.66	$ 22.34

Sheetmetal Worker — 09/01/2021

JOB DESCRIPTION Sheetmetal Worker **DISTRICT** 3

ENTIRE COUNTIES
Erie, Genesee, Niagara, Orleans, Wyoming

WAGES
Per hour: 07/01/2021

Sheet Metal Worker	$ 35.00

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.
Additional $1.00 per hour for work when required to have 40-hour HAZMAT training or the use of OSHA compliant respirator is required.

When shift work is mandated either in the job specification or by the contracting agency the following premiums apply:
Shift Premium per hour:

Second Shift	$ 3.25
Third Shift	$ 5.00

SUPPLEMENTAL BENEFITS
Per hour:

$ 27.47*

* Note - $17.57 of this amount must be paid at the same premium as the wages per overtime hours.

OVERTIME PAY
See (B, E, E2, 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	$ 15.75
2nd term	20.60
3rd term	22.04
4th term	26.36
5th term	29.24

Supplemental benefits per hour:

1st term	$ 15.94	Note - $8.04 of this amount must be paid at the same premium as the wage.
2nd term	19.04	Note - $11.14 of this amount must be paid at the same premium as the wage.
3rd term	24.68	Note - $14.78 of this amount must be paid at the same premium as the wage.
4th term	25.61	Note - $15.71 of this amount must be paid at the same premium as the wage.
5th term	26.23	Note - $16.33 of this amount must be paid at the same premium as the wage.

When shift work is mandated either in the job specification or by the contracting agency the following premiums apply;
Shift Premium per hour:

Second Shift

1st term	$ 1.46
2nd term	$ 1.63
3rd term	$ 1.79
4th term	$ 2.28
5th term	$ 2.60

Third Shift

1st term	$ 2.25
2nd term	$ 2.50
3rd term	$ 2.75
4th term	$ 3.50
5th term	$ 4.00

3-71

Sprinkler Fitter — 09/01/2021

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 07/01/2021

Sprinkler Fitter $ 36.33

SUPPLEMENTAL BENEFITS
Per hour

Journeyperson $ 27.14

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

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: When a holiday falls on Sunday, the following Monday shall be considered a holiday and all work performed on either day shall be at the double time rate. When a holiday falls on Saturday, the preceding Friday shall be considered a holiday and all work performed on either day shall be at the double time rate.

REGISTERED APPRENTICES
Wages per hour

One Half Year terms at the following wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$ 17.48	$ 19.43	$ 21.12	$ 23.06	$ 25.00	$ 26.95	$ 28.89	$ 30.83	$ 32.77	$ 34.72

Supplemental Benefits per hour

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$ 8.27	$ 8.27	$ 19.22	$ 19.22	$ 19.47	$ 19.47	$ 19.47	$ 19.47	$ 19.47	$ 19.47

1-669

Teamster - Building / Heavy&Highway **09/01/2021**

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 Tiremen, 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:	07/01/2021
All GROUPS	$ 41.22

Add $2.00 when required to use personal protection when performing hazardous waste removal work.
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:

$ 15.36*

*Note - Only $ 7.16 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 **09/01/2021**

JOB DESCRIPTION Teamster - Building / Heavy&Highway **DISTRICT** 3

ENTIRE COUNTIES
Erie, Niagara

WAGES

Per hour:	07/01/2021
Dump Truck Operator*	$ 24.25

*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:

$ 1.73

OVERTIME PAY
See (B, B2, Q) on OVERTIME PAGE

HOLIDAY

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

Welder **09/01/2021**

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 07/01/2021

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

(S1) Two and one half times the hourly rate the first 8 hours on Sunday or Holidays One and one half times the hourly rate all additional hours.

(T) Triple the hourly rate for Holidays

(U) Four times the hourly rate for Holidays

(V) Including benefits at SAME PREMIUM as shown for overtime

(W) Time and one half for benefits on all overtime hours.

(X) Benefits payable on Paid Holiday at straight time. If worked, additional benefit amount will be required for worked hours. (Refer to other codes listed.)

Holiday Codes

PAID Holidays:

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

OVERTIME Holiday Pay:

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays. The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Following is an explanation of the code(s) listed in the HOLIDAY section of each classification contained in the attached schedule. The Holidays as listed below are to be paid at the wage rates at which the employee is normally classified.

(1)	None
(2)	Labor Day
(3)	Memorial Day and Labor Day
(4)	Memorial Day and July 4th
(5)	Memorial Day, July 4th, and Labor Day
(6)	New Year's, Thanksgiving, and Christmas
(7)	Lincoln's Birthday, Washington's Birthday, and Veterans Day
(8)	Good Friday
(9)	Lincoln's Birthday
(10)	Washington's Birthday
(11)	Columbus Day
(12)	Election Day
(13)	Presidential Election Day
(14)	1/2 Day on Presidential Election Day
(15)	Veterans Day
(16)	Day after Thanksgiving
(17)	July 4th
(18)	1/2 Day before Christmas
(19)	1/2 Day before New Years
(20)	Thanksgiving
(21)	New Year's Day
(22)	Christmas
(23)	Day before Christmas
(24)	Day before New Year's
(25)	Presidents' Day
(26)	Martin Luther King, Jr. Day
(27)	Memorial Day
(28)	Easter Sunday

(29) Juneteenth

New York State Department of Labor - Bureau of Public Work
State Office Building Campus
Building 12 - Room 130
Albany, New York 12240

REQUEST FOR WAGE AND SUPPLEMENT INFORMATION

As Required by Articles 8 and 9 of the NYS Labor Law

Fax (518) 485-1870 or mail this form for new schedules or for determination for additional occupations.

This Form Must Be Typed

Submitted By: (Check Only One) ☐ Contracting Agency ☐ Architect or Engineering Firm ☐ Public Work District Office Date:

A. Public Work Contract to be let by: (Enter Data Pertaining to Contracting/Public Agency)

1. Name and complete address ☐ (Check if new or change)

Telephone: ( ) Fax: ( )
E-Mail:

2. NY State Units (see Item 5)

- ☐ 01 DOT
- ☐ 02 OGS
- ☐ 03 Dormitory Authority
- ☐ 04 State University Construction Fund
- ☐ 05 Mental Hygiene Facilities Corp.
- ☐ 06 OTHER N.Y. STATE UNIT
- ☐ 07 City
- ☐ 08 Local School District
- ☐ 09 Special Local District, i.e., Fire, Sewer, Water District
- ☐ 1O Village
- ☐ 11 Town
- ☐ 12 County
- ☐ 13 Other Non-N.Y. State (Describe)

3. SEND REPLY TO ☐ check if new or change)
Name and complete address:

Telephone:( ) Fax: ( )
E-Mail:

4. SERVICE REQUIRED. Check appropriate box and provide project information.

- ☐ New Schedule of Wages and Supplements.
  APPROXIMATE BID DATE :
- ☐ Additional Occupation and/or Redetermination

PRC NUMBER ISSUED PREVIOUSLY FOR THIS PROJECT :

OFFICE USE ONLY

B. PROJECT PARTICULARS

5. Project Title _____

Description of Work _____

Contract Identification Number _____

Note: For NYS units, the OSC Contract No. _____

6. Location of Project:
Location on Site _____

Route No/Street Address _____

Village or City _____

Town _____

County _____

7. Nature of Project - Check One:

- ☐ 1. New Building
- ☐ 2. Addition to Existing Structure
- ☐ 3. Heavy and Highway Construction (New and Repair)
- ☐ 4. New Sewer or Waterline
- ☐ 5. Other New Construction (Explain)
- ☐ 6. Other Reconstruction, Maintenance, Repair or Alteration
- ☐ 7. Demolition
- ☐ 8. Building Service Contract

8. OCCUPATION FOR PROJECT :

- ☐ Construction (Building, Heavy Highway/Sewer/Water)
- ☐ Tunnel
- ☐ Residential
- ☐ Landscape Maintenance
- ☐ Elevator maintenance
- ☐ Exterminators, Fumigators
- ☐ Fire Safety Director, NYC Only
- ☐ Guards, Watchmen
- ☐ Janitors, Porters, Cleaners, Elevator Operators
- ☐ Moving furniture and equipment
- ☐ Trash and refuse removal
- ☐ Window cleaners
- ☐ Other (Describe)

9. Has this project been reviewed for compliance with the Wicks Law involving separate bidding? YES ☐ NO ☐

10. Name and Title of Requester

Signature

SEE PAGE TWO FOR LAWS RELATING TO PUBLIC WORK CONTRACTS

NEW YORK STATE DEPARTMENT OF LABOR
Bureau of Public Work - Debarment List

LIST OF EMPLOYERS INELIGIBLE TO BID ON OR BE AWARDED ANY PUBLIC WORK CONTRACT

Under Article 8 and Article 9 of the NYS Labor Law, a contractor, sub-contractor and/or its successor shall be debarred and ineligible to submit a bid on or be awarded any public work or public building service contract/sub-contract with the state, any municipal corporation or public body for a period of five (5) years from the date of debarment when:

- Two (2) final determinations have been rendered within any consecutive six-year (6) period determining that such contractor, sub-contractor and/or its successor has WILLFULLY failed to pay the prevailing wage and/or supplements;
- One (1) final determination involves falsification of payroll records or the kickback of wages and/or supplements.

The agency issuing the determination and providing the information, is denoted under the heading 'Fiscal Officer'. DOL = New York State Department of Labor; NYC = New York City Comptroller's Office; AG = New York State Attorney General's Office; DA = County District Attorney's Office.

Debarment Database: To search for contractors, sub-contractors and/or their successors debarred from bidding or being awarded any public work contract or subcontract under NYS Labor Law Articles 8 and 9, or under NYS Workers' Compensation Law Section 141-b, access the database at this link: https://applications.labor.ny.gov/EDList/searchPage.do

For inquiries where WCB is listed as the "Agency", please call 1-866-546-9322

NYSDOL Bureau of Public Work Debarment List 08/27/2021

Article 8

AGENCY	Fiscal Officer	FEIN	EMPLOYER NAME	EMPLOYER DBA NAME	ADDRESS	DEBARMENT START DATE	DEBARMENT END DATE
DOL	NYC	*****9839	A.J.S. PROJECT MANAGEMENT, INC.		149 FIFTH AVENUE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL	*****4018	ADIRONDACK BUILDING RESTORATION INC.		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	AG	*****1812	ADVANCED BUILDERS & LAND DEVELOPMENT, INC.		400 OSER AVE #2300HAUPPAUGE NY 11788	09/11/2019	09/11/2024
DOL	DOL	*****1687	ADVANCED SAFETY SPRINKLER INC		261 MILL ROAD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	NYC	*****6775	ADVENTURE MASONRY CORP.		1535 RICHMOND AVENUE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	NYC		AGOSTINHO TOME		405 BARRETTO ST BRONX NY 10474	05/31/2018	05/31/2023
DOL	NYC		AMJAD NAZIR		2366 61ST ST BROOKLYN NY 11204	12/15/2016	12/15/2021
DOL	NYC		AMJED PARVEZ		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL		ANITA SALERNO		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	NYC		ANTHONY J SCLAFANI		149 FIFTH AVE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL		ANTHONY PERGOLA		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10323	01/23/2017	01/23/2022
DOL	DOL		ANTONIO ESTIVEZ		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		ARNOLD A. PAOLINI		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	NYC		ARSHAD MEHMOOD		168-42 88TH AVENUE JAMAICA NY 11432	11/20/2019	11/20/2024
DOL	DOL		ARVINDER ATWAL		65 KENNETH PLACE NEW HYDE PARK NY 11040	07/19/2017	07/19/2022
DOL	NYC	*****6683	ATLAS RESTORATION CORP.		35-12 19TH AVENUE ASTORIA NY 11105	08/02/2017	08/02/2022
DOL	NYC	*****5532	ATWAL MECHANICALS, INC		65 KENNETH PLACE NEW HYDE PARK NY 11040	07/19/2017	07/19/2022
DOL	NYC	*****2591	AVI 212 INC.		260 CROPSEY AVENUE APT 11GBROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	NYC		AZIDABEGUM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	NYC		BALWINDER SINGH		421 HUDSON ST SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	NYC	*****8416	BEAM CONSTRUCTION, INC.		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	NYC	*****2113	BHW CONTRACTING, INC.		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		BIAGIO CANTISANI			06/12/2018	06/12/2023
DOL	DOL	*****4512	BOB BRUNO EXCAVATING, INC		5 MORNINGSIDE DR AUBURN NY 13021	05/28/2019	05/28/2024
DOL	DOL		BOGDAN MARKOVSKI		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL		BRADLEY J SCHUKA		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	DOL	*****1449	BRRESTORATION NY INC		140 ARCADIA AVENUE OSWEGO NY 13126	09/12/2016	09/12/2021
DOL	DOL		BRUCE P. NASH JR.		5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	DOL	*****0225	C&D LAFACE CONSTRUCTION, INC.		8531 OSWEGO RD BALDWINSVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	*****8809	C.B.E. CONTRACTING CORPORATION		310 MCGUINESS BLVD GREENPOINT NY 11222	03/07/2017	03/07/2022
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL	*****5161	CALADRI DEVELOPMENT CORP.		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026

NYSDOL Bureau of Public Work Debarment List 08/27/2021

Article 8

DOL	DOL	*****3391	CALI ENTERPRISES, INC.		1223 PARK STREET PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	NYC		CALVIN WALTERS		465 EAST THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL		CANTISANI & ASSOCIATES LTD		442 ARMONK RD MOUNT KISCSO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CANTISANI HOLDING LLC			06/12/2018	06/12/2023
DOL	DOL		CARMEN RACHETTA		8531 OSWEGO RD BALDWINSVILLE NY 13027	02/03/2020	02/03/2025
DOL	DOL		CARMENA RACHETTA		8531 OSWEGO ROAD BALDWINSVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	*****3812	CARMODY "2" INC			06/12/2018	06/12/2023
DOL	DOL	*****1143	CARMODY BUILDING CORP	CARMODY CONTRACTING AND CARMODY CONTRACTING CORP.	442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY CONCRETE CORPORATION			06/12/2018	06/12/2023
DOL	DOL		CARMODY ENTERPRISES, LTD.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY INC		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****3812	CARMODY INDUSTRIES INC			06/12/2018	06/12/2023
DOL	DOL		CARMODY MAINTENANCE CORPORATION		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY MASONRY CORP		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****8809	CBE CONTRACTING CORP		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	AG		CESAR J. AGUDELO		81-06 34TH AVENUE APT. 6EJACKSON HEIGHTS NY 11372	02/07/2018	02/07/2023
DOL	DOL	*****0026	CHANTICLEER CONSTRUCTION LLC		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	DOL		CHRISTOPHER GRECO		26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL		CHRISTOPHER J MAINI		19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL		CHRISTOPHER PAPASTEFANOU A/K/A CHRIS PAPASTEFANOU		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	*****1927	CONSTRUCTION PARTS WAREHOUSE, INC.	CPW	5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	DOL	*****3228	CROSS-COUNTY LANDSCAPING AND TREE SERVICE, INC.	ROCKLAND TREE SERVICE	26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL	*****2524	CSI ELECTRICAL & MECHANICAL INC		42-32 235TH ST DOUGLASTON NY 11363	01/14/2019	01/14/2024
DOL	NYC		DALJIT KAUR BOPARAI		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	DOL		DANICA IVANOSKI		61 WILLETT ST. PASSAIC NJ 07503	10/26/2016	10/26/2021
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	NYC		DAVID WEINER		14 NEW DROP LANE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	DOL		DEBBIE STURDEVANT		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	AG		DEBRA MARTINEZ		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		DELPHI PAINTING & DECORATING CO INC		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL		DF CONTRACTORS OF ROCHESTER, INC.		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	DOL		DF CONTRACTORS, INC.		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	NYC		DIMITRIOS TSOUMAS		35-12 19TH AVENUE ASTORIA NY 11105	08/02/2017	08/02/2022

DOL	DOL		DOMENICO LAFACE		8531 OSWEGO RD BALDWINSVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	*****3242	DONALD R. FORSAY	DF LAWN SERVICE	1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	DOL		DONALD R. FORSAY		1835 DAANSEN RD. PALMYRA NY 14522	05/16/2017	05/16/2022
DOL	NYC		DUARTE LOPES		66-05 WOODHAVEN BLVD. STE 2REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	DOL	*****5175	EAGLE MECHANICAL AND GENERAL CONSTRUCTION LLC		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL		EAST COAST PAVING		2238 BAKER RD GILLETT PA 16923	03/12/2018	03/12/2023
DOL	NYC	*****4269	EAST PORT EXCAVATION & UTILITIES		601 PORTION RD RONKONKOMA NY 11779	11/18/2016	11/18/2021
DOL	DOL	*****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002
DOL	NYC	*****5917	EPOCH ELECTRICAL, INC		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2024
DOL	DOL	*****7403	F & B PAINTING CONTRACTING INC		2 PARKVIEW AVENUE HARRISON NY 10604	09/26/2016	09/26/2021
DOL	DOL		FAIGY LOWINGER		11 MOUNTAIN RD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL		FRANK BENEDETTO		19 CATLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL		FRANK BENEDETTO		C/O F & B PAINTING CONTRA 2 PARKVIEW AVENUEHARRISON NY 10604	09/26/2016	09/26/2021
DOL	DOL	*****4722	FRANK BENEDETTO AND CHRISTOPHER J MAINI	B & M CONCRETE	19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	NYC		FRANK MAINI		1766 FRONT ST YORKTOWN HEIGHTS NY 10598	01/17/2018	01/17/2023
DOL	NYC	*****6616	G & G MECHANICAL ENTERPRISES, LLC.		1936 HEMPSTEAD TURNPIKE EAST MEDOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		GABRIEL FRASSETTI			04/10/2019	04/10/2024
DOL	DOL		GEOFF CORLETT		415 FLAGGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	DOL		GIGI SCHNECKENBURGER		261 MILL RD EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		GIOVANNI LAFACE		8531 OSWEGO RD BALDWINSVILLE NY 13027	02/03/2020	01/09/2023
DOL	NYC	*****3164	GLOBE GATES INC	GLOBAL OVERHEAD DOORS	405 BARRETTO ST BRONX NY 10474	05/31/2018	05/31/2023
DOL	NYC		GREAT ESTATE CONSTRUCTION, INC.		327 STAGG ST BROOKLYN NY 11206	10/10/2017	10/10/2022
DOL	DOL		GREGORY S. OLSON		P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		HANS RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC	*****3228	HEIGHTS ELEVATOR CORP.		1766 FRONT ST YORKTOWN HEIGHTS NY 10598	01/17/2018	01/17/2023
DOL	DOL	*****5131	INTEGRITY MASONRY, INC.	M&R CONCRETE	722 8TH AVE WATERVLIET NY 12189	06/05/2018	06/05/2023
DOL	DOL		IRENE KASELIS		32 PENNINGTON AVE WALDWICK NJ 07463	05/30/2019	05/30/2024
DOL	DOL	*****9211	J. WASE CONSTRUCTION CORP.		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		J.A. HIRES CADWALLADER		P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		JAMES C. DELGIACCO		722 8TH AVE WATERVLIET NY 12189	06/05/2018	06/05/2023
DOL	DOL		JAMES LIACONE		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		JAMES RACHEL		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL	*****5368	JCH MASONRY & LANDSCAPING INC.		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023

DOL	NYC		JENNIFER GUERRERO		1936 HEMPSTEAD TURNPIKE EAST MEADOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		JESSICA WHITESIDE		C/O BRRESTORATION NY INC 140 ARCADIA AVENUEOSWEGO NY 13126	09/12/2016	09/12/2021
DOL	AG		JOHN ANTHONY MASSINO		36-49 204TH STREET BAYSIDE NY 11372	02/07/2018	02/07/2023
DOL	DOL		JOHN F. CADWALLADER		200 LATTA BROOK PARK HORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	*****4612	JOHN F. CADWALLADER, INC.	THE GLASS COMPANY	P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		JOHN GOCEK		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		JOHN WASE		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	AG	*****0600	JOHNCO CONTRACTING, INC.		36-49 204TH STREET BAYSIDE NY 11372	02/07/2018	02/07/2023
DOL	DOL		JON E DEYOUNG		261 MILL RD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		JORI PEDERSEN		415 FLAGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DOL		JOSE CHUCHUCA		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	NYC		JOSEPH FOLEY		66-05 WOODHAVEN BLVD. STE 2REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	NYC		JOSEPH MARTINO		1535 RICHMOND AVENUE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	DOL		JOY MARTIN		2404 DELAWARE AVE NIGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/3002
DOL	DOL	*****5062	K R F SITE DEVELOPMENT INC		375 LAKE SHORE DRIVE PUTNAM VALLEY NY 10579	01/23/2017	01/23/2022
DOL	NYC		K.S. CONTRACTING CORP.		29 PHILLIP DRIVE PARSIPPANY NJ 07054	02/13/2017	02/13/2022
DOL	DOL		KARIN MANGIN		796 PHELPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	DOL		KATE E. CONNOR		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KATIE BURDICK		2238 BAKER RD GILLETT PA 16923	03/12/2018	03/12/2023
DOL	DOL	*****2959	KELC DEVELOPMENT, INC		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KENNETH FIORENTINO		375 LAKE SHORE DRIVE PUTNAM VALLEY NY 10579	01/23/2017	01/23/2022
DOL	DOL	*****3490	L & M CONSTRUCTION/DRYWALL INC.		1079 YONKERS AVE YONKERS NY 10704	08/07/2018	08/07/2023
DOL	DA	*****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL	*****4505	LARAPINTA ASSOCIATES INC		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	DOL		LAVERN GLAVE		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	06/24/2016	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	06/24/2016	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	01/17/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL	*****4388	LEN.J CONSTRUCTION, LLC		PO BOX 10007 ALBANY NY 12201	08/14/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022

DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	09/19/2017	09/19/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	08/14/2017	08/14/2022
DOL	DOL		LEROY NELSON JR		PO BOX 10007 ALBANY NY 12201	01/17/2017	09/19/2022
DOL	DA	*****4460	LONG ISLAND GLASS & STOREFRONTS, LLC		4 MANHASSET TRL RIDGE NY 11961	09/06/2018	09/06/2023
DOL	AG	*****4216	LOTUS-C CORP.		81-06 34TH AVENUE APT. 6EJACKSON HEIGHTS NY 11372	02/07/2018	02/07/2023
DOL	DOL		LOUIS A. CALICCHIA		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	NYC		LUBOMIR PETER SVOBODA		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	NYC		M & L STEEL & ORNAMENTAL IRON CORP.		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	DOL		M ANVER BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL		M. ANVER BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL	*****1784	MADISON AVE CONSTRUCTION CORP		39 PENNY STREET WEST ISLIP NY 11795	11/02/2016	11/02/2021
DOL	DOL	*****2196	MAINSTREAM SPECIALTIES, INC.		11 OLD TOWN RD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DA		MANUEL P TOBIO		150 KINGS STREET BROOKLYN NY 14444	08/19/1998	08/19/2998
DOL	DA		MANUEL TOBIO		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	NYC		MAREK FABIJANOWSKI		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	NYC		MARTINE ALTER		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	DOL		MARVIN A STURDEVANT		29 MAPLEWOOD DRIVE BINGHAMTON NY 13901	02/21/2017	02/21/2022
DOL	DOL		MASONRY CONSTRUCTION, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****3333	MASONRY INDUSTRIES, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	NYC		MATINA KARAGIANNIS		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2023
DOL	DOL		MATTHEW P. KILGORE		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	DOL		MAURICE GAWENO		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		MCLEAN "MIKKI BEANE"		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MCLEAN "MIKKI" DRAKE		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MCLEAN M DRAKE-BEANE		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL	*****9445	MCLEAN M WALSH	ELITE PROFESSIONAL PAINTING OF CNY	1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL	*****9445	MCLEAN M WALSH	ELITE PROFESSIONAL PAINTING OF CNY	1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		MICHAEL LENIHAN		1079 YONKERS AVE UNIT 4YONKERS NY 10704	08/07/2018	08/07/2023
DOL	AG		MICHAEL RIGLIETTI		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL	*****4829	MILESTONE ENVIRONMENTAL CORPORATION		704 GINESI DRIVE SUITE 29MORGANVILLE NJ 07751	04/10/2019	04/10/2024
DOL	NYC	*****9926	MILLENNIUM FIRE PROTECTION, LLC		325 W. 38TH STREET SUITE 204NEW YORK NY 10018	11/14/2019	11/14/2024
DOL	NYC	*****0627	MILLENNIUM FIRE SERVICES, LLC		14 NEW DROP LNE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024

DOL	NYC	*****3826	MOVING MAVEN OF NY, INC.		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	NYC	*****3550	MOVING MAVEN, INC		1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	AG		MSR ELECTRICAL CONSTRUCTION CORP.		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		MUHAMMAD BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	DOL		MUHAMMAD BEIG		142 EAST MARKET STREET LONG BEACH NY 11561	03/07/2017	03/07/2022
DOL	NYC		MUHAMMED A. HASHEM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DA	*****9786	NATIONAL INSULATION & GC CORP		180 MILLER PLACE HICKSVILLE NY 11801	12/12/2018	12/12/2023
DOL	NYC		NICHOLAS FILIPAKIS		7113 FORT HAMILTON PARKWA BROOKLYN NY 11228	12/09/2016	12/09/2021
DOL	DOL	*****7429	NICOLAE I. BARBIR	BESTUCCO CONSTRUCTION, INC.	444 SCHANTZ ROAD ALLENTOWN PA 18104	09/17/2020	09/17/2025
DOL	DOL	*****6966	NORTH COUNTRY DRYWALL AND PAINT		23167 COUNTY ROUTE 59 DEXTER NY 13634	10/24/2016	10/24/2021
DOL	DOL	*****0065	NORTHEAST LANDSCAPE AND MASONRY ASSOC		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10523	01/23/2017	01/23/2022
DOL	DOL	*****1845	OC ERECTERS, LLC A/K/A OC ERECTERS OF NY INC.		1207 SW 48TH TERRACE DEERFIELD BEACH FL 33442	01/16/2018	01/16/2023
DOL	NYC	*****0818	ONE TEN RESTORATION, INC.		2366 61ST ST BROOKLYN NY 11204	12/15/2016	12/15/2021
DOL	NYC		PARESH SHAH		29 PHILLIP DRIVE PARSIPPANY NJ 07054	02/13/2017	02/13/2022
DOL	DOL		PAULINE CHAHALES		935 S LAKE BLVD MAHOPAC NY 10541	03/02/2021	03/02/2026
DOL	NYC	*****9422	PELIUM CONSTRUCTION, INC.		22-33 35TH ST. ASTORIA NY 11105	12/30/2016	12/30/2021
DOL	DOL		PETER M PERGOLA		3 WEST MAIN ST/SUITE 208 ELMSFORD NY 10523	01/23/2017	01/23/2022
DOL	DOL		PETER STEVENS		11 OLD TOWN ROAD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DOL		PIERRE LAPORT		224 COUNTY HIGHWAY 138 BROADALBIN NY 12025	03/07/2017	03/07/2022
DOL	DOL	*****1543	PJ LAPORT FLOORING INC		224 COUNTY HIGHWAY 138 BROADALBIN NY 12025	03/07/2017	03/07/2022
DOL	NYC	*****5771	PMJ ELECTRICAL CORP		7113 FORT HAMILTON PARKWA BROOKLYN NY 11228	12/09/2016	12/09/2021
DOL	DOL	*****0466	PRECISION BUILT FENCES, INC.		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	NYC	*****4532	PROFESSIONAL PAVERS CORP.		66-05 WOODHAVEN BLVD. REGO PARK NY 11374	04/20/2017	04/20/2022
DOL	NYC		RASHEL CONSTRUCTION CORP		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DOL	*****1068	RATH MECHANICAL CONTRACTORS, INC.		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL	*****2633	RAW POWER ELECTRIC CORP		3 PARK CIRCLE MIDDLETOWN NY 10940	01/30/2018	01/30/2023
DOL	AG	*****7015	RCM PAINTING INC.		69-06 GRAND AVENUE 2ND FLOORMASPETH NY 11378	02/07/2018	02/07/2023
DOL	DOL		REGINALD WARREN		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL	*****9148	RICH T CONSTRUCTION		107 WILLOW WOOD LANE CAMILLUS NY 13031	11/13/2018	11/13/2023
DOL	DOL		RICHARD MACONE		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023
DOL	DOL		RICHARD REGGIO		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	DOL	*****9148	RICHARD TIMIAN	RICH T CONSTRUCTION	108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	11/13/2018	11/13/2023
DOL	DOL		ROBBYE BISSESAR		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003

DOL	DOL		ROBERT A. VALERINO		3841 LANYARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		ROBERT BRUNO		3 GAYLORD ST AUBURN NY 13021	11/15/2016	11/15/2021
DOL	DOL		ROBERT BRUNO		5 MORNINGSIDE DRIVE AUBURN NY 13021	05/28/2019	05/28/2024
DOL	NYC		ROBERT HOHMAN		149 FIFTH AVE NEW YORK NY 10010	12/29/2016	12/29/2021
DOL	DOL		RODERICK PUGH		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	DOL	*****4880	RODERICK PUGH CONSTRUCTION INC.		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL		RONALD MESSEN		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		ROSEANNE CANTISANI			06/12/2018	06/12/2023
DOL	DOL		RYAN ALBIE		21 S HOWELLS POINT ROAD BELLPORT NY 11713	02/21/2017	02/21/2022
DOL	DOL	*****3347	RYAN ALBIE CONTRACTING INC		21 S HOWELLS POINT ROAD BELLPORT NY 11713	02/21/2017	02/21/2022
DOL	DOL	*****1365	S & L PAINTING, INC.		11 MOUNTAIN ROAD P.O BOX 408MONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	*****7730	S C MARTIN GROUP INC.		2404 DELAWARE AVE NIAGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	NYC	*****0349	SAM WATERPROOFING INC		168-42 88TH AVENUE APT.1 AJAMAICA NY 11432	11/20/2019	11/20/2024
DOL	NYC		SANDEEP BOPARAI		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	DOL	*****9751	SCW CONSTRUCTION		544 OLD ROUTE 23 ACRE NY 12405	02/14/2017	02/14/2022
DOL	NYC	*****6597	SHAIRA CONSTRUCTION CORP.		421 HUDSON STREET SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	DOL	*****1961	SHANE BURDICK	CENTRAL TRAFFIC CONTROL, LLC.	2238 BAKER ROAD GILLETT PA 16923	03/12/2018	03/12/2023
DOL	DOL		SHANE BURDICK		2238 BAKER ROAD GILLETT PA 16923	03/12/2018	03/12/2023
DOL	DOL		SHANE NOLAN		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		SHULEM LOWINGER		11 MOUNTAIN ROAD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	*****0816	SOLAR ARRAY SOLUTIONS, LLC		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL	*****2221	SOUTH BUFFALO ELECTRIC, INC.		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	DOL	*****3496	STAR INTERNATIONAL INC		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	08/11/2003	08/11/3003
DOL	DOL	*****6844	STEAM PLANT AND CHX SYSTEMS INC.		14B COMMERCIAL AVENUE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL	*****9933	STEED GENERAL CONTRACTORS, INC.		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL		STEFANOS PAPASTEFANOU, JR. A/K/A STEVE PAPASTEFANOU, JR.		256 WEST SADDLE RIVER RD UPPER SADDLE RIVER NJ 07458	05/30/2019	05/30/2024
DOL	DOL	*****9751	STEPHEN C WAGAR		544 OLD ROUTE 23 ACRE NY 12405	02/14/2017	02/14/2022
DOL	DOL		STEVE TATE		415 FLAGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	NYC		STEVEN GOVERNALE		601 PORTION RD RONKONKOMA NY 11779	11/18/2016	11/18/2021
DOL	DOL		STEVEN MARTIN		2404 DELWARE AVE NIAGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL		STEVEN TESTA		50 SALEM STREET - BLDG B LYNNFIELD MA 01940	01/23/2017	01/23/2022
DOL	NYC	*****5863	SUKHMANY CONSTRUCTION, INC.		185-06 56TH AVE FRESH MEADOW NY 11365	10/17/2017	10/17/2022
DOL	DOL	*****1060	SUNN ENTERPRISES GROUP, LLC		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024

NYSDOL Bureau of Public Work Debarment List 08/27/2021

Article 8

DOL	DOL	*****8209	SYRACUSE SCALES, INC.		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	DOL		TALAILA OCAMPA		1207 SW 48TH TERRACE DEERFIELD BEACH FL 33442	01/16/2018	01/16/2023
DOL	DOL		TERRY THOMPSON		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL		TEST		P.O BOX 123 ALBANY NY 12204	05/20/2020	05/20/2025
DOL	DOL	*****6789	TEST1000		P.O BOX 123 ALBANY NY 12044	03/01/2021	03/01/2026
DOL	DOL	*****5570	TESTA CORP		50 SALEM STREET - BLDG B LYNNFIELD MA 01940	01/23/2017	01/23/2022
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATIO N	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATIO N	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL	*****8311	TRIPLE B FABRICATING, INC.		61 WILLETT ST. PASSAIC NJ 07503	10/26/2016	10/26/2021
DOL	DOL	*****6392	V.M.K CORP.		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023
DOL	DOL	*****6418	VALHALLA CONSTRUCTION, LLC.		796 PHLEPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	NYC	*****7361	VIABLE HOLDINGS, INC.	MOVING MAVEN	1010 NORTHERN BLVD. GREAT NECK NY 11021	03/09/2017	03/09/2022
DOL	DOL		VICTOR ALICANTI		42-32 235TH ST DOUGLASTON NY 11363	01/14/2019	01/14/2024
DOL	NYC		VIKTAR PATONICH		2630 CROPSEY AVE BROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	DOL		VIKTORIA RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC		VITO GARGANO		1535 RICHMOND AVE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	NYC	*****3673	WALTERS AND WALTERS, INC.		465 EAST AND THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL		WAYNE LIVINGSTON JR	NORTH COUNTRY DRYWALL AND PAINT	23167 COUNTY ROUTE 59 DEXTER NY 13634	10/24/2016	10/24/2021
DOL	DOL	*****3296	WESTERN NEW YORK CONTRACTORS, INC.		3841 LAYNARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		WHITE PLAINS CARPENTRY CORP		442 ARMONK RD	06/12/2018	06/12/2023
DOL	DOL		WILLIAM C WATKINS		1229 JAMES STREET SYRACUSE NY 13203	05/02/2017	05/02/2022
DOL	DOL		WILLIAM DEAK		C/O MADISON AVE CONSTR CO 39 PENNY STREETWEST ISLIP NY 11795	11/02/2016	11/02/2021
DOL	DOL	*****4043	WINDSHIELD INSTALLATION NETWORK, INC.		200 LATTA BROOK PARK HORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	*****4730	XGD SYSTEMS, LLC	TDI GOLF	415 GLAGE AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	NYC		ZAKIR NASEEM		30 MEADOW ST BROOKLYN NY 11206	10/10/2017	10/10/2022
DOL	NYC	*****8277	ZHN CONTRACTING CORP		30 MEADOW ST BROOKLYN NY 11206	10/10/2017	10/10/2022

APPENDIX D

EASEMENTS

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX E

PERMITS

THIS PAGE INTENTIONALLY LEFT BLANK

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):

☐	Stamped Final Plans – Submit in PDF file format on CD, with three (3) paper copies (1" = 50'), or as requested
☐	ACORD 25 - Certificate of Insurance, with NYSDOT named as Additional Insured (See line 3 below).
☐	ACORD 855 - New York Construction Certificate of Liability Insurance Addendum (See line 3 below).
☐	PERM 1, 2, 6 or 16 - Undertaking Agreement, if applicable (See line 4 below).
☐	PERM 36 - Attachment to Highway Work Permit – Consultant Inspection, if applicable
☐	PERM 44 - Surety Bond – Performance bond in Applicant's name, or deposit (Bank cashier's check required)
☐	PERM 50 – Inspection/Supervision Payment Agreement, if applicable
☐	Proof of Worker's Compensation Insurance (Form C-105.2, U-26.3 or SI-12), or proof of exemption (Form CE-200)
☐	Proof of Disability Benefits Coverage (Form DB-120.1 or DB-155), or proof of exemption (Form CE-200)
☐	Permit Fees
☐	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:

Name _____

Address _____

City _____ State _____ Zip _____

Applicant Phone (_____)_____

Applicant Email Address _____

For Joint application, name and address of Applicant 2 below:

Name _____

Address _____

City _____ State _____ **Zip** _____

Applicant 2 Phone (_____)_____

Applicant 2 Email Address _____

Emergency Contact _____

Emergency Phone (_____) _____

RETURN PERMIT TO: ***(if different from Permittee)***

Name _____

Address _____

City _____ State _____ Zip _____

RETURN DEPOSIT/BOND TO: ***(if different from Permittee)***

Name _____

Address _____

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**			
☐	1a1	Underground - excavation, tunneling, boring, installing, etc.	32		.32/foot	0	
☐	1a2	Underground - Commercial subsurface connection	32		.32/foot	0	
☐	1a3	Underground - Residential subsurface connection	32		.32/foot	0	
☐	1b1	Overhead - Erecting poles, towers	63		2.50/unit	0	
☐	1b2	Overhead - Running new lines	63				
☐	1b3	Overhead - Commercial service connection	19				
☐	1b4	Overhead - Residential service connection	19				
☐	1c1	Installation on bridge or culvert	63				
☐	1c2	Installation on bridge or culvert requiring structural changes	625				
MAINTENANCE				**Number of regions/counties**			
☐	2a	Maintenance, single job	32				
☐	2b1	Annual maintenance per region			2500		0
☐	2b2	Annual maintenance per county			625		0
☐	2c	Repair of water or sewer lines	32				
☐	2d	DOT requested maintenance	N/C				
AFTER ORIGINAL CONSTRUCTION				**Number of regions/counties**			
☐	3a1	Annual – includes overhead connections – per region			2500		0
☐	3a2	Annual – includes overhead connections – per county			625		0
☐	3b	DOT requested relocation	N/C				
☐	3c	Commercial subsurface service connection	32				
☐	3d	Commercial overhead service connection	19				
☐	3e	Residential subsurface service connection	32				
☐	3f	Residential overhead service connection	19				
MISCELLANEOUS UTILITY WORK							
☐	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 _____

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):

☐	Stamped Final Plans – Submit in PDF file format on CD, with three (3) paper copies (1" = 50'), or as requested
☐	ACORD 25 - Certificate of Insurance, with NYSDOT named as Additional Insured (See line 3 below).
☐	ACORD 855 - New York Construction Certificate of Liability Insurance Addendum (See line 3 below).
☐	PERM 1, 2, 6 or 16 - Undertaking Agreement, if applicable (See line 4 below).
☐	PERM 36 - Attachment to Highway Work Permit – Consultant Inspection, if applicable
☐	PERM 44 - Surety Bond – Performance bond in Applicant's name, or deposit (Bank cashier's check required)
☐	PERM 50 – Inspection/Supervision Payment Agreement, if applicable
☐	Proof of Worker's Compensation Insurance (Form C-105.2, U-26.3 or SI-12), or proof of exemption (Form CE-200)
☐	Proof of Disability Benefits Coverage (Form DB-120.1 or DB-155), or proof of exemption (Form CE-200)
☐	Permit Fees
☐	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:

Name _____

Address _____

City _____ State _____ Zip _____

Applicant Phone (_____)_____

Applicant Email Address _____

For Joint application, name and address of Applicant 2 below:

Name _____

Address _____

City _____ State _____ **Zip** _____

Applicant 2 Phone (_____)_____

Applicant 2 Email Address _____

Emergency Contact _____

Emergency Phone (_____) _____

RETURN PERMIT TO: ***(if different from Permittee)***

Name _____

Address _____

City _____ State _____ Zip _____

RETURN DEPOSIT/BOND TO: ***(if different from Permittee)***

Name _____

Address _____

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**			
☐	1a1	Underground - excavation, tunneling, boring, installing, etc.	32		.32/foot	0	
☐	1a2	Underground - Commercial subsurface connection	32		.32/foot	0	
☐	1a3	Underground - Residential subsurface connection	32		.32/foot	0	
☐	1b1	Overhead - Erecting poles, towers	63		2.50/unit	0	
☐	1b2	Overhead - Running new lines	63				
☐	1b3	Overhead - Commercial service connection	19				
☐	1b4	Overhead - Residential service connection	19				
☐	1c1	Installation on bridge or culvert	63				
☐	1c2	Installation on bridge or culvert requiring structural changes	625				
MAINTENANCE				**Number of regions/counties**			
☐	2a	Maintenance, single job	32				
☐	2b1	Annual maintenance per region			2500		0
☐	2b2	Annual maintenance per county			625		0
☐	2c	Repair of water or sewer lines	32				
☐	2d	DOT requested maintenance	N/C				
AFTER ORIGINAL CONSTRUCTION				**Number of regions/counties**			
☐	3a1	Annual – includes overhead connections – per region			2500		0
☐	3a2	Annual – includes overhead connections – per county			625		0
☐	3b	DOT requested relocation	N/C				
☐	3c	Commercial subsurface service connection	32				
☐	3d	Commercial overhead service connection	19				
☐	3e	Residential subsurface service connection	32				
☐	3f	Residential overhead service connection	19				
MISCELLANEOUS UTILITY WORK							
☐	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 _____

APPENDIX F

NATIONAL GRID REQUIREMENTS

INTRODUCTION

Operation of vehicles or equipment near energized lines and equipment may create hazards due to electric field induction, magnetic field induction, and direct contact with energized lines or equipment. These effects may be reduced by grounding and/or isolating the vehicle or equipment.

PURPOSE

The purpose of this procedure is to provide the appropriate methods required for grounding and/or barricading before working on or near energized overhead and underground distribution, sub-transmission and transmission lines. The procedure addresses all mechanized equipment working in or near an energized source where the hazards due to electric or magnetic field inductions exist or the potential of an accidental contact with energized equipment / wire may occur.

ACCOUNTABILITY

1. Standards, Policies and Codes
    A. Update procedure as necessary.
    B. Provide T&D personnel guidance when requested.
2. Customer Operations
    A. Ensure the components of the procedure are implemented.
    B. Ensure T&D personnel are trained in this procedure.
    C. Provide revision input as necessary.
3. Employee
    A. Demonstrate the understanding of the procedure.
    B. Comply with the requirements of the procedure.

REFERENCES

National Grid Employee Safety Handbook
OSHA 1910.269 (p) 4 Operations Near Energized Lines or Equipment.
OSHA 1926.416
OSHA 1910.333
NESC 2012 edition
IEEE Standard 1048 2003 IEEE Guide for Protective Grounding of Power Lines
ANSI Z535.5-2002
ASTM Designation: F855-97
NG-EOP G013 Excavation Notification Requirements
NG-EOP UG011 Underground Electric

DEFINITIONS

Qualified Person: A person knowledgeable in the construction and operation of electric power generation, transmission, substation, and/or distribution apparatus involved along with the associated hazards in specific duties pertaining to electric operations.

Barricade: A physical obstruction such as tapes, screens or cones intended to warn and limit access to a hazardous area.

Barrier: A physical obstruction that is intended to prevent contact with energized lines and equipment.

Effectively Grounded: Being connected to the earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the building up of voltages that may result in undue hazard to connected equipment or to persons.

Energized (alive, live): Electrically connected to a source of potential difference or electrically charged so as to have a potential significantly different from that of earth in the vicinity.

Touch Potential: The voltage difference between an object which the worker may touch and the earth upon which the worker is standing. This voltage difference could be hazardous and could result from energizations, induction or faults.

Step Potential: The voltage difference between two points on earth's surface, separated by a distance of one pace (assumed to be one meter/approximately 3 feet) in the direction of the maximum voltage gradient. This potential difference, if great enough, could be dangerous to a worker.

Exposed – Not isolated or guarded.

Isolated: An object that is not readily accessible to persons unless special means of access are used.

Guarded: Protected by personnel, covered, fenced, or enclosed by means of suitable covers or casings, barrier rails, screens, mats, platforms, or other suitable devices in accordance with standard barricading techniques designed to prevent dangerous approach or contact by persons or objects.

Tolerance Zone: - If the diameter of the underground facility is known, the distance of one-half of the known diameter plus two feet, on either side of the designated center line or, if the diameter of the underground facility is not known, two feet on either side of the designated center line.

TRAINING

Provided by appropriate National Grid training program.

DOCUMENT CONTENTS

Table of Contents

1.0 SAFETY REQUIREMENTS

1.1 All appropriate Personal Protective Equipment, which includes, but is not limited to hard hat, safety glasses/eye protection, rubber protective equipment, appropriate footwear and FR clothing, shall be worn when performing work as required by the National Grid Employee Safety Handbook and applicable work procedures.

1.2 The employee in charge of the work shall conduct a written job brief with the employees involved before they start each job. The briefing shall cover at least the following subjects: hazards associated with the job, work procedures involved, special precautions, Clearance and Control Procedures, atmospheric testing and ventilation and personal protective equipment requirements.

1.3 During work, barriers or other appropriate protection shall be installed to protect adjacent conductors.

1.4 All the procedures shall be worked in accordance with accepted safe work practices using approved tools and equipment. Refer to the tool catalog for a listing of approved equipment.

2.0 GENERAL GUIDELINES FOR ALL APPLICATIONS (OVERHEAD AND UNDERGROUND)

2.1 All ground connections shall be made on a bare metal surface and shall be clean and wire brushed before installing connection.

2.2 All ground leads shall be fully extended or uncoiled.

2.3 All ground connections shall be checked prior to each use.

2.4 When installing a ground clamp or grounding mechanized equipment to a grounding element, the use of Class 2 rubber gloves is required. And, if the relevant minimum approach distances cannot be maintained for a particular voltage, the use of live line tools shall be used.

2.5 Temporary driven grounds shall be installed and barricaded at a location away from the workers on the ground.

2.6 Follow procedure NG-EOP G013 Excavation Notification Requirements when installing any ground rods.

3.0 OVERHEAD EQUIPMENT APPLICATION

3.1 When a qualified employee needs to operate mechanized equipment near energized lines or apparatus, the equipment shall be operated so that the minimum approach distances listed in the tables below are maintained from exposed energized lines/apparatus. This can be accomplished in most cases by repositioning the mechanized equipment or by displacement or relocation of the affected energized lines or apparatus. Insulated aerial equipment being used within its dielectric rating and operated by a qualified employee is exempt from this requirement.

MINIMUM WORKING APPROACH DISTANCES FOR VEHICULAR AND MECHANICAL EQUIPMENT

NEW ENGLAND (OSHA)

Nominal Voltage in kilovolts	Distance: Phase to ground exposure
0.05 to 1.0	Avoid contact
1.1 to 15.0	2'-1" (0.64m)
15.1 to 36.0	2'-4" (0.72m)
36.1 to 46.0	2'-7" (0.77m)
46.1 to 72.5	3'-0" (0.90m)
72.6 to 121	3'-2" (0.95m)
138 to 145	3'-7" (1.09m)
161 to 169	4'-0" (1.22m)
230 to 242	5'-3" (1.59m)
345 to 362	8'-6" (2.59m)
500 to 550	11'-3" (3.42m)
764 to 800	14'-11" (4.53m)

NEW YORK IBEW LOCAL 97 ONLY

Voltage	Electrically Qualified	OSHA General
50-1000v	Avoid Contact	Avoid Contact
1000V – 15kv	2 ft. 2 in.	10 ft.
23-34.5kV	3 ft.	10 ft.
46-69kV	4 ft.	10 ft. 8 in.
115kV	5 ft.	12 ft. 4 in.
230kV	7 ft.	16 ft.
345kV	9 ft.	20 ft.

New York Transmission Line Services:

The National Grid Employee Safety Handbook rules apply. Where the distances allow, the Minimum Approach Distances listed in Appendix A of the National Grid Employee Safety Handbook will be utilized. If such work cannot be performed, OSHA minimum approach distances will apply. (Reference OSHA 1910.269 tables R6 – R10). Per OSHA 1926.1408 (b)(3) a spotter is required within 20 ft zone.

3.2 A designated qualified employee other than the equipment operator shall observe the approach distance to exposed lines and apparatus and give timely warnings before the minimum approach distance, shown in the relevant table above, is reached. When the

minimum approach distance cannot be maintained, in order to accomplish the work, the written job brief shall document the reasons for the encroachment on the minimum approach distances and the operation shall comply with at least one of the following:

3.2.1 The energized lines exposed to contact shall be covered with approved Insulating products/barriers that will withstand the type of contact that might be made.

3.2.2 The equipment shall be insulated for the voltage involved and repositioned so that its uninsulated portions cannot approach the lines or equipment any closer than the minimum approach distances.

3.2.3 Each employee shall be protected from hazards that might arise from equipment contact with energized lines. The measures used shall ensure that employees will not be exposed to hazardous differences in potential by:

a. Using the best available ground to minimize the time the line remains energized.

b. Bonding equipment together to minimize or eliminate potential differences.

c. Providing temporary protective equipotential bond mats to extend areas of equipotential.

d. Employing portable insulating protective equipment or barricades to guard against any remaining hazardous potential differences.

4.0 OVERHEAD GROUNDING ELEMENTS

4.1 Ground element choices in order of priority are:

4.1.1 System neutral conductor or cable

4.1.2 Substation ground, structure ground

4.1.3 Ground wire connected to ground rod and bonded to system neutral (down ground)

4.1.4 An existing guy anchor rod under tension and that is not newly installed.

4.1.5 Temporary driven ground rod (8’ length driven fully into the soil)

5.0 GROUNDING OF OVERHEAD EQUIPMENT

5.1 **All wire trailers and pulling/tensioning equipment**

5.1.1 When operating this equipment near energized lines, the equipment shall be grounded to a ground element. The equipment/work area shall be barricaded to protect the workers and the public from dangerous touch and step potentials. Appropriate rated rubber gloves and EH rated overshoes shall be worn by the operators.

Three reel spacer cable trailer with axle grounds

Single reel trailer 2/0 grounding set

AB Chance Cat # SA600-3147 or
MacLean Power Systems

Three reel trailer 2/0 grounding set

AB Chance Cat # SA600-3149 or
MacLean Power Systems

All new grounds ordered will come with clear jacket
See tool catalog for ordering information

5.2 Three reel trailer grounding set installation:

5.2.1 The three rotators are put onto the arbors as the wire reels are being mounted located approximately two feet from each wire reel. Each three foot ground cable should be connected from the bare wire tail (stripping of conductor may be necessary) of each wire reel to one of the ball studs on the rotator installed on each arbor. Next, connect the ten foot ground cable lead to the second ball stud on the rotators to whichever bus bar is chosen depending on where the grounding element is located. Then connect the fifty foot ground cable lead from

the bus bar to the ground source. The single reel trailer grounding should be done in a similar fashion utilizing the approved single reel trailer grounding set.

5.2.2 Running or stringing grounds can be used in place of arbor reel grounds when installing new conductors. These grounds connect the new conductor to the trailer which connects to a ground element. **The preferred method is the arbor rotating ground method.**

5.3 Digger Derrick Trucks:

5.3.1 If it has been determined that adequate insulate/isolate products could not be installed to withstand the type of contact that might be made during the operation of the digger derrick with any uninsulated portions (winch line is not tested and cannot be considered insulated for voltages involved) operating within the relevant minimum approach distances, a written job brief shall detail the reasons for the encroachment on minimum approach distances and the following requirements shall be done:

a. The digger derrick shall be attached to the best available ground element at the work site. (See Section 3 Grounding Elements)

b. Bond equipment together to minimize or eliminate potential differences and provide temporary protective equipotential bond mats to extend areas of equipotential.

c. If there is exposure to the public (near a sidewalk or in a parking lot for example) the vehicle shall be barricaded.

d. It is strongly recommended that the equipment should always be barricaded to prevent ground personnel from making inadvertent contact with the equipment.

5.3.2 Contact with the vehicle while the boom or suspended load is in the energized area shall be avoided while standing on the ground. However, when situations require contact with the digger derrick from the ground, class 2 rubber gloves and EH rated overshoes shall be worn. Added safeguards such as insulating pole guards shall be used when setting poles within the relevant minimum approach distances.

5.3.3 The operator of the digger derrick shall utilize the following methods to protect themselves in case of accidental contact with energized lines:

a. Operate controls from the truck platform of the digger derrick.

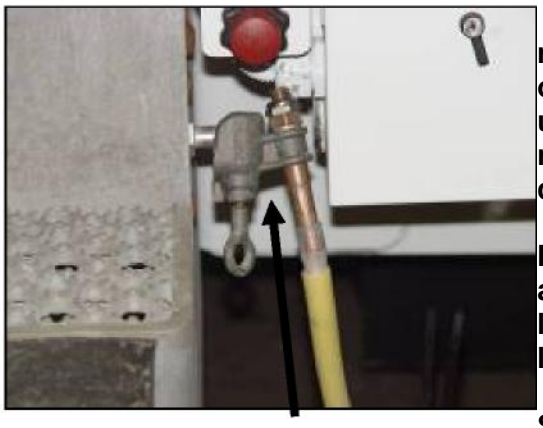
b. If controls are not being operated from the truck platform the operator shall wear Class 2 rubber gloves and EH rated overshoes.

c. Stand on a temporary protective equipotential bond mat bonded to the truck.

d. Avoid contact to equipment with unprotected portions of their body.

Grounding of Digger Derrick

tud
Located rear of digger derrick



G
r
o
u
n
d

B
a
l
l

S

Ball Socket Ground Clamp

Ground Cable Assembly Located in front till on passenger side of vehicle.
A visual inspection of the ground connection to the frame on this style of ground is required to ensure the integrity of the ground connection.

**Use a National Grid approved 2/0 Cu Ground Cable Assembly 50' length -
AB Chance Assembly # SA600-3027 or MacLean Power Systems part #BT-Q-2/0Y-50
to connect from the ball stud ground connection on the vehicle to the chosen ground element.**

All new grounds purchased will have a clear silicone jacket to allow for a visual inspection of the ground conductors and connections.

(See Bulletin #09-26 and Tool Catalog for specific sets and catalog #'s)

http://us3infonet/sites/eng_delivery_svcs/Pages/StdsWkMthds.aspx

5.4 Additional mechanized equipment

5.4.1 The following mechanized equipment when operating within the relevant minimum approach distances shall follow the approved methods described in this procedure; insulated aerial equipment rated below the circuit voltage level, cranes with booms, trucks with derricks, loaders, uninsulated telescopic and articulating aerial lifts, personnel lifts, scissor lifts, high reach forklifts, tractors with side booms and any other similar equipment.

6.0 UNDERGROUND EQUIPMENT APPLICATION

6.1 While pulling Cable with a conductive steel winch line and the steel winch line will be within reasonable proximity and a possibility of contact exists with an energized shielded cable, above 1000V up to 46kV and energized unshielded cables below 1000V, the cable pulling equipment shall be grounded and barricaded. This requirement applies when pulling cable in a manhole & conduit, URD or UCD systems.

6.2 Each employee shall be protected from hazards that might arise from equipment contact with energized cables. The measures used shall ensure that employees will not be exposed to hazardous differences in potential by:

6.2.1 Using the best available ground to minimize the time the line remains energized.

6.2.2 Bonding equipment together to minimize or eliminate potential differences.

6.2.3 Providing temporary protective equipotential bond mats to extend areas of equipotential.

6.2.4 Employing portable insulating protective equipment or barricades to guard against any remaining hazardous potential differences.

7.0 UNDERGROUND GROUNDING ELEMENTS

7.1 Underground Grounding Element Choices in order of priority:

7.1.1 Manhole ground grid (has ground rod)

7.1.2 Primary neutral in manhole

7.1.3 Secondary neutral in manhole

7.1.4 Substation / structure ground grid

7.1.5 Ground rod with down ground - which is connected to system neutral (non delta distribution area)

7.1.6 Street light ground rod (connected to the rod)

7.1.7 Anchor rod under tension, not new, not rusty (or clean off rust)

7.1.8 Temp ground rod (driven - 8' min)

Manhole Ground Grid (7.1.1)

Cable Truck Grounded to Ground Grid

8.0 GROUNDING OF UNDERGROUND EQUIPMENT

8.1 Underground Lines Pulling Equipment and Powered Reel Trailers

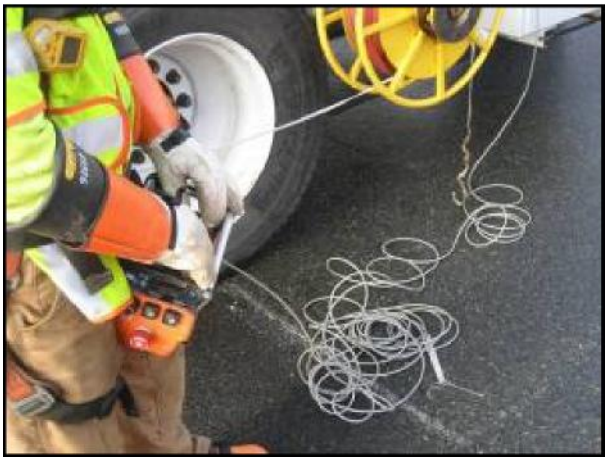
8.1.1 Cable Winch Trucks and powered reel trailers shall be attached to the best available ground element at the work site. (See section 7 Grounding Elements) Bond equipment together to minimize or eliminate potential differences. The equipment/work area shall be barricaded to protect the workers and the public from dangerous touch and step potentials. Appropriate rated rubber gloves and EH rated overshoes shall be worn by the operators.

8.1.2 Avoid contact with the winch truck or powered reel trailer while grounded. However, when situations require contact with the winch truck or reel trailer from the ground, class 2 rubber gloves and EH rated overshoes shall be worn.

8.1.3 The operator of the cable winch truck or the reel trailer shall utilize the following methods to protect themselves in case of accidental contact with energized cables:

a. Where possible use wireless remote controls to operate the equipment.

b. If using hard wired controls (including foot pedals) or operating the controls on the truck the operator shall wear Class 2 rubber gloves and EH rated overshoes or stand on a temporary protective equipotential bond mat bonded to the truck. The operator shall avoid contact to the equipment with unprotected portions of their body.



Wired Pendant Using Rubber Gloves

9.0 BARRICADING

9.1 Barricading a vehicle or equipment provides a physical and visual obstruction, warning the public and workers of possible danger. The barricade should be positioned so that no hazardous voltage exists outside the barricade and will prevent unauthorized entrance into the potentially hazardous area. No one should enter the barricaded area while the vehicle or equipment is operating and has a risk of contacting energized lines or apparatus. A barricade should be set up using a minimum six foot perimeter, if possible, around the vehicle or equipment providing isolation from the vehicle or equipment for the public and workers. If the six foot perimeter would impede traffic flow or create a greater hazard for the pedestrians, then a lesser perimeter is allowable, but a worker shall be positioned to ensure that contact is avoided. The use of safety cones, safety flags, red barricade tape, and/or retractable barriers shall be used to construct this barricade. The following is an example of a method of barricading:

Danger Barrier Tape - #9301672

Flags - #9321942

Safety Cones - #9319384
Retractable barrier - #9310511

10.0 EXCAVATING EQUIPMENT

10.1 Prior to excavating, cables and other buried utilities in the immediate vicinity shall be located, per NG-EOP G013 Excavation Notification Requirements. Mechanized equipment shall not be used to excavate in close proximity, within the tolerance zone (2 feet either side of center line), of energized buried lines and other buried utilities. Before excavating in close proximity of energized cables within the tolerance zone refer to NG-EOP UG011 Underground Electric.

10.2 Uninsulated mechanized excavating equipment (backhoes, earth borers, excavators, vacuum trucks, trenchers, diggers, and any other similar equipment) that could possibly contact an energized underground cable or apparatus shall be grounded and barricaded utilizing approved methods described in this procedure.

11.0 ELECTRIC AND MAGNETIC FIELD INDUCTION

11.1 Voltages can be induced on vehicles and equipment that are in proximity to energized lines due to electric and magnetic field induction. If these vehicles and equipment are not in the work area and cannot possibly make contact with energized lines or equipment, they may be grounded with a discharge (static) ground cable to drain off these induced voltages.

12.0 REVISION HISTORY

Version	Date	Description of Revision
1.0	05/03/11	This document supersedes document dated 08/27/07.
2.0	12/04/12	This document supersedes document dated 05/03/11.
3.0	05/24/13	This document supersedes document dated 12/04/12.

31.3 Pipeline High Voltage Protection During Construction

31.31 Introduction

When coated metallic piping is run parallel to overhead A.C. electric lines, the pipe is subject to picking up induced voltages and currents that are the result of electromagnetic and electrostatic coupling. These induced voltages and currents may cause coating damage, as well as damage to cathodic protection and electronic monitoring equipment. They can also be a hazard to personnel working on the pipeline, particularly during the construction period when long sections of pipe are exposed above-ground,

31.32 Purpose

The purpose of this specification is to cover the procedures and construction techniques which shall be used during the construction period to reduce potentials on the pipe and construction equipment to a level less than 15 volts (RMS) measured between the structure and ground. These specifications represent minimum requirements only. All possible actions to protect individuals during construction and maintenance should be reviewed to assure the safety of all persons and equipment affected. A qualified person shall be designated as the one in charge of electrical safety on all construction projects on electric rights-of-way. NMPC shall review this individual's experience and qualifications and approve his/her designation as the Supervisor of Electrical Safety. This person shall not be replaced without the Corporation's approval. When this person is not on site or available to give direction, another individual shall be designated responsible. This person shall be identified and approved by NMPC prior to his/her being assigned this function. At no time shall any work relating to electrical safety take place on the job without the qualified individual present.

31.33 Qualifications of the Supervisor of Electrical Safety

This person shall be fully aware of proper grounding procedures and the dangers associated with inductive and electrolytic coupling, power arc, lightning, faults, currents, etc. This person shall know of the proper safeguards for the construction equipment being used and the safe distance from overhead conductors required. This person shall be furnished with the instrumentation, equipment and authority required to maintain safe working conditions. In all cases, tests to detect A.C.and D.C. potentials shall be performed first--all systems shall be treated as a live electrical conductor, until proven otherwise. He should communicate at least daily with the dispatcher controlling the involved electric lines to ascertain any changes in loading or switching, scheduled that day which might be expected during the work period.

31.34 Grounding of Construction Equipment & Material

Each piece of equipment utilized to handle pipe in any way such as unloading, picking up, transporting, bending or setting-in shall be grounded and shall be equipped with a cable assembly capable of grounding the sections of pipe to the piece of equipment handling that pipe.
(See Exhibit No. 3, Sheets #1, #2, #3 and #4.)

Before any section of pipe is picked up or moved in any way, the ground shall be completed between the section of pipe and the equipment moving that pipe. "Setting-in" booms shall be equipped with ground cable and the ground shall be maintained at least until the stringer bead is completed.

Pipe shall be unloaded from stringing trucks by a sideboom equipped with grounding cable, as described above. A ground shalt be completed between all sections of pipe to be unloaded and the sideboom before unloading cable or slings are attached to the pipe.

During construction, long strips of welding, ungrounded and/or unbackfilled pipe shall not be allowed to accumulate along the right-of-way in the ditch parallel to and within 200 feet of the center line of the nearest electric line.

Pipe shall be hauled to the right-of-way and stored in stacks (perpendicular to the alignment of the electric lines) of ten sections or less. Each section of pipe in the stack shall be grounded with a 5/8" minimum diameter ground rod driven into the ground at least four (4) feet. (See Exhibit No. 4) This ground shall be maintained until each individual section of pipe has been removed from the stack. When grounding sections of pipe, the ground rod shall be driven and the grounding cable connected to the ground rod first. The grounding cable shall then be connected to the pipe. Cables used for temporary grounding attachments shall have good mechanical strength as well as high conductivity. The cable shall be single conductor #2 A.W.G. 1715 stranded welding cable or equivalent. Cable attachments to temporary grounding systems shall be made by a method that assures good electrical contact, while applying firm pressure to the pipe metal. This method of attachment should have a current carrying capacity of at least 200 amperes. When removing grounding cable, the cable shall be removed from the pipe or equipment first and then from the ground rod.

All grounding attachments and removals shall be made by or under the direct supervision of the persons described above who is in charge of electrical safety.

Each string of welded pipe not yet welded to the completed portion of the pipeline shall be temporarily connected to a ground rod having a minimum diameter of 5/8" and driven to a depth of at least four (4) feet. (See Exhibit No. 5) Any string of pipe no longer than 1,000 feet shall be grounded in at least two (2) places. Grounds shall be no more than 1,000 feet apart. Strings of pipe shall be limited to 3,000 feet in length unless longer lengths are authorized by the Company's authorized representative. Temporary grounds shall be maintained on new sections of main until they are tied into that portion of the line which has been buried and permanently grounded with magnesium anodes. When tie-ins are being made, both sections of pipe shall be bonded together and tested to assure that each is effectively grounded by measuring the potential between each loose end and ground. If this potential exceeds 20 volts, work shall not proceed until supplementary grounding is installed to reduce the potential to less than 15 volts.

Bare road casings may be utilized for additional grounding during construction. This may be done by attaching a bond cable between any exposed metallic surface of the pipeline and the bare casing. This bond shall be removed only after zinc grounding cells have been installed between the pipe and casing but before the casing and pipe have been buried.

31.35 Safe Voltage Requirements

The voltage to ground of any string of pipe exposed to contact by personnel shall be measured periodically by reading the voltage between the pipe and a clean steel pin driven in the ground. If the

voltage exceeds 15 volts above ground, supplementary grounds shall be used to reduce this voltage to less than 15 volts. In the event that measured voltage above ground exceeds 20 volts, the person in charge of electrical safety shall issue appropriate warnings, and all work on the pipe string shall be suspended until potential is reduced to less than 15 volts.

31.36 Insulating Joints During Construction

Insulating joints shall be installed with a bond cable shorting out the insulating material. This bond cable shall remain in place until the insulating joint has been welded into the pipeline and a zinc grounding cell has been connected across the insulating flange. The zinc grounding cell with test stations must be in service and the bond cable removed before the insulating joint is buried.

31.37 Refueling on Electric Right-of-Ways

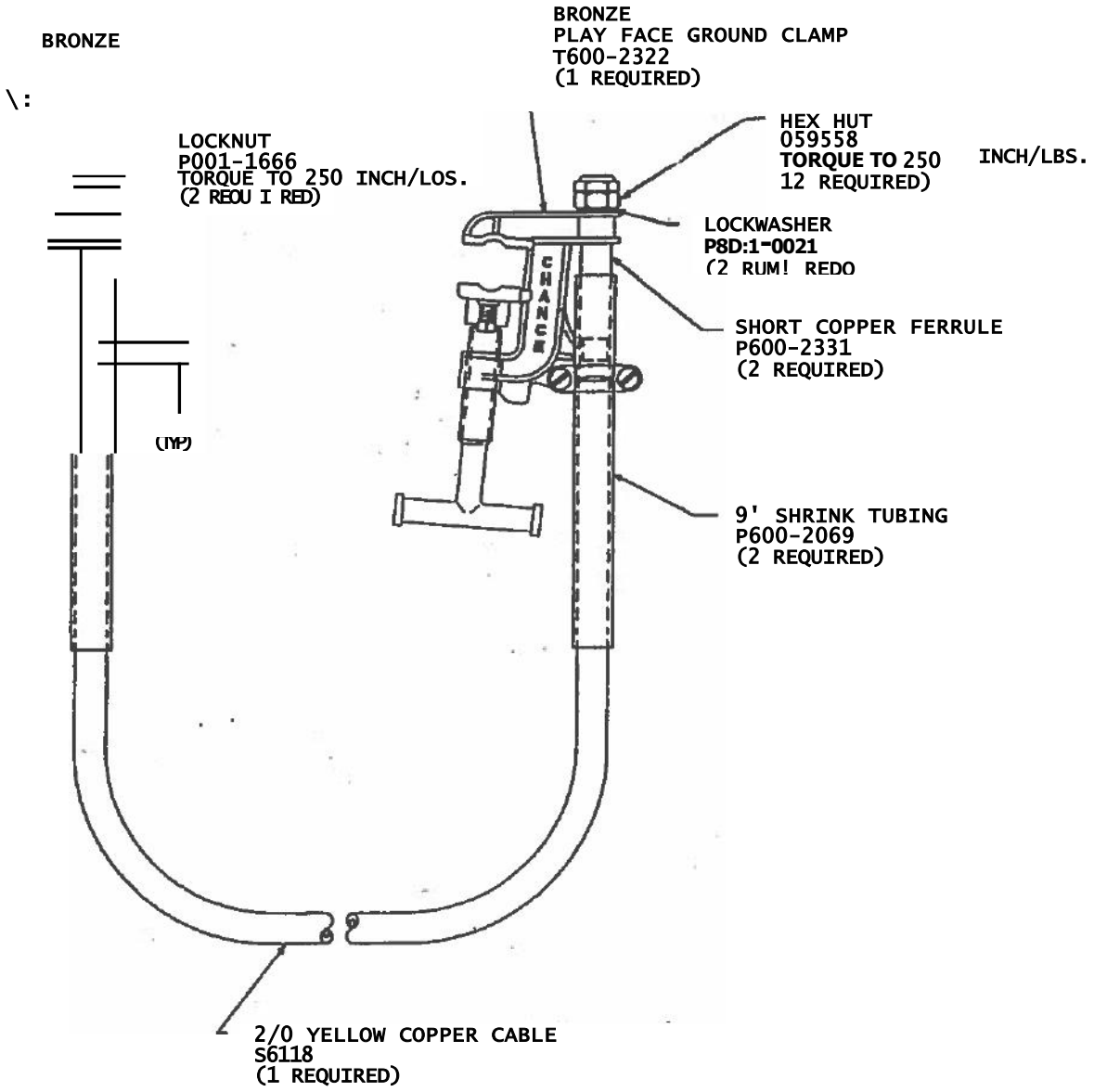
Each fuel truck shall be grounded and shall be equipped with a cable assembly capable of completing an electrical bond between the truck and any piece of equipment to be fueled. This bond shall be made each and every time prior to any part of refueling operation. This bond shall not be removed until all refueling operations are completed. Care shall be taken where cable attachments are made so that good electrical continuity is established.

31.38 Rubber-Tired Equipment on Electric Right-of-Ways

Rubber-tired equipment parked for any appreciable time on a power line right-of-way collects a considerable charge of static electricity. Refer to the Niagara Mohawk Accident Prevention Rules book (2.13 GROUNDING OF CRANES AND SIMILAR MOBILE EQUIPMENT WHEN OPERATED IN THE VINCINITY OF ELECTRICAL CONDUCTORS) for requirements for equipment grounding.

Vehicles should be parked no closer than 200 feet from the base of electric line towers. Rubber-mounted heavy equipment, while parked or in use on the power line right-of-way, shall be grounded to a driven ground at least 1/2" in diameter. The ground shall be driven to a depth of at least four (4) feet. All vehicles which might be parked on the right-of-way shall be equipped with a 1/2" copper ground rod and connecting cable assembly. Cable should be at least No. 2/0 AWG arid have insulated clips capable of completing an electrical bond between the ground rod and the vehicle. Each time a vehicle is parked on the power line right-of-way, the ground rod shall be pushed as far as possible into the ground to make an electrical connection between the rod and the vehicle. This bond shall remain in place as long as the vehicle is parked on the power line right-of-way.

Grounding cables shall be 25 ft. minimum and meet the requirements specified in drawing below.



31.39 Electric Grounds

All bonding connections shall be made to driven ground rods as described above. Bonding connections shall not be made between the pipeline and the electric transmission line ground. Such a connection can result in high pipeline potentials during power line faults with current flow through the pipeline which could damage the steel as well as the coating.

31.40 Construction During Thunder Storm

Work shall be suspended in the area of overhead high voltage power lines during any thunderstorm activity.

31.41 Safe Working Clearances on Electric Right-of-Ways

Whenever working within an electric right-of-way, the following guidelines shall be applied to ensure both personnel and equipment safety:

1. Except where electrical distribution and transmission lines have been de-energized and visibly grounded at the point of work or where insulating barriers, not a part of or an attachment to the equipment or machinery have been erected to prevent physical contact with the lines, equipment or machines shall be operated proximate to power lines only in accordance with the following:

   – For lines rated 50 KV or below, minimum clearance between the lines and any part of the crane or load shall be 10 feet.

   -For lines rated over 50 KV, minimum clearance between the lines and any part of the crane or load shall be 10 feet plus .4 inches for each 1 KV over 50 KV but not less than 15 feet.

   – In transit, with no load and boom lowered, the equipment clearance shall be a minimum of 4 feet for voltages less than 50 KV and 10 feet for voltages over 50 KV up to and including 345 KV and 16 feet for voltages up to and including 750 KV.

   – The above criteria applies to personnel and equipment including loaded and unloaded cranes, vehicles and cranes in transit, men and machines and combinations, thereof.

   – All lines shall be considered energized unless on-site personnel have verified it de-energized in accordance with NMPC Accident and Prevention Rules.

2. Equipment which has the capability of extending within the wire clear zone established above shall have a warning sign attached in clear view of the operator identifying the potential hazard.

3. At each access to the right-of-way, where the potential for electrical hazards exists, signs shall be posted warning of the electric danger.

4. No equipment actively employed in site preparation, grading, excavating, etc., shall be operated within (10) feet of any transmission line supporting structure unless otherwise approved by Niagara Mohawk.

5. There shall be no excavation under the overhead lines within 15 feet of the nearest wood member of guy anchor and/or 25 feet of the nearest steel member of a transmission line supporting structure, unless otherwise approved by NMPC.

6. The Regional Electric Superintendent Transmission & Distribution shall be notified at least 1 week before any work is started on the right-of-way. Reference this individual to EOP 214, "High Voltage Proximity Act" in the notification.

7. Equipment which is operated in the direct vicinity (within 200 feet of an electrical high voltagF line) must be effectively grounded.

31.42 Additional Safety Precautions for Electric ROW Construction

A pre-job brief shall be conducted with all site personnel prior to work commencement in the electric right-of-way, with a focus on electrical safety. Topics of discussion to ensure personnel and equipment safety shall include:

-Survey information and points of concern.

-Dangers associated with electrical hazards.

– Warning signs and postings.

-Minimum clearances.

-Safety equipment.

-Equipment and personnel positioning.

– Potential for cable whip and associated safety precautions.

The Contractor and Niagara Mohawk representatives shall consider further safety precautions, including the following:

-Designating an individual to observe equipment clearances and provide timely notification to equipment operators.

-Cage-type boom guards, insulating links, proximity warning devices and trapeze

lines. -Use of rubber gloves and boots.

– Additional machine and load grounding.

– Stored, construction, and installed grounds.

-Requests to Regional Control Room to remove auto reclose circuitry.

-Use of nylon straps, ropes and other insulating devices, rather than cables and conductive equipment.

– Continuous on-site supervision during construction activities, in addition to the "Supervisor of Electrical Safety."

31.43 References

The above criteria is established based on the current requirements of:

– 29 CFR Part 1926.550 Subpart N

-NEC 110-34

-NESC Part 4

-NMPC Doc. No. CR.03.039, High Voltage Proximity Act

-NYSCRR Chapter 469, High Voltage Proximity Act - Safety Measures

-NMPC Accident Prevention Rules Part 124 - Working Clearances

-EOP 214, Electric Operating Procedures, "High Voltage Proximity Act"

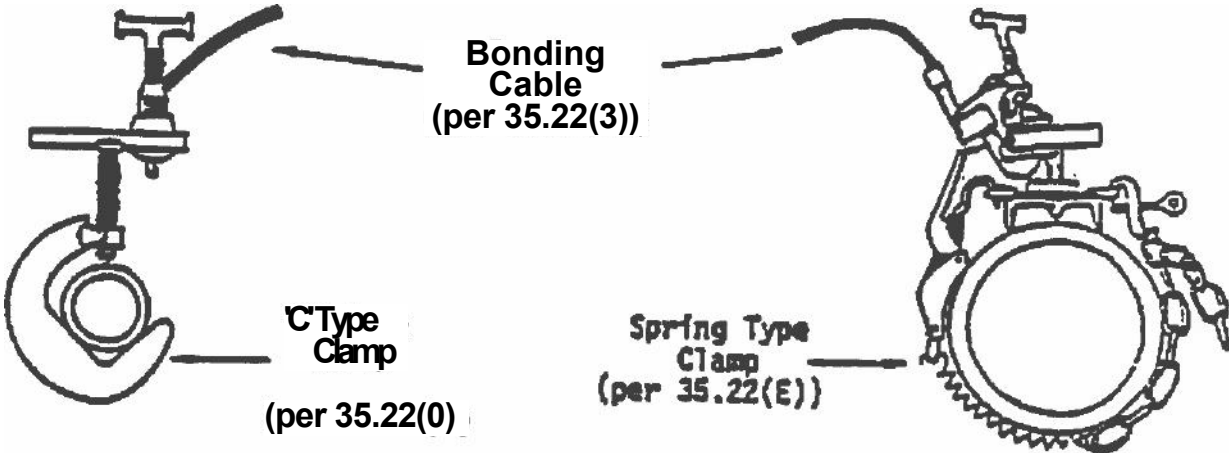
Deviations to the above criteria are allowed, provided approval from responsible parties of both the Contractor and NMPC is obtained and New York State and Federal Regulations are not violated, EOP-214 should be consulted.

31.44 Installation of Grounding Bonds

1. **The bond must be installed so as to bridge the entire distance of the existing gap or proposed void between the metallic structure and the grounding device.**

2. **The area where the contact point of the clamp engages the structure being grounded must be free of rust, dirt, coating, scale, oil and grease (bare metal).**

3. **The proper type clamp, as illustrated below, must be selected. Piping in sizes up to 2** 1/2" **IPS should utilize the "C"-type clamp, while 4" and over are accommodated by the spring type.**



4_ **The "C" clamp is engaged when the contact point has been tightened down so as to be in solid contact with the pipe or equipment to be grounded.**

Spring clamps must be secured to the pipe by connecting the lever spring and properly adjusted chain to the stabilizer piece, then securing the contact point as stated previously.

5. A bonding cable must be attached to the clamp handle on each side of the proposed work site. Be sure that the cable is safely routed around the work area.

Fabricated Components for Bonding

A. General

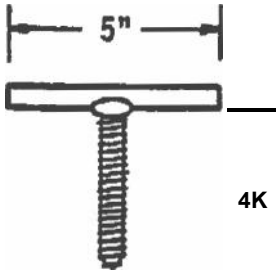
The following components should be fabricated and available to be assembled into bonding cables and clamps for use as described in Sheet No. 1.

B. Bonding Cables

Bonding Cables should be made up from two ground clamps, two compression ferrules that are connected by a section of #1 welding cable. These cables are used to connect either spring or "C" type clamps together.

Note: #2 A.W.G. 1715 stranded welding cable or equivalent and the appropriate size spring clamp (jumper cable ends) may be substituted for the #1 welding cable and ground clamps (35-03-069) when being used as a bonding cable during metallic pipe cutouts.

C. Fabricated Handle



This section is fabricated from a 1/2" hard steel stud bolt cut approximately 4" long; machined to a sharp point on one end and welded to a 5" handle piece of 1/2" steel rod.

D. "C" Type Pipe Clamps

Piping in sizes up to 2 1/2" IPS may be ground connected with a "C" type clamp. The jaws of these clamps may be fabricated from 1/2" boiler plate utilizing the pattern drawing A-33712-S, index 4.0-2-G24. This jaw piece together with a fabricated handle, per paragraph (C) will complete this clamp.

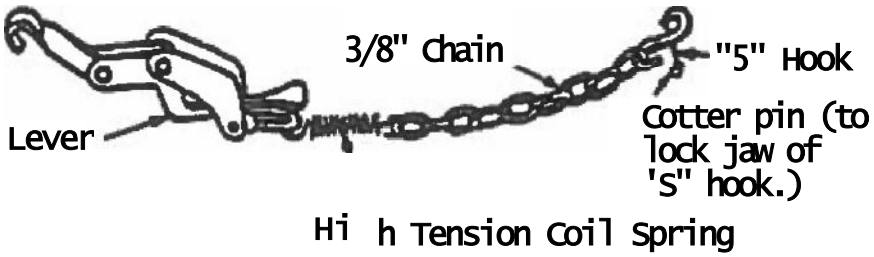
E. Spring Type Pipe Clamps

This type clamp is used on 4" through 24" IPS piping. It is assembled using a fabricated handle, per paragraph (C), together with the fabricated stabilizer piece, illustrated below. The appropriate sized lever spring will complete this clamp.

1. Lever Spring

Available from the H & M Pipe Beveling Machine Co. as a Boomer Assembly, model number per following chart.

Model No.	Pipe Range
#1	4" - 8"
#2	8" - 12"
#3	14" - 20"
#4	22" - 26"



2. Fabricated Stabilizer Piece

This is fabricated from a 3" piece of 3" channel iron. A 5/8" hole is cut in the center and a 1/2" square nut welded into place over the hole.

FOREWORD

National Grid's vision is to be a world-class safety organization with zero injuries every day. This includes working to help ensure the safety of our employees, contractors and the community. National Grid is committed to delivering operational excellence, including excellent levels of safety internally and in cooperation with the external contractors we rely on.

The Executive Safety Committee provides review and input for Safety Policies and Procedures through the Safety Policies and Procedures Subcommittee.

The Safety department is the owner of this procedure and is responsible for maintaining and implementing this procedure, soliciting comments from stakeholders and revising as necessary.

This document, "Contractor Safety Requirements", represents the current contractor safety requirements that are unique to operations and various functional groups at National Grid. This document does not specifically reference actions that are required by OSHA, other laws, rules, or regulations. These are requirements that should be understood by the contractor and contractor compliance with all applicable federal, state and local laws, rules, and regulations is expected by National Grid as a contractual condition.

Questions regarding this procedure should be referred to the National Grid Safety Department.

This document will be updated as necessary to communicate all aspects of National Grid's contractor safety to bidders, current contractors and to reflect changes in National Grid's Safety Policies and Procedures.

Date of Review/Revision:

Revision	Date	Description
1	08/5/2004	Initial
2	3/2/2005	Additions
3	01/30/2007	Additions
4	08/01/2008	Additions
5	08/01/2010	Additions
6	02/01/2011	Audit recommendations included

Date of Review/Revision Continued:

Revision	Date	Description
7	09/11/2013	Additions included OH; technical changes; Compliance Monitoring; Ethics; Job Briefs
8	11/02/2015	Additions include Audit & IA recommendations; ISN alignment; technical changes, 1910. 269 updates
9	8/17/2016	Format update and technical changes
10	3/29/2017	Additions to sections 2.2.6 and 6.5
11	2/26/2018	Process Safety, PM&CC Electric and PM&CC Vegetation Additions
12	3/12/2019	Contaminated Site Work Additions
13	10/24/2019	Job brief, Hi-Vis clothing, ladder use, and air gap revisions

1.0 CONTRACTOR SAFETY AT NATIONAL GRID

1.1 Definitions

Adverse Public Impact
Incident that disrupts service to the public or results in adverse public reaction.

Bulk Commodity Transportation
Activities involved in the movement of bulk commodities via truck, rail, plane or water vessel onsite and offsite on behalf of National Grid that if released could have safety and / or environmental consequences. Examples include but are not limited to: gasoline, oil, boiler chemicals, LNG, Nitrogen.

Compliance Assessments (CAs)
An act of observing and engaging in discussion with employees at a job site or work area locations. Compliance Assessments are documented using the Compliance Assessment checklist for each segment of operation and are not considered anonymous. Compliance Assessments are utilized to comply with internal policy and external regulatory requirements.

Contracted Services
Contracted Services refers to any activity that is conducted by an organization or individual under the terms of a purchase order. Contracted services may include all types of construction and maintenance services, tree trimming, building maintenance and demolition, electrical structure dismantling, site restoration, engineering design, recycling and waste disposal, drilling, rigging, electrical, and utility pole/structure maintenance.

Contractor
An independent person or company that undertakes a contract to provide materials or labor to perform a service or do a job and are responsible for the safety of his/her employees and subcontractors.

Contractor Orientation
Contractor orientation is intended to serve as a resource in order to provide the contractor with the tools necessary to educate their employees and subcontractors. The session is not intended to train the contractor management, their employees or subcontractors. The extent and content of the orientation session shall be commensurate with the scope and type of the contractor's activities.

Hazardous Conditions
A condition that can and is rectified immediately by the person who identified the hazard.

Incident
An unplanned event that has a human component and results in or could potentially result in harm to people, damage to property and/or adverse public impact.

Incident Management System (IMS)
National Grid's online incident management tool that allows the company to report safety, environmental and asset-related incidents, perform incident analysis, generate safety reports and monitor the organization's safety performance.

ISNetworld, Inc. (ISN or ISN System)
Third party contractor that is a global resource for connecting Hiring Clients with safe and reliable contractors and is a contractor information management system currently contracted with National Grid.

Job Brief
A planned interactive discussion that covers, but is not limited to, potential hazards associated with the job including situational awareness (assets or other items which may impact the job at hand), work procedures involved, special precautions, and personal protective equipment requirements. The discussion should include all contractor employees, sub-contractors and team members working on a job that occurs just prior to a job, task or project. A new job brief shall be conducted for each of the following events: prior to a change in planned work specific to the job site, changes in weather conditions, extended breaks (i.e. lunch breaks) or when a new worker or company joins the crew. When possible and reasonably practical, a National Grid Representative should be present at contractor job briefings. Truck drivers for daily, non-hazardous material deliveries such as stone, gravel, concrete material or porta john cleaning are exempt from completing a job brief unless there are potential hazards associated to the driver or delivery. A National Grid representative shall talk to the driver to determine if a job brief is needed.

Major Hazard Asset (MHA)
A class of assets at National Grid, including Compressed Natural Gas (CNG), Gas Transmission (≥ 125 psig), Power Generation sites, Liquefied Natural Gas (LNG) plants, and LNG Trucking, in which any condition, or set of conditions, presents potential for a major accident to occur. Also referred to as process safety assets.

Major Accident
An event involving the release of potentially dangerous materials, the sudden and uncontrolled release of large amounts of energy (such as fires and explosions), or both. These can have catastrophic effects and can result in multiple injuries and fatalities, as well as substantial reputational, economic, property, and environmental damage

Operator Qualification (OQ)
As defined in the Code of Federal Regulations, Transportation, 49 Subpart 192.801 through 192.809 and/or DOT pipeline qualified for gas contractors doing work at National Grid. Additional state requirements pursuant to the state the contractor is working may be required.

Process Safety Management
Method of focusing and mitigating concerns of major hazards impacting safety, environmental damage and business losses. It is an organized effort to identify and analyze the significance of hazardous situations associated with a process or activity to aid management in making critical safety decisions

Project Representative
National Grid Owner's Representative or designee who is assigned to certain contracted projects and communicates regularly with the contractor during the course of the contracted service. This person also ensures the work is being performed in accordance with the contract, including the safety requirements.

Purchase Order (P.O.)
An agreement/contract between National Grid and a contractor to provide services and/or materials. The P.O. is set up by Procurement. The term "Contract" and "P.O." are similar and may be used interchangeably. A "Blanket P.O." is set up for contractors whose work is on-going. A "one-time P.O." is set up for project work.

Qualified Electrical Worker
Those who are knowledgeable in the construction and operation of the electric power generation, transmission and/or distribution equipment involved, along with the associated hazards.

Qualified Gas Worker
Any contractor who performs covered tasks in accordance with National Grid's Operator Qualification Program and the Northeast Gas Association are required to be knowledgeable and meet all regulatory standards.

Risk Assessment
A risk assessment is the process of identifying hazards and calculating or ranking the associated risks according to: the likelihood of occurrence, the severity of the harm from the hazard, and the amount of time of exposure to the hazard.

Effective Safety Discussion (ESD)
A discussion with an individual or group about their safety programs, issues or concerns (safety plans, tools, equipment, procedures, etc.). They are safety

discussions amongst employees that share similar work environments…office to office, field to field.

Safety Observer
A person who is responsible for alerting the work team to any potential unsafe conditions or lack of compliance with approved work practices, procedures or guidelines.

Transportation Advisor
Third party agency specializing in federal and company mandated drug and alcohol testing programs.

1.2 Introduction

Safety performance is a prime consideration in the selection of contractors. National Grid will stipulate safety performance requirements and responsibilities in our contracts, purchase orders (POs) and will hold the contractor accountable for meeting the contractual requirements.

National Grid's goal is to establish a long-term working relationship with contractors who share the same safety values and demonstrate those values through their work performance.

Contractor safety at National Grid involves three broad areas:

1. **The Contractor Procurement (Selection) Process**
   Contractor safety begins with the selection of contractors who have demonstrated a strong safety record. National Grid will complete a review during the procurement process that involves determining a contractors' risk and the scope(s) of work involved. National Grid currently uses ISNetworld, Inc. as a third (3rd) party assessment process for assisting with contractor procurement. The 3rd party entity will vet and continually monitor individual contractors' compliance with applicable safety and/or risk and insurance program requirements.

2. **Safety Communication**
   Safety communication covers all the avenues and forums in which National Grid and the contractor communicates safety. Communication begins early in the bidding phase and is on-going as an integral part of the contractor-customer relationship. The goal is to ensure clarity, transparency and to limit misunderstandings.

3. Safety Compliance

Safety compliance is the process of ensuring that the necessary technical provisions of the contract are being followed. National Grid will assign a project representative or other designee to provide guidance and oversight. The Contractor is responsible for their employees and subcontractors and shall be held accountable for ensuring compliance with all applicable safety rules while working on National Grid property, rights of way (ROWs) and our assets.

1.3 Risk Ranking of Work

1. National Grid characterizes and ranks risk by the scopes of work performed. The categories are classified as high, medium or low risk. Prior to being considered for work at National Grid, contractors who perform High or Medium Risk work must be pre-qualified in ISN. See Appendix A for more information regarding the National Grid Contractor Risk Matrix.

2. Activities that are designated as “high risk” means that catastrophic event can result if safety measures are not followed. Activities designated as “medium” risk present certain opportunities for moderate to significant injuries, property or reputational damage, and/or loss of service and/or possibly business continuity. Activities designated as “low” risk may still require safety compliance and control measures, although the contractor performing the work does not necessarily need to be enrolled in ISN, if that is the only classification of work that contractor performs for National Grid.

3. The designation High Risk, Medium Risk, or Low Risk, refers only to the inherent risk associated with the work activity and is not an opinion on the ability of a contractor to work safely.

4. The Procurement Agent will notify the bidder/contractor at the beginning of the procurement process if their contracted service has been ranked as high or medium risk.

1.4 Bidder Information Request – High and Medium Risk Work

1. Any contractor bidding on high or medium risk work shall be required to complete a questionnaire regarding the Contractor’s safety program, compliance and history of occupational illnesses and injuries (ISNetworld New Vendor Onboarding application form, located on the ISNetworld website). Contractors will also be required to demonstrate that all employees, including subcontractors, are qualified.

2. ISNetworld then thoroughly reviews contractors' qualifications against a prerequisite list of National Grid criteria. National Grid has established that contractors performing high or medium risk work MUST HAVE and MAINTAIN a grade of "C" or better in the ISN system to perform work and services for National Grid. ISN will track and manage the National Grid pre-qualified contractor bidder lists. This bidder list is the first step for a contractor in establishing a working relationship with National Grid. For active ISN contractors, ISN will request updated information monthly. Contractors who do not have a current PO, contract, or authorized scope of work with National Grid will be considered as a Prospective bidder and will be asked to submit information quarterly. It is understood that insurance may not be maintained within National Grid standards, however, once a contractor is awarded a contract, proper and adequate insurance must be provided to ISNetworld to achieve a passing grade. Lack of insurance or inadequate insurance is an immediate "F" grade in the ISN system per National Grid criteria.

3. Project representatives may request an exemption or variance from requiring a contractor to be placed in ISNetworld for various reasons. A Supplier Exemption Request form (located in the forms section of the SHE Infonet) shall be completed, documented and signed by the business unit VP and Corporate Safety Director prior to contract award.

4. The information that the Bidder provides National Grid via ISN serves as the basis for assessing safety qualification. For this reason, it is important for contractors to maintain transparency throughout the process. National Grid and ISN will review all submitted information. Any effort in avoiding complete disclosure will disqualify the Bidder from bidding work at National Grid.

1.5 Safety Compliance

1. National Grid representatives evaluate contractor compliance by conducting routine site visits, Compliance Assessments (CA's), Effective Safety Discussion (ESD) visits and attending periodic contractor safety meetings. Contractors should also perform and document safety self-assessments to ensure compliance to federal, state, local and National Grid regulations. This combined effort enhances, solidifies safety compliance and has the added benefit of quality control / quality assurance of the work performed.

2. Contractors bidding on new work shall provide worker qualifications to the National Grid procurement representative via the "Bidder Information Request" form and/or ISN National Grid On-boarding form.

3. If a safety violation is observed by a National Grid representative, the violation will be discussed with the contractor at the time of discovery.

4. Contractor employees enrolled in ISNetworld that are involved in any accident, incident or significant near-miss event, will be required to lead an investigation and root cause determination process. In addition, the contractor must implement corrective actions and establish measures to prevent a recurrence through an incident investigation process and document the details within ISN.

5. Individual contractor personnel who habitually violate any safety rules should be identified, and the contractor should remove the individual(s) from the project. National Grid reserves the right to remove any contractor employee(s) who violate safety rules or procedures; pose a safety risk to themselves, other contractors; our employees; or the general public.

6. If a contractor is observed to be operating in a manner that creates an imminent danger to persons or property, it is the responsibility of all individuals observing the hazard to cease the hazardous operation impacted until the issue has been resolved to the satisfaction of National Grid, the Owners Representative or Safety Representative.

7. Contracts/POs shall require the contractor to immediately forward any citations, notices, or OSHA reportable cases per 29 CFR 1904.39 from a National Grid project, upon receipt to the appropriate project representative and/or ISN. The project representative shall distribute copies of the citation or notice to senior management, Safety, Procurement, and the Legal Department.

8. Willful and/or repeat violations of safety requirements by the contractor may be considered a breach of the contract and reason for contract termination.

9. If the contractor's overall safety performance is viewed as being unsatisfactory or noncompliant with contract provisions, and if the contractor is unwilling to demonstrate satisfactory program improvement, the result may be considered a breach of the contract and reason for contract termination.

10. National Grid project managers and/or construction supervisors shall document safety compliance by completing a "Contractor Performance Evaluation" for each project. This documents both positive and negative safety performance or behaviors and this feedback will be used in the decision process for awarding future contracts.

2.0 GENERAL SAFETY REQUIREMENTS

2.1 Introduction

1. All contractors are required, and expected to comply with all applicable requirements of the Occupational Safety and Health Administration (OSHA), and all other applicable federal, state and local laws, ordinances, regulations, and other project and site-specific permits unless superseded by identified National Grid procedures.

2. This document represents policies and safety-related work methods unique to National Grid and they may be more stringent than OSHA regulations. Contractors must follow these requirements as well as their own rules or regulations that meet or exceed OSHA and other regulatory requirements.

3. National Grid will provide more detailed information and guidance regarding specific procedures prior to commencement of work.

2.2 Applicability

Applies to: All contractors, as needed

1. In any contracted task, where a safety observer is required, it is the responsibility of the contractor to provide that person and ensure that he/she is qualified to perform the role when needed.

2. A 4:1 pitch shall be maintained when using an extension ladder or the ladder shall be tied off and/or secured and 3 points of contact shall be maintained by the climber. If both hands are needed to perform work, then fall protection is required.

3. Although not preferred, if hard hats are worn backwards, the suspension adjuster must always face the rear. Class E hard hats are required for all electrical work.

4. 20KV EH overshoes are required when:
    - Workers on the ground are working within 50’ of the master ground connection point to earth.
    - Operating a wire trailer and pulling/tensioning machine.
    - Operating a winch truck or reel trailer with its payout in an energized area that may result in inadvertent contact.
    - Hand digging in close proximity to energized cables within the tolerance zone.

- Making repairs in a trench to a faulted primary cable without de-energizing any adjacent energized primary cables within close proximity.
- Using approved live line tools to move energized primary cables in a trench.
- If removing underground cable rubber covering or arc suppression blankets from an energized cable.
- Working within minimum approach distance (MAD) of downed electrical wires or foot patrolling for such wires.
- If setting poles in proximity to energized lines or equipment and using truck controls from the ground.

5. National Grid expects that all cargo will be secured in accordance with U.S. DOT requirements.

    - As of January 2004, the Federal Motor Carrier Safety Administration (FMCSA) within the U.S. DOT published Cargo Securement Rules 393.100-136 Subpart I – Protection Against Shifting and Falling Cargo.

6. Chaps are required to be worn by ANY person using a chainsaw to make a cut on the ground or assisting in that cut and within striking distance. Other situations where cut off machines are used, chaps designed for the purpose of providing durable protection from abrasion, spatter and sparks from cutting ferrous metals shall be required; however, a hazard assessment should be completed to determine the need. Always use proper cutting techniques and push blades away from the body when using tools that may slip or inadvertently make contact with the leg. Never leave any equipment running while not in use.

7. All applicable contractors must meet the requirements of drug and alcohol testing in accordance with FMCSA DOT 49 CFR Part 40 and Pipeline and Hazardous Materials Safety Administration (PHMSA) DOT 49 CFR Part 199. National Grid shall monitor contractor compliance to the drug and alcohol regulatory requirements through Transportation Advisor or ISNetworld as needed.

8. Contractors who drive regularly in delivery of service for National Grid shall:

    a. Have a safe motor vehicle operations policy which must be communicated to their employees before they begin driving for company business. The contractor is expected to follow National Grid's *Safe Motor Vehicle Operations* policy to include the following:

- Prior to moving any vehicle, the driver shall perform a “circle of safety” inspection. This is to confirm not any person, animal, equipment, or property will be injured or damaged when the vehicle is moved.

- Drivers should back into or pull through a parking space so that when you re-enter the vehicle, the first move is forward.

- No driver shall use a hand-held mobile telephone while driving a vehicle for National Grid business.

- The driver shall eliminate or minimize sources of potential driving distractions to include, eating, smoking, reading, writing, grooming, use of any electronic devices, mirror or seat adjustment. These shall be done when the vehicle is not in motion.

b. Comply with all requirements of all federal, state and local regulations regarding safe motor vehicle operations.

c. Ensure that new and existing employees have a valid Driver’s License in accordance with requirements of specific job duties and classification/type of the vehicle they are operating. Contractors must have an acceptable driving record. If their driving record is unacceptable, the driver shall not be permitted to operate a vehicle on behalf of National Grid.

d. Provide vehicles in safe operating condition, in accordance with federal state and local regulations. The vehicle should be equipped with proper safety equipment as appropriate for the vehicle type and its intended use.

e. Track and evaluate any vehicular accidents or incidents experienced by their employees. Corrective actions, such as driver coaching, corrective action driver training and medical/vision tests should be recommended and acted upon where appropriate. All accidents or near misses while performing work for National Grid shall be communicated to the National Grid project representative or designee and documented in the ISN system.

f. For more information, contact a National Grid representative for a copy of the National Grid Safety Policy *Safe Motor Vehicle Operations*

9. All contractors that require the use of heavy equipment shall ensure that competent, appropriately licensed, skilled and qualified personnel are in control of this equipment at all times. In addition, contractors shall ensure the following:

    - Equipment is inspected for safety and use at the beginning of the work period of shift. All failing or defective equipment and components shall be removed from service.

    - Equipment is under the control of trained operators who are always aware of their location and the locations/presence of persons working near the equipment, its swing zones and blind spots.

    - Operators shall ensure that no loose clothing or jewelry is present that could inadvertently get caught equipment controls.

    - Equipment is kept free of debris, water, oil, grease, mud or anything that could create a slip/fall hazard inside the cab.

    - Keep hands, feet, and clothing away from power-driven and moving parts.

    - Equipment cab windows should be kept clean and free of mud, ice, snow and/or fog for maximum visibility.

    - Never carry passengers on heavy equipment or any equipment unless it is equipped to do so.

    - Ensure that stabilizers are extended prior to starting a task.

    - Before making a swing, operators shall always look out the windows and mirrors for confirmation that the area is clear. If visual confirmation is impaired or the operator is unsure due to weather, lighting or other interferences, the operator shall cease operation until an independent spotter can check the swing area and confirm it is clear.

    - All excavations shall have signs posted, demarcation and controlled to prevent unauthorized persons from entering and falling inadvertently into the excavation. Excavations shall only be opened under the supervision of a competent person for excavation.

- All pot holing/test holing and exploratory excavations shall utilize vacuum excavation whenever near known or the possibility of unknown hazards such as live electrical or gas conveyances. When using vacuum excavation in combination with air blowing/air knife tools, all persons in the immediate area shall be wearing safety glasses in addition to a full face shield.

- No one is to work under a suspended load.

- Never use a bucket to lift personnel.

- Ensure stabilizers are in the upright and stored position before moving equipment.

- Operators shall not leave heavy equipment running unless the following requirements are met:

    - Parking break is engaged and wheels are chocked (if applicable)

    - Surroundings create no hazard of unqualified personnel entering unattended equipment

    - Vehicles and equipment idling limited to that designated state and local environmental regulations (generally, 3 to 5 minutes maximum). See table below for additional information

Region	Vehicles	Idling Limit	Exemptions Include
New York	Diesel trucks	5 minutes	• Traffic conditions • Temperatures < 25°F and motionless for two hrs • Hybrid electric engine charging battery vehicles • To provide power to auxiliary sources
NYC	All Motor vehicles	3 minutes	• Emergency vehicles • Loading/unloading • Temperatures <40°F
New Hampshire	Diesel/ Gas vehicles	5 minutes >32°F 15 minutes -10°F to 32°F No Limit <-10°F and no nuisance created	• Traffic conditions • Emergency vehicles takeoff power for auxiliary uses • Vehicles being serviced or repaired • Operated solely to defrost windshield
Massachusetts	All Motor Vehicles	5 minutes	• Vehicles being serviced or repaired • Vehicles in operation for which associated power is needed • Delivery vehicle in which engine power is needed
Rhode Island	Diesel Motor Vehicles	5 minutes	• Traffic conditions • Operate defrosting, heating, or cooling equipment to ensure health and safety of the driver or passenger. • Temperatures between 0 & 32°F - 15 minutes per hour. If < 0°F idling as needed for heat • To provide power to auxiliary sources • Vehicles being serviced or repaired
Vermont	All Motor Vehicles	5 minutes within any 60-minute period	• Emergency/public safety vehicles while engaged in "official operations" • Idling necessary to operate safety equipment • Vehicles in operation for which associated power is needed • Vehicles being serviced or repaired

- All lifts that occur on National Grid properties, ROWs or near critical assets require formal lifting plans developed by the contractor and reviewed with the National Grid project representative. Some lifts will also require formal critical lifting plans and this may include PE or geotechnical assessments to ensure a stable lifting base for the crane or other apparatus.

10. All temporary, metal fencing installed or located under transmission lines shall be grounded and have signage according to National Grid grounding standards. Contact a National Grid representative for a copy of the Engineering Documents ST 03.05.001ST 03.06.001 and SP 08.00.001.

3.0 ADMINISTRATIVE SAFETY REQUIREMENTS

3.1 Worker Qualification Assurance

1. In order to meet National Grid safety requirements, the contractor must describe how workers, including subcontractors, are qualified. The contractor must supply information concerning the type of skills assessment performed, training programs and how they ensure that employees

demonstrate competencies. National Grid reserves the right to review this information and request additional training requirements. All documents shall be uploaded and maintained in the ISN system. For work on process safety assets, the contractor shall ensure all workers and sub-contractors are trained and receive appropriate refresher training to maintain their appropriate level of certification and qualifications needed to perform work safely.

2. The contractor shall provide management personnel qualifications through resumes or other documents. National Grid may interview and/or approve management personnel if considered necessary.

3. For work on Process Safety assets (Gas Transmission, Generation, LNG, LNG Transportation and CNG), contractors shall provide a description of their experience in the business asset and specific tasks including similar projects, lists of licenses/certifications, and references from previous similar projects. Contractors shall be made knowledgeable of National Grid process safety requirements that are relevant to their specific work activities by the business hiring them.

3.2 Meetings

Applies to: All contractors; as needed

1. The pre-bid meeting is coordinated by National Grid Procurement to provide bidders with an opportunity to become acquainted with contractual requirements and specific safety issues concerning the project, including company-specific safety rules and known site conditions.
   a. For contractors working on Major Hazard Assets, contractual language including designation of site medical facilities, locker rooms, bathrooms, etc. should be discussed by the project team with the contractor at this time.

2. At this time, Procurement will notify the prospective bidders of the following:

   a. If they are required to submit a project safety plan (HASP) prior to the pre-construction meeting

   b. The cost of specific safety equipment, practices and personal protective equipment shall be factored into their bid/proposal.

3.3 Project Health & Safety Plan (HASP)

Applies to: Contractors performing high or medium risk work

All HASPs shall be submitted to the National Grid project representative for review and approval before work commences. The National Grid project representative shall ensure the HASP meets National Grid criteria and includes all aspects of the project prior to a review by Safety.

1. Contractors who perform high or medium risk-ranked services shall submit a project-specific HASP plan prior to the start of the project and/or at pre-construction meeting. Your National Grid project representative will provide you with specific requirements of the format and/or forms to be completed.
2. For typical work that can be completed in 1-2 days, a documented job brief is sufficient to address the hazards and proper mitigations. Ask your National Grid project representative for details. See page 2 where job brief is defined. A National Grid representative has the right to require a HASP based on safety and complexity of the work.
3. The *Short Version* plan shall be used for work that generally last 3-5 days. This plan shall include a completed safety hazards checklist and the Emergency Contact Sheet. Proper mitigation shall be documented in the safety hazards checklist for any applicable hazards. For examples of the Safety Hazards Checklist and the Emergency Contact Sheet, a National Grid representative can provide related forms under the *Contractor Safety* website in the Infonet.
4. The *Long Version* plan shall be used for work that will take at least 6 days or complicated projects. At a minimum, the *Long Version* safety plan shall include the following elements:
    a. Roles and Responsibilities
    b. Scope of Work
    c. For contractors working on Major Hazard Assets - List of all equipment contractor is expected to use in work activities and indication that it meets regulatory and National Grid requirements
    d. For contractors working on Major Hazard Assets - List of contractor materials to be brought onto work site for review and approval by National Grid

e. Task and hazard identification and risk assessment of the hazards

f. Hazard mitigation/control procedures and work methods

g. Incident investigation and reporting

h. Compliance and monitoring

For an example of a Long Version HASP, a National Grid representative can provide related policies and procedures under the *Contractor Safety* website in the Infonet.

5. A site-specific HASP that meets the requirements of 29 CFR 1910.120(b)(4)(ii) must be prepared by the contractor for all work at contaminated sites. The HASP must include at a minimum:

a. A safety and health risk or hazard analysis for each site task and operation

b. Personal Protective Equipment to be used by employees for each of the site tasks and operations

c. Medical surveillance requirements

d. Frequency and types of air monitoring and personnel monitoring to be used

e. Site control measures

f. Decontamination procedures

g. An emergency response plan for safe and effective responses to emergencies, including the necessary PPE and other equipment

The contractor/National Grid project representative shall contact the Environmental Department for guidance on site requirements and to initiate any required regulatory notifications.

For contractors performing bulk commodity transportation activities, a risk assessment including the potential consequences, frequency and safeguards to be used shall be performed and included in the HASP. If a preexisting National Grid requirement is in place for managing bulk commodity transportation activities, one shall follow those requirements, with no additional risk assessment being required.

Every contracted and subcontracted employee, including those working alone, performing work on the project shall review the HASP to ensure steps in the plan are adhered to in order to mitigate hazards during the pre-job orientation. These mitigation steps shall be incorporated into all work plans and job briefs.

Truck drivers for daily, non-hazardous material deliveries such as stone, gravel, concrete material or porta john cleaning are exempt from completing a job brief unless there are potential hazards associated to the driver or delivery. A National Grid representative shall talk to the driver to determine if a job brief is needed.

In addition, all workers shall sign an attendance sheet during the pre-job orientation that they have reviewed the plan, will adhere to the mitigation steps and they fully understand the plan. This document will be kept at the job site and available for review as needed and if requested by any National Grid representative, or any other parties.

A. Roles and Responsibilities

The HASP shall identify who is providing project oversight and how they are qualified. For example, if the work requires excavation, there must be someone on-site who is qualified as an excavation competent person.

For multi-employer work-sites, the general contractor is responsible for all their employees and subcontractors. The safety plan shall clearly state this responsibility.

If requested to do so, Contractors shall designate a competent person to participate in or conduct a process hazard analysis (PHA) regarding a portion or the entirety of the project. National Grid will not be responsible for training the contractor on the PHA methodology.

B. Scope of Work

The Contractor shall clearly and briefly state the scope of work as provided by National Grid. The plan must specifically address the project or services requested by National Grid.

C. Task and Hazard Identification and Risk Assessment

The contractor shall perform a risk assessment by identifying all significant tasks, the anticipated hazards and hazard mitigation procedures.

The contractor's cost to provide adequate safety measures and to comply with National Grid requirements must be considered and budgeted in the bid/proposal.

D. Hazard Mitigation Procedures and Work Methods

For each hazard, the contractor shall specify measures that will be taken to eliminate, control or mitigate these hazards.

A table below is an example of a method to simply and clearly organize and present the task, hazard, and mitigation steps:

Location: Substation Yard		
Task	**Hazard**	**Mitigation Steps**
Material Handling	Contact with overhead energized lines/equipment	Off load in the clear and have a safety observer present

E. Incident Investigation and Reporting

All work related incidents involving injury or illness to employees, the public or property damage (including contractor vehicle accidents) shall be reported to the National Grid project representative and documented in the ISN system.

F. Compliance Monitoring

To ensure that both contractor employees and subcontractors will achieve safety compliance, jobs with over 100 workers at any point in time or in excess of $1 million will require a full time safety professional hired by the contractor. This safety professional must be qualified, competent and be on site anytime work is performed. Qualifications of this safety representative must be acceptable to National Grid prior to hire by the contractor and may be documented in the ISN system.

G. Environmental Compliance

Unless otherwise specified and based on the scope of work, any potential environmental risks shall be determined and addressed by the contractor following all applicable National Grid procedures. For more information, contact a National Grid representative regarding

Environmental Procedure No.6 *Contracted Services* and Environmental Procedure No.25 Appendix A, *Environmental Screening Checklist.*

3.4 Contractor Orientation/Pre-Construction Meeting

Applies to: All contractors, as needed

1. A National Grid project representative, construction supervisor, or other designated National Grid representative may hold a contractor orientation or pre-construction meeting prior to the start of a project/service. Other attendees may include; the Safety department, Environmental representatives, as well as contractor management as needed.

2. It is intended to serve as a method to provide the contractor with the tools necessary to educate their employees and subcontractors on National Grid's procedures and requirements. The session is not intended to train the contractor management, their employees or subcontractors.

3. All contractors are required to attend a National Grid orientation program specific to the type of work they will be performing. Contractor management representation shall also be present meeting and all documentation of attendance shall be kept at the job site and available to any National Grid representative. For visitors and contractors working on Major Hazard Assets, site orientation shall at a minimum include the following:

   - General site hazards
   - Specific hazards involved in each task the employee may perform
   - Safety policies and work rules, including Process Safety policies
   - Location of emergency equipment like fire extinguishers, eyewash stations, and first-aid supplies
   - Smoking regulations and designated smoking areas if applicable
   - Steps to take following an accident or injury
   - Proper reporting of emergencies, accidents, and near misses
   - Selection, use, and care of personal protective equipment
   - Emergency evacuation procedures, routes, and security systems
   - Safe housekeeping rules
   - Safe use of tools and equipment

- Hazardous materials in use and location of safety data sheets

Site access shall not be granted to contract employees working on process safety assets until orientation is conducted.

4. The contractor's Project Health & Safety Plan will be discussed at this meeting including a final review of the safety hazards checklist to ensure proper hazard identification and mitigation plan has been implemented.

5. These hazard mitigation measures shall be reviewed and work shall not commence until these hazards have been adequately addressed. The National Grid project representative will discuss the methods by which compliance will be achieved to National Grid safety requirements with the contractor.

6. An Emergency Call List shall be exchanged with the National Grid project representative for high or medium risk projects or as applicable. This list must contain 24-hour contact information for key contractor and project personnel, including the project representative and Safety representatives. This list should be distributed to all concerned, as determined by the project team, prior to the start of work. For contractors working on process safety assets who have an emergency response role, the emergency response plan shall be updated to clarify the contractor's role in the event of an emergency on site.

7. For routine maintenance services, a review of associated safety issues and specific facility issues, restrictions or practices, such as evacuation procedures, shall be discussed with the contractor upon initial hiring. Any changes in the facility that may affect the safety of contractor or National Grid employees or third parties must be communicated immediately.

8. Upon completion of the contractor orientation or preconstruction meeting, the contractor management official shall certify in writing that: (1) the contractor has been informed of National Grid safety requirements; (2) that employees and subcontractors have the appropriate qualifications to perform the work, and; (3) the contractor agrees to comply with all applicable safety requirements. The certification shall be completed annually in ISNetworld as an acknowledgement of the above requirements.

3.5 Job Safety Briefs

Applies to: All contractors; as needed

1. Job safety briefs shall be documented in writing. Written job safety briefs, permits, and/or plans shall be available at the job site for inspection and retained for 30 days after the job is completed.

2. National Grid reserves the right to perform a safety stand-down with any contractor for purposes including, but not limited to: recent injuries, incidents or near misses; identified hazards at job site or equivalent, and for other reasons to communicate with the contractor crew.

3. Each crew shall conduct these job safety briefs prior to commencing work at the job location. A new job brief is required when there are changes to the day's work order or plan, when there are changes in weather conditions, when a new worker or company joins the crew, and if the crew members take any extended breaks (i.e. lunch breaks). Working alone: A contractor working alone need not conduct a job brief; however, the contractor must review the hazards associated with the job as if a formal job brief had been performed.

4. Each worker must have the opportunity to voice concern. The work cannot begin until each worker signs off on the job safety brief stating that they have discussed the work, raised any questions, and agree with the plan.

5. Visitors to the work site shall be asked to read and sign the job brief acknowledging they understand contents. Contractors shall review the job brief and discuss the elements of the hazards and mitigation steps with each visitor prior to entering the job site. If a visitor refuses to sign, the general foreman will note it on the brief and will not allow the visitor to enter.

6. SITE SIGNAGE: An assessment of the work site should be conducted by the National Grid project representative overseeing the work with the contractor to determine if site signage will be needed to protect site visitors, the public or any other persons entering the work site. If Site Signage is required at the site, the signage shall be posted at the main entrance to the work site. The sign shall direct all visitors to check in with the Person in Charge (PIC), be escorted to the designated safe area and advised of all work currently in progress. The visitor is expected to comply with all related safety requirements and sign off on the Job Brief before entering the work site.

3.6 Safety Meetings

1. In addition to job safety briefs, the contractor shall have regular safety meetings with their employees and subcontractors. Contractors performing high or medium risk work shall have weekly safety meetings, while low risk contractors, at a minimum, shall have safety meetings monthly and attendance must be documented.

2. The safety meetings shall include the following topics: statistics, incidents, near misses, updates on old business and new business raised. It will include the round table discussion by the workers and the action items discussed. Meeting minutes must be documented and shall include specific action items, their due dates, persons responsible and a completion date. This documentation shall be available for inspection during the project period, and for 30 days after the project is completed. For contractors working on Process Safety assets, meeting minutes from contractor shall be shared and discussed with National Grid site management.

3. Routine Safety meetings/calls between National Grid and the Contractor shall be coordinated on a regular basis. Safety meetings may include but are not limited to ESD/Compliance Assessments, Safety Briefs, Safety Day discussions and regularly scheduled calls to promote safety and best safety practices. Contractors working on Process Safety assets for more than 6 months shall schedule leadership visits to discuss process safety topics.

4. Contractors working on process safety assets for greater than three (3) months, or as needed, shall hold project planning meetings to discuss short term and long term work items. Project planning meetings shall include safety performance monitoring against project targets and should include a National Grid SHE representative for jobs on Major Hazard Assets in addition to a National Grid site representative.

3.7 Incident Investigation

Applies to: All contractors (regardless of risk ranking)

1. All contractors are required to report any work-related incidents involving injury or illness to employees, the public or property damage to the National Grid project representative. The first priority is to ensure that anyone injured receives medical treatment. Examples of incidents may include, but is not limited to: injury, property damage, adverse public impact, near miss, a hazardous condition and road traffic collisions (RTC).

2. Contractors will then be responsible to perform an incident investigation immediately following the incident and document root cause/corrective actions in the ISN system and to National Grid.

Incident Response Steps

In the event of an incident, the contractor shall provide details of the incident to National Grid that follows the steps below.

1. Contractor supervisor collects basic information about the incident from the employee or witnesses:
    - What happened?
    - Who and how many people were injured?
    - What treatment was administered?
    - What was the nature and seriousness of the injury?
    - Where did the incident occur?
    - When did the incident occur (date, time of day)?
    - Were there any witnesses?

2. Contractor supervisor immediately calls the project representative or other National Grid point of contact. All incidents shall be entered into the Incident Management System (IMS) as soon as possible by the National Grid project representative or National Grid designee. When dialing 1-866-322-5594, the caller will be prompted to select option 2 for anything other than an employee injury.

3. Contractor shall conduct an investigation within 24 hours of the incident that will identify contributing factors and root cause analysis relating to the incident and the corrective actions that will be taken to prevent future occurrence. This information will be documented in the ISN system.

4. Contractor vehicle accidents occurring during the performance of work will also be investigated and reported to National Grid.

Other Reporting

National Grid may periodically request the following annualized data for all work activities limited to National Grid operations:

- Lost Time Incident (LTI) rate for workers
- Restricted Work rate
- OSHA Recordable Incident (ORI) rate

4.0 TECHNICAL SAFETY REQUIREMENTS

4.1 Personal Protective Equipment (PPE) Requirements – General

Applies to: All contractors (regardless of risk ranking)

1. Basic PPE attire at construction sites and other similar work zones include, at a minimum: hard hat, safety shoes and safety glasses with side shields. Any contractor who performs medium/high risk work for a Gas or Electric line of business exposed to vehicular traffic shall wear (FR) ANSI 107 certified class 3 hi-vis clothing or vest. All other contractors shall refer to the US Department of Transportation's Manual on Uniform Traffic Control Devices (MUTCD) to determine the correct class of hi-vis clothing / vests, either ANSI certified Class 2 or Class 3 or wear the higher class. The contractor and their employees, including subcontractors are expected to follow the same rules and protocols as National Grid personnel. Storm contractors that do not have a Contractor of Choice contract should follow their existing practices and rules.
2. The contractor shall ensure that their employees and subcontractors use protective safety toe footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where such employee's feet are exposed to electrical hazards. In addition, during inclement weather conditions or adverse events, the addition of anti-slip footwear or outer foot wear may be appropriate. Electrical Hazard (EH) rated footwear is required at all times. EH rated overshoes are required when working on or near (within Minimum Approach Distance MAD) around electrical equipment over 50 volts, when working in electric substations, excavating in and around electrical duct banks or in an area of expected downed wires per OSHA 1910.136 and ASTM standard F-2413-05.
3. Guidance for additional PPE is referenced in other sections of this document.

4.2 Flame Resistant Clothing Requirements

Applies to: All contractors; as needed

1. Flame Resistant (FR) clothing shall be worn when personnel work on energized equipment/lines or when distance and position will expose the worker to electric arc or flame hazards. FR clothing shall also be worn during live gas work as outlined in the gas PPE Matrix (Gas Policy SHE01001) and within LNG operations locations as required. FR clothing also includes arc- resistant rain gear. This additional ensemble may also be

required as part of the job for contractor personnel. Contact a National Grid representative for a copy or to view the PPE matrix.

2. FR clothing shall be worn as the outermost layer of clothing and when workers measure voltages, test or ground electrical equipment/lines.

3. FR clothing shall be worn when work requires the use of rubber protective equipment or the use of insulated live line tools.

4. FR clothing shall be worn when workers control/operate electrical equipment over 50 volts at the device location or are within 10 feet of equipment which is being physically operated/ worked on by another worker.

5. Visitors are not required to wear FR clothing in substations or production plants unless they are engaged in electrical work. The National Grid project representative will be able to determine whether FR clothing will be required based on the specific contractor task. Note: Gas contractor FR requirements may differ slightly. Please refer to National Grid PPE Matrix for Gas operations within Gas Policy SHE01001 as needed.

6. FR clothing shall meet a minimum arc rating of 8 cal/cm^2 (HRC 2) for energized electrical equipment unless otherwise specified based on increased potential exposure as indicated in the Arc Flash Tables in H-807 *Arc Flash Analysis and Mitigation* program.

7. Additional FR clothing protection is required when performing work on the distribution system in NY North and New England (legacy National Grid) stations. Contact a National Grid representative for a copy. (NG Employees: If the link does not work, copy and paste the url into your internet browser)
http://us3infonet/sites/eng_delivery_svcs/Pages/ArcFlashMitigation.aspx#2015

8. Contractors who may be involved with tasks requiring the implementation of this program shall be informed by National Grid. Contractors will be required to follow all aspects of OSHA and any other applicable regulation as it applies to the tasks they perform.

4.3 Rubber Gloves and Sleeves

1. Rubber glove use is required for work on all electrical apparatus at 50 Volts or greater. Rubber gloves shall be donned before the worker leaves the ground and shall be worn until the worker returns to the ground (commonly referred to as “ground to ground”, “cradle to cradle”)

2. Class 0 gloves are required for exposures up to 1000 Volts.
3. Class 2 gloves are required for voltages between 1000-15,000 Volts.
4. Rubber sleeves must be worn where work is conducted within the MAD of primary electrical apparatus that is not tested, de-energized and grounded.
5. For voltages 23 kV and above, workers can use specialized equipment or work practices as long as these workers have been appropriately trained and qualified. National Grid may request training records from the contractor.
6. Rubber glove exceptions for specific jobs (other than those listed in this section) are permitted only with the dated, written approval of a Division Director.
7. It is the contractor's responsibility to wear class 2 rubber gloves when grounding trucks or equipment due to a possible difference in potential.

Exceptions

No rubber gloves are required:

- When working in a properly established equi-potential zone.
- When the operator remains at the same potential as the equipment by being off the ground and on the equipment.
- When a qualified worker performs transmission "hot stick" work on lines 69 kV or greater and no other energized wires are on the pole or structure below the worker.
- When work is performed on transmission structures carrying only energized conductors (115kV and above) and the Live Line Techniques are not being employed. While performing these activities, the worker shall utilize conductive clothing such as conductive gloves, boots, leg straps and/or any other applicable conductive clothing.
- When climbing a steel structure to perform structural reinforcements while maintaining MAD from energized conductors or apparatus.
- When climbing a steel structure to access an area that has been properly grounded.

4.4 Isolation of Energized Apparatus

1. **Non-Reclosing Criteria and Live-Line Maintenance and Construction:** The appropriate interrupting devices (breakers, reclosers, circuit switches, etc.) will be placed on NON-RECLOSING in accordance with National Grid tagging procedures.

2. **Tagging Out Lines or Apparatus**

   The National Grid Construction Supervisor or designee shall coordinate all switching and tagging in accordance with the most current EOP on Clearance and Control.

   Upon receipt of Clearance, the project representative will present the Contractor's Person in Charge with the "Contractor Permission to Work Form" (Form NG0060), which states the specific apparatus that has been de-energized and that certain device(s) are tagged in the Protective Position and will remain so until the Contractor's Person in Charge informs the construction supervisor or designee of the completion of the work utilizing the "Contractor Completion of Work" section of the "Contractor Permission to Work" form.

   The original transferred copy needs to be returned after the completion of work section is filled out & signed. In some cases the tailboard is outside & is susceptible to elements & damage; a copy shall be utilized in the field instead of the original.

   No work will be performed until the "Contractor Permission to Work Form" is received from the construction supervisor stating that the equipment has been de-energized and a clearance to work has been given. The Contractors Permission to Work Form and a written grounding plan shall be attached to the crews Job Briefing and be kept at the work location.

   After the "clearance" is received from the National Grid Construction Supervisor, the various substation conductor bus and equipment to be worked will be tested and "Grounds" installed. Grounds shall be rated for the fault current of the line/equipment being grounded. (Note: Rubber Gloves and FR clothing are required when installing and removing grounds). The contractors "Person in Charge" (Construction Supervisor/General Foreman) shall be responsible for determining the location and number of grounds.

Vehicles and equipment may utilize a single 4/0 cu for grounding inside the substation. Employees working on de-energized lines and equipment shall always work between grounds.

Prior to the application of any personal protective grounds, the circuit to be worked on must be tested for the presence of voltage using an approved potential detector. The worker must verify the detector is in operating order prior to and after testing for voltage. MAD must be maintained during the testing, and appropriate PPE shall be worn. Testing for voltage shall be done at the point where the grounding devices are to be attached. All phases of the circuit to be worked on shall be tested at each location that grounds are installed.

When an Air Gap is required to create a work zone, the component (a tap) shall be removed in whole from the system unless removal of the component is impracticable or creates an additional hazard based on National Grid management in charge of the job. If the component (a tap) is deemed impracticable to be removed in whole it shall be disconnected from one end, isolated from all other conductors and properly secured to ensure accidental energization will not create a hazard. When National Grid switches out lines or apparatus, any grounds that may be installed shall only be considered a visual reference, and shall not be considered a means to protect the Contractor's employees. The Contractor is responsible to install their personal grounds, in accordance with all OSHA, Federal, State and local safety procedures. National Grid may provide guidance on the minimum size of the grounds to be used based on circuit available fault current. Refer to *Electric Operating Procedure D002,* for applicable grounding size. Ground rods shall be fully driven into the earth away from the workers and work area. T-Bar ground rods are not to be used on National Grid property.

The National Grid Construction Supervisor shall review the contractor's plan for the quantity and locations of grounds, ensuring that the work the contractor is performing is between grounds, covering all potential sources. All three phases shall be grounded. (In stations, from each phase to the station ground grid). Grounds shall be placed as close to the work area as reasonably possible, between the work area and all potential sources of inadvertent energization. A copy of the grounding plan shall be kept with the job safety brief.

It is the contractor's responsibility to account for all their grounds. The contractor shall provide, maintain, and enforce a ground tracking program suitable to National Grid. In the instance of a zone expanding/collapsing,

remaining grounds shall be listed on the Contractor Permission to Work Form and verbally communicated to the construction supervisor.

3. Grounding Mobile Equipment

When mobile equipment requires grounding, it shall be solidly grounded by means of appropriate sized copper cable while using rubber gloves. The cable shall be fastened to a securely attached clean metallic portion of the equipment, or shall be fastened to a grounding stud provided for the purpose at one end and an adequate ground at the other end.

Non insulated booms such as digger derricks that have the possibility of encroaching the MAD shall be grounded and barricaded. The ground is to trip the circuit and the barricade is to protect anyone who may become in contact with the truck during this energization.

4. Minimum Approach Distance (MAD)

Refer to OSHA 29 CFR 1910.269 for more information and details regarding qualified and unqualified workers.

4.5 Appointment of a Safety Observer

A safety observer shall be required if an employee (operator) determines that it is difficult to accurately determine the distance between the equipment (minimum approach distance) and energized parts. The Safety Observer shall never be a substitute for minimum approach distance (MAD), personal protective equipment (PPE), insulate/isolate techniques or work area identification as a form of employee protection.

The person in charge of the work (contractor or National Grid), shall appoint a qualified employee or employees to perform the task of a safety observer. The personal in charge shall:

1. Ensure a documented job brief is completed and includes the name of the safety observer, additional subjects such as the location of gas lines, energized equipment, in or adjacent to the work area and the limits of any de-energized work area
2. Discuss the scope of work and communication techniques used to warn or notify the equipment operator of hazardous conditions.
3. Communicate any changes to work and job completion to the safety observer

4. Select another safety observer if there is a need for the existing observer to have break in service.

The safety observer is a qualified employee who has been appointed by the person in charge based on the hazard assessment and the job brief. The safety observer shall:

1. Observe the worker performing the task/activity until all hazards have been eliminated or the task/activity has been completed
2. Have shown proficiency in the task/activity being observed and have a full understanding of the job and the hazards associated with the task/activity.
3. Remain continuously focused on the task/activity being performed and not perform or assist any other job activities while observing the worker performing the task/activity
4. Notify the person in charge if there is a need to have a break in service. Work must stop until a new observer is appointed or the safety observer returns.

A safety observer shall also be required when a critical lift is being performed. A critical lift plan shall be required during the following circumstances:

1. An object is lifted over energized apparatuses or assets where a failure of the lifting equipment or rigging could result in a significant safety hazard or cause significant disruption in service to National Grid customers.
2. The crane or other lifting apparatus is anticipated to be operated above 80% of its rated capacity for the specific load chart for the lift.
3. A man basket (pinned or suspended) is to be utilized. All fall protection rules shall be followed when in a man basket.
4. Two cranes will be used in concert to lift a single object
5. Internal substation construction involving all power transformers, control houses, capacitor banks and transmission breakers.
6. Lifts in LNG or Gas plants where a hazard assessment or job brief identifies a significant risk.
7. The lifted load will be less than twice the minimum approach distance (MAD) of the nearest energized part. Until a qualified electrical worker confirms the MAD, loads and equipment shall maintain a 20 foot distance. Once nominal voltage is established, the MAD will be according to OSHA tables.
8. The lifted load is hoisted over buildings or the general public.

4.6 Work Zone Traffic Control

1. If work activity is on or near a road, the contractor and their subcontractors shall comply with all applicable parts of the most current US Department of Transportation's Manual on Uniform Traffic Control Devices (MUTCD), state, local Work Zone Traffic Control requirements and the National Grid Work Zone Traffic Control Manual. Please contact your National Grid representative for a copy of the manual found in the Safety Homepage on the Infonet.

2. If pedestrian traffic is disrupted, pedestrians should be provided with a path that is reasonably safe, convenient and accessible. Pedestrians should not be led into conflicts with work site vehicles, equipment or operations.

3. If working in areas covered by state permits issued to National Grid, contractors shall comply with the provisions (work practices and notifications) of the permit language. These permits must be available on the job site upon request.

4.7 Qualified Gas Worker

Applies to gas projects/activities

1. Gas contractor employees will be operator qualified as required and defined according to the Code of Federal Regulations, Transportation, 49, Subpart 192.801 through 192.809.

2. Until these qualified employees have demonstrated proficiency in the work practices involved, they are considered employees undergoing on-the-job training and must be under the direct supervision of a qualified person at all times. According to the definition of a "qualified employee", the employee also must have demonstrated an ability to perform work safely at his or her level of training.

3. National Grid requires contractors with gas qualified employees to provide documentation on how they qualify their workers.

4. Additionally any qualifications' of contractor personnel shall be in full accordance with the Company's Operator Qualification written plan, (OQ Plan) Refer to the most current list of covered tasks in accordance with National Grids' Operator Qualification Program and the Northeast Gas Association, (NGA).

4.8 Qualified Electrical Worker

Applies to electrical projects/activities

1. According to 1910.269(a)(2)(ii), a qualified electrical employee must be trained and competent in the following prior to starting work:

    - The skills and techniques necessary to distinguish exposed live parts of electrical equipment
    - The skills and techniques necessary to determine the nominal voltage of exposed live parts
    - The MAD specified in 1910.269 corresponding to the voltages to which the qualified employee will be exposed
    - The proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electrical equipment

2. Until these qualified employees have demonstrated proficiency in the work practices involved, they are considered employees undergoing on-the-job training and must be under the direct supervision of a qualified person at all times. According to the definition of a “qualified employee”, the employee also must have demonstrated an ability to perform work safely at his or her level of training.

3. National Grid requires contractors with electrically qualified employees to provide documentation on how they qualify their workers.

4.9 Qualifying Non-Electrical Worker

Applies to: All qualifying non-electrical contractors working near energized lines and equipment; as needed

1. The contractor shall provide orientation for non-electrical workers entering and working within restricted areas such as a substation and those working near energized lines and equipment.

2. The information provided to these workers must meet the requirements of paragraph 1910.269(a)(2)(ii). However, the orientation and training may not be as comprehensive as the qualified electrical worker would be.

    They must know:

    - What is safe and not safe to touch in the specific areas they will be entering;

- The maximum voltage of the area;
- The MAD for the maximum voltage within the area;
- Proper use of personal protective equipment and in the work practices necessary for performing their specific work assignments within the area.

3. Until these workers have demonstrated proficiency in the work practices involved, they are considered to be employees undergoing on-the-job training and must be under the direct supervision of a qualified person at all times.

4.10 Asbestos, Lead and other Hazardous Materials

1. Asbestos and lead materials associated with electrical and gas equipment includes, but is not limited to: cement-type cable covering, cable wrap, wire coatings, coal tar pipe wrap, and transite panels and conduits. Asbestos and lead materials may also be present in building materials including but not limited to: paint, mastics, caulking, insulation and roofing materials.

2. Where asbestos and other hazardous material is present and likely to be disturbed, the National Grid project representative and contractor shall coordinate how the asbestos, lead or other hazardous materials will be managed and shall consult National Grid's Safety & Environmental department as appropriate.

3. Removal of this material must be done by individuals specifically trained and qualified to handle asbestos and lead. Refer to National Grid Safety Procedures, F-615, F-617 and F-619 for guidance on asbestos and lead handling and removals. For more information, contact a National Grid representative for a copy of these procedures.

Note: Contractors who will encounter asbestos or lead as part of their work shall reference in their safety plan how they will address this hazard.

4.11 Lift Plans for Work Near Energized Electrical Equipment

1. All work involving hoists, cranes or other lifting equipment **within 10' of energized electrical equipment** must have a detailed lift plan/procedure.

2. As a minimum Lift Plans shall include the following:

a. Designated Operator and Signal person

b. Detailed travel and flight path that ensures the boom and material being raised is controlled 100% of the time and will maintain the appropriate clearance

c. Designated cover up and isolation to ensure employee and equipment safety in the event of an unplanned action or failure

d. Emergency action plan with detailed instructions to respond to unplanned/uncontrolled event during the lift or positioning of the lifting equipment.

e. Documented load weight and equipment lifting limits

f. Rigging equipment and methods that will be used during the lifting. Sign off/approval from the management official responsible for the work

4.12 Fall Protection

1. Fall protection or fall restriction devices shall be used when working at heights over 4 feet with the exception of portable straight and extension ladder use, when three points of contact are maintained. If 3 points of contact cannot be maintained a work positioning belt is required. Step ladders shall be set up on level and stable surfaces, fully open with braces locked. Work positioning belts are not required for properly set up step ladders. Examples of fall protection include appropriate guardrail systems, completed/approved scaffolding and personal fall arrest. For more information, see the National Grid Safety Procedure H806 *Fall Protection*.

2. All fall protection shall be inspected before use each day to determine if equipment is in good working condition. Defective equipment shall not be used and shall be removed from service.

3. A worker may enter or exit an aerial lift (at heights above four (4) feet) provided that fall protection such as guardrails or a fall arrest system is used while the worker moves between the lift and the working surface. Before any such transfer is made, the employee shall be properly tied-off to an adequate support, the pole or structure prior to and in the direction of the transfer.

Exceptions to fall protection shall be in accordance with Federal & State requirements.

4.13 Herbicide Application

1. Vegetation spraying shall be conducted unescorted only by contractor employees who have been designated as a Qualified Electrical Worker, where applicable.

2. The spray applicator shall have ID cards issued by Security with background checks available from the contractor.

3. National Grid management shall require a schedule of the spraying in their areas.

4. Once spraying begins, the contractor must contact local management on a daily basis to inform them of progress or changes to the schedule.

5. The contractor shall post all stations with dated signs indicating when the station was sprayed. These signs should not inhibit access to the station.

6. The contractor shall ensure that any stored materials and equipment do not get covered with “overspray”. Overspray represents a substantial safety hazard and cannot be allowed.

7. When applying herbicides, contractor employees shall wear appropriate PPE in accordance with product labels.

5.0 UNDERGROUND OPERATIONS WORK

In addition to the other requirements referenced in this document, this section covers requirements that are specific to underground operations work.

5.1 PPE Requirements

All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.

5.2 Enclosed Space Assessment, Ventilation, Entry and Rescue

Refer to the National Grid EOP-UG006 *Underground Inspection and Maintenance* and National Grid Safety Procedure I-902 *Enclosed Space Procedure* for more information regarding enclosed space requirements.

1. Contractors are required to follow all procedures in this document in regards to enclosed spaces (manholes, sidewalk vaults, etc.), including assessment, ventilation, entry and rescue.

2. Each enclosed space shall be tested prior to removing manhole lids and entry. Atmospheric testing shall be continuous for the duration of the entry using a calibrated, industry approved atmospheric tester.

3. When performing hot lead work or when indicated by atmospheric monitoring, engineering controls such as forced mechanical ventilation shall be used when working in National Grid manholes at all times.

4. All contractors who are qualified electrical workers will treat these spaces as “enclosed spaces” and follow non-entry rescue provisions.

5. In some situations a boom is allowed for retraction from an enclosed space. Refer to Safety Procedure I-902 for more information.

6. Steel cable or wire rope for non-entry rescue is prohibited.

5.3 Equipment Safety Inspection

1. Inspect underground facilities (manholes, vaults, hand holes, splice boxes, junction boxes, pad mount transformers, switchgear and submersible equipment, etc.) each time a crew performs work at one of these facilities. All separable components in these facilities shall be inspected by infrared instrumentation. A National Grid representative can provide details from the National Grid EOP-UG001 *Infrared – Non-Contact Thermometer Inspection Requirement for Underground Equipment* for more information.

2. The infrared (IR) thermometer or camera shall, at a minimum, have a range of -25°F to 1400°F with a plus or minus 1% accuracy. For more details and current operating procedures, contact a National Grid representative regarding EOP UG001.

3. The format for data collected shall follow the National Grid EOP UG006 *Underground Inspection and Maintenance* requirements. Please contact a National Grid representative for more information.

4. “Touch Potential” testing of metal street lighting poles is required as a part of any maintenance work. For more information, a National Grid representative can provide a copy of the National Grid EOP G016 *Elevated*

Equipment Voltage Testing and National Grid Work Methods Bulletin #04-26 *Touch Potential Testing of Metal Street Lighting Poles.*

5. Touch Potential testing results shall be recorded on the job safety brief and the manhole inspection form which shall be given to the National Grid Construction Supervisor or designee.

6. All contractors working for National Grid shall use materials and equipment in accordance with the manufacturing guidelines. It is the contractors' responsibility to understand the manufacturers' limits and prescribed use of their tools and equipment before each use.

7. Workers shall test and verify that the underground cable is de-energized and guillotine the cable if needed from outside the hole. Rubber gloves shall be worn at all times while performing this task.

6.0 OVERHEAD LINE WORK

In addition to the other requirements referenced in this document, this section covers requirements that are specific to overhead line work.

6.1 PPE Requirements

All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0. In addition, contractors will follow ground-to-ground and cradle-to-cradle use of rubber gloves while performing work on energized overhead lines. Any foreign wire, including those on a pole or structure constitutes an energized source and requires the use of rubber gloves (ex: Cable TV, telephone, fire alarm wire, etc.).

6.2 Fall Protection

All contractors who climb structures such as wood poles or transmission towers shall utilize enhanced fall protection equipment (fall arrest devices) and techniques (ex: *Buckingham Buck-Squeeze, Miller StopFall* or *Jelco Pole Choker*). When working on wooden and steel structures, a full body harness and lanyard shall provide 100% fall protection at all times (100% tie off, Shepperd's Hook, etc.). Climbers shall never be allowed to drop or slide down a pole or structure more than two feet.

Exceptions to fall protection shall be in accordance with Federal & State requirements.

6.3 Pole/Structure Inspection

Contractor shall ascertain the structural integrity of the pole or other structure prior to installation, removal, repair or modification of the equipment on the structure.

1. Prior to climbing any pole, an inspection and test of the condition of any pole being climbed shall be performed. The weight of the employee, the equipment being installed and other working stresses (such as the removal or re-tensioning of conductors) can lead to the failure of a defective pole or one that is not designed to handle the additional stresses.

2. If the pole is found to be unsafe to climb or to work from, it must be secured so that it does not fail while an employee is on it. The pole can be secured by a line truck boom, by ropes or guys, or by lashing a new pole alongside it. [29 CFR 1910.269(q)] If measures cannot secure the pole, the contractor must cease operations and notify the National Grid Construction Supervisor or designee

6.4 Electrical Work Methods

1. Jumpers of any type shall not be used to keep transformers, risers or transformer banks energized for the purpose of changing potted porcelain cutouts. A National Grid representative can provide information to the National Grid Electric Operation Procedure (EOP) D001 *Cutouts – Open Type* for more information.

2. Potted porcelain cutouts must be changed out when work is being completed on a pole even if this is not planned in the scope of the work provided.

3. Properly rated and inspected slings, chains or tongs shall be utilized to move poles and equipment. Winch lines must not be wrapped around poles or looped around transformer ears to lift without a sling or chain.

6.5 Transmission Overhead Lines

1. For work on transmission circuits, red tape shall be placed around any energized pole, pole structure, or tower adjacent to the de-energized line.

2. When one circuit of a double circuit pole or tower line is de-energized for work, a red or orange flag shall be placed on the energized side of the pole or tower nine feet below the lowest energized conductor. In addition, a red

or orange flag shall be placed on the lower cage on the side toward the energized circuit at each arm level as employees work on them or pass them.

3. All contractors using ATV's, UTV's or RTV's for transmission or forestry work, are required to follow all local OHRV requirements for PPE and driving safety. Training shall include classroom and in-field instruction as well as a formal driving assessment on an annual basis for each type of vehicle planned for use: i.e. UTV specific training for UTV's and ATV specific training for ATV use. All contractor employees must be fully trained and qualified before use. Proof of individual operator training certifications for each operator shall be available at all times. US DOT rated helmets and safety glasses/goggles are required for any vehicle that does not have a seatbelt and a roll cage. In equipment with a roll cage and seatbelt, operators can utilize a hard hat and chin strap.

4. At the end of each day, unless other arrangements have been made for an extended outage, grounds will be removed and the National Grid project representative will be notified that all personnel are "clear" of the conductor bus work and equipment.

5. Wherever transmission line workers "touch" wires, a personal ground shall be installed at the work area to establish an equipotential zone, unless workers are engaged in live-line barehand work (29 CFR 1926.964)

7.0 SUBSTATIONS

In addition to the other requirements referenced in this document, this section covers requirements that are specific to substations work.

For additional information, a National Grid representative can provide a copy of the National Grid Substation Maintenance Procedure SMP 499.01.2 *Protective Grounding Procedure* under the Substation Work Methods Infonet page for specifics regarding substation grounding practices.

Grounding plans for substation, major distribution and transmission projects will be submitted to the National Grid construction supervisor a minimum of 1 week prior to construction for review. This plan will show the steps, work area limits and ground cable size and amount. Once reviewed with the National Grid and prior to starting the job, the plan will be reviewed by the contractors with all employees and subcontractors on the project.

The use of an “Equipotential” step/platform or a conductive mat is required for access and egress from the following:

a. Crane or any other equipment, including aerial lift equipment, that is connected to the substation ground grid and/or bonded to transmission line conductors when working outside of the station fence
b. In the rights-of-way
c. In areas inside the substation where there is no ground grid present.

When work is performed inside the substation and there is a ground grid available, the “Equipotential” step/platform or conductive mat is not necessary.

All vehicles shall be grounded and barricaded per OSHA standards and the National Grid Electric Operating Procedure G026 *Mechanized Equipment Grounding*.

Proper clearances shall be maintained from adjacent energized substation bus, energized portions of substation equipment and other transmission lines at all times.

Use of proper insulated tooling (shotguns and sticks) shall be utilized per NECA standard maintaining MAD.

7.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.

2. Contractors who perform any ground breaking activities in a substation within a pre-marked area will require Dig Safe marks to be in place; otherwise, the job must be suspended and the National Grid construction supervisor or project representative shall be notified of the condition.

3. When using non-insulated man-lifts, and if provided by the manufacturer, a secure point of attachment for lifelines, or lanyards or deceleration devices shall be utilized, independent of the means to support or suspend the employee. Workers feet shall also always remain on the floor.

7.2 Notification of Control Authority When Entering a Substation

1. When a contractor enters and exits a National Grid substation, the contractor shall ensure that the System Control Center is notified. While work is being conducted, gates must be monitored at all times or the gates

shall be locked. For more information, contact a National Grid representative regarding National Grid EOPG022 *Substation Security*.

2. Unescorted entry in substations can only be provided to contractors who provide assurance that their employees and subcontractors are electrically qualified as specified in 29 CFR 1910.269. Refer to Section 4.0 of this document

3. All National Grid specifically identified bulk power stations will require NERC-CIP training, certification and approval prior to entry to those sites.

7.3 Substation Work Area Identification (SWAI)

1. Contractors who will be working in substations shall follow the SWAI procedure. National Grid will provide a copy of this procedure if required by the project. For more information, contact a National Grid representative regarding National Grid SMP499.10.2 *Substation Work Area Identification Procedure*.

2. Qualified contractors as referenced in section 4.8 of this document shall install their own work area identification. National Grid shall arrange work area identification for non-qualified workers as required.

3. Designated storage areas for items not being used will be posted in the yard and should be the only place these items are kept.

8.0 GAS OPERATIONS WORK

In addition to the other requirements referenced in this document, this section covers requirements that are specific to Gas operations work. For more information, contact a National Grid representative regarding National Grid General Safety Requirements SHE1001 *Gas Policy* which can be found following this link:
http://dc-gasweb1/MelSite/WMSafetyAll.asp .

8.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.

2. The contractor shall wear all appropriate PPE and Class 2 rubber gloves for personal protection when digging or probing within 2 feet of known electrical conductors and when the location of energized conductors is unknown.

8.2 Gas Operations

1. Any contractor who performs covered tasks shall be operator qualified (OQ) as defined in the DOT Title 49 CFR, Subpart N and all applicable state requirements pursuant to the state the contractor is working in. Additionally, any qualifications of contractor employees shall be in full accordance with the Company's Operator Qualification written plan, (OQ Plan) Refer to the most current list of covered tasks in accordance with National Grids' Operator Qualification Program and the Northeast Gas Association, (NGA).

    a. The Operator Qualified status of contractor employees must be regularly updated and accessible through the ISN system. This listing must detail employees' current tasks they are qualified for, the next recertification date, associated documentation and a documented annual acknowledgement in ISN on their qualified workers as referenced in section 3.1 of this document.

    b. Contractor personnel involved with covered tasks may require certification by National Grid and an orientation of the involved tasks and National Grid Company standards. National Grid reserves the right to validate contractor qualifications prior to performing Live Gas work.

    c. Atmospheres are to be tested with a properly calibrated Combustion Gas Indicator (CGI) or Gas Measurement Instrument (GMI) in accordance with National Grid excavation procedures as required.

    d. Each employee in an excavation shall be protected from cave-ins by an adequate protective system, such as sloping, benching or an appropriate shoring system. For more information, contact a National Grid representative regarding National Grid Safety Procedure M-1301 *Standards for Working in Excavations.*

9.0 FORESTRY AND VEGETATION MANAGEMENT

In addition to the other requirements referenced in this document, this section covers requirements that are specific to vegetation management work.

9.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.

2. For work along roads and other areas of vehicular traffic, contractors shall wear high visibility clothing or vests.

3. Flame Resistant Clothing is not required per the applicable OSHA Forestry standard. Forestry contractors must instead wear natural fiber clothing when working within 10 feet of energized equipment.

4. Forestry contractors must wear a properly adjusted full-body fall protection harness connected to an appropriate lanyard when working from an aerial lift. The lanyard must connect to an attachment anchored to either the boom or bucket mounting hardware. Attachment points anchored through only the fiberglass portion of the bucket are not acceptable.

5. Forestry contractors will be required to wear chaps while operating a chainsaw or when assisting and/or working in close proximity to a chainsaw that is being operated.

6. Saws shall not be left unattended with the engine running.

7. When a contractor employee carries a saw, the engine shall be off and/or covered or the saw shall be carried with the blade to the rear and locked.

8. Tree crews will not be allowed to fly their buckets in between the primary and secondary cables if the MAD will be violated in process of doing so.

9.2 Equipment and Work Methods

1. Forestry contractors shall utilize fiberglass sticks and stick saws for work around energized equipment. Additionally, integrity tests shall be performed and documented annually. Test results and expirations shall be available on each vehicle as needed.

2. Forestry contractors shall perform and document dielectric testing of all aerial units annually. Test results and expirations shall be available on each vehicle as needed.

3. For lump sum or unit price mileage trimming projects, a single foreman may supervise up to four (4) bucket trucks on the same project. The minimum

qualifications for the "lead" person on each of the other trucks shall be a Journeyman Tree Trimmer or equivalent (Qualified Line Clearance Tree Trimmer). At least one other employee on the truck shall be an OSHA defined, Qualified Line Clearance Tree Trimmer Trainee. For Upstate New York only, it is understood that a Qualified Line Clearance Tree Trimmer shall carry the title, wage and benefits as outlined in IBEW LU 1249's existing contract of a Journeyman Treeman and that a Qualified Line Clearance Tree Trimmer Trainee shall carry, at a minimum, the title, wage and benefits as outlined in IBEW LU 1249's existing contract of a Treeman Trainee, 2nd year.

9.3 Training

1. Forestry contractor management will be required to attend safety council meetings hosted by National Grid as required. The contractor shall ensure that all appropriate safety personnel for the National Grid territory are in attendance.

2. Forestry contractors shall implement and provide the required training and certification programs necessary to provide OSHA defined Qualified Line Clearance Tree Trimmers or Qualified Line Clearance Tree Trimmer Trainees. Qualifications shall be provided in the ISN system. Forestry contractors shall provide an update HASP by April 1st of each year for all work being conducted at National Grid.

3. All contractors using ATV's, UTV's and RTV's for transmission or Forestry work are required to follow all local OHRV requirements for PPE and Driving safety

10.0 LNG PRODUCTION, TRANSPORT AND HANDLING

In addition to the other requirements referenced in this document, this section covers requirements that are specific to LNG Production facilities.

All contractors working at LNG plants will sign in and out of plants daily in the contractors log book. All other gas supply facilities and subcontractors require authorization under the contractor management official. If required by the project, trained National Grid plant personnel shall initially, and as needed, review and re-issue as needed, a work permit process which shall which describe the work being performed, valves with their locations and Lock-out/Tag-out numbers.

10.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0 and shall include FR outer clothing.

2. Cryogenic protective gloves/gauntlets and face shields are required when making connections to load / unload LNG. National Grid retains the right to enhance PPE requirements as conditions warrant. The use of additional PPE shall be based on the task performed and the PPE matrix for work in production plants.

10.2 Training

1. Contractors who transport LNG/propane at National Grid facilities are required to be certified in first aid/CPR and are required to complete frost-bite awareness training. Documentation of training records shall be maintained in the ISN system.

2. National Grid expects contractors working at LNG plants to meet the requirements of 49 CFR 193 Subpart H for health, training or experience and/or any applicable National Grid procedures that supersede the above requirements. Contractors shall provide documentation on their qualified workers, as referenced in section 3.1 of this document.

3. All Contractor personnel performing work in LNG plants must meet the requirements of the National Fire Protection Association (NFPA), part 59.

11.0 ELECTRIC GENERATION

In addition to the other requirements referenced in this document, this section covers requirements that are specific to Electric Generation.

11.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0

2. Hearing protection is required when working anywhere inside a generation plant and/or outside the plant where noise may be excessive. Acoustic barriers shall be maintained by the contractor as needed.

3. Safety shoes with a minimum height of six-inches are required in Generation plants.

4. Contractors working in generation plants are required to wear 8-Cal clothing protection. For additional guidance, a National Grid representative can provide reference to Electricity Distribution Operations Infonet webpage under Electric Generation's Policies and Procedures EGO-028 *Personal Protective Clothing* & EGO-029 *Personal Protective Equipment*.

11.2 Training

1. Required training may include; PCB's, asbestos, mercury, confined space awareness and excavation competent person requirements. HAZCOM is required by contractors working in generation plants as applicable.

2. Contractors who work at a National Grid Generation Station shall attend an orientation regarding plant safety and as required, US Coast Guard Maritime Security (MARSEC) policies.

3. Equipment training is required per federal, state and local regulations and National Grid procedures. Operators of any powered industrial vehicle must be qualified and documentation shall be documented.

11.3 Equipment & Excavations

1. All excavations shall be performed in accordance with EGO-0005 *Procedure for Excavation in National Grid Generation Facilities* and National Grid Safety Procedure M-1301 *Standards for Working in Excavations.* For additional information, contact a National Grid representative for copies.

2. Gasoline and diesel powered fork trucks shall NOT be used inside the plant or other enclosed facility. Only propane/electric fork trucks are permitted except where additional hazards may exist.

3. All wood products necessary for the work must be made of flame retardant material.

11.4 Equipment Isolation

For isolation of hazardous energy sources while working in Generation plants, please contact a National Grid representative regarding EGO-0010, *Control of Hazardous Energy Sources-Work Permit System.*

12.0 CIVIL CONSTRUCTION

In addition to the other requirements referenced in this document, this section covers requirements that are specific to civil construction work.

12.1 PPE Requirements

1. All contractors shall comply with the applicable PPE and WZTC requirements referenced in Section 4.0.

2. Rubber gloves shall be worn while carrying out work in and around energized or identified direct buried lines, live duct banks, transformer enclosures, manholes, switch gear and other electrical apparatus when performing civil investigations, installations or repairs.

12.2 Enclosed Space Assessment and Ventilation

Contact a National Grid representative regarding the National Grid EOP-UG006 *Underground Inspection and Maintenance* and National Grid Safety Procedure I-902 *Enclosed Space Procedure* for more information regarding enclosed space requirements.

1. Contractors are required to follow all procedures in this document in regards to enclosed spaces (manholes, sidewalk vaults, etc.), including assessment, ventilation, entry and rescue.

2. Each enclosed space shall be tested prior to removing manhole lids and entry. Atmospheric testing shall be continuous for the duration of the entry using a calibrated, industry approved atmospheric tester.

3. When performing hot work or when indicated by atmospheric monitoring, engineering controls such as forced mechanical ventilation shall be used when working in National Grid manholes at all times.

7. All contractors who are qualified electrical workers will treat these spaces as “enclosed spaces” and follow non-entry rescue provisions.

8. In some situations a boom is allowed for retraction from an enclosed space. Refer to Safety Procedure I-902 for more information.

9. Steel cable or wire rope for non-entry rescue is prohibited.

12.3 Equipment Safety Inspection

All contractors shall comply with the applicable equipment safety inspection procedures referenced in Section 5.3

12.4 Excavation Requirements

All excavation work shall be performed under the control of a competent person. All soils in National Grid territories are to be considered class “C”, considered unstable and shall require all excavations be performed in accordance with OSHA 1926.651, EGO-0005 *Procedure for Excavation in National Grid Generation Facilities* and National Grid Safety Procedure M-1301, *Standards for Working in Excavations.* For more information, contact a National Grid representative for a copy.

Crews that are performing Excavations shall include an excavation log with their job brief that states the soil type, expected depth and length as well as final depth and length. All required steps need to prevent collapse will be documented on this form as well prior to entry.

Protective systems shall be used for certain manhole installations. These scenarios are covered below:

- The hazard assessment, competent person and/or National Grid supervisor deems it necessary
- If an excavation for a manhole in a roadway is completed and installation of manhole and backfill is not able to be done before the day is complete, a protective system will be required before road plating
- Installation of any manhole 3 way or greater in size/

Where trench boxes are required to be built on site, the contractor shall submit a PE stamped plan and the location shall be designated on the excavation drawings.

All lifts (not limited to materials and equipment) shall be planned and rigged by a competent person. A lift plan shall be provided for all “critical lifts” and must be submitted by a qualified professional to the National Grid representative prior to the lift taking place.

12.5 Cable fault finding and replacements

For excavation work needed to support faulted cables and emergency cable locates, the use of Cable Avoidance Tooling (CAT) shall be used in addition to Dig Safe requirements as an added safeguard to further pin point unidentified buried cables.

For excavations within the tolerance zone, all hand digging in and around direct buried cables shall require basic PPE, non-metallic handled shovels, rubber gloves, FR clothing and EH rated work boots with over shoes.

All excavation equipment shall be grounded in accordance with NG EOP G026. For additional information, contact a National Grid representative.

The use of GPR (Ground Penetrating Radar) shall also be required to verify the Dig Safe/811 locates after award of the project and prior to excavation. This shall include electric URD, UCD and Substation projects.

12.6 Technical Review

Where and when applicable, all trench and excavation work shall be reviewed and stamped by a civil PE in the state of record and will be executed under the supervision of a trenching and excavation competent person. All leading edges of trenches and excavations shall be appropriately demarcated, clearly posted and controlled to prevent unauthorized persons from entering and inadvertently falling into the excavation. All trenches and excavations shall be closed as soon as practical/possible. All excavations shall be fully controlled for the duration of the exposure by adequately substantial means to withstand the environment and conditions expected to be present.

All pot holing/test holing and exploratory excavations shall utilize vacuum excavation whenever near known underground utilities or hazards, and when the potential for unknown hazards such as live electrical or gas conveyances exist. When using vacuum extraction in combination with air blowing/air knife tools, all persons in the immediate area shall be wearing safety glasses in addition to a full face shields.

13.0 CONSTRUCTION PROJECTS AT CONTAMINATED SITES

In addition to other requirements referenced in this document, all work on contaminated sites must be conducted per the requirements of 29 CFR 1910.120, including the worker qualification and training requirements of 1910.120(e).

14.0 AVIATION

1. Helicopter Crews of two or more shall perform a preflight documented job brief.

2. Helicopter work shall require the use of aviation helmets for both the pilot and passengers.

3. Helicopter pilots and passengers shall participate in the "Flying in the Wire and Obstruction Environment" training prior to flight.

4. Helicopter pilots shall meet the following minimum flight time experience:
    a. 2000 hours as Pilot in Command or Second in command of a rotor craft
    b. 1000 hours in a turbine rotorcraft / helicopter
    c. 100 hours in a helicopter of the make and model to be utilized at National Grid
    d. 300 hours flight time in Wire Environments

For more information, contact a National Grid representative for a copy of EOP T012 *Helicopter Utilization & Notifications.*

15.0 TRANSPORTATION RISKS

Contractor shall define transportation related activities that can have potential process safety consequences. National Grid shall determine if additional risk assessment is needed and contractor shall participate in the assessment. Contractor shall modify their process to mitigate risk that is determined to be intolerable.

APPENDIX A: NATIONAL GRID CONTRACTOR RISK MATRIX

National Grid Contractor Risk Matrix			
Category	**Description of Work**	**Impact of Work**	**Examples to be included in this category (including, but not limited to)**
Medium / High Risk Exposure **Tier I** **Inclusion in ISN Program is Required**	Physical Work, activity, or service that is performed on National Grid property site or is performed off-site where Owner Client has responsibility and is liable for work performed. Includes, but is not limited to, any activity requiring confined space entry, elevated work, work on operating systems involving hazardous energy, work on contaminated sites, and most work requiring a general work permit, hot work permit, or confined space permit.	Work, activity, or service having: • A potential for causing a catastrophic operational incident; • Access to operations; and/or • A direct role in site operations or maintenance, where failure could result in serious harm to employee or public well-being, company assets, or the environment Also includes any Contractor personnel's job function which has no direct or very limited supervision for operational checks.	• Maintenance, Construction and demolition contractors • Chemical cleaning, tank cleaning • Electricians and Instrumentation Technicians • Movers • Welding • Heavy equipment operations • Well drilling and testing • Environmental investigation, remediation, monitoring activities • Hazardous waste handling and/or transport • Excavation • Food service and handling • Equipment Inspection (e.g., X-ray & other NDT) • On-site sampling / gauging activities (not including escorted storm water sampling) • Common carriers transporting Owner Client-owned LNG or petroleum products • Landscaping services • Snow Removal • Janitorial services

			• Vacuum truck affecting/involving process operations • Oil Spill Response Organizations (OSRO)
Low Risk Exposure **Tier II** **Inclusion in ISN Program is NOT Required**	Work that is office based such as: • Consultants that do not perform work or activities as described in the Medium/High Risk exposure category • Offsite services • On-site vendor pick-up/delivery and repair services • Work performed by public and private utilities • Personnel on-site with Visitor Status, when escorted	Work, activity, or service having an indirect role and no, or limited, access to operations or maintenance where failure could result in serious harm to employee or public well-being, company assets, or the environment.	• Mail/package/part delivery or pick-up (e.g. UPS, Fed EX, vendor-specific) • Samples pick-up by laboratory/courier • Office machine servicing (copiers, printer, computer, etc.) • Laboratory apparatus servicing • Storm water Sampling Labs/Contractors (When Escorted by Owner Client personnel) • Deliver/supply services (vending machine, bottled water, laundry) • Municipal waste pick-up • General trash removal services • Off-site repair/fabrication shops (such as pump, safety valve, piping, vehicle) • Telephone, electric, local municipal utility services • Regulatory representatives • Technical representatives • Engineering services (when escorted by Owner) • Auditors
SVP of SHE can require any contractor to be part of ISN when deemed as a potential risk to National Grid			

INTRODUCTION

Operation of vehicles or equipment near energized lines and equipment may create hazards due to electric field induction, magnetic field induction, and direct contact with energized lines or equipment. These effects may be reduced by grounding and/or isolating the vehicle or equipment.

PURPOSE

The purpose of this procedure is to provide the appropriate methods required for grounding and/or barricading before working on or near energized overhead and underground distribution, sub-transmission and transmission lines. The procedure addresses all mechanized equipment working in or near an energized source where the hazards due to electric or magnetic field inductions exist or the potential of an accidental contact with energized equipment / wire may occur.

ACCOUNTABILITY

1. Standards, Policies and Codes
    A. Update procedure as necessary.
    B. Provide T&D personnel guidance when requested.
2. Customer Operations
    A. Ensure the components of the procedure are implemented.
    B. Ensure T&D personnel are trained in this procedure.
    C. Provide revision input as necessary.
3. Employee
    A. Demonstrate the understanding of the procedure.
    B. Comply with the requirements of the procedure.

REFERENCES

National Grid Employee Safety Handbook
OSHA 1910.269 (p) 4 Operations Near Energized Lines or Equipment.
OSHA 1926.416
OSHA 1910.333
NESC 2012 edition
IEEE Standard 1048 2003 IEEE Guide for Protective Grounding of Power Lines
ANSI Z535.5-2002
ASTM Designation: F855-97
NG-EOP G013 Excavation Notification Requirements
NG-EOP UG011 Underground Electric

DEFINITIONS

Qualified Person: A person knowledgeable in the construction and operation of electric power generation, transmission, substation, and/or distribution apparatus involved along with the associated hazards in specific duties pertaining to electric operations.

Barricade: A physical obstruction such as tapes, screens or cones intended to warn and limit access to a hazardous area.

Barrier: A physical obstruction that is intended to prevent contact with energized lines and equipment.

Effectively Grounded: Being connected to the earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the building up of voltages that may result in undue hazard to connected equipment or to persons.

Energized (alive, live): Electrically connected to a source of potential difference or electrically charged so as to have a potential significantly different from that of earth in the vicinity.

Touch Potential: The voltage difference between an object which the worker may touch and the earth upon which the worker is standing. This voltage difference could be hazardous and could result from energizations, induction or faults.

Step Potential: The voltage difference between two points on earth's surface, separated by a distance of one pace (assumed to be one meter/approximately 3 feet) in the direction of the maximum voltage gradient. This potential difference, if great enough, could be dangerous to a worker.

Exposed – Not isolated or guarded.

Isolated: An object that is not readily accessible to persons unless special means of access are used.

Guarded: Protected by personnel, covered, fenced, or enclosed by means of suitable covers or casings, barrier rails, screens, mats, platforms, or other suitable devices in accordance with standard barricading techniques designed to prevent dangerous approach or contact by persons or objects.

Tolerance Zone: - If the diameter of the underground facility is known, the distance of one-half of the known diameter plus two feet, on either side of the designated center line or, if the diameter of the underground facility is not known, two feet on either side of the designated center line.

TRAINING

Provided by appropriate National Grid training program.

DOCUMENT CONTENTS

Table of Contents

1.0 SAFETY REQUIREMENTS

1.1 All appropriate Personal Protective Equipment, which includes, but is not limited to hard hat, safety glasses/eye protection, rubber protective equipment, appropriate footwear and FR clothing, shall be worn when performing work as required by the National Grid Employee Safety Handbook and applicable work procedures.

1.2 The employee in charge of the work shall conduct a written job brief with the employees involved before they start each job. The briefing shall cover at least the following subjects: hazards associated with the job, work procedures involved, special precautions, Clearance and Control Procedures, atmospheric testing and ventilation and personal protective equipment requirements.

1.3 During work, barriers or other appropriate protection shall be installed to protect adjacent conductors.

1.4 All the procedures shall be worked in accordance with accepted safe work practices using approved tools and equipment. Refer to the tool catalog for a listing of approved equipment.

2.0 GENERAL GUIDELINES FOR ALL APPLICATIONS (OVERHEAD AND UNDERGROUND)

2.1 All ground connections shall be made on a bare metal surface and shall be clean and wire brushed before installing connection.

2.2 All ground leads shall be fully extended or uncoiled.

2.3 All ground connections shall be checked prior to each use.

2.4 When installing a ground clamp or grounding mechanized equipment to a grounding element, the use of Class 2 rubber gloves is required. And, if the relevant minimum approach distances cannot be maintained for a particular voltage, the use of live line tools shall be used.

2.5 Temporary driven grounds shall be installed and barricaded at a location away from the workers on the ground.

2.6 Follow procedure NG-EOP G013 Excavation Notification Requirements when installing any ground rods.

3.0 OVERHEAD EQUIPMENT APPLICATION

3.1 When a qualified employee needs to operate mechanized equipment near energized lines or apparatus, the equipment shall be operated so that the minimum approach distances listed in the tables below are maintained from exposed energized lines/apparatus. This can be accomplished in most cases by repositioning the mechanized equipment or by displacement or relocation of the affected energized lines or apparatus. Insulated aerial equipment being used within its dielectric rating and operated by a qualified employee is exempt from this requirement.

MINIMUM WORKING APPROACH DISTANCES FOR VEHICULAR AND MECHANICAL EQUIPMENT

NEW ENGLAND (OSHA)

Nominal Voltage in kilovolts	Distance: Phase to ground exposure
0.05 to 1.0	Avoid contact
1.1 to 15.0	2'-1" (0.64m)
15.1 to 36.0	2'-4" (0.72m)
36.1 to 46.0	2'-7" (0.77m)
46.1 to 72.5	3'-0" (0.90m)
72.6 to 121	3'-2" (0.95m)
138 to 145	3'-7" (1.09m)
161 to 169	4'-0" (1.22m)
230 to 242	5'-3" (1.59m)
345 to 362	8'-6" (2.59m)
500 to 550	11'-3" (3.42m)
764 to 800	14'-11" (4.53m)

NEW YORK IBEW LOCAL 97 ONLY

Voltage	Electrically Qualified	OSHA General
50-1000v	Avoid Contact	Avoid Contact
1000V – 15kv	2 ft. 2 in.	10 ft.
23-34.5kV	3 ft.	10 ft.
46-69kV	4 ft.	10 ft. 8 in.
115kV	5 ft.	12 ft. 4 in.
230kV	7 ft.	16 ft.
345kV	9 ft.	20 ft.

New York Transmission Line Services:

The National Grid Employee Safety Handbook rules apply. Where the distances allow, the Minimum Approach Distances listed in Appendix A of the National Grid Employee Safety Handbook will be utilized. If such work cannot be performed, OSHA minimum approach distances will apply. (Reference OSHA 1910.269 tables R6 – R10). Per OSHA 1926.1408 (b)(3) a spotter is required within 20 ft zone.

3.2 A designated qualified employee other than the equipment operator shall observe the approach distance to exposed lines and apparatus and give timely warnings before the minimum approach distance, shown in the relevant table above, is reached. When the

minimum approach distance cannot be maintained, in order to accomplish the work, the written job brief shall document the reasons for the encroachment on the minimum approach distances and the operation shall comply with at least one of the following:

3.2.1 The energized lines exposed to contact shall be covered with approved Insulating products/barriers that will withstand the type of contact that might be made.

3.2.2 The equipment shall be insulated for the voltage involved and repositioned so that its uninsulated portions cannot approach the lines or equipment any closer than the minimum approach distances.

3.2.3 Each employee shall be protected from hazards that might arise from equipment contact with energized lines. The measures used shall ensure that employees will not be exposed to hazardous differences in potential by:

a. Using the best available ground to minimize the time the line remains energized.

b. Bonding equipment together to minimize or eliminate potential differences.

c. Providing temporary protective equipotential bond mats to extend areas of equipotential.

d. Employing portable insulating protective equipment or barricades to guard against any remaining hazardous potential differences.

4.0 OVERHEAD GROUNDING ELEMENTS

4.1 Ground element choices in order of priority are:

4.1.1 System neutral conductor or cable

4.1.2 Substation ground, structure ground

4.1.3 Ground wire connected to ground rod and bonded to system neutral (down ground)

4.1.4 An existing guy anchor rod under tension and that is not newly installed.

4.1.5 Temporary driven ground rod (8’ length driven fully into the soil)

5.0 GROUNDING OF OVERHEAD EQUIPMENT

5.1 **All wire trailers and pulling/tensioning equipment**

5.1.1 When operating this equipment near energized lines, the equipment shall be grounded to a ground element. The equipment/work area shall be barricaded to protect the workers and the public from dangerous touch and step potentials. Appropriate rated rubber gloves and EH rated overshoes shall be worn by the operators.

Three reel spacer cable trailer with axle grounds

Single reel trailer 2/0 grounding set

AB Chance Cat # SA600-3147 or
MacLean Power Systems

Three reel trailer 2/0 grounding set

AB Chance Cat # SA600-3149 or
MacLean Power Systems

All new grounds ordered will come with clear jacket
See tool catalog for ordering information

5.2 Three reel trailer grounding set installation:

5.2.1 The three rotators are put onto the arbors as the wire reels are being mounted located approximately two feet from each wire reel. Each three foot ground cable should be connected from the bare wire tail (stripping of conductor may be necessary) of each wire reel to one of the ball studs on the rotator installed on each arbor. Next, connect the ten foot ground cable lead to the second ball stud on the rotators to whichever bus bar is chosen depending on where the grounding element is located. Then connect the fifty foot ground cable lead from

the bus bar to the ground source. The single reel trailer grounding should be done in a similar fashion utilizing the approved single reel trailer grounding set.

5.2.2 Running or stringing grounds can be used in place of arbor reel grounds when installing new conductors. These grounds connect the new conductor to the trailer which connects to a ground element. **The preferred method is the arbor rotating ground method.**

5.3 Digger Derrick Trucks:

5.3.1 If it has been determined that adequate insulate/isolate products could not be installed to withstand the type of contact that might be made during the operation of the digger derrick with any uninsulated portions (winch line is not tested and cannot be considered insulated for voltages involved) operating within the relevant minimum approach distances, a written job brief shall detail the reasons for the encroachment on minimum approach distances and the following requirements shall be done:

a. The digger derrick shall be attached to the best available ground element at the work site. (See Section 3 Grounding Elements)

b. Bond equipment together to minimize or eliminate potential differences and provide temporary protective equipotential bond mats to extend areas of equipotential.

c. If there is exposure to the public (near a sidewalk or in a parking lot for example) the vehicle shall be barricaded.

d. It is strongly recommended that the equipment should always be barricaded to prevent ground personnel from making inadvertent contact with the equipment.

5.3.2 Contact with the vehicle while the boom or suspended load is in the energized area shall be avoided while standing on the ground. However, when situations require contact with the digger derrick from the ground, class 2 rubber gloves and EH rated overshoes shall be worn. Added safeguards such as insulating pole guards shall be used when setting poles within the relevant minimum approach distances.

5.3.3 The operator of the digger derrick shall utilize the following methods to protect themselves in case of accidental contact with energized lines:

a. Operate controls from the truck platform of the digger derrick.

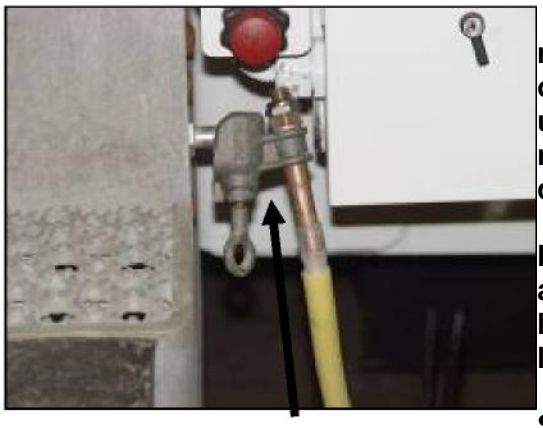
b. If controls are not being operated from the truck platform the operator shall wear Class 2 rubber gloves and EH rated overshoes.

c. Stand on a temporary protective equipotential bond mat bonded to the truck.

d. Avoid contact to equipment with unprotected portions of their body.

Grounding of Digger Derrick

tud
Located rear of digger derrick



G
r
o
u
n
d

B
a
l
l

S

Ball Socket Ground Clamp

Ground Cable Assembly Located in front till on passenger side of vehicle.
A visual inspection of the ground connection to the frame on this style of ground is required to ensure the integrity of the ground connection.

**Use a National Grid approved 2/0 Cu Ground Cable Assembly 50' length -
AB Chance Assembly # SA600-3027 or MacLean Power Systems part #BT-Q-2/0Y-50
to connect from the ball stud ground connection on the vehicle to the chosen ground element.**

All new grounds purchased will have a clear silicone jacket to allow for a visual inspection of the ground conductors and connections.

(See Bulletin #09-26 and Tool Catalog for specific sets and catalog #'s)

http://us3infonet/sites/eng_delivery_svcs/Pages/StdsWkMthds.aspx

5.4 Additional mechanized equipment

5.4.1 The following mechanized equipment when operating within the relevant minimum approach distances shall follow the approved methods described in this procedure; insulated aerial equipment rated below the circuit voltage level, cranes with booms, trucks with derricks, loaders, uninsulated telescopic and articulating aerial lifts, personnel lifts, scissor lifts, high reach forklifts, tractors with side booms and any other similar equipment.

6.0 UNDERGROUND EQUIPMENT APPLICATION

6.1 While pulling Cable with a conductive steel winch line and the steel winch line will be within reasonable proximity and a possibility of contact exists with an energized shielded cable, above 1000V up to 46kV and energized unshielded cables below 1000V, the cable pulling equipment shall be grounded and barricaded. This requirement applies when pulling cable in a manhole & conduit, URD or UCD systems.

6.2 Each employee shall be protected from hazards that might arise from equipment contact with energized cables. The measures used shall ensure that employees will not be exposed to hazardous differences in potential by:

6.2.1 Using the best available ground to minimize the time the line remains energized.

6.2.2 Bonding equipment together to minimize or eliminate potential differences.

6.2.3 Providing temporary protective equipotential bond mats to extend areas of equipotential.

6.2.4 Employing portable insulating protective equipment or barricades to guard against any remaining hazardous potential differences.

7.0 UNDERGROUND GROUNDING ELEMENTS

7.1 Underground Grounding Element Choices in order of priority:

7.1.1 Manhole ground grid (has ground rod)

7.1.2 Primary neutral in manhole

7.1.3 Secondary neutral in manhole

7.1.4 Substation / structure ground grid

7.1.5 Ground rod with down ground - which is connected to system neutral (non delta distribution area)

7.1.6 Street light ground rod (connected to the rod)

7.1.7 Anchor rod under tension, not new, not rusty (or clean off rust)

7.1.8 Temp ground rod (driven - 8' min)

Manhole Ground Grid (7.1.1)

Cable Truck Grounded to Ground Grid

8.0 GROUNDING OF UNDERGROUND EQUIPMENT

8.1 Underground Lines Pulling Equipment and Powered Reel Trailers

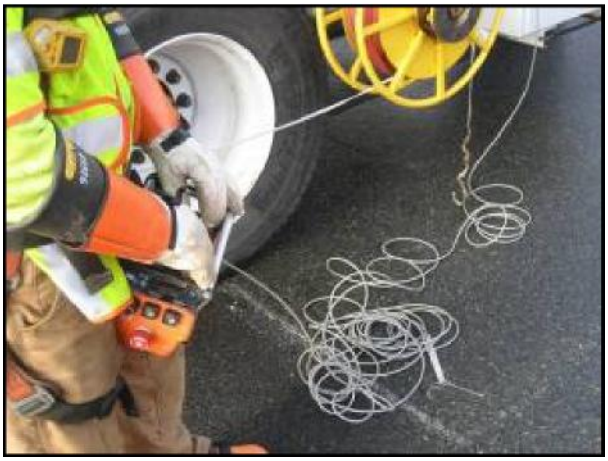
8.1.1 Cable Winch Trucks and powered reel trailers shall be attached to the best available ground element at the work site. (See section 7 Grounding Elements) Bond equipment together to minimize or eliminate potential differences. The equipment/work area shall be barricaded to protect the workers and the public from dangerous touch and step potentials. Appropriate rated rubber gloves and EH rated overshoes shall be worn by the operators.

8.1.2 Avoid contact with the winch truck or powered reel trailer while grounded. However, when situations require contact with the winch truck or reel trailer from the ground, class 2 rubber gloves and EH rated overshoes shall be worn.

8.1.3 The operator of the cable winch truck or the reel trailer shall utilize the following methods to protect themselves in case of accidental contact with energized cables:

a. Where possible use wireless remote controls to operate the equipment.

b. If using hard wired controls (including foot pedals) or operating the controls on the truck the operator shall wear Class 2 rubber gloves and EH rated overshoes or stand on a temporary protective equipotential bond mat bonded to the truck. The operator shall avoid contact to the equipment with unprotected portions of their body.



Wired Pendant Using Rubber Gloves

9.0 BARRICADING

9.1 Barricading a vehicle or equipment provides a physical and visual obstruction, warning the public and workers of possible danger. The barricade should be positioned so that no hazardous voltage exists outside the barricade and will prevent unauthorized entrance into the potentially hazardous area. No one should enter the barricaded area while the vehicle or equipment is operating and has a risk of contacting energized lines or apparatus. A barricade should be set up using a minimum six foot perimeter, if possible, around the vehicle or equipment providing isolation from the vehicle or equipment for the public and workers. If the six foot perimeter would impede traffic flow or create a greater hazard for the pedestrians, then a lesser perimeter is allowable, but a worker shall be positioned to ensure that contact is avoided. The use of safety cones, safety flags, red barricade tape, and/or retractable barriers shall be used to construct this barricade. The following is an example of a method of barricading:

Danger Barrier Tape - #9301672

Flags - #9321942

Safety Cones - #9319384
Retractable barrier - #9310511

10.0 EXCAVATING EQUIPMENT

10.1 Prior to excavating, cables and other buried utilities in the immediate vicinity shall be located, per NG-EOP G013 Excavation Notification Requirements. Mechanized equipment shall not be used to excavate in close proximity, within the tolerance zone (2 feet either side of center line), of energized buried lines and other buried utilities. Before excavating in close proximity of energized cables within the tolerance zone refer to NG-EOP UG011 Underground Electric.

10.2 Uninsulated mechanized excavating equipment (backhoes, earth borers, excavators, vacuum trucks, trenchers, diggers, and any other similar equipment) that could possibly contact an energized underground cable or apparatus shall be grounded and barricaded utilizing approved methods described in this procedure.

11.0 ELECTRIC AND MAGNETIC FIELD INDUCTION

11.1 Voltages can be induced on vehicles and equipment that are in proximity to energized lines due to electric and magnetic field induction. If these vehicles and equipment are not in the work area and cannot possibly make contact with energized lines or equipment, they may be grounded with a discharge (static) ground cable to drain off these induced voltages.

12.0 REVISION HISTORY

Version	Date	Description of Revision
1.0	05/03/11	This document supersedes document dated 08/27/07.
2.0	12/04/12	This document supersedes document dated 05/03/11.
3.0	05/24/13	This document supersedes document dated 12/04/12.

31.3 Pipeline High Voltage Protection During Construction

31.31 Introduction

When coated metallic piping is run parallel to overhead A.C. electric lines, the pipe is subject to picking up induced voltages and currents that are the result of electromagnetic and electrostatic coupling. These induced voltages and currents may cause coating damage, as well as damage to cathodic protection and electronic monitoring equipment. They can also be a hazard to personnel working on the pipeline, particularly during the construction period when long sections of pipe are exposed above-ground,

31.32 Purpose

The purpose of this specification is to cover the procedures and construction techniques which shall be used during the construction period to reduce potentials on the pipe and construction equipment to a level less than 15 volts (RMS) measured between the structure and ground. These specifications represent minimum requirements only. All possible actions to protect individuals during construction and maintenance should be reviewed to assure the safety of all persons and equipment affected. A qualified person shall be designated as the one in charge of electrical safety on all construction projects on electric rights-of-way. NMPC shall review this individual's experience and qualifications and approve his/her designation as the Supervisor of Electrical Safety. This person shall not be replaced without the Corporation's approval. When this person is not on site or available to give direction, another individual shall be designated responsible. This person shall be identified and approved by NMPC prior to his/her being assigned this function. At no time shall any work relating to electrical safety take place on the job without the qualified individual present.

31.33 Qualifications of the Supervisor of Electrical Safety

This person shall be fully aware of proper grounding procedures and the dangers associated with inductive and electrolytic coupling, power arc, lightning, faults, currents, etc. This person shall know of the proper safeguards for the construction equipment being used and the safe distance from overhead conductors required. This person shall be furnished with the instrumentation, equipment and authority required to maintain safe working conditions. In all cases, tests to detect A.C.and D.C. potentials shall be performed first--all systems shall be treated as a live electrical conductor, until proven otherwise. He should communicate at least daily with the dispatcher controlling the involved electric lines to ascertain any changes in loading or switching, scheduled that day which might be expected during the work period.

31.34 Grounding of Construction Equipment & Material

Each piece of equipment utilized to handle pipe in any way such as unloading, picking up, transporting, bending or setting-in shall be grounded and shall be equipped with a cable assembly capable of grounding the sections of pipe to the piece of equipment handling that pipe.
(See Exhibit No. 3, Sheets #1, #2, #3 and #4.)

Before any section of pipe is picked up or moved in any way, the ground shall be completed between the section of pipe and the equipment moving that pipe. "Setting-in" booms shall be equipped with ground cable and the ground shall be maintained at least until the stringer bead is completed.

Pipe shall be unloaded from stringing trucks by a sideboom equipped with grounding cable, as described above. A ground shalt be completed between all sections of pipe to be unloaded and the sideboom before unloading cable or slings are attached to the pipe.

During construction, long strips of welding, ungrounded and/or unbackfilled pipe shall not be allowed to accumulate along the right-of-way in the ditch parallel to and within 200 feet of the center line of the nearest electric line.

Pipe shall be hauled to the right-of-way and stored in stacks (perpendicular to the alignment of the electric lines) of ten sections or less. Each section of pipe in the stack shall be grounded with a 5/8" minimum diameter ground rod driven into the ground at least four (4) feet. (See Exhibit No. 4) This ground shall be maintained until each individual section of pipe has been removed from the stack. When grounding sections of pipe, the ground rod shall be driven and the grounding cable connected to the ground rod first. The grounding cable shall then be connected to the pipe. Cables used for temporary grounding attachments shall have good mechanical strength as well as high conductivity. The cable shall be single conductor #2 A.W.G. 1715 stranded welding cable or equivalent. Cable attachments to temporary grounding systems shall be made by a method that assures good electrical contact, while applying firm pressure to the pipe metal. This method of attachment should have a current carrying capacity of at least 200 amperes. When removing grounding cable, the cable shall be removed from the pipe or equipment first and then from the ground rod.

All grounding attachments and removals shall be made by or under the direct supervision of the persons described above who is in charge of electrical safety.

Each string of welded pipe not yet welded to the completed portion of the pipeline shall be temporarily connected to a ground rod having a minimum diameter of 5/8" and driven to a depth of at least four (4) feet. (See Exhibit No. 5) Any string of pipe no longer than 1,000 feet shall be grounded in at least two (2) places. Grounds shall be no more than 1,000 feet apart. Strings of pipe shall be limited to 3,000 feet in length unless longer lengths are authorized by the Company's authorized representative. Temporary grounds shall be maintained on new sections of main until they are tied into that portion of the line which has been buried and permanently grounded with magnesium anodes. When tie-ins are being made, both sections of pipe shall be bonded together and tested to assure that each is effectively grounded by measuring the potential between each loose end and ground. If this potential exceeds 20 volts, work shall not proceed until supplementary grounding is installed to reduce the potential to less than 15 volts.

Bare road casings may be utilized for additional grounding during construction. This may be done by attaching a bond cable between any exposed metallic surface of the pipeline and the bare casing. This bond shall be removed only after zinc grounding cells have been installed between the pipe and casing but before the casing and pipe have been buried.

31.35 Safe Voltage Requirements

The voltage to ground of any string of pipe exposed to contact by personnel shall be measured periodically by reading the voltage between the pipe and a clean steel pin driven in the ground. If the

voltage exceeds 15 volts above ground, supplementary grounds shall be used to reduce this voltage to less than 15 volts. In the event that measured voltage above ground exceeds 20 volts, the person in charge of electrical safety shall issue appropriate warnings, and all work on the pipe string shall be suspended until potential is reduced to less than 15 volts.

31.36 Insulating Joints During Construction

Insulating joints shall be installed with a bond cable shorting out the insulating material. This bond cable shall remain in place until the insulating joint has been welded into the pipeline and a zinc grounding cell has been connected across the insulating flange. The zinc grounding cell with test stations must be in service and the bond cable removed before the insulating joint is buried.

31.37 Refueling on Electric Right-of-Ways

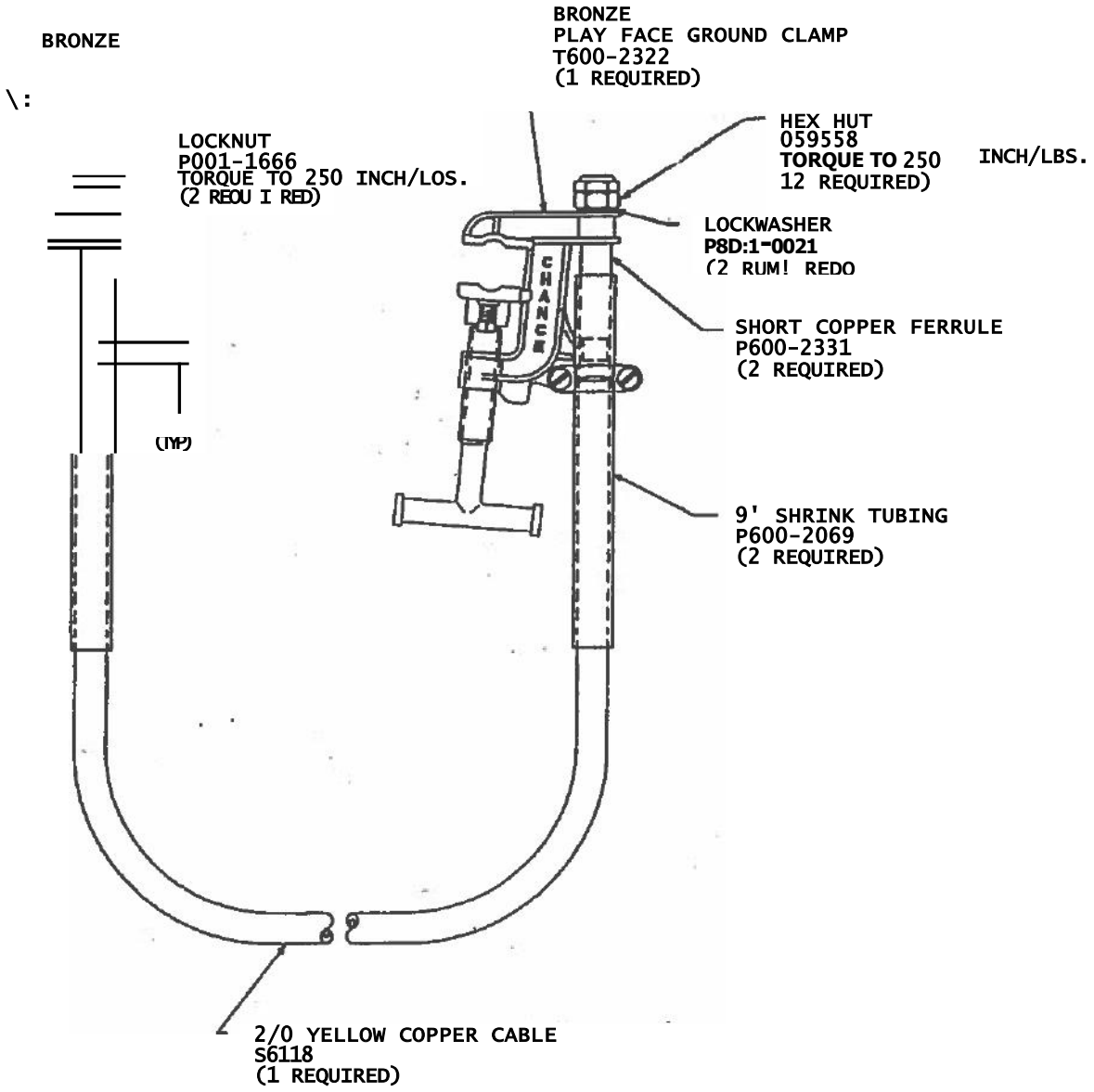
Each fuel truck shall be grounded and shall be equipped with a cable assembly capable of completing an electrical bond between the truck and any piece of equipment to be fueled. This bond shall be made each and every time prior to any part of refueling operation. This bond shall not be removed until all refueling operations are completed. Care shall be taken where cable attachments are made so that good electrical continuity is established.

31.38 Rubber-Tired Equipment on Electric Right-of-Ways

Rubber-tired equipment parked for any appreciable time on a power line right-of-way collects a considerable charge of static electricity. Refer to the Niagara Mohawk Accident Prevention Rules book (2.13 GROUNDING OF CRANES AND SIMILAR MOBILE EQUIPMENT WHEN OPERATED IN THE VINCINITY OF ELECTRICAL CONDUCTORS) for requirements for equipment grounding.

Vehicles should be parked no closer than 200 feet from the base of electric line towers. Rubber-mounted heavy equipment, while parked or in use on the power line right-of-way, shall be grounded to a driven ground at least 1/2" in diameter. The ground shall be driven to a depth of at least four (4) feet. All vehicles which might be parked on the right-of-way shall be equipped with a 1/2" copper ground rod and connecting cable assembly. Cable should be at least No. 2/0 AWG arid have insulated clips capable of completing an electrical bond between the ground rod and the vehicle. Each time a vehicle is parked on the power line right-of-way, the ground rod shall be pushed as far as possible into the ground to make an electrical connection between the rod and the vehicle. This bond shall remain in place as long as the vehicle is parked on the power line right-of-way.

Grounding cables shall be 25 ft. minimum and meet the requirements specified in drawing below.



31.39 Electric Grounds

All bonding connections shall be made to driven ground rods as described above. Bonding connections shall not be made between the pipeline and the electric transmission line ground. Such a connection can result in high pipeline potentials during power line faults with current flow through the pipeline which could damage the steel as well as the coating.

31.40 Construction During Thunder Storm

Work shall be suspended in the area of overhead high voltage power lines during any thunderstorm activity.

31.41 Safe Working Clearances on Electric Right-of-Ways

Whenever working within an electric right-of-way, the following guidelines shall be applied to ensure both personnel and equipment safety:

1. Except where electrical distribution and transmission lines have been de-energized and visibly grounded at the point of work or where insulating barriers, not a part of or an attachment to the equipment or machinery have been erected to prevent physical contact with the lines, equipment or machines shall be operated proximate to power lines only in accordance with the following:

   – For lines rated 50 KV or below, minimum clearance between the lines and any part of the crane or load shall be 10 feet.

   -For lines rated over 50 KV, minimum clearance between the lines and any part of the crane or load shall be 10 feet plus .4 inches for each 1 KV over 50 KV but not less than 15 feet.

   – In transit, with no load and boom lowered, the equipment clearance shall be a minimum of 4 feet for voltages less than 50 KV and 10 feet for voltages over 50 KV up to and including 345 KV and 16 feet for voltages up to and including 750 KV.

   – The above criteria applies to personnel and equipment including loaded and unloaded cranes, vehicles and cranes in transit, men and machines and combinations, thereof.

   – All lines shall be considered energized unless on-site personnel have verified it de-energized in accordance with NMPC Accident and Prevention Rules.

2. Equipment which has the capability of extending within the wire clear zone established above shall have a warning sign attached in clear view of the operator identifying the potential hazard.

3. At each access to the right-of-way, where the potential for electrical hazards exists, signs shall be posted warning of the electric danger.

4. No equipment actively employed in site preparation, grading, excavating, etc., shall be operated within (10) feet of any transmission line supporting structure unless otherwise approved by Niagara Mohawk.

5. There shall be no excavation under the overhead lines within 15 feet of the nearest wood member of guy anchor and/or 25 feet of the nearest steel member of a transmission line supporting structure, unless otherwise approved by NMPC.

6. The Regional Electric Superintendent Transmission & Distribution shall be notified at least 1 week before any work is started on the right-of-way. Reference this individual to EOP 214, "High Voltage Proximity Act" in the notification.

7. Equipment which is operated in the direct vicinity (within 200 feet of an electrical high voltagF line) must be effectively grounded.

31.42 Additional Safety Precautions for Electric ROW Construction

A pre-job brief shall be conducted with all site personnel prior to work commencement in the electric right-of-way, with a focus on electrical safety. Topics of discussion to ensure personnel and equipment safety shall include:

-Survey information and points of concern.

-Dangers associated with electrical hazards.

– Warning signs and postings.

-Minimum clearances.

-Safety equipment.

-Equipment and personnel positioning.

– Potential for cable whip and associated safety precautions.

The Contractor and Niagara Mohawk representatives shall consider further safety precautions, including the following:

-Designating an individual to observe equipment clearances and provide timely notification to equipment operators.

-Cage-type boom guards, insulating links, proximity warning devices and trapeze

lines. -Use of rubber gloves and boots.

– Additional machine and load grounding.

– Stored, construction, and installed grounds.

-Requests to Regional Control Room to remove auto reclose circuitry.

-Use of nylon straps, ropes and other insulating devices, rather than cables and conductive equipment.

– Continuous on-site supervision during construction activities, in addition to the "Supervisor of Electrical Safety."

31.43 References

The above criteria is established based on the current requirements of:

– 29 CFR Part 1926.550 Subpart N

-NEC 110-34

-NESC Part 4

-NMPC Doc. No. CR.03.039, High Voltage Proximity Act

-NYSCRR Chapter 469, High Voltage Proximity Act - Safety Measures

-NMPC Accident Prevention Rules Part 124 - Working Clearances

-EOP 214, Electric Operating Procedures, "High Voltage Proximity Act"

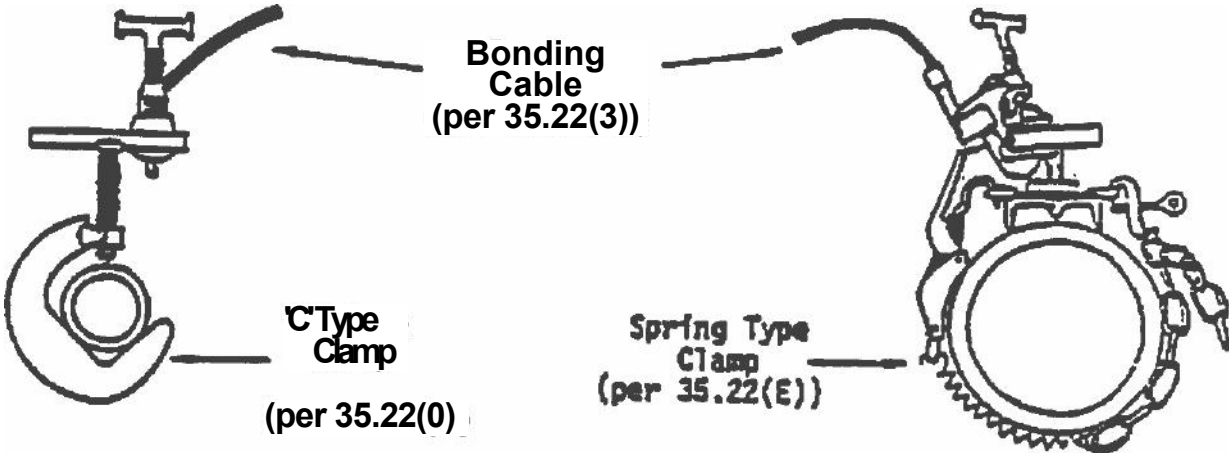
Deviations to the above criteria are allowed, provided approval from responsible parties of both the Contractor and NMPC is obtained and New York State and Federal Regulations are not violated, EOP-214 should be consulted.

31.44 Installation of Grounding Bonds

1. **The bond must be installed so as to bridge the entire distance of the existing gap or proposed void between the metallic structure and the grounding device.**

2. **The area where the contact point of the clamp engages the structure being grounded must be free of rust, dirt, coating, scale, oil and grease (bare metal).**

3. **The proper type clamp, as illustrated below, must be selected. Piping in sizes up to 2** 1/2" **IPS should utilize the "C"-type clamp, while 4" and over are accommodated by the spring type.**



4_ **The "C" clamp is engaged when the contact point has been tightened down so as to be in solid contact with the pipe or equipment to be grounded.**

Spring clamps must be secured to the pipe by connecting the lever spring and properly adjusted chain to the stabilizer piece, then securing the contact point as stated previously.

5. A bonding cable must be attached to the clamp handle on each side of the proposed work site. Be sure that the cable is safely routed around the work area.

Fabricated Components for Bonding

A. General

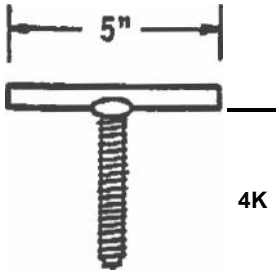
The following components should be fabricated and available to be assembled into bonding cables and clamps for use as described in Sheet No. 1.

B. Bonding Cables

Bonding Cables should be made up from two ground clamps, two compression ferrules that are connected by a section of #1 welding cable. These cables are used to connect either spring or "C" type clamps together.

Note: #2 A.W.G. 1715 stranded welding cable or equivalent and the appropriate size spring clamp (jumper cable ends) may be substituted for the #1 welding cable and ground clamps (35-03-069) when being used as a bonding cable during metallic pipe cutouts.

C. Fabricated Handle



This section is fabricated from a 1/2" hard steel stud bolt cut approximately 4" long; machined to a sharp point on one end and welded to a 5" handle piece of 1/2" steel rod.

D. "C" Type Pipe Clamps

Piping in sizes up to 2 1/2" IPS may be ground connected with a "C" type clamp. The jaws of these clamps may be fabricated from 1/2" boiler plate utilizing the pattern drawing A-33712-S, index 4.0-2-G24. This jaw piece together with a fabricated handle, per paragraph (C) will complete this clamp.

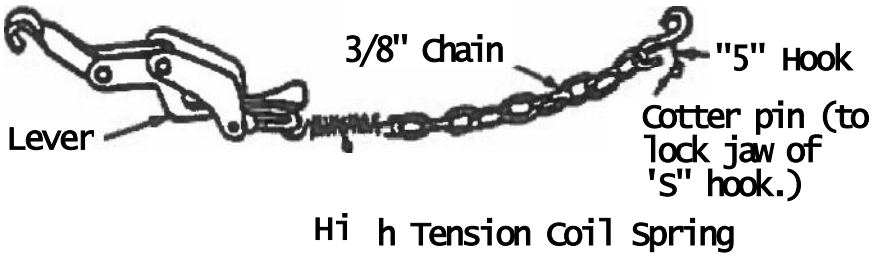
E. Spring Type Pipe Clamps

This type clamp is used on 4" through 24" IPS piping. It is assembled using a fabricated handle, per paragraph (C), together with the fabricated stabilizer piece, illustrated below. The appropriate sized lever spring will complete this clamp.

1. Lever Spring

Available from the H & M Pipe Beveling Machine Co. as a Boomer Assembly, model number per following chart.

Model No.	Pipe Range
#1	4" - 8"
#2	8" - 12"
#3	14" - 20"
#4	22" - 26"



2. Fabricated Stabilizer Piece

This is fabricated from a 3" piece of 3" channel iron. A 5/8" hole is cut in the center and a 1/2" square nut welded into place over the hole.

APPENDIX G

CSX REQUIREMENTS

PART 4 – CONSTRUCTION REQUIREMENTS

4.1 Method of Installation

4.1.1 General Requirements

a) Bored, jacked, or tunneled installations shall have a bore hole essentially the same as the outside diameter of the pipe plus the thickness of the protective coating.

b) The use of water or other liquids to facilitate casing emplacement and spoil removal is prohibited.

c) If, during installation, an obstruction is encountered which prevents installation of the pipe in accordance with this specification, notify CSXT immediately, abandon the pipe in place, and immediately fill with grout. A new installation procedure and revised plans must be submitted to, and approved by, CSXT before work can resume.

4.1.2 Bore and Jack (Steel Pipe)

a) This method consists of pushing the pipe into the earth with a boring auger rotating within the pipe to remove the spoil.

b) The boring operation shall be progressed on a 24-hour basis without stoppage (except for adding lengths of pipe) until the leading edge of the pipe has reached the receiving pit.

c) The front of the pipe shall be provided with mechanical arrangements or devices that will positively prevent the auger from leading the pipe so that no unsupported excavation is ahead of the pipe.

d) The auger and cutting head arrangement shall be removable from within the pipe in the event an obstruction is encountered.

e) The over-cut by the cutting head shall not exceed the outside diameter of the pipe by more than ½ inch. If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe (plus coating) by more than approximately 1 inch grouting (see the Construction Requirements-Grouting Section) or other methods approved by CSXT, shall be employed to fill such voids.

f) The face of the cutting head shall be arranged to provide a reasonable obstruction to the free flow of soft or poor material.

g) Plans and description of the arrangement to be used shall be submitted to CSXT for approval and no work shall proceed until such approval is obtained.

h) Any method that employs simultaneous boring and jacking for pipes over 8 inches in diameter that does not have above approved arrangement **will not be permitted**. For pipe 8 inches and less in diameter, auguring or boring without this arrangement may be considered for use only as approved by CSXT.

4.1.3 Jacking (RCP and Steel Pipe)

a) This method consists of pushing sections of pipe into position with jacks placed against a backstop and excavation performed by hand from within the jacking shield at the head of the pipe. Ordinarily 36 inch pipe is the least size that should be used, since it is not practical to work within smaller diameter pipes.

b) Jacking shall be in accordance with the current AREMA Guidelines, Chapter 1, Section 4.13, "Earth Boring and Jacking Culvert Pipe Through Fills." This operation shall be conducted without hand mining ahead of the pipe and without the use of any type of boring, auguring, or drilling equipment.

c) Bracing and backstops shall be so designed and jacks of sufficient rating used so that the jacking can be progressed on a 24-hour basis without stoppage (except for adding lengths of pipe) until the leading edge of the pipe has reached the receiving pit.

d) When jacking reinforced concrete pipe, a jacking shield shall be fabricated as a special section of reinforced concrete pipe with a steel cutting edge, hood, breasting attachments, etc., cast into the pipe. The wall thickness and reinforcing shall be designed for the jacking stresses.

e) When jacking reinforced concrete pipe tapped for no smaller than 1½- inch pipe, grout holes shall be cast into the pipe at manufacture. Three grout holes equally spaced around the circumference and 4 feet longitudinally shall be provided for greater than 54 inches and smaller. Four grout holes equally spaced around the circumference and 4 feet longitudinally shall be provided for RCP 60 inches and larger.

f) Immediately upon completion of jacking operations, the installation shall be pressure grouted as per Construction Requirements-Grouting Section of this specification.

4.1.4 Tunneling (Tunnel Liner Plate)

a) This method consists of placing rings of liner plate within the tail section of a tunneling shield or tunneling machine. A tunneling shield shall be used for all liner plate installations unless otherwise approved by CSXT.

b) The shield shall be of steel construction, designed to support a railroad track loading as specified in the Design Requirements-Casing Pipe of this specification, in addition to the other loadings imposed. The advancing face shall be provided with a hood, extending no less than 20 inches beyond the face and extending around no less than the upper 240 degrees of the total circumference. It shall be of sufficient length to permit the installation of at least one complete ring of liner plates within the shield before it is advanced for the installation of the next ring of liner plates. The shield shall conform to and not exceed the outside dimensions of the liner plate tunnel being placed by more than 1 inch at any point on the periphery unless otherwise approved by CSXT.

c) The shield shall be adequately braced and provided with necessary appurtenances for completely bulkheading the face with horizontal breastboards, and arranged so that the excavation can be benched as may be necessary. Excavation shall not be advanced beyond the edge of the hood, except in rock.

d) Manufacturer's shop detail plans and manufacturer's computations showing the ability of the tunnel liner plates to resist the jacking stresses shall be submitted to CSXT for approval.

e) Unless otherwise approved by CSXT, the tunneling shall be conducted continuously, on a 24-hour basis, until the tunnel liner extends at least beyond the theoretical railroad embankment line.

f) At any interruption of the tunneling operation, the heading shall be completely bulkheaded.

g) The liner plates shall have tapped grout holes for no smaller than 1½- inch pipe, spaced at approximately 3 feet around the circumference of the tunnel liner and 4 feet longitudinally.

h) Grouting behind the liner plates shall be in accordance with the Construction Requirements-Grouting Section of this specification.

4.1.5 Horizontal Directional Drilling

a) **Installations by this method are considered a variance to CSXT Pipeline Occupancy Specifications,** but special consideration will be given where the depth of cover is substantial, 15 feet or greater, or the bore is in rock. Factors considered will be track usage, pipe size, contents of pipeline, soil conditions, boring equipment and procedures, etc. Reference the CSXT Interim Guidelines for Horizontal Directional Drilling (HDD) for additional information and instructions.

4.1.6 Jack Conduit

a) Installations by this method are generally not acceptable, but may be considered under special circumstances. This method consists of using hydraulic jacking equipment to push a solid steel rod under the railroad from a launching pit to a receiving pit. At the receiving pit, a cone shaped “expander” is attached to the end of the rod and the conduit (casing pipe) is attached to the expander. The rod, expander, and conduit are then pulled back from the launching pit until the full length of the conduit is in place.

b) This method may be used to place steel conduit (casing pipe), up to and including 6 inches in diameter, under the railroad.

c) The project specifications must require the contractor to submit, to CSXT for approval, a complete construction procedure of the proposed boring operation. Included with the submission shall be the manufacturer’s catalog information describing the type of equipment to be used.

4.1.7 Open Cut – Not a readily accepted practice

a) The Owner must request open cut approval when making application for occupancy. All procedures will be in compliance with AREMA Chapter 1 Section 5.1.5.1(b).

b) Installations beneath the track by open trench methods will be permitted only with the approval of the Chief Engineer, Design and Construction.

c) Installations by open cut will not be permitted under mainline tracks, tracks carrying heavy tonnage or tracks carrying passenger trains. Also, open cut shall not be used within the limits of a highway/railroad grade crossing or its approaches, 25 feet either side of traveled way, where possible.

d) Rigid pipe (RCP, VCP, and PCCP) must be placed in a Class B bedding or better.

e) At locations where open cut is permitted, the trench is to be backfilled with crushed stone with a top size of the aggregate to be a maximum of 2 inches and to have no more than 5% passing the number 200 sieve. The gradation of the material is to be such that a dense stable mass is produced.

f) The backfill material shall be placed in loose 6 inch lifts and compacted to at least 95% of its maximum density with a moisture content that is no more than 1% greater than or 2% less than the optimum moisture as determined in accordance with current ASTM Designation D - 1557 (Modified Proctor). When the backfill material is within 3 feet of the subgrade elevation (the interface of the ballast and the subsoil) a compaction of at least 98% will be required. Compaction test results confirming compliance must be provided to CSXT's Regional Engineering Office by the Owner.

g) All backfilled pipes laid either perpendicular or parallel to the tracks must be designed so that the backfill material will be positively drained. This may require the placement of lateral drains on pipes laid longitudinally to the track and the installation of stub perforated pipes at the edge of the slopes.

h) Unless otherwise agreed upon, all work involving rail, ties, and other track material will be performed by railroad employees at the sole expense of the Owner, subject to advance payments by the owner.

4.2 Grouting

a) For jacked and tunneled installations a uniform mixture of 1:6 (cement: sand) cement grout shall be placed under pressure through the grout holes to fill any voids, which exist between the pipe or liner plate and the undisturbed earth.

b) Grouting shall start at the lowest hole in each grout panel and proceed upwards simultaneously on both sides of the pipe.

c) A threaded plug shall be installed in each grout hole as the grouting is completed at that hole.

d) When grouting tunnel liner plates, grouting shall be kept as close to the heading as possible, using grout stops behind the liner plates if necessary. Grouting shall proceed as directed by CSXT, but in no event shall more than 6 lineal feet of tunnel be progressed beyond the grouting.

4.3 Soil Stabilization

a) Pressure grouting of the soils or freezing of the soils before jacking, boring, or tunneling may be required at the direction of CSXT Chief Engineer, Design and Construction to stabilize the soils, control water, prevent loss of material, and prevent settlement or displacement of embankment. Grout shall be cement, chemical, or other special injection material selected to accomplish the necessary stabilization.

b) The materials to be used and the method of injection shall be prepared by a Licensed Professional Soils Engineer, or by an experienced and qualified company specializing in this work and submitted for approval to CSXT before the start of work. Proof of experience and competency shall accompany the submission.

4.4 Dewatering

a) When water is known or expected to be encountered all plans and specification must be submitted to the Chief Engineer, Design and Construction for approval before the process begins. Pumps of sufficient capacity to handle the flow shall be maintained at the site, provided the contractor has received approval from CSXT to operate them. Pumps in operation shall be constantly attended on a 24-hour basis until, in the sole judgment of CSXT, the operation can be safely halted. When dewatering, a process for monitoring for any settlement of track or structures must be in place.

4.5 Safety Requirements

a) All operations shall be conducted so as not to interfere with, interrupt, or endanger the operation of trains nor damage, destroy, or endanger the integrity of railroad facilities. All work on or near CSXT property shall be conducted in accordance with CSXT safety rules and regulations. Specifically all licensee's employees and agents, while on CSXT property, shall be required to wear an orange hard hart, safety glasses with side shields, 6" lace up boots with a distinct heel, shirts with sleeves, and long pants; additional personal protective equipment may be required for certain operations including abrasive cutting, use of torches, use of chainsaws, etc. The contractor and its employees shall comply with the CSXT safety rules at all times while occupying CSXT's property. Operations will be subject to CSXT inspection at any and all times.

b) All cranes, lifts, or other equipment that will be operated in the vicinity of the railroad's electrification and power transmission facilities shall be electrically grounded as directed by CSXT. Use of a crane or other lifting equipment is subject to requirements as stated in the CSXT Public Projects manual.

c) Whenever equipment or personnel are working closer than 25 feet from the centerline of an adjacent track, that track shall be considered as being obstructed. Insofar as possible, all operations shall be conducted no less than this distance. All operations shall be conducted only with the permission of, and as directed by, a duly qualified railroad employee present at the site of the work. All costs related to Railroad protection will be passed on to the applicant.

d) Crossing of tracks at grade by equipment and personnel is prohibited except by prior arrangement with and as directed by, CSXT.

4.6 Blasting

a) Blasting will not be permitted under or on CSXT's right-of-way.

4.7 Temporary Track Supports

a) When the jacking, boring or tunneling method of installation is used, and depending upon the size and location of the crossing, temporary track supports shall be installed at the direction of CSXT.

b) The Owner's contractor shall supply the track supports with installation and removal performed by CSXT employees.

c) The Owner shall reimburse CSXT for all costs associated with the installation and removal of the track supports.

4.8 Protection of Drainage Facilities

a) If, in the course of construction, it may be necessary to block a ditch, pipe, or other drainage facility, temporary pipes, ditches, or other drainage facilities shall be installed to maintain adequate drainage, as approved by CSXT. Upon completion of the work, the temporary facilities shall be removed and the permanent facilities restored.

b) Soil erosion methods shall be used to protect railroad ditches and other drainage facilities during construction on and adjacent to CSXT's right-of-way.

4.9 Support of Excavation Adjacent to Track

4.9.1 Launching and Receiving Pits

a) The location and dimensions of all pits or excavations shall be shown on the plans. The distance from centerline of adjacent track to face of pit or excavation shall be clearly labeled. Also, the elevation of the bottom of the pit or excavation must be shown on the profile.

b) The face of all pits shall be located a minimum of 25 feet from centerline of adjacent track, **measured at right angles to track,** unless otherwise approved by CSXT.

c) If the bottom of the pit excavation intersects the theoretical railroad embankment line, interlocking steel sheet piling, driven prior to excavation, must be used to protect the track stability. The use of trench boxes or similar devices is not acceptable in this area

d) Design plans and computations for the pits, sealed by a Licensed Professional Engineer, must be submitted by the Owner at time of application or by the contractor prior to start of construction. If the pit design is to be submitted by the contractor, the project specifications must require the contractor to obtain approval from CSXT's Chief Engineer, Design and Construction prior to beginning any work on or which may affect CSXT property.

e) The sheeting shall be designed to support all lateral forces caused by the earth, railroad and other surcharge loads. See Design Requirements- Design Loads for railroad loading.

f) After construction and backfilling, all sheet piling within 10 feet of centerline track must be cut off 3' – 0" below final grade and left in place.

g) All excavated areas are to be illuminated (flashing warning lights not permitted), fenced, and otherwise protected as directed by CSXT.

4.9.2 Parallel Trenching and Other Excavation

a) When excavation for a pipeline or other structure will be within the theoretical railroad embankment line of an adjacent track, interlocking steel sheet piling will be required to protect the track.

b) The design and construction requirements for this construction shall be in accordance with the requirements of the Construction Requirements – Support of Excavation Adjacent to Track section of this document.

4.9.3 Inspections and Testing

a) For pipelines carrying flammable or hazardous materials, ANSI Codes, current at time of constructing the pipeline, shall govern the inspection and testing of the facility on CSXT property, except as follows:

b) One hundred percent of all field welds shall be inspected by radiographic examinations, and such field welds shall be inspected for 100 percent of the circumference.

c) The proof testing of the strength of carrier pipe shall be in accordance with ANSI requirements.

4.9.4 Reimbursement of CSXT Costs

a) All CSXT costs associated with the pipe installation (inspection, flagging, track work, protection of signal cables, etc.) shall be reimbursed to CSXT by the Owner of the facility. Estimates for Railroad costs will be provided to the Owner prior to the commencement of any work on Railroad right-of-way. **At CSX's option, CSX may require the funds to be paid in advance of any work being done.**

END OF PART 4

THIS PAGE BLANK

THIS PAGE INTENTIONALLY LEFT BLANK

PART 4 – CONSTRUCTION REQUIREMENTS

4.1 Method of Installation

4.1.1 General Requirements

a) Bored, jacked, or tunneled installations shall have a bore hole essentially the same as the outside diameter of the pipe plus the thickness of the protective coating.

b) The use of water or other liquids to facilitate casing emplacement and spoil removal is prohibited.

c) If, during installation, an obstruction is encountered which prevents installation of the pipe in accordance with this specification, notify CSXT immediately, abandon the pipe in place, and immediately fill with grout. A new installation procedure and revised plans must be submitted to, and approved by, CSXT before work can resume.

4.1.2 Bore and Jack (Steel Pipe)

a) This method consists of pushing the pipe into the earth with a boring auger rotating within the pipe to remove the spoil.

b) The boring operation shall be progressed on a 24-hour basis without stoppage (except for adding lengths of pipe) until the leading edge of the pipe has reached the receiving pit.

c) The front of the pipe shall be provided with mechanical arrangements or devices that will positively prevent the auger from leading the pipe so that no unsupported excavation is ahead of the pipe.

d) The auger and cutting head arrangement shall be removable from within the pipe in the event an obstruction is encountered.

e) The over-cut by the cutting head shall not exceed the outside diameter of the pipe by more than ½ inch. If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe (plus coating) by more than approximately 1 inch grouting (see the Construction Requirements-Grouting Section) or other methods approved by CSXT, shall be employed to fill such voids.

f) The face of the cutting head shall be arranged to provide a reasonable obstruction to the free flow of soft or poor material.

g) Plans and description of the arrangement to be used shall be submitted to CSXT for approval and no work shall proceed until such approval is obtained.

h) Any method that employs simultaneous boring and jacking for pipes over 8 inches in diameter that does not have above approved arrangement **will not be permitted**. For pipe 8 inches and less in diameter, auguring or boring without this arrangement may be considered for use only as approved by CSXT.

4.1.3 Jacking (RCP and Steel Pipe)

a) This method consists of pushing sections of pipe into position with jacks placed against a backstop and excavation performed by hand from within the jacking shield at the head of the pipe. Ordinarily 36 inch pipe is the least size that should be used, since it is not practical to work within smaller diameter pipes.

b) Jacking shall be in accordance with the current AREMA Guidelines, Chapter 1, Section 4.13, "Earth Boring and Jacking Culvert Pipe Through Fills." This operation shall be conducted without hand mining ahead of the pipe and without the use of any type of boring, auguring, or drilling equipment.

c) Bracing and backstops shall be so designed and jacks of sufficient rating used so that the jacking can be progressed on a 24-hour basis without stoppage (except for adding lengths of pipe) until the leading edge of the pipe has reached the receiving pit.

d) When jacking reinforced concrete pipe, a jacking shield shall be fabricated as a special section of reinforced concrete pipe with a steel cutting edge, hood, breasting attachments, etc., cast into the pipe. The wall thickness and reinforcing shall be designed for the jacking stresses.

e) When jacking reinforced concrete pipe tapped for no smaller than 1½- inch pipe, grout holes shall be cast into the pipe at manufacture. Three grout holes equally spaced around the circumference and 4 feet longitudinally shall be provided for greater than 54 inches and smaller. Four grout holes equally spaced around the circumference and 4 feet longitudinally shall be provided for RCP 60 inches and larger.

f) Immediately upon completion of jacking operations, the installation shall be pressure grouted as per Construction Requirements-Grouting Section of this specification.

4.1.4 Tunneling (Tunnel Liner Plate)

a) This method consists of placing rings of liner plate within the tail section of a tunneling shield or tunneling machine. A tunneling shield shall be used for all liner plate installations unless otherwise approved by CSXT.

b) The shield shall be of steel construction, designed to support a railroad track loading as specified in the Design Requirements-Casing Pipe of this specification, in addition to the other loadings imposed. The advancing face shall be provided with a hood, extending no less than 20 inches beyond the face and extending around no less than the upper 240 degrees of the total circumference. It shall be of sufficient length to permit the installation of at least one complete ring of liner plates within the shield before it is advanced for the installation of the next ring of liner plates. The shield shall conform to and not exceed the outside dimensions of the liner plate tunnel being placed by more than 1 inch at any point on the periphery unless otherwise approved by CSXT.

c) The shield shall be adequately braced and provided with necessary appurtenances for completely bulkheading the face with horizontal breastboards, and arranged so that the excavation can be benched as may be necessary. Excavation shall not be advanced beyond the edge of the hood, except in rock.

d) Manufacturer's shop detail plans and manufacturer's computations showing the ability of the tunnel liner plates to resist the jacking stresses shall be submitted to CSXT for approval.

e) Unless otherwise approved by CSXT, the tunneling shall be conducted continuously, on a 24-hour basis, until the tunnel liner extends at least beyond the theoretical railroad embankment line.

f) At any interruption of the tunneling operation, the heading shall be completely bulkheaded.

g) The liner plates shall have tapped grout holes for no smaller than 1½- inch pipe, spaced at approximately 3 feet around the circumference of the tunnel liner and 4 feet longitudinally.

h) Grouting behind the liner plates shall be in accordance with the Construction Requirements-Grouting Section of this specification.

4.1.5 Horizontal Directional Drilling

a) **Installations by this method are considered a variance to CSXT Pipeline Occupancy Specifications,** but special consideration will be given where the depth of cover is substantial, 15 feet or greater, or the bore is in rock. Factors considered will be track usage, pipe size, contents of pipeline, soil conditions, boring equipment and procedures, etc. Reference the CSXT Interim Guidelines for Horizontal Directional Drilling (HDD) for additional information and instructions.

4.1.6 Jack Conduit

a) Installations by this method are generally not acceptable, but may be considered under special circumstances. This method consists of using hydraulic jacking equipment to push a solid steel rod under the railroad from a launching pit to a receiving pit. At the receiving pit, a cone shaped “expander” is attached to the end of the rod and the conduit (casing pipe) is attached to the expander. The rod, expander, and conduit are then pulled back from the launching pit until the full length of the conduit is in place.

b) This method may be used to place steel conduit (casing pipe), up to and including 6 inches in diameter, under the railroad.

c) The project specifications must require the contractor to submit, to CSXT for approval, a complete construction procedure of the proposed boring operation. Included with the submission shall be the manufacturer’s catalog information describing the type of equipment to be used.

4.1.7 Open Cut – Not a readily accepted practice

a) The Owner must request open cut approval when making application for occupancy. All procedures will be in compliance with AREMA Chapter 1 Section 5.1.5.1(b).

b) Installations beneath the track by open trench methods will be permitted only with the approval of the Chief Engineer, Design and Construction.

c) Installations by open cut will not be permitted under mainline tracks, tracks carrying heavy tonnage or tracks carrying passenger trains. Also, open cut shall not be used within the limits of a highway/railroad grade crossing or its approaches, 25 feet either side of traveled way, where possible.

d) Rigid pipe (RCP, VCP, and PCCP) must be placed in a Class B bedding or better.

e) At locations where open cut is permitted, the trench is to be backfilled with crushed stone with a top size of the aggregate to be a maximum of 2 inches and to have no more than 5% passing the number 200 sieve. The gradation of the material is to be such that a dense stable mass is produced.

f) The backfill material shall be placed in loose 6 inch lifts and compacted to at least 95% of its maximum density with a moisture content that is no more than 1% greater than or 2% less than the optimum moisture as determined in accordance with current ASTM Designation D - 1557 (Modified Proctor). When the backfill material is within 3 feet of the subgrade elevation (the interface of the ballast and the subsoil) a compaction of at least 98% will be required. Compaction test results confirming compliance must be provided to CSXT's Regional Engineering Office by the Owner.

g) All backfilled pipes laid either perpendicular or parallel to the tracks must be designed so that the backfill material will be positively drained. This may require the placement of lateral drains on pipes laid longitudinally to the track and the installation of stub perforated pipes at the edge of the slopes.

h) Unless otherwise agreed upon, all work involving rail, ties, and other track material will be performed by railroad employees at the sole expense of the Owner, subject to advance payments by the owner.

4.2 Grouting

a) For jacked and tunneled installations a uniform mixture of 1:6 (cement: sand) cement grout shall be placed under pressure through the grout holes to fill any voids, which exist between the pipe or liner plate and the undisturbed earth.

b) Grouting shall start at the lowest hole in each grout panel and proceed upwards simultaneously on both sides of the pipe.

c) A threaded plug shall be installed in each grout hole as the grouting is completed at that hole.

d) When grouting tunnel liner plates, grouting shall be kept as close to the heading as possible, using grout stops behind the liner plates if necessary. Grouting shall proceed as directed by CSXT, but in no event shall more than 6 lineal feet of tunnel be progressed beyond the grouting.

4.3 Soil Stabilization

a) Pressure grouting of the soils or freezing of the soils before jacking, boring, or tunneling may be required at the direction of CSXT Chief Engineer, Design and Construction to stabilize the soils, control water, prevent loss of material, and prevent settlement or displacement of embankment. Grout shall be cement, chemical, or other special injection material selected to accomplish the necessary stabilization.

b) The materials to be used and the method of injection shall be prepared by a Licensed Professional Soils Engineer, or by an experienced and qualified company specializing in this work and submitted for approval to CSXT before the start of work. Proof of experience and competency shall accompany the submission.

4.4 Dewatering

a) When water is known or expected to be encountered all plans and specification must be submitted to the Chief Engineer, Design and Construction for approval before the process begins. Pumps of sufficient capacity to handle the flow shall be maintained at the site, provided the contractor has received approval from CSXT to operate them. Pumps in operation shall be constantly attended on a 24-hour basis until, in the sole judgment of CSXT, the operation can be safely halted. When dewatering, a process for monitoring for any settlement of track or structures must be in place.

4.5 Safety Requirements

a) All operations shall be conducted so as not to interfere with, interrupt, or endanger the operation of trains nor damage, destroy, or endanger the integrity of railroad facilities. All work on or near CSXT property shall be conducted in accordance with CSXT safety rules and regulations. Specifically all licensee's employees and agents, while on CSXT property, shall be required to wear an orange hard hart, safety glasses with side shields, 6" lace up boots with a distinct heel, shirts with sleeves, and long pants; additional personal protective equipment may be required for certain operations including abrasive cutting, use of torches, use of chainsaws, etc. The contractor and its employees shall comply with the CSXT safety rules at all times while occupying CSXT's property. Operations will be subject to CSXT inspection at any and all times.

b) All cranes, lifts, or other equipment that will be operated in the vicinity of the railroad's electrification and power transmission facilities shall be electrically grounded as directed by CSXT. Use of a crane or other lifting equipment is subject to requirements as stated in the CSXT Public Projects manual.

c) Whenever equipment or personnel are working closer than 25 feet from the centerline of an adjacent track, that track shall be considered as being obstructed. Insofar as possible, all operations shall be conducted no less than this distance. All operations shall be conducted only with the permission of, and as directed by, a duly qualified railroad employee present at the site of the work. All costs related to Railroad protection will be passed on to the applicant.

d) Crossing of tracks at grade by equipment and personnel is prohibited except by prior arrangement with and as directed by, CSXT.

4.6 Blasting

a) Blasting will not be permitted under or on CSXT's right-of-way.

4.7 Temporary Track Supports

a) When the jacking, boring or tunneling method of installation is used, and depending upon the size and location of the crossing, temporary track supports shall be installed at the direction of CSXT.

b) The Owner's contractor shall supply the track supports with installation and removal performed by CSXT employees.

c) The Owner shall reimburse CSXT for all costs associated with the installation and removal of the track supports.

4.8 Protection of Drainage Facilities

a) If, in the course of construction, it may be necessary to block a ditch, pipe, or other drainage facility, temporary pipes, ditches, or other drainage facilities shall be installed to maintain adequate drainage, as approved by CSXT. Upon completion of the work, the temporary facilities shall be removed and the permanent facilities restored.

b) Soil erosion methods shall be used to protect railroad ditches and other drainage facilities during construction on and adjacent to CSXT's right-of-way.

4.9 Support of Excavation Adjacent to Track

4.9.1 Launching and Receiving Pits

a) The location and dimensions of all pits or excavations shall be shown on the plans. The distance from centerline of adjacent track to face of pit or excavation shall be clearly labeled. Also, the elevation of the bottom of the pit or excavation must be shown on the profile.

b) The face of all pits shall be located a minimum of 25 feet from centerline of adjacent track, **measured at right angles to track,** unless otherwise approved by CSXT.

c) If the bottom of the pit excavation intersects the theoretical railroad embankment line, interlocking steel sheet piling, driven prior to excavation, must be used to protect the track stability. The use of trench boxes or similar devices is not acceptable in this area

d) Design plans and computations for the pits, sealed by a Licensed Professional Engineer, must be submitted by the Owner at time of application or by the contractor prior to start of construction. If the pit design is to be submitted by the contractor, the project specifications must require the contractor to obtain approval from CSXT's Chief Engineer, Design and Construction prior to beginning any work on or which may affect CSXT property.

e) The sheeting shall be designed to support all lateral forces caused by the earth, railroad and other surcharge loads. See Design Requirements- Design Loads for railroad loading.

f) After construction and backfilling, all sheet piling within 10 feet of centerline track must be cut off 3' – 0" below final grade and left in place.

g) All excavated areas are to be illuminated (flashing warning lights not permitted), fenced, and otherwise protected as directed by CSXT.

4.9.2 Parallel Trenching and Other Excavation

a) When excavation for a pipeline or other structure will be within the theoretical railroad embankment line of an adjacent track, interlocking steel sheet piling will be required to protect the track.

b) The design and construction requirements for this construction shall be in accordance with the requirements of the Construction Requirements – Support of Excavation Adjacent to Track section of this document.

4.9.3 Inspections and Testing

a) For pipelines carrying flammable or hazardous materials, ANSI Codes, current at time of constructing the pipeline, shall govern the inspection and testing of the facility on CSXT property, except as follows:

b) One hundred percent of all field welds shall be inspected by radiographic examinations, and such field welds shall be inspected for 100 percent of the circumference.

c) The proof testing of the strength of carrier pipe shall be in accordance with ANSI requirements.

4.9.4 Reimbursement of CSXT Costs

a) All CSXT costs associated with the pipe installation (inspection, flagging, track work, protection of signal cables, etc.) shall be reimbursed to CSXT by the Owner of the facility. Estimates for Railroad costs will be provided to the Owner prior to the commencement of any work on Railroad right-of-way. **At CSX's option, CSX may require the funds to be paid in advance of any work being done.**

END OF PART 4

THIS PAGE BLANK

APPENDIX H

ECWA Forms

THIS PAGE INTENTIONALLY LEFT BLANK

Pressure Test / Leakage Test Report

(Please print all information)

Project Name: _____

Date of Testing: _____

Inspector Name: _____ **Firm:** _____

Location: _____ **Watermain Diameter:** _____ inches

Diameter of Reservoir: _____ inches **Watermain Type:** DIP PVC PCCP HDPE

Starting Depth: _____ inches

Ending Depth: _____ inches

If Reservoir is greater than 15" in diameter, the test shall be run for a minimum of four (4) hours.

Length of Main: _____ linear feet **Volume Loss:** _____ cf x 7.48 gal/cf = _____ gallons

(Maximum distance of 2,000 LF)

Leakage Rate Allowed: _____ g/hr/1000 LF x _____ LF x _____ hrs divided by 1000 = _____ gallons

Time (hrs:min)	Pressure Reading (psi)	Repressurized To (psi)	Pressure Loss (psi)	Cumulative Pressure Loss (psi)	Leakage Recorded (gal)
Pre-test		<--- 4 hour initial expansion pressure (for HDPE pipe only)			-----
0:00		-----	0	0	0
0:15					
0:30					
0:45					
1:00					
1:15					
1:30					
1:45					
2:00					
For PVC, DIP, and PCCP, if the cumulative pressure loss is 3 psi or greater, run test for another 2 hours.					
2:30					
3:00					
3:30					
4:00					
				Total Recorded Leakage (gal):	
				Total Allowed Leakage (gal):	

1. Before the test, did you witness all the line valves opened, and all the end valves closed? **Yes / No**

2. Does the mainline, and every tee branch, have 2" or larger blowoffs for proper flushing? **Yes / No**

3. Did you witness the pressure gauge dropping to zero when the pressure was released? **Yes / No**

4. Was the total pressure loss recorded less than 5 psi? **Yes / No**

5. Do you believe the test passed per all current ECWA and Erie County Health Dept specifications? **Yes / No**

_____

Inspector's Signature and Date

Rev 04/19

THIS PAGE INTENTIONALLY LEFT BLANK

ECWA Test Pit Inspection Form

(Please print all information)

Project Name: _____

Date: _____

Foreman's Name: _____ **Firm:** _____

Location: _____

Existing Waterline Type: **CIP** **DIP** **PVC** **PCCP** **HDPE** **ACP** **STEEL** **Other:** _____

(circle one)

Diameter: _____ **inches**

Test Pit Description & Summary of items found:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Sketch of the test pit results (provide horizontal and vertical dimensions as necessary).

Note: Attach photos as necessary.

_____

Foreman's Signature and Date

Rev 12/19

THIS PAGE INTENTIONALLY LEFT BLANK

WATERLINE SHUTDOWN REQUEST FORM

Erie County Water Authority
3030 Union Road
Cheektowaga, New York 14227

Phone: 684-1510 Fax: 684-3937

Directions:
1. This form is used to request a shutdown of an existing waterline for interconnections or repair.
2. Only authorized Erie County Water Authority personnel may operate existing valves and hydrants.
3. A minimum of (5) business days notice to the ECWA is required for proper shutdown scheduling.
4. Contractor must notify in writing all affected customers (5) business days in advance of shutdown.
5. Shutdowns prior to 9:00 a.m. will not be permitted without approval by Erie County Water Authority.
6. The Contractor requesting the shutdown shall complete Section 1 and forward to the Engineer.
7. The Engineer will complete Section 2 and forward to the Erie County Water Authority.
8. Engineer will notify all parties when the shutdown is approved.

Section 1 (To be filled out by Contractor and forwarded to Engineer)

Project Name: _____ Interconnection #: _____

Town: _____ Shutdown X-street(s): _____

_____

Contractor: _____

Field Contact Name: _____

Office Phone #: _____ Fax#: _____

Mobile Phone # _____

Date Submitted: _____ Work Date Requested: _____

Signature: _____ Time Requested: _____

Signature certifies that sufficient personnel and equipment will be scheduled to perform the necessary work.

Section 2 (To be filled out by Engineer and forwarded to ECWA)

Engineering Firm: _____

Field Contact Name: _____

Office Phone: _____ Fax#: _____

Mobile Phone#: _____

Signature: _____ Date Submitted: _____

Signature certifies that the date and time are acceptable and that proper inspection will be provided.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX I

Stormwater Pollution Prevention Plan and Permit (SWPPP)

ARCADIS Design & Consultancy for natural and built assets

Eric County Water Authority

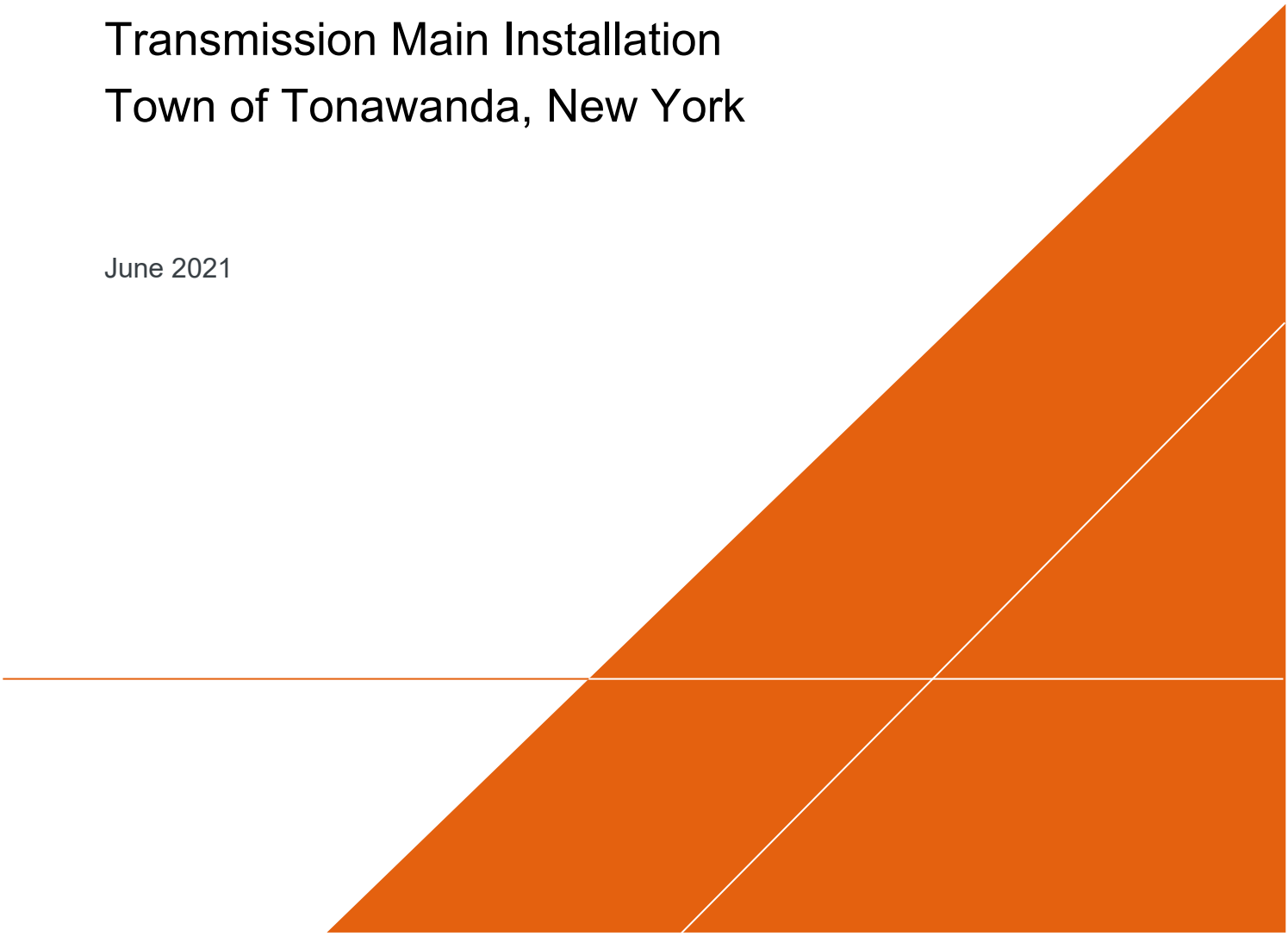
STORMWATER POLLUTION PREVENTION PLAN

Water System Improvements (MP-084)

Transmission Main Installation

Town of Tonawanda, New York

June 2021



STORMWATER POLLUTION PREVENTION PLAN

Water System Improvements (MP-084)

Transmission Main Installation

Town of Tonawanda, New York

Prepared for:

Erie County Water Authority

Prepared by:

Arcadis of New York, Inc.

50 Fountain Plaza

Suite 600

Buffalo

New York 14202

Tel 716 667 0900

Fax 716 842 2612

Our Ref.:

30041729

Date:

June 2021

CONTENTS

ATTACHMENTS

1 PROJECT INFORMATION

1.1 Introduction

On behalf of the Erie County Water Authority (ECWA), Arcadis of New York, Inc. (Arcadis) has prepared this Stormwater Pollution Prevention Plan (SWPPP) for water system improvements within the Town of Tonawanda in Erie County, New York. The water system improvements will be conducted within a utility corridor (the "Site"). For detailed information regarding the design and planned construction activities, refer to the ECWA Water System Improvements Transmission Main Installation drawing set (Technical Drawings) (Attachment 1).

This SWPPP has been prepared pursuant to the New York State (NYS) Department of Environmental Conservation (NYSDEC) State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001). The SWPPP objectives for the Site are to:

- Minimize the potential for erosion and conveyance of soil/sediment via surface runoff to downgradient on-site areas that are outside the limits of work and off-site areas.
- Minimize the potential for erosion and conveyance of soil/sediment via surface runoff such that water quality (visible turbidity) in downgradient water bodies is not significantly affected relative to pre-construction conditions.
- Minimize the potential for erosion and sediment migration within the work areas.
- Minimize the potential for mechanical tracking of soils/sediments onto off-site areas.
- Identify potential pollutants and their sources; eliminate, control, or otherwise manage each potential pollutant or its source using appropriate Best Management Practices (BMPs).

1.2 Project Description

The project involves the installation of approximately 4,100 linear feet of 48-inch diameter prestressed concrete cylinder pipe to a minimum depth of 4-feet below ground surface and associated appurtenances (e.g., valves, anodes, utility markers).

The Site will be restored to pre-construction contours and ground cover conditions (meadow), apart from two air release valves. The air release valves will be accessed via a 30-inch square aluminum hatch set within a 72-inch square precast concrete chamber.

The Site area subject to the water system improvements and related construction activities is estimated to be approximately 4.3 acres. Therefore, during the installation work, active areas that could contribute to the erosion, migration, tracking of soil/sediment prior to restoration activities will be less than 5 acres at any one time.

1.3 Existing Site Conditions

The project Site consists of a utility corridor with underground and aboveground utilities, with one crossing over a CSX railroad. The Site access west of the CSX railroad is via a stone road used for the Town of Tonawanda Landfill coming off Pirson Parkway. Access east of the CSX railroad is off Military Road.

Surrounding land use consists of the Town of Tonawanda Landfill, a residential development and the Tonawanda Self Store property to the north, Military Road to the east, a manufacturing facility and Pirson Parkway to the south, and a residential development, vacant land, and Two Mile Creek and the associated Greenway Trail to the west. For additional Site information, refer to the Technical Drawings provided in Attachment 1.

Stormwater runoff generated within the Site limits occurs primarily as sheet flow and travels to the north and south. Runoff within the Site west of the CSX railroad enters a series of ditches that drain to the west and eventually enter Two Mile Creek, which discharges to the Niagara River to the north. Runoff within the Site east of the railroad enters storm inlets of the Tonawanda storm sewer system. Slopes within the Site range from approximately 4 to 17%. The Site lies within the Town of Tonawanda municipal separate stormwater sewer system (MS4).

There are no wetlands located within or directly adjacent to the Site boundaries.

1.4 Soils

Soils within the Site consist predominantly of several types of urban fill with an unknown hydrologic soil group. Site soil types were identified based on information available from the United States Department of Agriculture's Web Soil Survey (Attachment 3).

1.5 Potential Pollution Sources

The following is a list of potential pollutants that could impact stormwater quality during construction activities if not properly managed:

- Sediment
- Vehicle and equipment fluids (e.g., fuel, grease, coolant, oil)
- Vegetative debris from clearing operations
- Landscaping materials (e.g., mulch, fertilizer)
- General litter or other project-related waste

Appropriate BMPs will be used to reduce or eliminate the potential release of these pollutants, including sources of sediment in stormwater as described in the following Sections.

1.6 Project Permitting and Compliance

1.6.1 State Pollution Discharge Elimination System General Permit

This SWPPP has been prepared in accordance with the substantive requirements of the GP-0-20-001 (Attachment 7). Activities included in this SWPPP require coverage under the GP-0-20-001 as this project will disturb more than one acre. A Notice of Intent (NOI) form will be submitted to the NYSDEC for this project (Attachment 4). The NOI will include signed SWPPP Preparer, MS4 Acceptance and project Owner/Operator certification forms.

1.6.2 Municipal Separate Stormwater Sewer System Permit

As described in Section 1.3, this project lies within the Town of Tonawanda MS4. In accordance with GP-0-20-001, this SWPPP has been prepared to minimize the amount of pollutants carried by stormwater to the storm sewer system. The SWPPP and NOI (Attachment 4) will be submitted to the Town of Tonawanda for review and approval. Once the Town of Tonawanda accepts the SWPPP and returns a signed MS4 acceptance form, the MS4 acceptance form will be submitted along with the NOI to the NYSDEC.

1.6.3 State Historical Preservation Office Review

In accordance with the GP-0-20-001, any construction activities that have the potential to affect historic and/or archeological resources are not eligible for coverage under the general permit unless the screening and consultation process specified in the Letter of Resolution that was developed between the NYSDEC and the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) has been completed and the required documentation demonstrating that potential impacts have been avoided or mitigated is obtained and maintained on-site. The review of New York State Historical Preservation Office (SHPO) publicly available data showed the Site lies outside an archeologically sensitive area. Additionally, the review showed that there were no registered historic resources within the vicinity of the Site. To confirm the findings, the project was submitted for review and on December 23, 2020 a response from OPRHP indicated that the project will have no impact on any archaeological or historic resources. The findings from the OPRHP review are included with this SWPPP (Attachment 5).

2 CONSTRUCTION SEQUENCE

Refer to Drawing C-02 of the Technical Drawings (Attachment 1) for a description of the anticipated construction sequence. Specific construction activity sequencing may vary depending on field conditions encountered at the time of construction, and any implemented changes to the construction sequence will be completed in compliance with applicable regulatory requirements and the overall objectives described in Section 1.1 of this SWPPP.

3 EROSION AND SEDIMENT CONTROL PLAN

The Contractor will be responsible for installing and maintaining all temporary erosion and sediment control measures required during project construction activities. All erosion and sediment controls will be installed and maintained in accordance with the latest edition of the NYS Standards and Specifications for Erosion and Sediment Control (NYS Standards and Specifications). Temporary erosion and sediment control measures will be installed prior to initiation of soil disturbing activities. The Contractor will also be responsible for providing additional erosion and sediment control measures, as needed or as directed, to achieve the stormwater management objectives of this SWPPP.

3.1 Erosion and Sediment Control Measures

Technical Drawings C-02, C-13, and C-14 (Attachment 1) provide information regarding the types, locations, and specifications of erosion control measures for the project. Erosion and sediment control measures for the project are also described below.

3.1.1 Site Planning and Prevention Measures

The following site planning and prevention measures will be implemented for effective temporary (during construction) and final (post construction) erosion control:

- The Contractor and ECWA's on-site Representative and/or the Engineer will work together to properly plan and sequence construction events to effectively minimize the duration that erodible soil and stockpiled materials are exposed.
- Temporary soil stockpiles (e.g., gravel, topsoil, spoils), if needed, will be located in areas of the Site where the stockpiles can be protected from significant runoff flows that could result in washout and erosion of the stockpiles material. Sediment controls established around the full perimeter of the stockpiles may be required at downgradient locations to prevent migration of saturated soils.
- Restore disturbed surfaces (i.e., achieve the design grade and establish stabilized cover) as soon as possible.

3.1.2 Construction Road and Parking Area Stabilization

The Site will be accessed off Pirson Parkway (west of CSX railroad) or Military Road (east of railroad). Parking will not be permitted on bare soil or vegetated areas unless agreed to by ECWA's on-site Representative and/or the Engineer. Parking areas will be designated and communicated to all personnel.

3.1.3 Stabilized Construction Entrance

Stabilized construction entrances will be constructed at the following locations: south of the Site where the existing access road spurs off from Pirson Parkway, on the east and west sides of the existing landfill access road as it crosses the Site, and off Military road on the east side of the Site. The stabilized construction entrances will minimize the potential for tracking sediments onto off-site areas. It is the responsibility of the Contractor to inspect vehicles and equipment and confirm soil materials are not tracked onto any off-site areas. Note that stabilized construction entrances may not be necessary along the existing stone access roads if the Contractor inspects and cleans all vehicles prior to leaving the Site,

and there is no evidence of sedimentation on the existing roads during construction. Refer to drawing C-013 *Erosion and Sediment Details I* for more information.

3.1.4 Compost Filter Sock

Compost filter sock will be used to reduce the potential migration of suspended sediments from work areas to downgradient off-site areas. At a minimum, compost filter sock will be installed on the western border of the Site, the north and south sides of the utility corridor to protect off-site stormwater ditches, along the edges of the depressed railway, and north on the eastern portion of the Site to protect off-site stormwater inlets. The locations of the compost filter sock are as shown on the Technical Drawings and will be positioned parallel to the existing contours to the extent practical. Compost filter sock may also be installed around temporary stockpiles, construction staging areas, and as otherwise needed to control potential off-site migration of suspended sediments in sheet flow. Additional compost filter sock may be installed as needed along and downgradient of the active trench excavation areas as needed to prevent migration of suspended sediments.

The Technical Drawings indicate that 12-inch diameter compost filter socks will be placed downgradient of the boring pits to prevent migration of sediment to the existing railroad tracks. If, based on field conditions, the 12-inch socks are not sufficient to prevent sediment migration, the Contractor will install larger socks (or smaller socks stacked to an equivalent height) and/or additional erosion control measures to prevent sediment migration. Refer to drawing C-013 *Erosion and Sediment Details I* for more information.

3.1.5 Check Dam

Check dams will be used in stormwater ditches and other areas of concentrated flow to reduce water velocity and the potential for the migration of suspended sediments. Check dams will be installed in the existing stormwater ditches prior to leaving the Site, as shown on the Technical Drawings. Check dams may also be installed at additional locations as needed if concentrated flow paths are encountered during construction. In accordance with the NYS Standards and Specifications and Technical Drawings, check dams may be constructed with stone or compost filter sock, provided that the check dam standard requirements and dimensions are met with either material. Refer to drawing C-014 *Erosion and Sediment Details II* for more information.

3.1.6 Filter Bag

Filter bags will be used to filter out water pumped from excavated trenches prior to discharging. Filter pump(s) and a stockpile of filter bags will be available on-site to be utilized when dewatering is necessary. Pumping rates will vary depending on the size of the filter bag, sediment type, and quantity of sediment. It is the responsibility of the Contractor to determine the appropriate filter bag and pump sizes to ensure that sediment is not discharged off-site. Compost filter socks will be installed downgradient of filter bags located within 50 feet of any receiving surface water or stormwater inlet or where a well-vegetated area is not available. Refer to drawing C-014 *Erosion and Sediment Details II* for more information.

3.1.7 Dust Controls

Dust controls may include applying water to exposed soils from a water truck, an on-site water tank, or other approved water source, limiting vehicle speeds, sweeping paved roadways, and mulching bare soil areas. These activities will be implemented on an as-needed basis based on observed conditions or as-directed by ECWA's on-site Representative and/or the Engineer during construction, to reduce the potential for dust generation. Water for dust suppression shall be applied such that runoff or excessive soil saturation does not result in soil erosion.

If necessary, other methods and means for controlling dust (e.g., soil binders) may be considered. Such measures will be reviewed for acceptability by ECWA's on-site Representative and/or the Engineer prior to use by the Contractor. Refer to specification 01563 *Temporary Controls* for more information.

3.1.8 Good Housekeeping Practices

Good housekeeping measures will be implemented to reduce the potential for construction materials to enter stormwater drainage from the Site. During construction, the Contractor will be responsible for maintaining the Site in a neat and orderly fashion. This will include, but not necessarily be limited to, the following:

- Routine waste management activities, including the collection and disposal of trash, construction waste, and sanitary wastes.
- Prompt cleanup of spills of liquid or dry materials (if any).
- Prompt cleanup of notable accumulations of sediments (if any) inadvertently tracked by construction vehicles and/or transported by wind or stormwater from active work areas to non-work areas of the Site or off-site areas.

3.1.9 Temporary Seeding

Temporary seeding will be implemented to reduce the potential for erosion and sediment transport from disturbed areas, bare soil areas, or soil stockpile areas. This seeding will be applied to provide a temporary protective cover on disturbed areas when construction activities have temporarily ceased, such as when preparing for winter shutdown, or to provide cover when permanent seed growth is delayed due to mid-summer heat or drought. If bare soil will be exposed for more than 14 days, temporary seeding or other controls will be utilized to the extent practicable and will be initiated by the end of the next business day. Note that seeding should be performed promptly after completing the grading activities to minimize the need for surface roughening. Runoff control measures (e.g., diversions) shall be installed, as needed, prior to seeding to reduce the potential for erosion of the newly seeded area. Refer to specification 02900 *Restoration* for more information.

3.1.10 Permanent Stabilization

The Site will be restored in-kind (i.e., to pre-construction contours and ground cover).

For vegetated surfaces, permanent seeding shall be implemented per the NYS Standards and Specifications and the Technical Drawings. This seeding will be applied to provide a protective cover following achievement of final grades or during a long-term dormancy period (e.g., longer than 1 year).

Consistent with temporary seeding, this should be done promptly after completing the final grading activities to minimize the need for surface roughening. Runoff control measures shall be installed, as needed, prior to seeding to reduce the potential for erosion of the newly seeded area.

For non-vegetated surfaces (e.g., concrete, asphalt, rip-rap, gravel), the Contractor shall restore the area to pre-construction subbase and cover materials. Refer to specification 02900 *Restoration* for more information.

3.1.11 Erosion Control Blanket

Erosion control blanketing will be installed to reduce the potential for erosion, retain soil moisture, and promote seed germination. At a minimum, erosion control blanket will be installed in concentrated flow paths (e.g., stormwater ditches) and on all slopes that are 3H:1V or steeper.

Hydraulically applied blanket may be substituted for rolled erosion control blanket, except in areas prone to concentrated runoff at any time (e.g., stormwater ditches), on slopes steeper than 3H:1V, or other areas otherwise susceptible to excessive erosion. Refer to drawing C-014 *Erosion and Sediment Details II* for more information.

3.1.12 Vehicle Maintenance and Material Storage Area

The Contractor will perform routine vehicle/equipment maintenance activities and will store construction materials (such as fuels, fertilizers, BMP materials) in designated areas to prevent their potential release to stormwater drainage. Any fuels or fluids must be properly covered, contained, and/or placed in a temporary shed or enclosure. Refer to specification 01600 *Storage of Material* for more information.

3.1.13 Topsoil Placement

Topsoil will be spread over prepared areas to facilitate vegetative growth that results in a stabilized surface condition. Topsoil and seeding specifications are provided in the Technical Drawings (Attachment 1) and applicable NYS standards and specifications. Refer to specification 02900 *Restoration* for more information.

3.1.14 Surface Roughening

Surface roughening will aid in the establishment of vegetative cover from seed, reduce runoff velocity and increase infiltration, and trap sediment. Surface roughening includes creating horizontal grooves across a slope (i.e., perpendicular to the downslope direction) using a spike-tooth harrow, tilling equipment, disking attachments or tracking the area with appropriate construction equipment. The type of surface roughening techniques will be determined in the field by the Contractor and ECWA's on-site Representative and/or the Engineer.

3.2 Inspection and Maintenance of Erosion and Sedimentation Controls

3.2.1 Inspection and Contractor Notification Requirements

Inspections of erosion and sediment controls will be performed to confirm that this SWPPP is being implemented and remains functional relative to site conditions and actual project activities. Prior to land disturbing activities (excluding installation of erosion and sediment control practices), a Qualified Inspector (see Section 3.2.5) shall perform a pre-construction site assessment to verify that erosion and sediment controls are properly installed and functional.

During construction activities, all erosion and sediment control measures shall be inspected daily by a Trained Contractor (as specified in Section 3.2.5 of this SWPPP) to identify any deficiencies or required maintenance. The Trained Contractor will document the inspection results and immediately notify ECWA's on-site Representative and/or the Engineer and appropriate Contractor (or subcontractors) of the need for necessary corrective actions. Corrective actions will be initiated within 1 business day following the inspection notification unless otherwise allowed by ECWA's on-site Representative and/or the Engineer.

Throughout the active construction period, a Qualified Inspector (see Section 3.2.5) will conduct inspections of all site areas affected by construction at least once every 7 calendar days. The Qualified Inspector will inspect all construction-phase erosion and sediment control measures until such time as the Site is deemed sufficiently stable and no longer requiring inspection. Inspections include all disturbed areas that have not achieved final stabilization, all points of discharge to natural surface waterbodies within or immediately adjacent to the Site, and all points of stormwater discharge from the Site. After each inspection, the Qualified Inspector shall prepare an inspection report in accordance with Section 3.3. The Qualified Inspector shall immediately notify ECWA's on-site Representative and/or the Engineer and appropriate Contractor (or subcontractors) of any necessary corrective actions. Corrective actions will be initiated within 1 business day following the inspection notification unless otherwise allowed by ECWA's on-site Representative and/or the Engineer.

An inspection form template is included in Attachment 2. The Contractor may use an alternate form provided that the alternate includes, at a minimum, all the items contained or asked for in Attachment 2.

3.2.2 Inspections During Shutdown

In the event project activities have been suspended (e.g., winter shutdown) and temporary stabilization measures have been applied to disturbed areas, the Qualified Inspector will conduct a site inspection at least once every 30 calendar days. ECWA's Representative will notify the Division of Water (SPDES) Program contact at the Regional Office (270 Michigan Avenue, Buffalo, NY 14203) in writing prior to reducing the inspection frequency. Additionally, the Qualified Inspector can discontinue these inspections if all disturbed areas of the site (as of the project shutdown date) have achieved appropriate stabilization, and all PCSM practices (if applicable) have been implemented in conformance with this SWPPP.

3.2.3 Maintenance Requirements

Maintenance or repair of installed erosion and sediment controls will be initiated within 1 business day following notification of deficiencies, unless otherwise allowed by ECWA's on-site Representative and/or the Engineer and completed in a reasonable timeframe. Erosion and sediment control measures shall be maintained for the duration of the project until such time as all permanent stabilization measures have become fully established and a satisfactory final Site inspection (described in Section 3.4 of this SWPPP) has been performed by a Qualified Inspector.

3.2.4 Contractor Compliance Certification

The Contractor and subcontractors are required to certify that their respective activities will comply with the relevant portions of this SWPPP. All such certifications will be in writing and retained at the Site with the SWPPP document. The Contractor certification statement and signature page are included with this SWPPP (Attachment 6). In accordance with Part III.A.6 of GP-0-20-001, all Contractors and subcontractors must provide contact information and describe the elements of this SWPPP they are responsible for.

3.2.5 Training Requirements

The Contractor and subcontractors involved in soil-disturbing activities shall identify at least one person from their company that will be responsible for inspection of the SWPPP components defined herein. This individual shall have completed the requirements to be considered a "Trained Contractor" in accordance with GP-0-20-001, meaning they have received four hours of NYSDEC-endorsed training in proper erosion and sediment control principles from a NYSDEC-endorsed entity. At least one Trained Contractor must be onsite daily when soil-disturbing activities are being performed. Note that the Trained Contractor cannot perform the duties of the Qualified Inspector unless the Trained Contractor also meets the Qualified Inspector qualifications.

The Qualified Inspector shall meet the requirements of GP-0-20-001, meaning they shall be a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, NYSDEC-endorsed individual, or someone working under one of the previously-listed persons who has received four hours of NYSDEC-endorsed erosion and sediment control training.

3.3 Recordkeeping

The following reporting and recordkeeping requirements shall be followed for the project:

- SWPPP (and related documents) – a copy of this SWPPP, inspection reports, contractor compliance certification, and any other relevant documents will be retained for the duration of Site construction activities to the time of final stabilization as described in Section 3.4 of this SWPPP. These documents will be retained in a secured/lockable mailbox at a location identified in the contract documents readily available to individuals performing compliance inspections.
- Weekly Inspections Reports – the construction area shall be inspected at a minimum of once every 7 calendar days (see Section 3.2.1). Inspection reports shall document the results of the inspections and include the following:
  - Date and time of inspection.

- Name and title of person(s) performing the inspection.
- Weather and soil conditions (e.g., dry, wet, saturated).
- Condition of the runoff at points of stormwater discharge from the Site, including any discharges of sediment and discharges from conveyance systems (i.e., pipes, culverts, and ditches) and overland flow.
- Condition of existing natural surface water bodies located within or immediately adjacent to the Site property boundaries that receive runoff from disturbed construction areas.
- Identification of erosion and sediment control measures that need repair or maintenance.
- Identification of erosion and sediment control measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced.
- Areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection.
- Current phase of construction of all PCSM measures (if applicable), and identification of activities/items that are not in conformance with this SWPPP.
- Corrective actions that must be taken to install, repair, replace, or maintain erosion and sediment control measures and correct deficiencies identified with the installation of the PCSM measures (if applicable).
- Photographs with date stamp that clearly show the condition of measures that have been identified as needing corrective actions, as well as photographs showing the condition of the measures after the corrective action has been completed.

All inspection reports shall be signed by the Qualified Inspector and copies maintained onsite as described above.

- Records Retention – copies of this SWPPP and any reports submitted or prepared in conjunction with this SWPPP shall be retained by the facility owner/operator for a period of at least 5 years from the date that the NYSDEC receives the Notice of Termination.
- SWPPP Updates – the SWPPP shall accurately document all erosion and sediment control practices being implemented at the Site. The SWPPP shall be amended, at a minimum:
  - Whenever the current provisions are ineffective in minimizing pollutants in stormwater discharges from the Site.
  - Whenever there is a change in design, construction, or operation at the construction site that has the potential to effect stormwater discharge.
  - To address issues of deficiencies identified during an inspection by the Qualified Inspector or other regulatory authorities.

3.4 Site Restoration

All areas disturbed or damaged during construction shall be restored in-kind. A final Site inspection will be performed and documented by the Qualified Inspector to verify that all disturbed areas are suitably stabilized (i.e., uniform perennial vegetative cover with at least 80 percent density, rock riprap, or impervious cover [e.g., asphalt, concrete]). Final stabilization will be implemented in accordance with NYS Standards and Specifications and the Technical Drawings (Attachment 1).

If disturbed areas are not sufficiently stabilized, measures will be implemented to correct the substandard areas and a second final Site inspection will be performed. Following successful completion of the final site

stabilization, the Contractor will remove any temporary erosion and sediment control features that are no longer needed (e.g., compost filter sock, etc.), as appropriate.

4 POLLUTION PREVENTION CONTROLS

4.1 General

In addition to the good housekeeping practices described under Section 3.1.4, the Contractor will implement measures to prevent spills from occurring and to properly respond to spills/spill-related emergencies. The Contractor will also adhere to all applicable regulations and ECWA's site management procedures in the event of a spill.

At a minimum, the following pollution prevention procedures will be implemented by the Contractor during construction.

4.2 Spill Prevention Plan

Prior to mobilization, each piece of equipment scheduled for delivery to site, will be visually inspected by the Contractor for, but not limited to, potential sources of spills or leakage of hydraulic fluid, engine oil, transmission fluid, fuel, and grease (e.g., by inspecting the condition of hydraulic cylinders, hoses, gaskets, fuel tanks). For potential sources that are identified, the Contractor will remove and replace the subject equipment and/or will make available onsite the necessary materials to manage the source and impacted area in the event of a spill or leakage. At a minimum, the Site will be equipped with at least one spill kit consisting of sorbents, absorbent booms, and fire extinguishers. In the event of a spill or leakage, the Contractor will be responsible for safely mitigating the source condition and removal/disposal of any impacted materials.

The Contractor will take the following precautions to minimize potential for spills of fuel or lubricants during the construction activities. At a minimum, these precautions will include:

- Place secondary containment measures around all fuel and lubricant storage tanks/units.
- Perform refueling activities on level ground within vehicle/equipment maintenance and fueling area, which is away from steep slopes and runoff conveyance features (e.g., ditches, storm sewers).
- Do not leave equipment unattended during refueling.
- Only smoke, snack, eat, etc., in areas designated for such activities, that are located away from the refueling area.
- Do not refill fuel tanks while the engine is running.
- Replace fuel caps immediately after filling and before starting the engine.
- Secure fuel pump dispensers when not in use to avoid accidental fuel release.
- Perform inspections and tests of equipment and portable fuel tanks to check for leaks and evaluate the condition of hydraulic hoses and connections. If leaks are observed, transfer the contents to an alternate tank/storage unit and replace the equipment/tank or repair the leak, as appropriate.
- Maintain all equipment in accordance with the manufacturer's specifications.
- Operate all vehicles and equipment safely and park them a safe distance away from site hazards and sensitive resources.

4.3 Spill Response Plan

The Contractor will be responsible for implementing appropriate spill response procedures when responding to releases of, but not limited to, oil, products, and materials during the performance of construction activities. All spills will be immediately reported by the Contractor to federal, state, and local agencies as required, as well as the personnel listed below:

- Contractor's Project Manager
- ECWA's on-site Representative and/or Engineer

Names and phone numbers of these personnel will be included in a phone number list. Reporting of spills to necessary agencies will be in accordance with applicable regulations. The Contractor will be responsible for implementing appropriate spill response procedures, which may include the following:

1. Ceasing operation of the affected equipment: This will consist of shutting off the equipment and/or closing any valves and stopping the leak, if possible.
2. Containing the spill: If the spilled material is floating on a water surface, spill-absorbent pads/booms will be placed across the path of the floating spill. If the spilled material sinks below the water surface, a dam, weir, or other containment method will be used to stop the flow of the spilled material. If the spill occurs on land, a ditch, dam, or other containment unit will be constructed to stop the flow of the spilled material. Absorbent material will be applied as necessary.
3. Cleaning up the spill: Spills in water will be recovered using, but not limited to, pumps and sorbent material, as necessary, until the spilled material is recovered (and no sheen or other evidence of the spill is observed on the water surface). Spills on land will be recovered using pumps, sorbent material, hand tools, and/or heavy equipment, as necessary, until the spilled material is recovered. Other activities to be performed during spill cleanup activities include removing impacted soil/sorbent pads and using rags and cleaning solution to remove excess spilled material from equipment.
4. Containerizing spill materials: Spilled materials, including, but not limited to, impacted soil and sorbent pads will be containerized in NYS Department of Transportation-approved containers. The containers will be labeled with the waste type and date of accumulation in accordance with applicable regulations. Samples will be collected to characterize the spilled materials for disposal, as required.
5. Disposing of spill materials: Impacted materials and spill cleanup debris will be disposed at a facility permitted to accept such materials.
6. Performing post-spill maintenance: Following cleanup of the spill, the Contractor's project manager will verify that all used spill cleanup material and equipment has been disposed or decontaminated, as appropriate. If the equipment that caused the spill cannot be properly repaired, replacement equipment will be obtained.

4.4 Emergency Coordination Plan

In the event of a spill and/or emergency, the Contractor's project manager will complete (at a minimum) the activities described below:

- Immediately notify appropriate site personnel.
- Inform site personnel of any potential hazards and required levels of personal protective equipment to conduct the cleanup.

- Record the following information pertaining to the spill:
  - Name of the person who identified the spill incident
  - Date, time, and location (include address and appropriate phone number) of the spill incident
  - Brief description and cause of the spill incident
  - Estimated quantity and type of material spilled
  - Extent and description of impacts to soil, sediment, and water from the spill
  - Any damages or injuries caused by the spill
  - Actions being used to stop, remove, and mitigate the effects of the discharge.

If there is an immediate threat to human health and/or the environment (based on observations of the spill incident), the Contractor will promptly notify the appropriate authorities (i.e., local police, fire departments, hospitals, and state and local emergency response teams). As indicated above, the Contractor will coordinate spill reporting to the appropriate agencies (e.g., NYSDEC). To facilitate the preparation of reporting documentation in a timely manner, the Contractor will provide a copy of the above-identified information to ECWA's on-site Representative and/or the Engineer.

4.5 Contact Personnel

The Contractor will prepare a list of contact names and phone numbers for the following personnel and/or organizations:

- ECWA (primary contact)
- ECWA's on-site Representative
- The Engineer (Arcadis for Site Civil Components)
- Contractor on-site lead personnel (Site supervisor)
- Local hospital
- Local ambulance service
- Local fire department
- Local, county, and state police department

5 POST-CONSTRUCTION STORMWATER MANAGEMENT

Post construction stormwater management activities are not required for this project in accordance with Appendix B of the GP-0-20-001. Per Table 1 of Appendix B, the installation of underground linear utilities, such as water mains, that involve soil disturbances of one (1) or more acres of land only require a SWPPP that includes erosion and sediment controls.

ATTACHMENT 1

Erie County Water Authority Water System Improvements
Transmission Main Installation Technical Drawings

ATTACHMENT 2

Construction Stormwater Compliance Inspection Report

ATTACHMENT 2

Construction Stormwater Compliance Inspection Report

Project Name and Location: Municipality: County:	Date:	Page 1 of 2
	Permit # (if any): **NYR**	
	Entry Time:	Exit Time:
On-site Representative(s) and contact information:	Weather Conditions:	
Name and Address of SPDES Permittee/Title/Phone/Fax Numbers: Contacted: Yes ☐ No ☐		

INSPECTION CHECKLIST

SPDES Authority

	Yes	No	N/A		Law, rule or permit citation
1.	☐	☐	☐	Is a copy of the NOI posted at the construction site for public viewing?	
2.	☐	☐	☐	Is an up-to-date copy of the signed SWPPP retained at the construction site?	
3.	☐	☐	☐	Is a copy of the SPDES General Permit retained at the construction site?	

SWPPP Content

	Yes	No	N/A		Law, rule or permit citation
4.	☐	☐	☐	Does the SWPPP describe and identify the erosion & sediment control measures to be employed?	
5.	☐	☐	☐	Does the SWPPP provide a maintenance schedule for the erosion & sediment control measures?	
6.	☐	☐	☐	Does the SWPPP describe and identify the post-construction SW control measures to be employed?	
7.	☐	☐	☐	Does the SWPPP identify the contractor(s) and subcontractor(s) responsible for each measure?	
8.	☐	☐	☐	Does the SWPPP include all the necessary 'CONTRACTOR CERTIFICATION' statements?	
9.	☐	☐	☐	Is the SWPPP signed/certified by the permittee?	

Recordkeeping

	Yes	No	N/A		Law, rule or permit citation
10.	☐	☐	☐	Are inspections performed as required by the permit (every 7 days and after ½" rain event)?	
11.	☐	☐	☐	Are the site inspections performed by a qualified professional?	
12.	☐	☐	☐	Are all required reports properly signed/certified?	
13.	☐	☐	☐	Does the SWPPP include copies of the monthly/quarterly written summaries of compliance status?	

Visual Observations

	Yes	No	N/A		Law, rule or permit citation
14.	☐	☐	☐	Are all erosion and sediment control measures installed/constructed?	
15.	☐	☐	☐	Are all erosion and sediment control measures maintained properly?	
16.	☐	☐	☐	Have all disturbances of 5 acres or more been approved prior to the disturbance?	
17.	☐	☐	☐	Are stabilization measures initiated in inactive areas?	
18.	☐	☐	☐	Are permanent stormwater control measures implemented?	
19.	☐	☐	☐	Was there a discharge into the receiving water on the day of inspection?	
20.	☐	☐	☐	Are receiving waters free of there evidence of turbidity, sedimentation, or oil ? (If no , complete Page 2)	

Overall Inspection Rating: ❑ Satisfactory ❑ Marginal ❑ Unsatisfactory	
Name/Agency of Lead Inspector:	**Signature of Lead Inspector:**
Names/Agencies of Other Inspectors:	

Water Quality Observations

Describe the discharge(s) [source(s), impact on receiving water(s), etc.] ____

____

____

____

____

Describe the quality of the receiving water(s) both upstream and downstream of the discharge________________________________

____

____

____

____

Describe any other water quality standards or permit violations ____

____

____

Additional Comments:____

____

____

____

____

____

____

____

____

____

____

____

____

____

____

- [ ] Photographs attached

ATTACHMENT 3

Soil Resource Report for Erie County, New York

United States Department of Agriculture

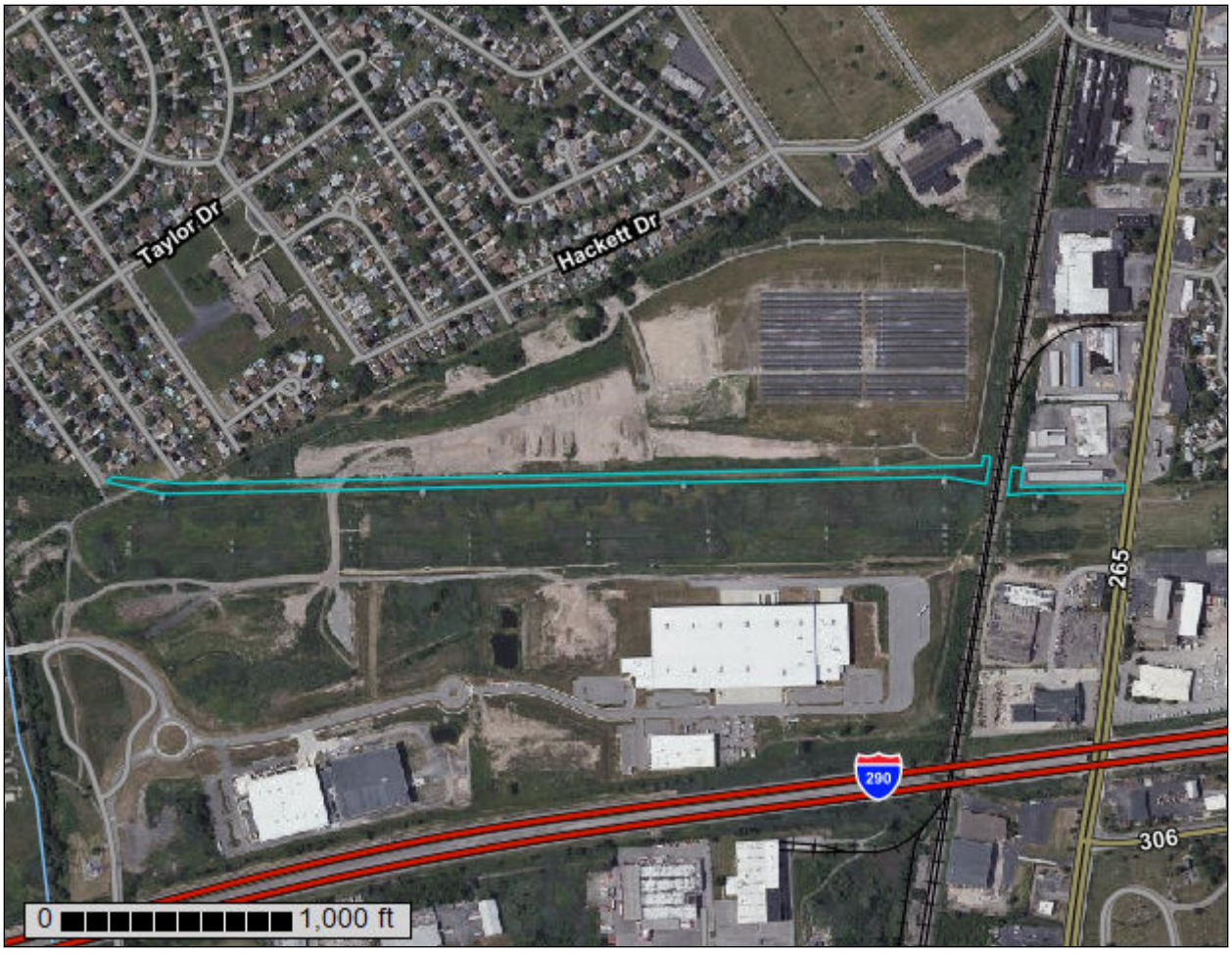
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Erie County, New York

ECWA Tonawanda



December 14, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

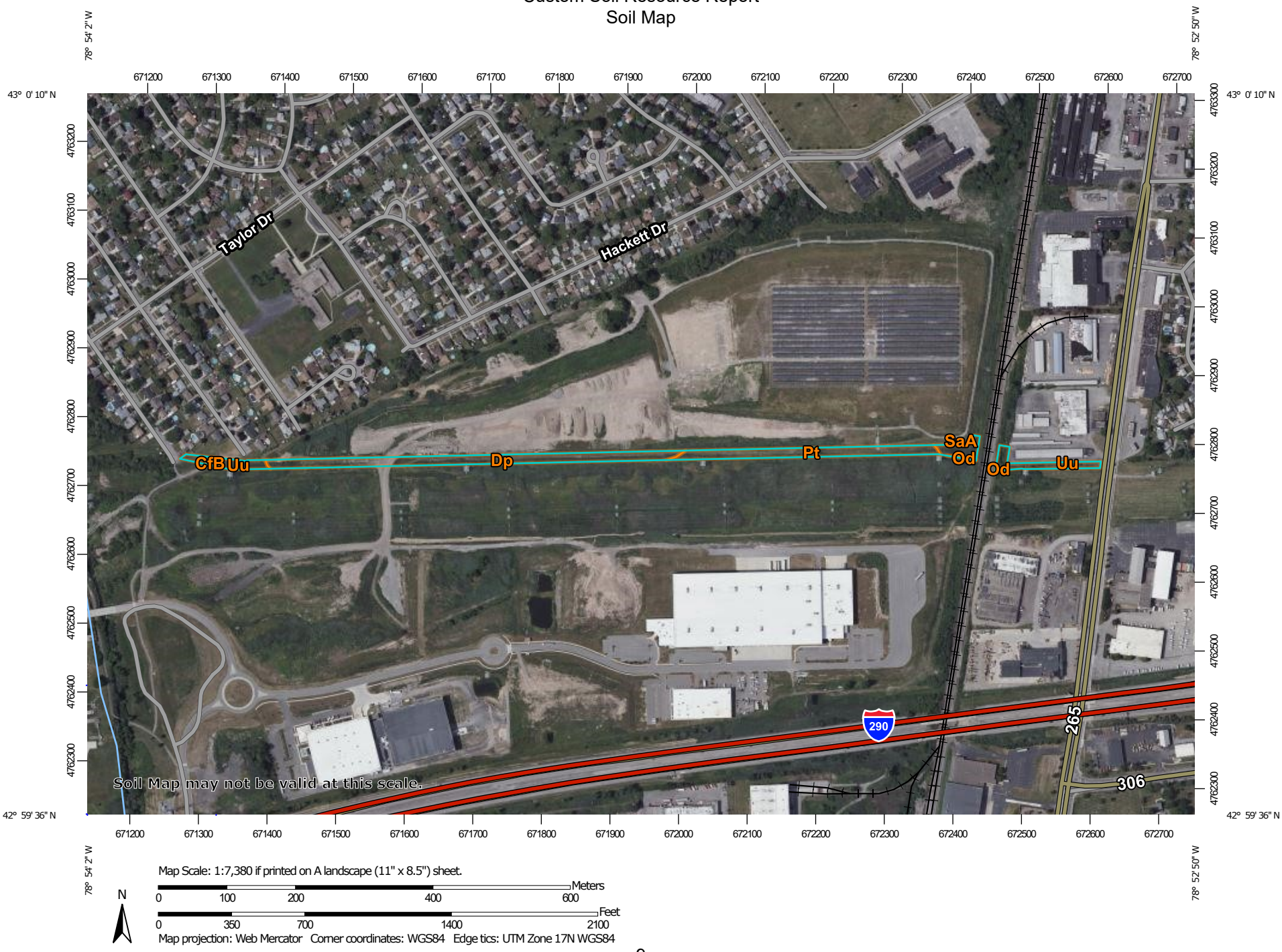
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Erie County, New York
Survey Area Data: Version 20, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 4, 2020—Jul 10, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CfB	Cayuga silt loam, 3 to 8 percent slopes	0.1	3.4%
Dp	Dumps	1.9	45.1%
Od	Odessa silt loam, 0 to 3 percent slopes	0.0	0.7%
Pt	Pits, borrow	1.2	28.9%
SaA	Schoharie silt loam, 0 to 3 percent slopes	0.3	6.5%
Uu	Urban land-Schoharie complex, 0 to 3 percent slopes	0.7	15.4%
Totals for Area of Interest		**4.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Erie County, New York

CfB—Cayuga silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9rkj
Elevation: 560 to 1,440 feet
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Cayuga and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cayuga

Setting

Landform: Lake plains, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest, tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Clayey glaciolacustrine deposits over loamy till derived from limestone, dolomite, sandstone, or shale

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 26 inches: silty clay
H3 - 26 to 60 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Ecological site: F101XY009NY - Moist Lake Plain
Hydric soil rating: No

Minor Components

Niagara

Percent of map unit: 5 percent

Hydric soil rating: No

Churchville
Percent of map unit: 5 percent
Hydric soil rating: No

Collamer
Percent of map unit: 5 percent
Hydric soil rating: No

Schoharie
Percent of map unit: 5 percent
Hydric soil rating: No

Rhinebeck
Percent of map unit: 5 percent
Hydric soil rating: No

Dp—Dumps

Map Unit Setting

National map unit symbol: 9rlm
Elevation: 100 to 1,600 feet
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Dumps: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dumps

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydric soil rating: Unranked

Minor Components

Mardin
Percent of map unit: 5 percent
Hydric soil rating: No

Darien
Percent of map unit: 5 percent
Hydric soil rating: No

Honeoye
Percent of map unit: 5 percent
Hydric soil rating: No

Canandaigua
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Lakemont
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Od—Odessa silt loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 2wrd8
Elevation: 260 to 1,540 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 195 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Odessa and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Odessa

Setting
Landform: Lake terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Red clayey glaciolacustrine deposits derived from calcareous shale

Typical profile
Ap - 0 to 8 inches: silt loam
Bt/E - 8 to 10 inches: silty clay loam
Bt1 - 10 to 15 inches: silty clay
Bt2 - 15 to 25 inches: silty clay
C - 25 to 79 inches: silty clay

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)

Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Available water capacity: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F101XY009NY - Moist Lake Plain
Hydric soil rating: No

Minor Components

Lakemont

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Schoharie

Percent of map unit: 5 percent
Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Churchville

Percent of map unit: 3 percent
Landform: Drumlinoid ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Rhinebeck

Percent of map unit: 2 percent
Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Pt—Pits, borrow

Map Unit Setting

National map unit symbol: 9rp8
Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Pits, borrow: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Mardin

Percent of map unit: 5 percent
Hydric soil rating: No

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Palmyra

Percent of map unit: 5 percent
Hydric soil rating: No

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Langford

Percent of map unit: 5 percent
Hydric soil rating: No

SaA—Schoharie silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2xgh1
Elevation: 280 to 970 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Schoharie and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Schoharie

Setting

Landform: Lake terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Red clayey glaciolacustrine deposits derived from calcareous shale

Typical profile

Ap - 0 to 8 inches: silt loam
E - 8 to 11 inches: silt loam
Bt/E - 11 to 18 inches: silty clay
Bt - 18 to 33 inches: clay
C1 - 33 to 52 inches: silty clay
C2 - 52 to 79 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Available water capacity: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Odessa

Percent of map unit: 5 percent
Landform: Lake terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Cazenovia

Percent of map unit: 5 percent

Landform: Reworked lake plains, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Cayuga

Percent of map unit: 3 percent
Landform: Lake plains, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest, tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Collamer

Percent of map unit: 2 percent
Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Uu—Urban land-Schoharie complex, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2xggf
Elevation: 560 to 670 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 60 percent
Schoharie and similar soils: 35 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Description of Schoharie

Setting

Landform: Lake terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Red clayey glaciolacustrine deposits derived from calcareous shale

Typical profile

Ap - 0 to 8 inches: silty clay loam
E - 8 to 11 inches: silt loam
Bt/E - 11 to 18 inches: silty clay
Bt - 18 to 33 inches: clay
C1 - 33 to 52 inches: silty clay
C2 - 52 to 79 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Available water capacity: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Odessa

Percent of map unit: 2 percent
Landform: Lake terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Cayuga

Percent of map unit: 1 percent
Landform: Lake plains, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest, tread
Down-slope shape: Concave
Across-slope shape: Convex

Hydric soil rating: No

Collamer

Percent of map unit: 1 percent
Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Cazenovia

Percent of map unit: 1 percent
Landform: Till plains, reworked lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

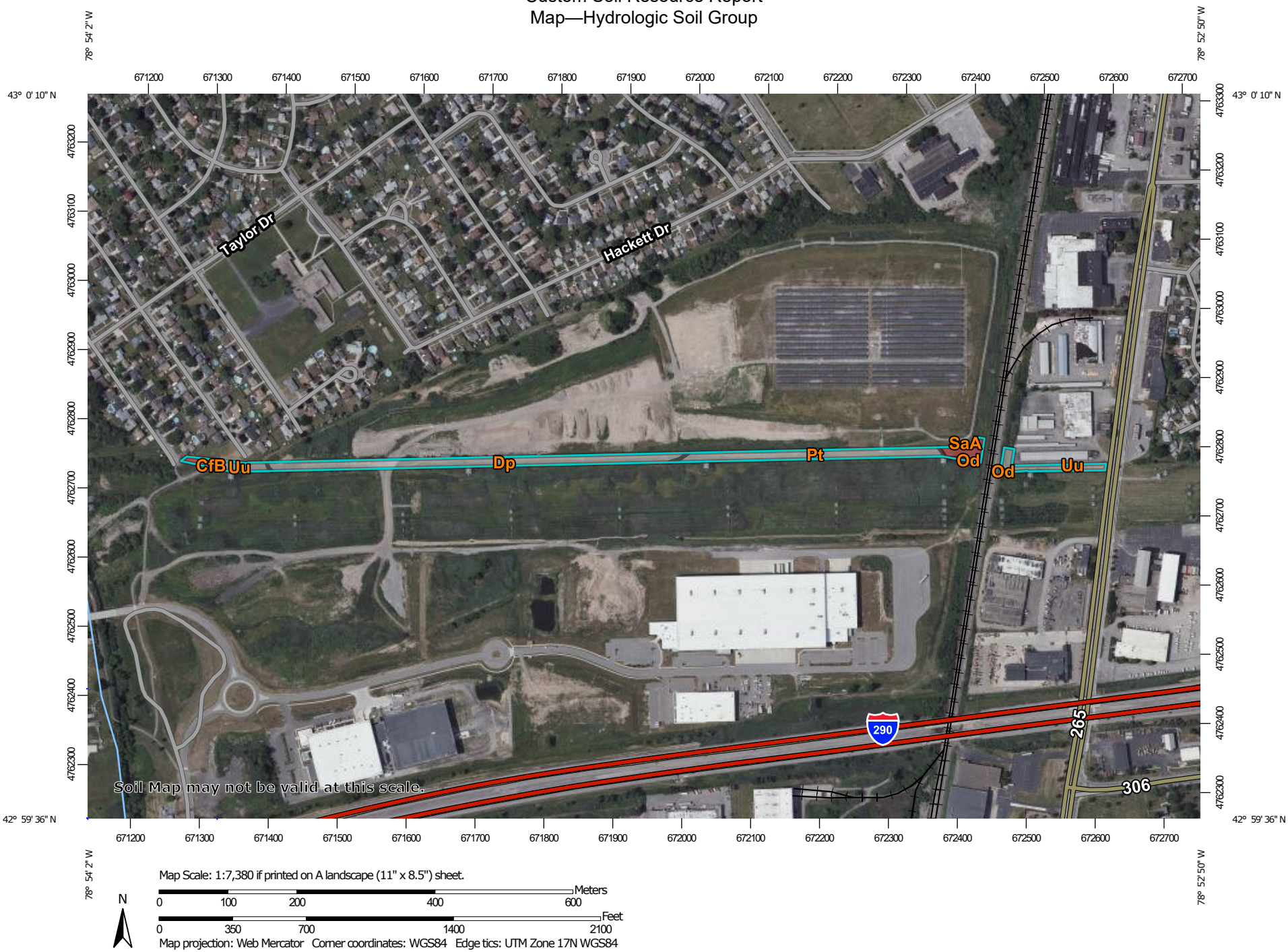
Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.


78° 54' 2" W
78° 52' 50" W
43° 0' 10" N
42° 59' 36" N
671200
671300
671400
671500
671600
671700
671800
671900
672000
672100
672200
672300
672400
672500
672600
672700
4763300
4763200
4763100
4763000
4762900
4762800
4762700
4762600
4762500
4762400
4762300
Taylor Dr
Hackett Dr
CfB
Uu
Dp
Pt
SaA
Od
Od
Uu
290
265
306
Soil Map may not be valid at this scale.
Map Scale: 1:7,380 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0
100
200
400
600
Feet
0
350
700
1400
2100
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Erie County, New York
Survey Area Data: Version 20, Jun 11, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 4, 2020—Jul 10, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CfB	Cayuga silt loam, 3 to 8 percent slopes	D	0.1	3.4%
Dp	Dumps		1.9	45.1%
Od	Odessa silt loam, 0 to 3 percent slopes	D	0.0	0.7%
Pt	Pits, borrow		1.2	28.9%
SaA	Schoharie silt loam, 0 to 3 percent slopes	D	0.3	6.5%
Uu	Urban land-Schoharie complex, 0 to 3 percent slopes		0.7	15.4%
Totals for Area of Interest			**4.3**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

ATTACHMENT 4

Notice of Intent

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.29

(Submission #: HP5-0ZT8-CN2CK, version 1)

Details

Submission Alias	ECWA Tonawanda NOI for coverage under Stormwater General Permit for Construction Activity
Originally Started By	Owen Hunter
Submission ID	HP5-0ZT8-CN2CK
Submission Reason	New
Status	Draft
Active Steps	Form Submitted

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
Erie County Water Authority

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Kowalski

Owner/Operator Contact Person First Name
Leonard

Owner/Operator Mailing Address
3030 Union Road

City
Cheektowaga

State
New York

Zip
14227

Phone
716-685-8220

Email
lkowalski@ecwa.org

Federal Tax ID
16-6000337

Project Location

Project/Site Name
Water System Improvements Transmission Main Installation

Street Address (Not P.O. Box)
Between 193 Brookside Terrace West and 2250 Military Road

Side of Street
East

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Town of Tonawanda

State
NY

Zip
14150

County
ERIE

DEC Region
9

Name of Nearest Cross Street
Pirson Parkway

Distance to Nearest Cross Street (Feet)
800

Project In Relation to Cross Street
North

Tax Map Numbers Section-Block-Parcel
52.12-6-1.1, 52.15-1-17

Tax Map Numbers
NONE PROVIDED

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:
- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.
- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates
42.99805531804609,-78.89862499366511

Project Details

2. What is the nature of this project?
Redevelopment with increase in impervious area

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Linear Utility

Post-Development Future Land Use
Linear Utility (wqter/sewer/gas, etc.)

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
NONE PROVIDED

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)
4.3

Total Area to be Disturbed (acres)
4.3

Existing Impervious Area to be Disturbed (acres)
0.1

Future Impervious Area Within Disturbed Area (acres)
0.1

5. Do you plan to disturb more than 5 acres of soil at any one time?
No

---

6. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
0

B (%)
0

C (%)
0

D (%)
100

7. Is this a phased project?
No

8. Enter the planned start and end dates of the disturbance activities.

Start Date
7/1/2021

End Date
2/28/2022

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
Two Mile Creek

9a. Type of waterbody identified in question 9?
Stream/Creek Off Site

Other Waterbody Type Off Site Description
NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
NONE PROVIDED

10. Has the surface waterbody(ies in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001?
No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001?
No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
No

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey?
NONE PROVIDED

If Yes, what is the acreage to be disturbed?
NONE PROVIDED

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
No

16. What is the name of the municipality/entity that owns the separate storm sewer system?
NONE PROVIDED

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?
No

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?
No

19. Is this property owned by a state authority, state agency, federal government or local government?
No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)
No

Required SWPPP Components

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?
Yes

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?
No

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual?
NONE PROVIDED

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

SWPPP Preparer
Arcadis of New York, Inc.

Contact Name (Last, Space, First)
Lenz Mark

Mailing Address
50 Fountain Plaza

City
Buffalo

State
New York

Zip
14202

Phone
716-667-6625

Email
Mark.Lenz@arcadis.com

Download SWPPP Preparer Certification Form
Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form

3) Scan the signed form
4) Upload the scanned document
Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification
NONE PROVIDED
Comment
NONE PROVIDED

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared?
Yes

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural
Dust Control
Check Dams
Stabilized Construction Entrance

Biotechnical
None

Vegetative Measures
Mulching
Protecting Vegetation
Seeding
Topsoiling

Permanent Structural
Land Grading

Other
compost filter sock

Post-Construction Criteria

*** IMPORTANT: Completion of Questions 27-39 is not required if response to Question 22 is No.**

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.
NONE PROVIDED

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).
NONE PROVIDED

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
NONE PROVIDED

29. Post-construction SMP Identification
Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use the Post-Construction SMP Identification section to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
NONE PROVIDED

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28)?
NONE PROVIDED

If Yes, go to question 36. If No, go to question 32.

32. Provide the Minimum RRv required based on HSG. [Minimum RRv Required = (P) (0.95) (Ai) / 12, Ai=(s) (Aic)] (acre-feet)
NONE PROVIDED

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?
NONE PROVIDED

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs
Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)
NONE PROVIDED

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).
NONE PROVIDED

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?
NONE PROVIDED

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv required and provided or select waiver (#36a), if applicable.

CPv Required (acre-feet)
NONE PROVIDED

CPv Provided (acre-feet)
NONE PROVIDED

36a. The need to provide channel protection has been waived because:
NONE PROVIDED

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (#37a), if applicable.

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
NONE PROVIDED

Post-Development (CFS)
NONE PROVIDED

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
NONE PROVIDED

Post-Development (CFS)
NONE PROVIDED

37a. The need to meet the Qp and Qf criteria has been waived because:
NONE PROVIDED

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
NONE PROVIDED

If Yes, Identify the entity responsible for the long term Operation and Maintenance
NONE PROVIDED

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). (See question #32a) This space can also be used for other pertinent project information.
NONE PROVIDED

Post-Construction SMP Identification

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs
Identify the Post-construction SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Garden (RR-6)
NONE PROVIDED

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
NONE PROVIDED

Total Contributing Impervious Acres for Porous Pavement (RR-9)
NONE PROVIDED

Total Contributing Impervious Acres for Green Roof (RR-10)
NONE PROVIDED

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
NONE PROVIDED

Total Contributing Impervious Acres for Infiltration Basin (I-2)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Well (I-3)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Infiltration System (I-4)
NONE PROVIDED

Total Contributing Impervious Acres for Bioretention (F-5)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Swale (O-1)
NONE PROVIDED

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Pond (P-2)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
NONE PROVIDED

Total Contributing Impervious Acres for Multiple Pond System (P-4)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Pond (P-5)
NONE PROVIDED

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
NONE PROVIDED

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
NONE PROVIDED

Total Contributing Impervious Acres for Organic Filter (F-4)
NONE PROVIDED

Total Contributing Impervious Acres for Shallow Wetland (W-1)
NONE PROVIDED

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
NONE PROVIDED

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Wetland (W-4)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Swale (O-2)
NONE PROVIDED

Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Total Contributing Impervious Area for Hydrodynamic
NONE PROVIDED

Total Contributing Impervious Area for Wet Vault
NONE PROVIDED

Total Contributing Impervious Area for Media Filter
NONE PROVIDED

"Other" Alternative SMP?
NONE PROVIDED

Total Contributing Impervious Area for "Other"
NONE PROVIDED

Provide the name and manufaturer of the alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

Manufacturer of Alternative SMP
NONE PROVIDED

Name of Alternative SMP
NONE PROVIDED

Other Permits

40. Identify other DEC permits, existing and new, that are required for this project/facility.
None

If SPDES Multi-Sector GP, then give permit ID
NONE PROVIDED

If Other, then identify
NONE PROVIDED

41. Does this project require a US Army Corps of Engineers Wetland Permit?
No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth
NONE PROVIDED

42. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.
NONE PROVIDED

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
Yes - Please attach the MS4 Acceptance form below

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?
Yes

MS4 SWPPP Acceptance Form Download
Download form from the link below. Complete, sign, and upload.
MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload
> NONE PROVIDED
> **Comment**
> NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download
Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.
Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form
> NONE PROVIDED
> **Comment**
> NONE PROVIDED

Status History

	User	Processing Status
12/15/2020 8:37:29 AM	Owen Hunter	Draft

Processing Steps

Step Name	Assigned To/Completed By	Date Completed
Form Submitted		
Under Review	DAVID GASPER	

ATTACHMENT 5

State Historic Preservation Office Documentation

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

December 23, 2020

Terri Brown
Regulatory Compliance Specialist
Arcadis
50 Fountain Plaza
Suite 600
Buffalo, NY 14202

Re: DEC
Erie County Water Authority Transmission Main
Between Military Road and Brookside Terrace West, Town of Tonawanda, Erie County, NY
20PR08057

Dear Terri Brown:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the opinion of OPRHP that no properties, including archaeological and/or historic resources, listed in or eligible for the New York State and National Registers of Historic Places will be impacted by this project.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

R. Daniel Mackay

Deputy Commissioner for Historic Preservation
Division for Historic Preservation

ATTACHMENT 6

Contractor Compliance Form

CONTRACTOR AND SUBCONTRACTOR CERTIFICATION/AGREEMENT

Project Title: _____

Site Location: _____

Operator: _____

As a contractor/subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the construction site.

Each contractor/subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

> **"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."**

This certification is hereby signed in reference to the above named project:

Company: _____

Address: _____

Telephone Number: _____

Type of Construction Services to be provided: _____

Elements of SWPPP for which my Company is responsible: _____

_____

_____

_____

Name and Title of trained individual(s) responsible for SWPPP implementation

Name: _____

Title: _____

Signature: _____

Date:_____

Arcadis of New York, Inc.

50 Fountain Plaza

Suite 600

Buffalo, New York 14202

Tel 716 667 0900

Fax 716 842 2612

www.arcadis.com

THIS PAGE INTENTIONALLY LEFT BLANK

STORMWATER POLLUTION PREVENTION PLAN AND PERMIT

PART 1 - GENERAL

1.1 DESCRIPTION

A. CONTRACTOR shall comply with the Transmission Main Installation, Town of Tonawanda State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges for Construction Activity (Permit No. GP-0-20-001), as administered by the New York State Department of Environmental Conservation (NYS DEC). The CONTRACTOR shall be a co-permittee with the OWNER and is responsible for providing necessary materials and taking appropriate measures to comply with the requirements of the permit and minimize pollutants in storm water runoff from the Project.

B. Documents: The following documents are part of the Work included under this Section:
   1. Storm Water Pollution Prevention Plan (SWPPP): Prepared by ENGINEER and filed with authority having jurisdiction over storm water discharges during construction. The SWPPP is included with the Contract Documents.
   2. SWPPP Revisions: Prepared by CONTRACTOR and submitted to ENGINEER. At minimum, CONTRACTOR shall file a SWPPP Revision prior to starting Work at the Site, and as required by the authority having jurisdiction. SWPPP Revision shall include CONTRACTOR's proposed temporary means for storm water control during all phases of the Work and include plans for storm water conveyance and retention, as applicable. Coordinate with excavation plan submittals required in Division 2 of the Specifications. Should CONTRACTOR propose deviations to the SWPPP included in the Contract Documents, or if project-specific modifications of the SWPPP are required to conform to field conditions, CONTRACTOR shall provide additional SWPPP Revisions as necessary, per requirements of the authority having jurisdiction and applicable permits. SWPPP Revisions shall use the SWPPP Revision form included in this Section, with supporting documents attached as required, or forms provided by authority having jurisdiction.
   3. Storm Water Certification Statement: To be provided by CONTRACTOR to ENGINEER on the form included with this Section, or on a form provided by authority having jurisdiction. No Work shall be performed at the Site until the Storm Water Certification has been submitted to ENGINEER.
   4. Notice of Intent (NOI): Prepared by OWNER or ENGINEER and submitted to authority having jurisdiction following ENGINEER’s receipt and approval of CONTRACTOR’s SWPPP Revision and preliminary Progress Schedule. NOI will be filed with authority having jurisdiction by ENGINEER within ten days of ENGINEER’s approval of CONTRACTOR’s SWPPP Revision and preliminary Progress Schedule. No Work shall be performed at Site until NOI is submitted to authority having jurisdiction.
   5. Co-permittee Agreement: Prepared by CONTRACTOR using forms included with the SWPPP, and submitted to ENGINEER within five days of the date the Contract Times commence running, for signature by OWNER. ENGINEER will file the co-permittee

agreement with authority having jurisdiction. No Work shall be performed at the Site until the co-permittee agreement is submitted to authority having jurisdiction.

6. Storm Water Inspection Report: Prepared by ENGINEER's Resident Project Representative (RPR) using the form included at the end of this Section, or a form provided by authority having jurisdiction. These reports will be filed in a log book kept at the Site by ENGINEER. A copy of each report will be provided to CONTRACTOR. These reports will be completed:
   a. Pre-construction: After placement of storm water management measures, including sediment and erosion controls, and site offices, prior to starting other Work at the Site.
   b. Every seven days during the Work until Notice of Termination is completed.
   c. After every wet weather event with over 1/2-inch of precipitation until Notice of Termination is completed.
   d. Final: Final inspection report will be will be prepared prior to completion of Notice of Termination.
7. Monthly Storm Water Report: Prepared by ENGINEER's RPR, summarizing previous month's Storm Water Inspection Reports. These reports will be filed in a log book at the Site by ENGINEER. A copy of each report will be provided to CONTRACTOR.
8. Quarterly Storm Water Reports: Prepared by ENGINEER's RPR, summarizing past three Monthly Storm Water Reports. These reports will be filed in a log book kept at the Site by ENGINEER and submitted by ENGINEER to authority having jurisdiction. A copy of each report will be provided to CONTRACTOR.
9. Notice of Termination (NOT): Prepared by CONTRACTOR on the form included with storm water permit and provided to ENGINEER for review and signature by OWNER. Submit the NOT following completion of all Work that may result in pollution in storm water discharges, including landscaping Work. Final Payment will not be made until the NOT is filed with authority having jurisdiction, with a copy to the OWNER and ENGINEER.

C. CONTRACTOR shall prevent discharge of sediment to and erosion to watercourses, public streets, and private property from the Project, including dewatering operations. Prevent demolition and construction debris from leaving the Site via storm water runoff. Provide berms, dikes, and other approved methods of directing storm water around work areas to drainage routes. Construction-related discharges to publicly owned conveyance or treatment systems shall be approved by owner of system prior to start of construction activities.

D. CONTRACTOR shall not cause or contribute to a violation of water quality standards. Notify ENGINEER of changes to the SWPPP necessary to protect receiving water quality and comply with applicable storm water permit Implement measures to minimize pollutants in storm water runoff from the Site to prevent:
   1. An increase in turbidity that will cause a substantial visible contrast to natural conditions.
   2. An increase in suspended, colloidal, and settleable solids that will cause sediment deposition or impair receiving water quality and use.
   3. Presence of residue from oil and floating substances, visible oil, and globules of grease.

E. CONTRACTOR is responsible for paying civil penalties and other costs incurred by OWNER, including additional engineering and RPR services, associated with non-compliance with applicable permits related to storm water discharges associated with construction activity and sediment and erosion controls.

F. Coordinate requirements of this Section with requirements for earthwork, erosion control, and landscaping specified in the Contract Documents, and applicable permit requirements.

G. Implement SWPPP controls and practices prior to starting other Work All subcontractors identified in the SWPPP and SWPPP Revisions must sign a copy of the storm water certification statement.

1.2 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with applicable federal, state, and local laws and regulations relative to environmental protection and restoration, including:
   1. Storm water permit applicable to the Work and Site.
   2. State and local erosion and sediment control guidelines and requirements,
   3. State and local storm water regulations and guidance.

1.3 SUBMITTALS

A. Provide to ENGINEER the submittals listed below. Requirements on submittals are presented in Article 1.1 of this Section.
   1. SWPPP Revisions.
   2. Co-permittee Agreement.
   3. Storm Water Certification Statement.
   4. Notice of Termination

B. For storm water discharges associated with construction activity that are discharged to a publicly owned conveyance or treatment system, provide system owner's written approval for such discharges, prior to commencing discharges.

C. Within three days of each storm water inspection, provide copies of updated storm water site plan during each storm water inspection. Provide one copy of storm water map to ENGINEER's RPR and, to ENGINEER's office, storm water maps equal to the number of copies of each Shop Drawing submittal.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 INSPECTIONS AND REPAIRS

A. Perform Site inspections and assessments as required in applicable storm water permit and this Section. Inspections and assessments shall be done by CONTRACTOR's site superintendent or project manager, together with ENGINEER's RPR.

B. Inspections:
   1. During the Work, Site inspections shall be performed:
      a. After SWPPP controls are provided and prior to starting other Work at the Site.
      b. A minimum of every seven calendar days.
      c. Within 24 hours of the end of a wet weather event with 1/2-inch or more of precipitation
      d. Prior to CONTRACTOR submitting the Notice of Termination.
   2. During each inspection, verify sediment control practices and record approximate degree of sediment accumulation as a percentage of acceptable sediment storage volume; inspect erosion and sediment control practices and record maintenance performed; observe and record deficiencies relative to implementation of the SWPPP. ENGINEER will complete the Storm Water Inspection Reports and CONTRACTOR shall record the following.
      a. Storm Water Map: On a copy of the site plan included in the Contract Documents or other map of the Site acceptable to ENGINEER, indicate extent of all disturbed areas and drainage pathways. Indicate areas that are expected to undergo initial disturbance or significant site work within the next fourteen days.
      b. Indicate on storm water map areas of Site that have undergone temporary or permanent stabilization.
      c. Indicate on storm water map all disturbed areas that have not undergone active site Work during the previous fourteen days.

C. CONTRACTOR shall maintain a copy of storm water maps from storm water inspection at Site and provide a copy of each storm water map to ENGINEER's RPR. ENGINEER will maintain at the Site a log book with a copy of Storm Water Inspection Reports.

D. On a monthly basis, CONTRACTOR shall post at the Site, in a location accessible during business hours Monday through Friday, ENGINEER's Monthly Storm Water Report.

E. Cooperate with representatives of authority having jurisdiction during periodic visits to Site, and promptly provide information requested by authority having jurisdiction.

F. Complete repairs to SWPPP controls per applicable requirements and to satisfaction of ENGINEER within two calendar days of each inspection.

3.2 SWPPP REVISIONS

A. CONTRACTOR shall prepare a SWPPP Revision per applicable storm water permit when:

1. There is a significant change in design, construction, operation, or maintenance that significantly affects the potential of discharging pollutants to Waters of the United States, and has not otherwise been addressed in the SWPPP.
2. SWPPP proves to be ineffective relative to:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP required by this permit, or
   b. Achieving general objectives of controlling pollutants in storm water discharges from permitted construction activity.
3. A SWPPP Revision identifying contractors and subcontractor responsible for implementing part of the SWPPP shall be provided.

3.3 ATTACHMENTS

A. The forms listed below, following the "End of Section" designation, are a part of this Specification section. Notice of Intent (NOI) form, Co-permittee Agreement form, and Notice of Termination (NOT) form are included with the SWPPP.
   1. Storm Water Inspection Report.
   2. Storm Water Permit Certification
   3. SWPPP Revision Form.
   4. Format of Monthly Storm Water Report.
   5. Format of Quarterly Storm Water Report.

3.4 SUPPLEMENTS

A. The supplements listed below, following the attachments, are part of this Section:
   1. Supplement A – Storm Water Pollution Prevention Plan (SWPPP).

+ + END OF SECTION + +

Construction Stormwater Compliance Inspection Report

Project Name and Location:	Date:	Page 1 of 2
	Permit # (if any): **NYR**	
Municipality: County:	Entry Time:	Exit Time:
On-site Representative(s) and contact information:	Weather Conditions:	
Name and Address of SPDES Permittee/Title/Phone/Fax Numbers: Contacted: Yes □ No □		

INSPECTION CHECKLIST

SPDES Authority **Law, Rule or Permit Citation**

	Yes	No	N/A	
1.	□	□	□	Is a copy of the NOI posted at the construction site for public viewing?
2.	□	□	□	Is an up-to-date copy of the signed SWPPP retained at the construction site?
3.	□	□	□	Is a copy of the SPDES General Permit retained at the construction site?

SWPPP Content **Law, Rule or Permit Citation**

	Yes	No	N/A	
4.	□	□	□	Does the SWPPP describe and identify the erosion & sediment control measures to be employed?
5.	□	□	□	Does the SWPPP provide a maintenance schedule for the erosion & sediment control measures?
6.	□	□	□	Does the SWPPP describe and identify the post-construction SW control measures to be employed?
7.	□	□	□	Does the SWPPP identify the contractor(s) and subcontractor(s) responsible for each measure?
8.	□	□	□	Does the SWPPP include all the necessary 'CONTRACTOR CERTIFICATION' statements?
9.	□	□	□	Is the SWPPP signed/certified by the permittee?

Recordkeeping **Law, Rule or Permit Citation**

	Yes	No	N/A	
10.	□	□	□	Are inspections performed as required by the permit (every 7 days and after ½" rain event)?
11.	□	□	□	Are the site inspections performed by a qualified professional?
12.	□	□	□	Are all required reports properly signed/certified?
13.	□	□	□	Does the SWPPP include copies of the monthly/quarterly written summaries of compliance status?

Visual Observations **Law, Rule or Permit Citation**

	Yes	No	N/A	
14.	□	□	□	Are all erosion and sediment control measures installed/constructed?
15.	□	□	□	Are all erosion and sediment control measures maintained properly?
16.	□	□	□	Have all disturbances of 5 acres or more been approved prior to the disturbance?
17.	□	□	□	Are stabilization measures initiated in inactive areas?
18.	□	□	□	Are permanent stormwater control measures implemented?
19.	□	□	□	Was there a discharge into the receiving water on the day of inspection?
20.	□	□	□	Are receiving waters free of there evidence of turbidity, sedimentation, or oil ? (If no , complete Page 2)

Overall Inspection Rating: ❑ Satisfactory **“** Marginal ❑ Unsatisfactory	
Name/Agency of Lead Inspector:	**Signature of Lead Inspector:**
Names/Agencies of Other Inspectors:	

Water Quality Observations

Describe the discharge(s) [source(s), impact on receiving water(s), etc.]

Describe the quality of the receiving water(s) both upstream and downstream of the discharge

Describe any other water quality standards or permit violations

Additional Comments:

STORM WATER PERMIT CERTIFICATION

Contract Number:_____ Project:_____

Owner:_____

Each Contractor and Subcontractor identified in the Storm Water Pollution Prevention Plan (SWPPP) must certify that they understand the permit conditions and their responsibilities. Every Contractor and Subcontractor performing an activity that involves soil disturbance shall sign this certification and provide it to the Engineer prior to performing Work. This certification shall be signed by an Owner, Principal, President, Secretary or Treasurer of the firm.

> I certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP for the construction site identified in such SWPPP as a condition of authorization to discharge storm water. I also understand that my firm and its employees and subcontractors must comply with the terms and conditions of the Owner's general permit for storm water discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards.

Firm: _____

Address: _____

City:_____ State_____ Zip_____

_____ _____ _____

Name (Print) Signature Date

_____

Title

STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REVISION

Date of Inspection: _____

Sheet No. _____ **of** _____ **Sheets**

Owner:
Site:
Project:
Contractor:

This form is to be used when revisions to the current Storm Water Pollution Prevention Plan (SWPPP) are required by the Storm Water General Permit for Construction Activity.

Reason for the Revision(s): Revisions were requested by State: ☐ Yes ☐ No

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Describe the Revision(s) to the SWPPP: _____

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable by Law.

Signature: _____ Prepared: _____ (Date) Submitted: _____ (Date)

Copy to: □ Engineer □ Contractor _____

Date

FORMAT OF MONTHLY STORM WATER SUMMARY REPORT

Pursuant to the General Permit For Storm Water Discharges From Construction Activity

Contract Number: D123456

Contract Description: Rte 123 over Hudson River

County: Anywhere

Report Period: August 2006

SAMPLE

The following periodic site inspections were conducted:

Date of Inspection: August 11, 2006

- Inspected 12 stone check dams-all in good condition, minimal sediment accumulation, and required no maintenance.
- Inspected 8 separate silt fence installations. Silt fences in from of #3874 and #4123 Main Street were restaked. Remaining silt fences were in good condition and required no maintenance.
- Inspected all seeded and mulched areas. All areas were in good condition and required no maintenance.

Date of Inspection: August 18, 2006

- Inspected 12 stone check dams. Three check dams has accumulated sediment removed. Remaining check dams were in good condition, averaged 10 percent sediment accumulation, and required no maintenance.
- Inspected 8 separate silt fence installations. Silt fence in from of $4198 was restaked and accumulated sediment removed. Remaining silt fences were in good condition and required no maintenance.
- Inspected all seeded and mulched areas. All areas were in good condition and required no maintenance.

Date of Inspection: August 30, 2006

- Inspected 12 stone check dams. Three check dams had accumulated sediment removed. Remaining check dams were in good condition, averaged 10 percent sediment accumulation, and required no maintenance.
- Inspected 8 separate silt fence installations. Silt fences in from of #3989 and #4214 Main Street were restaked. Remaining silt fences were in good condition and required no maintenance.
- Inspected all seeded and mulched areas. All areas were in good condition and required no maintenance.

The following site inspections were conducted as a result of a rainfall event:

Date of Inspection: August 4, 2006 – Received ¾-inch of rainfall overnight

- Inspected 12 stone check dams. Six check dams had accumulated sediment removed. Remaining check dams were in good condition, had minimal sediment accumulation, and required o maintenance.
- Inspected 8 separate silt fence installations. Silt fences in front of Library and Mobil gas station were restaked and accumulated sediment removed. Other silt fences were in good condition and required no maintenance.
- Inspected all seeded and mulched areas. All areas were in good condition and required no maintenance.

Date of Inspection: August 23, 2006 – Received 1-inch of rainfall during day

- Inspected 12 stone check dams. Seven check dams had accumulated sediment removed. Remaining check dams were in good condition, averaged 15 percent sediment accumulations, and required not maintenance.
- Inspected 8 separate silt fence installations. Silt fences in from of #3989 and #4076 Main Street were restaked and accumulated sediment removed. Other silt fences were in good condition and required no maintenance.
- Inspected all seeded and mulched areas. Mulch in front of #3827 Main Street washed away and was replaced. Remaining areas were in good condition and required no maintenance.

Signature: _____ Date_____

Engineer Name/Title: Malcolm Pirnie, Inc.

FORMAT OF QUARTERLY STORM WATER REPORT

Pursuant to the General Permit For Storm Water Discharges From Construction Activity

Contract Number: D123456

Contract Description: Rte 123 over Hudson River

SAMPLE

County: Anywhere

Report Period: 3rd Quarter 2006

PROJECT STATUS:

The Contractor continued to progress the project in accordance with the approved construction schedule, but there have been delays due to high water. The following activities occurred during this quarter:

- Initial project mobilization (field office set-up and establishment of an equipment staging area).
- Completed clearing and grubbing items. One on-site spoil area was approved by EIC and CEC.
- On-site detour installed with minor change in alignment to address site distance problem at adjacent driveway.
- Completed demolition of existing bridge. Contractor intends to start pile driving for new abutments within the next 10 days.

COMPLIANCE WITH STORM WATER PERMIT

The appropriate erosion and sediment control items were installed for this stage of the project. Installation of these items was generally in accordance with the details shown in the project plans. Modifications to the E&SC plan to account for changes in the detour alignment were documented in the Site Log Book.

- There were no site visits by state or federal regulatory agencies.
- There were no known violations of the SPDES Permit.
- The SWPPP was amended to include the restoration plan for the on-site spoil site.
- EIC denied a request from an adjacent landowner for clean spoil material to fill in a low (wetland) area.
- Conducted 9 standard seven day site inspections.
- Conducted 2 storm-related site inspections. (1-inch and ¾-inch rain events)

INDIVIDUAL SWPPP COMPONENTS

The project is currently in Stage 1 of the Erosion Control Plan show on Sheet 18 (Drawing EC-1). All erosion and sediment controls are in place per this plan. A summary of adjustments, modifications and maintenance issues include:

- Added pay item for Vegetation Protection Barrier to protect shrubs in front of a historic house.
- Inspected all seeded and mulched areas. All areas were in good condition and required no maintenance.
- Directed contractor to repair a 20-foot section of silt fence toppled by sediment during a large storm event. Added a temporary swale diversion and 2 stone check dams up gradient of silt fence to slow water velocity.
- Waterway diversion item was used during installation of the temporary detour and for ridge demolition. Contractor used an 8" pump and settling basin which worked well. Work was completed and the diversion was removed before the two storm events.

Signature:_____ Date_____

Engineer Name/Title: Arcadis