CONTRACT DOCUMENTS

FOR

BOLTON POINT RAW WATER PUMP STATION
ELECTRICAL UPGRADES

CONTRACT NO. 1A – GENERAL CONSTRUCTION
CONTRACT NO. 1B – MECHANICAL CONSTRUCTION
CONTRACT NO. 1C – ELECTRICAL CONSTRUCTION

SOUTHERN CAYUGA LAKE
INTERMUNICIPAL WATER COMMISSION
TOMPKINS COUNTY, NEW YORK

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FEBRUARY 2026

PREPARED BY:

BARTON & LOGUIDICE, D.P.C.
443 ELECTRONICS PARKWAY
LIVERPOOL, NEW YORK 13088

NO ALTERATION PERMITTED HEREIN EXCEPT
AS PROVIDED UNDER SECTION 7209 SUBDIVISION
2 OF THE NEW YORK STATE EDUCATION LAW.

SECTION 00 01 10

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INTERMUNICIPAL WATER COMMISSION

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ADVERTISEMENT FOR BIDS

BOLTON POINT RAW WATER PUMP STATION
ELECTRICAL UPGRADES

Sealed, separate Bids for the construction of the Electrical Upgrades will be received by the Southern Cayuga Lake Intermunicipal Water Commission, at its principal office, 1402 East Shore Drive, Ithaca, New York 14850, until 2:00 P.M. local time on Thursday, March 26, 2026, at which time the Bids received will be publicly opened and read. The Project consists primarily of:

1. A new Electrical Building with approximate dimensions of 20' x 20'.
2. HVAC for new Electrical Building.
3. Site work for installation of new building and electrical equipment.
4. New panelboard, transformer and associated circuiting.
5. New circuiting to support relocated motor control center.
6. Installation of Owner-supplied equipment including a 1,500kVA transformer, 1,600A automatic transfer switch, 1,600A main circuit breaker, and 1,600A motor control center.
7. New 35kV gang operated air break switch on existing structure.
8. Replacement of existing exhaust fans and starters in existing pump room.
9. Replacement of powered overhead door operator.

Separate Bids will be received for the following schedules of work:

A. 1A – General Construction
B. 1B – Mechanical Construction.
C. 1C – Electrical Construction

Bidders, at their option, may submit a separate and independent Bid for any or all of the separate schedules of work contemplated under this Advertisement for which they are properly licensed to perform. All segments will be awarded separately, per the divisions of Work as described herein. Bid alternates may be included, as deemed in the Owner's best interest.

The Issuing Office for the Bidding Documents is: Barton & Loguidice, D.P.C., 443 Electronics Parkway, Liverpool, New York. Prospective Bidders may examine the Bidding Documents at the Issuing Office on Mondays through Fridays between the hours of 8:00 A.M. and 4:00 P.M., and may obtain copies of the Bidding Documents from the Issuing Office as described below.

Bidding Documents may be viewed and ordered online by registering with the Issuing Office at https://bl.biddyhq.com/. Following registration, complete sets of Bidding Documents may be downloaded from the Issuing Office's website as "zipped" portable document format (PDF) files. The date that the Bidding Documents are downloaded will be considered the Bidder's date of receipt of the Bidding Documents. Partial sets of the Bidding Documents will not be available from the Issuing Office.

The following plan room services have received sets of Bidding Documents for the Work contemplated herein:

Builders Exchange of Rochester, 180 Linden Oaks, Ste. 100, Rochester, NY 14625
Eastern Contractors Association, 6 Airline Drive, Albany, NY 12205
Southern Tier Builders Association, 65 East Main Street, Falconer, NY 14733
Syracuse Builders Exchange, 6563 Ridings Road, Syracuse NY 13206

Each Bid must be submitted on the prescribed Bid Form and accompanied by Bid security, as prescribed in the Instructions to Bidders.

The Successful Bidder will be required to furnish the additional bond(s) prescribed in the Bidding Documents.

In order to perform public work, the Successful Bidder and Subcontractors prior to contract award shall hold or obtain such license as required by State statutes, and Federal and local Laws and Regulations.

Bids will not be accepted from Bidders that have been barred from competing on public works under General Municipal Law 5A-103-b.

Purchase made by the Southern Cayuga Lake Intermunicipal Water Commission are not subject to any Federal, State or local sales tax. Bidders shall not include in their bid sales and compensating use taxes on the cost of materials. Exemption certificates will be executed upon request.

For information concerning the proposed work, contact Jesse Cary, P.E., Barton & Loguidice, D.P.C., 443 Electronics Parkway, Liverpool, New York 13088, email: jcary@bartonandloguidice.com.

An optional pre-bid conference will be held at 2:00 P.M. local time on March 12, 2026 at the Bolton Point Conference Room, 1402 East Shore Drive, Ithaca, New York 14850.

The Owner’s right is reserved to reject all Bids or any Bid no conforming to the intent and purpose of the Bidding Documents.

Dated this 24th day of February 2026.

END OF SECTION

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INSTRUCTIONS TO BIDDERS

ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office* – The office from which the Bidding Documents are to be issued. The Issuing Office for this Project is: Barton & Loguidice, D.P.C., 443 Electronics Parkway, Liverpool, New York 13088.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.

2.02 Complete sets of Bidding Documents shall 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.

2.03 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 authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, Bidder shall submit with its Bid (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) the following additional information:

A. No Bidder shall be eligible to submit a Bid who has been barred from public works projects as defined in General Municipal Law 5A-103-b.

B. Evidence of Bidder's authority to do business in the state where the Project is located.

C. Subcontractor and Supplier qualification information; coordinate with provisions of Article 12 of these Instructions, "Subcontractors, Suppliers, and Others."

3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications and by its submission of a Bid represents and agrees that it has done so.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify:

a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.

b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

c. reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.

d. Technical Data contained in such reports and drawings.

2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or adjacent to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data 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 unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 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 Contract 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 the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

A. Bidder shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site.

B. Unless Bidder determines it is unable to prepare a complete and accurate Bid otherwise, Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a complete and accurate Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *Owner's Safety Program*

A. Site visits and work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.05 *Other Work at the Site*

A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

A. Examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;

B. Visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. Become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;

D. Carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;

E. Consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;

F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

H. 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;

I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and

J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – PRE-BID CONFERENCE

6.01 A pre-Bid conference will be held at the time and location stated in the advertisement to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference and will be charged with knowledge of the information provided at the conference should they choose not to attend. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than seven days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect. Addenda will be issued at least five (5) days prior to the date of Bid opening.

7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of five (5) percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and 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 released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 45 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The number of days within which, or the dates by which, Milestones are to be achieved and the Work is to be substantially completed, and completed and ready for final payment, are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.

11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."

13.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown.

13.03 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The partnership's address for receiving notices shall be shown.

13.04 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the firm's address for receiving notices shall be shown.

13.05 A Bid by an individual shall show the Bidder's name and address for receiving notices.

13.06 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture's address for receiving notices shall be shown.

13.07 All names shall be printed in ink below the signatures.

13.08 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.09 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

13.10 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID

14.01 *Lump Sum*

A. Bidders shall submit a Bid on a lump sum basis as set forth in the Bid Form.

14.02 *Unit Price*

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity" (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. 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.

14.03 *Allowances*

A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

ARTICLE 15 – SUBMITTAL OF BID

15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 7 of the Bid Form.

15.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED."

A. Sealed bids may be delivered in person or mailed to: Glenn Ratajczak, Southern Cayuga Lake Intermunicipal Water Commission, 1402 East Shore Drive, Ithaca, NY 14850.

15.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

16.02 If within 3 days after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

17.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.

19.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.

19.03 Evaluation of Bids

A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

B. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form. To determine the Bid prices for purposes of comparison, Owner shall announce to all bidders a “Base Bid plus alternates” budget after receiving all Bids, but prior to opening them. For comparison purposes alternates will be accepted, following the order of priority established in the Bid Form, until doing so would cause the budget to be exceeded. After determination of the Successful Bidder based on this comparative process and on the responsiveness, responsibility, and other factors set forth in these Instructions, the award may be made to said Successful Bidder on its base Bid and any combination of its additive alternate Bids for which Owner determines funds will be available at the time of award.

19.04 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 20 – BONDS AND INSURANCE

20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. Within ten days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 22 – WAGE RATES

22.01 The Work under these Bidding Documents is to be paid for by public funds; therefore, minimum prevailing wage rates published by the New York State Department of Labor shall be paid on this project. Reference Prevailing Wage Determination PRC 2018012626.

ARTICLE 23 – SALES AND USE TAXES

23.01 Owner is exempt from New York State sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes shall not be included in the Bid. Refer to Paragraph SC-7.09 of the Supplementary Conditions for additional information.

ARTICLE 24 – SEQUENCING OF WORK AND MAINTAINING PLANT OPERATIONS

24.01 The Work under this Contract will be performed within an active water treatment, storage, and pumping facility with several mechanical, electrical, and chemical systems in operation. The Work under this contract shall not compromised the treatment, storage, or pumping capacity of the facility beyond the constraints specified within these Contract Documents. All work shall be coordination with the Owner's operations, consistent with the Owner's obligations to supply potable water to the public.

ARTICLE 25 – SUBCONTRACTED WORK

25.01 The Owner reserves the right to limit the amount of subcontracted work for this project to no more than 50 percent of the total contract price.

ARTICLE 26 – WORK BY THE OWNER

26.01 The Owner will provide mechanical control programming and integration services. The Successful Bidder will coordinate instrumentation signal and control wiring with the Owner's programmer.

END OF SECTION

SECTION 00 41 16.01

BID FORM – GENERAL

BOLTON POINT RAW WATER PUMP STATION
ELECTRICAL UPGRADES
CONTRACT NO. 1A – GENERAL CONSTRUCTION

SUBMITTED BY:

_____

_____

_____

_____

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Bolton Point Water System
1402 East Shore Drive
Ithaca, New York 14850

1.02 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 prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 45 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	**Addendum Date**
_____	_____
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all 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 adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, 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 given Designer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Designer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding;

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;
2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels;
4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

CONTRACT No. 1A – GENERAL CONSTRUCTION – BASE BID ITEMS

Item	Description	Quantity	Unit	Unit Price	Extension
1A.1	Mobilization	1	LS		
1A.2	General Construction	1	LS		
				Bidder's Total Base Bid	

CONTRACT NO. 1A – GENERAL CONSTRUCTION – ELECTIVE BID ITEMS

Item	Description	Quantity	Unit	Unit Price	Extension
		1	LS		
		1	LS		

5.02 Items additive to the Base Bid shall be represented in figures thus: $1,234.00.

5.03 Items deductive to the Base Bid shall be represented in figures thus: ($1,234.00)

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work and Milestones specified in Section 01 31 13, Project Coordination, will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 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 damages in the event of failure to complete the Work, and any specified Milestones, within Contract Times.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid Security;

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

_____

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name and E-mail Address: _____

_____

Bidder's Federal
Employer Identification
Number (FEIN) _____
(For NYS Department of Labor reporting of Successful Bidder only)

SECTION 00 41 16.01

BID FORM - MECHANICAL

BOLTON POINT RAW WATER PUMP STATION
ELECTRICAL UPGRADES
CONTRACT NO. 1B – MECHANICAL CONSTRUCTION

SUBMITTED BY:

_____

_____

_____

_____

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Bolton Point Water System
1402 East Shore Drive
Ithaca, New York 14850

1.02 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 prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 45 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	**Addendum Date**
_____	_____
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all 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 adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, 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 given Designer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Designer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding;

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;
2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels;
4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

CONTRACT NO. 1B – MECHANICAL CONSTRUCTION – BASE BID ITEMS

Item	Description	Quantity	Unit	Unit Price	Extension
1B.1	Mobilization	1	LS		
1B.2	Mechanical Construction	1	LS		
				Bidder's Total Base Bid	

CONTRACT NO. 1B – MECHANICAL CONSTRUCTION – ELECTIVE BID ITEMS

Item	Description	Quantity	Unit	Unit Price	Extension
		1	LS		
		1	LS		

5.02 Items additive to the Base Bid shall be represented in figures thus: $1,234.00.

5.03 Items deductive to the Base Bid shall be represented in figures thus: ($1,234.00)

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work and Milestones specified in Section 01 31 13, Project Coordination, will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 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 damages in the event of failure to complete the Work, and any specified Milestones, within Contract Times.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid Security;

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

_____

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name and E-mail Address: _____

_____

Bidder's Federal Employer Identification Number (FEIN) _____
(For NYS Department of Labor reporting of Successful Bidder only)

SECTION 00 41 16.03

BID FORM - ELECTRICAL

BOLTON POINT RAW WATER PUMP STATION
ELECTRICAL UPGRADES
CONTRACT NO. 1C – ELECTRICAL CONSTRUCTION

SUBMITTED BY:

_____

_____

_____

_____

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Bolton Point Water System
1402 East Shore Drive
Ithaca, New York 14850

1.02 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 prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 45 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	**Addendum Date**
_____	_____
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all 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 adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, 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 given Designer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Designer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding;

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;
2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels;
4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

CONTRACT NO. 1C – ELECTRICAL CONSTRUCTION – BASE BID ITEMS

Item	Description	Quantity	Unit	Unit Price	Extension
1C.1	Mobilization	1	LS		
1C.2	Electrical Construction	1	LS		
1C.3	Transformer Fluid Testing	1	LS		
1C.4	446-Gallon Transformer Cleaning, Removal and Disposal (PCB <50 PPM)	1	LS		
1C.5	Installation of Owner Supplied Equipment	1	LS		
				Bidder's Total Base Bid	

CONTRACT NO. 1C – ELECTRICAL CONSTRUCTION – ADDITIVE BID ITEMS

Item	Description	Quantity	Unit	Unit Price	Extension
1C.A1	446-Gallon Transformer Cleaning, Removal and Disposal (PCB ≥50 PPM – ≤ 500 PPM)	1	LS		
1C.A2	446-Gallon Transformer Cleaning, Removal and Disposal (PCB >500 PPM)	1	LS		

5.02 Items additive to the Base Bid shall be represented in figures thus: $1,234.00.

5.03 Items deductive to the Base Bid shall be represented in figures thus: ($1,234.00)

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work and Milestones specified in Section 01 31 13, Project Coordination, will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 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 damages in the event of failure to complete the Work, and any specified Milestones, within Contract Times.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid Security;

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

_____

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name and E-mail Address: _____

_____

Bidder's Federal Employer Identification Number (FEIN) _____
(For NYS Department of Labor reporting of Successful Bidder only)

SECTION 00 43 13

BID BOND

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

BIDDER *(Name and Address)*:

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

OWNER *(Name and Address)*:

BID

Bid Due Date:

Description *(Project Name— Include Location)*:

BOND

Bond Number:

Date:

Penal sum _____ $ _____

(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER	**SURETY**
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
Title	Title

Note: Addresses are to be used for giving any required notice.

Provide execution by any additional parties, such as joint venturers, if necessary.

1. 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. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.

2. 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. This obligation shall be null and void if:

3.1 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

3.2 All Bids are rejected by Owner, or

3.3 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 hereof).

4. Payment under this Bond will be due and payable upon default of 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. Surety waives notice of 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 the Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.

7. 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. 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. 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. 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. The term “Bid” as used herein includes a Bid, offer, or proposal as applicable.

SECTION 00 43 93

BIDDER'S CHECKLIST

Section 00 41 16.01 through Section 00 41 16.03. All blanks appropriately filled in ink with both words and figures, and signed where applicable.	☐
Section 00 43 13, Bid Bond. Execute and attach Bid security.	☐

State and Federal requirements: Each of the following forms must be complete and executed:

Section 00 45 19, Non-Collusive Bidding Certification. REQUIRES BIDDER'S SIGNATURE.	☐
Section 00 45 34, Iranian Energy Sector Divestment Certification. REQUIRES BIDDER'S SIGNATURE.	☐
SECTION 00 45 35, Sexual Harassment Prevention Certification. REQUIRES BIDDER'S SIGNATURE.	☐
SECTION 00 45 45, PROHIBITION ON PURCHASE OF TROPICAL HARDWOODS CERTIFICATION. REQUIRES BIDDER'S SIGNATURE.	☐
SECTION 00 45 46, GENDER-BASED VIOLENCE CERTIFICATION. REQUIRES BIDDER'S SIGNATURE.	☐
EEO Policy Statement	☐

END OF SECTION

SECTION 00 45 19

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 to be made unless the head of the purchasing unit of the political subdivision, public department, agency or official thereof to which the bid is made, or his designee determines that such disclosure was not made for the purpose of restricting competition.

(c) The fact that a bidder (a) has published price lists, rates, or tariffs covering items being 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 paragraph (a) of this certification.

(d) Any bid hereafter made to any political subdivision of the State or any public department, agency or official thereof by a corporate bidder for work or services performed or to be performed or goods sold or to be sold, where competitive bidding is required by statute, rule, regulation, or local law, and where such bid contains the certification referred to in subdivision one of the section, shall be deemed to have been authorized by the board of directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of the certificate as to non-collusion as the act and deed of the corporation.

FIRM: _____

By: _____

Title: _____

(CORPORATE SEAL IF ANY)

END OF SECTION

SECTION 00 45 34

IRANIAN ENERGY SECTOR DIVESTMENT CERTIFICATION

1. Bidder hereby represents that said Bidder is in compliance with New York State General Municipal Law Section 103-g entitled “Iranian Energy Sector Divestment”, in that Bidder has not:

   a) Provided goods or services of $20 million or more in the energy sector of Iran including but not limited to the provision of oil or liquefied natural gas tankers or products used to construct or maintain pipelines used to transport oil or liquefied natural gas for the energy sector of Iran; or

   b) Acted as a financial institution and extended $20 million or more in credit to another person for forty-five (45) days or more, if that person’s intent was to use the credit to provide goods or services in the energy sector in Iran.

2. Any Bidder who has undertaken any of the above and is identified on a list created pursuant to Section 165-a (3) (b) of the New York State Finance Law as a person engaging in investment activities in Iran, shall not be deemed a responsible bidder pursuant to Section 103 of the New York State General Municipal Law.

3. Except as otherwise specifically provided herein, every Bidder submitting a Bid in response to this Advertisement for Bid must certify and affirm the following under penalties of perjury:

   a) “By submission of this bid, the Bidder and each person signing on behalf of the 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 its knowledge and belief, that Bidder is not on the list created pursuant to NYS Finance Law Section 165-a (3) (b).”

      The Owner will accept this statement electronically in accordance with the provisions of Section 103 of the General Municipal Law.

4. Except as otherwise specifically provided herein, any Bidder that is submitted without having complied with subdivision (a) above, shall not be considered for award. In any case where the Bidder cannot make the certification as set forth in subdivision (a) above, the Bidder shall so state and shall furnish with the bid a signed statement setting forth in detail the reasons therefore. The Owner reserves its rights, in accordance with General Municipal Law Section 103-g to award the Bid to any Bidder who cannot make the certification, on a case-by-case basis under the following circumstances:

a) The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012 and the Bidder has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or

b) The Owner has made a determination that the goods or services are necessary for the Owner to perform its functions and that, absent such an exemption, the Owner would be unable to obtain the goods or services for which the Bidder is offered. Such determination shall be made by the Owner in writing and shall be a public document.

_____	_____
Signature	Title
_____	_____
Company Name	Date

State of _____)
) SS:
County of _____)

On this _____ day of _____, 20____, before me personally came and appeared_____ to me known and known to me to be the person described in and who executed the foregoing instrument and acknowledged that he executed the same.

_____

END OF SECTION

SECTION 00 45 35

SEXUAL HARASSMENT PREVENTION CERTIFICATION

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 that person's knowledge and belief:

(1) In accordance with State Finance Law 139-L, bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace;

(2) Bidder provides annual sexual harassment prevention training to all of its employees;

(3) Bidders sexual harassment policy, at a minimum, meets the requirements of section 201-G of the State Labor Law.

I hereby affirm under penalties of perjury that the foregoing statement is true.

Bidder: _____

By: _____

_____
(Please type or print name)

Title: _____

Any bid made by a corporate bidder for work or services shall be deemed to have been authorized by the Board of Directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bids and the inclusion therein of this certificate.

END OF SECTION

SECTION 00 45 45

PROHIBITION ON PURCHASE OF TROPICAL HARDWOODS CERTIFICATION

A. Bidder hereby certifies and warrants that all wood products to be used under this Contract award will be in accordance with, but not limited to, the specifications and provisions of Section 165 of the State Finance Law, (Use of Tropical Hardwoods).
   1. Which prohibits purchase and use of tropical hardwoods, unless specifically exempted, by the State of any government agency or political subdivision or public benefit corporation.
   2. In addition, when any portion of this Contract involving the use of woods, whether supply or installation, is to be performed by any subcontractor, the prime Contractor certifies through the submitted bid proposal that any and all subcontractors have been informed and are in compliance with the specification's and provisions regarding use of tropical hardwoods as detailed in Section 165 of New York State Finance law.

B. Qualifications for an exemption under this law will be the responsibility of the Bidder to establish to meet with the approval of the State. Otherwise, the bid may not be considered responsive. Upon executing this certification the Bidder acknowledges that proof of qualifications for exemption are the Bidder's responsibility to meet with the approval of the state.

C. Except as otherwise specifically provided herein, every contractor/ proposer submitting a bid in response to this request for bids must certify and affirm the following under penalties of perjury:
   1. "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 its knowledge and belief, wood to be used under this contract award complies with New York State Finance Law Section 165".

FIRM:_____

By:_____

Title:_____

(CORPORATE SEAL IF ANY)

STATE OF)
) SS:
COUNTY OF)

On this_____ day of_____, 20____, before me personally came and appeared _____ to me known and known to me to be the person described in and who executed the foregoing instrument and acknowledged that he executed the same.

END OF SECTION

SECTION 00 45 46

GENDER-BASED VIOLENCE CERTIFICATION

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 the bidder has and has implemented a written policy addressing gender-based violence and the workplace and has provided such policy to all of its employees, directors and board members. Such policy shall, at a minimum, meet the requirements of subdivision 11 of section five hundred seventy-five of the executive law:

I hereby affirm under penalties of perjury that the foregoing statement is true.

Bidder: _____

By: _____

_____

(Please type or print name)

Title: _____

Any bid made by a corporate bidder for work or services performed or to be performed or goods sold or to be sold, where such bid contains the statement above, shall be deemed to have been authorized by the Board of Directors of such bidder, and such authorization shall be deemed to include the signing and submission of such bid and the inclusion therein of such statement as the act and deed of the corporation.

END OF SECTION

SECTION 00 51 00

NOTICE OF AWARD

Date of Issuance:

Owner: Owner's Contract No.:

Engineer: Engineer's Project No.:

Project: Contract Name:

Bidder:

Bidder's Address:

TO BIDDER:

You are notified that Owner has accepted your Bid dated [_____] for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

_____.

The Contract Price of the awarded Contract is: $_____

Six (6) unexecuted counterparts of the Agreement and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

☐ a set of the Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of this Notice of Award:

1. Deliver to Owner three (3) counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner**:**

Authorized Signature

By:

Title:

Copy: Resident Project Engineer

SECTION 00 52 13

AGREEMENT

THIS AGREEMENT is by and between _____ ("Owner") and _____ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: <**CONTRACT No. X PROJECT NAME**>

ARTICLE 3 – ENGINEER

3.01 The part of the Project that pertains to the Work has been designed by Barton & Loguidice, D.P.C. ("Engineer").

3.02 The Owner has retained Barton & Loguidice, D.P.C. to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

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

4.02 *Contract Times: Days*

A. The Work will be substantially completed within _____ days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within _____ days after the date when the Contract Times commence to run.

B. Parts of the Work shall be substantially completed on or before the following Milestone(s):

1. Milestone 1 [event & date/days]
2. Milestone 2 [event & date/days]
3. Milestone 3 [event & date/days]

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal proceeding the actual loss suffered by Owner if the Work is not 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):

1. Substantial Completion: Contractor shall pay Owner ONE THOUSAND FIVE HUNDRED ($1,500.00) for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.

2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner FIVE HUNDRED ($500) for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

4. Milestones: Contractor shall pay Owner $_____ for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone 1, until Milestone 1 is achieved.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. All specific cash allowances are included in the above price in accordance with Paragraph 13.02 of the General Conditions.

B. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item):

The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities included in the Bid Form. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Designer.

C. Total of Lump Sum Amount and Unit Price Work (subject to final Unit Price adjustment)

_____ _____ _____ _

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 30th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract:

a. Ninety-five (95) percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to one hundred (100) percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less two times the Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall bear interest at the rate of 1.5 percent per annum, unless otherwise prescribed by Law.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all 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 adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no 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.

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 given Designer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Designer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement (pages 1 to 8, inclusive).
2. Performance bond (pages 1 to 4, inclusive).
3. Payment bond (pages 1 to 4, inclusive).
4. Other bonds.

a. ___ (pages ___ to ___, inclusive).

5. General Conditions (pages 1 to 64, inclusive).
6. Supplementary Conditions (pages 1 to 14, inclusive).
7. Division 01 through Division 49 Specifications, as listed in the Table of Contents of the Project Manual.
8. Drawings (not attached but incorporated by reference) consisting of 34 sheets with each sheet bearing the following general title "ELECTRICAL UPGRADES".
9. Addenda (numbers ___ to ___, inclusive).
10. Exhibits to this Agreement (enumerated as follows):
    a. Contractor's Bid (For Contract Nos. 1A, 1B, and 1C, inclusive).
11. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.
    c. Change Orders.
    d. Field Orders.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, 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, money that may become due and money that is 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 successors, assigns, and legal representatives to the other party hereto, its 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 Documents 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 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 *Other Provisions*

A. <**Pre-selection**> <**Owner-furnished equipment**>

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

OWNER:	CONTRACTOR:
_____	_____
By: _____	By: _____
Title: _____	Title: _____ *(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)*
Attest: _____	Attest: _____
Title: _____	Title: _____
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
	License No.: _____ *(where applicable)*

(If Owner is a corporation, 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 this Agreement.)

Certification of the Owner's Attorney

I, the undersigned, the duly authorized and acting legal representative of _____ do hereby certify as follows:

I have examined the foregoing Contract and surety bonds and the matter of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with the terms, conditions, and provisions thereof.

By:_____

Owner's Attorney

_____

Date

END OF SECTION

SECTION 00 55 00

NOTICE TO PROCEED

Owner:	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer:	Engineer's Project No.:
Project:	Contract Name:
	Effective Date of Contract:

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [_____, 20__].

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, the date of Substantial Completion is _____, and the date of readiness for final payment is_____].

Before starting any Work at the Site, Contractor must comply with the following:

[Note any access limitations, security procedures, or other restrictions]

Owner**:**

Authorized Signature

By:

Title:

Date Issued:

Copy: Resident Project Engineer

SECTION 00 61 13

SUBCONTRACTOR'S VERIFIED STATEMENT
(SECTION 220-a OF NEW YORK LABOR LAW)

STATE OF NEW YORK)
COUNTY OF _____)ss.:

_____, being duly sworn, deposes and states:

1. That I am an officer of _____ (hereinafter referred to as "the Subcontractor"), a subcontractor on public contract number _____ (hereinafter "the Contract") and I am duly authorized to make this Verified Statement on behalf of the firm.
2. That I make this Verified Statement in order to comply with the provisions of Section 220-a of New York Labor Law.
3. That on _____, the Subcontractor received from _____, the public improvement contractor/subcontractor that engaged this firm as a subcontractor on the Contract, a copy of the initial/revised schedule of wages and supplements Prevailing Rate Case Number ___ (PRC) specified in the Contract.
4. That the Subcontractor has reviewed such schedule(s) of wages and supplements, and agrees to pay the applicable prevailing wages and to pay or provide the supplements specified therein.
5. I have read this Subcontractor's Verified Statement and know the contents thereof; and the same is true to my own knowledge. This Verified Statement is made by me, a person acquainted with the facts of this matter, and is made under penalty of perjury.

_____
SIGNATURE

_____
PRINT NAME

_____
NAME OF SUBCONTRACTOR

_____
TITLE WITH SUBCONTRACTOR

On this ___ day of _____, 20___, before me personally appeared _____, to me known, and known to me to be one of the firm of _____ described in and who executed the foregoing Verified Statement, and he/she thereupon acknowledged to me that he/she executed the same as and for the act and deed of said firm.

_____
Notary Public

If this verified statement is verified by an oath administered by a notary public in a foreign country other than Canada, it must be accompanied by a certificate authenticating the authority of the notary who administers the oath. (See New York CPLR Section 2309(c); New York Real Property Law Sections 311 and 312).

CONTRACTOR'S VERIFIED STATEMENT
(SECTION 220-a OF NEW YORK LABOR LAW)

STATE OF NEW YORK)
COUNTY OF _____)ss.:

_____, being duly sworn, deposes and states:

1. That I am an officer of _____ (hereinafter referred to as "the Contractor") and am duly authorized to make this Verified Statement on behalf of the Contractor on public contract number _____ (hereinafter "the Contract").

2. That the Contractor fully comprehends the terms and provisions of Section 220-a of the Labor Law.

3. That the Contractor hereby files every verified statement required to be obtained by the Contractor from the subcontractors.

4. That, except as herein stated, there are no amounts due and owing from the Contractor to or on behalf of any and all laborers for daily or weekly wages or supplements on account of labor performed upon the work under the Contract. (Set forth below the names of the persons whose wages or supplements are unpaid and the amount due to each or on behalf of each, respectively. If there are none, please write "N/A".)

NAME AMOUNT

_____
_____
_____
_____

5. That, upon information and belief, except as stated herein, there are no amounts due and owing from the Contractor's subcontractors or the subcontractors of the Contractor's subcontractors to or on behalf of any and all laborers for daily or weekly wages or supplements on account of labor performed upon the work under the Contract. (Set forth below the known names of the persons whose wages or supplements are unpaid and the known amount due to each or on behalf of each, respectively. If there are none known to the Contractor, please write "N/A" and utilize clause 5A below.)

NAME AMOUNT

_____
_____
_____
_____

5A. That the Contractor has no knowledge of amounts due and owing from the Contractor's subcontractors or the subcontractors of the Contractor's subcontractors to or on behalf of any and all laborers for daily or weekly wages or supplements on account of labor performed upon the work under the Contract.

6. In the event it is determined by the Commissioner of Labor that the wages or supplements or both of any employees of the Contractor's subcontractors and subcontractors of the Contractor's subcontractors have not been paid or provided pursuant to the appropriate schedule of wages and supplements, the Contractor shall be responsible for payment of such wages or supplements pursuant to the provisions of Section 223 of New York Labor Law.

7. I have read this Contractor's Verified Statement and know the contents thereof; and the same is true to my own knowledge, except with respect to wages and supplements owing by subcontractors, which is stated upon information and belief, and, with respect to wages and supplements owing by subcontractors, I believe it to be true. This Verified Statement is made by me, a person acquainted with the facts of this matter, and is made under penalty of perjury.

_____
SIGNATURE

_____
PRINT NAME

_____
NAME OF CONTRACTOR

_____
TITLE WITH CONTRACTOR

On this ___ day of _____, 20___, before me personally appeared _____, to me known, and known to me to be one of the firm of _____ described in and who executed the Verified Statement, and he/she thereupon acknowledged to me that he/she executed the same as and for the act and deed of said firm.

_____
Notary Public

If this affidavit is verified by an oath administered by a notary public in a foreign country other than Canada, it must be accompanied by a certificate authenticating the authority of the notary who administers the oath. (See New York CPLR Section 2309(c); New York Real Property Law Sections 311 and 312).

(NEW YORK STATE)

SECTION 00 61 13.13

CONTRACTOR'S PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that we_____

_____

principal _____ and _____

_____

_____

surety _____, are held and firmly bound unto the <**Owner**> in the sum of _____ Dollars ($_____) lawful money of the United States, to be paid to the <**Owner**>, its successors or assigns, for which payment well and truly to be made we bind ourselves and all and each of our successors, heirs, executors, and administrators, jointly and severally, firmly by these presents.

Sealed with our seals Dated this_____day of_____, 20__.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the above bounden, the Contractor _____ with the <**Owner**> in the foregoing contract named, shall and will faithfully perform the work and furnish the materials and supplies in and by said contract agreed by _____ to be performed and furnished, and shall faithfully perform and comply with all the conditions and obligations of said contract on _____ part in every particular, and shall promptly make payment of the sums due to all persons supplying labor and material in the prosecution of the work provided for in said contract, then and in that event, this obligation to be void, otherwise to remain in full force and virtue.

(Affix seal if principal is a corporation; if principal is a co-partnership, each partner should sign individually under the firm name)

Principal_____L.S.

_____L.S

_____L.S

Surety _____L.S.

(Affix seal if surely is a corporation)

_____L.S.

_____L.S.

(If signed by a Surety Company, affix authority of its officers to sign and its latest sworn financial statement unless these are on file in the Village Clerk's office, when this fact should be so stated.)

(If signed by individual sureties, the justification as well as the acknowledgement on the reverse side should be completed in two places.)

(All signatures should be acknowledged below. The surety, if a corporation, may affix its forms of acknowledgement as particularly applicable to its method of execution.)

CONTRACTOR, IF AN INDIVIDUAL, ACKNOWLEDGE HERE

STATE OF NEW YORK
COUNTY OF <**COUNTY**>, ss.
<**MUNICIPALITY OF OWNER**>

On this _____ day of_____ 20__, before me personally

appeared _____ to me known and known to me to

be the individual described in and who executed the within

instrument, and he duly acknowledged that he executed the same.

_____

Notary Public,_____County

Commission of Deeds_____

CONTRACTOR, IF A CO-PARTNERSHIP, ACKNOWLEDGE HERE

STATE OF NEW YORK
COUNTY OF <**COUNTY**>
<**MUNICIPALITY OF OWNER**>

On this _____ day of _____ 20___, before me personally

appeared _____, to me known, and known to me to be one

of the firm of _____

described in and who executed the foregoing instrument, and he

_____ thereupon _____ acknowledged to

me that he executed the same as and for the act and deed of said firm.

_____

Notary Public,_____County

Commissioner of Deeds_____

CONTRACTOR, IF A CORPORATION, ACKNOWLEDGE HERE

STATE OF NEW YORK
COUNTY OF <**COUNTY**>
<**MUNICIPALITY OF OWNER**>

On this_____ day of_____, 20___, before me the subscriber personally came_____, to me known, who being by me duly sworn did depose and say that he resides in the City of_____; that he is the _____ of the above instrument; that he knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed pursuant to a resolution of the Board of Directors of said corporation and that he signed his name thereto by like order.

_____

Notary Public,_____County

Commissioner of Deeds_____

SURETY COMPANY ACKNOWLEDGEMENT MAY BE AFFIXED HERE

I hereby approve foregoing surety_____ _____

Dated, <**Municipality of Owner**>, New York _____ 20_____

_____Mayor

END OF SECTION

SECTION 00 63 36

FIELD ORDER

Field Order 001

Date of Issuance:	Effective Date:
Owner:	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer:	Engineer's Project No.:
Project:	Contract Name:

Contractor is hereby directed to promptly execute this Field Order, issued in accordance with General Conditions Paragraph 11.01, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference: _____ (Specification(s)) _____ (Drawing(s) / Detail(s))

Description:

Attachments:

ISSUED:	RECEIVED:
By: _____	By: _____
Engineer (Authorized Signature)	Contractor (Authorized Signature)
Title: _____	Title: _____
Date: _____	Date: _____

Copy to: Owner

SECTION 00 63 63

CHANGE ORDER

Change Order No. _____

Date of Issuance:	Effective Date:
Owner:	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer:	Engineer's Project No.:
Project:	Contract Name:

The Contract is modified as follows upon execution of this Change Order:

Description:

Attachments:

CHANGE IN CONTRACT PRICE	**CHANGE IN CONTRACT TIMES** *[note changes in Milestones if applicable]*
Original Contract Price: $_____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: $_____	[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: Substantial Completion: _____ Ready for Final Payment: _____ days
Contract Price prior to this Change Order: $_____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] of this Change Order: $_____	[Increase] [Decrease] of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
Contract Price incorporating this Change Order: $_____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ days or dates

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____	By: _____	By: _____
Engineer (if required)	Owner (Authorized	Contractor (Authorized
Title: _____	Titl _____	Titl _____
Date: _____	Dat _____	Dat _____

SECTION 00 65 16

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer: Barton & Loguidice, D.P.C.	Engineer's Project No.: 677.008.001
Project:	Contract Name:

This final Certificate of Substantial Completion applies to:

☒ All Work ☐ The following specified portions of the Work:

_____
Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows:

Amendments to Owner's responsibilities:
☒ None
☐ As follows

Amendments to Contractor's responsibilities:
☒ None
☐ As follows:

The following documents are attached to and made a part of this Certificate: Punch List

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

SECTION 00 72 16

GENERAL CONDITIONS

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

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

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

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. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document 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, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change

Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .

15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Engineer*—The individual or entity named as such in the Agreement.

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

22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

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

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.

26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

27. *Notice to Proceed*—A written notice 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.

28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.

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

34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.

35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. *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, and such other lands furnished by Owner which are designated for the use of Contractor.

38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

39. *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.

40. *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.

41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

43. *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 a Subcontractor.

44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

45. *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 but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

46. *Unit Price Work*—Work to be paid for on the basis of unit prices.

47. *Work*—The entire 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; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*:

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, 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 Work for compliance with the information in the Contract Documents and with the design concept of the 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 is not intended to and 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 Article 10 or any other provision of the Contract Documents.

C. *Day*:

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

D. *Defective*:

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. 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 15.03 or 15.04).

E. *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. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. Unless stated otherwise in the Contract Documents, words or phrases that 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 and Evidence of Insurance*

A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

C. *Evidence of Owner’s Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for 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;

2. a preliminary Schedule of Submittals; 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.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, 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 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

A. At least 10 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 2.03.A. Contractor shall have an additional 10 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 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 Submittals will be acceptable to Engineer if it provides a workable arrangement which provides Engineer the time necessary, in its professional judgment, for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if, in Engineer's professional judgment, it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required 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.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, 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, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract 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, reference standard, 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 part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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 part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*:

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless:

a. Contractor had actual knowledge thereof, or

b. Contractor failed to fully or adequately perform the verifications and review required by Paragraphs 3.03.A.1. and 3.03.A.2. and should have had actual knowledge thereof had it done so

B. *Resolving Discrepancies*:

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

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

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.

B. Engineer will, with reasonable promptness allowing sufficient time in Engineer's professional judgment to review the matter, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. 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 its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *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 Contract 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 Contract. 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 Contract, whichever date is earlier.

4.02 *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 such date.

4.03 *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.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 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 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.

B. 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, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. abnormal weather conditions;

3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and

4. acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with

reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *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.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

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

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*:

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers,

directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all 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 directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent 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 the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas 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 of 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 structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

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

1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Subject to the limitations stated therein, Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site 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 5.03 is materially inaccurate; or

2. is of such a nature as to require a change in the Drawings or Specifications; 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 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will within a reasonable time which, in it its professional judgment, allows sufficient opportunity to consider the matter, review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, 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 fall within any one or more of the categories described in Paragraph 5.04.A;

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 Paragraph 13.03; and,

c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or

b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

c. Contractor failed to give the written notice as required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent 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 do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; 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 information and data regarding existing Underground Facilities at the Site;

b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;

c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then 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 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

C. *Engineer's Review*: Engineer will within a reasonable time which, in it its professional judgment, allows sufficient opportunity to consider the matter, review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;

    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 Paragraph 13.03;

    c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and

    d. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

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

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

2. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors 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 removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) 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. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. 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, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.

H. 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, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, 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, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, 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 failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.

B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.

E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the

policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, 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.

G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.

H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.

J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).

B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.

2. claims for damages insured by reasonably available personal injury liability coverage.

3. 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.

C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:

a. Such insurance shall be maintained for three years after final payment.

b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.

3. Broad form property damage coverage.

4. Severability of interest.

5. Underground, explosion, and collapse coverage.

6. Personal injury coverage.

7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.

8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against 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. The automobile liability policy shall be written on an occurrence basis.

E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.

F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result

of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, 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 (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:

1. include at least the specific coverages provided in this Article.

2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.

3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.

4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.

5. be appropriate for the Work being performed and provide protection from claims that 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.

J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, 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.

B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."

2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).

6. extend to cover damage or loss to insured property while in transit.

7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

8. allow for the waiver of the insurer's subrogation rights, as set forth below.

9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.

10. not include a co-insurance clause.

11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.

12. include performance/hot testing and start-up.

13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.

B. *Notice of Cancellation or Change*: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.

Partial Occupancy or Use by Owner: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

D. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.

E. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights

against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, 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 builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause.

A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *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.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction 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, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, 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, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required 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.

C. 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.

7.04 *"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 Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item 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 is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion and exercise of professional judgment determines that 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, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, 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:

        1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

        2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

        3) it has a proven record of performance and availability of responsive service; and

        4) it is not objectionable to Owner.

    b. Contractor certifies that, if approved and incorporated into the Work:

        1) there will be no increase in cost to the Owner or increase in Contract Times; and

        2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability and will not be liable for its decisions in that regard made in good faith. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall 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:

a. shall certify that the proposed substitute item will:

1) perform adequately the functions and achieve the results called for by the general design,

2) be similar in substance to that specified, and

3) be suited to the same use as that specified.

b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,

2) whether 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 other work on the Project) to adapt the design to the proposed substitute item, and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from that specified, and

2) available engineering, sales, maintenance, repair, and replacement services.

d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability and will not be liable for its decisions in that regard made in good faith. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.

B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance

by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. 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 the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. 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.

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

L. 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.

M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

O. Nothing in the Contract Documents:

1. 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

2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *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.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors 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 specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, 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 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.

7.08 *Permits*

A. Unless otherwise provided in the Contract Documents, 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 the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *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.

7.10 *Laws and Regulations*

A. Contractor shall give all notices required by and shall 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 or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, 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 such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. 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, other work in progress, 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 Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the

Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.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 at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer 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).

F. Contractor's duties and responsibilities for safety and protection 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 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *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.

7.14 *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.

7.15 *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.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements*:

1. Before submitting a Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

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

c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings*:

a. Contractor shall submit the number of copies required in the Specifications.

b. 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 7.16.D.

2. *Samples*:

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, 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.

C. *Other Submittals*: Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.

D. *Engineer's Review*:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of 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 or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.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. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.

5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *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.

2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

B. 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.

C. 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 review and approval of a Shop Drawing or Sample submittal;

6. 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.

D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, 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 is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent 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.

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors 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 7.18.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 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors to the extent arising out of:

1. the negligent preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

7.19 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.

B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Licensed professional shall be properly insured, shall name the Owner and Engineer as additional insureds. The Contractor shall supply a copy of the certificate of insurance prior to commencing services. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. 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 such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, 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.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. an itemization of the specific matters to be covered by such authority and responsibility; and

3. the extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner for whom the

Owner is responsible causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all 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 damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

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

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *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.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *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.

10.02 *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 its professional judgment in order to endeavor 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 endeavor to 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 reasonable 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 reasonably 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 10.08. 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.

10.03 *Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. 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.

10.04 *Rejecting Defective Work*

A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.

C. Engineer's authority as to Change Orders is set forth in Article 11.

D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

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

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, 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.

A. 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.

B. 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.

C. 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 15.06.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.

D. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. *Change Orders*:

a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. *Work Change Directives*: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the Owner and Contractor expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes 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. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this

paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *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, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

B. 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, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

C. *Contractor's Fee*: When applicable, 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 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 13.01.B.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 Paragraphs 11.04.C.2.a and 11.04.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

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 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures*: Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 14 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. *Engineer's Action*: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. *Binding Decision*: Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

B. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. 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;

2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety 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), 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.

ARTICLE 12 – CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving

rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*:

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

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 on the Work. 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, and 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 13.01.

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, as 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 6.05), 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 communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *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, safety 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 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here 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 Paragraph 13.01.B.

D. *Contractor's Fee*: When the Work as a whole 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, Change Proposal, Claim, set-off, or other 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 11.04.C.

E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, 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.

13.02 *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 and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash 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, overhead, profit, and other expenses contemplated for the cash 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.

C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. 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.

13.03 *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.

B. 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. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. 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.

D. 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 the following paragraph.

E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

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, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. 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, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine, in its professional judgment, whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, fees of the Engineer resulting from the defective work and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation

of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then 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, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages 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 pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered 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 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, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *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, then 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.

14.07 *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, 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, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed as expeditiously as is reasonable under the circumstances. In connection with such corrective or 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, 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 incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. 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 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 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 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 during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*:

1. At least 20 days before the date established in the Agreement 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, a warehouse bond, or 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.

C. *Review of Applications*:

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, 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 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, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and 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:

    a. 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; or

    b. 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:

    a. to supervise, direct, or control the Work, or

    b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

    c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

    d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or

    e. 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 stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

    a. the Work is defective, requiring correction or replacement;

    b. the Contract Price has been reduced by Change Orders;

    c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

    d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

    e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*:

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*:

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

    a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

    b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

    c. Contractor has failed to provide and maintain required bonds or insurance;

    d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

    e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

    f. the Work is defective, requiring correction or replacement;

    g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

    h. the Contract Price has been reduced by Change Orders;

    i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

    j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. 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;

l. there are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, 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, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *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 and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, 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.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy 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, subject to the following conditions:

1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.

2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. 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 15.03 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.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *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, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *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, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

   d. a list of all disputes that Contractor believes are unsettled; and

   e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, 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, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's 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 in its professional judgment that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. 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 15.07. 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. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due*: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed 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 Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;

2. correct such defective Work;

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written 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. 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 repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

C. 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.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, 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.

E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *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 written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Times, directly attributable to any such suspension. Any Change Proposal seeking such adjustment shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's 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);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, 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 complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate has substantially corrected its failure to perform and proceeds diligently to completely cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds 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.

F. 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, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *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, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. 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. 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; and

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer ,without good cause, fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 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 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer, without good cause, has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 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 are not intended to preclude Contractor from submitting a Change Proposal 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 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *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:

1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

A. When any period of time is referred to in the Contract 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.

18.03 *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. 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.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

END OF SECTION

SECTION 00 73 16

SUPPLEMENTARY CONDITIONS

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC-1.01 Defined Terms

SC-1.01. Add to the list of definitions in Paragraph 1.01.A by inserting the following as numbered items in their proper alphabetical positions:

Geotechnical Data Report (GDR) — The factual report that collects and presents data regarding actual subsurface conditions at or adjacent to the Site, including Technical Data and other geotechnical data, prepared by or for Owner in support of the Geotechnical Baseline Report. The GDR's content may include logs of borings, trenches, and other site investigations, recorded measurements of subsurface water levels, the results of field and laboratory testing, and descriptions of the investigative and testing programs. The GDR does not include an interpretation of the data. If opinions, or interpretive or speculative non-factual comments or statements appear in a document that is labeled a GDR, such opinions, comments, or statements are not operative parts of the GDR and do not have contractual standing. Subject to that exception, the GDR is a Contract Document.

Southern Cayuga Lake Intermunicipal Water Commission – the project Owner. Also referred interchangeably within these Contract Documents as "Bolton Point Water System". Both terms shall equally refer to the project Owner.

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.01 Delivery of Bonds and Evidence of Insurance

SC-2.01 Delete Paragraphs 2.01 B. and C. in their entirety and insert the following in their place:

B. Evidence of Contractor's Insurance: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner copies of the policies of insurance (including all endorsements, and identification of applicable self-insured retentions and deductibles) required to be provided by Contractor in Article 6. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

C. Evidence of Owner's Insurance: After receipt from Contractor of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor copies of the policies of insurance to be provided by Owner under Article 6 (if any). Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

SC-2.02 Copies of Documents

SC-2.02 Delete Paragraph 2.02.A in its entirety and insert the following new paragraph in its place:

A. Owner shall furnish to Contractor one (1) copy of conformed Contract Documents incorporating and integrating all Addenda and any amendments negotiated prior to the Effective Date of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies of the conformed Contract Documents will be furnished upon request at the cost of reproduction.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.03 Subsurface and Physical Conditions

SC-5.03 Add the following new paragraph immediately after 5.03.B:

C. The following reports of explorations and tests of subsurface conditions at or adjacent to the site are known to the owner:

1. Report dated July 21, 2022 prepared by CME Associates, Inc., Syracuse, NY, entitled: "Subsurface Exploration and Foundation Recommendations Report – Raw Water Pumping Station Addition", consisting of 30 pages. The Technical Data contained in such report upon whose accuracy Contractor may rely are those indicated in the definition of Technical Data in the General Conditions. This report is attached at the end of the Supplementary Conditions.

ARTICLE 6 – BONDS AND INSURANCE

SC-6.02 Insurance—General Provisions

SC-6.02 Add the following paragraph 6.02.K. immediately after Paragraph 6.02.J:

K. Endorsements shall be provided to Bolton Point Water System prior to work commencing on the Contract, evidencing that each policy contains the following three provisions:

1. Additional Insured (not required for Professional Errors and Omissions Liability or Workers' Compensation).

2. Primary Coverage: The policy shall provide primary coverage to the additional insureds. It is not secondary or in any way subordinate to any other insurance or coverage maintained by the additional insureds.

3. Waiver of Subrogation: Policy will include a Waiver of Subrogation that will waive any right of recovery against the additional insureds because of payment made for injury or damages arising out of ongoing operations or completed work done under contract with the additional insureds.

L. Subcontractors hired shall carry insurance with the same limits and provisions provided herein.

SC-6.03 Contractor's Insurance

SC 6.03 Add the following new paragraph immediately after Paragraph 6.03.J:

K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. The following information outlines Bolton Point Water System's insurance requirements. Work will not commence and payment will not be made until a Certificate of Insurance, consistent with the requirements specified herein is on file.

2. Contractor's insurance carrier must be admitted in New York State and must be rated at least A- or 10 by A.M. Best. Coverage to be as follows:

a. Commercial General Liability (CGL) with limits of Insurance of not less than $1,000,000 each occurrence and $2,000,000 Annual Aggregate.

1) If the CGL coverage contains a General Aggregate Limit, such General Aggregate shall apply separately to each project.

2) CGL coverage shall be written on ISO Occurrence form CG 00 01 1093 or a substitute form providing equivalent coverage and shall cover liability arising from premises, operations, independent contractors, products-completed operations, and personal and advertising injury.

3) Contractor, Owner and all other parties required of the Contractor, shall be included as additional insureds on the CGL, using ISO Additional Insured Endorsement CG2010 (11/85) or CG2010 (04/13) **AND** CG2037 (04/13) or CG2037 (04/13) **AND** CG2038 (04/13) or an endorsement providing equivalent coverage to the additional insureds. This insurance for the additional insureds shall be as broad as the coverage provided for the named insured Contractor/Subcontractor. It shall apply as Primary and non-contributing Insurance before any other insurance or self-insurance, including any deductible, maintained by, or provided to, the additional insured.

4) Contractor and subcontractors shall maintain CGL coverage for itself and all additional insureds for the duration of the project and maintain Completed Operations coverage for itself and each additional insured for at least 3 years after completion of the Work.

b. Automobile Liability:

1) Business Auto Liability with limits of at least $1,000,000 each accident.

2) Business Auto coverage must include coverage for liability arising out of all owned, leased, hired, and non-owned automobiles.

3) Contractor, Owner, and all other parties required of the Contractor, shall be included as insureds on the auto policy.

c. Commercial Umbrella:

1) Umbrella limits must be at least $5,000,000.

2) Umbrella coverage must include as insureds all entities that are additional insureds on the CGL.

3) Umbrella coverage for such additional insureds shall apply as primary before any other insurance or self-insurance, including any deductible, maintained by, or provided to, the additional insured other than the CGL, Auto Liability and Employers Liability coverages maintained by the Contractor.

d. Workers' Compensation and Employer's Liability:

1) Statutory coverage complying with New York Workers' Compensation Law Section 57, General Municipal Law Section 125, Contractor shall submit one of the following:

i) CE-200, Certificate of Attestation of Exemption from NYS Workers' Compensation available at www.web.state.ny.us , OR

ii) C-105.2, Certificate of NYS Workers' Compensation Insurance, OR

iii) U-26.3, State Insurance Fund version, OR

iv) SI-12, Certificate of NYS Workers' Compensation Self Insurance, OR

v) GSI-105.2, Certificate of NYS Workers' Compensation Group Self-Insurance.

e. Disability Benefits Coverage: Statutory coverage complying with NYS Workers' Compensation Law Section 220 (8) under General Municipal Law Section 125, Contractor shall submit one of the following:

1) CE-200, Certificate of Attestation of Exemption from NYS Disability Benefits Coverage available at www.web.state.ny.us , OR

2) DB120.1, Certificate of Disability Benefits Insurance, OR

3) DB155, Certificate of Disability Self-Insurance.

f. Waiver of Subrogation:

1) Contractor waives all rights against Contractor, Owner, Engineer, and their agents, officers, directors, and employees for recovery of damages to the extent these damages are covered by commercial general liability, commercial umbrella, business auto liability or Workers' Compensation and employers liability insurance maintained per the requirements stated herein.

2) Attached to each certificate of insurance shall be a copy of the Additional Insured Endorsement that is part of the Contractor's Commercial General Liability policy.

3) These certificates and the insurance policies shall contain a provision that coverage afforded under the policies will not be

cancelled or allowed to expire until at least 30 days prior written notice has been given to the Contractor.

g. Railroad Protective Insurance:

~~1) On behalf of the Owner, the Contractor shall pay a risk financing fee of $1,000 for the railway crossing in order to add the project to Norfolk Southern's Master Railroad Protective Policy. This will satisfy the railroad protective liability insurance requirement in its entirety for the project.~~

~~2) Provide a Certificate of Liability Insurance that evidences a combined single limit maximum of $1,000,000 per occurrence of general liability, which may be achieved via an excess or umbrella policy.~~

~~3) The certificate shall name Norfolk Southern Railway Company, Three Commercial Place, Norfolk, VA 23510-2191, as the certificate holder~~

h. Owner's and Contractor's Protective Liability with limits of Insurance of not less than $1,000,000 each occurrence and $2,000,000 Annual Aggregate.

i. Pollution Liability with limits of Insurance of not less than $1,000,000 each occurrence and $2,000,000 Annual Aggregate.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

SC-7.02 Labor; Working Hours

SC-7.02.B. Add the following new subparagraphs immediately after Paragraph 7.02.B:

1. Regular working hours will be 7:00 AM to 4:00 PM, Monday through Friday, excluding legal holidays.
2. As observed by New York State public employees, Owner's legal holidays are:
   a. New Year's Day.
   b. Dr. Martin Luther King, Jr Day.
   c. Lincoln's Birthday.
   d. Washington's Birthday.
   e. Memorial Day.
   f. Independence Day.
   g. Labor Day.
   h. Columbus Day.
   i. Election Day.
   j. Veteran's Day.
   k. Thanksgiving Day.
   l. Christmas Day.

SC-7.02.C. Add the following new paragraph immediately after Paragraph 7.02.B:

C. Hours of Work: Contractor's and subcontractors' labor forces may not work more than 8 hours per day or more than 5 days in any one calendar week, unless an exemption has been granted by the New York State Department of Labor in accordance with Section 220 of the New York State Labor Law, as amended.

SC-7.09 Taxes

SC 7.09 Add a new paragraph immediately after Paragraph 7.09.A:

B. Owner is exempt from payment of sales and compensating use taxes of the State of New York and of cities and counties thereof 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-7.12 Safety and Protection

SC-7.12 Add a new paragraph immediately after Paragraph 7.12.G:

H. The Contractor shall be responsible for providing a "Safe Place to Work". This obligation shall include adherence to all OSHA, PESH, applicable Federal, State and local regulations that may relate to the safety of the Contractor's employees, subcontractors, agents, assigns, and/or the public. The Health and Safety Program shall be prepared in accordance with 29 CFR 1910, "General Industry Safety and Health Standards", and 29 CFR 1926, "Construction Industry Safety and Health Standards". A confined space entry program shall be specifically included, as required.

SC-7.18 Indemnification

SC-7.18 Delete Paragraph 7.18.A. and replace with the following:

A. To the fullest extent permitted by law, the Contractor shall defend, indemnify, and hold harmless the Southern Cayuga Lake Intermunicipal Water Commission, and its agents and employees, from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of or resulting from the performance of the Work, but only to the extent caused by the intentional acts or negligent acts or errors or omissions. Of the Contractor, the Contractor's subcontracts, agents, assigns, or anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by the Southern Cayuga Lake Intermunicipal Water Commission. Such obligation shall not be constructed to negate, abridge, waive eliminate, or reduce any other right or obligations of indemnity, including specifically but not limited to common law indemnity or contribution which would otherwise exist as to a party or person described in this paragraph.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 Project Representative

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.A:

B. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.

1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.

2. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.

3. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.

4. Liaison:

   a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.

   b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

   c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.

5. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

6. Shop Drawings and Samples:

   a. Record date of receipt of Samples and Contractor-approved Shop Drawings.

   b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.

   c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.

7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.

8. Review of Work and Rejection of Defective Work:

    a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.

    b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

9. Inspections, Tests, and System Start-ups:

    a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.

    b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.

10. Records:

    a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.

    b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.

    c. Maintain records for use in preparing Project documentation.

11. Reports:

    a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.

    b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.

    c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.

12. Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

13. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

14. Completion:

    a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.

    b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.

    c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.

C. The RPR shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.

5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.

8. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 12 – CLAIMS

Delete 12.01.D. in its entirety and replace with the following:

12.01.D.1 To the fullest extent permitted by law, the Contractor hereby waives any claims that the Owner has been unjustly enriched by any alteration or addition to the Work, whether or not there hereafter is any unjust enrichment to the Work, as a basis for an increase in any amounts due the Contractor or a change in any time period provided for in the Contract.

12.01.D.2 Claims for Concealed or Unknown Conditions: If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than fourteen (14) calendar days after first observance of the conditions. The Engineer will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, and such difference would not reasonably have been discovered by a reasonably competent Contractor prior to bid, then the Engineer will recommend to the Owner an equitable adjustment in the Contract Sum or the Contract Time, or both. If the Engineer determines that the conditions at the site are not materially different from those indicated in the Contract Documents, or that such difference would reasonably have been discovered by a reasonably competent Contractor prior to bid, and that no change in the terms of the Contract is justified, the Engineer shall so notify the Owner and the Contractor in writing, stating the reasons. Claims by the Contractor in opposition to such determination must be made within 21 days after the Engineer has given notice of the decision. If the conditions encountered are materially different, and such difference would not reasonably have been discovered by a reasonably competent Contractor prior to bid, the Contract Sum and Contract Time shall be equitably adjusted.

12.02.D.3 Claims for Additional Cost: If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property.

12.02D.4. Claims for Additional Time:

a. Any Claim for an increase in the Contract Time, must be preceded by written notice detailing the cause of each such delay which notice must be given in writing to the Owner and the Engineer within five (5) days of such time as the occurrence causing the delay should have been detected. Such notice must specify each such occurrence, describe how the occurrence is causing delay, include an estimate and description of each cost or damage being incurred as a result of the delay, and set forth the probable effect of delay on the progress of the Work.

b. Failure to strictly comply with these requirements by the Contractor shall constitute a waiver of such claim and constitute sufficient cause to deny any extension of time.

c. If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

d. In planning its construction schedule within the agreed Contract Time, it shall be assumed that the Contractor has anticipated the amount of magnitude of adverse weather conditions

normal to the site of the Work for the seasons involved. Only those weather delays attributable to other than normal weather conditions will be considered.

12.02.E.1 An extension of the Contract Time, to the extent permitted hereunder shall be the sole remedy of the Contractor for any (1) delay in the commencement, prosecution or completion of the Work, (2) hindrance or obstruction in the performance of the Work, (3) loss of productivity; or (4) any delay-related claim (collectively referred in this subparagraph as "Delay") whether or not such Delay is foreseeable. In no event shall the Contractor be entitled to any compensation or recovery of any damages, in connection with any Delay, including, without limitation, consequential damages, lost opportunity cost, impact damages, labor inefficiency damages, or overhead costs. Notwithstanding the foregoing, in the event the Delay is solely caused by the acts of the Owner, the Contractor shall be permitted an extension of time to complete the Work and an equitable adjustment to the Contract Sum in the amount of Contractor's increased labor costs caused by the Delay.

12.02.E.2 The Contractor understands that the timely prosecution of Contractor's obligations under the Contract is essential to the efficient completion of the Project and may have a direct bearing on the costs incurred by all other Prime Contractors. Some of the Contractor's obligations in this regard include, but are not limited to: 1) Completing the Work in an orderly fashion and in accordance with an agreed upon progress schedule; 2) Timely coordination and cooperation with the Owner, the Engineer, and the other Prime Contractors to resolve disruptions, interferences or other problems as they arise; 3) Providing sufficient personnel, systems and procedures to insure that required materials, supplies, and skilled human resources are available so that the Work is timely understood, anticipated, progressed, and communicated where require to others involved with the Project; 4) Maintaining accurate job progress schedules and systems; 5) Timely notifying others working on the site when delays or interferences occur that will affect the Contractor's or others' work pertaining to the Project; 6) Providing a skilled, informed, and properly supported superintendent at the Project site and at all required job meetings to provide meaningful information and commitments to efficiently cooperate in coordinating the Work of the various Contractors; and 7) Timely reviewing all job minutes, correspondence and other communications and responding to same when required. Accordingly, Contractor shall indemnify and save the Owner harmless from all damages, costs and expenses incurred by reason of Contractor's failure to timely prosecute its obligations under this Agreement.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-13.01 Cost of the Work

SC 13.01.B.5.c Delete Paragraph 13.01.B.5.c in its entirety and insert the following in its place:

c. Construction Equipment and Machinery:

1) Rentals of all construction equipment and machinery, and the parts thereof, 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.

2) Costs for equipment and machinery owned by Contractor will be paid at a rate shown for such equipment in the Market Watch Rental Rate Blue Book. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs. Costs will include the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, shall cease to accrue when the use thereof is no longer necessary for the changed Work. Equipment or machinery with a value of less than $1,000 will be considered small tools.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

SC-14.02 Tests, Inspections, and Approvals

SC 14.02 Delete Paragraph 14.02.B. in its entirety.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC-15.03 Substantial Completion

SC 15.03.B Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, shall be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

ARTICLE 19 – NO DISCRIMINATION

SC-19.01 The Contractor will not discriminate against any employee or applicant for employment on the basis of sexual or affectional preference or orientation.

SC-ARTICLE 20. Add the following new Article:

ARTICLE 20 – NEW YORK STATE PUBLIC WORKS LABOR LAWS

SC-20.01 10-Hour Safety Course (NYS Labor Law Section 220-h, eff. 7/18/08).

A. All laborers, workers, and mechanics employed in the performance of the contract on the public work site, either by the contractor, subcontractor or other person or contracting to the whole or a part of the work contemplated by the contract, shall be certified prior to performing any work on the project as having successfully completed a course in construction safety and health approved by the United States Department of Labor's Occupational Safety and Health Administration is at least ten hours in duration.

SC-20.01 Compliance with Prevailing Wage and Supplements Laws

A. The following outlines the procedures required by Sections 220 and 220-a of the New York State Labor Law to ensure that all laborers working on this Contract are paid prevailing wages and supplements. Compliance with these procedures, including the filing of payrolls in a manner consistent with Section 220(3-a) of New York Labor Law, is a condition precedent to payment of any sums due and owing to the Contractor for work performed on the Project that is the subject matter of this Contract.

1. Public improvement contractors and subcontractors must provide each of their subcontractors with a copy of the schedule of wages and supplements specified in the public improvement contract before each of the subcontractor's work is started.

2. Pursuant to Section 220-a(1) of New York Labor Law, upon receipt from the public improvement contractors and subcontractors of a copy of the schedule of wages and supplement specified in the public improvement contract, the subcontractors engaged by a public improvement contractor or subcontractor that engaged them a verified statement attesting that the subcontractor has received and reviewed the schedule of wages and supplements and any subsequently issued schedule and agrees that it will pay the applicable prevailing wages and will pay or provide the supplements specified therein. A blank subcontractor's verified statement that meets the requirements of Section 220-a(1) of the New York Labor Law can be found on herein.

3. The public improvement contractors and subcontractors must immediately obtain their subcontractors' verified statements. Such verified statements must be maintained by the public improvement contractors and subcontractors until the final payment has been made.

4. Pursuant to Section 220-a(2) of New York Labor Law, before approval and issuance of final payment on this contract, the Contractor is required to file with the Owner every verified statement required to be obtained by the Contractor from its subcontractors and to file a verified statement with the Owner certifying to the amounts then due and owing from such contractor filing such statement to or on behalf of any and all laborers for daily or weekly wages or supplements on account of labor performed upon the work under the Contract, setting forth therein the names of the persons whose wages of supplements are unpaid and the amount due to each or on behalf of each, respectively. The Contractor's verified statement shall also set forth the amounts known by the Contractor to be then due and owing from each subcontractor, or from a subcontractor of such subcontractor, for wages or supplements, or shall certify that the Contractor has no knowledge of such amounts owing to or on behalf of any laborers of its subcontractors, and that in the event it is determined by the Commissioner of Labor that the wages or supplements or both of any employees of such subcontractors have not been paid or provided pursuant to the appropriate schedule of wages and supplements, the Contractor shall be responsible for payment of such wages or supplements pursuant to the provisions of Section 223 of the New York Labor Law. A blank contractor's verified statement that meets the requirements of Section 220-a(1) of the New York Labor Law can be found with the prevailing wage insert in this Project Manual.

5. If revised schedules of wages and supplements are issued after the verified statement required in subparagraph 2 herein has been provided by the subcontractors, the public improvement contractors and subcontractors must provide each subcontractor with such revised schedules and receive and obtain from each subcontractor a new verified statement.

6. Each contractor and subcontractor shall submit to the Owner within thirty days after the issuance of its first payroll on the Project and every thirty days thereafter, a transcript of the payroll record, as provided for in Article 8 of the New York Labor Law, subscribed to and sworn to or affirmed as true under the penalties of perjury.

7. To satisfy the requirements set forth subparagraph 2 and subparagraph 4, a copy of the subcontractor(s)' verified statement(s) and the Contractor's verified statement must be submitted to the Owner with the Contractor's final payment request. At the same time, the original of the subcontractor(s)' verified statement(s) and the Contractor's verified statement must be sent to the Owner. Failure to obtain and provide the required verified statements will delay the Contractor's final payment.

8. The term "subcontractor" applies to both the subcontractor of the Contractor and subcontractors of a subcontractor.

SC-20.03 Compliance with New York State Public Works Labor Laws

A. The Contractor shall pay employees engaged in work under this Agreement for the trade or occupation listed, not less than the wage rates listed in the schedule of prevailing rates referenced in the Instructions to Bidders including supplements and any amendments thereto issued or to be issued by the State of New York. The Contractor shall comply with the requirements of Article 8 (Section 220-223) of the Labor Law of the State of New York.

B. The Contractor shall limit the hours of labor of each employee as required by the Laws of the State of New York.

C. Except specifically permitted by the Laws of the State of New York, workers who are qualified by training and experience shall not be discriminated against on any grounds whatsoever.

D. The Contractor shall be required to keep the following information records for the work in which it is engaged:

1. Record of hours worked by each workman, laborer and mechanic on each day.

2. Records of days worked each week by each workman, laborer and mechanic.

3. Schedule of occupation or occupations at which each workman, laborer and mechanic is employed during each work day and week.

4. Schedule of hourly wage rates to each workman, laborer and mechanic for each occupation.

E. The Contractor shall submit Certified Payrolls with all request for payment.

F. These laws are summarized in the prevailing wage insert in this Project Manual.

SC-20.04 NYS Public Works Labor Laws Web Page

A. Additional information can be found at the NYS Department of Labor Web pages pertaining to Public Work:

https://www.labor.ny.gov/workerprotection/publicwork/pwcontents.shtm

END OF SECTION

CME Associates, Inc.

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Transmittal

July 21, 2022

Barton & Loguidice, D.P.C.
443 Electronics Parkway
Liverpool, New York 13088

Attn: Ms. Olivia M. Hicklen, Engineer I

Re: Raw Water Pumping Station Addition
Lansing, New York
CME Project No.: 27941-05

Gentlepeople:

Enclosed you will find….

Number of Copies	Report Number	Description
3	27941B-01-0722	Subsurface Exploration and Foundation Recommendations Report

This report was emailed to Ms. Olivia M. Hicklen at ohicklen@bartonandloguidice.com on 07/21/22.

Respectfully submitted,
CME Associates, Inc.

Niru Paransothy, E. I. T
Geotechnical Engineer

NP.cl

Subsurface Exploration and Foundation Recommendations Report

Raw Water Pumping Station Addition
Lansing, New York

Prepared For: (Client)

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Attn: Ms. Olivia M. Hicklen, Engineer I
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Prepared By: (Geotechnical Engineer)

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CME Report No.: 27941B-01-0722
July 21, 2022

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Attachment Listing:

CME Exploration Location Plan, ELP-1 (1 of 1)
GPS Coordinates and Elevations Table (1 of 1)
CME Subsurface Exploration – Test Boring Logs, SB-1 to SB-4 (4 of 4)
Bedrock Core Photographs (1 of 1)
ASCE 7 Hazards Report (3 of 3)
Existing Site Plan, C100 (1 of 1)
Modified Grading Plan, C101 (1 of 1)
1974 Record Drawings, A-1 and A-3 (2 of 2)
General Information & Key to Test Boring Logs (4 of 4)

Subsurface Exploration and Foundation Recommendations Report
Raw Water Pumping Station Addition
Lansing, New York

1.0 INTRODUCTION

CME Associates, Inc. (CME) is pleased to provide this Subsurface Exploration and Foundation Recommendations Report for the proposed addition planned at the existing Raw Water Pumping Station in Lansing, New York. CME conducted a limited subsurface exploration for the subject project, consisting of advancing four Test Borings on 07/06/2022.

One Test Boring (labeled SB-3) was advanced within the footprint of the proposed addition to obtain subsurface information for CME's use to develop foundation recommendations for this addition. All other Test Borings (labeled SB-1, SB-2 and SB-4) were advanced at locations selected by Barton & Loguidice, D.P.C. (Client) to obtain subsurface information for their use.

The Scope of Basic Services and this report have been provided pursuant to an Agreement between CME and Client for Professional Services, dated 03/21/2022, which incorporates CME Proposal/Agreement No.: 05.6754, dated 03/16/2022.

This report provides a summary of subsurface conditions identified in Test Boring SB-3, and provides geotechnical recommendations for the proposed addition. Geotechnical recommendations for all other improvements and construction, planned at the subject project site, are outside of CME's Scope of Basic Services contracted in the agreement, and are expressly excluded from this report.

2.0 PROPOSED DEVELOPMENT

Please refer to the attached *Existing Site Plan* (labeled, C100, dated April 2022), *Modified Grading Plan* (labeled C101, dated April 2022) and *1974 Record Drawings* (labeled A-1, dated 06/28/1974, and A-3, dated 03/27/1974) for existing conditions and proposed improvements. A single-story addition with a concrete slab-on-grade floor is planned. Finish floor is planned to match existing at elevation 388.8 feet.

A review of the above referenced Record Drawings indicates that the north wall of the existing building (where new addition meets existing) is shown to be supported on a continuous strip footing foundation, bearing at elevation 380 feet. The proposed addition will have exterior load bearing walls supported on continuous strip footing foundations, bearing at/or below frost cover depth. CME understands that the new footings will step down to match existing, where new meets existing. No loading information was provided to CME at the time of this report preparation.

If any of the above information is incorrect, please let CME know in writing, so that we can revisit our recommendations, and determine if additional geotechnical investigation and/or evaluation are warranted.

3.0 EXPLORATION METHODOLOGY

3.1 Exploration Layout and Utility Clearance

The Test Boring locations were selected by Client and staked in the field by CME. Prior to advancing the Borings, CME contacted Dig Safely New York (DSNY) to clear public utilities at the Boring locations. Private utilities at the Boring locations were cleared by Others. *CME Exploration Location Plan*, labeled ELP-1, is attached, which depicts the approximate Boring locations.

GPS coordinates and elevation at grade at the Boring locations were determined using hand-held GPS Survey equipment (Spectra Precision Ranger 3). Please refer to the attached *GPS Coordinates and Elevations Table* for GPS coordinates and elevation at the Boring locations.

3.2 Test Boring

On 07/06/2022, CME advanced four Test Borings using a Central Mine Equipment Model 550X ATV mounted rotary drill rig, equipped with 3-¼" I.D. hollow stem augers. Soil sampling was conducted using a 140-pound automatic hammer dropping through a distance of 30-inches to drive a 2" O.D. split barrel sampler in general conformance with, ASTM D1586 Standard Practice. Rock coring was performed in general conformance with ASTM D2113 Standard Practice. The borehole was backfilled with auger cuttings upon completion, and the surface was backfilled to closely match existing grade. The *CME Subsurface Exploration – Test Boring Logs*, labeled SB-1 to SB-4, are attached.

The soil samples were logged and visually classified in the field by the CME Drillers, and a portion of each soil sample was placed and sealed in a glass jar. The soil classifications were later reviewed by a CME Professional Geologist and the undersigned Engineer in CME's AASHTO re:source[1] accredited East Syracuse Laboratory. The visual soil classifications were made using a modified Burmister Classification System, as practiced by CME, and as described in the attached document entitled, *General Information & Key to Test Boring Logs* (Key).

4.0 SUBSURFACE CONDITIONS

The subsurface conditions presented herein have been generalized for simplicity and brevity by CME from the actual data obtained from Test Boring SB-3, advanced for the proposed building addition. Please refer to the attached Test Boring Log SB-3 for actual condition encountered at the time, location and elevation of each sample obtained. It is possible for the subsurface conditions between sampling intervals to vary from those expressed in this section or shown on the Test Boring Log SB-3.

4.1 Subsurface Profile

Test Boring SB-3 was advanced within the proposed addition footprint, which penetrated Existing Fill underlain by Silt, underlain by Bedrock. A brief description of each stratum is given below:

Existing Fill: Existing Fill (Man-placed Fill), consisting of Gravel mixed with lesser and variable amounts of Sand, Silt and Shale fragments, was penetrated to about 8 feet below existing grade (corresponding to about elevation 380 feet). The Existing Fill does not appear to have been placed in a prepared manner (i.e., not placed in controlled compacted lifts), and meets the Building Code (2020 Building Code of New York State) definition of "Unprepared Fill", which is assigned a zero-bearing capacity.

Silt: Below Existing Fill, a Silt stratum consisting predominately of Silt, with lesser Gravel and Sand contents, was penetrated to about 13 feet below existing grade (corresponding to about elevation 375 feet), where bedrock was encountered. Based on Standard Penetration Testing (SPT) blow counts, the Silt is stiff in consistency.

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[1]**AASHTO re:source** – American Association of State Highway & Transportation Officials (AASHTO) Materials Reference Laboratory, a Federal Agency having jurisdiction to assess laboratory competency according to the Standards of the United States of America. CME East Syracuse accreditation includes testing of Portland Cement Concrete, Aggregate and Soil Materials. www.AASHTOresource.org.

Bedrock: Below Silt, sampler refusal was noted on bedrock, which was investigated via coring. A 5-foot rock core was obtained from 13.5 feet to 18.5 feet below existing grade. The rock core revealed grey, fresh, medium hard to hard, thinly to medium bedded Limestone Bedrock with a black Shale layer. This bedrock is of "Excellent" quality, based on its rock mass quality index (Rock Quality Designation, RQD = 92%). Please refer to the attached *Rock Core Photographs* for more details. A description of nomenclature used to classify bedrock is given in the attached document entitled "General Information and Key to Test Boring Logs".

4.2 Groundwater Observations

Groundwater level observations and measurements are made by the CME field crew when groundwater accumulates in the Borehole. CME notes water level inside the borehole during advancement and following casing (auger) removal. CME also notes the visual appearance of the moisture condition of the samples as retrieved. The condition and time of groundwater level observations are unique to each Boring, time and date, and are recorded on the Test Boring Log.

During CME's exploration, groundwater was observed in Test Boring SB-3 at 4.4 feet below grade, corresponding to about elevation 383 feet. Cayuga Lake Level in March 2022 was at about elevation 381 feet, as shown on the attached *Existing Site Plan*.

Groundwater fluctuations at this site will occur depending on several factors, such as adjacent Lake level, rainfall, seasonal changes, prevailing climate, and adjacent construction operations, among other factors.

4.3 Expansive Soils

Based on CME's visual naked-eye classification of the soil samples retrieved from the explorations, the soils sampled from the Silt stratum are not considered expansive to cause heave of foundation elements planned for the proposed addition.

4.4 Site Class

Based on a computational analysis using the information obtained from the CME Test Boring and the interpretation of Building Code Section 1613, which references Chapter 20 of ASCE 7, the subject project site is defined as a "Very Dense Soil and Soft Rock" profile, representative of a Site Class "C". The Test Boring did not sample soils vulnerable to liquefaction, sudden collapse or failure under seismic loading conditions. Please refer to the attached *ASCE 7 Hazards Report* for Design Spectral Response Curves for Risk Category IV, Essential Structures.

5.0 GEOTECHNICAL RECOMMENDATIONS

5.1 General Foundation Considerations

The subsurface conditions identified in Test Boring SB-3 is satisfactory to support the proposed addition via a conventional shallow footing foundation system. However, the following geotechnical items must be addressed.

1. **Temporary Excavation Protection and Dewatering:** Cayuga Lake level in March 2022 was at about elevation 381 feet. Groundwater level within the proposed addition footprint is expected to be higher than the lake level. Plan bottom of new footings (where new meets existing) will likely extend below groundwater, depending on the time of the year construction takes place. No excavation shall be permitted below groundwater. A satisfactory support of excavation (SOE) system shall be installed, and the groundwater level shall be lowered below the plan excavation depth, prior to making the excavation. Please refer to Report Sections 5.4 and 5.5 for more details.

2. **Subgrade/Bearing Grade Improvement:** Test Boring SB-3 identified Existing Fill to about 8 feet below existing grade. Existing Fill is assigned a zero-bearing capacity (see Report Section 4.1) and is not a suitable bearing material for foundations and slab-on-grade. Slab-on-grade subgrade improvement (see Section 5.2) and footing bearing grade improvement (see Section 5.3) will be required to utilize the foundation system recommended in this report.

5.2 Slab-on-Grade Support

The building pad (addition footprint plus a 5-foot nominal buffer, where practical) shall be prepared in the presence of the Inspecting Professional Geotechnical Engineer (IPGE), as outlined below.

Following removal of unsuitable materials (such as, but not limited to, organic-rich soils, wet/unstable soils, and deleterious materials) from within the building pad, a proofroll shall be performed. The proofroll should occur on a dry day, free of precipitation, in the presence of the IPGE. The proofroll shall consist of a 5-ton smooth drum roller making five overlapping passes in each of two perpendicular directions. Any unstable or non-uniform response areas delineated by the IPGE shall be undercut and replaced at his/her direction.

Following grade approval by the IPGE, Structural Fill placement may commence to achieve plan subgrade elevation. Please refer to Report Section 5.6 for Structural Fill material and placement requirements.

Slab-on-grade subgrade prepared as outlined above and approved by the IPGE is expected to exhibit a Modulus of Subgrade Reaction, Ks, of 200 pci. CME recommends a minimum of 12-inches of Subbase Course, consisting of NYSDOT Type 2 (Item No. 304.12) or Type 4 (Item No. 304.14) Subbase Course material under the slab-on-grade.

Design of concrete slab-on-grade should be consistent with recognized standards such as ACI 360R "Design of Slabs-on-Grade". Construction should be consistent with good industry practice using ACI Qualified Flatwork Finishers and recognized standards such as ACI 302.1R "Guide for Concrete Floor and Slab Construction".

5.3 Footing Foundation Support

Excavation for footings is expected to expose Existing Fill or Silt at plan bearing elevation.

The Silt soils at this site are moisture sensitive, and will become muddy and unstable in the presence of water and construction activities. The Contractor shall be altered to this condition, and shall protect and maintain bearing grades in-the-dry.

CME recommends that all foundation excavations exposing Silt at plan footing bearing elevation be undercut by minimum 6 inches and backfilled with Crushed Stone (NYSDOT Size Designation on No. 2 Washed Stone), wrapped in a geotextile fabric (Mirafi 140N or approved equal). All foundation excavations exposing Existing Fill at plan bearing elevation shall be undercut to expose inorganic, virgin Silt, and backfilled with Crushed Stone, wrapped in geotextile fabric. The Crushed Stone shall be placed in maximum 18-inch-thick lifts, with each lift compacted using a plate tamper making 3 overlapping passes. This process shall be conducted in the presence of the IPGE.

Footings bearing on satisfactorily installed and compacted Crushed Stone grade, examined and approved by the IPGE, is expected to exhibit a Presumptive Soil Bearing Pressure of 2,000 psf.

All footings shall bear at or below frost cover depth. CME recommends a minimum frost cover of 4 feet (measured from bottom of footing to adjacent permanent final grade) for footings bearing on a minimum 6-inches of Crushed Stone.

Footing foundations designed and installed in accordance with this report's recommendations are estimated to settle less than about one inch with differential settlement within the addition footprint estimated to be less than about three quarters of an inch.

5.4 Temporary Excavation Protection

The contractor shall provide a satisfactory Support of Excavation (SOE) and a temporary Excavation Protection System (EPS), to protect and prevent any vertical and horizontal movement of existing structures and underground utilities as well as to provide worker safety per OSHA and NYCRR regulations and law. CME recommends that all SOE and temporary EPS be designed by a NYS Licensed Engineer (hired and paid for by the Contractor), who has at least 5 years of experience in design and installation of such systems.

When applicable, the SOE and temporary EPS designs shall include the provision for monitoring the movement of existing structures during installation, in-service, and after extraction/removal of SOE. Such monitoring provisions shall include maximum limits for movement, and location, type and details of the geotechnical instruments/monitor points; and shall address maximum fugitive vibrations limits so that existing or new construction is not damaged.

5.5 Construction Dewatering

All excavations shall be made and maintained in-the-dry until satisfactorily backfilled. The Contractor shall install temporary dewatering systems prior to commencing foundation excavations. The groundwater level should be lowered to at least 2 feet below bottom of proposed excavation, prior to making the excavation.

5.6 Fill & Backfill

5.6.1 Fill & Backfill Materials

Structural Fill Material consisting of Select Granular Fill shall be used for all fill and backfill areas. All fill materials shall be pre-qualified through a submittal process. The submittal shall include all required test reports that are not older than 60 days.

Select Granular Fill: Select Granular Fill material shall be well-graded Gravel and Sand, approved recycled product or crushed rock product which is capable of being compacted to the required density at the proper moisture content and which is free of deleterious materials, trash, roots, debris, frozen material and organic or other foreign matter.

Select Granular Fill shall be accepted based on gradation, soundness, plasticity index and a well-defined Moisture-Density Relationship Curve. Select Granular Fill to be placed within 2'-0" of final exterior grade shall be subjected to Soundness requirements. Soundness shall be less than 30% loss based on a four-cycle magnesium sulfate soundness test. Plasticity Index of that portion of fill material passing the No. 40 mesh sieve shall not exceed 5.0. Gradation requirements for Select Granular Fill are as provided in Table 1 below.

Table 1: Select Granular Fill – Recommended Gradation	
Standard Sieve Size	**% Passing by Dry Weight**
2-inch	100
1/4-inch	25 to 65
No. 40	5 to 40
No. 200	0 to 10

5.6.2 Filling & Backfilling Execution

CME recommends that all filling and backfilling to occur on this project be accomplished in a workmanlike manner according to good industry practice. All filling and backfilling shall be installed in a quality-controlled manner with prequalified materials, with quality assurance structural tests and inspections conducted at regular intervals according to the Building Code Chapters 17 and 18, and consistent with the following methodology.

1. The grade to receive fill shall be dry, stable, free of mud, water and loose or frozen material. The grade shall be proofrolled, inspected and deemed satisfactory by the IPGE prior to placement of fill.
2. Fill material shall be placed on satisfactory grade, in a manner to minimize segregation. The fill shall be placed in nearly horizontal lifts commencing at the lowest fill area elevation and proceeding with each lift upward and outward from the lower lift.
3. The moisture content of the material shall be adjusted prior to application of compaction such that it is within 3% of the Optimum Moisture Content. This procedure may involve adding water when the fill material is too dry or discing and aerating to reduce moisture when the fill material is too wet.
4. The compacted lift thickness and minimum in-place field density shall conform to the recommendations provided in Table 2.

Table 2: Structural Fill Compaction and Lift Thickness Recommendations		
Minimum In-Place Density[1]	**Maximum Compacted Lift Thickness[2] (inch)**	**Fill Area Description**
95%	12	Mass-fill areas and subbase course
95%	8-10	Confined areas such as utility trenches and foundation backfill.
1. As determined using ASTM D1557, Modified Effort Proctor. 2. Or compactor manufacturer's recommended thickness, whichever is less.		

5. When the test results indicate that insufficient compaction has been obtained in any layer, the Contractor shall take action to modify or alter the moisture content of the soil, provide additional compaction or make other adjustments to increase the in-place soil density. If the Contractor cannot obtain satisfactory compaction due to material properties, the Contractor shall remove the unsatisfactory material and replace with new material.
6. Materials which are frozen, or which include mud, debris, organics or other deleterious materials shall be removed and replaced with clean specified material.
7. No fill shall be placed over an area or lift of fill that has not been tested and achieved satisfactory results.

6.0 SOIL SPECIAL INSPECTION

In addition to the Geotechnical Engineering Observation and Inspection specified previously in this Report, the Building Code requires special inspection and tests for all structural fill, backfill, concrete and reinforcement of the geotechnical constructions proposed for this project.

6.1 Accredited Testing Agency Required

CME recommends that the Testing Agency providing special inspections and structural tests be Accredited by a Nationally Recognized Authority (such as: AASHTO Re:source, A2LA or NVLAP) to demonstrate compliance with ASTM E329 to conduct soil, aggregate and concrete materials testing. All testing and inspection staff must possess current credentials and nationally recognized certification or licensure which is applicable to the specific material and construction element that they are inspecting and/or testing.

6.2 Required Inspections & Tests of Soils

CME recommends that the Soil Special Inspections be accomplished in full conformance with the Building Code requirements and Table 3 given herein:

Table 3: Statement of Required Soil Special Inspections

Type	Frequency of Special Inspections & Tests
1. Verify excavations are extended to proper depth and have reached proper subgrade material.	Continuously during excavation.
2. Prior to placement of compacted fill, verify that site has been prepared properly.	Continuously prior to placement of compacted fill.
3. Perform classification and testing of compacted fill materials.	Periodically per the Earthwork Specifications.
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	Continuously during fill installation and per Earthwork Specifications. Perform 1 In-Place Field Density (IPFD) test per lift for each spread footing excavation and one in-place density test per lift for every 25 lineal feet of continuous footing trench, per side.
5. Examine undercut grade, witness installation and compaction of Crushed Stone pad and approve bearing grade.	Continuously during foundation excavation, by IPGE.

7.0 OTHER IMPORTANT CONSIDERATIONS

CME provides the information in this section for those using our reports, so they may acquire a better understanding of geotechnical engineering professional practice and the limitations associated with its application to this and other projects.

7.1 Changes to the Project

CME has described in Report Section 2.0 our understanding of the proposed development at the time this report is published. It is anticipated that the preliminary plans may change during design phase. Substantial changes consist of many items such as, but not limited to: bearing elevation, floor elevation, planned depth of cuts or fills, decrease or increase in design loads, structure footprint growth or shrinkage, structure location movement, time period of construction (compression or relaxation), and addition or deletion of sublevel (basement or crawlspace) area, among others.

Please advise CME of substantial changes so CME can evaluate the continued applicability of the analyses and recommendations given in this Report. It will help reduce project risks, could save you time and money, and result in a higher quality construction project.

7.2 Review of Plans & Specs

CME recommends that it be afforded the opportunity to review the Plans and Specifications, prepared pursuant to this Report, prior to Bidding. This review will help to verify that a correct interpretation of CME's recommendations and design intent given in this Report are implemented and incorporated into the Construction Documents. Since CME is not aware of the project schedule, it is the responsibility of the Client to forward the applicable construction contract documents to CME for review. Please allow at least 5 business days for CME to complete the review and issue a report of comments and findings.

7.3 Construction Phase Geotechnical Services

The analysis and recommendations contained in this report are preliminary and are based on the specific data obtained from the limited subsurface explorations referenced in this report. The explorations indicate subsurface conditions only at the specific locations and times, and only to the depths penetrated. The validity of the recommendations is based in part on CME's assumptions about the stratigraphy, as well as information about the proposed development provided by others. CME's assumptions may be confirmed only during earthwork and foundation construction operations.

The recommendations made in this report are based on the "Observational Method". The Observational Method ensures continuity from the design to the construction and has been at the heart of many successful construction projects. It relies upon extensive use of monitoring and observational procedures during the construction. Construction monitoring allows CME to take advantage of conditions more favorable than those anticipated based on the subsurface exploration program. It often provides for timely warning when conditions are less favorable, allowing for changes or alterations to be made before a problem shows itself in newly completed construction. Therefore, it is recommended that CME be retained to provide Construction Phase Observation and the Soil and Foundation Special Inspections.

It is very important to point out that CME's engineering recommendations given in this Report are premised upon CME being retained to provide Construction Phase Geotechnical Engineering Observation as they relate to earthwork, filling and backfilling, and foundation installations. If others are retained to provide construction phase observation, a complete understanding, interpretation or execution of CME's reported recommendations may not occur. CME will not assume responsibility for the performance of the structures, slabs, and pavements when CME is not providing the construction phase observation.

8.0 STANDARD OF CARE AND WARRANTY

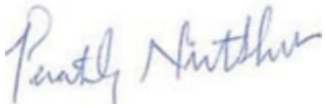
CME has endeavored to conduct the services identified herein in a manner consistent with that level of care and skill ordinarily exercised by members of the geotechnical engineering profession currently practicing in the same locality and under similar conditions as this project. No warranty, either express or implied, is made or intended by CME's proposal, contract, and written and oral reports, all of which warranties are hereby expressly disclaimed. CME shall not be responsible for the acts or omissions of Client, its contractors, agents and consultants. CME has relied upon information supplied by Client, its contractors, agents and consultants, or information available from generally accepted reputable sources, without independent verification, and CME assumes no responsibility for the accuracy thereof.

9.0 CLOSING COMMENTS

In accordance with CME's Subcontract for Geotechnical Services, CME will dispose of all unconsumed samples sixty (60) days after submission of this report. All consumed samples were disposed of immediately after test completion. If you would like to keep the unconsumed samples for a longer time period, please email a request to do so, within five (5) business days from the date of this report to Becky Patchett, bpatchett@cmeassociates.com.

Please do not hesitate to contact our office if you have any questions regarding this report, its conclusions, its recommendations, or its application to actual field conditions revealed during construction.

Respectfully Submitted,
CME Associates, Inc.



Niru Paransothy, E. I. T.
Geotechnical Engineer

Reviewed By,
CME Associates, Inc.

Anas N. Anasthas, P. E.
Senior Geotechnical Engineer

NP.bsp

CME EXPLORATION LOCATION PLAN - ELP-1
CME Report No. 27941B-01-0722
Raw Water Pumping Station Addition
Lansing, New York
Legend
Approximate Reference Elevation Location
Approximate Test Boring Location
SB-1
SB-2
SB-4
SB-3
Reference 1
N
200 ft
Google Earth

Attachment to CME Report No.: 27941B-01-0722

GPS Coordinates and Elevations Table
Raw Water Pumping Station Addition, Lansing, New York

TABLE 1			
Boring ID	**Latitude**	**Longitude**	**Elevation (FT. AMSL)**
SB-1	42.50542974	-76.51824678	382.9
SB-2	42.50527234	-76.51819490	382.6
SB-3	42.50513000	-76.51813400	387.7
SB-4	42.50520317	-76.51796849	386.5
Reference 1	42.50511820	-76.51759048	395.2

Notes:

AMSL: Above Mean Sea Level

1. GPS coordinates were obtained utilizing a Spectra Precision Ranger 3 GPS survey equipment.
2. NYSDOT CORS positions are based on NAD 83 (2011).
3. Elevations are based on the North American Vertical Datum of 1988 (NAVD 1988).
4. Reference 1 refers to the center of water shut off cap located on hillside southeast of Test Boring SB-4.

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SUBSURFACE EXPLORATION TEST BORING LOG

Boring No.	**SB-1**
Page No.	1 of 1
Report No.	27941B-01-0722

Project Name:	Raw Water Pumping Station Addition, Lansing, New York	**Date Started**	07/06/22
Client:	Barton & Loguidice, D.P.C.	**Date Finished**	07/06/22
Location:	See CME Exploration Location Plan, ELP-1	**Surface Elev.**	382.9'

METHODS OF INVESTIGATION

Driller:	Beau Fletcher	**Casing:**	3¼" ID H.S.A.
Driller:	Ryan Casatelli	**Casing Hammer:**	
Inspector:		**Other:**	
Drill Rig:	CME 550X	**Soil Sampler:**	2" OD Split Barrel
Type:	ATV Mounted	**Hammer Wt:**	140 lbs.
Rod Size:	AWJ	**Hammer Fall:**	30 in.

GROUNDWATER OBSERVATIONS

Date	Time	Depth (Ft.)	Casing At (Ft.)
07/06/22	While Drilling	2.0'	4.0'
07/06/22	Before Casing Removed	1.5'	9.0'
07/06/22	After Casing Removed	1.0'	out
07/06/22	After Casing Removed	caved @ 2.0'	out

LOG OF BORING SAMPLES / VISUAL CLASSIFICATION OF MATERIAL

Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From	Sample Depth (Ft.) To	Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine / and - 35 to 50% / some - 20 to 35% / little - 10 to 20% / trace - 0 to 10%	SPT "N" or RQD %
0	1	0.0	2.0	SS/10	1-2-3-4		*Possible Fill:* Grey/Brown cmf GRAVEL, little cmf SAND, trace SILT, trace ORGANICS (wet, loose)	5
1								
2	2	2.0	4.0	SS/14	7-8-7-7		*Possible Fill:* Grey cmf GRAVEL, little SILT, trace cmf SAND, trace ORGANICS (wet, medium compact)	15
3								
4	3	4.0	6.0	SS/11	7-4-4-4		Grey/Brown SILT, little CLAY, little cmf GRAVEL, trace cmf SAND (wet, stiff)	8
5								
6	4	6.0	8.0	SS/14	3-6-6-7		Grey/Brown SILT, little CLAY, little cmf GRAVEL, trace cmf SAND (wet, stiff)	12
7								
8	5	8.0	8.8	SS/6	8-100@4"		Grey weathered ROCK FRAGMENTS, little SILT, little mf SAND (wet)	100+
9							*Spoon refusal @ 8.8', auger resfusal @ 9.0'*	
10							Bottom of Boring @ 9.0'	
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

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SUBSURFACE EXPLORATION TEST BORING LOG

Boring No.	**SB-2**
Page No.	1 of 1
Report No.	27941B-01-0722

Project Name:	Raw Water Pumping Station Addition, Lansing, New York	**Date Started**	07/06/22
Client:	Barton & Loguidice, D.P.C.	**Date Finished**	07/06/22
Location:	See CME Exploration Location Plan, ELP-1	**Surface Elev.**	382.6'

METHODS OF INVESTIGATION

Driller:	Beau Fletcher	**Casing:**	3¼" ID H.S.A.
Driller:	Ryan Casatelli	**Casing Hammer:**	
Inspector:		**Other:**	
Drill Rig:	CME 550X	**Soil Sampler:**	2" OD Split Barrel
Type:	ATV Mounted	**Hammer Wt:**	140 lbs.
Rod Size:	AWJ	**Hammer Fall:**	30 in.

GROUNDWATER OBSERVATIONS

Date	Time	Depth (Ft.)	Casing At (Ft.)
07/06/22	While Drilling	3.7'	4.0'
07/06/22	Before Casing Removed	1.1'	8.0'
07/06/22	After Casing Removed	0.5	out
07/06/22	After Casing Removed	caved @ 1.9'	out

LOG OF BORING SAMPLES / VISUAL CLASSIFICATION OF MATERIAL

Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From	Sample Depth (Ft.) To	Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine / and - 35 to 50% / some - 20 to 35% / little - 10 to 20% / trace - 0 to 10%	SPT "N" or RQD %
0	1	0.0	2.0	SS/7	2-6-6-7		*Possible Fill:* Grey/Brown cmf GRAVEL, some cmf SAND, trace SILT (wet, medium compact)	12
1								
2	2	2.0	4.0	SS/9	3-5-7-9		*Possible Fill:* Grey cmf GRAVEL, little cmf SAND, little SILT (wet, medium compact)	12
3								
4	3	4.0	6.0	SS/6	3-4-4-5		*Possible Fill:* Similar as above (wet, loose)	8
5								
6	4	6.0	8.0	SS/14	3-4-5-9		Brown/Grey SILT, little CLAY, little cmf GRAVEL, little cmf SAND (wet, stiff)	9
7								
8	5	8.0	8.4	SS/5	100@5"		Grey weathered ROCK FRAGMENTS, trace SILT, trace SAND (wet)	100+
9							*Spoon refusal @ 8.4', auger refusal @ 8.5'*	
10							Bottom of Boring @ 8.5'	
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

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SUBSURFACE EXPLORATION TEST BORING LOG

Boring No.	**SB-3**
Page No.	1 of 1
Report No.	27941B-01-0722

Project Name:	Raw Water Pumping Station Addition, Lansing, New York	**Date Started**	07/06/22
Client:	Barton & Loguidice, D.P.C.	**Date Finished**	07/06/22
Location:	See CME Exploration Location Plan, ELP-1	**Surface Elev.**	387.7'

METHODS OF INVESTIGATION

Driller:	Beau Fletcher	**Casing:**	3¼" ID H.S.A.
Driller:	Ryan Casatelli	**Casing Hammer:**	
Inspector:		**Other:**	NQ-Core
Drill Rig:	CME 550X	**Soil Sampler:**	2" OD Split Barrel
Type:	ATV Mounted	**Hammer Wt:**	140 lbs.
Rod Size:	AWJ	**Hammer Fall:**	30 in.

GROUNDWATER OBSERVATIONS

Date	Time	Depth (Ft.)	Casing At (Ft.)
07/06/22	While Drilling	12.0'	13.0'
07/06/22	Before Casing Removed	4.4'	13.5'
07/06/22	After Casing Removed	4.0'*	out
07/06/22	After Casing Removed	caved @ 8.4'	out

LOG OF BORING SAMPLES / VISUAL CLASSIFICATION OF MATERIAL

Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From	Sample Depth (Ft.) To	Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine / and - 35 to 50% / some - 20 to 35% / little - 10 to 20% / trace - 0 to 10%	SPT "N" or RQD %
0	1	0.0	2.0	SS/9	3-2-4-5		EXISTING FILL: Grey cmf gravel, cmf sand, silt (moist)	6
1								
2	2	2.0	4.0	SS/11	6-9-7-8		EXISTING FILL: Grey cmf gravel, cmf sand, silt (moist)	16
3								
4	3	4.0	5.0	SS/14	8-14-12-11		EXISTING FILL: Grey/Brown cmf gravel, silt, cmf sand (moist)	26
5								
6	4	6.0	8.0	SS/12	9-11-11-11		EXISTING FILL: Grey cmf gravel, weathered shale fragments, cmf sand, silt (wet)	22
7								
8	5	8.0	10.0	SS/7	6-8-6-7		Grey SILT, Some cmf GRAVEL, little cmf SAND (wet, stiff)	14
9								
10								
11								
12								
13	6	13.0	13.0	SS/0	100@0"		*Augered Hard beginning @ 13.0'* No Recovery - *Spoon refusal @ 13.0' , auger refusal @ 13.5'*	100+
14	7	13.5	18.5	C/60	NQ-Core		Grey LIMESTONE BEDROCK, fresh, thinly-medium bedded, medium hard to hard. Interbedded Black SHALE layer from 14.9' - 17.2'. Recovery: 60"/60" = 100% RQD: 55"/60" = 92% *10 Pieces, 5" Chips and Fragments* *1.5 min/ft, no water loss* Coring conducted in 5th gear, 2400rpm, 600 psi feed pressure	92%
15								
16								
17								
18								
19							Bottom of Boring at 18.5'	
20								

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks: * Water added to borehole during coring process.

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SUBSURFACE EXPLORATION TEST BORING LOG

Boring No.	**SB-4**
Page No.	1 of 1
Report No.	27941B-01-0722

Project Name:	Raw Water Pumping Station Addition, Lansing, New York	**Date Started**	07/06/22
Client:	Barton & Loguidice, D.P.C.	**Date Finished**	07/06/22
Location:	See CME Exploration Location Plan, ELP-1	**Surface Elev.**	386.5'

METHODS OF INVESTIGATION

Driller:	Beau Fletcher	**Casing:**	3¼" ID H.S.A.
Driller:	Ryan Casatelli	**Casing Hammer:**	
Inspector:		**Other:**	
Drill Rig:	CME 550X	**Soil Sampler:**	2" OD Split Barrel
Type:	ATV Mounted	**Hammer Wt:**	140 lbs.
Rod Size:	AWJ	**Hammer Fall:**	30 in.

GROUNDWATER OBSERVATIONS

Date	Time	Depth (Ft.)	Casing At (Ft.)
07/06/22	While Drilling	None Noted	6.0'
07/06/22	Before Casing Removed	None Noted	10.0'
07/06/22	After Casing Removed	None Noted	out
07/06/22	After Casing Removed	caved @ 3.5'	out

LOG OF BORING SAMPLES / VISUAL CLASSIFICATION OF MATERIAL

Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From	Sample Depth (Ft.) To	Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine / and - 35 to 50% / some - 20 to 35% / little - 10 to 20% / trace - 0 to 10%	SPT "N" or RQD %
0	1	0.0	2.0	SS/15	10-14-18-22		EXISITNG FILL: Grey/Brown cmf gravel, silt, cmf sand (moist)	32
1								
2	2	2.0	4.0	SS/18	31-25-18-14		EXISITNG FILL; Brown/Grey cmf gravel, cmf sand, silt (moist)	43
3								
4	3	4.0	6.0	SS/6	14-10-10-8		EXISITNG FILL; Brown/Grey cmf gravel, silt, cmf sand (moist)	20
5								
6	4	6.0	8.0	SS/15	3-4-3-3		EXISITNG FILL ; Grey clay, silt, cmf sand, coal pieces (moist)	7
7								
8	5	8.0	9.8	SS/15	4-8-10-100@3"		Grey CLAY, some SILT, little cmf GRAVEL, trace cmf SAND (moist, very stiff) *Spoon refusal @ 9.8'* *Auger refusal @ 10.0'*	18
9								
10							Bottom of Boring at 10.0'	
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks: * Water added to borehole during coring process.

Bedrock Core Photographs
Attachment to CME Report No: 27941B-01-0722

Photograph 1 Boring: SB-3 Run 1 Depth 13.5' - 18.5' See Photographs Nos. 2 and 3 for detailed views.

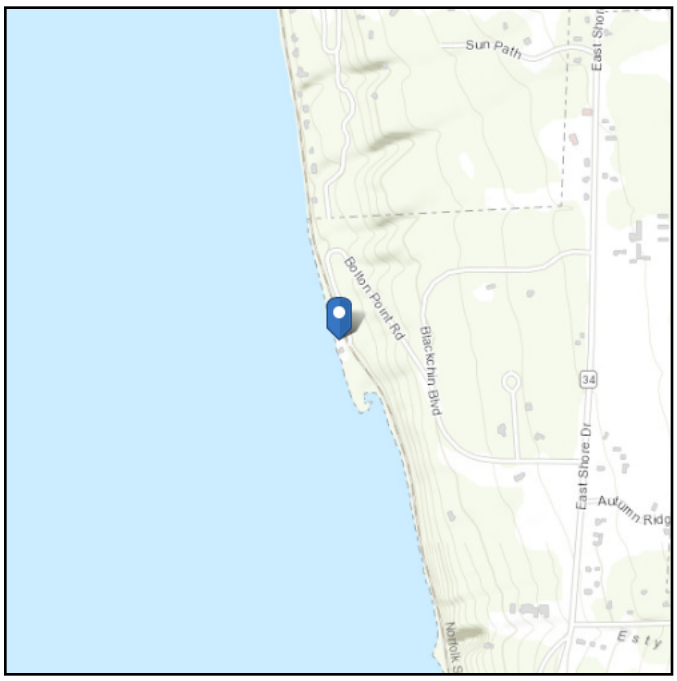
Photograph 2 Boring: SB-3 Run 1 Top Depth 13.5' - 16.0'

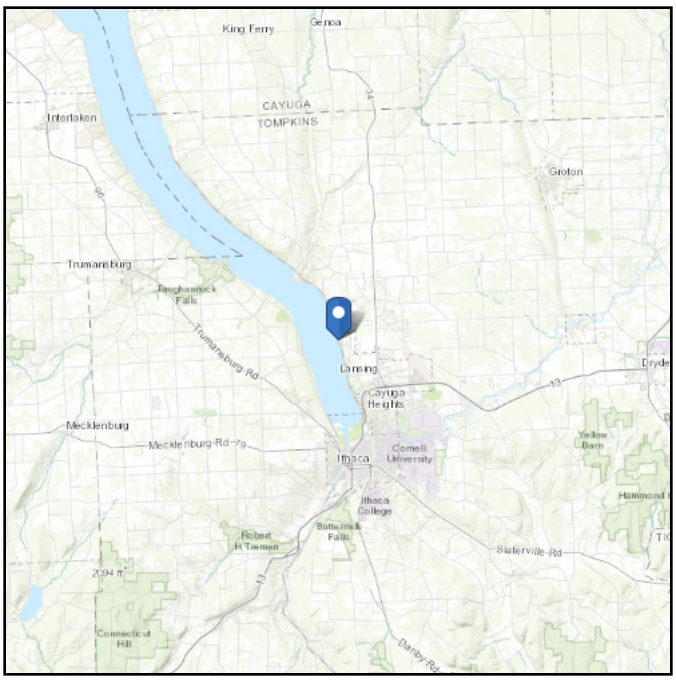
Photograph 3 Boring: SB-3 Run 1 Bottom Depth 16.0' - 18.5'

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Elevation:**	386.57 ft (NAVD 88)
Risk Category:	IV	**Latitude:**	42.505316
Soil Class:	C - Very Dense Soil and Soft Rock	**Longitude:**	-76.518097





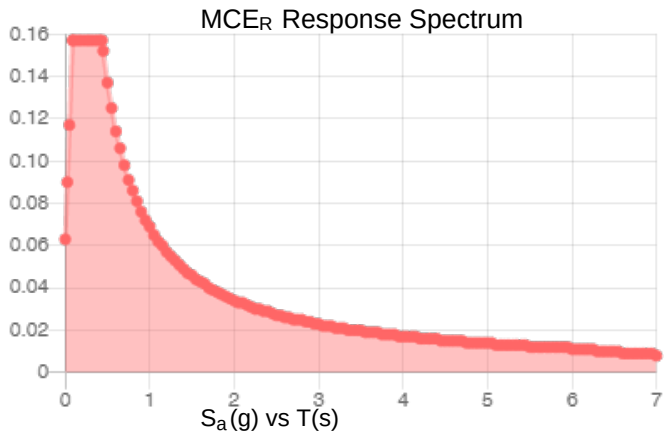
Seismic

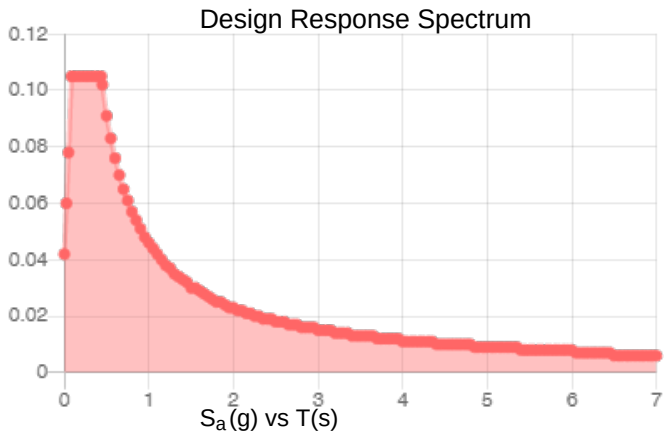
Site Soil Class: C - Very Dense Soil and Soft Rock

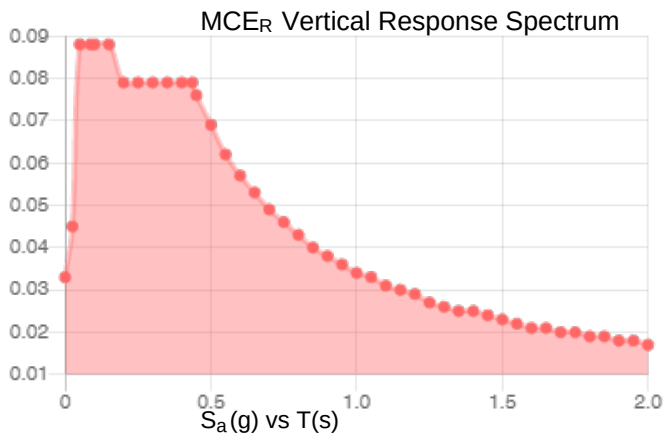
Results:

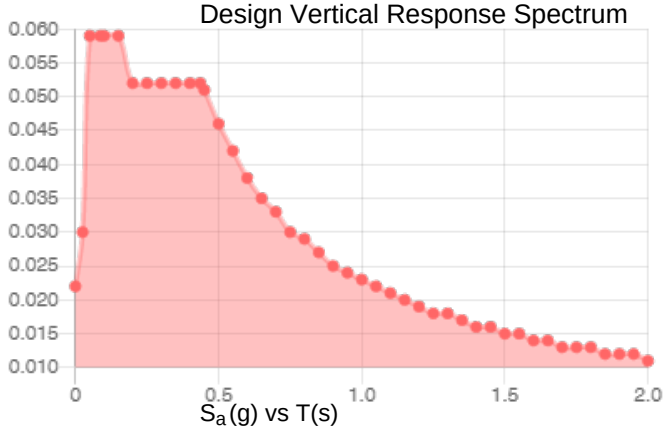
S_S :	0.121	S_{D1} :	0.046
S_1 :	0.046	T_L :	6
F_a :	1.3	PGA :	0.059
F_v :	1.5	PGA_M :	0.077
S_{MS} :	0.157	F_{PGA} :	1.3
S_{M1} :	0.069	I_e :	1.5
S_{DS} :	0.105	C_v :	0.7

Seismic Design Category A









Data Accessed: Mon Jul 18 2022

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

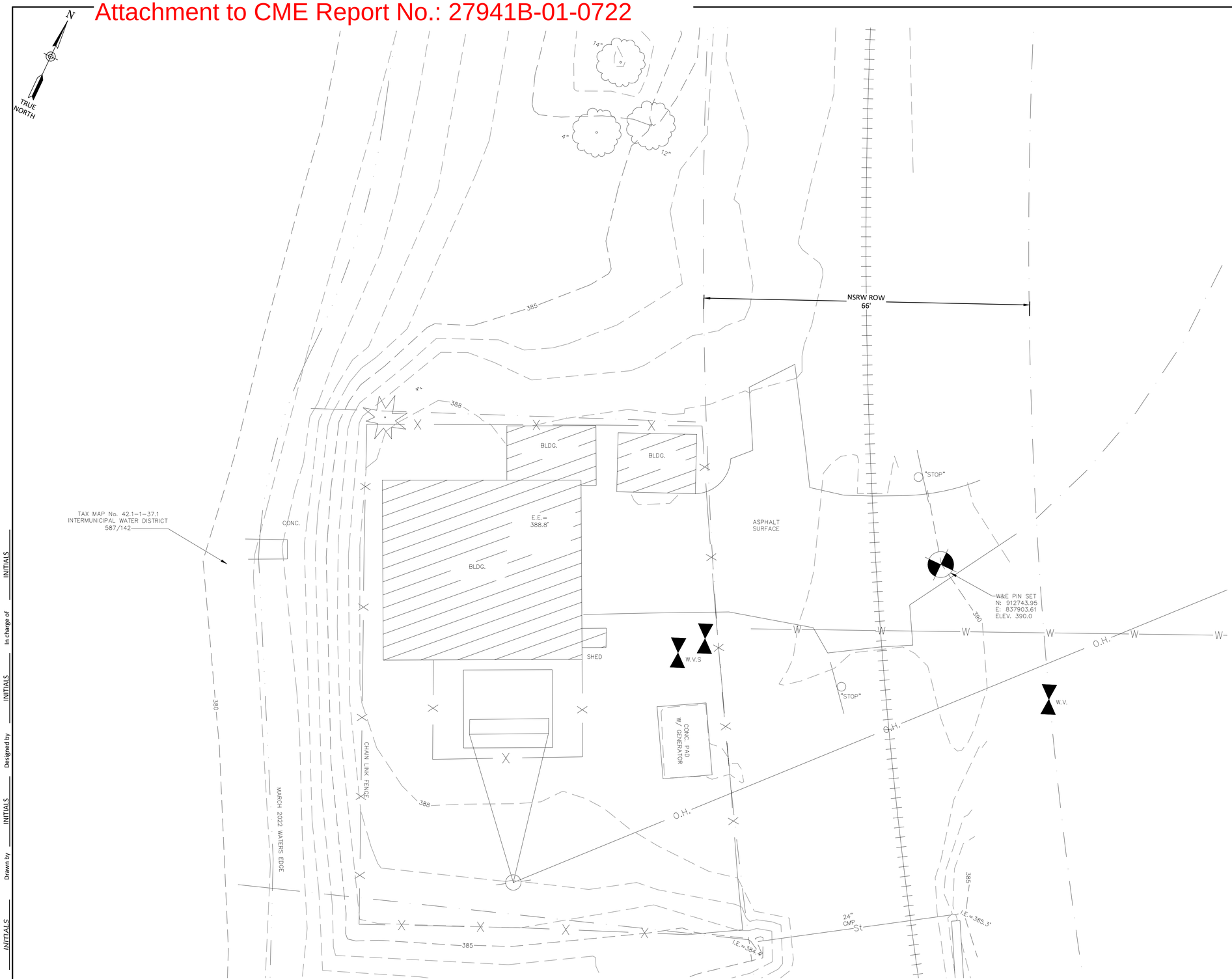
AMERICAN SOCIETY OF CIVIL ENGINEERS

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Attachment to CME Report No.: 27941B-01-0722



EXISTING SITE PLAN

SCALE: 1" = 10'-0"

1"=10' 10' 0 10' 20'

NOTES:

1. PROVIDE, ERECT AND MAINTAIN TEMPORARY BARRIERS AND SECURITY DEVICES TO SECURE THE WORK SITE.
2. CONDUCT OPERATIONS WITH MINIMUM INTERFERENCE TO PUBLIC OR PRIVATE ACCESS.
3. MAINTAIN INGRESS AND EGRESS AT ALL TIMES. DO NOT CLOSE OR OBSTRUCT ROADWAYS WITHOUT PERMITS.
4. CONTRACTOR SHALL EMPLOY CONSTRUCTION METHODS WHICH PREVENT ENCROACHMENT ONTO NEIGHBORING PROPERTIES.
5. CONTRACTOR SHALL INSTALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO PERFORMING ANY EARTH-DISTURBING ACTIVITY.
6. MODIFY AND ADJUST TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS NECESSARY DURING THE COURSE OF THE WORK TO MAINTAIN PROTECTION OF ALL WATER COURSES.

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW, ARTICLE 145 §7209 SPECIAL PROVISIONS, FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE STAMP OF A LICENSED PROFESSIONAL IS ALTERED, THE ALTERING PROFESSIONAL SHALL STAMP THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REVISIONS	

SOUTHERN CAYUGA INTERMUNICIPAL WATER COMMISSION
RAW WATER PUMP STATION ADDITION

EXISTING SITE PLAN AND TEMPORARY EROSION AND SEDIMENT CONTROL PLAN

TOWN OF LANSING
TOMPKINS COUNTY, NEW YORK

443 Electronics Parkway
Liverpool, NY
13088

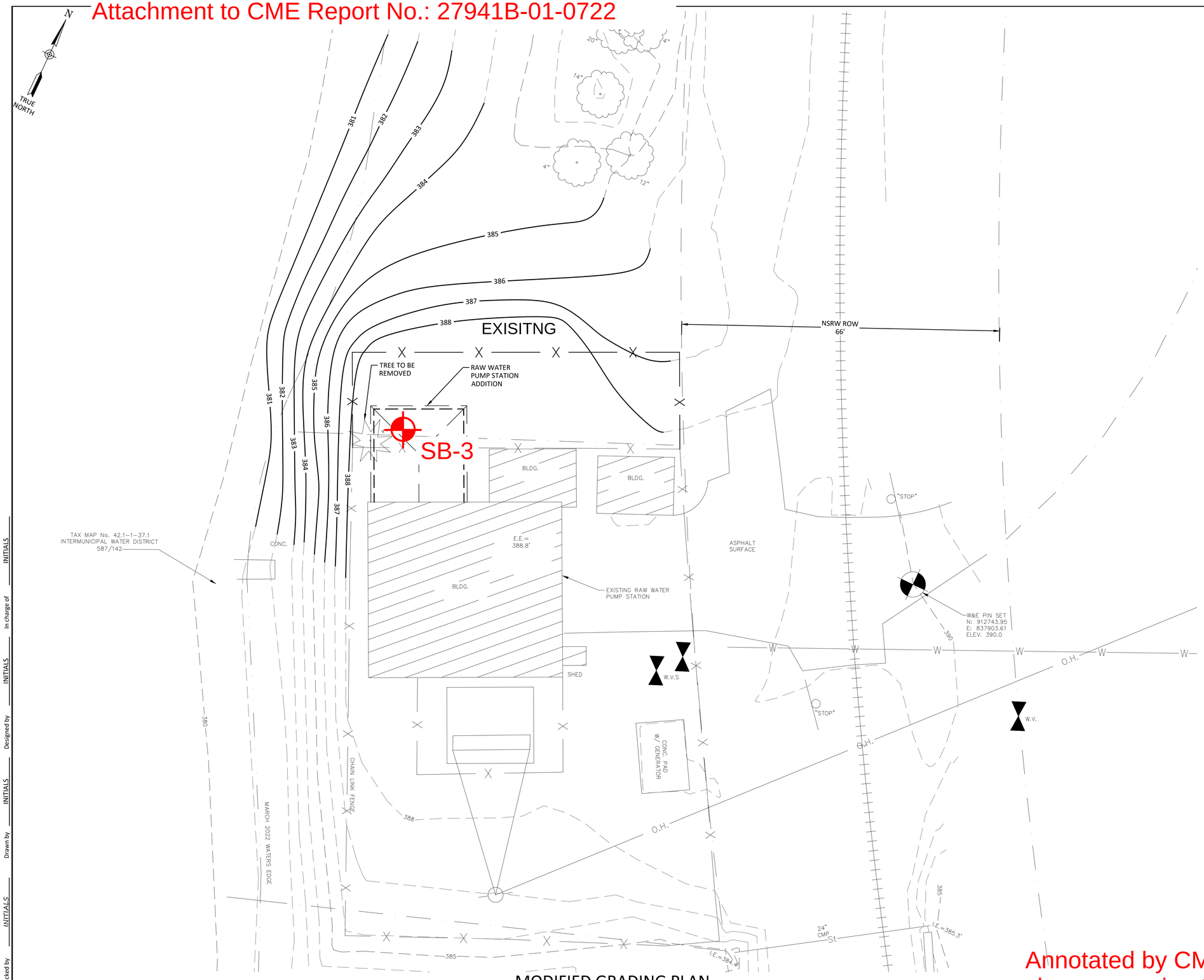
B&L
Barton & Loguidice, D.P.C.

Date: APRIL 2022
Scale: AS SHOWN
Sheet Number: C100
Project Number: 677.005.006

Plotted: Apr 11, 2022 - 1:09PM By: ohicken
Z:\BL-Vault\02\8217A02-1C71-4823-8927-99B5C4D54147\0\2577000-2577999\2577317\LL\677005 C100 EXISTING SITE PLAN AND TEMPORARY ESC (ID 2577317).dwg

Checked by INITIALS Drawn by INITIALS Designed by INITIALS In charge of INITIALS

Attachment to CME Report No.: 27941B-01-0722



MODIFIED GRADING PLAN

SCALE: 1" = 10'-0"

Annotated by CME on 07/19/2022 to show approximate Test Boring location

NOTES:

1. CONTRACTOR SHALL INSTALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO PERFORMING ANY EARTH-DISTURBING ACTIVITY.
2. MODIFY AND ADJUST TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS NECESSARY DURING THE COURSE OF THE WORK TO MAINTAIN PROTECTION OF ALL WATER COURSES.

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW, ARTICLE 145 §7209 SPECIAL PROVISIONS, FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE STAMP OF A LICENSED PROFESSIONAL IS ALTERED, THE ALTERING PROFESSIONAL SHALL STAMP THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REVISIONS	

SOUTHERN CAYUGA INTERMUNICIPAL WATER COMMISSION
RAW WATER PUMP STATION ADDITION

MODIFIED GRADING PLAN

TOWN OF LANSING
TOMPKINS COUNTY, NEW YORK

443 Electronics Parkway
Liverpool, NY
13088

B&L
Barton & Loguidice, D.P.C.

Date
APRIL 2022

Scale
AS SHOWN

Sheet Number
C101

Project Number
677.005.006

Checked by _____ INITIALS _____ Drawn by _____ INITIALS _____ Designed by _____ INITIALS _____ In charge of _____ INITIALS _____

Plotted: Apr 21, 2022 – 12:47PM By: ishicken
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Attachment to CME Report No.: 27941B-01-0722

FLOOR PLAN
SCALE 1/4" = 1'-0"

BUILDING SECTION A-A
SCALE 1/4" = 1'-0"

EAST ELEVATION
SCALE 1/4" = 1'-0"

REINFORCEMENT SECTIONS
SCALE 3/8" = 1'-0"

HEAD DETAIL
SCALE 1 1/2" = 1'-0"

JAMB DETAIL
SCALE 1 1/2" = 1'-0"

THRESHOLD DETAIL
SCALE 1 1/2" = 1'-0"

ROLLING METAL DOOR DETAILS

PERSONNEL DOOR DETAILS
SCALE 1 1/2" = 1'-0"

NOTES:
- FOR SITE PLAN REF. S-A-3
- FOR ALL CONCRETE DIMENSIONS AND REINFORCEMENT REF. SHEET A-2 (BELOW ELEVATION 381.00')

NEW YORK STATE DEPARTMENT OF HEALTH
Division of Sanitary Engineering
By direction of the State Commissioner of Health.
These plans are hereby approved. See first sheet for date and signature.

NO. 1
ORDER NUMBER 1 -
DATED 12/17/74
D.J.C. 12/19/74
2 REINFORCEMENT ELEVATIONS - CHANGED #10 REINFORCING TO #9 & BEAM STIRRUPS RESPACED ETC. 1/21/75

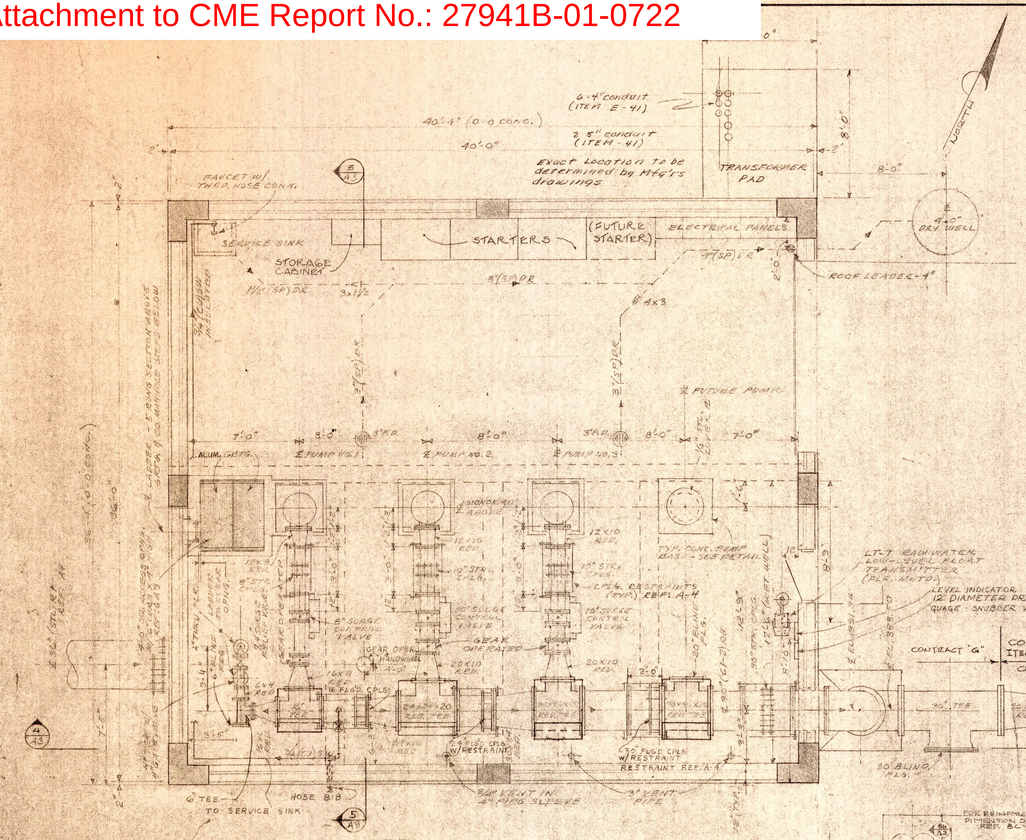
JOB TITLE
WATER SUPPLY FACILITIES
FOR
SOUTHERN CAYUGA LAKE INTERMUNICIPAL WATER COMMISSION
TOMPKINS COUNTY, N.Y.

SHEET TITLE
RAW WATER PUMP STATION
ARCHITECTURAL PLAN & DETAILS

LOZIER ENGINEERS INC.
10 GIBBS STREET
ROCHESTER, NEW YORK

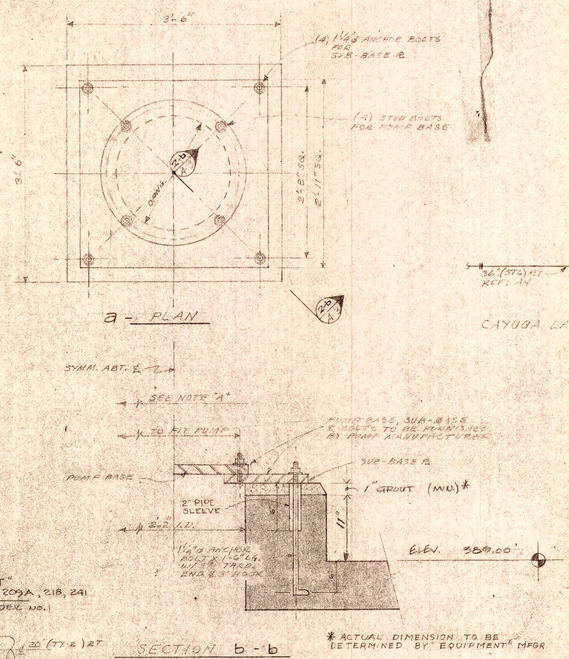
By Edward K. Kumm
NO 10277
DATE 6/26/75

DESIGNED	FIELD BOOKS	JOB NO
E.K.		1302-30
DRAWN		SHEET NO
EK.-BGR		A-1
CHECKED	SCALE	FILE NO
S.J.C.	AS NOTED	22901



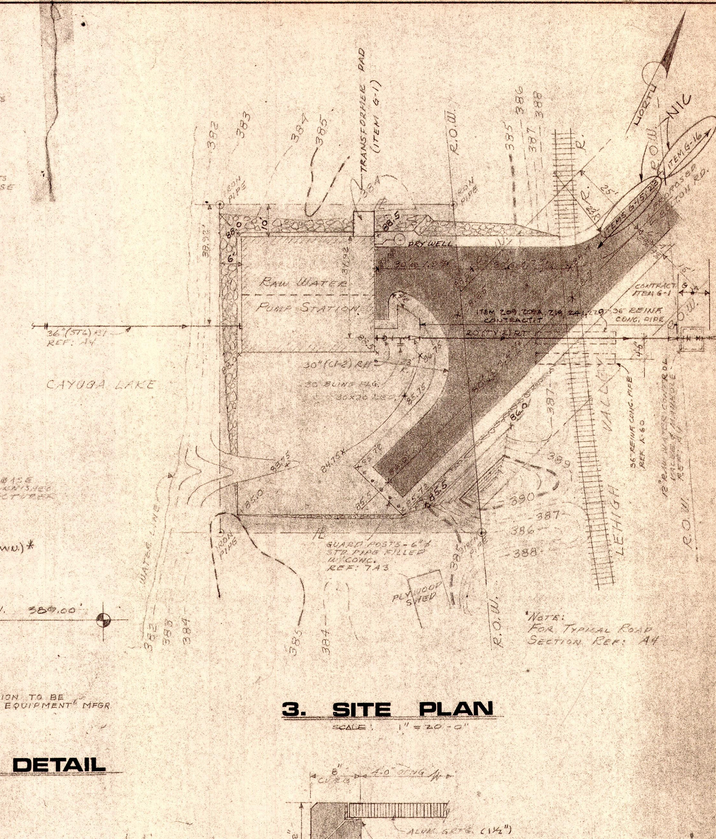
1. PLAN

SCALE: 1/4" = 1'-0"



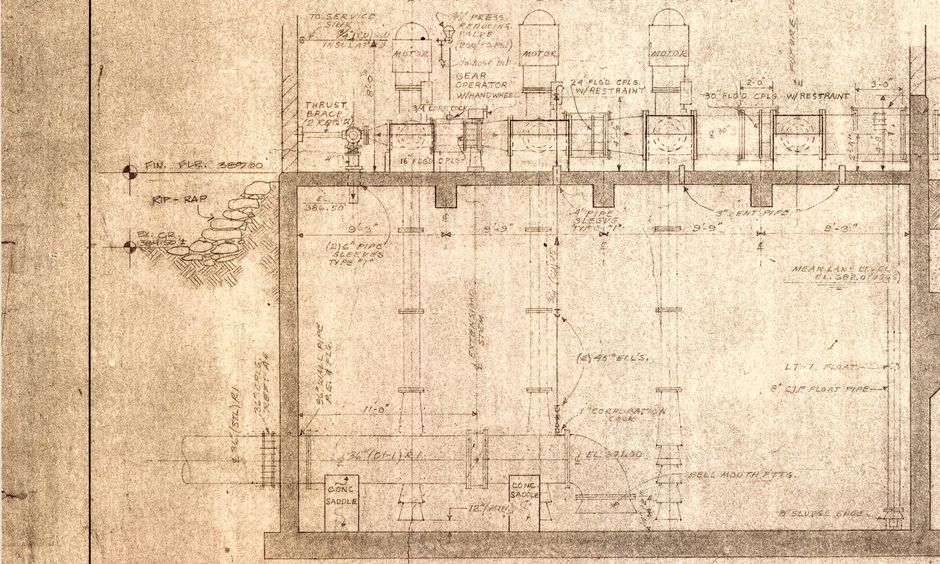
2. TYP. CONC. PUMP BASE DETAIL

NOT TO SCALE



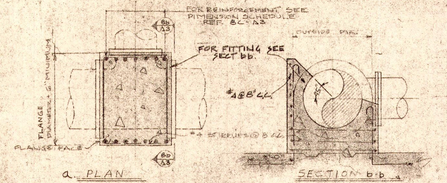
3. SITE PLAN

SCALE: 1" = 20'-0"



SECTION 4 - 4

SCALE: 1/4" = 1'-0"

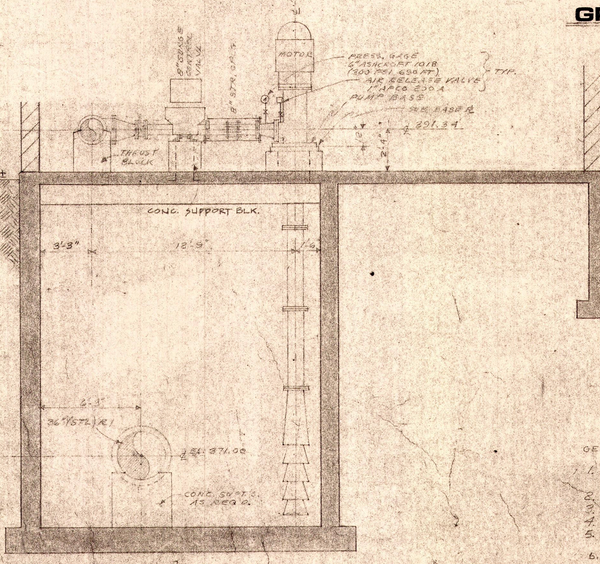


8. THRUST DETAIL

NO SCALE

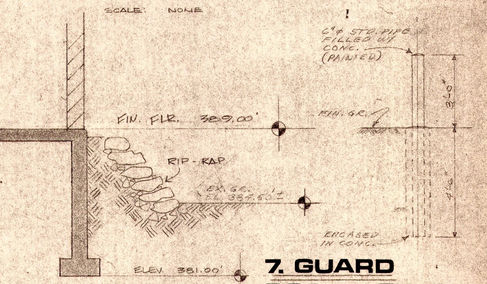
FITTINGS	REINFORCEMENT EACH FACE EQUALLY SPACED
16" TEE	5 # 8
20" TEE	7 # 8
24"x12"x12" TEE	7 # 9
30"x30"x24" TEE	7 # 8

6. DIMENSION SCHEDULE



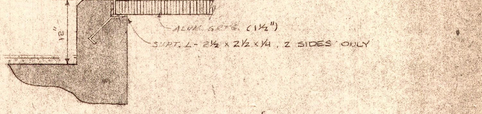
SECTION 5 - 5

SCALE: 1/4" = 1'-0"



7. GUARD POST DETAIL

NO SCALE



6. ACCESS OPENING & GRATING DETAIL

REVIEWED BY NEW YORK STATE DEPARTMENT OF HEALTH
By direction of the Commissioner of Health,
Bureau of Sanitary Engineering
Approved. See first sheet
for date and signature.

GENERAL NOTES:

1. ALL PIPE VALVES AND FITTINGS TO BE CLASS 250 PSI WORKING PRESSURE IN THE DISCHARGE LINE OF PUMPS.
2. PIPE HANGER SUPPORTS NOT SHOWN - SEE SPECIFICATIONS.
3. FOR BUTTERFLY VALVE LOCATIONS SEE REF: A 30
4. ALL PIPE TAPS TO BE MADE WITH CORPORATION COCKS.
5. LARGE PIECES OF ROCK REMOVED IN EXCAVATION, MAY BE USED AS RIP-RAP AS DIRECTED BY ENGR. (CU. YD. M.E.)
6. ROCK SHALL BE PRE-SPLIT WHEN DIRECTED BY ENGR.

NOTE:
FOR PIPE LINE DESIGNATION AND MATERIAL SEE "PIPE LINE LEGEND" - REF: A 30

REVISIONS
2 REVISED DETAIL NO. 6 JRE 12/17/74

JOB TITLE
WATER SUPPLY FACILITIES
FOR
SOUTHERN CAYUGA LAKE INTERMUNICIPAL WATER COMMISSION

TOMPKINS COUNTY, N.Y.

SHEET TITLE
RAW WATER PUMP STATION
SITE PLAN & PROCESS PIPING

LOZIER ENGINEERS INC.
10 GIBBS STREET
ROCHESTER, NEW YORK

BY James C. Pinckney
NO. 35742
DATE 3/27/74

DESIGNED	FIELD BOOKS	JOB NO.
R.B & E.K.		1302-30
DRAWN		SHEET NO.
BPC		A-3
CHECKED	SCALE	FILE NO.
E.K.	AS NOTED	22903

GENERAL INFORMATION & KEY TO TEST BORING LOGS

The **Subsurface Exploration – Test Boring Logs** produced **by CME Associates, Inc.** (CME) present observations and mechanical data collected by the CME Drill Crew while at the site, supplemented, at times, by classification of the materials removed from the borings determined through visual identification by technicians in the laboratory. It is cautioned that the materials removed from the borings represent only a fraction of the total volume of the deposits at the site and may not necessarily be representative of the subsurface conditions between adjacent borings or between the sampled intervals. The data presented on the Exploration Logs together with the recovered samples will provide a basis for evaluating the character of the subsurface conditions relative to the proposed construction. The evaluation must consider all the recorded details and their significance relative to each other. Often, analyses of standard boring data indicate the need for additional testing and sampling procedures to more accurately evaluate the subsurface conditions. Any evaluations of the contents of CME's report and the recovered samples must be performed by Licensed Professionals having experience in Soil Mechanics, Geological Sciences and Geotechnical Engineering. The information presented in this Key defines some of the methods, procedures and terms used on the CME Exploration Logs to describe the conditions encountered. Refer to the Log on page 4 for key number.

Key No. **Description**

1. The figures in the **DEPTH SCALE** column define the vertical scale of the Boring Log.

2. The **SAMPLE NO.** is used for identification on the sample containers and in the Laboratory Test Report or Summary.

3. The **SAMPLE DEPTH** column gives the depth range from which a sample was recovered.

4. The **TYPE / SAMPLE RECOVERY** column is used to signify the various types of samples. "SS is Split Spoon, "U" is Undisturbed Tube, and "C" is Rock Core. For soil and rock samples, the recovered length of the sample is recorded in inches.

5. **BLOWS ON SAMPLER** – This column shows the results of the "Standard Penetration Test (SPT) ASTM D1586", recording the number of blows required to drive a 2-inch outside diameter (O.D.) split spoon sampler into the ground beneath the casing. The number of blows required for each six inches of penetration is recorded. The total number of blows required for the 6-inch to 18-inch interval is summarized in the **SPT "N"** column and represents the "Standard Penetration Number". The outside diameter of the sampler, the hammer weight and the length of drop are noted in the **Methods of Investigation** portion of the log. A "WH" or "WR" in this column indicates that the sample spoon advanced a 6-inch interval under the **W**eight of **H**ammer + Rod or **W**eight of **R**od, respectively. If a rock core sample is taken, the core bit size designation is given here.

6. The **DEPTH OF CHANGE** column designates the depth (in feet) that the driller noted a compactness or stratum change. In soft materials or soil strata exhibiting a consistent relative density, it is difficult for the driller to determine the exact change from one stratum to the next. In addition, a grading or gradual change may exist. In such cases the depth noted is approximate or estimated only and may be represented by a dashed line. When continuous split spoon sampling is not employed, or an interval of several feet exists between samplings, the Depth of Change may not be indicated at all.

7. **VISUAL CLASSIFICATION OF MATERIAL** – Soil materials sampled and recovered are described by the Driller or Geotechnical Representative on the original field log. Notes of the Drillers observations are also placed in this column. Recovered samples may also be visually classified by a Geologist, Engineer, or Soil Technician. Visual soil classifications are made using a modified Burmister System as practiced by CME and as generally described in this Key and abbreviated on the Test Boring Log. This modified Burmister System is a type of visual-manual textural classification estimated by the Driller, Geologist, Engineer, or Technician on the basis of weight-fraction of the recovered material and estimated plasticity, among other characteristics. See Table 1 **"Classification of Materials"**. The description of the relative compactness or consistency is based upon the standard penetration number as defined in Table 2. The description of the recovered sample moisture condition is described as dry, moist, wet, or saturated. Water used to advance the boring may affect the moisture content of the recovered sample. Special terms may be used to describe recovered materials in greater detail, such terms are listed in ASTM D653. When sampling gravelly soils with a standard two-inch O.D. Split Spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter. The presence of boulders, cobbles, and large gravel is sometimes, but not necessarily, detected by observation of the casing advancement and sampler blows and/or through the "action" of the drill rig, sampler and/or casing as reported by the Driller.

   The description of **Rock** is based upon the recovered rock core. Terms frequently used in the description are included in Tables 3, 4 and 5. The length of core run is defined as length of penetration between retrievals of the core barrel from the bore hole, expressed in inches. The core recovery expresses the length of core recovered from the core barrel per core run, in percent. The size core barrel used is noted in Column 5. An "N" size core, being larger in diameter than "A" size core, often produces better recovery, and is frequently utilized where accurate information regarding the geologic conditions and engineering properties is needed. An estimate of in-situ rock quality is provided by a modified core recovery ratio known as the **"Rock Quality Designation" (RQD)**. This ratio is determined by considering only pieces of core that are at least 4 inches long and are hard and sound. Breaks obviously caused by drilling are ignored. The percentage ratio between the total length of such core recovered and the length of core drilled on a given run is the RQD. Table 4 indicates in-situ rock quality as related to the **RQD**.

8. The **SPT "N"** or **RQD** is given in this column as applicable to the specific sample taken. In Very Compact coarse-grained soils and in Hard fine-grained soils the N-value may be indicated as 50+ or 100+. This typically means that the blow count was achieved prior to driving the sampler the entire 6-inch interval or the sampler refused further penetration. For an "N"size rock core, the RQD is reported here, expressed in percent (%).

9. **GROUNDWATER OBSERVATIONS** and timing noted by the Drill Crew are shown in this section. It is important to realize that the reliability of the water level observations depend upon the soil type (e.g. water does not readily stabilize in a hole through fine grained soils), and that drill water used to advance the boring may have influenced the observations. Groundwater levels typically fluctuate seasonally so those noted on the log are only representative of that exhibited during the period of time noted on the log. One or more perched or trapped water levels may exist in the ground seasonally. All the available resources and data should be evaluated. If definite conclusions cannot be made, it is often prudent to examine the conditions more thoroughly through test pit excavations or through groundwater observation well installations.

10. **METHODS of INVESTIGATION** provides pertinent information regarding the identity of the Drill Crew members, inspector (if any), drill rig make and model, drill rig mount vehicle, casing and type of advancement, soil and rock sampling tools and appurtenances used in the installation of the Test Boring.

TABLE 1 - CLASSIFICATION OF MATERIALS	
GROUP	**COARSE GRAINED SOILS TEXTURAL SIZES**
BOULDERS	larger than 12" diameter
COBBLES	12" diameter to 3" sieve
GRAVEL	3" - coarse - 1" - medium - 1/2" - fine - #4 sieve
SAND	#4 - coarse - #10 - medium - #40 - fine - #200 sieve
GROUP	**FINE GRAINED SOILS SIZE (PLASTICITY*)**
SILT	#200 sieve (0.074mm) to 0.005mm size (see below *)
CLAY	0.005mm size to 0.001 mm size (see below *)
GROUP	**ORGANIC SOILS, PEAT, MUCK, MARL**
ORGANIC	Based on smell, visual-manual and laboratory testing

ABBREVIATIONS	**TERM**	**ESTIMATED PERCENT OF TOTAL SAMPLE BY WEIGHT**
f - fine	and	35 to 50%
m - medium	some	20 to 35%
c - coarse	little	10 to 20%
	trace	0 to 10%

***PLASTICITY DESCRIPTIONS and INDICATOR FIELD TESTS**			
		DRY STRENGTH TEST	
TERM	**PLASTICITY INDEX**	**INDICATION**	**FIELD TEST RESULT**
non-plastic	0 - 3	Very low	falls apart easily
slightly plastic	4 - 15	Slight	easily crushed by fingers
plastic	15 - 30	Medium	difficult to crush
highly plastic	31 or more	High	impossible to crush with fingers
Other Field Tests include: Dilatancy, Thread and Shine Testing			

*TABLE 2 - DESCRIPTION OF SOIL COMPACTNESS OR CONSISTENCY based on SPT "N"**		
Primary Soil Type	**Descriptive Term of Compactness**	**Range of Standard Penetration Resistance (N)**
COARSE GRAINED SOILS	Very Loose	less than 4 blows per foot
(More than half of Material is larger than No. 200 sieve size)	Loose	4 to 10
	Medium Compact	10 to 30
	Compact	30 to 50
	Very Compact	Greater than 50
FINE GRAINED SOILS	**Descriptive Term of Consistency**	**Range of Standard Penetration Resistance (N)**
(More than half of material is smaller than No. 200 sieve size)	Very Soft	less than 2 blows per foot
	Soft	2 to 4
	Medium Stiff	4 to 8
	Stiff	8 to 15
	Very Stiff	15 to 30
	Hard	Greater than 30
*The number of blows of 140-pound weight falling 30 inches to drive a 2-inch O.D., 1-3/8 inch I.D. sampler 12 inches is defined as the Standard Penetration Resistance, designated "N".		

TABLE 3 - ROCK CLASSIFICATION TERMS		
Rock Classification Terms		**Field Test or Meaning of Term**
Hardness	Soft	Scratched by fingernail. Crumbles under firm blows with a geologic pick.
	Medium Soft	Shallow indentations (1 to 3 mm) can be made by firm blows of a geologic pick. Can be peeled with a pocketknife with difficulty.
	Medium Hard	Scratched distinctly by penknife or steel nail. Can't be peeled or scraped with knife.
	Hard	Scratched with difficulty by penknife or steel nail. Requires more than one blow with a geologic hammer to break it
	Very Hard	Cannot be scratched by penknife or steel nail. Breaks only by repeated heavy blows with a geologic hammer.
Bedding (Divisional planes and/or surfaces separating it from layers above and below)	Thinly Laminated Laminated Thinly Bedded Medium Bedded Thickly Bedded Massive	less than 1/8th inch 1/8th to 1 inch 1 inch to 4 inches 4 inches to 12 inches 12 inches to 48 inches greater than 48 inches

TABLE 4 **Relation of Rock Quality Designation (RQD) and in-situ Rock Quality**	
RQD %	**Rock Quality Term Used**
90 to 100	Excellent
75 to 90	Good
50 to 75	Fair
25 to 50	Poor
0 to 25	Very Poor

TABLE 5 – BEDROCK WEATHERING CLASSIFICATION	
Classification	**Diagnostic Features**
Fresh	No visible sign of decomposition or discoloration. Rings under hammer impact.
Slightly Weathered	Slight discoloration inwards from open fractures, otherwise similar to Fresh.
Moderately Weathered	Discoloration throughout. Strength somewhat less than fresh rock but cores cannot be broken by hand or scraped with knife. Texture observed.
Highly Weathered	Most minerals somewhat decomposed. Specimens can be broken by hand with effort or shaved with knife. Core stones present in rock mass. Texture becoming indistinct but fabric preserved.
Completely Weathered	Minerals decomposed to soil, but fabric and structure preserved (e.g. Saprolite). Specimens easily crumbled or penetrated.
Residual Soil	Advanced state of decomposition resulting in plastic soils. Rock fabric and structure completely destroyed. Large volume change.

CME Associates, Inc. 6035 Corporate Drive East Syracuse, NY 13057 Phone: 315-701-0522	SUBSURFACE EXPLORATION TEST BORING LOG	Boring No.	B-2
		Page No.	1 of 1
		Report No.	
Project Name:		Date Started	
Client:		Date Finished	
Location:		Surface Elev.	

METHODS OF INVESTIGATION			
Driller: 10	**Casing:** 10		
Driller:	**Casing Hammer:**		
Inspector:	**Other:**		
Drill Rig:	**Soil Sampler:**		
Type:	**Hammer Wt:**		
Rod Size:	**Hammer Fall:**		

GROUNDWATER OBSERVATIONS			
Date	**Time**	**Depth (Ft.)**	**Casing At (Ft.)**
	While Drilling	9	9
	Before Casing Removed		
	After Casing Removed		
	After Casing Removed		

LOG OF BORING SAMPLES						VISUAL CLASSIFICATION OF MATERIAL		
Depth Scale (Feet)	Sample No.	Sample Depth (Ft.) From	Sample Depth (Ft.) To	Type / Sample Rec. (in.)	Blows on Sampler Per 6 Inches	Depth of Change (Ft.)	c - coarse m - medium f - fine	and - 35 to 50% / some - 20 to 35% little - 10 to 20% / trace - 0 to 10%	SPT "N" or RQD %
1	2	3	3	4	5	6	7		8

SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer + Rod, WR - Weight of Rod

Remarks:

Kathy Hochul, Governor

Roberta Reardon, Commissioner

Bolton Point Water System

Jesse Cary
442 Electronics Parkway
Liverpool NY 13088

Schedule Year 2025 through 2026
Date Requested 01/16/2026
PRC# 2026000893

Location Bolton Point RWPS
Project ID#
Project Type new electrical building addition, new circuiting, installation of transformer and switchgear, new lighting.

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 Rate Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2025 through June 2026. 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.

Contractor Registry

Effective December 30, 2024 all contractors and subcontractors submitting bids or performing construction work on public work projects, or private projects covered by Article 8 of the Labor Law, are required to register with the New York State Department of Labor (NYSDOL) under Labor Law Section 220-i. To register, contractors and subcontractors must submit an application through NYSDOL's Contractor Registry portal which is available through the agency's Management System for Protecting Worker Rights (MPWR) https://mpwr-public.labor.ny.gov/en/login.

For additional information, please visit online.

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.

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 12226; 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 12226 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

Bolton Point Water System

Jesse Cary
442 Electronics Parkway
Liverpool NY 13088

Schedule Year 2025 through 2026
Date Requested 01/16/2026
PRC# 2026000893

Location Bolton Point RWPS
Project ID#
Project Type new electrical building addition, new circuiting, installation of transformer and switchgear, new lighting.

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 12226

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, https://dol.ny.gov/public-work-and-prevailing-wage
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

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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 12226

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)

WE ARE YOUR DOL

NEW YORK STATE Department of Labor

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.

Your pay stub and wage notice received upon hire must clearly state your wage rate and supplement rate.

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: https://dol.ny.gov/bureau-public-work

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) 568-5287		

* 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.

*Contractor Registry (LL 220-I): Effective December 30th, 2024
Labor Law Section 220-i(6) prohibits contractors from bidding on public work and prohibits both contractors and subcontractors from commencing work on private and public projects subject to prevailing wage requirements. This section requires contractors to submit their Certificate of Registration with their bid materials. Each Certificate of Registration will have a unique registration number. Failure to provide proof of registration, as required by Labor Law Section 220-i, as a minimum qualification will result in the bidder being deemed non-responsive. There is a public database of registered contractors and subcontractors available online at data.ny.gov to confirm registration validity. For additional information on how to register and the requirements, visit https://dol.ny.gov/public-work-contractor-and-subcontractor-registry-landing

*Electronic Certified Payroll (LL 220-J): Effective December 31st, 2025
Effective December 31, 2025, all contractors and subcontractors who perform public work, or covered private work subject to the prevailing wage, will be required to submit certified payrolls electronically to the Bureau of Public Work and Prevailing Wage Enforcement. Additional information about the electronic certified payroll submission system will be made available on the Department's Website at https://dol.ny.gov/Electronic-Payroll

Payrolls and Payroll Records

Every contractor and subcontractor MUST keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. Payrolls must be maintained for at least three (3) years from the projects date of completion. Additionally, as per Article 6 of the Labor Law, contractors and subcontractors are required to establish, maintain, and preserve for not less that six (6) years, contemporaneous, true, and accurate payroll records.

At a minimum, payrolls must show the following information for each person employed on a public work project: Name; Address, Last 4 Digits of Social Security number, Classification(s) in which the worker was employed, Hourly wage rate(s) paid, Supplements paid or provided, and Daily and weekly number of hours worked in each classification.

Payroll records and transcripts are required to be kept on site during all the time that work under that contract is being performed.

NOTE: *For more detailed information regarding Article 9 prevailing wage contracts, please refer to "General Provisions of Laws Covering Workers on Article 9 Public Work Building Service Contracts".*

If you have any questions concerning the attached schedule or would like additional information, please write to:

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

OR

Contact the nearest BUREAU of PUBLIC WORK District Office

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

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.

Shift Work

If the timeline of the contract requires shift work be performed to meet deadlines, the BPWE will enforce the shift work rate as the required rate on the project whether or not shift work is specifically addressed in the contract.

Paid Prenatal Leave

Every employer shall be required to provide to its employees twenty hours of paid prenatal personal leave during any fifty-two week calendar period. Paid prenatal personal leave shall mean leave taken for the health care services received by an employee during their pregnancy or related to such pregnancy, including physical examinations, medical procedures, monitoring and testing, and discussions with a healthcare provider related to the pregnancy. Paid prenatal personal leave may be taken in hourly increments. Benefits for paid prenatal personal leave shall be paid in hourly installments. Employees shall receive compensation at the employee's regular rate of pay, or the applicable minimum wage established by the labor law, whichever is greater, for the use of Paid Prenatal leave.

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 12226

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

Tompkins County General Construction

Boilermaker — 01/01/2026

JOB DESCRIPTION Boilermaker **DISTRICT** 7

ENTIRE COUNTIES
Cayuga, Clinton, Cortland, Franklin, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Seneca, St. Lawrence, Tompkins

WAGES

Per hour:	07/01/2025	01/01/2026 Additional	01/01/2027 Additional
Boilermaker	$ 40.50	$ 2.50*	$ 2.50*

* To be allocated at a later date.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 26.60* + 1.49

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

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

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 25) on HOLIDAY PAGE
NOTE: When a holiday falls on Sunday, the day observed by the State or Nation shall be observed. When a holiday falls on Saturday, Friday will be observed as the holiday.

REGISTERED APPRENTICES
WAGES per hour: Six (6) month terms at the following percentage of Journeyworker's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th
65%	65%	70%	75%	80%	85%	90%	95%

SUPPLEMENTAL BENEFITS per hour:

$ 19.76* + 1.49	$ 19.76* + 1.49	$ 20.74* + 1.49	$ 21.71* + 1.49	$ 22.67* + 1.49	$ 23.66* + 1.49	$ 24.66* + 1.49	$ 25.62* + 1.49

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

7-175

Broadband — 01/01/2026

JOB DESCRIPTION Broadband **DISTRICT** 4

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, Orleans, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Wyoming, Yates

PARTIAL COUNTIES
Orange: Only in the Village of Greenwood Lake, Village of Highland Falls, Town of Tuxedo, and Town of Patterson

WAGES
NOTE: Applies to all public work and covered private projects, including those receiving ConnectAll funding subject to New York State Labor Law §224-E, solicited on or after July 1,2025. For all other projects solicited prior to July 1,2025 please see LINEMAN ELECTRICIAN-TELEDATA

Per Hour:	07/01/2025	08/04/2025
Field Tech Install/Repair	$ 51.31	$ 52.85

For outside work (excluding installation on building construction/alteration/renovation projects), stopping at first point of attachment (demarcation), installing/maintaining/repairing broadband internet service.

"Broadband", "Broadband Service", or "Broadband Internet" means mass-market retail service by wire or radio that provides the capability to transmit data to and receive data from all or substantially all internet endpoints, including any capabilities that are incidental to and enable the operation of the communications service, but excluding dial-up internet access service.

Note: EXLCUDES work within ten (10) feet of High Voltage (600 Volts and over) transmission lines for this work, please see LINEMAN

SUPPLEMENTAL BENEFITS
Per Hour:

$ 23.24

OVERTIME PAY
See (B, K, *R) on OVERTIME PAGE
* Two and one half times the hourly rate after the 8th hour

HOLIDAY
Paid: See (5, 6, 7, 11, 12) on HOLIDAY PAGE
Overtime: See (5, 6, 7, 11, 12) on HOLIDAY PAGE

4-CWA-Dist2

Carpenter - Building — 01/01/2026

JOB DESCRIPTION Carpenter - Building **DISTRICT** 2

ENTIRE COUNTIES
Chemung, Cortland, Schuyler, Steuben, Tompkins

PARTIAL COUNTIES
Allegany: Only the Township of Alfred.

WAGES

Per hour:	07/01/2025	01/01/2026	07/01/2026 Additional	07/01/2027 Additional
Carpenter	$ 31.59	$ 32.09	$ 3.50*	$ 4.00*
Floor Coverer	31.59	32.09	3.50*	4.00*
Carpet Layer	31.59	32.09	3.50*	4.00*
Dry-Wall	31.59	32.09	3.50*	4.00*
Diver-Wet Day	61.25	61.25	0.00	4.00*
Diver -Dry Day	32.59	33.09	3.50*	4.00*
Diver Tender	32.59	33.09	3.50*	4.00*

*To be allocated at a later date

NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW (per hour worked):
- Pile Drivers/Dock Builders shall receive $0.25 per hour over the journeyworker's rate of pay when performing piledriving/dock building work.
- Certified welders shall receive $1.00 per hour over the journeyworker's rate of pay when the employee is required to be certified and performs DOT or ABS specified welding work (Effective 7/1/2026 premium increases to $3.00/hr and will include premium when AWS certification is required).
- When an employee performs work within a contaminated area on a State and/or Federally designated hazardous waste site, and where relevant State and/or Federal regulations require employees to be furnished and use or wear required forms of personal protection, then the employee shall receive his regular hourly rate plus $1.50 per hour.
- Depth pay for Divers based upon deepest depth on the day of the dive (per diem payment):
  0' to 80' no additional fee
  81'to 100' additional $.50 per foot
  101'to 150' additional $0.75 per foot
  151'and deeper additional $1.25 per foot
- Penetration pay for Divers based upon deepest penetration on the day of the dive (per diem payment):
  0' to 50' no additional fee
  51' to 100' additional $.75 per foot
  101' and deeper additional $1.00 per foot
- Diver rates applies to all hours worked on dive day.

SHIFT WORK
On Agency/Owner mandated shift work, the following rates will be applicable:
1st Shift - Regular Rate
2nd Shift - Premium of 7% of base wage per hour (Effective 7/1/2026 premium increases to 10%)
3rd Shift - Premium of 14% of base wage per hour (Effective 7/1/2026 premium increases to 15%)
Shift work shall be defined as implementing at least two (2) shifts in a twenty-four (24) consecutive hour period. Shift work must be for a minimum of three (3) consecutive days.

SUPPLEMENTAL BENEFITS
Per hour:

	07/01/2025	01/01/2026
Journeyworker	$ 23.39	$ 23.39

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

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: Any holiday which occurs on Sunday shall be observed the following Monday. If Christmas falls on a Saturday, it shall be observed on the prior Friday.

REGISTERED APPRENTICES
Wages per hour (1300 hour terms at the following percentage of Journeyworker's base wage):

1st	2nd	3rd	4th
65%	70%	75%	80%

Supplemental Benefits per hour:

$ 12.55	$ 12.55	$ 15.15	$ 15.15

NOTE ADDITIONAL AMOUNTS PAID TO APPRENTICES FOR THE FOLLOWING WORK LISTED BELOW (per hour worked):
- Pile Driving/Dock Builder apprentices shall receive an additional $0.25 per hour worked when performing piledriving/dock building work.
- Certified Welders shall receive $1.00 per hour over the apprentices rate of pay when the apprentice is required to be certified and performs DOT or ABS specified welding work (Effective 7/1/2026 premium increases to $3.00/hr and will include premium when AWS certification is required).
- When an apprentice performs work within a contaminated area on a State and/or Federally designated hazardous waste site, and where relevant State and/or Federal regulations require the apprentice to be furnished and use or wear required forms of personal protection, then the apprentice shall receive his regular hourly rate plus $1.50 per hour.

2-277B-CS

Carpenter - Building / Heavy&Highway — 01/01/2026

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:	07/01/2025	07/01/2026 Additional	07/01/2027 Additional
Carpenter - ONLY for Artificial Turf/Synthetic Sport Surface	$ 37.94	$ 2.25*	$ 2.25*

* To be allocated at a later date.

Note - Does not include the operation of equipment. Please see Operating Engineers rates.

SUPPLEMENTAL BENEFITS
Per hour worked:

Journeyworker	$ 27.34

OVERTIME PAY
See (B, E, Q) 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 (1300 hour terms at the following percentage of Journeyworker's wage):

1st	2nd	3rd	4th

65%	70%	75%	80%

Supplemental Benefits per hour worked:

$19.10	$19.69	$21.83	$22.42

2-42AtSS

Carpenter - Heavy&Highway 01/01/2026

JOB DESCRIPTION Carpenter - Heavy&Highway **DISTRICT** 2

ENTIRE COUNTIES
Broome, Cayuga, Chemung, Cortland, Delaware, Jefferson, Lewis, Onondaga, Oswego, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Yates

WAGES

Per hour	07/01/2025	07/01/2026 Additional	07/01/2027 Additional
Carpenter	$ 39.52	$ 2.00*	$ 4.42*
Piledriver	39.52	2.00*	4.42*
Dockbuilder	39.52	2.00*	4.42*
Diver-Wet Day	64.52	2.00*	4.42*
Diver-Dry Day	40.52	2.00*	4.42*
Diver-Tender	40.52	2.00*	4.42*

*To be allocated at a later date.

NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW (per hour worked):
- State or Federal designated hazardous site, requiring protective gear shall be an additional $2.50 per hour.
- Certified welders when required to perform welding work will receive an additional $5.00 per hour.

ADDITIONAL NOTES PERTAINING TO DIVERS/TENDERS:
- Divers and Tenders shall receive one and one half (1 1/2) times their regular diver and tender rate of pay for Effluent and Slurry diving.
- Divers and tenders being paid at the specified rate for Effluent and Slurry diving shall have all overtime rates based on the specified rate plus the appropriate overtime rates (one and one half or two times the specified rate for Slurry and Effluent divers and tenders).
- The pilot of an ADS or submersible will receive one and one-half (1 1/2) times the Diver-Wet Day Rate for time submerged.
- All crew members aboard a submersible shall receive the Diver-Wet Day rate.
- Depth pay for Divers based upon deepest depth on the day of the dive (per diem payment):
  - 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
  - 201' and deeper additional $1.50 per foot
- Penetration pay for Divers based upon deepest penetration on the day of the dive (per diem payment):
  - 0' to 50' no additional fee
  - 51' to 100' additional $0.75 per foot
  - 101' to 200' additional $1.00 per foot
  - Over 201' additional $1.25 per foot
- Diver rates applies to all hours worked on dive day.

SHIFT WORK
When project owner mandates a single irregular work shift, the Journeyworkers and Apprentices will receive an additional $4.00 per hour. A single irregular work shift can start any time from 5:00 p.m. to 1:00 a.m.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 27.31

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

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
- In the event a Holiday falls on a Saturday, the Friday before will be observed as a Holiday. If a Holiday falls on a Sunday, then Monday will be observed as a Holiday.
- The employee must work their scheduled workday before and their scheduled workday after the holiday to receive holiday pay.

REGISTERED APPRENTICES
CARPENTER/PILEDRIVER/DOCKBUILDER APPRENTICES
Wages per hour (1300 hour terms at the following percentage of journeyworker's base wage):

1st	2nd	3rd	4th
65%	70%	75%	80%

Supplemental Benefits per hour:

$ 19.07 $ 19.66 $ 21.75 $ 22.34

NOTE ADDITIONAL AMOUNTS PAID PER HOUR WORKED TO APPRENTICES FOR SPECIFIC TYPES OF WORK PERFORMED:
- State or Federal designated hazardous site, requiring protective gear shall be an additional $2.50 per hour.
- Certified welders when required to perform welding work will receive an additional $5.00 per hour.

2-277HH-Bro

Electrician 01/01/2026

JOB DESCRIPTION Electrician **DISTRICT** 6

ENTIRE COUNTIES
Cortland, Herkimer, Madison, Oneida, Oswego

PARTIAL COUNTIES
Cayuga: Townships of Ira, Locke, Sempronius, Sterling, Summerhill and Victory.
Chenango: Only the Townships of Columbus, New Berlin and Sherburne.
Onondaga: Entire County except Townships of Elbridge and Skaneateles.
Otsego: Only the Townships of Plainfield, Richfield, Springfield, Cherry Valley, Roseboom, Middlefield, Otsego, Exeter, Edmeston, Burlington, Pittsfield and New Lisbon.
Tompkins: Only the Township of Groton.
Wayne: Only the Townships of Huron, Wolcott, Rose and Butler.

WAGES

Per hour:	07/01/2025	06/01/2026 Additional
Electrician	$ 50.50	$ 5.25*
Teledata	50.50	5.25*
Cable Splicer	55.55	5.25*

* To be allocated at a later date.

NOTE: Additional amounts, subject to overtime premiums, due for the following work (applicable to all employees):
- Additional $2.50 per hour for work performed over 35 feet above the ground, floor, or roof levels or where work is required in tunnels, shafts, or under compressed air 35 feet below the ground level.
- Additional $3.00 per hour for working over 50 feet above or below ground, floor, or roof level. This includes work on ladders, "toothpicks", scaffolds, boatswain chairs, towers, smokestacks or other open structures, or mechanical lifts used over 60 feet.

Occupied Conditions: When necessary to perform alteration and/or renovation work and owner mandates (due to occupied conditions) prevent the work from being performed during "normal" working hours (defined as between 6:00 a.m. and 4:30 p.m. Monday through Friday), alternate hours may be worked, provided: 1) The hours are established for a minimum of five (5) days duration or the length of the job, whichever is shorter; and 2) An entire work scope within a job-site area is performed utilizing the varied hours. If these conditions are satisfied, all hours worked Monday through Friday of a shift that starts before or ends after the "normal" hours, shall be paid at the appropriate rate plus fifteen percent (15%). However, the following restrictions shall apply:

1) "Alternate" hours shall consist of a minimum of eight (8) consecutive hours per day.
2) Hours worked in excess of eight (8) hours per day, Monday through Friday, shall be paid at a rate of one and one-half times the applicable rate (dayshift + 15%).
3) Hours worked on Saturday shall be paid at time and one-half the applicable rate.
4) Hours worked on Sundays and Holidays shall be paid at double the straight time rate.
5) Work of a new construction nature may not be worked under these conditions.

SHIFT WORK
THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF EIGHT (8) HOURS FOR AT LEAST FIVE (5) DAYS DURATION WHICH MAY HAVE BEEN WORKED. WHEN TWO (2) SHIFTS OR THREE (3) SHIFTS ARE WORKED:

1ST SHIFT	8:00AM - 4:30PM:	Regular wage rate
2ND SHIFT	4:30 PM - 1:00 AM:	Regular wage rate plus 15%
3RD SHIFT	12:30 AM - 9:00 AM:	Regular wage rate plus 25%

SUPPLEMENTAL BENEFITS

Per hour:	
Journeyworker	$ 33.52 plus 3% of hourly wage paid*

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

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

* NOTE: On Saturday the first 8 hours worked shall be paid at a rate of one and one-half times the applicable rate. All additional hours are payable at double the straight time rate.
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, 15, 26) on HOLIDAY PAGE
NOTE: If any of the above holidays fall on Saturday, Friday shall be observed as the holiday. If any of the above holidays fall on Sunday, Monday shall be observed as the holiday.

REGISTERED APPRENTICES
WAGES per hour: Hourly terms at the following wage.

1st period (0-1000 hrs)	$ 20.20
2nd period (1001-2000)	22.75
3rd period (2001-3500)	25.25
4th period (3501-5000)	30.30
5th period (5001-6500)	35.35
6th Period (6501-8000)	40.40

SUPPLEMENTAL BENEFITS per hour:

1st period	$ 14.69*
2nd period	14.69*
3rd period	30.02*
4th period	30.72*
5th period	31.42*
6th period	32.12*

* PLUS 3% OF HOURLY WAGE PAID, STRAIGHT TIME RATE OR PREMIUM RATE.

6-43

Electrician — 01/01/2026

JOB DESCRIPTION Electrician **DISTRICT** 6

ENTIRE COUNTIES

PARTIAL COUNTIES
Cayuga: Only the Township of Genoa.
Schuyler: Only the Townships of Cayuta, Catharine, and Hector.
Seneca: Only the Townships of Lodi and Covert.
Tioga: Only the Townships of Spencer and Candor.
Tompkins: Entire county except the Township of Groton.

WAGES

Per hour:	07/01/2025	06/01/2026 Additional	06/01/2027 Additional
Electrician	$ 44.50	$ 4.00*	$ 4.50*

* To be allocated at a later date.

NOTE: Additional amounts, subject to overtime premiums, due for the following work (applicable to all employees):
-Additional $1.00 per hour for work from trusses, scaffolds, frames, spider baskets, ladders, etc. 40 feet or more from ground floor or in underground mines or tunnels. Work done from personal lift equipment that complies with OSHA requirements are excluded.
-Additional $2.00 per hour when required to work under compressed air, on radio towers, on asbestos abatement projects which require the use of a respirator, work of a hazardous nature, work where gas masks are required or work requiring use of protective arc flash suits.

SHIFT WORK
THE FOLLOWING RATES WILL APPLY WHEN SHIFT WORK IS MANDATED EITHER IN THE JOB SPECIFICATION OR BY THE CONTRACTING AGENCY:

1ST SHIFT	8:00 AM to 4:30 PM	Regular wage rate
2ND SHIFT	4:30 PM to 1:00 AM	Regular wage rate plus 17.3%
3RD SHIFT	12:30 AM to 9:00 AM	Regular wage rate plus 31.4%

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 30.55 plus 3% of hourly wage paid*

* NOTE: 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: On Saturday the first 8 hours worked shall be paid at a rate of one and one-half times the applicable rate. All additional hours are payable at double the straight time rate.
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) on HOLIDAY PAGE
NOTE: When a holiday falls on a Saturday, the day preceding shall be celebrated as such, and when falling on a Sunday, Monday will be celebrated as the holiday.

REGISTERED APPRENTICES
WAGES per hour: One year terms at the following percentage of Journeyworker's wage.

1st year	50%
2nd year	55%
3rd year	65%
4th year	75%
5th year	85%

SUPPLEMENTAL BENEFITS per hour:

1st year	$ 14.25*
2nd year	14.25*
3rd year	24.30*
4th year	24.84*
5th year	26.38*

* PLUS 3% OF HOURLY WAGE PAID, STRAIGHT TIME RATE OR PREMIUM RATE.

6-241

Elevator Constructor — 01/01/2026

JOB DESCRIPTION Elevator Constructor **DISTRICT** 6

ENTIRE COUNTIES
Broome, Cayuga, Chenango, Cortland, Franklin, Jefferson, Lewis, Onondaga, Oswego, St. Lawrence, Tioga, Tompkins

PARTIAL COUNTIES
Delaware: Only the towns of: Tompkins, Walton, Masonville, Sidney, Franklin and Deposit.
Madison: Only the towns of: Cazenovia, DeRuyter, Eaton, Fenner, Georgetown, Lebanon, Lenox, Nelson and Sullivan.
Oneida: Only the towns of: Camden, Florence and Vienna.

WAGES

Per hour:	07/01/2025	01/01/2026	01/01/2027
Mechanic	$ 58.44	$ 61.003	$ 63.719
Helper	40.91	42.70	44.60

SUPPLEMENTAL BENEFITS

Per hour:			
Journeyworker	$ 38.435*	$ 38.985*	39.535*

*NOTE - add 6% of regular hourly rate for all hours worked. Add 8% of regular hourly rate if more than 5 years of service.

OVERTIME PAY
See (D, O) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6, 15, 16) on HOLIDAY PAGE
Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE
NOTE: When a holiday falls on a Saturday, it shall be observed on Friday. When a holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES
WAGES per hour: 1 year terms at the following percentage of the Elevator Constructor wage.

0-6 months	6-12 months	2nd year	3rd year	4th year
50%	55%	65%	70%	80%

SUPPLEMENTAL BENEFITS per hour:

0-6 months: 6% of the hourly apprentice rate paid, no additional supplemental benefits.

All other terms: Same as Journeyworker

6-62.1

Glazier — 01/01/2026

JOB DESCRIPTION Glazier **DISTRICT** 5

ENTIRE COUNTIES
Broome, Chemung, Chenango, Delaware, Otsego, Schuyler, Steuben, Tioga, Tompkins

WAGES
Per hour: 07/01/2025

Glazier	$ 30.00

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 33.15

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
1000 hour terms

Appr. 1st term	$ 20.00
Appr. 2nd term	21.00
Appr. 3rd term	22.00
Appr. 4th term	23.00
Appr. 5th term	24.00
Appr. 6th term	25.00
Appr. 7th term	26.00
Appr. 8th term	27.00

Supplemental Benefits per hour:

Appr. 1st term	$ 13.27
Appr. 2nd term	13.27
Appr. 3rd term	19.27
Appr. 4th term	19.27
Appr. 5th term	20.27
Appr. 6th term	20.27
Appr. 7th term	21.27
Appr. 8th term	21.27

5-677z3

Insulator - Heat & Frost — 01/01/2026

JOB DESCRIPTION Insulator - Heat & Frost **DISTRICT** 7

ENTIRE COUNTIES
Broome, Cayuga, Chemung, Chenango, Cortland, Herkimer, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Otsego, Schuyler, Seneca, St. Lawrence, Tioga, Tompkins

WAGES
Per hour: 07/01/2025

Asbestos Installer	$ 43.25
Insulation Installer (On mechanical systems only)	43.25

SHIFT WORK
The following rates will apply on all contracting agency-mandated shifts worked:

1st Shift	$ 43.25

2nd Shift	49.74
3rd Shift	51.90

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 27.34

OVERTIME PAY
See (*B1, **K, P) on OVERTIME PAGE
*NOTE: First 10 hours on Saturday.
**NOTE: Holidays that fall on Sunday are subject to double time.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (2*,4,6,28) on HOLIDAY PAGE
*Triple time for Labor Day if worked.

REGISTERED APPRENTICES
WAGES per hour: One (1) year terms at the following percentage of Journeyworker's wage.

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

SUPPLEMENTAL BENEFITS per hour:

$ 24.09	$ 24.09	$ 27.34	$ 27.34

7-30-Syracuse

Ironworker — 01/01/2026

JOB DESCRIPTION Ironworker **DISTRICT** 6

ENTIRE COUNTIES
Broome, Cayuga, Cortland, Onondaga, Oswego, Seneca, Tioga, Tompkins

PARTIAL COUNTIES
Chenango: Only the townships of Afton, Bainbridge, Coventry, German, Greene, Guilford, Lincklaen, McDonough, Norwich, Otselic, Oxford, Pharsalia, Pitcher, Preston and Smithville.
Jefferson: Only the townships of Adams, Alexandria, Brownville, Cape Vincent, Clayton, Ellisburg, Henderson, Hounsfield, LeRay, Lorraine, Lyme, Orleans, Pamelia, Rodman, Rutland, Theresa, Watertown and Worth.
Madison: Only the townships of Cazenovia, DeRuyter, Fenner, Georgetown, Lenox, Lincoln, Nelson, Smithfield and Sullivan.
Schuyler: Only the townships of Cayuta, Catharine, Hector and Montour.
Wayne: Only the townships of Butler, Galen, Huron, Rose, Savannah and Wolcott.

WAGES
Structural, Reinforcing, Re-bar, Machinery Mover & Rigger, Ornamental & Curtain Wall, Window Wall, Pre-Glazed Metal Framed Windows Attached to Steel or Masonry Including Caulking, Fence Erector (Chain Link/Security), Sheeter/Bridge Rail, Pre-Cast Erector, Stone Derrickman, Pre-Engineered Building Erector, Welder

Per hour:	07/01/2025	07/01/2026 Additional
Ironworker	$ 37.16	$ 2.76*

* To be allocated at a later date.

SHIFT WORK
Multiple shifts mandated by the project owner. All shifts will be eight (8) hours.

1st Shift	$ 37.16	
2nd Shift	40.88	Starting times between 2PM and 7PM
3rd Shift	42.73	Starting times between 7PM and 12AM

WHEN A SINGLE IRREGULAR SHIFT IS WORKED, WITH START TIMES BASED ON SECOND AND THIRD SHIFTS, ADD 10% TO THE 1ST SHIFT WAGE RATE POSTED ABOVE.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 31.88

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

HOLIDAY
Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: Any holiday which occurs on Saturday shall be observed on the preceding Friday. Any holiday which occurs on Sunday shall be observed the following Monday.

REGISTERED APPRENTICES
WAGES per hour: One year terms at the following rates.

1st	2nd	3rd	4th
$ 21.50	$ 23.50	$ 25.50	$ 27.50

SUPPLEMENTAL BENEFITS per hour:

1st year	$ 13.03
2nd year	21.36
3rd year	22.55
4th year	23.74

6-60

Laborer - Building — 01/01/2026

JOB DESCRIPTION Laborer - Building **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chemung, Cortland, Schuyler, Steuben, Tioga, Tompkins

PARTIAL COUNTIES
Chenango: Entire County except the Townships of Sherburne, Columbus and New Berlin.
Delaware: Only the Townships of Sidney, Masonville, Walton, Tompkins, Deposit, Hancock, and Colchester.

WAGES
Per hour:

GROUP #1: Basic Laborer - excavation, concrete vibrator, power-driven buggie, demolition (including acetylene torch work) that is customarily done by a laborer

GROUP #2: Air Tool Operators, Mason Tenders

GROUP #3: Blaster, Rock Drill (compressor driven)

GROUP #4: Asbestos, Hazardous, Toxic Waste, Lead and Mold Remediation

	07/01/2025	07/01/2026 Additional
GROUP #1	$ 30.00	$ 1.25*
GROUP #2	31.00	1.25*
GROUP #3	32.00	1.25*
GROUP #4	32.00	1.25*

*To be allocated at a later date.

IMPORTANT NOTES:
- Laborer tasks on Renewable Energy and Green Energy construction work shall be paid at the appropriate Heavy & Highway rates.
- Wage and supplement rates for the operation of forklift and skid steer may be found under the classification "Operating Engineer".

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 20.20

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

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
When a holiday falls on Sunday, it shall be observed on the following Monday.

REGISTERED APPRENTICES
WAGES: 1000 hour terms at the following percentage of Journeyworker's wage.

1st	2nd	3rd	4th
70%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

1st term	$ 15.85
2nd term	17.10
3rd term	17.98
4th term	18.85

2-785b

Laborer - Heavy&Highway 01/01/2026

JOB DESCRIPTION Laborer - Heavy&Highway **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chemung, Cortland, Schuyler, Steuben, Tioga, Tompkins

PARTIAL COUNTIES
Chenango: Entire County except the Townships of Sherburne, Columbus, and New Berlin.
Delaware: Only the Townships of Sidney, Masonville, Walton, Tompkins, Deposit, Hancock and Colchester.

WAGES
Per hour:

GROUP A: Drill Helper, Flagman, Outboard and Hand Boats.

GROUP B: Basic Rate, Bull Float (where used for strike off only), 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, Installation of Bridge Drainage Pipe, Pipe Layers, Vibrator Type Rollers, Tamper, Drill Doctor, Water Pump Operators (1-1/2" & 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, and Air Tool Operators, Wrecking Laborer.

GROUP C: Drilling equipment - only where a separate air compressor unit supplies power, Acetylene Torch Operators, Asphalt Raker, Powder Man, Tail or Screw Operator on Asphalt Paver.

GROUP D: Blasters, Form Setters (slab steel forms on highways, roads, streets & airport runways), Stone or Granite Curb Setters.

GROUP E: Hazardous Waste defined as when an employee performs hazardous waste removal, lead abatement and removal, asbestos abatement and removal work on State and/or Federally designated waste site and were relevant State and/or Federal regulations require employees to use or wear required forms of personal protection.

	07/01/2025	07/01/2026 Additional	07/01/2027 Additional
GROUP A	$ 38.06	$ 3.40*	$ 4.20*
GROUP B	38.26	3.40*	4.20*
GROUP C	38.46	3.40*	4.20*
GROUP D	38.66	3.40*	4.20*
GROUP E	43.26	3.40*	4.20*

*To be allocated at a later date.

IMPORTANT NOTES:
- Laborer tasks on Renewable Energy and Green Energy construction work shall be paid at the appropriate Heavy & Highway rates.
- Wage and supplement rates for the operation of forklift and skid steer may be found under the classification "Operating Engineer".
- When an employee is required by the employer and/or by the material data safety sheets of a product, during its application, to wear a half or full-face replaceable cartridge respirator for more than (2) hours, then in such case said employee(s) will be paid the Group E rate for the shift.

SHIFT WORK
A single irregular work shift starting any time between 5:00 PM and 1:00 AM on governmental mandated night work shall be paid an additional $5.00 per hour.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 26.35

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

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

- If Holiday falls on Sunday, it will be celebrated on Monday. If the Holiday falls on Saturday, it will be celebrated on Saturday.
- An Employee must work the scheduled working day before and the scheduled working day after a holiday to receive holiday pay.

REGISTERED APPRENTICES
WAGES: 1000 hour terms at the following percentage of Journeyworker's GROUP B wage:

1st	2nd	3rd	4th
70%	80%	90%	95%

SUPPLEMENTAL BENEFITS per hour:
All terms $ 26.35

2-785h

Laborer - Tunnel 01/01/2026

JOB DESCRIPTION Laborer - Tunnel **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chemung, Cortland, Schuyler, Steuben, Tioga, Tompkins

PARTIAL COUNTIES
Chenango: Entire County except the Townships of Sherburne, Columbus, and New Berlin.
Delaware: Only the Townships of Sidney, Masonville, Walton, Tompkins, Deposit, Hancock and Colchester.

WAGES
Per hour:

GROUP A: Change House Man

GROUP B: Miners and all Machine Men, Safety Miner, All Shaft work, Caisson work, Drilling, Blow Pipe, all Air Tools, Tugger, Scaling, Nipper, Guniting pot to nozzle, Bit Grinder, Signal Man (top and bottom), Concrete Man, Shield Driven Tunnels, mixed face and soft ground, liner plate tunnels in free air.

GROUP C: Blaster

GROUP D: Hazardous waste removal work on a State and/or Federally designated waste site where relevant State and/or Federal regulations require employees to use or wear required forms of personal protection.

	07/01/2025	07/01/2026 Additional	07/01/2027 Additional
Group A	$ 41.24	$ 3.40*	$ 4.20*
Group B	41.44	3.40*	4.20*
Group C	44.24	3.40*	4.20*
Group D	46.24	3.40*	4.20*

*To be allocated at a later date

IMPORTANT NOTES:
- When an employee is required by the employer and/or by the material data safety sheets of a product, during its application, to wear a half or full face replaceable cartridge respirator for more then (2) hours, then in such case said employee(s) will be paid the Group D rate for the shift.

SHIFT WORK
A single irregular work shift starting any time between 5:00 PM and 1:00 AM on governmental mandated night work shall be paid an additional $5.00 per hour.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker $ 26.35

OVERTIME PAY
See (B, E, Q) on OVERTIME PAGE
- If Holiday falls on Sunday, it will be celebrated on Monday. If the Holiday falls on Saturday, it will be celebrated on Friday.

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
If the holiday falls on Saturday, it will be celebrated on Friday. If the holiday falls on Sunday, it will be celebrated on Monday

REGISTERED APPRENTICES
WAGES: 1000 hour terms at the following percentage of Group B wage

1st	2nd	3rd	4th

70% 80% 90% 95%

SUPPLEMENTAL BENEFITS per hour:

All Terms $ 26.35

2-785T

Lineman Electrician 01/01/2026

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
A 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, assembly of all electrical materials, conduit, pipe, 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.

Crane Operators: Operation of any type of crane on line projects.
Crawler Backhoe: Operation of tracked excavator/crawler backhoe with 1/2 yard bucket or larger on line projects.
Digging Machine Operator: All other digging equipment and augering on line projects.

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

NOTE: Includes Teledata Work within ten (10) feet of High Voltage Transmission Lines. Also includes digging of holes for poles, anchors, footer, and foundations for electrical equipment.

---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. Includes access matting for line work.

Per hour:	07/01/2025	05/04/2026	05/03/2027	05/01/2028
Group A:				
Lineman, Technician	$ 61.56	$ 64.37	$ 66.84	$ 69.47
Crane, Crawler Backhoe	61.56	64.37	66.84	69.47
Welder, Cable Splicer	61.56	64.37	66.84	69.47
Group B:				
Digging Mach. Operator	$ 55.40	$ 57.93	$ 60.16	$ 62.52
Group C:				
Tractor Trailer Driver	$ 52.33	$ 54.71	$ 56.81	$ 59.05
Groundman, Truck Driver	49.25	51.50	53.47	55.58
Equipment Mechanic	49.25	51.50	53.47	55.58
Group D:				
Flagger	$ 33.86	$ 35.40	$ 36.76	$ 38.21

Additional 3% per hour above regular rate for entire crew when a helicopter is used. This will increase to 5% on May 03, 2027.

---Below rates applicable on all electrical sub-stations, switching structures, fiber optic cable and all other work not defined as "Utility outside electrical work." Includes access matting for line work.

Group A:				
Lineman, Technician	$ 61.56	$ 64.37	$ 66.84	$ 69.47
Crane, Crawler Backhoe	61.56	64.37	66.84	69.47
Cable Splicer	67.72	70.81	73.52	76.42
Certified Welder,				

Pipe Type Cable	$ 64.64	$ 67.59	$ 70.18	$ 72.94
Group B:				
Digging Mach. Operator	$ 55.40	$ 57.93	$ 60.16	$ 62.52
Group C:				
Tractor Trailer Driver	$ 52.33	$ 54.71	$ 56.81	$ 59.05
Groundman, Truck Driver	49.25	51.50	53.47	55.58
Equipment Mechanic	49.25	51.50	53.47	55.58
Group D:				
Flagger	$ 33.86	$ 35.40	$ 36.76	$ 38.12

Additional 3% per hour above regular rate for entire crew when a helicopter is used. This will increase to 5% on May 03, 2027.

----Below rates applicable on all switching structures, maintenance projects, railroad catenary install/maintenance third rail installation, bonding of rails and pipe type cable and installation of fiber optic cable. Includes access matting for line work.

Group A:				
Lineman, Tech, Welder	$ 62.94	$ 65.81	$ 68.34	$ 71.03
Crane, Crawler Backhoe	62.94	65.81	68.34	71.03
Cable Splicer	69.23	72.39	75.17	78.13
Certified Welder, Pipe Type Cable	66.09	69.10	71.76	74.58
Group B:				
Digging Mach. Operator	$ 56.65	$ 59.23	$ 61.51	$ 63.93
Group C:				
Tractor Trailer Driver	$ 53.50	$ 55.94	$ 58.09	$ 60.38
Groundman, Truck Driver	50.35	52.65	54.67	56.82
Equipment Mechanic	50.35	52.65	54.67	56.82
Group D:				
Flagger	$ 34.62	$ 36.20	$ 37.59	$ 39.07

Additional 3% per hour above regular rate for entire crew when a helicopter is used. This will increase to 5% on May 03, 2027.

----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. Includes access matting for line work.

Group A:				
Lineman, Tech, Welder	$ 64.18	$ 67.10	$ 69.68	$ 72.43
Crane, Crawler Backhoe	64.18	67.10	69.68	72.43
Group B:				
Digging Mach. Operator	$ 57.76	$ 60.39	$ 62.71	$ 65.19
Group C:				
Tractor Trailer Driver	$ 54.55	$ 57.04	$ 59.23	$ 61.57
Groundman, Truck Driver	51.34	53.68	55.74	57.94
Equipment Mechanic	51.34	53.68	55.74	57.94
Group D:				
Flagger	$ 35.30	$ 36.91	$ 38.32	$ 39.84

Additional 3% per hour above regular rate for entire crew when a helicopter is used. This will increase to 5% on May 03, 2027.

SHIFT WORK

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 %

SUPPLEMENTAL BENEFITS

Per hour:

07/01/2025	05/04/2026	05/03/2027	05/01/2028

Group A	$ 31.90*	$ 32.90*	$ 34.40*	$ 35.90*
Group B	$ 27.90*	$ 28.90*	$ 30.40*	$ 31.90*
Group C	$ 27.70*	$ 28.50*	$ 29.70*	$ 30.90*
Group D	$ 27.65*	$ 28.40*	$ 29.53*	$ 30.66*

*Plus 7 % of the hourly wage paid. The 7% is based on straight time or premium time.

OVERTIME PAY
See (B, E, Q, X) on OVERTIME PAGE. NOTE: Double time for all emergency work designated by the Dept. of Jurisdiction.
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, 25) on HOLIDAY PAGE
Overtime See (5, 6, 8, 15, 25) on HOLIDAY PAGE
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 Journeyworker's Lineman wage.

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

SUPPLEMENTAL BENEFITS per hour:

	07/01/2025	05/04/2026	05/03/2027	05/01/2028
All terms:	$ 27.65*	$ 28.40*	$ 29.53*	$ 30.66*

*Plus 7% of the hourly wage paid. The 7% is based on straight time or premium time.

6-1249a

Lineman Electrician - Teledata — 01/01/2026

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
NOTE: Applies to all public work and covered private projects, including those receiving ConnectAll funding subject to LL 224-E,solicited prior to July 1, 2025. For all projects, excluding dial-up internet access service, solicited on or after July 1, 2025, please see BROADBAND

Per hour:	07/01/2025
Cable Splicer	$ 40.81
Installer, Repairman	$ 38.73
Teledata Lineman	$ 38.73
Tech., Equip. Operator	$ 38.73
Groundman/Flagger	$ 20.53

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

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

SHIFT WORK
THE FOLLOWING RATES APPLY WHEN THE CONTRACTING AGENCY MANDATES MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION ARE WORKED. WHEN TWO (2) OR THREE (3) SHIFTS ARE WORKED THE FOLLOWING RATES APPLY:

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

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 5.77 *plus 3% of the hour 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
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 — 01/01/2026

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.

Crane Operators: Operation of any type of crane on Traffic Signal/Lighting projects.
Crawler Backhoe: Operation of tracked excavator/crawler backhoe with 1/2 yard bucket or larger on Traffic Signal/Lighting projects.
Digging Machine Operator: All other digging equipment and augering on Traffic Signal/Lighting projects.

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

A flagger's duties shall consist of traffic control only.

Per hour:	07/01/2025	05/04/2026	05/03/2027	05/01/2028
Group A:				
Lineman, Technician	$ 52.86	$ 55.31	$ 57.40	$ 59.64
Crane, Crawler Backhoe	52.86	55.31	57.40	59.64
Certified Welder	55.50	58.08	60.27	62.62
Group B:				
Digging Machine	$ 47.57	$ 49.78	$ 51.66	$ 53.68
Group C:				
Tractor Trailer Driver	$ 44.93	$ 47.01	$ 48.79	$ 50.69
Groundman, Truck Driver	42.29	44.25	45.92	47.71
Equipment Mechanic	42.29	44.25	45.92	47.71
Group D:				
Flagger	$ 31.72	$ 33.19	$ 34.44	$ 35.78

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.

SHIFT WORK
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%

SUPPLEMENTAL BENEFITS
Per hour worked:

	07/01/2025	05/04/2026	05/03/2027	05/01/2028
Group A	$ 31.90*	$ 32.90*	$ 34.40*	$ 35.90*
Group B	$ 27.90*	$ 28.90*	$ 30.40*	$ 31.90*
Group C	$ 27.70*	$ 28.50*	$ 29.70*	$ 30.90*
Group D	$ 27.65*	$ 28.40*	$ 29.53*	$ 30.66*

* Plus 7% of the hourly wage paid. The 7% is based on straight time or premium time.

OVERTIME PAY
See (B, E, Q, X) on OVERTIME PAGE. NOTE: Double time for all emergency work designated by the Dept. of Jurisdiction.
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, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 25) on HOLIDAY PAGE
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 Journeyworker's Lineman wage.

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

SUPPLEMENTAL BENEFITS per hour:

	07/01/2025	05/04/2026	05/03/2027	05/01/2028
All terms:	$ 27.65*	$ 28.40*	$ 29.53*	$ 30.66*

* Plus 7% of the hourly wage paid. The 7% is based on straight time or premium time.

6-1249a-LT

Lineman Electrician - Tree Trimmer — 01/01/2026

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 includes stump removal near underground energized electrical lines including telephone and CATV lines.

Per hour:	07/01/2025	01/01/2026	01/04/2026	01/03/2027
Tree Trimmer	$ 33.18	$ 33.18	$ 34.67	$ 36.23
Equipment Operator	29.35	29.35	30.67	32.05
Equipment Mechanic	29.35	29.35	30.67	32.05
Truck Driver	23.85	23.85	24.93	26.05
Groundman	19.64	19.64	20.53	21.45
Flagger	15.50	16.00	16.20	16.93

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 10.98*	$ 10.98*	$ 11.23*	$ 11.48*

* Plus 4.5% of the hourly wage paid. The 4.5% is based on straight time rate or premium rate.

OVERTIME PAY
See (B, E, Q, X) on OVERTIME PAGE
WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY
Paid: See (5, 6, 8, 15, 16, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 16, 25) on HOLIDAY PAGE
NOTE: All paid holidays falling on a Saturday shall be observed on the preceding Friday. All paid holidays falling on a Sunday shall be observed on the following Monday.

6-1249TT

Mason - Building — 01/01/2026

JOB DESCRIPTION Mason - Building **DISTRICT** 5

ENTIRE COUNTIES
Cortland, Tompkins

WAGES
Per hour: 07/01/2025
Building:
Brick/Block layer, Cement Mason $ 33.68
Plasterer/EFIS, Stone Mason, Tuck Pointer

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman $ 31.19

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:

One year terms at the following wage:

1st	2nd	3rd	4th
$ 21.52	$ 26.58	$ 27.69	$ 30.31

Supplemental Benefits per hour:

1st	2nd	3rd	4th
$ 25.12	$ 26.13	$ 29.07	$ 30.51

5-3B Ith - Z2

Mason - Heavy&Highway — 01/01/2026

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: 07/01/2025
Heavy & Highway:
Cement Mason $ 38.63
Bricklayer 38.63

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman $ 26.28

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	$ 15.40
2nd term	$ 24.62
3rd term	$ 25.04
4th term	$ 25.45

5-3h

Mason - Tile Finisher 01/01/2026

JOB DESCRIPTION Mason - Tile Finisher **DISTRICT** 5

ENTIRE COUNTIES
Broome, Chemung, Chenango, Cortland, Delaware, Otsego, Schuyler, Steuben, Tioga, Tompkins

PARTIAL COUNTIES
Allegany: Towns of Alfred, Almond, Andover and Burns in Allegany County

WAGES

Wages Per hour:	07/01/2025
Building:	
Marble, Slate, Terrazzo and Tile Finisher	$ 32.45

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman $ 23.52

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:

One year terms at the following wage:

1st	2nd	3rd
$ 19.47	$ 22.72	$ 25.96

Supplemental benefits per hour:

1st	2nd	3rd
$ 15.12	$ 15.72	$ 20.37

5-3TF - Z4

Mason - Tile Setter 01/01/2026

JOB DESCRIPTION Mason - Tile Setter **DISTRICT** 5

ENTIRE COUNTIES
Broome, Chemung, Chenango, Cortland, Delaware, Otsego, Schuyler, Steuben, Tioga, Tompkins

PARTIAL COUNTIES
Allegany: Towns of Alfred, Almond, Andover and Burns.

WAGES

Wages Per Hour:	07/01/2025
Building:	
Marble, Slate, Terrazzo and Tile Setter	$ 34.69

SUPPLEMENTAL BENEFITS
Per hour:

Journeyman	$ 27.06

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:

One year terms at the following wage:

1st	2nd	3rd	4th
$ 20.81	$ 24.28	$ 27.75	$ 31.22

Supplemental benefits per hour:

1st	2nd	3rd	4th
$ 15.59	$ 16.26	$ 25.70	$ 26.38

5-3TS - Z4

Millwright — 01/01/2026

JOB DESCRIPTION Millwright **DISTRICT** 6

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

WAGES
THE FOLLOWING RATE APPLIES TO ANY GAS/STEAM TURBINE AND OR RELATED COMPONENT WORK, INCLUDING NEW INSTALLATIONS OR MAINTENANCE AND ANY/ALL WORK PERFORMED WITHIN THE PROPERTY LIMITS OF A NUCLEAR FACILITY.

Per hour:	07/01/2025
Millwright - Power Generation	$ 47.00

NOTE: ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount subject to any overtime premiums):
- Certified Welders shall receive an additional $1.75 per hour provided they are directed to perform Certified Welding.
- If a 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) is required, then that employee shall receive an additional $1.50 per hour.
- An employee performing the work of a machinist shall receive an additional $2.00 per hour. 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:

Journeyworker	$ 28.45*

*NOTE: Subject to OT premium

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

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: Any holiday that falls on Sunday shall be observed the following Monday. Any holiday that falls on Saturday shall be observed the preceding Friday.

REGISTERED APPRENTICES
WAGES per hour: One year terms at the following percentage of Journeyworker's wage:

Appr. 1st year	65%*
Appr. 2nd year	75%*
Appr. 3rd year	80%*
Appr. 4th year	90%*

*NOTE: Additional premium for the following work listed below:

Certified Welder	$ 1.75
Hazardous Waste Work	1.50
Machinist	2.00
Underground (500' and below)	1.00

SUPPLEMENTAL BENEFITS per hour:

Appr. 1st year	$ 11.95
Appr. 2nd year	23.50
Appr. 3rd year	25.15
Appr. 4th year	26.80

6-1163Power

Millwright — 01/01/2026

JOB DESCRIPTION Millwright **DISTRICT** 6

ENTIRE COUNTIES
Chemung, Cortland, Livingston, Monroe, Ontario, Orleans, Schuyler, Steuben, Tompkins, Wayne, Wyoming

WAGES
Per hour: 07/01/2025

Building	$ 37.89
Heavy & Highway	41.39

NOTE: ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount subject to any overtime premiums):
- Certified Welders shall receive an additional $1.75 per hour provided they are directed to perform Certified Welding.
- On Building projects, If a 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) is required, then that employee shall receive an additional $1.50 per hour.
- 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.
- An employee performing the work of a machinist shall receive an additional $2.00 per hour. 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:

Journeyworker	$ 27.29

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

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: Any holiday that falls on Sunday shall be observed the following Monday. Any holiday that falls on Saturday shall be observed the preceding Friday.

REGISTERED APPRENTICES
WAGES per hour: One year terms at the following percentage of Journeyworker's wage:

Appr. 1st year	65%*
Appr. 2nd year	75%*

Appr. 3rd year	80%*
Appr. 4th year	90%*

*NOTE: Additional premium for the following work listed below:

Certified Welder	$ 1.75
Hazardous Waste (Bldg)	1.50
Hazardous Waste (H/H)	2.00
Machinist	2.00
Underground (500' and below)	1.00

SUPPLEMENTAL BENEFITS per hour:

Appr. 1st year	$ 11.95
Appr. 2nd year	22.69
Appr. 3rd year	24.22
Appr. 4th year	25.76

6-1163

Operating Engineer - Building — 01/01/2026

JOB DESCRIPTION Operating Engineer - Building **DISTRICT** 6

ENTIRE COUNTIES
Cayuga, Cortland, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Seneca, St. Lawrence, Tompkins

WAGES
NOTE:
--If a prime contract is let for site work only, meaning no buildings are involved in their site contract, the Heavy/Highway rates would be applicable. When a prime contract is let for site work and building excavation is part of that contract, the Building rates would be applicable for the Operators classification.
--In the event that equipment listed below is operated by robotic control, the classification covering the operation will be the same as if manually operated.
--If a second employee is required by the employer for operation of any covered machine, they shall be an Engineer Class C.

CLASS A1*: All Cranes (A1 Includes Boom Trucks over 5 tons, Cableway, Cherry Picker, Derrick, Dragline, Dredge, Overhead Crane, Pile Driver, Tower Crane**, Truck Crane, Whirlies).

CLASS A: Air Plako, Asphalt & Blacktop Roller, Automated Concrete Spreader (CMI or equivalent), Automated Fine Grade Machine (CMI), Backhoe, Barrel Shredder, Belt Placer, Blacktop Spreader (such as Barber-Greene & Blaw Knox), Blacktop Plant (automated), Blast or Rotary Drill (Truck or Cat mounted), Boom Trucks (5 ton and under), Burning Plant Operator, Caisson Auger, Central Mix Plant (automated), Concrete Pump, Crusher (Rock), De-watering Press, Diesel Power Unit, Dirt Filter Press with Operation Equipment, Dredge, Dual Drum Paver, Elevating Grader (self-propelled or towed), Elevator Hoist - Two Cage, Excavator - all purpose hydraulically operated, Forklift (Loed/Lull and other rough terrain type), Front End Loader (4 c.y. and over), Gradall, Grader (Power), Head Tower (Saurman or equal), Hoist (2 or 3 Drum), Hydroblaster (Laser Pump), Light Plants - Compressors and Generators, Locomotive, Maintenance Engineer, Maintenance Welder, Mine Hoist, Mucking Machine or Mole, Quarry Master or Equivalent, Refrigeration Equipment (for soil stabilization), Scraper, Sea Mule, Shovel, Side Boom, Slip Form Paver, Straddle Buggy (Ross Carrier, Lumber Carrier), Tractor Drawn Belt Type Loader (Euclid Loader), Trenching Machine (digging capacity of over 4ft. depth), Truck or Trailer Mounted Log Chipper (self-feeder), Tug Operator (Manned, rented equipment excluded), Tunnel Shovel, Vibro or Sonic Hammer Controls (when not mounted in proximity to Rig Operator), Work Boat Operator including LCM's.

CLASS B: "A" Frame Truck, Back Dumps, Blacktop Plant (non-automatic), Boring Machine, Bulldozer, Cage-Hoist, Central Mix Plant (non-automated), Compressor, Pump, Generator or Welding machine (when used in battery of not more than five (5)), Concrete Paver (single drum over 16'), Core boring machine, Drill Rigs - tractor mounted, Elevator - as material hoist, Farm Tractor (with or without accessories), Forklift (over 10 ton with or without attachments), Front End Loader (under 4 c.y.), Grout Pump, Gunite Machine, High Pressure Boiler (15 lbs. & over), Hoist (one drum), Hydraulic Breaking Hammer (Drop Hammer), Kolman Plant Loader (screening gravel), Maintenance Grease Man, Mixer for stabilized base - self-propelled (Seaman Mixer), Monorail Machine, Parapet Concrete or Pavement Grinder, Parts Man, Post Driver (truck or tractor mounted), Post Hole Digger (truck or tractor mounted), Power Sweeper (Wayne or similar), Pump-Crete or Squeeze-Crete, Road Widener (front end of Grader or self-propelled), Roller, Self-contained hydraulic bench drill, Shell Winder (motorized), Skid steer (Bobcat type loader), Snorkel (overhead arms), Snowblower control man, Tractor (with or without accessories), Trenching Machine (digging capacity of 4 ft. or less), Tugger Hoist, Vacuum Machine (self-propelled or mounted), Vibro Tamp, Well Drill / Well Point System (Submersible pumps when used in lieu of Well Point System), Winch (Motor driven), Winch Cat, Winch Truck.

CLASS C: Compressor (up to 500 cfm), Concrete Paver or Mixer (under 16'), Concrete Pavement Spreaders & Finishers (not automated), Conveyor (over 12 ft), Electric Submersible Pump (4" and over), Fine Grade Machine (not automated), Fireman, Forklift ("with or without" attachments, 10 ton and under), Form Tamper, Generator (2,500 watts and over), Hydraulic Pump, Mechanical Heaters (More than two (2) Mechanical Heaters or any Mechanical Heater or Heaters whose combined output exceeds 640,000 BTU per hour (manufacturer's rating) plus one self-contained heating unit - i.e. Sundog or Air Heat type - New Holland Hay Dryer type excluded), Mulching Machine, Oiler, Power Driven Welding Machine (300 amp and over, other than all electric. One Welding Machine under 300 amp will not require an engineer unless in a battery), Power Heaterman (hay dryer), Pumps (water and trash), Revinus Widener (road widener), Single Light Plant, Steam Cleaner or Jenny.

Per hour: 07/01/2025

Building	
Class A1*	$ 49.61
Class A	48.11
Class B	45.99
Class C	41.77

Additional $2.50 per hour if work requires Personal Protective Equipment for hazardous waste site activities with a level C or over rating.

(*) TONNAGE PREMIUMS:
All cranes up to 64 ton capacity - A1 rate
All cranes 65 ton to 110 ton capacity - A1 rate plus $ 1.50
All cranes 111 ton to 199 ton capacity - A1 rate plus $ 2.00
All cranes 200 ton to 399 ton capacity - A1 rate plus $ 3.00
All cranes 400 ton to 599 ton capacity - A1 rate plus $ 4.00
All cranes 600 ton to 799 ton capacity - A1 rate plus $ 5.00
All cranes 800 ton to 999 ton capacity - A1 rate plus $ 6.00
All cranes 1000 ton capacity and over - A1 rate plus $ 7.00

(**) Tower Cranes - A1 rate plus $2.50 (no tonnage premiums apply)

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker $ 32.12

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

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: If the holiday falls on Sunday, it will be celebrated on Monday.

REGISTERED APPRENTICES
WAGES per hour: One thousand hour terms at the following percentage of Journeyworker's CLASS A wage:

1st: 60%
2nd: 65%
3rd: 70%
4th: 80%

Additional $2.50 per hour if work requires Personal Protective Equipment for hazardous waste site activities with a level C or over rating.

SUPPLEMENTAL BENEFITS per hour:

07/01/2025

All terms: $ 32.05

6-158-545b.s

Operating Engineer - Heavy&Highway 01/01/2026

JOB DESCRIPTION Operating Engineer - Heavy&Highway **DISTRICT** 6

ENTIRE COUNTIES
Cayuga, Cortland, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Seneca, St. Lawrence, Tompkins

WAGES
NOTE:
--In the event that equipment listed below is operated by robotic control, the classification covering the operation will be the same as if manually operated.

--If a second employee is required by the employer for operation of any covered machine, they shall be an Engineer Class C.

CLASS A1*: All Cranes that require a NYS Crane License (Boom Truck, Cherry Picker, Derrick, Dragline, Overhead Crane (Gantry or Straddle Type), Pile Driver, Tower Cranes (including self-erecting)**, Truck Crane).

CLASS A: Asphalt Curb Machine (self-propelled, slipform); Asphalt Paver; Automated Concrete Spreader (CMI type); Automatic Fine Grader; Backhoe (except tractor mounted, rubber tired); Backhoe Excavator, Full Swing (CAT 212 or similar type); Back Filling Machine; Belt Placer (CMI type); Blacktop Plant (automated); Blacktop Roller; Bull Dozer being operated with active GPS; Cableway; Caisson Auger; Central Mix Concrete Plant (automated); Concrete Curb Machine (self-propelled, slipform); Concrete Pump; Cranes - listed in A1 that do not require a NYS Crane License; Directional Boring/Drilling Machine; Dredge; Dual Drum Paver; Excavator (all purpose-hydraulic, Gradall or similar); Front End Loader (4 cu. yd. & over); Head Tower (Sauerman or equal); Hoist (two or three drum); Holland Loader; Maintenance Engineer; Mine Hoist; Mucking Machine or Mole; Pavement Breaker (SP Wertgen; PB-4 and similar type); Profiler/Milling Machine (over 105 h.p.); Power Grader; Quad 9; Quarry Master (or equivalent); Rotating Telehandler; Scraper (including challenger type); Shovel; Side Boom; Slip Form Paver; Tractor Drawn Belt-Type Loader; Truck or Trailer Mounted Chipper (self-feeder); Tug Operator (manned rented equipment excluded); Tunnel Shovel.

CLASS B: Backhoe (tractor mounted, rubber tired); Bituminous Recycler Machine; Bituminous Spreader and Mixer; Blacktop Plant (non-automated); Blast or Rotary Drill (truck or tractor mounted); Boring Machine; Bridge Deck Finishing Machine; Brokk; Cage Hoist; Central Mix Plant (non-automated) and All Concrete Batching Plants; Concrete Paver (over 16'); Crawler Drill (self-contained); Crusher; Diesel Power Unit; Drill Rigs (truck or tractor mounted); Front End Loader (under 4 cu. yd.); Greaseman - Lubrication Engineer; HiPressure Boiler (15 lbs & over); Hoist (one drum); Hydro-Axe; Kolman Plant Loader & similar type loaders; Locomotive; Material Handling Knuckle Boom; Mini Excavators (under 18,000 lbs.); Mixer (for stabilized base, self-propelled); Monorail Machine; Profiler/Milling Machine (105 h.p. and under); Plant Engineer; Prentice Loader; Pug Mill; Pump Crete; Ready Mix Concrete Plant; Refrigeration Equipment (for soil stabilization); Road Widener; Roller (all above subgrade, See Class A for Blacktop Roller); Sea Mule; Self-contained ride-on Rock Drill (excluding Air-Track type drill); Skidder; Tractor with Dozer and/or Pusher; Trencher; Tugger Hoist; Vacuum Machine (mounted or towed); Vermeer Saws (ride-on, any size or type); Welder; Winch and Winch Cat; Work Boat Operator including L.C.M.'s.

CLASS C: "A" Frame Winch Hoist (On Truck); Aggregate Plant; Articulated Heavy Hauler; Asphalt or Concrete Grooving Machine (ride-on); Ballast Regulator (ride-on); Bituminous Heater (self-propelled); Boat (powered); Boiler (used in conjunction with production); Cement & Bin Operator; Compressors***; Concrete Pavement Spreader and Finisher; Concrete Paver or Mixer (16' & under); Concrete Saw (self-propelled); Conveyor; Deck Hand; Directional Boring/Drilling Machine Locator; Drill (Core); Drill (Well); Dust Collectors***; Electric Pump When Used in Conjunction with Well Point System; Farm Tractor with accessories; Fine Grade Machine; Fireman; Forklift; Form Tamper; Generators***; Grout Pump; Gunite Machine; Hammers (hydraulic self-propelled); Heaters***; Hydra-Spiker (ride-on); Hydraulic Pump (jacking system); Hydro-Blaster (water); Light Plants***; Mulching Machine; Oiler; Parapet Concrete or Pavement Grinder; Post Hole Digger (excluding hand-held); Post Driver; Power Broom (towed); Power Heaterman; Power Sweeper; Pumps***; Revinius Widener; Roller (subgrade & fill); Scarifier (ride-on); Shell Winder; Skid Steer Loader (Bobcat or similar, including all attachments); Span Saw (ride-on); Steam Cleaner; Tamper (ride-on); Tie Extractor (ride-on); Tie Handlers (ride-on); Tie Inserters (ride-on); Tie Spacers (ride-on); Tire Repair; Track Liner (ride-on); Tractor; Tractor (with towed accessories); Vacuum Machine (self-propelled); Vibratory Compactor; Vibro Tamp; Welding Machines***; Well Point.

***CLASS C NOTE: Considered Hands-Off (unmanned). Includes only operation and maintenance of the equipment.

Per hour:	07/01/2025
H/H	
CLASS A1*	$ 58.85
CLASS A	55.85
CLASS B	54.97
CLASS C	51.69

(*) TONNAGE PREMIUMS:
All cranes up to 64 ton capacity - A1 rate
All cranes 65 ton to 110 ton capacity - A1 rate plus $ 1.50
All cranes 111 ton to 199 ton capacity- A1 rate plus $ 2.00
All cranes 200 ton to 399 ton capacity - A1 rate plus $ 3.00
All cranes 400 ton to 599 ton capacity - A1 rate plus $ 4.00
All cranes 600 ton to 799 ton capacity - A1 rate plus $ 5.00
All cranes 800 ton to 999 ton capacity - A1 rate plus $ 6.00
All cranes 1000 ton capacity and over - A1 rate plus $ 7.00

(**) Tower Cranes - A1 rate plus $3.00 (no tonnage premiums apply)

- Cranes in Luffer Configuration - A1 rate plus $ 5.00
- Cranes with external ballast (Tray or Wagon) - A1 rate plus $ 5.00

Additional $2.50 per hour for hazardous waste removal work on a State and/or Federally designated waste site which requires employees to wear Level C or above forms of personal protection.

SHIFT WORK
SINGLE IRREGULAR WORK SHIFT: Additional $2.50 per hour for all employees who work a single irregular work shift starting from 5:00 PM to 1:00 AM that is mandated by the Contracting Agency.

SUPPLEMENTAL BENEFITS
Per hour: 07/01/2025

Journeyworker $ 33.55

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

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: If a holiday falls on Sunday, it will be celebrated on Monday. If an employee works on this Monday, they shall be compensated at double time plus the holiday pay (triple time). If a holiday falls on a Saturday, employees who work a Saturday Holiday shall be paid double time plus the holiday pay.

REGISTERED APPRENTICES
WAGES per hour: One thousand hour terms at the following percentage of Journeyworker's CLASS B wage.

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

Additional $2.50 per hour for hazardous waste removal work on a State and/or Federally designated waste site which requires employees to wear Level C or above forms of personal protection.

SUPPLEMENTAL BENEFITS per hour: Same as Journeyworker

6-158-545h

Operating Engineer - Survey Crew — 01/01/2026

JOB DESCRIPTION Operating Engineer - Survey Crew **DISTRICT** 12

ENTIRE COUNTIES
Albany, Allegany, Broome, Cayuga, Chemung, Chenango, Clinton, Columbia, Cortland, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Oneida, Onondaga, Ontario, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Warren, Washington, Wayne, Yates

PARTIAL COUNTIES
Dutchess: The northern portion of the county from the northern boundary line of the City of Poughkeepsie, north.
Genesee: Only the portion of the county that lies east of a line down the center of Route 98 to include all area that lies within the City of Batavia.

WAGES
These rates apply to Building, Tunnel and Heavy Highway.

Per hour:
SURVEY CLASSIFICATIONS:

Party Chief - One who directs a survey party.
Instrument Person - One who operates the surveying instruments.
Rod Person - One who holds the rods and assists the Instrument Person.

	07/01/2025
Party Chief	$ 52.91
Instrument Person	48.67
Rod Person	36.29
Additional $3.00/hr. for Tunnel Work	
Additional $2.50/hr. for Hazardous Work Site	

SUPPLEMENTAL BENEFITS
Per hour worked:

Journeyman $ 30.10

OVERTIME PAY
See (B, E, P, *X) on OVERTIME PAGE
*Note: $25.10/Hr. Only for "ALL" premium hours paid 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 Persons Wage:

	07/01/2025
0-1000	60%
1001-2000	70%
2001-3000	80%

SUPPLEMENTAL BENEFIT per hour worked:

0-1000	$ 21.88 / PHP $18.03
1001-2000	24.90 / " 20.45
2001-3000	27.93/ " 22.93

NOTE: PHP is premium hours paid when worked.

12-158-545 D.H.H.

Operating Engineer - Survey Crew - Consulting Engineer — 01/01/2026

JOB DESCRIPTION Operating Engineer - Survey Crew - Consulting Engineer **DISTRICT** 12

ENTIRE COUNTIES
Albany, Allegany, Broome, Cayuga, Chemung, Chenango, Clinton, Columbia, Cortland, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Oneida, Onondaga, Ontario, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Warren, Washington, Wayne, Yates

PARTIAL COUNTIES
Dutchess: The northern portion of the county from the northern boundary line of the City of Poughkeepsie, north.
Genesee: Only the portion of the county that lies east of a line down the center of Route 98 to include all area that lies within the City of Batavia.

WAGES
These rates apply to feasibility and preliminary design surveying, line and 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.

	07/01/2025
Party Chief	$ 52.91
Instrument Person	48.67
Rod Person	36.29

Additional $3.00/hr. for Tunnel Work.
Additional $2.50/hr. for EPA or DEC certified toxic or hazardous waste work.

SUPPLEMENTAL BENEFITS
Per hour worked:

Journeyman	$ 30.10

OVERTIME PAY
See (B, E, Q, *X) on OVERTIME PAGE
*Note: $25.10/Hr. Only for "ALL" premium hours paid when worked.

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

REGISTERED APPRENTICES
WAGES: 1000 hour terms based on percentage of Rod Persons Wage:

	07/01/2025
0-1000	60%
1001-2000	70%

2001-3000	80%

SUPPLEMENTAL BENEFIT per hour worked:

0-1000	$ 21.88 / PHP $18.03
1001-2000	$ 24.90 / " 20.45
2001-3000	$ 27.93 / " 22.93

NOTE: PHP is premium hours paid when worked.

12-158-545 DCE

Operating Engineer - Tunnel — 01/01/2026

JOB DESCRIPTION Operating Engineer - Tunnel **DISTRICT** 7

ENTIRE COUNTIES
Albany, Allegany, Broome, Cayuga, Chemung, Chenango, Clinton, Columbia, Cortland, Essex, Franklin, Fulton, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Oneida, Onondaga, Ontario, Oswego, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Tioga, Tompkins, Warren, Washington, Wayne, Yates

PARTIAL COUNTIES
Dutchess: Northern part of Dutchess, to the northern boundary line of the City of Poughkeepie, then due east to Route 115 to Bedell Road, then east along Bedell Road to VanWagner Road, then north along VanWagner Road to Bower Road, then east along Bower Road to Rte. 44 east to Rte. 343, then along Rte. 343 east to the northern boundary of the Town of Dover Plains and east along the northern boundary of the Town of Dover Plains, to the borderline of the State of Connecticut.
Genesee: Only that portion of the county that lies east of a line drawn down the center of Route 98 and the entirety of the City of Batavia.

WAGES
CLASS A: Automatic Concrete Spreader (CMI Type); Automatic Fine Grader; Backhoe (except tractor mounted, rubber tired); Belt Placer (CMI Type); Blacktop Plant (automated); Cableway; Caisson Auger; Central Mix Concrete Plant (automated); Concrete Curb Machine (self-propelled slipform); Concrete Pump (8" or over); Dredge; Dual Drum Paver; Excavator; Front End Loader (4 cu. yd & over); Gradall; Head Tower (Sauerman or Equal); Hoist (shaft); Hoist (two or three Drum); Log Chipper/Loader (self-feeder); Maintenance Engineer (shaft and tunnel); any Mechanical Shaft Drill; Mine Hoist; Mining Machine(Mole and similar types); Mucking Machine or Mole; Overhead Crane (Gantry or Straddle Type); Pile Driver; Power Grader; Remote Controlled Mole or Tunnel Machine; Scraper; Shovel; Side Boom; Slip Form Paver (If a second man is needed, they shall be an Oiler); Tripper/Maintenance Engineer (shaft & tunnel); Tractor Drawn Belt-Type Loader; Tug Operator (manned rented equipment excluded); Tunnel Shovel.

CLASS B: Automated Central Mix Concrete Plant; Backhoe (topside); Backhoe (track mounted, rubber tired); Backhoe (topside); Bituminous Spreader and Mixer, Blacktop Plant (non-automated); Blast or Rotary Drill (truck or tractor mounted); Boring Machine; Cage Hoist; Central Mix Plant(non-automated); all Concrete Batching Plants; Compressors (4 or less exceeding 2,000 c.f.m. combined capacity); Concrete Pump; Crusher; Diesel Power Unit; Drill Rigs (tractor mounted); Front End Loader (under 4 cu. yd.); Grayco Epoxy Machine; Hoist (One Drum); Hoist (2 or 3 drum topside); Knuckle Boom material handler; Kolman Plant Loader & similar type Loaders (if employer requires another person to clean the screen or to maintain the equipment, they shall be an Oiler); L.C.M. Work Boat Operator; Locomotive; Maintenance Engineer (topside); Maintenance Grease Man; Mixer (for stabilized base-self-propelled); Monorail Machine; Plant Engineer; Personnel Hoist; Pump Crete; Ready Mix Concrete Plant; Refrigeration Equipment (for soil stabilization); Road Widener; Roller (all above sub-grade); Sea Mule; Shotcrete Machine; Shovel (topside); Tractor with Dozer and/or Pusher; Trencher; Tugger Hoist; Tunnel Locomotive; Vacuum Machine (mounted or towed); Welder; Winch; Winch Cat.

CLASS C: A Frame Truck; All Terrain Telescoping Material Handler; Ballast Regulator (ride-on); Compressors (4 not to exceed 2,000 c.f.m. combined capacity; or 3 or less with more than 1200 c.f.m. but not to exceed 2,000 c.f.m.); Compressors ((any size, but subject to other provisions for compressors), Dust Collectors, Generators, Pumps, Welding Machines, Light Plants (4 or any type combination)); Concrete Pavement Spreaders and Finishers; Conveyor; Drill (core); Drill (well); Electric Pump used in conjunction with Well Point System; Farm Tractor with Accessories; Fine Grade Machine; Fork Lift; Grout Pump (over 5 cu. ft.); Gunite Machine; Hammers (hydraulic-self-propelled); Hydra-Spiker (ride-on); Hydra-Blaster (water); Hydro-Blaster; Motorized Form Carrier; Post Hole Digger and Post Driver; Power Sweeper; Roller grade & fill); Scarifer (ride-on); Span-Saw (ride-on); Submersible Electric Pump (when used in lieu of well points); Tamper (ride-on); Tie-Extractor (ride-on), Tie Handler (ride-on), Tie Inserter (ride-on), Tie Spacer (ride-on); Track Liner (ride-on); Tractor with towed accessories; Vibratory Compactor; Vibro Tamp, Well Point.

CLASS D: Aggregate Plant; Cement & Bin Operator; Compressors (3 or less not to exceed 1,200 c.f.m. combined capacity); Compressors ((any size, but subject to other provisions for compressors), Dust Collectors, Generators, Pumps, Welding Machines, Light Plants (3 or less or any type or combination)); Concrete Saw (self-propelled); Form Tamper; Greaseman; Hydraulic Pump (jacking system); Junior Engineer; Light Plants; Mulching Machine; Oiler; Parapet Concrete or Pavement Grinder; Power Broom (towed); Power Heaterman (when used for production); Revinius Widener; Shell Winder; Steam Cleaner; Tractor.

Per hour:	07/01/2025
CLASS A	$ 58.44
CLASS B	57.22
CLASS C	54.43
CLASS D	51.42

Additional $5.00 per hour for Hazardous Waste Work on a state or federally designated hazardous waste site where the Operating Engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin and eye protection.

CRANES:
Crane 1: All cranes, including self-erecting.
Crane 2: All Lattice Boom Cranes and all cranes with a manufacturer's rating of fifty (50) ton and over.
Crane 3: All hydraulic cranes and derricks with a manufacturer's rating of forty nine (49) ton and below, including boom trucks.

Crane 1	$ 62.44
Crane 2	61.44
Crane 3	60.44

SUPPLEMENTAL BENEFITS
Per hour:

$ 25.90
+ 10.10*

* This portion of the benefits subject to SAME PREMIUM as shown for overtime wages.

OVERTIME PAY
See (B, B2, E, Q, X) on OVERTIME PAGE

HOLIDAY
Paid: See (5, 6) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: If a holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES
WAGES:(1000) hours terms at the following percentage of Journeyworker's Class B wage.

1st term	60%
2nd term	65%
3rd term	70%
4th term	75%

SUPPLEMENTAL BENEFITS per hour: Same as Journeyworker

7-158-832TL.

Painter — 01/01/2026

JOB DESCRIPTION Painter **DISTRICT** 2

ENTIRE COUNTIES
Cortland, Tompkins

WAGES
Per hour:

	07/01/2025	05/01/2026 Additional
Painter	$ 28.20	$ 1.85*
Taper, Paperhangers, and Vinyl hangers	29.61	1.90*

*To be allocated at a later date.

ADDITIONAL AMOUNTS FOR SPECIFIC TYPES OF JOBSITE CONDITIONS (amount subject to any overtime premiums):
- Additional $ 1.10 per hour for Brush and Roll Epoxy (Solvent Base Only)
- Additional $ 0.60 per hour for Swing Scaffold, Boatswain chair, Spray helper, Steam cleaning acid and high pressure water, Power grinders with respirator
- Additional $ 0.60 per hour for Structural steel (buildings) defined as new or old construction where ceilings, walls or the steel itself is to be painted from open trusses which require climbing or crawling without the support of solid scaffolding or scaffolding starting at the floor or ground level.
- Additional $ 1.00 per hour for Spray Painting
- Additional $ 1.50 per hour for Spray Epoxy (Solvent Based)
- Additional $ 0.90 per hour for Sandblasting

NOTE - SEE BRIDGE PAINTER RATES FOR BRIDGES & TANKS

SUPPLEMENTAL BENEFITS
Per hour:
Journeyworker $ 24.98

OVERTIME PAY
See (B, E2, F, R) on OVERTIME PAGE

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
A Holiday that falls on a Sunday will be celebrated on Monday, a holiday that falls on a Saturday will be celebrated on Friday.

REGISTERED APPRENTICES
WAGES:

Painter: 750 hour terms at the Painter Apprentice wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th
$ 18.00	$ 19.00	$ 20.00	$ 21.00	$ 22.00	$ 23.00	$ 24.00	$ 25.00

Taper: 750 hour terms at the following Journeyworker Taper Apprentice wage rate:

1st	2nd	3rd	4th	5th	6th
$ 20.00	$ 21.00	$ 22.00	$ 23.00	$ 24.00	$ 25.00

ADDITIONAL AMOUNTS FOR SPECIFIC TYPES OF JOBSITE CONDITIONS (amount subject to any overtime premiums):
- Additional $ 1.10 per hour for Brush and Roll Epoxy (Solvent Base Only)
- Additional $ 0.60 per hour for Swing Scaffold, Boatswain chair, Spray helper, Steam cleaning acid and high pressure water, Power grinders with respirator
- Additional $ 0.60 per hour for Structural steel (buildings) defined as new or old construction where ceilings, walls or the steel itself is to be painted from open trusses which require climbing or crawling without the support of solid scaffolding or scaffolding starting at the floor or ground level.
- Additional $ 1.00 per hour for Spray Painting
- Additional $ 1.00 per hour for Steeple Jack (Over 100 feet)
- Additional $ 1.50 per hour for Spray Epoxy (Solvent Based)
- Additional $ 0.90 per hour for Sandblasting

SUPPLEMENTAL BENEFITS per hour:
Painter/Decorator:

1st	2nd	3rd	4th	5th	6th	7th	8th
$ 6.00	$ 7.00	$ 8.00	$ 9.10	$ 11.00	$ 11.00	$ 13.00	$ 14.00

Taper/Drywall Finisher:

1st	2nd	3rd	4th	5th	6th
$ 6.00	$ 7.00	$ 8.00	$ 10.00	$ 13.00	$ 14.00

2-178 I

Painter — 01/01/2026

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:	07/01/2025	05/01/2026 Additional
Bridge	$ 46.19	$ 2.50
Tunnel	46.19	
Tank*	44.19	

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.

SHIFT WORK
Note an additional $1.50 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:
$ 31.51

OVERTIME PAY
Exterior work only See (B, E2, E4, F, R) on OVERTIME PAGE.

All other work See (B, F, R) 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 wage:

1st	2nd	3rd	4th	5th	6th
$ 24.00	$ 26.00	$ 28.00	$ 30.00	$ 34.00	$ 38.00

Supplemental benefits per hour:

1st	2nd	3rd	4th	5th	6th
$ 6.60	$ 6.95	$ 7.30	$ 7.65	$ 8.00	$ 8.35

3-4-Bridge, Tunnel, Tank

Painter - Metal Polisher — 01/01/2026

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

	07/01/2025
Metal Polisher	$ 40.33
Metal Polisher*	41.43
Metal Polisher**	44.33

*Note: Applies on New Construction & complete renovation
** Note: Applies when working on scaffolds over 34 feet.

SUPPLEMENTAL BENEFITS
Per Hour: 07/01/2025

Journeyworker:
All classification $ 13.44

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, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES
Wages per hour:
One (1) year term at the following wage rates:

	07/01/2025
1st year	$ 20.17
2nd year	22.18
3rd year	24.20
1st year*	$ 20.56
2nd year*	22.62
3rd year*	24.74
1st year**	$ 22.67
2nd year**	24.68
3rd year**	26.70

*Note: Applies on New Construction & complete renovation
** Note: Applies when working on scaffolds over 34 feet.

Supplemental benefits:
Per hour:

1st year	$ 8.94
2nd year	8.94
3rd year	8.94

8-8A/28A-MP

Plumber 01/01/2026

JOB DESCRIPTION Plumber **DISTRICT** 6

ENTIRE COUNTIES
Chemung, Cortland, Onondaga, Schuyler, Tompkins

PARTIAL COUNTIES
Madison: Only the Townships of Sullivan, Cazenovia and DeRuyter.
Seneca: Only the Townships of Covert and Lodi.
Steuben: Only the Townships of Addison, Bath, Bradford, Campbell, Caton, Corning, Erwin, Hornby, Lindley, Pulteney, Rathbone, Thurston, Tuscarora, Urbana and Wayne.
Tioga: Only the Townships of Barton, Berkshire, Candor, Nichols, Richford, Spencer and Tioga.

WAGES

Per hour:	07/01/2025	05/01/2026 Additional
Plumber, Steamfitter, Pipefitter, Welder, HVAC, Refrigeration.	$ 48.26	$ 4.50*

* To be allocated at a later date.

SHIFT WORK
SINGLE IRREGULAR WORK SHIFT: Additional 15% premium added to the wage rate above for a single irregular work shift starting between 4:30PM and 7:00AM.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 28.15*

*NOTE: $10.27 of the supplemental benefits are paid at the same premium as shown for overtime work performed at semi-conductor manufacturer and/or fabrication plants.

OVERTIME PAY
Time and one half for the 9th & 10th hours Monday thru Friday and first 10 hours on Saturday. All other overtime hours are double time.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
NOTE: If a holiday falls on Saturday, the holiday will be observed on the preceding Friday. If a holiday falls on Sunday, it will be observed on the following Monday.

REGISTERED APPRENTICES
WAGES per hour: One year terms at the following percentage of the Journeyworker's wage:

1st	2nd	3rd	4th	5th
55%	60%	70%	75%	85%

SUPPLEMENTAL BENEFITS per hour*:

1st	$ 15.87
2nd	24.67
3rd	25.30
4th	25.89
5th	26.90

*NOTE: Below is the portion of supplemental benefits paid at overtime premiums for work performed at semi-conductor manufacturer and/or fabrication plants:

1st	n/a
2nd	$ 8.58
3rd	8.77
4th	9.14
5th	9.71

Roofer 01/01/2026

JOB DESCRIPTION Roofer **DISTRICT** 2

ENTIRE COUNTIES
Broome, Chemung, Chenango, Delaware, Otsego, Schoharie, Schuyler, Steuben, Tioga, Tompkins

WAGES

Per hour:	07/01/2025
Roofer, Waterproofer	$ 30.33
	+ 1.02*

*This amount is paid for all hours worked, whether regular or premium hours.

NOTE ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount not subject to overtime premiums):
- On days where more than one shift is worked on the job, the hours worked after 4:30 PM and before 6:30 AM will be paid an additional $1.90 per hour premium. This premium is not for use in emergency repair situations.
- Premium of $1.25 per hour will be paid for the application, rip-off or handling of pitch products. The premium will be paid for pitch that is showing, covered or buried on the roof.
- Premium of $1.25 per hour will be paid for asbestos abatement requiring a half face respirator.

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker	$ 23.99

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:

Hours per term	
0-667 Hrs.	$ 21.24 + 0.71*
668-1335 Hrs.	22.76 + 0.76*
1336-2002 Hrs.	24.27 + 0.81*
2003-2669 Hrs.	25.79 + 0.86*
2670-3336 Hrs.	27.30 + 0.92*
3337-4000 Hrs.	28.82 + 0.97*

*This amount is paid for all hours worked, whether regular or premium hours.

NOTE ADDITIONAL PREMIUMS PAID FOR THE FOLLOWING WORK LISTED BELOW (amount not subject to overtime premiums):
- On days where more than one shift is worked on the job, the hours worked after 4:30 PM and before 6:30 AM will be paid an additional $1.90 per hour premium. This premium is not for use in emergency repair situations.
- Premium of $1.25 per hour will be paid for the application, rip-off or handling of pitch products. The premium will be paid for pitch that is showing, covered or buried on the roof.
- Premium of $1.25 per hour will be paid for asbestos abatement requiring a half face respirator.

Supplemental Benefits:

0-667 Hrs.	$ 19.93
668-1335 Hrs.	20.62
1336-2002 Hrs.	21.29
2003-2669 Hrs.	21.96
2670-3336 Hrs.	22.65
3337-4000 Hrs.	23.32

2-203elmi

Sheetmetal Worker 01/01/2026

JOB DESCRIPTION Sheetmetal Worker **DISTRICT** 2

ENTIRE COUNTIES
Allegany, Broome, Chemung, Delaware, Otsego, Schuyler, Steuben, Tioga, Tompkins

WAGES
Per hour:

	07/01/2025	05/01/2026	05/01/2027

		Additional	Additional
Sheetmetal Worker	$ 39.74 + 0.99*	$ 4.00**	$ 4.00**

NOTE: Ten cents ($0.10) per hour additional premium to be paid when working polyresin fiberglass.
*Amount is paid for every hour worked (amount not subject to overtime premium)
**To be allocated at a later date

SUPPLEMENTAL BENEFITS
Per hour:

Journeyworker: $ 22.41

OVERTIME PAY
See (*B1, Q) on OVERTIME PAGE
*On Saturday, time and one half of the hourly rate for the first ten (10) hours, then two (2) times the hourly wage rate for all hours after ten (10) hours worked.

HOLIDAY
Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6) on HOLIDAY PAGE
Note: Holidays are observed on the Holiday, not on the day that it is locally observed.

REGISTERED APPRENTICES
WAGES per hour:
Indentured after 05/01/2025 (1-year Terms):

1st	2nd	3rd	4th	5th
$ 23.84	$ 25.83	$ 27.82	$ 31.79	$ 33.78
+0.60*	+0.65*	+0.70*	+0.79*	+0.84*

Indentured prior to 05/01/2025 (Half Year Terms):

1st	2nd	3rd	4th	5th	6th	7th	8th
$ 23.84	$ 23.84	$ 25.83	$ 27.82	$ 29.81	$ 31.79	$ 33.78	$ 35.77
+0.60*	+0.60*	+0.65*	+0.70*	+0.75*	+0.79*	+0.84*	+0.89*

*Amount is paid for every hour worked (amount not subject to overtime premium)

SUPPLEMENTAL BENEFITS per hour:
Indentured after 05/01/2025:

1st	2nd	3rd	4th	5th
$ 2.12	$ 18.64	$ 18.72	$ 18.88	$ 22.17

Indentured prior to 05/01/2025:

1st	2nd	3rd	4th	5th	6th	7th	8th
$ 2.12	$ 2.12	$ 18.64	$ 18.72	$ 18.80	$ 18.88	$ 18.97	$ 19.05

Sprinkler Fitter — 01/01/2026

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 07/01/2025

Sprinkler Fitter $ 45.06

SUPPLEMENTAL BENEFITS
Per hour

Journeyworker $ 29.41

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
$ 23.28	$ 25.98	$ 28.15	$ 30.31	$ 31.94	$ 34.64	$ 36.81	$ 38.97	$ 41.14	$ 43.30

Supplemental Benefits per hour

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
$ 9.57	$ 9.57	$ 21.49	$ 21.49	$ 21.74	$ 21.74	$ 21.74	$ 21.74	$ 21.74	$ 21.74

1-669

Teamster - Building — 01/01/2026

JOB DESCRIPTION Teamster - Building **DISTRICT** 6

ENTIRE COUNTIES
Broome, Cayuga, Cortland, Delaware, Onondaga, Seneca, Tompkins, Yates

PARTIAL COUNTIES
Allegany: Only the Townships of Alfred, Almond, Burns.
Chenango: Only the Townships of Afton, Bainbridge, Coventry, Greene, Guilford, Oxford and Smithville.
Madison: Only the Townships of Cazenovia, DeRuyter, Fenner, Georgetown, Lenox, Nelson and Sullivan.
Oswego: All Townships except Boylston, Redfield and Sandy Creek.
Otsego: Only the Townships of Butternuts, Laurens, Maryland, Millford, Morris, Oneonta, Otego, Unadilla, and Worchester.
Steuben: Only the Townships of Canisteo, Cohoctan, Dansville, Fremont, Greenwood, Hornell, Hartsville, Jasper, Prattsburg, Troupsburg, and West Union.
Tioga: Only the Townships of Berkshire, Candor, Newark Valley, Nichols, Owego, Richford, and Tioga. All territory east of Nichols/Smithboro to Broome County, within the State of New York.

WAGES
GROUP A: Straight Trucks.
GROUP B: Tractor Trailer, Farm Tractor, Fuel Truck.
GROUP C: Euclid.
GROUP D: On site Mechanic.

Per hour:	07/01/2025
Building: (under $ 5 million*)	
GROUP A, B, C, D	$ 34.43
Building: (over $ 5 million*)	
GROUP A, B	$ 35.48
GROUP C	35.83
GROUP D	35.63

* Total project cost including General Construction, Plumbing, HVAC and Electrical

SUPPLEMENTAL BENEFITS
Per hour:

(under $5 million*)	$ 30.87
(over $5 million*)	31.67

* Total project cost including General Construction, Plumbing, HVAC and Electrical

OVERTIME PAY
(D, O) on OVERTIME PAGE

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

6-317

Teamster - Heavy&Highway — 01/01/2026

JOB DESCRIPTION Teamster - Heavy&Highway **DISTRICT** 6

ENTIRE COUNTIES
Cayuga, Cortland, Seneca, Tompkins, Yates

PARTIAL COUNTIES
Allegany: Only the Townships of Almond, Alfred, Burns.
Steuben: Only the Townships of Canisteo, Cohocton, Dansville, Freemont, Greenwood, Hartsville, Hornell, Jasper, Prattsburg, Troupsburg, and West Union.

WAGES
GROUP 1: Warehousemen*, Yardmen*, Truck Helpers, Pickups, Panel Trucks, Flatboy Material Trucks (straight jobs), Single Axle Dump Trucks, Dumpsters, Material Checkers & Receivers*, Greasers, Truck Tiremen, Mechanic Helpers and Parts Chasers, Tandems & Batch Trucks, Mechanics, Semi-Trailers, Low-boy Trucks, Asphalt Distributor Trucks and Agitator, Mixer Trucks and Dumpcrete type vehicles, Truck Mechanic, Fuel Trucks.

*NOTE: Applies when a temporary warehouse structure is built/utilized specifically for a public work project.

GROUP 2: Specialized Earth Moving Equipment-Euclid type, or similar off-highway equipment, where not self-loading, Straddle (Ross) Carrier, and self-contained concrete mobile truck, Off-highway Tandem Back-Dump, Twin Engine Equipment and Double-Hitched Equipment where not self-loading.

Group 3: Fuel trucks that require a HazMat license endorsement.

Per hour:	07/01/2025	07/01/2026	07/01/2027
GROUP 1	$ 37.27	$ 40.62	$ 44.28
GROUP 2	37.47	40.82	44.48
GROUP 3	42.27	45.62	49.28

SHIFT WORK
A single irregular work shift can start any time between 5:00pm and 1:00am. All employees who work a single irregular shift on governmental mandated night work shall be paid an additional $ 5.00 per hour.

SUPPLEMENTAL BENEFITS

Per hour:	07/01/2025	07/01/2026	07/01/2027
Journeyworker	$ 29.29	$ 29.94	$ 30.78

OVERTIME PAY
See (*B, B3, J, X) on OVERTIME PAGE
*Time and one half also applicable after the 5th day worked.

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

6-317(Syr)

Welder — 01/01/2026

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	07/01/2025
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
(B3)	Time and one half of the hourly rate after 40 straight 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)	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 12226

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
- ☐ Fuel Delivery
- ☐ Guards, Watchmen
- ☐ Janitors, Porters, Cleaners, Elevator Operators
- ☐ Moving furniture and equipment
- ☐ Trash and refuse removal
- ☐ Window cleaners
- ☐ Other (Describe)

9. Does this project comply 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://apps.labor.ny.gov/EDList/searchPage.do

For inquiries please call 518-457-5589.

NYSDOL Bureau of Public Work Debarment List 01/09/2026

Article 8

AGENCY	Fiscal Officer	FEIN	EMPLOYER NAME	EMPLOYER DBA NAME	ADDRESS	DEBARMENT START DATE	DEBARMENT END DATE
DOL	DOL	*****5754	0369 CONTRACTORS, LLC		515 WEST AVE UNIT PH 13NORWALK CT 06850	05/12/2021	05/12/2026
DOL	DOL	*****5784	A.J.M. TRUCKING, INC.		PO BOX 2064 MONROE NY 10950	02/12/2024	02/12/2029
DOL	DOL		AKHLAQ OULAKH		4307 28TH AVE ASTORIA NY 11103	10/11/2024	10/11/2029
DOL	DOL		ALEXANDER DELISA		411 THEODORE FREMND SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	NYC		ALL COUNTY SEWER & DRAIN, INC.		7 GREENFIELD DR WARWICK NY 10990	03/25/2022	03/25/2027
DOL	DOL	*****8387	AMERICAN PAVING & MASONRY, CORP.		8 FOREST AVE GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	DOL	*****8654	AMERICAN PAVING, INC.		8 FORREST AVE. GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	NYC		AMJED PARVEZ		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		ANGELO GARCIA		515 WEST AVE UNIT PH 13NORWALK CT 06850	05/12/2021	05/12/2026
DOL	DOL		ANGELO STANCO		8 FOREST AVE. GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	DOL		ANGELO TONDO		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL	*****4231	ANKER'S ELECTRIC SERVICE, INC.		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027
DOL	DOL		ANTHONY CASALE		20 HEATHER RIDGE ROAD TROY NY 12180	05/20/2025	05/20/2030
DOL	DOL		ANTHONY MONGELLI		PO BOX 2064 MONROE NY 10950	02/12/2024	02/12/2029
DOL	DOL	*****8421	B & B DRYWALL, INC		206 WARREN AVE APT 1WHITE PLAINS NY 10603	12/14/2021	12/14/2026
DOL	NYC	*****2113	BHW CONTRACTING, INC.		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DA	*****2404	BJA RENOVATION, CORP		33 DOLLARD DR NORTH BABYLON NY 11703	03/19/2025	03/19/2030
DOL	DOL	*****5078	BLACK RIVER TREE REMOVAL, LLC		29807 ANDREWS ROAD BLACK RIVER NY 13032	10/17/2023	10/17/2028
DOL	DOL		C.M.C CONTRACTORS, INC.		500 WEST PUTNAM AVE SUITE 400GREENWICH CT 06830	09/03/2025	09/03/2030
DOL	DOL	*****5161	CALADRI DEVELOPMENT CORP.		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	DOL	*****3391	CALI ENTERPRISES, INC.		1223 PARK STREET PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	DOL		CARLOS F. ESCOBAR		411 THEODORE FREMD AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL		CARLOS FIGUEROA		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL	*****4155	CASA BUILDERS, INC.	FRIEDLANDER CONSTRUCTI ON	64 N PUTT CONNERS ROAD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	AG	*****7247	CENTURY CONCRETE CORP		2375 RAYNOR ST RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL		CESAREO TULA		120 SEARS AVE ELMSFORD NY 10523	09/26/2025	09/26/2030
DOL	DOL	*****2292	CHAMPION MAINTENANCE CONTRACTORS, INC.		211 SOUTH RIDGE STREET RYE BROOK NY 10573	09/03/2025	09/03/2030
DOL	NYC	*****2117	CHARAN ELECTRICAL ENTERPRISES		9-11 40TH AVENUE LONG ISLAND CITY NY 11101	09/26/2023	09/26/2028
DOL	DOL		CHARLES CASALE		55 MAIN AVENUE WYNANTSKILL NY 12198	05/20/2025	05/20/2030
DOL	DOL		CHARLES CASALE		55 MAIN AVENUE WYNANTSKILL NY 12198	05/20/2025	05/20/2030
DOL	DOL		CHRISTOPHER GRECO		26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL		CHRISTOPHER PEROSI		5507 NESCONSET HIGHWAY MT. SINAI NY 11766	07/17/2025	07/17/2030
DOL	DOL	*****2281	CORRAO TRUCKING, INC.		PO BOX 393 NANUET NY 10954	09/17/2024	09/17/2029
DOL	DOL		CRAIG JOHANSEN		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027

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	*****7619	DANCO CONSTRUCTION UNLIMITED INC.		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL		DANIEL DELISA		211 SOUTH RIDGE STREET RYE BROOK NY 10573	09/03/2025	09/03/2030
DOL	DOL		DANIEL ROBERT MCNALLY		7 GREENFIELD DRIVE WARWICK NY 10990	03/25/2022	03/25/2027
DOL	DOL		DARWIN PEGUESE		6400 BALTIMORE NATIONAL SUITE 602CANTONSVILLE NY 21228	10/24/2024	10/24/2029
DOL	DOL		DAVID FRIEDLANDER		64 NORTH PUTT CORNERS RD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	DOL		DENISE NAGLE		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030
DOL	DOL		DINA TAYLOR		64 N PUTT CONNERS RD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	AG		EDWIN HUTZLER		23 NORTH HOWELLS RD BELLPORT NY 11713	08/04/2021	08/04/2026
DOL	DA		EDWIN HUTZLER		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	*****2337	EGL DRAINAGE SOLUTION & REPAIRS LLC		5507 NESCONSET HIGHWAY MT. SINAI NY 11766	07/17/2025	07/17/2030
DOL	DOL	*****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002
DOL	DOL		EMIL KISZKO		84 DIAMOND ST BROOKLYN NY 11222	07/18/2024	07/18/2029
DOL	DOL	*****3298	EMJACK CONSTRUCTION CORP.		84 DIAMOND ST BROOKLYN NY 11222	07/18/2024	07/18/2029
DOL	DOL	*****3298	EMJACK CONSTRUCTION LLC		4192 SIR ANDREW CIRCLE DOYLESTOWN PA 18902	07/18/2024	07/18/2029
DOL	DOL		EUGENIUSZ "GINO" KUCHAR		195 KINGSLAND AVE BROOKLYN NY 11222	12/22/2023	12/22/2028
DOL	DA		FREDERICK HUTZLER		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	*****2998	G.E.M. AMERICAN CONSTRUCTION CORP.		195 KINGSLAND AVE BROOKLYN NY 11222	12/22/2023	12/22/2028
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	DA		GIOVANNA TRAVALJA		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	DA		GIOVANNI NAPOLITANO		2501 BAYVIEW AVENUE WANTAGH NY 11793	02/21/2024	02/21/2029
DOL	DA	*****0213	GORILLA CONTRACTING GROUP, LLC		505 MANHATTAN AVE WEST BABYLON NY 11704	10/05/2023	10/05/2028
DOL	DA	*****4760	GTX CONSTRUCTION ASSOCIATES, CORP		2501 BAYVIEW AVE WANTAGH NY 11793	02/21/2024	02/21/2029
DOL	DOL		HENRY WICKE A/K/A HENRY WICKE, JR.		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	01/24/2023	01/24/2028
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL	*****6961	HUNTER ELEVATOR COMPANY, INC.		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030
DOL	DOL	*****2397	ISLAND BREEZE MARINE, INC.		6400 BALTIMORE NATIONAL CANTONSVILLE MD 21228	10/24/2024	10/24/2029
DOL	DOL	*****5010	J. LINDSLEY ENTERPRISE, LLC		1002 STATE ROUTE 176 FULTON NY 13069	07/30/2025	07/30/2030
DOL	DOL	*****0241	J. LINDSLEY ROOFING, LLC		211 NORTH 2ND STREET FULTON NY 13069	07/30/2025	07/30/2030
DOL	DOL	*****9211	J. WASE CONSTRUCTION CORP.		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		J.M.J CONSTRUCTION		151 OSTRANDER AVENUE SYRACUSE NY 13205	11/21/2022	11/21/2027
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027

DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	12/12/2022	12/12/2027
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JAMES J. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL		JAMES LINDSLEY		211 NORTH 2ND STREET FULTON NY 13069	07/30/2025	07/30/2030
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****7993	JBS DIRT, INC.		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****2435	JEFFEL D. JOHNSON	JMJ7 AND SON	5553 CAIRNSTRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JEFFEL JOHNSON ELITE CARPENTER REMODEL AND CONSTRUCTION		C2 EVERGREEN CIRCLE LIVERPOOL NY 13090	11/21/2022	11/21/2027
DOL	DOL	*****2435	JEFFREY M. JOHNSON	JMJ7 AND SON	5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JENNIFER LINDSLEY		211 NORTH 2ND STREET FULTON NY 13069	07/30/2025	07/30/2030
DOL	DOL		JERRY DASTON		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030
DOL	DOL		JIM PLAUGHER		17613 SANTE FE LINE ROAD WAYNEFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL		JMJ7 & SON CONSTRUCTION, LLC		5553 CAIRNS TRAIL LIVERPOOL NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 AND SONS CONTRACTORS		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS		7014 13TH AVENUE BROOKLYN NY 11228	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS AND SONS		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS, LLC		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JOHN MARKOVIC		47 MANDON TERRACE HAWTHORN NJ 07506	03/29/2021	03/29/2026
DOL	DOL		JOHN NAGLE A/K/A JOHN NAGLE, JR.		36 OAKWOOD TRAIL S AL MONROE NY 10950	10/29/2025	10/29/2030
DOL	DOL		JOHN WASE		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		JONATHAN DELISA		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL		JORGE FIGUEROA		411 THEODORE FRMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL		JORGE RAMOS		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	DA		JOSEPH DEMASCO		33 DOLLARD DRIVE NORTH BABYLON NY 11703	03/19/2025	03/19/2030
DOL	DOL		JOSEPH HALL		937 US ROUTE 11 CENTRAL SQUARE NY 13036	10/21/2024	10/21/2029
DOL	DOL	*****2271	JOSEPH HALL COMPANIES LLC		937 US ROUTE 11 CENTRAL SQUARE NY 13036	10/21/2024	10/21/2029
DOL	DOL		JOSEPH K. SALERNO		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL		JOSEPH K. SALERNO II		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028

DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL		JRN CONSTRUCTION CO, LLC		1024 BROADWAY ALBANY NY 12204	11/07/2023	11/07/2028
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/3002
DOL	DOL		KATE E. CONNOR		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KEAN INDUSTRIES, LLC		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL	*****2959	KELC DEVELOPMENT, INC		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KEVIN FUNEZ URBINA A/K/A KEVIN FUNEZ		1009 LYNDALE AVE TRENTON NJ 08629	12/16/2024	12/16/2029
DOL	DOL		KIMBERLY F. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****8760	KJ&J CONSTRUCTION, LLC		1009 LYNDALE AVE TRENTON NJ 08629	12/16/2024	12/16/2029
DOL	DOL		KMA GROUP II, INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL	*****1833	KMA GROUP INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL		KMA INSULATION, INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL		KRIN HEINEMANN		2345 ROUTE 52, SUITE 2N HOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	NYC		KULWANT S. DEOL		9-11 40TH AVENUE LONG ISLAND CITY NY 11101	09/26/2023	09/26/2028
DOL	DA	*****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL	*****3716	LIGHTNIN ELECTRIC INC.		3418 NORTHERN BLVD SUITE 5-27LONG ISLAND CITY NY 11101	12/13/2024	12/13/2029
DOL	AG	*****3291	LINTECH ELECTRIC, INC.		3006 TILDEN AVE BROOKLYN NY 11226	02/16/2022	02/16/2027
DOL	DOL		LIZETTE PONCE		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL		LOUIS A. CALICCHIA		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
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	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	01/24/2023	01/24/2028
DOL	DOL		MOHAMMAD MIAN		8269 21ST ST BELLEROSE NY 11426	12/22/2022	12/22/2027
DOL	NYC		NASEER CHAUDHRY		2349 BRAGG STREET BROOKLYN NY 11229	04/22/2025	04/22/2030
DOL	DOL	*****7790	NATIONAL BUILDING & RESTORATION CORP		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL	*****1797	NATIONAL CONSTRUCTION SERVICES, INC		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	NYC		NAVIT SINGH		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
DOL	DOL		NELCO CONTRACTING, LLC		1024 BROADWAY ALBANY NY 12204	11/07/2023	11/07/2028
DOL	DA		NICHOLAS BARNETT		33 DOLLARD DR BABYLON NY 11703	03/04/2025	03/04/2030
DOL	DOL		NICHOLAS RAO		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DA		NICHOLAS T. ANALITIS		505 MANHATTAN AVE WEST BABYLON NY 11704	10/05/2023	10/05/2028
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL		NIKOLA NTONI		3418 NORTHERN BLVD SUITE 5-27LONG ISLAND CITY NY 11101	12/13/2024	12/13/2029
DOL	NYC	*****6971	NN CONSTRUCTION, INC.		2349 BRAGG STREET BROOKLYN NY 11229	04/22/2025	04/22/2030
DOL	NYC	*****5643	NYC LINE CONTRACTORS, INC.		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
DOL	DOL		PATRICK PENNACCHIO		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL		PATRICK PENNACCHIO		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL		PAULINE CHAHALES		935 S LAKE BLVD MAHOPAC NY 10541	03/02/2021	03/02/2026
DOL	DOL		PETER STEVENS		11 OLD TOWN ROAD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DOL	*****4168	PHANTOM CONSTRUCTION CORP.		95-27 116TH STREET QUEENS NY 11419	07/12/2024	07/12/2029
DOL	DOL	*****4168	PHANTOM CONSTRUCTION CORP.		95-27 116TH STREET QUEENS NY 11419	05/28/2024	05/28/2029
DOL	DOL	*****4772	R.W. LOBDELL CONSTRUCTION LLC		635 WEST DRYDEN ROAD FREEVILLE NY 13068	01/31/2025	01/31/2030
DOL	DOL	*****2633	RAW POWER ELECTRIC CORP.		3 PARK CIRCLE MIDDLETOWN NY 10940	07/11/2022	07/11/2027
DOL	DOL		ROBBYE BISSESAR		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	07/11/2022	07/11/2027
DOL	DOL		ROSA GARCIA		411 THEODORE FRMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL	*****7172	RZ & AL INC.		198 RIDGE AVENUE VALLEY STREAM NY 11581	06/06/2022	06/06/2027
DOL	DOL		SAL FRESINA MASONRY CONTRACTORS, INC.		1935 TEALL AVENUE SYRACUSE NY 13206	07/16/2021	07/16/2026
DOL	DOL		SAL MASONRY CONTRACTORS, INC.		(SEE COMMENTS) SYRACUSE NY 13202	07/16/2021	07/16/2026
DOL	DOL	*****9874	SALFREE ENTERPRISES INC		P.O BOX 14 2821 GARDNER RDPOMPEI NY 13138	07/16/2021	07/16/2026
DOL	DOL		SALVATORE A FRESINA A/K/A SAM FRESINA		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13218	07/16/2021	07/16/2026
DOL	DOL		SAM FRESINA		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13218	07/16/2021	07/16/2026

NYSDOL Bureau of Public Work Debarment List 01/09/2026

Article 8

DOL	DA	*****0476	SAMCO ELECTRIC CORP.		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	DA		SILVANO TRAVALJA		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	DOL	*****0440	SOLAR GUYS INC.		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	NYC	*****3661	SPANIER BUILDING MAINTENANCE CORP		200 OAK DRIVE SYOSSET NY 11791	03/14/2022	03/14/2027
DOL	DOL		STANADOS KALOGELAS		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL	*****3496	STAR INTERNATIONAL INC		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	08/11/2003	08/11/3003
DOL	DOL	*****9528	STEEL-IT, LLC.		17613 SANTE FE LINE ROAD WAYNESFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL		STEVEN DELISA		411 THEODORE FREMND AVE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL	*****3800	SUBURBAN RESTORATION CO. INC.		5-10 BANTA PLACE FAIR LAWN PLACE NJ 07410	03/29/2021	03/29/2026
DOL	DOL	*****9150	SURGE INC.		8269 21ST STREET BELLEROSE NY 11426	12/22/2022	12/22/2027
DOL	DOL		SYED MUHAMMAD S. JAFRI A/K/A SHARRUKH JAFRI		4307 28TH AVE ASTORIA NY 11103	10/11/2024	10/11/2029
DOL	DOL		SYED RAZA		198 RIDGE AVENUE NY 11581	06/06/2022	06/06/2027
DOL	DOL		TARLOK SINGH		95-27 116TH STREET QUEENS NY 11419	05/28/2024	05/28/2029
DOL	DOL		TARLOK SINGH		95-27 116TH STREET QUEENS NY 11419	07/12/2024	07/12/2029
DOL	DOL	*****4855	TECH INDUSTRIES LLC		20 HEATHER RIDGE ROAD TROY NY 12180	05/20/2025	05/20/2030
DOL	DOL	*****9733	TERSAL CONSTRUCTION SERVICES INC		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13208	07/16/2021	07/16/2026
DOL	DOL		TERSAL CONTRACTORS, INC.		221 GARDNER RD P.O BOX 14POMPEI NY 13138	07/16/2021	07/16/2026
DOL	DOL		TERSAL DEVELOPMENT CORP.		1935 TEALL AVENUE SYRACUSE NY 13206	07/16/2021	07/16/2026
DOL	DOL	*****2426	THE MATRUKH GROUP, INC.		4307 28TH AVE PO BOX 9082ASTORIA NY 11103	10/11/2024	10/11/2029
DOL	DOL		THOMAS LOBDELL		635 WEST DRYDEN ROAD FREEVILLE NY 13068	01/31/2025	01/31/2030
DOL	DOL		TIMOTHY PERCY		29807 ANDREWS ROAD BLACK RIVER NY 13612	10/17/2023	10/17/2028
DOL	DA	*****1050	TRI STATE CONSTRUCTION OF NY CORP.		50-39 175TH PLACE FRESH MEADOWS NY 11365	03/28/2022	03/28/2027
DOL	DA	*****4106	TRIPLE H CONCRETE CORP		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	*****8485	TULA PLUMBING AND HEATING LLC		120 SEARS AVE ELMSFORD NY 10523	09/26/2025	09/26/2030
DOL	DOL	*****8210	UPSTATE CONCRETE & MASONRY CONTRACTING CO INC		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL		VINCENT CORRAO		PO BOX 393 NANUET NY 10954	09/17/2024	09/17/2029
DOL	DOL	*****8266	WILLIAM CHRIS MCCLENDON	MCCLENDON ASPHALT PAVING	1646 FALLS STREET NIAGARA FALLS NY 14303	05/01/2023	05/01/2028
DOL	DOL		WILLIAM CHRIS MCCLENDON		1646 FALLS STREET NIAGARA FALLS NY 14303	05/01/2023	05/01/2028
DOL	DOL		WILLIAM G. PROERFRIEDT		85 SPRUCEWOOD ROAD WEST BABYLON NY 11704	01/19/2021	01/19/2026
DOL	DOL	*****5924	WILLIAM G. PROPHY, LLC	WGP CONTRACTIN G, INC.	54 PENTAQUIT AVE BAYSHORE NY 11706	01/19/2021	01/19/2026
DOL	DOL		WILLIAM SCRIVENS		4192 SIR ANDREW CIRCLE DOYELSTOWN PA 18902	07/18/2024	07/18/2029
DOL	DOL	*****9494	WND CONSTRUCTION LLC		411 THEODORE FREMD AVENUE SUITE 206RYE NY 10580	09/03/2025	09/03/2030
DOL	DOL		XENOFON EFTHIMIADIS		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028

SECTION 00 91 13
ADDENDUM

BOLTON POINT RAW WATER PUMP STATION
ELECTRICAL UPGRADES
Addendum No.
Date Issued:

The attention of bidders is called to the following changes to the Bid Documents, shall be taken into account in the preparation of Bids, and shall be a part of the Bid Documents

Bidders must acknowledge receipt of this Addendum on page 1 of the Bid Form.

PROJECT MANUAL

Section	Description

END OF ADDENDUM

BARTON & LOGUIDICE, D.P.C.

/
Attachments

ADDENDUM

BOLTON POINT RAW WATER PUMP STATION
ELECTRICAL UPGRADES

EMAIL TRANSMISSION – RETURN RECEIPT REQUESTED

PLEASE ACKNOWLEDGE BY RETURN EMAIL
(lcarter@bartonandloguidice.com)

Signature: _____ Date: _____

Title: _____

Company: _____

SECTION 01 10 00

SUMMARY OF WORK

PART 1 – GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. The following summary of Work is a general summary of the salient features of the Work to be performed by the General and Trades construction contractors. It does not supersede the requirements of the detailed technical specifications.

B. Summary of Work:
1. A new Electrical Building with approximate dimensions of 20’ x 20’.
2. HVAC for new Electrical Building.
3. Site work for installation of new building and electrical equipment.
4. New panelboard, transformer and associated circuiting.
5. New circuiting to support relocated motor control center.
6. Installation of Owner-supplied equipment including a 1500kVA transformer, 1,600A automatic transfer switch, 1600A main circuit breaker, and 1,600A motor control center.
7. New 35kV gang operated air break switch on existing structure.
8. Replacement of existing exhaust fans and starters in existing pump room.
9. Replacement of powered overhead door operator.

C. Facility Address:
Blackchin Blvd.
Ithaca, NY 14850

1.02 NUMBER OF CONTRACTS

A. Work will be performed under three (3) Prime Contracts, each Contract is identified in the following and on Drawings:
1. Contract No. 1A – General Construction.
2. Contract No. 1B – Mechanical Construction
2. Contract No. 1C – Electrical Construction.

B. Refer to Section 01 29 00, Payment Procedures, for detailed Pay Item descriptions.

1.03 WORK BY OWNER OR OTHERS

A. Operation of existing facilities:
1. Pumps and valves and mechanical equipment will be operated solely by Bolton Point Water System staff only.

2. Outages required to complete the Work shall be performed in strict accordance with these Contract Documents.
3. Comply with Section 01 31 13, Project Coordination.

B. Control system integration:
1. The Owner's Operations staff will integrate control signals into the Plant SCADA system.
2. The Contractor shall terminate control wiring in appropriate control cabinet, as directed by the Owner's Operations staff and shall coordinate and assist the Owner in signal integration from Contractor-supplied equipment.

1.05 CONTRACTOR'S USE OF SITE AND PREMISES

A. Temporary easement:
1. Temporary staging and laydown area is available and shall be coordinated with Owner.
2. No temporary construction easements have been secured from adjacent property owners for this Project.
3. Contractor shall confine its activities to the Owner's property.

B. Utility Outages and Shutdown:
1. Coordinate and schedule electrical and other utility outages with Owner.
2. At least one week before scheduled outage, submit Outage Request to Engineer itemizing the date, time, and duration for each requested outage.

1.07 PERMITS

A. Contractor shall secure all building permits, coordinate all inspections, pay all fees, to authorities having jurisdiction, and secure certificates of occupancy for all buildings and facilities constructed under this Contract.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 – GENERAL

1.01 PROPOSAL REQUESTS

A. The Owner may, in anticipation of ordering an addition, deletion, or revision to the Work, request the Contractor prepare a detailed proposal of cost and times to perform contemplated change.

B. Proposal requests will include reference number for tracking purposes and detailed description of and reason for proposed change, and such additional information as appropriate and as may be required for Contractor to accurately estimate cost and time impact on the Project.

C. Proposal request is for information only; Contractor is neither authorized to execute proposed change no stop Work in progress as a result of such request.

D. Contractor's written proposal shall be transmitted to the Engineer promptly, but not later than 14 days after Contractor's receipt of Owner's written request. Proposal shall remain firm for a maximum period of 45 days after receipt.

E. Owner's request for proposal or Contractor's failure to submit such proposal within the required time period will not justify a Claim for an adjustment in Contract Price or Contract Times (or Milestones).

1.02 CLAIMS

A. Include at a minimum:
   1. Specific reference including:
      a. Drawing numbers.
      b. Specification section and article/paragraph number.
      c. Submittal type.
      d. Submittal number.
      e. Date reviewed.
      f. Engineer's comment, as applicable with appropriate attachments.
   2. Stipulated facts and pertinent documents, including photographs and statements.
   3. Interpretations relied upon.
   4. Description of:
      a. Nature and extend of Claim.
      b. Who or what caused the situation.
      c. Impact to the Work and work of others.

d. Discussion of claimant's justification for requesting a change to price, time, or both.

5. Estimated adjustment in price claimant believes it is entitled to with full documentation and justification.
6. Requested Change in Contract Times: Include at least:
   a. Progress Schedule documentation showing logic diagram for request.
   b. Documentation that float times available for Work have been used.
   c. Revised activity logic with durations including subnetwork logic revisions, duration changes and other interrelated schedule impacts, as appropriate.
7. Documentation as may be necessary as set forth below for Work Change Directive, and as Engineer may otherwise require.

1.03 WORK CHANGE DIRECTIVES

A. Procedures:
   1. Engineer will:
      a. Initiate, including a description of the Work involved and any attachments.
      b. Affix signature, demonstrating Engineer's recommendation.
      c. Transmit five (5) copies to the Owner.
   2. Owner will:
      a. Affix signature, demonstrating approval of the changes involved.
      b. Return four (4) copies to the Engineer, who will retain one copy, send one copy to construction observation staff and forward two copies to the Contractor.
   3. Upon completion of the Work covered by the Work Change Directive or when final Contract Times and Contract Price are determined, Contractor shall submit documentation for inclusion in a Change Order.
   4. Contractor's documentation shall include but not be limited to:
      a. Appropriately detailed records of Work performed to enable determination of value of the Work.
      b. Full information required to substantiate resulting change in Contract Times and Contract Price for Work. On request of Engineer, provide additional data necessary to support documentation.
      c. Support data for Work performed on a unit price or Cost of the Work basis with additional information such as:
         1) Dates Work was performed and by whom.
         2) Time records, wage rates paid, and equipment rental rates.
         3) Invoices and receipts for materials, equipment, and subcontracts, are similarly documented.

B. Effective Date of Work Change Directive: Date of signature by Owner, unless otherwise indicated thereon.

1.04 CHANGE ORDERS

A. Procedure:
   1. Engineer will prepare four (4) copies of Change Order and transmit such attached therewith agreed-upon scopes of work and cost proposal for same. Engineer's signature on the Change Order form is evidence of the Engineer's recommendation that the cost of the Work (increase or decrease) is reasonable and in accordance with the Contract Documents.
   2. Contractor shall, upon receipt, review the Change Order and attached scope and cost back-up. If the Change Order and back-up is consistent with the Contractor's understanding of the change in Contract scope, then the Contractor shall sign and forward four (4) copies of the change order back to the Engineer.
   3. Engineer will, upon receipt of Contractor-signed copies, promptly forward the four (4) copies of the Change Order to the Owner for execution.
   4. Upon receipt of the Contractor-signed copies, the Owner will promptly either:
      a. Execute the Change Order, retaining one (1) copy for its file and returning (3) copies to the Engineer for distribution.
      b. Return to Engineer unsigned copies with written justification for not executing Change Order.
   5. Upon receipt of Owner-executed Change Order, Contractor shall:
      a. Perform Work covered by Change Order.
      b. Revise Schedule of Values to adjust Contract Price and submit with the next Application for Payment.
      c. Revise the Progress Schedule to reflect changes in Contract Times, if any, and to adjust times for other items of Work affected by the change.

B. In signing a Change Order, the Owner and Contractor acknowledge and agree that:
   1. Stipulated compensation (Contract Price, Contract Time or both) set forth includes payment for:
      a. the Cost of the Work covered by the Change Order.
      b. The Contractor's fee for overhead and profit.
      c. Interruption of Progress Schedule.
      d. Delay and impact, including cumulative impact, on other Work under the Contract Documents.
      e. Extended overhead.
   2. Change Order constitutes full mutual accord and satisfaction for the change to the Work.
   3. Unless otherwise stated in the Change Order, all requirements of the original Contract Documents apply to the Work covered by the Change Order.

1.05 COST OF THE WORK

A. In determining the supplemental costs allowed in Paragraph 13.01 of the General Conditions for rental equipment and machinery, the following will apply.

B. Rental of construction equipment and machinery and the parts thereof having a replacement value in excess of $1,000, whether owned by the Contractor or rented or leased from others, shall meet the following requirements.

1. Full rental costs for leased equipment shall not exceed rates listed in the Rental Rate Blue Book published by Equipment Watch, Atlanta, GA, as adjusted to the regional area of the Project. Owned equipment costs shall not exceed the single shift rates established in the Cost Reference Guide (CRG), also published by Equipment Watch. The most recent published edition in effect at commencement of actual equipment use shall be used.
2. Rates shall apply to equipment in good working condition. Equipment not in good condition, or larger than required, may be rejected by the Engineer or accepted at reduced rates.
3. Leased equipment: For equipment leased or rented in arm's length transactions from outside vendors, maximum rates shall be determined by the following actual usage/Blue Book Payment Category:
   a. Less than 8 hours: Hourly Rate.
   b. Eight (8) or more hours, but less than 7 days: Daily Rate.
   c. Seven (7) or more days, but less than 30 days: Weekly Rate.
   d. Thirty (30) days or more: Monthly Rate.
4. "Arm's-length" rental and lease transactions are those in which the firm involved in the rental or lease of equipment is not associated with, owned by, have common management, directorship, facilities and/or stockholders with the firm renting the equipment.
5. Leased Equipment in Use: Actual equipment use time documented by Engineer shall be the basis that equipment was on and utilized at the Project Site. In addition to the leasing rate above, equipment operation costs shall be paid at the estimated hourly operating cost rate set forth in the Blue Book if not already included in the lease rate. Hours of operation shall be based upon actual equipment usage to the nearest quarter hour, as recorded by the Engineer.
6. Leased Equipment, When Idle (Standby): Idle or standby equipment is equipment onsite or in transit to and from the Work Site and necessary to perform the Work under the modification, but not in actual use. Idle equipment time, as documented by the Engineer, shall be paid at the leasing rate determined above, excluding operational costs.
7. Owned and Other Equipment in Use: Equipment rates for owner equipment or equipment provided in other than an arm's-length transaction shall not exceed the single shift total hourly costs rate developed in accordance with the CRG and as modified herein for multiple shifts. This total hourly rate will be paid for each hour the equipment actually performs work. Hours of operation shall be based on

actual equipment usage as recorded by the Engineer. This rate shall represent payment in full for Contractor's direct costs.

8. Owned and Other Equipment, When Idle (Standby): Equipment necessary to be onsite to perform the Work on single shift operations, but not utilized, shall be paid for at the ownership hourly expense rate developed in accordance with the CRG, provided its presence sand necessity onsite has been documented by the Engineer. Payment for idle time of portions of a normal workday, in conjunction with original contract Work, will not be allowed. In no even shall idle time claimed in a day for a particular piece of equipment exceed the normal Work or shift schedule established for the Project. It is agreed that this rate shall represent payment in full for Contractor's direct costs. When the Engineer determines that the equipment is not needed to continuously remain at the Work Site, payment will be limited to actual hours in use.
9. Owned and Other Equipment, Multiple Shifts: For multiple-shift operations, the CRG single shift total hourly costs rate shall apply to the operating equipment during the first shift. For subsequent shifts, up to 2 in a 24-hour day, operating rate shall be the sum of the total hourly CRG operating cost and 60 percent of the CRG ownership and overhaul expense. Payment for idle or standby time for second and third shifts shall be 20 percent of the CRG ownership and overhaul expense.
10. When necessary to obtain owned equipment from sources beyond the Project limits, the actual cost to transfer equipment to the Work Site and return it to its original location will be allowed as an addition item of expense. Move-in and move-out allowances will not be made for equipment brought to the Project if the equipment is also used on original Contract or related Work.
11. If the move-out destination is not to the original location, payment for move-out will not exceed payment for move-in.
12. If move is made by common carrier, the allowance will be the amount paid for the freight. If equipment is hauled with Contractor's own forces, rental will be allowed for the hauling unit plus the hauling unit operator's wage. If equipment is transferred under its own power, the rental will be 75 percent of the appropriate total hourly costs for the equipment, without attachments, plus the equipment operator's wage.
13. Charges for time utilized in services equipment to ready it for use prior to moving and similar charges will not be allowed.
14. When a breakdown occurs on any piece of owned equipment, payment shall cease for that equipment and any other owned equipment idled by the breakdown.
15. If any part of the Work is shut down by the Owner, standby time will be paid during non-operating hours if diversion of equipment to other Work is not practicable. Engineer reserves the right to cease standby time payment when an extended shutdown is anticipated.

16. If a rate has not been established in the CRG for owned equipment, Contractor may choose one of the following courses of action:
    a. If approved by the Engineer, use the rate of the most similar model found, considering such characteristics as manufacturer, capacity, horsepower, age, and fuel type.
    b. Request Equipment Watch to furnish a written response for a rate on the equipment, which shall be presented to the Engineer for approval.
    c. Request Engineer to establish a rate.

1.06 FIELD ORDER

A. Engineer will issue Field Orders, with three copies to the Contractor.

B. Effective date of the Field Order shall be the date of signature by Engineer, unless otherwise indicated thereon.

C. Contractor shall acknowledge receipt by signing and returning one copy to the Engineer.

D. Field Orders will be incorporated into subsequent Change Orders, as a no-cost change to the Contract.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 – GENERAL

1.01 SUBMITTALS

A. Informational Submittals:
   1. Schedule of Values: Submit on Form EJCDC C620.
   2. Application for Payment.
   3. Final Application for Payment

1.02 SCHEDULE OF VALUES

A. Prepare a separate Schedule of Values for each schedule of the Work under the Agreement.

B. Upon request of the Engineer, provide documentation to support the accuracy of the Schedule of Values.

C. Unit Price Work: Reflect unit price quantity and price breakdown from conformed Bid Form.

D. Lump Sum Work:
   1. Reflect specified cash allowances and alternates, as applicable.
   2. List bonds and insurance premiums, mobilization, demobilization, progress schedule preparation, equipment testing, facility start-up, and contract closeout separately.
   3. An unbalanced or front-loaded schedule will not be accepted.

E. Summation of the complete Schedule of Values representing all the Work shall equal the Contract Price.

1.04 SCHEDULE OF ESTIMATED PROGRESS PAYMENTS

A. Show estimated payment requests throughout Contract Times aggregating initial Contract Price.

B. Base estimated progress payments on initially acceptable progress schedule. Adjust to reflect subsequent adjustments in progress schedule and Contract Price as reflected by modifications to the contract Documents.

1.05 APPLICATION FOR PAYMENT

A. Transmittal Summary Form: Attach one Summary Form with each detailed Application for Payment for each schedule and include Request for Payment of Materials and Equipment On-Hand, as applicable. Execute certification by authorized officer of Contractor.

B. Use detailed Application for Payment EJCDC C-620.

C. Prepare separate form for each schedule, as applicable.

D. Include accepted Schedule of Values for each schedule or portion of lump sum Work and the unit price breakdown for the Work to be paid on a unit price basis.

E. Include separate line item for each Change Order and Work Change Directive executed prior to date of submission. Provide further breakdown of such, as requested by the Engineer.

1.06 PAY ITEMS

A. Schedule 1A – General Construction – Base Bid Items:
   1. Pay Item 1A.1, Mobilization:
      a. Measurement: lump sum.
      b. Payment: Payment shall be full compensation for all preparatory work and operations including, but not limited to, those necessary for the movement of personnel, equipment, supplies and incidentals to the project site and for demobilization.
         1) Fifty percent (50%) of the lump sum price bid for mobilization or $50,000, whichever is less, will be paid upon application for payment, but no sooner than 15 days after start of the Work at the project site.
         2) Forty percent (40%) of the lump sum price bid for mobilization or $40,000, whichever is less, will be paid with the first regular pay application after ten percent (10%) of the original total contract amount, including payments for delivered materials but excluding mobilization, is earned.
         3) The balance of the lump sum price for mobilization will be paid upon completion of all work on the project, including final cleanup, including but not limited to demobilization and restoration activities. Specifically excluded from this item is remobilization associated with punch list or warranty work.

2. Pay Item 1A.2, General Construction:
    a. Measurement: lump sum.
    b. Payment: Payment shall be full compensation for all general construction work shown on the Drawings and specified herein, including coordination with the Owner and other contractors, general requirements, sequencing, and other related items, as shown and specified herein, or as may be required.
    c. Related Work:
        1) Drawings:
            a) C-Drawings.
            b) A-Drawings.
            c) S-Drawings.
            b) Coordination with other Contracts, as shown or called on these Drawings.
        2) Specifications:
            a) Division 00, Bidding Requirements.
            b) Division 01, General Requirements.
            c) Applicable sections of Division 02, Existing Conditions
            d) Division 03, Concrete
            e) Division 04, Masonry
            f) Division 05, Metals
            g) Division 07, Thermal and Moisture Protection
            h) Division 08, Openings
            i) Division 09, Finishes
            j) Division 22, Plumbing
            k) Division 31, Earthwork
            l) Division 32, Exterior Improvements
            m) Division 33, Utilities

C. Schedule 1B – Mechanical Construction – Base Bid Items:
    1. Pay Item 1B.1, Mobilization:
        a. Measurement: lump sum.
        b. Payment: Payment shall be full compensation for all preparatory work and operations including, but not limited to, those necessary for the movement of personnel, equipment, supplies and incidentals to the project site and for demobilization.
            1) Fifty percent (50%) of the lump sum price bid for mobilization or $50,000, whichever is less, will be paid upon application for payment, but no sooner than 15 days after start of the Work at the project site.
            2) Forty percent (40%) of the lump sum price bid for mobilization or $40,000, whichever is less, will be paid with the first regular pay application after ten percent (10%) of the original total contract amount, including

payments for delivered materials but excluding mobilization, is earned.

3) The balance of the lump sum price for mobilization will be paid upon completion of all work on the project, including final cleanup, including but not limited to demobilization and restoration activities. Specifically excluded from this item is remobilization associated with punch list or warranty work.

2. Pay Item 1B.2, Mechanical Construction:
   a. Measurement: lump sum.
   b. Payment: Payment shall be full compensation for all general construction work shown on the Drawings and specified herein, including coordination with the Owner and other contractors, general requirements, sequencing, and other related items, as shown and specified herein, or as may be required.
   c. Related Work:
      1) Drawings:
         a) M-Drawings.
         b) P-Drawings
         c) Coordination with other contracts, as shown or called on these Drawings.
      2) Specifications:
         a) Division 00, Bidding Requirements.
         b) Division 01, General Requirements.
         c) Applicable sections of Division 02, Existing Conditions
         d) Division 22, Plumbing
         e) Division 23, Heating, Ventilation and Air Conditioning

D. Schedule 1C – Electrical Construction – Base Bid Items:
   1. Pay Item 1C.1, Mobilization:
      a. Measurement: lump sum.
      b. Payment: Payment shall be full compensation for all preparatory work and operations including, but not limited to, those necessary for the movement of personnel, equipment, supplies and incidentals to the project site and for demobilization.
         1) Fifty percent (50%) of the lump sum price bid for mobilization or $50,000, whichever is less, will be paid upon application for payment, but no sooner than 15 days after start of the Work at the project site.
         2) Forty percent (40%) of the lump sum price bid for mobilization or $40,000, whichever is less, will be paid with the first regular pay application after ten percent (10%) of the original total contract amount, including

payments for delivered materials but excluding mobilization, is earned.

3) The balance of the lump sum price for mobilization will be paid upon completion of all work on the project, including final cleanup, including but not limited to demobilization and restoration activities. Specifically excluded from this item is remobilization associated with punch list or warranty work.

2. Pay Item 1C.2, Electrical Construction:
   a. Measurement: lump sum.
   b. Payment: Payment shall be full compensation for all general construction work shown on the Drawings and specified herein, including coordination with the Owner and other contractors, general requirements, sequencing, and other related items, as shown and specified herein, or as may be required.
   c. Related Work:
      1) Drawings:
         a) E-Drawings.
         b) Coordination with other contracts, as shown or called on these Drawings.
      2) Specifications:
         a) Division 00, Bidding Requirements.
         b) Division 01, General Requirements.
         c) Applicable sections of Division 02, Existing Conditions
         d) Division 26, Electrical
3. Pay Item 1C.3, Transformer Fluid Testing:
   a. Measurement: lump sum.
   b. Payment: Payment shall be full compensation for testing the fluid of the existing 1500kVA transformer for PCB content.
   c. Related Work:
      1) Drawings:
         a) E-Drawings.
         b) Coordination with other contracts, as shown or called on these Drawings.
      2) Specifications:
         a) Division 00, Bidding Requirements.
         b) Division 01, General Requirements.
         c) Applicable sections of Division 02, Existing Conditions
         d) Division 26, Electrical
4. Pay Item 1C.4, 446-Gallon Transformer Cleaning, Removal and Disposal (PCB <50 PPM):
   a. Measurement: lump sum.

b. Payment: Payment shall be full compensation for removing the main 1500kVA transformer with an assumed PCB content <50 PPM.

c. Related Work:

1) Drawings:

a) E-Drawings.

b) Coordination with other contracts, as shown or called on these Drawings.

2) Specifications:

a) Division 00, Bidding Requirements.

b) Division 01, General Requirements.

c) Applicable sections of Division 02, Existing Conditions

d) Division 26, Electrical

5. Pay Item 1C.5, Installation of Owner Supplied Equipment:

a. Measurement: lump sum.

b. Payment: Payment shall be full compensation for installation of Owner supplied equipment and all required storage, rigging, coordination, and associated work.

c. Related Work:

1) Drawings:

a) E-Drawings.

b) Coordination with other contracts, as shown or called on these Drawings.

2) Specifications:

a) Division 00, Bidding Requirements.

b) Division 01, General Requirements.

c) Applicable sections of Division 02, Existing Conditions

d) Division 26, Electrical

E. Schedule 1C – Electrical Construction – Additive Bid Items:

1. Pay Item 1C.A1, 446-Gallon Transformer Cleaning, Removal and Disposal (PCB ≥50 PPM – ≤ 500 PPM):

a. Measurement: lump sum.

b. Payment: Payment shall be an add to the base bid if the transformer PCB content is determined to be ≥50 PPM – ≤ 500 PPM.

c. Related Work:

1) Drawings:

a) E-Drawings.

b) Coordination with other contracts, as shown or called on these Drawings.

2) Specifications:
   a) Division 00, Bidding Requirements.
   b) Division 01, General Requirements.
   c) Applicable sections of Division 02, Existing Conditions
   d) Division 26, Electrical

2. Pay Item 1C.A2, 446-Gallon Transformer Cleaning, Removal and Disposal (PCB >500 PPM):
   a. Measurement: lump sum.
   b. Payment: Payment shall be an add to the base bid if the transformer PCB content is determined to be >500 PPM.
   c. Related Work:
      1) Drawings:
         a) E-Drawings.
         b) Coordination with other contracts, as shown or called on these Drawings.
      2) Specifications:
         a) Division 00, Bidding Requirements.
         b) Division 01, General Requirements.
         c) Applicable sections of Division 02, Existing Conditions
         d) Division 26, Electrical

1.07 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

A. Payment will not be made for the following:
   1. Loading, hauling, and disposing of rejected material.
   2. Quantities of material wasted or disposed in a manner not called for in the Contract Documents.
   3. Rejected loads of material, including material rejected after it has been placed by reason of failure of Contractor to conform to provision of Contract Documents.
   4. Material not unloaded from transporting vehicle.
   5. Defective Work not accepted by the Owner.
   6. Material remaining on hand after completion of the Work.

1.08 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

A. Partial Payment: No partial payments will be made for materials and equipment delivered or stored unless shop drawings and preliminary operation and maintenance data has been accepted by the Engineer.
B. Final Payment:
   1. Will be made only for products incorporated into the Work.

2. Remaining products, for which partial payments have been made shall revert to Contractor unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

1.09 PARTIAL PAYMENT FOR UNDELIVERED, PROJECT-SPECIFIC MANUFACTURED OR FABRICATED EQUIPMENT

A. Notwithstanding the above provisions, partial payments for undelivered (not yet delivered to Site or not stored in the vicinity of the Site) products specifically manufactured for this Project, excluding off-the-shelf or catalog items, will be made for products listed below when all following conditions exist:
   1. Partial payment request is supported by written acknowledgement from Suppliers that invoice requirements have been met.
   2. Equipment is adequately insured, maintained, stored, and protected by appropriate security measures.
   3. Each equipment items is clearly marked and segregated from other items to permit inventory and accountability.
   4. Authorization has been provided for access to storage Site for Engineer and Owner.
   5. Equipment meets applicable Specifications of these Contract Documents.

B. Failure of Contractor to continue compliance with above requirements shall give cause for Owner to withhold payments made for such equipment from future partial payments.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01 29 00

SUPPLEMENT
LIEN WAIVER AND RELEASE

WHEREAS, _____, hereafter called the "Undersigned," having entered into a written contract or purchase order with the Bolton Point Water System, hereafter call the "Owner", for the supplying of materials and/or the furnishing of labor and materials, or the furnishing of labor only for the project known as the Raw Water Pumping and Transmission Improvements**.**

WHEREAS, Undersigned has requisitioned a PARTIAL/FINAL payment from the Owner pursuant to such contract or purchase order.

NOW, THEREFORE, for good and valuable consideration including the PARTIAL/FINAL payment of $_____ provided for herein, Undersigned agrees as follows:

1) Upon receiving payment from the Owner, the payment to which this instrument refers, Undersigned agrees not in any way to claim or file a mechanic's lien or other lien against said project, premises or any part thereof, or on the monies or other consideration due to become due for the Owner for any of the materials heretofore furnished or work or labor performed or furnished by the Undersigned. Further, the Undersigned hereby formally and irrevocably releases and waives in writing every and any lien, charges or claim of any nature whatsoever that it has, or as to which it may at any time have been entitled, up to and including the date hereof in connection with the said project, except for any unpaid retained monies unless the payment herein is payment of retainage, which lien waiver shall be for the benefit of the Owner of the Project.

2) The Undersigned further says that all monies due for this work which includes all labor, material, fuel, transportation and equipment, fringe benefits, pension funds, apprentice training programs, employee vacations, welfare funds, and similar funds and payments as well as all applicable sales and used taxes, royalties, commissions, permits, bonds, guarantees, insurances, licenses, or patent fees have been paid in full except as noted below. (If none write "NONE").

_____
_____
_____

And that there are no persons in a position to have or file a lien against the above mentioned work and/or the premises on which the same is located on account of any labor or materials furnished to Undersigned or any of the Undersigned's subcontractors or suppliers.

3) Undersigned agrees that the lien waiver appearing in Paragraph "1" hereof shall be deemed to be in compliance with the Lien Law of the State of New York.

4) Undersigned agrees that any of its subcontractors or suppliers being entitled to any of the proceeds of the within payments have been paid except as noted below. (If none write "NONE").

_____

_____

5) Furthermore, Undersigned hereby formally and irrevocably releases and waives any rights to make a claim upon any labor and material payment bond issued to the Owner, for this project on account of the labor, services, materials, fixtures or supplies heretofore furnished to this date by the Undersigned for the said project.

6) Furthermore, Undersigned hereby formally and irrevocably releases the Owner from all claims of liability, loss or damage to the Undersigned except as noted otherwise herein for anything furnished or performed in connection with, relating to or arising out of the contract or out of the work covered by said contract, including, but not limited to, all claims for extra work, labor or materials, delays or increased costs due to changed conditions, loss of efficiency or productivity, nonsequential work operations, delays, acceleration, suspension of work, and for any prior act, neglect or default on the part of the Owner, or any of its officers, agents or employees in connection therewith, up to and including the date of this waiver, except for any unpaid retained monies.

7) The Undersigned further acknowledges that neither the aforesaid payment nor acceptances by the Owner, of the work covered by the aforementioned contract and/or purchase order shall in any way or manner operate as, or constitute a release or waiver of the Undersigned's obligations, undertaking or liabilities under said contract or purchase order or in any way affect or limit the same.

This Agreement shall run to the benefit of the Owner, its successors and assigns; signed and dated this ____ day of _____, 20__.

AMOUNT OF THIS
PARTIAL/FINAL PAYMENT: $_____

_____

_____
Office/Authorized Signature

_____
Printed Name and Title

Sworn to before me this _____ day of _____, 20___.

_____
Notary Public

SECTION 01 31 13

PROJECT COORDINATION

PART 1 – GENERAL

1.01 DESCRIPTION

A. The Owner's operations staff will maintain control over its facilities for the duration of the Contract.

B. No work shall be undertaken which would jeopardize the minimum required conveyance or capacity of the existing conveyance and treatment systems.

C. All outages, cut-overs and connections of new Work to the existing conveyance system shall be coordinated with the respective Owner's operating personnel.

1.02 RELATED WORK AT THE SITE

A. General:
   1. Other work that is either directly or indirectly related to schedule performance of the Work under these Contract Documents, listed henceforth, is anticipated to be performed at the Site by others.
   2. Coordinate the Work of the Contract Documents with work of others as specified in the General Conditions.
   3. Include sequencing constraints specified herein as a part of Progress Schedule.

1.03 FACILITY OPERATIONS

A. Continuous operation of Owner's facilities is of critical importance. Schedule and conduct activities to enable existing facilities to operate continuously, unless otherwise specified.

B. Perform Work continuously during critical connections and change-overs, and as required to prevent interruption of the Owner's operation.

C. When necessary, plan, design, and provide various temporary services, utilities, connections, temporary piping and heating, access, and similar items to maintain continuous operations of the Owner's facilities.

D. Facility operations schedule:
   1. Normal Plant hours of operation:
      a. Weekdays: Plant operates from 08:00 AM to 4:00 PM.

E. Do not take any action which would affect the operation of existing systems, except as specifically required by the Contract Documents and after authorization by Owner and Engineer. Such authorization will be considered within 48 hours after receipt of Contractor's written request.

1.04 SUBSTANTIAL COMPLETION

A. Completion of the following items shall constitute Substantial Completion for the Work:
   1. Schedule A, General Construction:
      a. Complete site and building construction. Submittal and acceptance of all O&M manuals shall be completed and ready for the Owner's use.
      b. Successful completion of this work shall constitute Substantial Completion of the Schedule A work and shall set the date of warranty period commencement for all labor, equipment, and material furnished by the Contractor.
   2. Schedule B, Mechanical:
      a. Complete construction of all mechanical equipment. Submittal and acceptance of all O&M manuals shall be completed and ready for the Owner's use.
      b. Successful completion of this work shall constitute Substantial Completion of the Schedule B work and shall set the date of warranty period commencement for all labor, equipment, and material furnished by the Contractor.
   3. Schedule C, Electrical:
      a. All building electrical services, generator system, lights, switchgear, terminations, third-party acceptance tests, conduit and wire labeling. Submittal and acceptance of all O&M manuals shall be completed and ready for the Owner's use.
      b. Successful completion of this work shall constitute Substantial Completion of the Schedule C work and shall set the date of warranty period commencement for all labor, equipment, and material furnished by the Contractor

PART 2 – PRODUCTS
(NOT USED)

PART 3 – EXECUTION
(NOT USED)

END OF SECTION

SECTION 01 31 19

PROJECT MEETINGS

PART 1 – GENERAL

1.01 GENERAL

A. Engineer will schedule physical arrangements for meetings throughout the progress of the Work on a monthly basis, prepare meeting agenda with regular participant input and will distribute with written notice of each meeting, preside at meetings, record minutes to include significant proceedings and decisions, and reproduce and distribute copies of minutes following each meeting to participants and parties affected.

1.02 PRECONSTRUCTION CONFERENCE

A. Contractor shall be prepared to discuss the following subjects, as a minimum:
   1. Required schedules.
   2. Status of bonds and insurance.
   3. Sequencing of critical path work items.
   4. Progress payment procedures.
   5. Project changes and clarifications.
   6. Use of Site, access, office and storage areas, security and temporary facilities.
   7. Major product delivery and priorities.
   8. Contractor’s safety plan.

B. Attendees will include:
   1. Owner’s representative.
   2. Contractor’s office representative.
   3. Contractor’s resident superintendent.
   4. Contractor’s quality control representative.
   5. Subcontractors’ representatives whom the Contractor may wish or Engineer may request to attend.
   6. Engineer’s representatives.
   7. Others, as appropriate.

1.03 PROGRESS MEETINGS

A. Engineer will schedule regular progress meetings at Site, conducted monthly to review the Work progress, Progress Schedule, Schedule of Submittals, Application for Payment, contract modifications, and other matters needing discussion and resolution. Additional coordination meetings may be called by the Owner, as required to adequately coordinate major tie-ins.

B. Attendees will include:
   1. Owner’s representative(s), as appropriate.
   2. Contractor, Subcontractor, and Suppliers, as appropriate.
   3. Engineer’s representative(s).
   4. Others, as appropriate.

1.04 OTHER MEETINGS

A. In accordance with Contract Documents and as may be required by Owner and Engineer.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01 32 16

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 – GENERAL

1.01 SUBMITTALS

A. Informational Submittals:
   1. Detailed Progress Schedule:
      a. Submit initial Detailed Progress Schedule within 30 days after Effective Date of the Agreement.
      b. Submit an Updated Progress Schedule at each update, as specified herein.
   2. Submit with each Progress Schedule submittal:
      a. Contractor's certification that Progress Schedule submittal is actual schedule being utilized for execution of the Work.
      b. Project shall be scheduled using P6 by Primavera, or approved equal software capable of critical path activity analysis.
      c. Progress schedule: Six (6) legible color copies.
      d. Narrative Progress Report: Same number of copies as specified for Progress Schedule.
   3. Prior to final payment, submit a final Updated Progress Schedule.

1.02 SCHEDULE COORDINATION

A. Where Contractor is referred to in the singular, it shall refer to each of separate contractors as applicable.

B. General Contractor shall incorporate detailed schedules prepared by other contractors into the overall Progress Schedule, and shall maintain throughout the duration of the Project.

C. Coordinate preparation and process of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

D. Coordinate Contractor's construction schedule with the schedule of values, list of subcontractors, submittal schedule, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from entities involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

E. Schedule Updates:
   1. The General Contractor shall update the work schedule on a monthly basis throughout construction.
   2. A copy of the updated work schedule shall be submitted to the Engineer along with each payment application, along with copies of certified payrolls and required M/WBE documentation.
   3. Payment applications will not be reviewed by the Engineer until an acceptable updated schedule has been received.
   4. The General Contractor shall update the work schedule on a monthly basis throughout the construction period.

1.03 DETAILED PROGRESS SCHEDULE

A. In addition to the requirements of the General Conditions, submit a Detailed Progress Schedule beginning with Notice to Proceed and continuing through Final Completion.

B. Show the duration and sequence of activities required for complete performance of the Work reflecting means and methods chosen by the Contractor.

C. When accepted by the Engineer, the Detailed Progress Schedule will be the Baseline Schedule. Subsequent revisions will be considered as Updated Progress Schedules.

D. Format: In accordance with requirements specified herein.

E. Updated monthly through the 15th of each month along with each pay application to reflect actual progress and occurrences to date, including weather delays.

1.04 PROGRESS SCHEDULE – CRITICAL PATH NETWORK

A. General: Comprehensive computer-generated schedule using the critical path method (CPM), generally as outlined in the "Construction Planning & Scheduling Manual", as published by the Associated of General Contractors of America (AGC). If a conflict occurs between the AGC publication and this Specification, then this Specification shall govern.

B. Contents:
   1. Schedule shall begin with the date of Notice to Proceed and conclude with the date of Final Completion.
   2. Identify Work calendar basis using days as a unit of measure.
   3. Show complete interdependence and sequence of construction and Project-related activities reasonably required to complete the Work.
   4. Identify the Work of separate stages and other logically grouped activities.

5. Reflect sequences of the Work, constraints, delivery windows, review times Contract Times and Project Milestones set forth in the Agreement and Section 01 31 13, Project Coordination.
6. Include as applicable, at a minimum:
    a. Obtaining permits, submittals for early product procurement, and long-lead items.
    b. Mobilization and other preliminary activities.
    c. Submittal review and approval.
    d. Initial Site work.
    e. Specified Work sequences, constraints, and Milestones, including Substantial Completion date.
    f. Major equipment fabrication, factory-testing, and delivery dates.
    g. Concrete work.
    h. Structural steel work.
    i. Equipment work.
    j. Mechanical work.
    k. Electrical work.
    l. Instrumentation and control work.
    m. Equipment and system startup and testing activities.
    n. Project closeout and site restoration.
    o. Demobilization.
7. No activity duration, exclusive of those for Submittals review and product fabrication/delivery, shall be less than 1 day or more than 14 days, unless otherwise approved.
8. Activity duration for Submittal review shall not be less than review time specified unless clearly identified and prior written acceptance has been obtained from the Engineer.

C. Network Graphical Display:
1. Plot or print on paper 11” x 17”.
2. Title block: Show name of Project, Owner, date submitted, revision or update number, and the name of the scheduler. Updated schedules shall indicate data date.
3. Identify horizontally across top of schedule the time frame by year, month, and day.
4. Identify each activity with a unique number and a brief description of the Work associated with that activity.
5. Indicated critical path.
6. Show, at a minimum, the controlling relationships between activities.
7. Plot activities on a time-scaled basis, with the length of each activity proportional to the current estimate of the duration.
8. Plot activities on an early start basis unless otherwise request by Engineer.
9. Provide a legend to describe standard and special symbols used.

1.05 PROGRESS OF THE WORK

A. Updated Progress Schedule shall reflect:
   1. Progress of Work through 15th of each month, tied to pay application submittal.
   2. Approved changes in Work scope and activities modified since submittal.
   3. Delays in Submittals or resubmittals, deliveries, or Work.
   4. Adjusted or modified sequences of the Work.
   5. Other identifiable changes.
   6. Revised projections of progress and completion.
   7. Report of changed logic.

B. Produce detailed sub-schedules during Project, upon request of Owner or Engineer, to further define critical portions of the Work, such as a planned facility shutdown.

C. If Contractor fails to complete activity by its latest scheduled completion date and this failure impacts the critical path, the Contractor shall, within 7 days of such failure, submit a recovery schedule, detailing how the Contractor intends to correct nonperformance and return to acceptable current Progress Schedule. Actions by the Contractor to complete the Work within Contract Times (or Milestones) will not be justification for adjustment to Contract Price or Contract Times.

D. Owner may order Contractor to increase plant, equipment, labor force or working hours if Contractor fails to:
   1. Complete a Milestone activity by its completion date.
   2. Satisfactorily execute Work as necessary to prevent delay to overall completion of Project, at no additional cost to the Owner.

1.06 SCHEDULE ACCEPTANCE

A. Engineer's acceptance will demonstrate agreement that:
   1. Proposed schedule is accepted with respect to:
      a. Contract Times, including Final Completion and all intermediate Milestones are within the specified times.
      b. Specified Work sequences and constraints are shown as specified.
      c. Access restrictions are accurately reflected.
      d. Startup and testing times are as specified.
      e. Submittal review times are as specified.
      f. Startup testing duration is as specified and timing is acceptable.
   2. In all other respects, Engineer's acceptance of the Contractor's schedule indicates that, in the Engineer's judgement, schedule represents a reasonable plan for constructing the project in accordance with the Contract Documents. The Engineer's review will not make any change in Contract requirements. Lack of comment on any aspect of the schedule

that is not in accordance with the Contract Documents will not thereby indicate acceptance of the change, unless Contractor has explicitly called the non-conformance to the Engineer's attention in submittal. Schedule remains the Contractor's responsibility and the Contractor retains responsibility for performing all activities, for activity durations, and for activity sequences required to construct the Project in accordance with the Contract Documents.

1.07 ADJUSTMENT OF CONTRACT TIMES

A. Reference General Conditions and Section 01 26 00, Contract Modification Procedures.

B. Evaluation and reconciliation of Adjustments of Contract Times shall be based on the Updated Progress Schedule at the time of proposed adjustment or claimed delay.

C. Float:
   1. Float time is a Project resource available to both parties to meet contract Milestones and Contract Times.
   2. Use of float suppression techniques such as preferential sequencing or logic, special lead/lag logic constraints, and extended activity times are prohibited, and use of float time disclosed or implied by use of alternate float-suppression techniques shall be to the benefit of the Owner and Contractor.
   3. Pursuant to above float-sharing requirement, no time extensions will be granted nor delay damages paid until a delay occurs which:
      a. Impacts the Project's critical path.
      b. Consumes available float or contingency time.
      c. Extends Work beyond the contract completion date.

D. Claims Based on Contract Times:
   1. Where Engineer has not yet rendered a formal decision on Contractor's Claim for adjustment of Contract Times, and parties are unable to agree as to amount of adjustment to be reflected in Progress Schedule, Contractor shall reflect an interim adjustment in the Progress Schedule as acceptable to the Engineer.
   2. It is understood and agreed that such interim acceptance will not be binding on either the Contractor or the Owner, and will be made only for the purpose of continuing to schedule Work until such time as formal decision has been rendered as to an adjustment, if any, of the Contract Times.
   3. Contractor shall revise Progress Schedule prepared thereafter in accordance with the Engineer's formal decision.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Work specified elsewhere:
   1. Section 01 29 00, Payment Procedures.
   2. Section 01 32 16, Construction Progress Documentation.
   3. Section 01 77 00, Closeout Procedures.
   4. Section 01 78 23, Operation and Maintenance Data.
   5. Section 01 91 14, Equipment Testing and Facility Start-up.

1.02 DEFINITIONS

A. Action Submittals:
   1. Written and graphic information and physical samples that require Engineer's responsive action.
   2. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals:
   1. Written and graphic information and physical samples that do not require Engineer's responsive action.
   2. Submittals may be rejected for not complying with requirements.
   3. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals".

C. Portable Document Format (PDF): An open file format standard licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.03 FORMAT

A. The Contractor shall be responsible for submittal all information necessary for submittal approvals. Make submittals to the office of the Engineer: Barton & Loguidice, D.P.C., 443 Electronics Parkway, Liverpool, New York 13088.

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. If a shop drawing deviates from the requirements of the Contract Documents, the Contractor shall specifically note each deviation in its letter of transmittal.

D. Contractor's approval:
   1. All submittals shall bear the stamp of approval and signature of the Contractor as evidence that the submittal has been reviewed by the Contractor.
   2. Submittals without this stamp of approval will not be reviewed and will be returned to the Contractor.
   3. The Contractor's stamp shall contain the following minimum information:
      a. Project: Raw Water Pumping and Transmission Improvements
      b. Bid No: BBBB
      c. Contractor:
      d. Date:
      e. Specification section:
      f. Drawing number:
      g. Submittal No.: BBBB-SS SS SS-sss-rrr, where:
         1) BBBB: Bid No.
         2) SS SS SS: Specification section number.
         3) sss: sequential submittal number.
         4) rrr: submittal revision number. All initial submittals shall be revision number "000".

E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
   1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section.
   2. Submit electronically in PDF format (or DWF format as applicable) via electronic mail.
   3. Make special file transfer arrangements for submittals larger than 25 MB.
   3. Paper Submittals: No paper submittals will be accepted as part of this Project unless specifically required as part of the Contract Documents or requested by Engineer or Engineer's consultants.

F. Resubmittals:
   1. Make resubmittals in same form and number of copies as initial submittal.
   2. Resubmittals shall be as a standalone submittal, including all applicable information from the previous submittals.
   3. Resubmittals that only include information on revised items will be returned without review.
   4. Note date and content of previous submittal.

5. Note date and content of revision in label or title block and clearly indicate extent of revision.
6. Resubmit submittals until they are marked with approval notation from Engineer's action stamp.

1.04 SUBSTITUTIONS

A. Requests for substitutions or consideration of "or equal" items shall be handled as specified in the General Conditions, as modified in the Supplementary Conditions.

B. Substitutions or "or equal" items shown or implied on the submittal are prohibited and will be rejected.

1.05 DELEGATED DESIGN SERVICES

A. Performance and design criteria:
1. Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
2. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer.

B. Delegated-design services certification:
1. In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
2. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 2 – PRODUCTS

2.01 WARRANTIES

A. General warranty:
1. Except as otherwise specifically provided in the Contract Documents, all warranties on equipment and systems shall extend for one calendar year from the date of Substantial Completion for the particular equipment or system.
2. During the warranty period, the Contractor is responsible for repair or replacement of all failures and defects, exclusive of the ordinary and routine maintenance and failures traceable to a lack thereof.

3. This requirement shall be thoroughly explained by the Contractor to all prospective equipment suppliers.
4. The provisions of any usual warranty, terms of sale, etc., by suppliers shall not be substituted for this requirement, except where such substitution provides an extended warranty beyond the requirements of this paragraph.
5. These warranty requirements are of the essence of the contract between the Owner and the Contractor.

PART 3 – EXECUTION

3.01 CONTRACTOR'S RESPONSIBILITIES

A. General:
1. The Contractor shall forward submittals well in advance of the need for the material or equipment for construction and with required allowance for time required to make delivery of material or equipment after data cover such is approved.
2. The Contractor assumes the risk for all material or equipment that is ordered, fabricated, or shipped prior to the approval of submittals.
3. No material or equipment will be permitted to be incorporated into the Work nor will such be included in monthly pay estimates until approval thereof has been obtained in the manner specified herein.

B. Coordination:
1. It is the Contractor's responsibility to review submittals of its suppliers and subcontractors before transmitting them to the Engineer to assure proper coordination of the Work, to determine that each submittal is in accordance with the Contract Documents, and that there is sufficient information about material and equipment for the Engineer to determine compliance with the Contract Documents.
2. Incomplete or inadequate submittals will be returned for revision without review, as specified herein.
3. Approval of submittals shall not relieve the Contractor from the obligation of furnishing material and equipment of proper dimension, size, quality, quantity, and all performance characteristics to perform the requirements and intent of the Contract Documents
4. Engineer's approval shall not relieve the Contractor from responsibility for errors of any sort on the submittals.
5. Approval is intended only to assure conformance with the design concept of the project and compliance with the information given in the Contract Documents.
6. The Contractor is responsible for dimensions which shall be confirmed and correlated at the project site.

7. The Contractor is responsible for information that pertains solely to the fabrication processes or to the technique of construction and for the coordination of the Work of all trades.

C. Engineer's approval:
1. Submittals not bearing the Engineer's "approved" or "approved as noted" notation shall not be used issued to subcontractors nor utilized for construction purposes.
2. No work shall be performed or equipment installed without an approved drawing or submittal.
3. The Contractor assumes the risk for all work performed or equipment installed without an approved drawing or submittal.
4. In the event the Contractor obtains the Engineer's approval for the use of equipment other than that which is shown or specified, the Contractor shall, at its own expense and using methods approved by the Engineer, make all changes to the Work, including structures, piping, electrical, equipment and controls, that may be necessary to accommodate this equipment.

3.02 ENGINEER'S ACTION

A. The Engineer will review and process all submittals promptly, but a reasonable time shall be allowed for submittal transmittals, reviews, and revisions.

B. The Contractor shall allow fifteen (15) days for each submittal review and response in the preparation of Progress Schedules.

C. The Contractor shall allow for two (2) submittals for major products and equipment.

D. The Owner may back-charge the Contractor for costs associated with review the third and successive submittal(s) for major products and equipment.

E. The Engineer will document and notify in writing of all such back charges to be deducted from the progress payment request prior to application for payment.

3.03 SUBMITTAL STATUS AND PROCEDURE

A. After the Engineer completes its review, the submittal will be marked with one of the following dispositions:
1. Approved.
2. Approved as noted.
3. No action required.
4. Revise and resubmit.
5. Not approved

B. Submittals marked “Approved”:
   1. Submittals that conform to the Contract Documents without comment will be issued a disposition of “Approved”.
   2. The Contractor may order, fabricate, or ship the materials included in the submittal.

C. Submittals marked “Approved as noted”:
   1. Submittals that conform to the Contract Documents with correction of minor clarifications or omissions will be issued a disposition of “Approved as noted”.
   2. The Contractor may order, fabricate, or ship the materials included in the submittal that incorporates the Engineer’s comments.

D. Submittals marked “No action required”: Informational submittals will be issued a disposition of “No action required”, acknowledging to the Contractor the Engineer’s receipt of the submittal.

E. Submittals marked “Revise and resubmit”:
   1. Submittals that include a named manufacturer or supplier, but contain insufficient information to determine conformance to the Contract Documents will be issued a disposition of “Revise and Resubmit”.
   2. The Contractor shall make corrections to satisfy the deficiencies indicated and repeat the submittal procedure.
   3. The resubmittal shall conform to the submittal numbering procedure specified herein.

F. Submittals marked “Not approved”:
   1. Submittals that do not conform to the Contract Documents will be issued a disposition of “Not approved”.
   2. The Contractor shall revise the submittal to incorporate equipment or products that comply with the requirements of the Contract Documents.

END OF SECTION

SECTION 01 42 13

ABBREVIATIONS AND ACRONYMS

PART 1 – GENERAL

1.01 REFERENCE STANDARDS AND SPECIFICATIONS OF TECHNICAL SOCIETIES

A. Work specified by reference to published standard or specification of government agency, technical association, trade association, professional society or institute, testing agency, or other organization shall meet requirements or surpass minimum standards of quality for materials and workmanship established by designated standard or specification.

B. Where so specified, products or workmanship shall also meet or exceed additional prescriptive or performance requirements included within the Contract Documents to establish a higher or more stringent standard of quality than required by the reference standard.

C. Where two or more standards are specified to establish quality, product and workmanship shall meet or exceed the requirements of the most stringent.

D. Where both a standard and a brand name are specified for a product in the Contract Documents, proprietary product named shall meet or exceed the requirements of the specified reference standard.

E. Copies of standards and specifications of technical societies:
   1. Copies of applicable referenced standards have not been bound into these Contract Documents.
   2. When the Contractor needs copies of standards, it shall obtain a copy or copies directly from the publication source and maintain in an orderly manner at the Site as Work Site records, available to the Contractor's personnel, Subcontractors, Owner, and Engineer.

1.02 ABBREVIATIONS

A. Abbreviations for trade organizations and government agencies: Following is a list of construction industry organizations and government agencies to which references may be made in the Contract Documents, with abbreviations used.

1.	AA	Aluminum Association.
2.	AABC	Associated Air Balance Council.
3.	AAMA	American Architectural Manufacturers Association.
4.	AASHTO	American Association of State Highway and Transportation Officials.
5.	ABMA	American Bearing Manufacturers Association.

6.	ACI	American Concrete Institute.
7.	AEIC	Association of Edison Illuminating Companies.
8.	AGA	American Gas Association.
9.	AGMA	American Gear Manufacturers Association.
10.	AI	Asphalt Institute.
11.	AISC	American Institute of Steel Construction.
12.	AISI	American Iron and Steel Institute.
13.	AITC	American Institute of Timber Construction.
14.	ALS	American Lumber Standards.
15.	AMCA	Air Movement and Control Association.
16.	ANSI	American National Standards Institute.
17,	APA	APA – The Engineered Wood Association.
18.	API	American Petroleum Institute.
19.	APWA	American Public Works Association.
20.	AHRI	Air-Conditioning, Heating, and Refrigeration Institute.
21.	ASA	Acoustical Society of America.
22.	ASABE	American Society of Agricultural and Biological Engineers.
23.	ASCE	American Society of Civil Engineers.
24.	ASHRAE	American Society of Heating, Refrigeration, and Air-Conditioning Engineers, Inc.
25.	ASME	American Society of Mechanical Engineers.
26.	ASNT	American Society of Nondestructive Testing.
27.	ASSE	American Society of Sanitary Engineers.
28.	ASTM	ASTM International.
29.	AWI	Architectural Woodwork Institute.
30.	AWPA	American Wood Preservers' Association.
31.	AWPI	American Wood Preservers' Institute.
32.	AWS	American Welding Society.
33.	AWWA	American Water Works Association.
34.	BHMA	Builders Hardware Manufacturers' Association.
35.	CBM	Certified Ballast Manufacturer
36.	CDA	Copper Development Association.
37.	CGA	Compressed Gas Association.
38.	CISPI	Cast Iron Soil Pipe Institute.
39.	CMAA	Crane Manufacturers' Association of America.
40.	CRSI	Concrete Reinforcing Steel Institute.
41.	CS	Commercial Standard.
42.	CSA	Canadian Standards Association.
43.	CSI	Construction Specifications Institute.
44.	DIN	Deutsches Institut für Normung, e.V.
45.	DIPRA	Ductile Iron Pipe Research Association.
46.	EIA	Electronic Industries Alliance.
47.	EJCDC	Engineers Joint Contract Document Committee.
48.	ETL	Electrical Test Laboratories.

49.	FAA	Federal Aviation Administration.
50.	FCC	Federal Communications Commission.
51.	FDA	Food and Drug Administration.
52.	FEMA	Federal Emergency Management Agency.
53.	FIPS	Federal Information Processing Standards.
54.	FM	FM Global.
55.	Fed. Spec.	Federal Specifications.
56.	FS	Federal Specifications and Standards.
57.	FA	Gypsum Association.
58.	GANA	Glass Association of North America.
59.	HI	Hydraulic Institute.
60.	HMI	Hoist Manufacturers' Institute.
61.	IBC	International Building Code.
62.	ICBO	International Conference of Building Officials.
63.	ICC	International Code Council.
64.	ICEA	Insulated Cable Engineers' Association.
65.	IFC	International Fire Code.
66.	IEEE	Institute of Electrical and Electronic Engineers, Inc.
67.	IESNA	Illuminating Engineering Society of North America.
68.	IFI	Industrial Fasteners Institute.
69.	IGMA	Insulating Glass Manufacturers' Alliance.
70.	IMC	International Mechanical Code.
71.	INDA	Association of the Nonwoven Fabrics Industry.
72.	IPC	International Plumbing Code.
73,	ISA	International Society of Automation.
74.	ISO	International Organization for Standardization.
75.	ITL	Independent Testing Laboratory.
76.	JIC	Joint Industry Conferences of Hydraulic Manufacturers.
77.	MIA	Marble Institute of America.
78.	MIL	Military Specifications.
79.	MMA	Monorail Manufacturers' Association.
80.	MSS	Manufacturers' Standardization Society.
81.	NAAMM	National Association of Architectural Metal Manufacturers.
82.	NACE	NACE International.
83.	NBGQA	National Building Granite Quarries Association.
84.	NEBB	National Environmental Balancing Bureau.
85.	NEC	National Electric Code.
86.	NECA	National Electrical Contractors' Association.
87.	NEMA	National Electrical Manufacturers' Association.
88.	NESC	National Electrical Safety Code.
89.	NETA	National Electrical Testing Association.
90.	NFPA	National Fire Protection Association.
91.	NHLA	National Hardwood Lumber Association.

92.	NICET	National Institute for Certification in Engineering Technologies.
93.	NIST	National Institute for Standards and Technology.
94.	NRCA	National Roofing Contractors' Association.
95.	NRTL	Nationally Recognized Testing Laboratory.
96.	NSF	NSF International.
97.	NSPE	National Society of Professional Engineers.
98.	NTMA	National Terrazzo and Mosaic Association.
99.	NWWDA	National Wood Window and Door Association.
100.	NYSHD	New York State Health Department.
101.	OCHD	Onondaga County Health Department.
102.	OSHA	Occupational Safety and Health Administration.
103.	PCI	Precast/Prestressed Concrete Institute.
104.	PEI	Porcelain Enamel Institute.
105.	PPI	Plastic Pipe Institute.
106.	PS	Product Standards Section-U.S. Department of Commerce.
107.	RMA	Rubber Manufacturers' Association.
108.	RUS	Rural Utilities Service.
109.	SAE	SAE International.
110.	SDI	Steel Deck Institute.
111.	SDI	Steel Door Institute.
112.	SJI	Steel Joist Institute.
113.	SMACNA	Sheet Metal and Air Conditioning Contractors National Association.
114.	SPI	Society of the Plastics Industry.
115.	SSPC	The Society for Protective Coatings.
116.	STI/SPFA	Steel Tank Institute/Steel Plate Fabricators Association.
117.	SWI	Steel Window Institute.
118.	TEMA	Tubular Exchanger Manufacturers' Association.
119.	TCA	Tile Council of North America.
120.	TIA	Telecommunications Industry Association.
121.	UBC	Uniform Building Code.
122.	UFC	Uniform Fire Code.
123.	UL	Underwriters Laboratories, Inc.
124.	UMC	Uniform Mechanical Code.
125.	USBR	U.S. Bureau of Reclamation.
126.	WCLIB	West Coast Lumber Inspection Bureau.
127.	WEF	Water Environment Federation.
128.	WI	Wood Institute.
129.	WWPA	Western Wood Products Association.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01 43 26.01

SPECIAL INSPECTIONS AND STRUCTURAL TESTING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Special Inspections and Structural Testing shall be in accordance with Chapter 17 of the 2025 International Building Code as adopted by New York State (BCNYS).

B. The program of Special Inspection and Structural Testing is a Quality Assurance program intended to ensure that the work is performed in accordance with the Contract Documents.

C. This specification section is intended to inform the Contractor of the Owner's quality assurance program and the extent of the Contractor's responsibilities. This specification section is also intended to notify the Special Inspector, Testing Laboratory, and other Agents of the Special Inspector of their requirements and responsibilities.

D. Where application is made to the building official for construction as specified in Section 105 of the BCNYS, the Owner or the Owner's authorized agent, other than the Contractor, shall employ one or more approved agencies to provide special inspections and tests during construction and identify the approved agencies to the building official. These special inspections and tests are in addition to the inspections by the Building Official and by the Contractor, on his behalf.

1.02 SCHEDULE OF INSPECTIONS AND TESTS

A. Required inspections and tests are described in the Schedule of Special Inspections provided in Part 3 of this specification and in the individual specification sections for the items to be inspected or tested.

1.03 QUALIFICATIONS

A. The Special Inspector shall be a licensed Professional Engineer, Structural Engineer or as specified in the Schedule of Special Inspections and Chapter 17 of the BCNYS, and who is approved by the Code Enforcement Official (CEO).

B. The Testing Laboratory and individual technicians shall be approved by the CEO.

C. The Testing Laboratory shall maintain a full time licensed Professional Engineer or Structural Engineer on staff who shall certify all test reports. The Engineer shall be responsible for the training of the testing technicians and shall be in responsible charge of the field and laboratory testing operations.

D. The minimum qualifications for testing agency laboratory personnel, and the minimum technical requirements for equipment and procedures utilized in the testing and inspection of construction and materials used in construction shall comply with ASTM E329 (Latest Edition) Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.

1.04 SUBMITTALS

A. The Special Inspector and Testing Laboratory shall submit to the CEO for review a copy of their qualifications which shall include the names and qualifications of each of the individual inspectors and technicians who will be performing inspections or tests. The Testing Laboratory shall also submit to the CEO for review, in accordance with ASTM E329, a certificate of accreditation, including the scope of accreditation.

B. Approved Fabricators: Special Inspections are not required for work done on the premises of a fabricator registered and approved to perform such work without special inspection. See Section 1704.2.5 of the Building Code of New York State for conditions of approval.

1. Certificate of Compliance upon completion of fabrication. The "Fabricator's Certificate of Compliance" form is provided with the *Statement of Special Inspections*.

1.05 CONTRACTOR RESPONSIBILITIES

A. The Contractor shall cooperate with the Special Inspector and his agents so that the Special Inspections and testing may be performed without hindrance.

B. The Contractor shall review the *Statement of Special Inspections* and shall be responsible for coordinating and scheduling inspections and tests. The Contractor shall notify the Special Inspector or Testing Laboratory at least 5 days in advance of a required inspection or test. Uninspected work that required inspection may be rejected solely on that basis.

C. The Contractor shall provide incidental labor and facilities to provide access to the work to be inspected or tested, to obtain and handle samples at the site or at source of products to be tested, to facilitate tests and inspections, storage and curing of test samples.

D. The Contractor shall keep at the project site the latest set of construction drawings, field sketches, approved shop drawings, and specifications for use by the inspectors and testing technicians.

E. The Special Inspection program shall in no way relieve the Contractor of his obligation to perform work in accordance with the requirements of the Contract Documents or from implementing an effective Quality Control program. The Contractor's quality control personnel shall first review all work that is to be subjected to Special Inspections.

F. The Contractor shall be solely responsible for construction site safety.

G. When required by the *Statement of Special Inspection's* "Quality Assurance Plan" each Contractor responsible for the construction or fabrication of main seismic or wind force resisting systems, designated seismic systems, or seismic or wind resisting components shall submit to the CEO and the Owner a "Statement of Responsibility". If required the Contractor's "Statement of Responsibility" form is provided with the *Statement of Special Inspections.*

1.06 LIMITS ON AUTHORITY

A. The Special Inspector or Testing Laboratory may not release, revoke, alter, or enlarge on the requirements of the Contract Documents.

B. The Special Inspector or Testing Laboratory will not have control over the Contractor's means and methods of construction.

C. The Special Inspector or Testing Laboratory shall not be responsible for construction site safety.

D. The Special Inspector or Testing Laboratory has no authority to stop the work.

1.07 STATEMENT OF SPECIAL INSPECTIONS

A. The *Statement of Special Inspections* will be prepared and maintained by the Registered Design Professional in Responsible Charge (RDP).

B. The *Statement of Special Inspections* shall be submitted with the application for Building Permit.

1.08 RECORDS AND REPORTS

A. Detailed daily reports shall be prepared of each inspection or test and submitted to the Special Inspector. Reports shall be submitted to the Special Inspector within 5 days of the inspection or test. The "Special Inspection Daily Report" form is provided with the *Statement of Special Inspections.* Daily reports shall include:
   1. Project Name and Location,
   2. Date of test or inspection,
   3. Time of Inspection start and end,
   4. Type of inspection "Continuous" or "Periodic",
   5. Name of inspector or technician,
   6. Location of specific areas tested or inspected,
   7. Description of test or inspection and results,
   8. Applicable ASTM standard(s),
   9. Weather conditions,
   10. Current item(s) of construction needing corrective action,
   11. Previously reported items of construction requiring corrective action that have been corrected,

12. Previously reported items of construction requiring corrective action that have not been corrected,
13. Changes to Contract Documents authorized by the RDP,
14. Engineer's seal and signature.

B. The Special Inspector shall submit interim reports to the CEO, the Special Inspection Coordinator, the RDP, and the Contractor at the end of each week. The interim report(s) shall include all inspections and test reports received that week along with a completed "Special Inspection Weekly (Interim) Report" form provided with the *Statement of Special Inspections*.

C. Any discrepancies from the Contract Documents found during a Special Inspection shall be immediately reported to the Contractor for correction. If the discrepancies are not corrected, the Special Inspector shall notify the CEO, Special Inspection Coordinator, and the RDP by telephone, email, or fax. Reports shall document all discrepancies identified, exact location, reference to applicable plan sheets, details and specifications and the resolution or corrective action taken.

D. The Testing Laboratory shall immediately notify the Special Inspector, Special Inspection Coordinator, the RDP and the Contractor by telephone, email, or fax of any test results that fail to comply with the requirements of the Contract Documents.

E. Upon completion of the work requiring Special Inspections, each inspection agency and testing laboratory shall provide a statement to the Special Inspector that all work was completed in conformance with the Contract Documents and that all appropriate inspections and tests were performed.

1.09 FINAL REPORT OF SPECIAL INSPECTIONS

A. The "Final Report of Special Inspections" shall be completed by the Special Inspector and submitted to the CEO prior to the issuance of a Certificate of Use and Occupancy. Concurrent with submission of the "Final Report of Special Inspections" to the CEO, the "Final Report of Special Inspections" shall be submitted to the Special Inspection Coordinator, and the RDP. The "Final Report of Special Inspections" form is provided with the *Statement of Special Inspections.*

B. The "Final Report of Special Inspections" will certify that all required inspections have been performed and the report will itemize any discrepancies that were not corrected or resolved.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

3.01 STATEMENT OF SPECIAL INSPECTIONS

A. See Statement of Special Inspections attached to this Section.

3.02 SCHEDULE OF INSPECTION AND TESTING AGENCIES

A. See Schedule of Special Inspection and Testing Agencies attached to this Section.

END OF SECTION

Statement of Special Inspections

Project:	
Location:	
Owner:	
Address:	
Registered Design Professional in Responsible Charge:	Matthew Fuller, P.E.

This *Statement of Special Inspections* is submitted as a condition for permit issuance in accordance with the Special Inspection and Structural Testing requirements of the 2025 International Building Code as amended by New York State (IBCNYS). It includes a schedule of Special Inspection services applicable to this project as well as the name of the Special Inspection Coordinator and the identity of other approved agencies to be retained for conducting these inspections and tests. This *Statement of Special Inspections* encompasses the following disciplines:

☒ Structural ☐ Mechanical/Electrical/Plumbing
☐ Architectural ☐ Other: _____

The Special Inspection Coordinator shall keep records of all inspections and shall furnish inspection reports to the Building Code Enforcement Official (CEO) and the Registered Design Professional in Responsible Charge (RDP). Discovered discrepancies shall be brought to the **immediate** attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the **immediate** attention of the CEO, the RDP in Responsible Charge and the Special Inspection Coordinator. The Special Inspection program does not relieve the Contractor of his or her responsibilities as defined in the Contract Documents.

Interim reports shall be submitted to the CEO and the RDP in Responsible Charge at a frequency as noted below. Detailed daily Special Inspection reports shall be submitted to the Special Inspector within (5) five days of item inspected.

When required by the *Statement of Special Inspection's "Quality Assurance Plan"* each Contractor responsible for the construction or fabrication of main seismic or wind force resisting systems, designated seismic systems, or seismic or wind resisting components shall submit to the CEO and the Owner a *Statement of Responsibility.* The Contractor's *Statement of Responsibility* form is provided with this *Statement of Special Inspections.*

Each approved fabricator that is exempt from Special Inspection of shop fabrication and implementation procedures per section 1704.2.5 of the IBCNYS must submit a *Fabricator's Certificate of Compliance* at the completion of fabrication. The *Fabricator's Certificate of Compliance* form is provided with this *Statement of Special Inspections.*

A *Final Report of Special Inspections* documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections shall be submitted prior to issuance of a Certificate of Use and Occupancy. The *Final Report of Special Inspections* form is provided with this *Statement of Special Inspections*

Job site safety and means and methods of construction are solely the responsibility of the Contractor.

Interim Report Frequency: *Weekly (a weekly report form is provided with this Statement of Special Inspections)* or ☐ per attached schedule.

Prepared by:

Matthew C. Fuller, P.E.
(type or print name)

Signature Date

Design Professional Seal

Owner's Authorization:

Signature Date

Building Code Enforcement Official's Acceptance:

Signature Date

Schedule of Inspection and Testing Agencies

This Statement of Special Inspections/Quality Assurance Plan includes the following building systems:

- ☒ Soils and Foundations
- ☒ Cast-in-Place Concrete
- ☒ Precast Concrete
- ☒ Masonry
- ☒ Structural Steel
- ☐ Cold-Formed Steel Framing
- ☐ Spray Fire Resistant Material
- ☐ Wood Construction
- ☐ Exterior Insulation and Finish System
- ☐ Mechanical & Electrical Systems
- ☐ Architectural Systems
- ☐ Special Cases

Special Inspection Agencies	Firm	Address, Telephone, e-mail
1. **Special Inspection Coordinator**	*BARTON & LOGUIDICE, D.P.C. (B&L)*	*443 Electronics Parkway Liverpool, NY 13088 (315) 457-5200*
2. **Geotechnical Testing Agency**	*TBD*	
3. **Concrete Testing Agency**	*TBD*	
	TBD	
5. **Structural Steel and Cold Formed Inspection Agency**	*TBD*	

Note: The inspectors and testing agencies shall be independent of the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.

Qualifications of Inspectors & Testing Technicians

The qualifications of all personnel performing Special Inspection activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided.

MINIMUM QUALIFICATIONS FOR SPECIAL INSPECTORS

CATEGORY	MINIMUM QUALIFICATIONS
Reinforced Concrete	1. Current ICC Reinforced Concrete Special Inspector or ACI Concrete Construction Inspector 2. Concrete field testing can be by an ACI Concrete Field Testing Technician with Grade 1 certification. 3. Engineer-in-Training (EIT) with relevant experience. 4. New York State Registered Design Professional Engineer (RDP) with relevant experience.
Prestressed Concrete	1. Precast Concrete; Current ICC Reinforced Concrete certification, and ICC prestressed concrete certification, and ACI Concrete Field Testing Technician with Grade 1 certification plus one year of relevant experience. 2. Engineer-in-Training (EIT) with relevant experience. 3. RDP with relevant experience.
Welding	1. Current AWS Certified Welding Inspector. 2. Current ICC Structural Steel and Welding Certificate plus one year of relevant experience. 3. Current Level II certification from the American Society for Non-Destructive Testing (NDT). 4. Current NDT Level III provided previously certified as NDT Level II.
High-Strength Bolting & Steel Frame Inspection	1. Current ICC Structural Steel and Welding certification and one year of relevant experience. 2. Engineer-in-Training (EIT) with relevant experience. 3. RDP with relevant experience.
Masonry	1. Current ICC Structural Masonry certification and one year of relevant experience. 2. Engineer-in-Training (EIT) with relevant experience. 3. RDP with relevant experience.
Excavation and Filling; Verification of Soils	1. Current Level II certification in geotechnical engineering technology/construction from the National Institute for Certification in Engineering Technologies (NICET). 2. Engineer-in-Training (EIT) with relevant experience. 3. RDP with relevant experience.
Wood Construction	1. Special Inspector approved by the Building Code Enforcement Official. 2. Engineer-in-Training (EIT) with relevant experience. 3. RDP with relevant experience.
Inspection of Fabricators	1. Precast Concrete; Current ICC Reinforced Concrete certification plus one year of relevant experience. 2. Structural Steel: see welding requirements. 3. Pre-fabricated Wood Trusses: Special Inspector approved by the Building Code Enforcement Official.

Quality Assurance Plan

Quality Assurance for Seismic Resistance

Seismic Design Category	*A*
Quality Assurance Plan Required (Y/N)	*N*

Description of seismic force resisting system(s), designated seismic system(s), and additional seismic system(s) and component(s):

Seismic Force Resisting System(s) – *Ordinarily Reinforced Masonry Bearing Walls*
Designated Seismic System(s) – *NA*
Additional Seismic System(s) and Component(s) – *NA*

Quality Assurance for Wind Requirements

Basic Wind Speed (3 second gust)	*110 MPH*
Wind Exposure Category	*C*
Quality Assurance Plan Required (Y/N)	*Y*

Description of main wind force resisting system(s) and designated wind resisting component(s):

Main Wind Force Resisting System(s) – *CMU Shear Walls*
Designated Wind Resisting Components(s) – *In Accordance with 2018 IBC, 1705.11.3*

Statement of Responsibility:

Each contractor responsible for the construction or fabrication of a system or component designated above must submit a Statement of Responsibility.

Qualifications of Inspectors and Testing Technicians

The qualifications of all personnel performing Special Inspection and testing activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided if requested.

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the *Agency Number* on the Schedule.

PE/SE	Structural Engineer – a licensed SE or PE specializing in the design of building structures
PE/GE	Geotechnical Engineer – a licensed PE specializing in soil mechanics and foundations
EIT	Engineer-In-Training – a graduate engineer who has passed the Fundamentals of Engineering examination with relevant experience.

American Concrete Institute (ACI) Certification

ACI-CFTT	Concrete Field Testing Technician – Grade 1
ACI-CCI	Concrete Construction Inspector
ACI-LTT	Laboratory Testing Technician – Grade 1&2
ACI-STT	Strength Testing Technician

American Welding Society (AWS) Certification

AWS-CWI	Certified Welding Inspector
AWS/AISC-SSI	Certified Structural Steel Inspector

American Society of Non-Destructive Testing (ASNT) Certification

ASNT	Non-Destructive Testing Technician – Level II or III.

International Code Council (ICC) Certification

ICC-SMSI	Structural Masonry Special Inspector with current registration, and one (1) year of relevant experience)
ICC-SWSI	Structural Steel and Welding Special Inspector
ICC-SFSI	Spray-Applied Fireproofing Special Inspector
ICC-PCSI	Prestressed Concrete Special Inspector
ICC-RCSI	Reinforced Concrete Special Inspector

National Institute for Certification in Engineering Technologies (NICET)

NICET-CT	Concrete Technician – Levels I, II, III & IV
NICET-ST	Soils Technician – Levels I, II, III & IV
NICET-GET	Geotechnical Engineering Technician – Levels I, II, III & IV

ITEM	AGENCY # (QUALIF.)	SCOPE	SPECIAL INSPECTION (CONTINUOUS)	SPECIAL INSPECTION (PERIODIC)[a]
1. Foundation Excavations	#_ *PE/GE* *EIT* *NICET-GET*	*For Building Foundations/Structure Foundations verify soils below item of construction for conformance with the Contract Documents. Verify removal of unsuitable material and preparation of subgrade prior to placement of controlled fill.* *Verify excavations have extended to proper foundation design depths in accordance with the Contract Documents.*		*X*
2. Controlled Structural Fill (Granular Fill) Classification	#_ *PE/GE* *EIT* *NICET-GET*	*Prior to controlled fill/backfill placement below and adjacent to Item 1 construction, perform classification and testing of each source of fill materials to verify compliance with the Contract Documents.*		*X*
3. Controlled Structural Fill (Granular Fill) Placement	#_ *PE/GE* *EIT* *NICET-GET*	*Prior to controlled fill/backfill placement below and adjacent to Item 1 construction, and continuously during placement, verify placement lift thickness and compaction, and test density of each compacted lift, to verify compliance with the Contract Documents.*	*X*	

a. "Periodic" rate of Special Inspection shall be defined as part-time or intermittent observation of work requiring Special Inspection by an approved Special Inspector who is present in the area where the work has been, or is being performed, and at the completion of work being observed, but prior to concealment. Specifically, "Periodic" Special Inspection shall begin at the commencement of an item to be inspected, at the mid-point of item construction, and at completion of item construction prior to concealment.

ITEM	AGENCY # (QUALIF.)	SCOPE	SPECIAL INSPECTION (CONTINUOUS)	SPECIAL INSPECTION (PERIODIC)[a]
1. Mix Design	#_ *ACI-CFTT* *ACI-CCI* *ICC-RCSI* *PE/SE* *EIT*	*Verify prior to concrete placement that concrete mix to be placed complies with the approved mix design and the Contract Documents for the item being constructed. Construction covered includes building and structure foundations and walls, elevated floor slabs and beams, and equipment pads.*		*X*
2. Reinforcement Installation	#_ *ACI-CCI* *ICC-RCSI* *PE/SE* *EIT*	*Verify prior to concrete placement that the size, spacing, cover, positioning, condition, splices, and grade of reinforcing for Item 1 construction complies with the Contract Documents.*		*X*
3. Concrete Placement	#_ *ACI-CCI* *ICC-RCSI* *PE/SE* *EIT*	*Continuously verify that placement of concrete and concrete placement techniques for Item 1 construction are in compliance with the Contract Documents.*	*X*	
4. Sampling and Testing of Concrete	#_ *ACI-CFTT* *ACI-CCI* *ICC-RCSI* *PE/SE* *EIT*	*For Item 1 construction sample, test and report concrete slumps (ASTM C143), air-contents (ASTM C231 or C173) and temperatures (ASTM C1064) in accordance with the Contract Documents.*	*X*	
5. Formwork	#_ *ACI-CCI* *ICC-RCSI* *PE/SE* *EIT*	*Verify prior to concrete placement for Item 1 construction that formwork shapes, locations, and dimensions for concrete elements being formed comply with the Contract Documents.*		*X*
6. Curing and Protection	#_ *ACI-CCI* *ICC-RCSI* *PE/SE* *EIT*	*Verify prior to concrete placement, and periodically during the specified period of curing and protection, the means, methods, and maintenance of curing and protection of placed concrete for Item 1 construction are in compliance with the Contract Documents.*		*X*
8. In-place Concrete Strength	#_ *ACI-CFTT* *ACI-CCI* *ICC-RCSI* *PE/SE* *EIT*	*Verify in-place concrete strength prior to removal of shores and forms from beams and structural slabs*		*X*

Structural Steel

NYSBC §1704.6, §1707.3

ITEM	AGENCY # (QUALIF.)	SCOPE	SPECIAL INSPECTION (CONTINUOUS)	SPECIAL INSPECTION (PERIODIC)[a]
1. Material Verification of High Strength Bolts, Nuts and Washers	#_ *ICC-SWSI PE/SE EIT*	*Identify markings to conform to ASTM standards specified in the Contract Documents. Manufacturer's certificate of compliance is required.*		*X*
2. Inspection of High-Strength Bolting (Snug-Tight Type)	#_ *ICC-SWSI PE/SE EIT*	*Verify that bolted connections have been drawn together and properly snugged in accordance with AISC 360, Section M2.5, and the RCSC "Specification for Structural Joints Using ASTM A325 or A490 Bolts.*		*X*
3. Material Verification of Structural Steel	#_ *ICC-SWS PE/SE EIT*	*Identify markings to conform to ASTM standards specified in the Contract Documents. Manufacturer's mill certificate of compliance is required.*		*X*
4. Material Verification of Weld Filler Materials	#_ *ICC-SWS PE/SE EIT*	*Identify markings to conform to AWS specification in the Contract Documents and AISC 360, Section A3.5. Manufacturer's mill certificate of compliance is required*		*X*
5. Inspection of Welding I	#_ *ICC-SWS PE/SE EIT*	*Multipass, and single pass fillet welds greater than 5/16" in accordance with the Contract Documents and AWS D1.1*	*X*	
6. Inspection of Welding II	#_ *ICC-SWS PE/SE EIT*	*Single pass fillet welds less than or equal to 5/16", and floor and roof deck welds in accordance with the Contract Documents and AWS D1.1*		*X*
7. Inspection of Steel Frame (Including Wall and Roof) Details	#_ *ICC-SWS PE/SE EIT*	*Inspection of joint details, including details of bracing, stiffening, member locations, and application of joint details at each location for compliance with the Contract Drawings*		*X*

Wind

ITEM	AGENCY # (QUALIF.)	SCOPE	SPECIAL INSPECTION (CONTINUOUS)	SPECIAL INSPECTION (PERIODIC)[a]
1. Quality Assurance Plan For Pre-Engineered Metal Building:	#_ *ICC-SWSI PE/SE EIT*	*SPECIAL INSPECTIONS FOR CATEGORY C, 115 MPH 2018 IBC, SECTION 1705.11*		
1a. Roof Purlins, Panels, Cladding, Roof Frame Connections	#_ *ICC-SWSI PE/SE EIT*	*Verify roof purlin, metal roof panels, and roof level bracing is installed in accordance with the contract documents and approved shop drawings*		*X*
1b. Wall Girt Connections To Columns and Framing	#_ *ICC-SWSI PE/SE EIT*	*Verify wall girts are installed in accordance with the contract documents and approved shop drawings*		*X*
1c. Roof Diaphragms System	#_ *ICC-SWSI PE/SE EIT*	*Verify roof diaphragm system and its attachment to lateral resisting elements is installed in accordance with the contract documents and approved shop drawings*		*X*
1d. Vertical Wind Force Resisting Systems	#_ *ICC-SWSI PE/SE EIT*	*Verify vertical lateral bracing elements are installed in accordance with the contract documents and approved shop drawings*		*X*
1e. Wind Force Resisting Connections	#_ *ICC-SWSI PE/SE EIT*	*Verify moment frame, portal frame, and X-bracing connections are provided in accordance with contract documents and approved shop drawings.*		*X*
1f. Fabrication and Installation of Components and Assemblies	#_ *ICC-SWSI PE/SE EIT*	*Verify roof covering, roof deck, roof framing connections, exterior wall covering and wall connections to roof diaphragm.*		*X*
2. Final Acceptance	#_ *ICC-SWSI PE/SE EIT*	*The special inspector shall make weekly field inspection reports available to the Metal Building Manufacturer.*	*X*	

Contractor’s Statement of Responsibility

Each contractor responsible for the construction or fabrication of a system or component designated in the Quality Assurance Plan must submit a Statement of Responsibility.

Project:

Contractor’s Name:

Address:

License No.:

Description of designated building systems and components included in the Statement of Responsibility:

Contractor’s Acknowledgment of Special Requirements

I hereby acknowledge that I have received, read, and understand the Quality Assurance Plan and Special Inspection program.

I hereby acknowledge that control will be exercised to obtain conformance with the construction documents approved by the Building Official.

_____ _____

Signature Date

Contractor’s Provisions for Quality Control

Procedures for exercising control within the contractor’s organization, the method and frequency of reporting and the distribution of reports are attached to this Statement.

Identification and qualifications of the person(s) exercising such control and their position(s) in the organization are attached to this Statement.

Fabricator’s Certificate of Compliance

Each approved fabricator that is exempt from Special Inspection of shop fabrication and implementation procedures per section 1704.2 of the IBCNYS must submit a *Fabricator’s Certificate of Compliance* at the completion of fabrication.

Project:

Fabricator’s Name:

Address:

Certification or Approval Agency:

Certification Number:

Date of Last Audit or Approval:

Description of structural members and assemblies that have been fabricated:

I hereby certify that items described above were fabricated in strict accordance with the approved construction documents.

_____ _____

Signature Date

_____

Title

Attach copies of fabricator’s certification or building code evaluation service report and fabricator’s quality control manual

SPECIAL INSPECTION DAILY REPORT

City/County of Permit No.: Date:

Project Name/Address:

Inspection type(s) coverage:

☐ Continuous ☐ Periodic

Inspection time: Beginning: Ending:

Describe inspections made, including locations:

Tests performed:

New items needing correction:

Corrected items from previous reports:

Item corrections remaining incomplete:

Changes to approved plans authorized by registered design professional in responsible charge:

Comments:

_____
_____
_____
_____
_____
_____

To the best of my knowledge, work inspected was in accordance with the building department approved plans, specifications and applicable workmanship provisions of the IBCNYS except as noted above.

Signed: _____ Inspection Agency: _____
Print Full Name: _____ ID / Certificate Number: _____

cc: Project Owner

SPECIAL INSPECTION WEEKLY (INTERIM) REPORT

City/County of Permit No.: Date:

Project Name/Address:

Total inspection time each day:

Date							
Hours							
Inspection Type							
Frequency (P or C)							
Location							

P – Periodic inspection
C – Continuous inspection

Describe inspections made, including locations:

Tests performed:

New items needing correction:

Corrected items from previous reports:

Item corrections remaining incomplete:

Changes to approved plans authorized by registered design professional in responsible charge:

Comments:

_____
_____
_____
_____
_____

To the best of my knowledge, work inspected was in accordance with the building department approved plans, specifications and applicable workmanship provisions of the IBC except as noted above.

Signed: _____ Inspection Agency: _____
Print Full Name: _____ ID /Certificate Number: _____

cc: Project Owner

Final Report of Special Inspections

Project:

Location:

Owner:

Owner's Address:

Architect of Record: *Barton & Loguidice, D.P.C.*

Structural Engineer of Record: *Matthew Fuller, P.E.*

To the best of my information, knowledge and belief, the Special Inspections required for this project, and itemized in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

(Attach continuation sheets if required to complete the description of corrections.)

Interim reports submitted prior to this final report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,
Special Inspector

(Type or print name)

Signature Date

Licensed Professional Seal

SECTION 01 43 33

MANUFACTURER'S FIELD SERVICES

PART 1 – GENERAL

1.01 DEFINITIONS

A. Person-day: One person for 8 hours within regular working hours.

1.02 SUBMITTALS

A. Informational Submittals:
   1. Training Schedule: Submit in accordance with the requirements of this Specification, not less than 21 days prior to start of equipment installation and revise as necessary for acceptance.
   2. Lesson Plan: Submit, in accordance with requirements of this Specification, proposed lesson plan not less than 21 days prior to scheduled training and revise as necessary for acceptance.

1.03 QUALIFICATIONS OF MANUFACTURER'S REPRESENTATIVE

A. Authorized representative of the manufacturer, factory-trained, and experienced in the technical applications, installation, operation, and maintenance of respective equipment, subsystems, or system, with full authority by the equipment manufacturer to issue the certifications required of the manufacturer. Additional qualifications may be specified in the individual specification sections.

B. Representative subject to acceptance by Owner and Engineer. No substitute representative will be allowed unless prior written approval by such has been given.

PART 2 – PRODUCTS
(NOT USED)

PART 3 – EXECUTION

3.01 FULFILLMENT OF SPECIFIED MINIMUM SERVICES

A. Furnish manufacturer's services, when required by an individual specification section, to meet the requirements of this section.

B. Where time is necessary in excess of that stated in the Specifications for manufacturer's services, or when a minimum time is not specified, time required to perform specified services shall be considered incidental.

C. Schedule manufacturer's services to avoid conflict with other onsite testing or other manufacturer's onsite services.

D. Determine, before scheduling services, that conditions necessary to successful testing have been met.

E. Only those days of service approved by the Engineer will be credited to fulfill specified minimum services.

F. When specified in individual specification sections, manufacturer's services shall include:
   1. Assistance during product (system, subsystem, or component) installation or application procedures.
   2. Inspection, checking, and adjustment as required for product to function as warranted by manufacturer and necessary to furnish Manufacturer's Certificate of Proper Installation.
   3. Revisiting the Site as required to correct problems and until installation and operation are acceptable to the Engineer.
   4. Assistance during function and performance testing, and facility startup and evaluation.
   5. Training of the Owner's personnel in the operation and maintenance of the respective equipment, as required.

3.03 MANUFACTURER'S CERTICATE OF PROPER INSTALLATION

A. A Manufacturer's Certificate of Proper Installation form shall be completed and signed by the equipment manufacturer's authorized representative.

B. Such form shall certify the installation is properly installed and consistent with the manufacturer's intended use of the equipment and that the equipment is ready for commissioning and performance testing.

3.04 TRAINING

A. General:
   1. Furnish manufacturer's representatives for hands-on training to Owner's personnel on operation and maintenance of specified equipment, and as may be required in the applicable specifications.
   2. Furnish trained, articulate personnel to coordinate and expedite training, to be present during training coordination meetings with the Owner, and familiar with operation and maintenance manual information specified in Section 01 78 23, Operation and Maintenance Data.

3. Manufacturer's representative shall be familiar with facility operation and maintenance requirements as well as with specified equipment.
4. Furnish complete training materials, to include operation and maintenance data, to be retained by each trainee.

B. Training Schedule:
1. List specified equipment and systems that require training services and show:
   a. Respective manufacturer.
   b. Estimated dates for installation completion.
   c. Estimated training dates.
2. Allow for multiple sessions when several shifts are involved.
3. Adjust schedule to ensure training of appropriate personnel as deemed necessary by Owner, and to allow full participation by manufacturers' representatives. Adjust schedule for interruptions in operability of equipment.
4. Coordinate with Section 01 91 14, Equipment Testing and Facility Startup.

C. Pre-startup Training:
1. Coordinate training sessions with Owner's operating personnel, manufacturer's representatives, and with submission of operation and maintenance manuals in accordance with Section 01 78 23, Operation and Maintenance Data.
2. Complete at least 14 days prior to beginning of equipment startup.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section
   1. American Nursery and Landscape Association (ANLA): American Standards for Nursery Stock.
   2. Federal Emergency Management Agency (FEMA).
   3. National Fire Prevention Association (NFPA): 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.
   4. Telecommunications Industry Association (TIA): 568-C, Commercial Building Telecommunications Cabling Standard.
   5. U.S. Department of Agriculture (USDA): Urban Hydrology for Small Watersheds.
   6. U.S. Weather Bureau: Rainfall-Frequency Atlas of the U.S. for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 years.

1.02 SUBMITTALS

A. Informational Submittals:
   1. Copies of permits and approvals for construction as required by Laws and Regulations and governing agencies.
   2. Temporary Utility submittals:
      a. Electric power supply and distribution plans.
      b. Dewatering well locations.
   3. Site Utilization Plan:
      a. Access Roads: Routes, cross-sections, and drainage facilities.
      b. Parking area plans.
      c. Contractor’s field office, storage yard, and storage building plans, including gravel surfaced areas.
      d. Fencing and protective barrier locations and details.
      e. Engineer’s field office plans.
      f. Staging area location plan.
      g. Traffic and pedestrian control and routing plans: As specified herein, and proposed revisions thereto.
      h. Plan for maintenance of existing operations.
   4. Temporary Control Submittals:
      a. Noise control plan.
      b. Dust control plan.
      c. Plan for disposal of waste materials and intended haul routes.

5. Project Sign and Construction Traffic Signs:
    a. Submit layouts for approval prior to fabrication and delivery.
    b. Design all signs and supports to withstand 75 mph wind load.

1.03 MOBILIZATION

A. Mobilization shall include, but not be limited to, these principle items:
1. Obtaining required permits.
2. Moving Contractor's field office and equipment required for first month.
3. Installing temporary construction power, wiring and lighting facilities.
4. Providing onsite communication facilities, including telephones.
5. Providing onsite sanitary facilities and potable water facilities as specified and as required by Laws and Regulations.
6. Arrange for and erection of, Contractor's work and storage yard.
7. Posting OSHA required notices and establishing safety programs and procedures.
8. Having Contractor's superintendent at the Site full-time.

B. Use area designated for Contractor's temporary facilities as shown on the Drawings or as directed by the Owner.

1.04 PROTECTION OF WORK AND PROPERTY

A. Comply with Owner's safety rules while on Owner's property.

B. Keep Owner informed of series onsite accidents and related claims.

C. Use of explosives: No blasting or use of explosives will be allowed onsite.

1.05 VEHICULAR TRAFFIC

A. Traffic Control Plan:
1. Adhere to traffic control plan reviewed and accepted by Engineer.
2. Changes to this plan shall be made only by written approval of appropriate public authority.
3. Secure approvals for necessary changes so as not to delay progress of the Work.

B. Traffic Routing Plan: Show sequences of construction affecting use of roadways, time required for each phase of the Work, provisions for decking over excavations and phasing of operations to provide necessary access, and plans for signing, barricading, and striping to provide passages for pedestrians and vehicles.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

3.01 TEMPORARY UTILITIES

A. Power:
   1. No electric power is available at the Site. Make arrangements to obtain and pay for electrical power used until final payment and acceptance by the Owner, unless otherwise recommended by the Engineer at Substantial Completion.
   2. Cost of electric power shall be borne by the Contractor. No separate payment will be made.

B. Lighting: provide temporary lighting to meet applicable safety requirements to allow erection, application, or installation of materials and equipment, and observation or inspection of the Work.

C. Heating, Cooling, and Ventilating:
   1. Provide as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for installation of materials, and to protect materials, equipment, and finishes from damage because of temperature or humidity. Costs for temporary heat shall be borne by the Contractor.
   2. Provide adequate forced air ventilation of enclosed areas to cure installed materials, to dispense humidity, and to prevent hazardous accumulations of dust, fumes, vapors, and gases.
   3. Pay costs of installation, maintenance, operation, removal, and fuel consumed.
   4. Provide portable unit heaters, complete with controls, oil- or gas-fired, and suitably vented to outside as required for protection of health and property.
   5. If permanent natural gas piping is used for temporary heating units, do not modify or re-route gas piping without approval of Gas Utility. Provide separate gas metering, as required by the Gas Utility.

D. Water: No construction or potable water is available at the Site. Make arrangements for and bear the cost of providing water required for construction purposes and drinking by construction personnel during construction.

E. Sanitary and Personnel Facilities: Provide and maintain facilities for Contractor's employees, Subcontractors, and other onsite employers' employees. Service, clean and maintain facilities and enclosures.

F. Fire Protection: Furnish and maintain on Site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable parts of NFPA 241.

3.02 PROTECTION OF WORK AND PROPERTY

A. General:
1. Perform Work within right-of-way and easements in a systematic manner that minimizes inconvenience to property owners and the public.
2. No residence or business shall be cut off from vehicular traffic for a period exceeding 4 hours, unless special arrangements have been made.
3. Maintain in continuous service existing oil and gas pipelines, underground power, telephone and communication cable, water mains, irrigation lines, sewers, poles and overhead power and other utilities encountered along the line of the Work, unless other arrangements satisfactory to the utility owners of have been made.
4. When completion of the Work requires temporary or permanent removal or relocation of existing utility, coordinate activities with utility owner and perform work to their satisfaction.
5. Protect, shore, brace, support, and maintain underground utility construction uncovered or otherwise affected by construction operations.
6. Keep fire hydrants and water control valves free from obstruction and available for use at all times.
7. In areas where Contractor's operations are adjacent to or near a utility such as gas, telephone, television, electric power, water, sewer, or irrigation system, and such operations may cause damage or inconvenience, suspend operations until arrangements necessary for protection have been made by the Contractor.
8. Notify property owners and utility offices that may be affected by construction operation at least 2 days in advance. Before exposing a utility, obtain utility owner's permission. Should service of utility be interrupted due to Contractor's activity, notify proper authority immediately. Cooperate with said authority in restoring service as promptly as possible and bear costs incurred.
9. Do not impair operation of existing sewer system. Prevent construction material and pavement, concrete, earth, volatile and corrosive wastes, and other debris from entering sewers, pump stations, and other utility structures.
10. Maintain original site drainage wherever possible.

B. Site Security:
1. Erect a temporary security fence for protection of the existing facilities. Maintain fence throughout the construction period. Obtain Engineer's written permission before removal of temporary security fencing.
2. Provide and maintain additional temporary security fences as necessary to protect the Work and Contractor-furnished products not yet installed.

C. Barricades and Lights:
   1. Provide as required by the NYS DOT Manual of Uniform Traffic Control Devices and in sufficient quantity to safeguard public and the Work.
   2. Provide as necessary to prevent unauthorized entry to construction areas and affected roads, streets, and alley ways, inside and outside of fenced area, and as required to ensure public safety and the safety of the Contractor's employees, other employers' employees, and others who may be affected by the Work.
   3. Provide to protect existing facilities and adjacent properties from potential damage.
   4. Locate to enable access by facility operators and property owners.
   5. Protect streets, roads, highways, and other public thoroughfares that are closed to traffic by effective barricades with acceptable warning signs.
   6. Locate barricades at the nearest intersecting public thoroughfare on each side of the blocked section.
   7. Illuminate barricades and obstructions with warning lights from sunset to sunrise.

D. Existing Structures:
   1. Where Contractor contemplates removal of small structures such as mailboxes, signposts, and culverts that interfere with the Contractor's operations, obtain approval of property owner and Engineer.
   2. Move mailboxes to temporary locations accessible to postal service.
   3. Replace items removed in their original location and a condition equal to or better than original.

E. Finished Construction: Protect finished floors and concrete floors exposed as well as those covered with tile or other finish.

F. Waterways: Keep ditches, culverts, and natural drainages continuously free of construction materials and debris.

G. Dewatering:
   1. Construct, maintain, and operate cofferdams, channels, flume drains, sumps, pumps, or other temporary diversion and protection works.
   2. Furnish materials required, install, maintain, and operate necessary pumping and other equipment for the environmentally safe removal and disposal of water from the various parts of the Work. Maintain foundations and parts of the Work free from water.

3.04 TEMPORARY CONTROLS

A. Air Pollution Control:
   1. Minimize air pollution from construction operations.
   2. Burning of waste materials, rubbish, or other debris will not be allowed onsite.

3. Conduct operations of dumping rock and of carrying rock away in trucks to cause a minimum of dust. Give unpaved streets, roads, detour, or haul roads used in construction area a dust-preventative treatment or periodically water to prevent dust. Strictly adhere to applicable environmental regulations for dust prevention.
4. Provide and maintain temporary dust-tight partitions, bulkheads, or other protective devices during construction to permit normal operation of existing facilities. Construct partitions of plywood, insulating board, plastic sheets, or similar material. Construct partitions in such a manner that dust and dirt from demolition and cutting will not enter other parts of existing building or facilities. Remove temporary partitions as soon as need no longer exists.

B. Noise Control:
1. Provide acoustical barriers so noise emanating from tools or equipment will not exceed legal noise levels.
2. Noise Control Plan: Propose plan to mitigate construction noise and comply with noise control ordinances, including method of construction, equipment to be used, and acoustical treatments.

C. Water Pollution Control:
1. Divert sanitary sewage and non-storm waste flow interfering with construction and requiring diversion to sanitary sewers. No not cause or permit action to occur which would cause an overflow to existing waterway.
2. Prior to commencing excavation and construction, obtain Owner's agreement with detailed plans showing procedures intended to manage and dispose of sewage, groundwater, and dewatering pump discharges.
3. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.

D. Project Signage:
1. Location of signs shall be as shown or as directed by the Engineer.
2. Maintain signs so they are clean, legible, and upright. Keep grass and weeds cut away from signs.
3. Repair and repaint damaged signs. Relocate signs as required by progress of Work.
4. Remove signs when Project is completed or when directed by the Engineer.
5. Signs to be relocated shall be removed, cleaned, and stored if not immediately reinstalled.

3.05 STORAGE YARDS AND BUILDINGS

A. Coordinate requirements with Section 01 61 00, Common Product Requirements.

B. Temporary Storage Yards: Construct temporary storage yards for storage of products that are not subject to damage by weather conditions.

C. Temporary Storage Buildings:
   1. Provide environmental control systems that meet recommendations of manufacturers of equipment and material stored.
   2. Arrange or partition to provide security of contents and ready access for inspection and inventory.
   3. Store combustible materials (paints, solvents, fuels) in well-ventilated and remote building meeting safety standards.

3.06 ACCESS ROADS

A. Construct access roads as shown and within easements, rights-of-way, or Project limits. Alignments for new routes shall be approved by the Engineer.

B. Maintain drainage ways. Install and maintain culverts to allow water to flow beneath access roads. Provide corrosion-resistant culvert pipe of adequate strength to resist construction loads.

C. Provide gravel, crushed rock, or other stabilization material to permit access by all motor vehicles at all times.

D. Maintain road grade and crown to eliminate potholes, rutting, and other irregularities that restrict access.

E. Coordinate with Engineer detours and other operations affecting traffic and access. Provide at least 72 hours' notice to Engineer of operations that will alter site access.

F. Upon completion of construction, restore ground surface disturbed by access road construction to grades as shown on the Drawings.

3.07 PARKING AREAS

A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Owner's operations, or construction operations.

B. Provide parking facilities for personnel working on the Project. No employee or equipment parking will be permitted on Owner's existing paved areas, except as specifically designated for Contractor's use.

C. Use area designated on Drawings or area as designated by the Owner for parking of Contractor's and Contractor's employees' vehicles.

3.08 VEHICULAR TRAFFIC

A. Comply with Laws and Regulations regarding closing or restricting use of public streets or highways. No public or private road shall be closed, except by written permission of proper authority. Ensure the least possible obstruction to traffic and normal commercial pursuits.

B. Conduct the Work to interfere as little as possible with public travel, whether vehicular, pedestrian, or freight rail.

C. Whenever it is necessary to cross, close, or obstruct roads, driveways, and walks, whether public or private, provide and maintain suitable and safe bridges, detours, or other temporary expedients from accommodation of public and private travel.

D. Maintenance of Traffic is not required if Contractor obtains written permission from Owner and tenant of private property, or from authority having jurisdiction over public property involved, to obstruct traffic at designated point.

E. In making street crossing, do not block more than one-half of the street at a time. Whenever possible, widen shoulder on opposite side to facilitate traffic flow. Provide temporary surfacing on shoulders as necessary.

F. Maintain top of backfilled trenches before they are paved, to allow normal vehicular traffic to pass over. Provide temporary access driveways where required. Cleanup operations shall follow immediately behind backfilling.

G. When flaggers and guards are required by regulation or when deemed necessary for safety, furnish them with approved orange wearing apparel and other regulation traffic control devices.

H. Provide snow removal to facilitate normal vehicular traffic on public or private roads affected by construction. Perform snow removal promptly and efficiently by means of suitable equipment whenever necessary for safety, and as may be directed by proper authority.

3.09 CLEANING DURING CONSTRUCTION

A. In accordance with the General Conditions, as may be specified in other specification sections, and as required herein.

B. Wet down exterior surfaces prior to sweeping to prevent blowing of dust and debris. At least weekly, sweep floors (basins, tunnels, platforms, walkways, roof surfaces), and pick up and dispose of debris.

C. Provide approved containers for collection and disposal of waste materials, debris, and rubbish off-site.

D. At least weekly, brush sweep entry drive, roadways and other streets and walkways affected by the Work and where adjacent to the Work.

END OF SECTION

SECTION 01 57 13

TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. Scope:
   1. This section covers work necessary for stabilization of soil to prevent erosion during and after construction and land-disturbing activities.
   2. The Work shall include the furnishing of all labor, material, tools, and equipment to perform the Work and services necessary as herein specified and as indicated on the Drawings.
   3. This shall include installation, maintenance, and final removal of all temporary soil erosion and sediment control measures.

B. The minimum areas requiring soil erosion and sediment control measures are indicated on the Drawings.

C. The Owner or Engineer reserves the right to modify the use, location, and quantities of soil erosion and sediment control, based on the Contractor's activities.

D. See additional information noted on the Drawings.

1.02 GENERAL

A. Refer to General Conditions and Division 01, General Requirements, which contain information and requirements that apply to the Work specified herein and are mandatory requirements of for this Project.

B. All activities shall conform to the latest edition of the New York State Storm Water Management Design Manual, the site-specific Storm Water Pollution Prevention Plan (SWPPP), the SPDES General Permit GP-0-20-001, and the Drawings. In the event of conflicting requirements, the more stringent requirements shall apply.

C. Soil erosion stabilization and sedimentation control consist of the following elements:
   1. Maintenance of existing permanent or temporary storm drainage piping and channel systems, as necessary.
   2. Construction of new permanent and temporary storm drainage piping and channel systems, as necessary.
   3. Construction of temporary erosion control facilities such as silt fences, check dams, etc.
   4. Topsoil and seeding:

a. Placement and maintenance of Temporary Seeding on all areas disturbed by construction.
b. Placement of permanent topsoil, fertilizer, and seed, etc. in all areas not occupied by structures or pavement, unless shown otherwise.

5. Soil Stabilization Seeding: Placement of fertilizer, seed, etc. in areas as specified hereinafter.

D. The Contractor shall be responsible for phasing and coordinating Work in areas allocated for respective use including proposed stockpile areas to restrict sediment transport. This will include installation of all temporary erosion and sediment control devices, ditches, or other facilities.

E. The areas set aside for the Contractor's use during the Project may be temporarily developed to provide satisfactory working, staging, and administrative areas for its exclusive use. Preparation of these areas shall be in accordance with other requirements contained within these Specifications and shall be done in a manner to control all sediment transport away from the area.

F. Sediment transport and erosion from working stockpiles shall be controlled and restricted from moving beyond the immediate stockpile area by installation of silt fence or fiber rolls and construction of temporary toe-of-slope ditches, as necessary. The Contractor shall keep these temporary facilities in operational condition by regular cleaning, regrading, and maintenance. Stockpiles remaining in place longer than 14 calendar days shall be considered permanent stockpiles for purposes of erosion and sediment control.

G. All permanent stockpiles shall be seeded with soil stabilization seed and protected by permanent 2-foot-minimum ditches, completely surrounding stockpiles and located within 10 feet of the toes of stockpile slopes.

H. The Contractor shall maintain all elements of the soil erosion and sediment control systems and facilities to be constructed during this Project for the duration of activity on the Project. Formal inspections made jointly by the Contractor and the Engineer shall be conducted every 2 weeks to evaluate the Contractor's conformance. These inspections shall be in addition to the daily inspections performed by the Contractor and the weekly inspections performed by the Engineer.

I. All silt traps shall be cleaned of collected sediment after every storm or as determined from weekly inspections. Cleaning shall be done in a manner that will not direct the sediment into the storm drain piping system. Removed sediment shall be taken to an area selected by the Engineer where it can be cleaned of sticks and debris, then allowed to dry. Final sediment and debris disposal shall be on-site, as directed by the Engineer.

J. Replacement or repair of failed or overloaded silt fences, check dams, or other temporary erosion control devices shall be accomplished by the Contractor within 2 days after receiving written notice from the Engineer.

K. Unpaved earth drainage ditches shall be re-graded as needed to maintain original grade and remove sediment buildup. If a ditch becomes difficult to maintain, the Contractor shall cooperate with the Engineer and install additional erosion control devices such as check dams, rolled erosion control product, or silt fences, as directed by the Engineer.

L. If the Contractor has not complied with any of the above maintenance efforts to the satisfaction of the Engineer within 2 working days after receiving written notification, the Owner shall have sufficient cause to engage others to perform any needed maintenance or cleanup, including removal of accumulated sediment at constructed erosion control facilities, and deduct from the Contractor's monthly partial payment the costs for such efforts, plus a $500 administrative fee.

1.03 SUBMITTALS

A. Comply with Section 01 33 00, Submittal Procedures.

B. In addition, the Contractor shall provide the following specific information:
1. Certificates of inspection of seed by State or Federal authorities and copies of delivery invoices or other proof of quantities of fertilizer.
2. Manufacturer's certificate of compliance attesting that the geotextile meets the requirements of these Specifications.

PART 2 - PRODUCTS

2.01 PERMANENT SEED

Seed for those areas where topsoil is to be applied shall be 20 lbs per acre Creeping Red Fescue, 20 lbs per acre Chewings Fescue, 10 lbs per acre Red Clover, and 5 lbs per acre Perennial Ryegrass.

2.02 SOIL STABILIZATION AND TEMPORARY SEED

A. Summer seed mix shall be Annual or Perennial Ryegrass.

B. Winter seed mix shall be Certified Aroostook Winter Rye (cereal rye).

2.03 TOPSOIL

A. Reconcile where topsoil will be specified and edit the appropriate Division 30 specification for consistency.

B. Topsoil shall be as specified under Section 32 92 00, Turfs and Grasses.

2.04 FERTILIZER

A. Fertilizer shall be commercial, chemical type, uniform in composition, free-flowing, conforming to State and Federal laws, and suitable for application with equipment designed for that purpose.

B. State law prohibits the application of fertilizer between December 1 and April 1, and application within 20 feet of a surface water is restricted.

C. Fertilizers shall have a minimum percentage of plant food by weight for the following: Permanent fertilizer mix shall be 10 percent nitrogen, 10 percent phosphoric acid, and 10 percent potash.

D. Fertilizer with phosphate composition greater than 0.67 percent by weight may only be used if new lawn is being established or a soil test indicates that it is necessary. Projects located within watersheds with Enhanced Phosphorus Removal Standards may only use fertilizer with more than 0.67 phosphate with a valid soil test demonstrating need.

2.05 LIME

A. Ground dolomitic limestone not less than 85 percent total carbonates and magnesium, ground so that 50 percent passes through a 100-mesh sieve and 90 percent passes a 20-mes sieve. Coarser material will be acceptable provided the specified application rates are increased proportionately on the basis of quantities passing a 100-sieve.

B. Quantity of lime needed varies by soil pH. Apply in accordance with current edition of the New York State Standards and Specifications for Erosion and Sediment Control.

2.06 STRAW MULCH

A. Threshed straw of oats, wheat, barley, or rye, free from seed of noxious weeds, or clean salt hay applied at 2 tons per acre.

2.07 EROSION CONTROL BLANKETS

A. The erosion control blanket shall be a machine-produced mat of 70% agricultural straw and 30% coconut fiber matrix.

B. The blanket shall be of consistent thickness with the straw and coconut fiber evenly distributed over the entire area of the mat.

C. The blanket shall be covered on the top side with heavyweight photodegradable netting having ultraviolet additives to delay breakdown and an approximately 0.63-inch x 0.63-inch mesh.

D. The bottom side shall be covered with a lightweight photodegradable polypropylene netting having an approximate 1/2-inch x 1/2-inch mesh. The blanket shall be sewn together on 1.5-inch centers with degradable thread.

E. The erosion control blankets shall be SC150 as manufactured by North American Green, or equivalent.

F. Material content:
1. Matrix: 70% Straw Fiber (0.35 lbs/sy).
2. 30% Coconut Fiber (0.15 lb/sy)
3. Netting Top: Heavyweight photodegradable with UV additives (3.0 lbs/1,000 sf).
4. Bottom: Lightweight photodegradable (1.50 lbs/1,000 sf).
5. Thread: Degradable.

G. The functional longevity of the erosion control blanket shall be approximately 24 months.

H. The blankets shall be manufactured with a colored line or thread stitched along both outer edges (approximately 2 – 5 inches from the edge) to ensure proper material overlapping.

I. All erosion control blankets shall be properly stored by the Contractor at the site per manufacturer's recommendations.

J. Blankets damaged during storage shall be replaced at the Contractor's expense.

PART 3 - EXECUTION

3.01 GENERAL

A. Install erosion and sediment control measures and maintain in accordance with the Drawings, General Permit, and the SWPPP.

B. Provide and maintain Temporary Seeding at all times.

3.02 SEEDING

A. General:
1. The Contractor shall give at least 3 days' notice to the Engineer prior to seeding to allow the Owner to inspect the prepared areas. The Contractor shall rework all areas not approved for seeding to the Owner's satisfaction.
2. The Contractor shall keep the Engineer advised of schedule of operations.
3. Seed shall be clean, delivered in original, unopened packages and bearing an analysis of the contents, guaranteed 95 percent pure with minimum germination rate of 85 percent.

B. Schedules:
   1. Seeding shall be performed in accordance with the following schedule:
      a. Summer Seeding: From March 15 to June 15, and September 1 to October 15.
      b. Winter Seeding: All other times of year, except when weather conditions prohibit further construction operations as determined by the Engineer.

C. Soil Stabilization and Temporary Seeding:
   1. Soil stabilization seeding shall consist of the application of the following materials in quantities as further described herein for stockpiles and disturbed areas left inactive for more than 14 days:
      a. Lime.
      b. Fertilizer.
      c. Temporary seed mix at 30 pounds per acre for summer seed mix or 100 pounds per acre for winter seed mix.
      d. Mulch.
      e. Maintenance.
   2. Hydroseeding will be permitted as an alternative method of applying seed and associated soil conditioning agents described above. Submit hydroseeding application plan and methods prior to commencing work.
   3. Temporary Seeding shall be placed and maintained over all disturbed areas prior to Permanent Seeding. Maintain Temporary Seeding until such time as areas are approved for Permanent Seeding. As a minimum, maintenance shall include:
      a. Repair and re-seeding bare areas or re-disturbed areas.
      b. Mowing for stands of grass or weeds exceeding 6 inches in height.

D. Topsoil and Permanent Seeding:
   1. Topsoil and Permanent Seeding shall consist of the application of the following materials in quantities as further described herein:
      a. 4-inch depth of topsoil.
      b. Lime.
      c. Fertilizer.
      d. Permanent seed mix.
      e. Mulch.
   2. Topsoil shall be placed over all disturbed areas that are not surfaced with concrete, asphalt, or pavers.
   3. Preparation:
      a. After rough grading is completed and reviewed by the Engineer, Contractor shall spread topsoil as specified herein over all areas to received Permanent Seeding to a minimum compacted depth of 6 inches with surface elevations as shown. Loosen the finished surface to a depth of 2 inches and leave in smooth condition, free from depressions or humps, ready for seeding.

b. Finish Grading:
   1) Contractor shall rake the topsoiled area to a uniform grade such that all areas drain as indicated on the Contract Drawings.
   2) Contractor shall remove all trash and all stones exceeding 1-inch in diameter from area to a depth of 2 inches.

4. Permanent Seed:
   a. After soil has been scarified, apply seed and other products at the rate and proportion specified below:
      1) Seed Mix: 55 pounds per acre.
      2) Fertilizer: In accordance with manufacturer's recommendations.
      3) Lime: Varies by soil pH. Apply in accordance with New York Standards and Specifications for Erosion and Sediment Control
      4) Water: as necessary.
5. Maintenance:
   a. Maintenance Period: Contractor shall begin maintenance immediately after each portion of permanent grass is planted and continue for 8 weeks after all planting is completed.
   b. Maintenance Operations: Contractor shall water to keep surface oil moist. Repair washed out areas by filling with topsoil, liming, fertilizing, and seeding. Replace mulch on banks when washed or blown away. Mow to 2 inches after grass reaches 3 inches in height, and mow frequently enough to keep grade from exceeding 3-1/2 inches. Weed by local spot application of selective herbicide only after first planting season when grass is established.
6. Guarantee:
   a. If, at the end of the 8-week maintenance period, a satisfactory stand of grass has not been produced, the Contractor shall renovate and re-seed the grass or unsatisfactory portions thereof immediately, or, if after October 15, during the next planting season. If a satisfactory stand of grass develops by July 1 or the following year, it will be accepted. If it is not accepted, a complete replanting will be required during the planting season meeting all of the requirements specified under paragraph Permanent Seed.
   b. A satisfactory stand of grass is defined as grass or section of grass that has a substantial establishment of new grass, strongly rooted, and uniformly green in appearance from a distance of 50 feet, with no noticeable thin or bare areas as determined by the Engineer.

END OF SECTION

SECTION 01 61 00

COMMON PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.01 DEFINITIONS

A. Products:
1. New items for incorporation into the Work, whether purchased by Contractor for the Project, or taken from previously purchased stock, and may also include existing materials or components required for reuse.
2. Includes the terms material, equipment, machinery, components, subsystem, system, hardware, software and terms of similar intent and is not intended to change meaning of such other terms used in Contract Documents, as those terms are self-explanatory and have well recognized meanings in the construction industry.
3. Items identified by manufacturer's product name, including make or model designation, indicated in manufacturer's published product literature, that is current as of the date of the Contract Documents.

1.02 DESIGN REQUIREMENTS

A. Where Contractor design is specified, design of installation, systems, equipment and components, including support and anchorage shall be in accordance with the provision of the latest edition of the New York State Uniform Code.
1. Seismic Design: Building Risk Category IV, Importance Factor: 1.25, Site Class: E, mapped maximum considered earthquake, 5 percent damped, spectral response at short periods, S_{ds} = 0.211, mapped maximum condition earthquake, 5 percent damped, spectral response at period of 1 second, S_{d1} = 0.061, unless specified otherwise.

1.03 ENVIRONMENTAL REQUIREMENTS

A. Altitude: Provide materials and equipment suitable for installation and operation under rated conditions at nominally 380 feet above sea level.

1.04 PREPARATION FOR SHIPMENT

A. When practical, factory-assemble products. Mark or tag separate parts and assemblies to facilitate field-assembly. Cover machined and unpainted parts that may be damaged by the elements with strippable protective coating.

B. Package products to facilitate handling and protect from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate its

purchase order number, bill of lading number, contents by name, name of Project or Contractor, equipment number, and approximate weight. Include complete packing list and bill of materials with each shipment.

C. Extra Materials, Special Tools, Test Equipment and Expendables:
   1. Furnish as required by individual Specifications.
   2. Schedule:
      a. Ensure that shipment and delivery occur concurrently with ship of associated equipment.
      b. Transfer to Owner shall occur immediately subsequent to Contractor's acceptance of equipment from Supplier.
   3. Packaging and Shipment:
      a. Package and ship extra materials and special tools to avoid damage during long-term storage in original containers insofar as possible, or in appropriately-sized hinged cover, wood, plastic or metal box.
      b. Prominently displayed on each package, the following:
         1) Manufacturer's part nomenclature and number, consistent with Operation and Maintenance Manual identification system.
         2) Applicable equipment description.
         3) Quantity of parts in package.
         4) Equipment manufacturer.

D. Equipment Delivery: Respective contractor will coordinate delivery schedules with respective suppliers.

E. Factory Test Results: Reviewed and accepted by Engineer before product shipment as required in individual specification sections.

1.05 DELIVERY AND INSPECTION

A. Deliver products in accordance with accepted current Progress Schedule and coordinate to avoid conflict with the Work and conditions at the Site.

B. Deliver anchor bolts and templates sufficiently early to permit setting prior to placement of structural concrete.

C. Deliver products in undamaged condition, in manufacturer's original container or packaging, with identifying labels intact and legible. Include on label, date of manufacture and shelf life, where applicable.

D. Unload products in accordance with manufacturer's instructions for unloading or as specified. Record receipt of products at the Site. Promptly inspect for completeness and evidence of damage during shipment.

E. Remove damaged products from Site and expedite deliver of identical new undamaged products, and remedy incomplete or lost products to provide that specified, so as not to delay progress of the Work.

1.06 HANDLING, STORAGE, AND PROTECTION

A. Handle and store products in accordance with manufacturer's written instructions and in a manner to prevent damage. Provide manufacturer's recommended maintenance during storage, installation, and until products are accepted for use by the Owner.

B. Manufacturer's instructions for material requiring special handling, storage, or protection shall be provided prior to delivery of material.

C. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration. Keep running account of products in storage to facilitate inspection and to estimate progress payments for products delivered, but not installed in the Work.

D. Store electrical, instrumentation, and control products, and equipment with bearings in weather-tight structures maintained above 60 degrees F, and relative humidity at least five degrees above the dew point. Protect electrical, instrumentation, and control products, and insulate against moisture, water and dust damage. Connect and operate continuously space heaters furnished in electrical equipment.

E. Store fabricated products above ground on blocking or skids, and prevent soiling or staining. Store loose granular materials in well-drained area on solid surface to prevent mixing with foreign matter. Cover products that are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.

F. Store finished products that are ready for installation in dry and well-ventilated areas. Do not subject to extreme changes in temperature or humidity.

G. After installation, provide coverings to protect products from damage due to traffic and construction operations. Remove coverings when no longer needed.

H. Hazardous Materials: Prevent contamination of personnel, storage area, and Site. Meet requirements of product specification, codes and manufacturer's instructions.

PART 2 – PRODUCTS

2.01 GENERAL

A. Provide manufacturer's standard materials suitable for service conditions, unless otherwise specified in the individual specifications.

B. Where product specifications include a named manufacturer, with or without model number, and also include performance requirements, named manufacturer's products must meet the performance specifications.

C. Like items of products furnished and installed in the Work shall be end products of one manufacturer and of the same series or family of models to achieve standardization for appearance, operation and maintenance, spare parts and replacement, manufacturer's services, and implement same or similar process instrumentation and control functions in same or similar manner.

D. Equipment, Components, Systems, and Subsystems: Design and manufacture with due regard for health and safety of operation, maintenance, and accessibility, durability of parts, and shall comply with applicable OSHA, State and local health and safety regulations.

E. Regulatory Requirements: Coating materials shall meet Federal, State, and local requirements limiting the emission of volatile organic compounds and for worker exposure.

F. Safety Guards: Provide for all belt and chain drives, fan blades, couplings, and other moving or rotary parts. Cover rotating part on all sides. Design for easy installation and removal. Use 16-gauge or heavier galvanized steel or galvanized expanded steel mesh. Provide galvanized steel accessories and supports, including bolts. For outdoor applications, prevent entrance of rain and dripping water.

G. Authority Having Jurisdiction (AHJ):
   1. Provide the Work in accordance with NFPA 70, National Electric Code. Where required by the AHJ, material and equipment shall be labeled or listed by a nationally recognized testing laboratory or other organization acceptable to the AHJ in order to provide a basis for approval under NEC.
   2. Materials and equipment manufactured within the scope of standards published by Underwriter Laboratories, Inc. shall conform to those standards and shall have an applied UL listing mark.

H. Equipment Finish:
   1. Provide manufacturer's standard finish and color, except where specified color is indicated. Equipment scheduled to be field-painted shall be shop-primed with a primer compatible with the specified finish coating system.

Comply with Section 09 91 00, Painting for coating systems, including mil thickness.

2. If manufacturer has no standard color, provide equipment with finish as approved by the Owner.

I. Special Tools and Accessories: Furnish to Owner, upon acceptance of equipment, all accessories required to place each item of equipment in full operation. These accessory items include, but are not limited to, adequate oil and grease (as required for first lubrication of equipment after field testing), light bulbs, fuses, hydrant wrenches, valve keys, hand wheels, chain operators, special tools, and other spare parts as required for maintenance.

J. Lubricant: Provide initial lubricant recommended by equipment manufacturer in sufficient quantity to fill lubricant reservoirs and to replace consumption during testing, startup, and operation until final acceptance by Owner.

2.02 FABRICATION AND MANUFACTURE

A. General:

1. Manufacture parts to U.S.A. standard sizes and gauges.
2. Two or more items of the same type shall be identical, by the same manufacturer, and interchangeable.
3. Design structural members for anticipated shock and vibratory loads.
4. Use 1/4-inch minimum thickness for steel that will be submerged, wholly or partially, during normal operation.
5. Modify standard products as necessary to meet performance specifications.

B. Lubrication System:

1. Require no more than weekly attention during continuous operation.
2. Convenient and accessible; oil drains with bronze or stainless steel valves and fill plugs, easily accessible from the normal operating area or platform. Locate drains to allow convenient collection of oil during oil changes without removing equipment from its installed position.
3. Provide constant-level oilers or oil level indicators for oil lubrication systems.
4. For grease type bearings which are not easily accessible, provide and install stainless steel tubing, protect and extend tubing to convenient location with suitable grease fitting.

2.03 SOURCE QUALITY CONTROL

A. Where specifications call for factory testing to be witnessed by the Engineer, notify Engineer not less than 14 days prior to scheduled test date, unless otherwise specified.

B. Calibration Instruments: Bear the seal of a reputable laboratory certifying instrument has been calibrated within the previous 12 months to a standard endorsed by the National Institute of Standards and Technology (NIST).

C. Factory Tests: Perform in accordance with accepted test procedures and document successful completion.

PART 3 – EXECUTION

3.01 INSPECTION

A. Inspect materials and equipment for signs of pitting, rust decay, or other deleterious effects of storage.

B. Do not install material or equipment showing such effects.

C. Remove damaged material or equipment from the Site and expedite delivery of identical new material or equipment.

D. Delays to the Work resulting from material or equipment damage that necessitates procurement of new products will be considered delay within the Contractor's control.

3.02 INSTALLATION

A. Equipment Drawings show general locations of equipment, devices, and raceway, unless specifically dimensioned.

B. No shimming between machined surfaces is allowed.

C. Install the Work in accordance with NECA Standard of Installation, unless otherwise specified.

E. Repaint painted surfaces that are damaged prior to equipment acceptance.

E. Do not cut or notch any structural member or building surface without specific approval of the Engineer.

F. Handle, install, connect, clean, condition, and adjust products in accordance with manufacturer's instructions, and as may be specified. Retain a copy of manufacturers' instructions at the Site, available for review at all times.

3.03 FIELD FINISHING

A. In accordance with Section 09 91 00, Painting.

3.04 ADJUSTMENT AND CLEANING

A. Perform required adjustments, tests, operational checks, and other startup activities.

3.05 LUBRICANTS

A. Fill lubricant reservoirs and replace consumption during testing, startup, and operation prior to acceptance of equipment by Owner.

END OF SECTION

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.01 SUBMITTALS

A. Informational Submittals:
1. Submit prior to application for payment:
a. Record documents: as required in the General Conditions, and as specified herein.
b. Approved shop drawings and samples: As required in the General Conditions.
c. Special bonds, Special Guarantees, and Service Agreements.
d. Consent of Surety to Final Payment: as required in the General Conditions.
e. Releases or waivers of liens and claims: As required in the General Conditions.
f. Releases from Agreements.
g. Final Application for Payment: Submit in accordance with Section 01 29 00, Payment Procedures.
h. Extra materials: as required by the individual specification sections.

1.02 RECORD DOCUMENTS

A. Quality Assurance:
1. Furnish qualified and experienced person, whose duty and responsibility shall be to maintain record documents.
2. Accuracy of Records:
a. Coordinate changes within record documents, making legible and accurate entries on each sheet of Drawings and other documents where such entry is required to show change.
b. Purpose of Project Record documents is to document factual information regarding aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive Site measurement, investigation, and examination.
3. Make entries within 24 hours after receipt of information that a change in the Work has occurred.
4. Prior to submitting each request for progress payment, request Engineer's review and approval of current status of record documents. Failure to properly maintain, update, and submit record documents may result in a

deferral by Engineer to recommend whole or any part of Contractor's application for Payment, either partial or final.

1.03 RELEASES FROM AGREEMENTS

A. Furnish Owner written releases from property owners or public agencies where side agreements or special easements have been made, or where Contractor's operations have not been kept within the Owner's construction right-of-way.

B. In the event the Contractor is unable to secure written releases:
   1. Inform the Owner of the reasons.
   2. Owner or its representatives will examine the Site, and Owner will direct Contractor to complete the Work that may be necessary to satisfy terms of side agreement or special easement.
   3. Should the Contractor refuse to perform this Work, the Owner reserves the right to complete the Work under separate contract and deduct cost of same from the Contract Price, or require the Contractor to furnish a satisfactory bond in a sum to cover legal Claims for damages.
   4. When Owner is satisfied that the Work has been completed in accordance with the Contract Documents and terms of side agreement or special easement, right is reserved to waive requirement for written release if:
      a) Contractor's failure to obtain such statement is due to grantor's refusal to sign and this refusal is not based on any legitimate claim that the Contractor has failed to fulfill terms of the side agreement or special easement, or
      b) The Contractor is unable to contact or has had undue hardship in contacting the Grantor.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

3.01 MAINTENANCE OF RECORD DOCUMENTS

A. General:
   1. Revise approved shop drawings to reflect as-built conditions, including control logic, interlocks, fail-safes, etc.
   2. Record information concurrently with construction progress and within 24 hours after receipt of information that a change has occurred. Do not cover or conceal Work until required information is recorded.

B. Preservation:
   1. Maintain documents in a clean, dry, legible condition and in good order. Do no use record documents for construction purposes.
   2. Make documents and Samples available at all times for inspection and review by the Engineer.

C. Making Entries on Drawings:
   1. Date entries.
   2. Call attention to entry by revision “cloud” drawn around area or areas affected.
   3. Legibly mark to record actual changes made during construction, including, but not limited to:
      a. Depths of various elements of foundation in relation to finished first floor data if not shown or where depth differs from that shown.
      b. Horizontal and vertical locations of existing and new underground facilities and appurtenances, and other underground structures, equipment, or Work. Reference to at least two measurements to permanent surface improvements.
      d. Locate existing facilities, piping, equipment, and items critical to the interface between existing physical conditions or construction and new construction.
      e. Changes made by addendum, field order, work change directive, change order, and Engineer’s written interpretation and clarification using consistent symbols for each and showing appropriate document tracking number.
   4. Dimensions on Schematic Layouts: Show on record drawings by dimension, the centerline of each run of items such as are described in previous subparagraphs above.
      a. Clearly identify the item by accurate note such as “cast iron drain”, “galvanized water”, etc.
      b. Show, by symbol or note, vertical location of item (“under slab”, “in ceiling plenum”, etc).
      c. Make identification so descriptive that it may be related reliably to specifications.

3.02 FINAL CLEANING

A. At completion of the Work or of a part thereof and immediately prior to Contractor’s request for certificate of Substantial Completion, or if no certificate is issued, immediately prior to Contractor’s notice of completion, clean entire Site or parts thereof, as applicable.

B. Leave the Work and adjacent areas affected in a cleaned condition satisfactory to the Owner.

C. Remove grease, dirt, dust paint or plaster spatter, stains, labels, fingerprints, and other foreign materials from exposed surfaces.

D. Repair, patch, and touch up marred surfaces to specified finish and match adjacent surfaces.

E. Clean all windows.

F. Clean and wax wood, vinyl, or painted floors.

G. Broom clean exterior paved driveways and parking areas.

H. Hose clean sidewalks, loading areas, and others contiguous with principal structures.

I. Rake clean all other surfaces.

J. Remove snow and ice from access to buildings.

K. Replace air-handling filters and clean ducts, blowers, and coils of ventilation units operated during construction.

L. Leave water courses, gutters, and ditches open and clean.

M. Use only cleaning materials recommended by manufacturer of surfaces to be cleaned.

END OF SECTION

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 – GENERAL

1.01 SCOPE

A. Detailed information for the preparation, submittal, and Engineer's review of Operations and Maintenance (O&M) Data, as required by individual specification sections.

1.02 DEFINITIONS

A. Preliminary Data: Initial and subsequent submissions for Engineer's review.

B. Final Data: Engineer-accepted data, submitted as specified herein.

C. Maintenance Operation: Any routine operation required to ensure satisfactory performance and longevity of equipment. Examples of typical maintenance operation are lubrication, belt tensioning, adjustment of pump packing glands, and routine adjustments.

1.03 SEQUENCING AND SCHEDULING

A. Equipment and system data:
   1. Preliminary data:
      a. Do not submit until Shop Drawing for equipment or system has been reviewed and approved by Engineer.
      b. Submit prior to shipment date.
   2. Final Data: Submit Instructional Manual formatted data not less than 30 days prior to equipment or system field functional testing. Submit Compilation Formatted and Electronic Media formatted data prior to Substantial Completion of the Project.

B. Materials and finishes data:
   1. Preliminary Data: Submit at least 15 days prior to request for final inspection.
   2. Final Data: submit within 10 days after final inspection.

1.04 DATA FORMAT

A. Prepare preliminary and final data in the form of an instructional manual. Prepare final data in data compilation format.

B. Instructional Manual Format:
   1. Binder: Commercial-quality, permanent three-ring or three-post binders with durable plastic cover.
   2. Size: 8-1/2 inches by 11 inches, minimum.
   3. Cover: Identify manual with typed or printed title “OPERATION AND MAINTAINENCE DATA”, and list:
      a. Project title.
      b. Designate applicable system, equipment, material, or finish.
      c. Identity of separate structure as applicable.
      d. Identify volume number if more than one volume.
      e. Identity of general subject matter covered in manual.
   4. Spine:
      a. Project Title.
      b. Identify volume number if more than one volume.
   5. Title Page:
      a. Contractor name, address, and telephone number.
      b. Subcontractor, Supplier, installer, or maintenance contractor’s name, address, and telephone number, as appropriate.
         1) Identify area of responsibility of each.
         2) Provide name and telephone number of local source of supply for parts and replacement.
   6. Table of Contents:
      a. Neatly typewritten and arranged in systematic order with consecutively numbered pages.
      b. Identify each product by product name and other identifying numbers or symbols, as set forth in Contract Documents.
   7. Paper: 20-pound minimum, white for typed pages.
   8. Text: Manufacturer’s printed data, or neatly typewritten.
   9. Three-hole punch data for binding and composition; arrange printing so that punched holes do not obliterate data.
   10. Material shall be suitable for reproduction, with quality equal to original. Photocopying of material will be acceptable, except for material containing photographs.

C. Data Compilation Format:
   1. Compile all Engineer-accepted preliminary O&M data into a hard-copy, hard-bound set.
   2. Each set shall consist of the following:
      a. Binder: Commercial quality, permanent, three-ring or three-post binders with durable plastic cover.
      b. Cover: Identify each volume with typed or printed title “OPERATION AND MAINTENANCE DATA, VOLUME No. XX” and list:
         1) Project title.
         2) Contractor’s name, address, and telephone number.

3) If entire volume covers equipment or system provided by one supplier, include the following:
   a) Identity of general subject matter covered in manual.
   b) Identity of equipment number and specification section.

c. Provide each volume with title page and type table of contents with consecutively numbered pages. Place contents of entire set, identified by volume number, in each binder.

d. Table of contents neatly typewritten, arranged in a systematic order:
   1) Include list of each product, indexed to content of each volume.
   2) Designate system or equipment for which it is intended.
   3) Identify each product by product name and other identifying numbers or symbols.

e. Section Dividers:
   1) Heavy, 80-pound cover weight, tabbed with numbered plastic index tabs.
   2) Fly leaf:
      a) For each separate product, or each piece of operating equipment, with typed description of product and major component parts of equipment.
      b) List with each product:
         i) Name, address, and telephone number of Subcontractor, Supplier, installer and maintenance contractor, as appropriate.
         ii) Identify area of responsibility of each.
         iii) Provide local source of supply for parts and replacement.
      c) Identity of separate structure as applicable.

f. Assemble and bind material, as much as possible, in same order as specified in the Contract Documents.

1.05 SUBMITTALS

A. Informational:
   1. Data outline: Submit three copies of a detailed outline of proposed organization and contents of Final Data prior to preparation of Preliminary Data.
   2. Preliminary Data:
      a. Submit three copies for Engineer's review.
      b. If data meets conditions of the Contract:
         1) One copy will be returned to the Contractor.
         2) One copy will be forwarded to field staff.
         3) One copy will be retained by the Engineer.

c. If data does not meet conditions of the Contract:
1) All copies will be returned to Contractor with Engineer's comments (on separate document) for revision.
2) Engineer's comments will be retained in the Engineer's file.
3) Resubmit three copies revised in accordance with Engineer's comments.

3. Final Data: Submit two copies in format specified herein.

1.06 DATA FOR EQUIPMENT AND SYSTEMS

A. Content for each unit (or common units) and System:
1. Product Data:
a. Include only those sheets that are pertinent to specific product.
b. Clearly annotate each sheet to:
1) Identify specific product or part installed.
2) Identify data applicable to installation.
3) Delete references to inapplicable information.
c. Function, normal operating characteristics, and limiting conditions.
d. Performance curves, engineering data, nameplate data, and tests.
e. Complete nomenclature and commercial number of replaceable parts.
f. Original manufacturer's parts list, illustrations, detailed assembly drawings showing each part with part numbers and sequentially numbered parts list, and diagrams required for maintenance.
g. Spare parts ordering instructions.
h. Where applicable, identify installed spares and other provisions for future work (e.g. reserved panel space, unused components, wiring, terminals, etc).
2. As-installed, color-coded piping diagrams.
3. Charts of valve tag numbers, with the location and function of each valve.
4. Drawings: supplement product data with drawings as necessary to clearly illustrate:
a. Format:
1) Provide reinforced, punched, binder tab; bind in with text.
2) Reduced to 8-1/2 inches by 11-inches, or 11 inches by 17 inches, folded to 8-1/2 inches by 11 inches.
3) Where reduction is impractical, fold and place in 8-1/2 inch envelopes.
b. Relations of component parts of equipment and systems.
c. Control and flow diagrams.
d. Coordinate drawings with Project record documents to assure correct illustration of completed installation.

5. Instructions and Procedures: Within text, as required to supplement product data.
    a. Format:
        1) Organize in consistent format under separate heading for each different procedure.
        2) Provide logical sequence of instructions for each procedure.
        3) Provide information sheet for Owner's personnel, including:
            a) Proper procedures in event of failure.
            b) Instances that might affect validity of guarantee or Bond.
    b. Installation Instructions: Including alignment, adjusting, calibrating, and checking.
    c. Operating Procedures:
        1) Startup, break-in, routine, and normal operating instructions.
        2) Test procedures and results of factory tests where required.
        3) Regulation, control, stopping and emergency instructions.
        4) Description of operation sequence by control manufacturer.
        5) Shutdown instructions for both short and extended duration.
        6) Summer and winter operating instructions, as applicable.
        7) Safety precautions.
        8) Special operating instructions.
    d. Maintenance and Overhaul Procedures:
        1) Routine maintenance.
        2) Guide to troubleshooting.
        3) Disassembly, removal, repair, reinstallation, and re-assembly.
6. Guarantee, Bond, and Service Agreement: In accordance with Section 01 77 00, Closeout Procedures.

B. Content for Each Electric or Electronic Item or System:
1. Description of Unit and Component Parts:
    a. Function, normal operating characteristics, and limiting conditions.
    b. Performance curves, engineering data, nameplate data, and tests.
    c. Complete nomenclature and commercial number of replaceable parts.
    d. Interconnection wiring diagrams, including control and lighting systems.
2. Circuit Directories of Panelboards.
3. Electric service.
4. Control requirements and interfaces.
5. Communication requirements and interfaces.
6. List of electrical relay settings, and control and alarm contact settings.

7. Electrical interconnection wiring diagram, including as applicable, single-line, three-line, schematic and internal wiring, and external interconnection wiring.
8. As-installed control diagrams by CSSI.
9. Operating procedures:
    a. Routine normal operating instructions.
    b. Startup and shutdown sequences, normal and emergency.
    c. Safety precautions.
    d. Special operating instructions.
10. Maintenance Procedures:
    a. Routine maintenance.
    b. Guide to troubleshooting.
    c. Adjustment and checking.
    d. List of relay settings, control and alarm contact settings.
11. Manufacturer's printed operating and maintenance instructions.
12. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01 91 14

EQUIPMENT TESTING AND FACILITY START-UP

PART 1 – GENERAL

1.01 DEFINITIONS

A. Facility: Facilities furnished under the Contractor's scope of supply.

B. Functional Test: Test or tests in presence of Engineer and Owner to demonstrate that installed equipment meets manufacturer's installation, calibration, and adjustment requirements and other requirements as specified.

C. Performance Test: Test or tests performed after required functional test in the presence of the Engineer and Owner to demonstrate and confirm individual equipment meets performance requirements specified in individual sections.

1.02 SUBMITTALS

A. Informational Submittals:
   1. Facility Startup and Performance Demonstration Plan.
   2. Functional and performance test results.
   3. Completed unit process startup documentation for each unit process.
   4. Completed facility performance demonstration documentation.

1.03 FACILITY STARTUP AND PERFORMANCE DEMONSTRATION PLAN

A. Develop a written plan, in conjunction with the Owner's operations personnel to include the following:
   1. Step-by-step instructions for startup of each unit process and the complete facility.
   2. Unit process startup documentation to minimally include the following:
      a. Description of the unit process, including equipment numbers/nomenclature of each item of equipment and all included devices.
      b. Detailed procedures for startup of the unit process including valves to be opened/closed, order of equipment startup, etc.
      c. Startup requirements for each unit process, including water, power, chemicals, etc.
      d. Space for evaluation comments.
   3. Facility performance demonstration documentation:
      a. Description of unit processes included in the facility startup.
      b. Sequence of unit process startup to achieve facility startup.
      c. Description of remote/SCADA operations included in the facility.

d. Contractor certification that the facility is capable of performing its intended function(s), including fully automatic operation.
e. Signature spaces for Contractor and Engineer.

PART 2 – PRODUCTS

(NOT USED)

PART 3 – EXECUTION

3.01 GENERAL

A. Facility Startup Meetings: schedule to discuss test schedule, test methods, materials, chemical and liquids required, facilities operations interface, and Owner involvement.

B. Contractor's Testing Startup Representative:
1. Designate and furnish one or more personnel to coordinate and expedite testing and facility startup.
2. Representative(s) shall be present during startup meetings and shall be available at all times during testing and startup.

C. Provide temporary valves, gauges, piping, test equipment and other materials and equipment required for testing and startup.

D. Provide Subcontractor and equipment manufacturer's staff adequate to prevent delays. Schedule ongoing work so as not to interfere with or delay testing and startup.

E. Owner will:
1. Provide water, power, chemicals, and other items as required for startup, unless otherwise indicated.
2. Operate process units and facility with support of Contractor.
3. Provide labor and materials as required for laboratory analyses.
4. Make available spare parts, special tools, and operation and maintenance information for Owner-furnished products.

3.02 EQUIPMENT TESTING

A. Preparation:
1. Complete installation before testing.
2. Furnish qualified manufacturer's representatives, when required by individual specification sections.

3. Obtain and submit from equipment manufacturer's representative a certification of proper installation, in accordance with Section 01 43 33, Manufacturers' Field Services.
4. Equipment Test Report Form: Provide written test report for each item of equipment to be tested, to include the minimum information:
    a. Owner/Project Name.
    b. Equipment or item tested.
    c. Date and time tested.
    d. Type of test performed (Functional or Performance).
    e. Test method.
    f. Test conditions.
    g. Test results.
    h. Signature spaces for Contractor and Engineer as witness.
5. Cleaning and Checking: Prior to beginning functional testing:
    a. Calibrate testing equipment in accordance with manufacturer's instructions.
    b. Inspect and clean equipment, devices, connected piping, and structures to ensure they are free of foreign material.
    c. Lubricate equipment in accordance with manufacturer's recommendations.
    d. Turn rotating equipment by hand when possible to confirm that equipment is not bound.
    e. Open and close valves by hand and operate other devices to check for binding, interference, or improper functioning.
    f. Check power supply to electric-powered equipment for correct voltage.
    g. Adjust clearances and torque.
    h. Test piping for leaks.
6. Ready-to-test determination will be by the Engineer based at least on the following:
    a. Acceptable Operation and Maintenance Data.
    b. Notification by Contractor of equipment readiness for testing.
    c. Receipt of manufacturer's certification of proper installation.
    d. Adequate completion of work adjacent to, or interfacing with, equipment to be tested.
    e. Availability and acceptability of manufacturer's representative, when specified, to assist in testing of respective equipment.
    f. Satisfactory fulfillment of other specified manufacturer's responsibilities.
    g. Equipment and electrical tagging complete.
    h. Delivery of all spare parts and special tools.

B. Functional Testing:
1. Conduct as specified in individual specification sections.
2. Notify Owner and Engineer in writing at least 10 days prior to schedule date of testing.

3. Prepare an equipment test report summarizing test method and results.
4. When, in the Engineer's opinion, equipment meets functional requirements specified, such equipment will be accepted for purposes of advancing to performance testing phase, if so required by individual specification section. Such acceptance will be evidenced by Engineer/Owner's signature as witness to the equipment test report.

C. Performance Testing:
1. Conduct as specified in individual specification sections.
2. Notify Engineer and Owner in writing at least 10 days prior to schedule date of test.
3. Performance testing shall not commence until equipment has been accepted by Engineer as having satisfied functional test requirements specified.
4. Type of fluid, gas, or solid for testing shall be as specified.
5. Unless otherwise indicated, furnish labor, materials, and supplies for conducting the test and taking samples and performance measurements.
6. Prepare equipment test report summarizing test method and results.
7. When, in the Engineer's opinion, equipment meets performance requirements specified, such equipment will be accepted as to conforming to Contract requirements. Such acceptance will be evidenced by Engineer's signature on the equipment test report.

3.03 STARTUP OF UNIT PROCESSES

A. Prior to unit process startup, equipment within unit process shall be accepted by Engineer as having met functional and performance testing requirements specified.

B. Make adjustments, repairs, and corrections necessary to complete unit process startup.

C. Startup shall be considered complete when, in the opinion of the Engineer, unit process has operated in a manner intended for fourteen (14) continuous days without significant interruption. This period is in addition to functional or performance test periods specified elsewhere.

D. Significant Interruption: May include any of the following events:
1. Failure of Contractor to provide and maintain qualified on-site startup personnel as scheduled.
2. Failure to meet specified functional operation for more than 2 consecutive hours.
3. Failure of any critical equipment or unit process that is not satisfactorily corrected within 5 hours after failure.
4. Failure of any non-critical equipment or unit process that is not satisfactorily corrected within 8 hours after failure.

5. As determined by the Engineer.

E. A significant interruption will require startup then in progress to be stopped. After corrections are made, startup test period shall start from beginning again.

3.04 FACILITY PERFORMANCE DEMONSTRATION

A. When, in the opinion of the Engineer, startup of all unit processes has been achieved, sequence of each unit operation to the point that facility is operational.

B. Demonstrate proper operation of required interfaces within and between individual unit processes.

C. After facility is operating, complete performance testing of equipment and systems not previously tested.

D. Certify, on the Facility performance demonstration form, that facility is capable of performing its intended function(s), including fully automatic operation.

END OF SECTION

SECTION 02 22 10

EXCAVATING, BACKFILLING AND COMPACTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Excavating, Backfilling and Compacting, as shown on the Plans and specified.

B. Excavation, in open cut, includes the loosening, removing, transporting, storage and disposal of all materials necessary to be removed for the construction and completion of all work under the Contract. Excavations shall be made to the widths and depths shown on the Plans and specified.

C. The Contractor shall be responsible for maintaining the stability of any excavations and for any damage or injury to any persons property or structures as a result.

D. Where rock is encountered, the excavations shall be done in accordance with the applicable provisions hereof.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. American Society for Testing and Materials (ASTM) Publications. Reference to standard Specifications is intended to specify minimum standards for quality of materials and performance of workmanship, and for standard test methods.

1.03 DEFINITIONS

A. The term "excavation" and the term "trenching" where used, shall be deemed and understood to cover the following described work, and the price bid for any and all items including "excavation", or "trenching" shall be deemed to include and cover all of the several following detailed operations:
   1. The loosening, removing, transporting, storage and rehandling of all materials;
   2. All sheeting, bracing and shoring, and the placing, cutting off and removing of the same;
   3. All ditching, pumping, bailing, dewatering and draining or otherwise disposing of water (surface and subsurface);

4. The refilling of trenches, excavations and pits, and the furnishing and placing of material over trenches, excavations and pits to the original surface of the ground or to other grades as may be shown or directed;
5. The compacting of all materials used in filling or refilling by rolling, ramming, watering, puddling, etc., as may be required;
6. The removing and disposing of all surplus materials from all excavations in the manner specified;
7. The maintenance, accommodation and protection of travel;
8. All temporary bridging, fencing and barricades and the removing of same.
9. The removing and clearing away of all construction rubbish, refuse, unused materials, plant and tools from the site;
10. The dressing, topsoiling, sodding and/or seeding of all unpaved areas disturbed by the Contractor within and outside the limits of the Contract as may be necessary to leave the surface in as good condition as it was previous to the commencement of the work.

B. "Earth" includes all materials, such as sand, gravel, clay loam, pavements, ashes, cinders, muck, roots, or pieces of timber, soft or disintegrated rock, not requiring barring or wedging from their original beds, and specifically excludes all ledge or bed rock, and individual boulders or masonry larger than one-half cubic yard in volume.

C. "Backfill" includes selected materials for the backfilling or refilling of all excavations and trenches up to the original surface of the ground or to other grades as may be shown or directed.

D. "Lining" includes selected materials utilized for the embedment of underground piping for the purpose of structural support and/or protection of the piping installed.

E. "Spoil" includes surplus excavated materials not required or not suitable for backfills or embankments.

F. "Embankments" include fills constructed of selected materials above the original surface of the ground.

G. “Rock" includes ledge or bedrock requiring barring or wedging from their original beds and individual boulders or masonry larger than one-half cubic yard in volume.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS/COMMON FILL

A. Where used for general site fill or suitable backfill, soil material shall be free of debris, roots, wood, scrap material, vegetable matter, refuse, soft unsound particles, frozen, deleterious, or objectionable materials.

2.02 CONTROLLED FILL

A. Controlled fill material shall be structural fill as specified in Section 31 05 16, “Aggregates For Earthwork”.

2.03 LINING

A. Lining material, where specified, for the embedment of piping shall be clean sand or pea stone.

2.04 PEA STONE

A. Where specified as backfill, pea stone shall consist of clean sound screened gravel with a minimum quality of 20 percent maximum loss weight at 4 cycles as tested by the magnesium sulfate soundness test. Gradation shall be as follows:

% Passing	Sieve
100	½”
20-100	¼”
0-15	No. 10
0-5	No. 20

PART 3 - EXECUTION

3.01 EXCAVATION FOR STRUCTURES

A. Excavation shall be of sufficient size, and only of sufficient size, to give suitable room for the proper construction of structures and appurtenances, including allowances for sheeting, dewatering, and other similar work necessary for completion of the Contract.

B. Excavations for structures shall be made only to the lines and grades shown on the Plans, specified or directed.

C. In no case will under cutting excavation faces be permitted.

D. Subgrade for all footings and foundations shall be undisturbed original earth, thoroughly compacted where noted on drawings. Keep all excavations free from water. Excavate soil disturbed or weakened by Contractor's operations and soils softened or made unsuitable for subsequent construction due to exposure to weather.

1. Where excavation below subgrade is ordered, it shall be thoroughly compacted and consolidated structural fill as directed and as specified in Section 31 05 16. It shall be sufficiently stable to remain firm and intact during the surfacing of subgrade, laying reinforcing steel and placing concrete thereon.

3.02 BACKFILLING AROUND STRUCTURES

A. Backfilling around structures shall not be commenced until all lumber, refuse, rubbish and other similar materials are removed from the excavated area. Backfill around structures may be placed by machine, provided the work shall be done carefully to prevent damage to the structure. In no case shall backfill materials be allowed to fall directly on a structure, until at least twelve (12) inches of hand-placed material has been placed thereon and compacted.

B. Backfill around structures shall be deposited in horizontal layers not more than eight (8) inches in thickness and shall be thoroughly compacted. Compaction shall be by a vibrating tamper or other approved method and shall be to a minimum dry density of ninety-five (95) percent of the maximum dry weight density in pounds per cubic foot as determined by the Modified Proctor Compaction Test (ASTM D1557). Compact adjacent areas, beyond five (5) feet of a slab or structure, to ninety (90) percent of ASTM D1557.

C. Backfilling shall be done immediately after work has been inspected and approved. No frozen material shall be used, nor shall backfilling be placed on or against frozen earth, debris or other deleterious matter not conducive to proper compaction.

D. Contractor shall take every necessary precaution during compaction of fill adjacent to foundations, walls, etc., that such items are not displaced from their proper location or damaged by compacting equipment. In the event damage or displacement occurs during or resulting from compaction of fill as specified above, the Contractor shall be responsible for correcting the same, to approval of the Engineer and at no expense to the Owner.

E. Controlled fill within building lines, under concrete slabs and aprons shall be structural fill as specified in Section 31 05 16. Areas of completed fill which are to receive slabs, pavements and structures, etc., shall be kept free of standing water or otherwise protected from any loss of compaction density.

3.03 TRENCHING

A. The alignment, depth and pipe subgrades of all pipe trenches shall be determined by electrical laser beam or other grade control devices, installed and maintained by the Contractor.

B. Width and Depth of Trenches: The trenches in which pipelines are to be constructed, shall be excavated in all cases in such manner and to such depths and widths as will give suitable room for the pipelines which the trenches are to contain, for stability, sheeting, pumping, dewatering, and draining of water, and for removing the material not suitable for pipe subgrade.

C. Unless otherwise specified, trenches for pipes shall be not less than six (6) inches wider and deeper than the hubs of the pipe on each side and below, when measured from the hubs of the pipe.

3.04 EARTH SUBGRADE PREPARATION FOR PIPES

A. Unless otherwise permitted by the Engineer, the trench shall have a flat bottom conforming to the grade to which the pipe is to be laid.

B. Pipe subgrade preparation shall be performed immediately prior to installing the pipe in the trench. The trench bottom shall be accurately graded by means of hand tools in such a manner that a uniform and continuous bearing and support on solid and undisturbed ground is provided for each pipe for its entire length.

C. All trenches shall be so graded that the pipe will be accurately centered when laid, without raising the pipe off the trench bottom. Regrading of a trench bottom which is too high will be permitted. Correction of a subgrade that is too low shall be done only by placing and compacting structural fill over the entire width of the trench and regrading.

3.05 PIPE LINING

A. All pipe shall be protected from lateral displacement and possible damage resulting from superimposed backfill loads, impact or unbalanced loading during backfilling operations by being adequately embedded in the specified pipe lining material. Except where loading or subsoil conditions require the use of concrete cradle or encasement, all pipe lining shall be placed so as to insure adequate lateral and vertical stability of the installed pipe during embedment operations. The amount of the specified pipe lining material to hold the pipe in alignment shall extend not less than 6 inches in any direction from the pipe and shall be uniformly deposited on each pipe laid.

B. Pipe lining materials placed at any point below an elevation six (6) inches above the top of pipe, shall be deposited and compacted in layers not to exceed four (4) inches in uncompacted depth, and such deposition and compactions shall be done

simultaneously and uniformly on both sides of the pipe. Compaction shall be by vibrating tamper or other approved method and shall be to a minimum dry density of ninety-five (95) percent of the maximum dry weight density in pounds per cubic foot as determined by the Modified Proctor Compaction Test. All such materials shall be placed in the trench with hand tools in such a manner that they will be scattered alongside the pipe and not dropped into the trench in compact masses.

3.06 BACKFILL ABOVE PIPE LINING

A. The portion of pipe trenches between the top of the pipe lining and the upper limit of backfill shall be refilled with suitable materials as shown or indicated on drawings, or as specified herein.

B. Where trenches are within structures or the ditch-to-ditch or edge of pavement limits of any road, driveway or other recognized traveled vehicular way, or within other limits that may be specifically shown or specified for this purpose, the backfill materials shall be deposited in the trench in horizontal layers not more than six (6) inches in thickness, and each layer shall be compacted by vibrating tamper or other approved method and shall be to a minimum dry density of ninety-five (95) percent of the maximum dry weight density in pounds per cubic foot as determined by the Modified Proctor Compaction Test (ASTM D1557).

3.07 REMOVAL OF WATER

A. The Contractor shall at all times during construction provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the prosecution of the work or the proper placing of pipe, masonry, concrete, structures, or other work.

B. Removal of water includes the construction and removal of sheeting and bracing, the furnishing of materials, equipment and labor necessary therefore, the excavation and maintenance of ditches and sluice-ways and the furnishing and operation of pumps, and appliances needed to maintain thorough drainage of the work in a satisfactory manner.

C. Water shall not be allowed to rise over or come in contact with any masonry, concrete or mortar, until at least twenty-four (24) hours after placement, and no stream of water shall be allowed to flow over such work until such time as the Engineer may permit.

D. Unless otherwise specified, all excavations which extend down to below the groundwater elevation at the sites of structures shall be dewatered by lowering and maintaining the groundwater beneath such excavations at an elevation not less than that specified herein at all times when work thereon is in progress, during subgrade preparation and the placing of the structures or pipe thereon.

E. Where an upward pressure or flow of water in combination with a fine-grained subsurface material causes a quick condition, the Contractor shall install wellpoints to stabilize the subgrade. Where wellpoints are used, the groundwater table shall be continuously (day and night) maintained to an elevation of not less than twenty-four (24) inches below the excavation and when subgrade is reached the groundwater shall be maintained not less than twenty-four (24) inches below the subgrade. Unless otherwise permitted by the Engineer, the groundwater shall be maintained not less than twenty-four (24) inches below the subgrade until completion of the backfilling to an elevation at least twelve (12) inches above natural groundwater level. Wellpoint headers, points, and other pertinent equipment shall not be placed within the limits of the excavation in such a manner or location as to interfere with the laying of pipe or trenching operations or with the excavation for and construction of other structures.

F. In areas where groundwater enters the excavation but does not cause a quick condition, the groundwater may be removed by any practical method which does not damage the subgrade, cause the same to become unstable or interferes with construction operations.

G. The groundwater control requirements specified for wellpointing operations apply to other dewatering methods.

H. Suitable stand-by pumping equipment shall be provided to insure the maintenance of the specified lowering of the water table.

I. Water pumped or drained from excavations, or drains, or water courses encountered in the work, shall be disposed of in a suitable and environmental manner without injury to adjacent property, the work under construction, or to pavements, roads, and drives. No water shall be discharged to sanitary sewers. If petroleum contaminated groundwater is encountered, the Contractor shall notify the Engineer immediately.

J. Any damage caused by improper handling of water shall be repaired by the Contractor at his own expense.

3.08 SHEETING & BRACING

A. The Contractor shall furnish, place and maintain such sheeting, bracing and shoring as may be required to support the sides and ends of excavations in such manner as to prevent any movement which could, in any way, injure the pipe, sewers, masonry, or other work; diminish the width necessary; otherwise damage or delay the work; or endanger existing structures, pipes or pavements; cause the excavation limits to exceed the right-of-way limits; or to occasion a hazard to persons engaged on the project or to the general public.

B. In no case will bracing be permitted against pipes or structures in trenches or other excavations.

C. The Contractor shall be solely responsible for the safety and adequacy of all sheeting and bracing. He shall make good any damage resulting from failure of supports with no additional cost to Owner.

D. Removal of Sheeting & Bracing:

1. In general, all sheeting and bracing, whether of steel, timber or other material, used to support the sides of trenches or other open excavations, shall be withdrawn as the trenches or other open excavations are being refilled. That portion of the sheeting extending below the top of a pipe or structure shall be withdrawn, unless directed, before more than six (6) inches of earth is placed above the top of the pipe or structure and before any bracing is removed. The voids left by the sheeting shall be carefully refilled with selected material and rammed tight with tools especially adapted for the purpose, or otherwise as may be approved.
2. The Engineer may order the Contractor to delay the removal of sheeting and bracing, if in his judgment the installed work has not attained the necessary strength to permit placing of backfill.

3.09 STORAGE OF MATERIAL

A. All excavation materials shall be stored in locations so as not to endanger the work, and so that easy access may be had at all times to all parts of the excavation. Stored materials shall be kept neatly piled and trimmed. All stockpiled fill material shall be stored only in those fill areas as approved by the Owner.

3.10 ADDITIONAL EXCAVATION

A. In case the materials encountered at the locations and grades shown on the Plans or specified are not suitable, or in case it is found desirable or necessary to excavate additional materials to secure good support for the structure or pipeline, the excavation shall be carried to such additional limits as the Engineer may direct. The Contractor shall refill such additional excavated space with either structural fill, Class "D" or "E" concrete or other material, as the Engineer may direct. Additional excavation, backfill material, concrete or other materials so ordered, will be paid for under the appropriate items of the Contract.

3.11 UNAUTHORIZED EXCAVATION

A. Whenever excavations are carried beyond or below the lines and grades shown on the Plans, or as given or directed by the Engineer, all such excavated space shall be refilled with structural fill, concrete or other materials as directed by the Engineer. All refilling of unauthorized excavations shall be at the Contractor's own expense.

B. All material which slides, falls or caves into the established limits of excavations due to any cause whatsoever shall be removed and disposed of at the Contractor's own expense, and no extra compensation will be paid the Contractor for any materials ordered for refilling the void areas left by the slide, fall or cave-in.

3.12 DISPOSAL OF MATERIALS

A. All clean spoil shall be transported and placed on-site at a location approved by Owner. No environmental sensitive areas shall be used for spoil areas.

B. The surface of all spoil placed on the Site shall be graded and dressed, and no unsightly mounds or heaps shall be left on completion of the work.

END OF SECTION

SECTION 02 40 00

DEMOLITION AND REMOVAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Demolition and Removal, as shown on the Plans, as specified and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. American National Standards Institute, Inc. (ANSI) Publications:
      a. A10.4 - Safety Requirements for Personnel Hoists and Employee Elevators for Construction and Demolition Operations
      b. A10.6 - Demolition Operations – Safety Requirements
   2. National Fire Protection Association (NFPA) Publication:
      a. 241 - Safeguarding Construction, Alteration and Demolition Operations
   3. New York Code Rule and Regulations/Department of Labor:
      a. 12 NYCRR - Protection in Construction, Demolition and Part 23 Excavation Operations
   4. Occupational Safety and Health Administration (OSHA) Regulations:
      a. 29 CFR Part 1926 - Regulations for Construction

1.03 GENERAL REQUIREMENTS

A. Do not begin demolition until authorization is received from the Engineer. Remove rubbish and debris from the project site daily; do not allow accumulations inside or outside the buildings. Store materials that cannot be removed daily in areas specified by the Engineer.

1.04 SUBMITTALS: Submit the following:

A. Statements:
   1. Demolition plan

   Submit proposed demolition and removal procedures to the Engineer for approval before work starts.

1.05 REGULATORY AND SAFETY REQUIREMENTS

A. Comply with Federal, State, and local hauling and disposal regulations. In addition to the requirements of the "General Requirements", safety requirements

shall conform with ANSI A10.4, ANSI A10.6, NFPA 241, 12 NYCRR Part 23 and OSHA 29 CFR Part 1926.

1.06 DUST AND DEBRIS CONTROL

A. Prevent the spread of dust and debris to occupied portions of the building and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution. Vacuum and dust the work area daily.

1.07 PROTECTION

A. Existing Work: Protect existing work which is to remain in place, be reused, or remain the property of the Owner. Do not overload structural elements. Provide new supports and reinforcement for existing construction weakened by demolition or removal work. Repairs, reinforcement, or structural replacement must have Engineer approval.

B. Weather Protection: For portions of the building to remain, protect building interior and materials and equipment from the weather at all times. Where removal of existing roofing is necessary to accomplish work, have materials and workmen ready to provide adequate and temporary covering of exposed areas so as to ensure effectiveness and to prevent displacement.

1.08 RELOCATIONS

A. Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Repair items to be relocated which are damaged or replace damaged items with new undamaged items as approved by the Engineer.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 EXISTING FACILITIES TO BE REMOVED

A. Structures: Remove indicated existing structures or portions of structures as indicated.

B. Masonry: Sawcut and remove masonry so as to prevent damage to surfaces to remain and to facilitate the installation of new work. Where new masonry adjoins existing, the new work shall abut or tie into the existing construction as indicated.

C. Concrete: Saw concrete along straight lines to a depth of not less than 2 inches. Make each cut in walls perpendicular to the face and in alignment with the cut in the opposite face. Break out the remainder of the concrete provided that the broken area is concealed in the finished work, and the remaining concrete is sound. At locations where the broken face cannot be concealed, grind smooth or saw cut entirely through the concrete.

D. Patching: Where removals leave holes and damaged surfaces exposed in the finished work, patch and repair these holes and damaged surfaces to match adjacent finished surfaces. Where new work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new work. Finished surfaces of patched area shall be flush with the adjacent existing surface and shall match the existing adjacent surface as closely as possible as to texture and finish.

3.02 DISPOSITION OF MATERIAL

A. Title to Materials: Except where specified in other sections, all materials and equipment removed, and not reused, shall become the property of the Contractor and shall be removed from Owner's property. Title to materials resulting from demolition, and materials and equipment to be removed, is vested in the Contractor upon approval by the Engineer of the Contractor's demolition and removal procedures, and authorization by the Engineer to begin demolition. The Owner will not be responsible for the condition or loss of, or damage to, such property after notice to proceed. Materials and equipment shall not be viewed by prospective purchasers or sold on the site.

3.03 CLEANUP

A. Debris and Rubbish: Remove and transport debris and rubbish in a manner that will prevent spillage on pavements, streets or adjacent areas. Limit to 3/8-cubic yard capacity buggies or other conveyances used on roofs and within the building to transport removed debris.

END OF SECTION

SECTION 02 84 33.01

POLYCHLORINATED BIPHENYL (PCB) TRANSFORMER REMOVAL AND DISPOSAL

PART 1 - GENERAL

1.01 SUMMARY

A. Under this Section, the Contractor shall furnish all labor, rigging, materials, transportation and equipment for Polychlorinated Biphenyl (PCB) Transformers Removal and Disposal, as shown on the Plans, or as specified in the Contract Documents. This Section shall apply to all other PCB-containing/contaminated electrical equipment and materials encountered during this project, including capacitors and equipment and materials containing dielectric fluids with such trade names as Askarel, Inerteen, and Pyranol. All work shown on the Plans and not included in other unit or lump sum price items shall be included in the Base Bid.

1.02 APPLICABLE SPECIFICATIONS, CODES AND STANDARDS

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only. The publications are identified for information only, and do not represent all regulations, codes, or standards which may apply to this work. Where PCB waste is not otherwise subject to RCRA hazardous waste regulation, management shall comply with 40 CFR Part 761.

1. United States Environmental Protection Agency (EPA) Publications:
    a. 40 CFR Part 261 - Identification and Listing of Hazardous Waste
    b. 40 CFR Part 262 - Standards Applicable to Generators of Hazardous Waste
    c. 40 CFR Part 263 - Standards Applicable to Transporters of Hazardous Waste
    d. 40 CFR Part 761 - Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
2. New York State Department of Environmental Conservation (NYSDEC) Publications:
    a. 6 NYCRR Part 364 - Waste Transporter Permits
    b. 6 NYCRR Part 370 - Hazardous Waste Management System: General
    c. 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes
    d. 6 NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
    e. 6 NYCRR Part 373 - Hazardous Waste Management Facilities

3. Occupational Safety and Health Administration (OSHA) Regulations:
    a. 29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response
    b. 29 CFR Part 1910.134 - Respiratory Protection
    c. 29 CFR Part 1910.146 - Permit-Required Confined Spaces
4. United States Department of Transportation (USDOT) Publication:
    a. 49 CFR Part 171-180 - Hazardous Materials Regulations
5. Toxic Substances and Control Act (TSCA).
6. Resource Conservation and Recovery Act (RCRA).
7. Fire Code of New York State:
    a. 50 - Hazardous Materials – General Provisions
    b. 57 - Flammable and Combustible Liquids Code
8. National Fire Protection Association, Inc. (NFPA) Publications:
    a. 30 - Flammable and Combustible Liquids Code
    b. 69 - Standard on Explosion Prevention Systems
    c. 77 - Recommended Practice on Static Electricity
    d. 326 - Standard for the Safeguarding of Tanks and Containers for Entry, Cleaning, or Repair
    e. 327 - Standard Procedures for Cleaning or Safeguarding Small Tanks and Containers

1.03 GENERAL DESCRIPTION

A. In addition to the description of work in this Section and the work indicated on the Plans, the Contractor is responsible for all project mobilization, site sampling, preparation, decontamination, removals, excavation, loading, transport, disposal of PCB and Non-PCB Transformers, PCB Wastes, PCB Remediation Waste, and other PCB Items, backfill, and site restoration (as required).

1.04 QUALITY CONTROL

A. Contractor shall demonstrate experience in PCB Transformer and PCB-Contaminated Transformer removal and disposal and shall provide continuous on-site supervision by personnel knowledgeable in all aspects of hazardous waste removal and disposal.

B. Disposal of PCB Transformers and PCB-Contaminated Transformers shall be completed no later than 30 days after decommissioning, unless otherwise specified.

1.05 SUBMITTALS

A. Prepare and submit at least 15 calendar days prior to start of construction, the following:
    1. Summary of qualifications and experience of Contractor or subcontractor applicable to the project. Provide evidence of employee training in accordance with 29 CFR 1910.120.

2. Proof that the insurance coverage required by the Contract Documents covers Polychlorinated Biphenyl-related claims.
3. Work Plan: Contractor shall submit a written Work Plan that shall include the following information:
    a. Identification of proposed schedule and tasks.
    b. Names, qualifications, and applicable permits for each Contractor involved in removing, transporting, storing, treating, and disposing of the wastes.
    c. List of handling equipment to be utilized in performing the work. Include specific containment, containerization, and contamination materials and products.
    d. Waste disposal plan including containerization, transportation, storage, and final disposal requirements for each type of waste generated during work on this project. Include copies of applicable permits and a copy of the form(s) used by the Contractor for maintenance of waste shipment records.
    e. Figure/Drawing showing the proposed location of on-site staging and Containment/Decontamination Area.
    f. Sampling methods and procedures, proposed analytical laboratory, methods for analysis, and qualifications for sampling personnel.
    g. The Work Plan shall include a copy of the Contractor's Health & Safety Plan and Confined Space Safety Plan, as necessary.
4. Spill Plan. Contractor shall submit a written Spill Plan that shall include the following information:
    a. The Spill Plan shall include a figure/drawing of the immediate area surrounding the transformer(s) and associated equipment to removed, and shall identify all access points to floor drains, sewers, catch basins, storm water outfalls and adjacent waters. The Spill Plan shall describe measures to be taken in the event of a spill.
    b. The Spill Plan may be incorporated into the Work Plan.
5. Waste Disposal Documentation (Pre-Disposal):
    a. A list of all proposed permitted intermediate and ultimate disposal sites for PCB wastes and non-PCB wastes.
    b. A list of all proposed permitted hazardous waste transporters.
    c. A copy of the current operating permit for all proposed disposal facilities and hazardous waste transporters.
    d. Written communication from the disposal facility verifying that it is authorized, has capacity to handle the PCB waste, and provide assurance that the PCB Wastes will be disposed of in accordance with applicable regulations.
    e. Blank log forms for Contractor's waste manifest system, including those for hazardous and non-hazardous material.
    f. Certified scale house to be utilized for weighing waste.

B. Sample Results: The Contractor shall provide certified laboratory analytical results of all dielectric fluid samples within 48 hours of receipt from the laboratory.

C. Waste Disposal Documentation (Post-Disposal): The Contractor shall submit the following records following transport and disposal of all PCB waste materials:
   1. Signed and accepted waste manifests, as required by 40 CFR 761 and 6 NYCRR Part 372 shall be distributed within 5 days of transport and disposal.
   2. Certificates of Disposal issued by the transporter and disposal facility, as required by 40 CFR761.218, or latest revision. The Owner shall be listed as the generator on all waste documentation.
   3. Results of samples used for waste characterization.

1.06 REGULATORY AND SAFETY REQUIREMENTS

A. Comply with Federal, State, and other applicable regulations governing the handling, transport, and disposal of PCBs, PCB Items, and PCB Wastes. It is the Contractor's responsibility to insure PCB removals are conducted in accordance with all Federal, State, and applicable regulations.

1.07 PROTECTION

A. Facilities: Protect electrical and mechanical services and utilities. Where removal of existing utilities is required to complete the work, provide written Notice of Interruption and approved temporary services or connections for electrical and mechanical utilities (as necessary).

1.08 RELOCATIONS

A. Perform temporary relocation of utilities and site features located adjacent to the work area which will impair the remedial project. Relocation of all existing utilities and site features must be approved and coordinated with the Engineer and Owner (as necessary). Perform the removal and reinstallation of approved items with workmen skilled in the trades involved. Repair items to be relocated which are damaged or replace damaged items with new undamaged items, at no additional expense to the Owner, and as approved by the Engineer.

1.09 WORK AREA SECURITY

A. After removal of PCB contaminated fluids from equipment has begun, the work area shall not be left unattended until all fluids and solids which have come in contact with PCB's are properly sealed in non-leaking drums and the work area is secured.

1.10 SCHEDULING ACTIVITIES

A. PCB related activities shall be scheduled such that all PCB articles and items are transported to the approved disposal and/or servicing/storage facility as soon as the PCB and/or PCB contaminated fluid is removed and sealed in containers as identified herein. All work shall be scheduled during normal work hours.

1.11 CONTROL AREA

A. All equipment such as pumps, containers, etc., shall be confined to the work area until containers are sealed and equipment are decontaminated in accordance with EPA regulations and properly secured for transport.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Containers utilized for packaging PCB Articles and PCB Wastes shall meet the requirements of United States Department of Transportation or New York State Department of Transportation, or latest requirements, as defined in 40 CFR 761.65 or latest revision.

B. 10-mil reinforced poly sheeting and raised edges to provide secondary containment the PCB Containment/Decontamination Area as defined herein, or approved equal.

PART 3 - EXECUTION

3.01 NOTIFICATION

A. The Contractor shall notify the Owner and Engineer at least five (5) days prior to PCB Transformer Removal and Disposal. The Contractor shall also notify the Owner and Engineer immediately in the event of a spill or unplanned release of oils or contaminated fluid during the course of the transformer removal work.

3.02 PCB CONTROL AREA

A. Establish a PCB Control Area to prevent entry of unauthorized persons. Provide temporary fencing/barricades, and signs at all approaches to the PCB Control Area to warn unauthorized personnel such that they may take necessary precautions before entering the area. Do not block emergency exits and/or building ingress/egress.

B. Allow adequate space within the PCB Control Area for equipment necessary to complete the work, to encompass the PCB Containment/Decontamination Area, and for temporary staging of waste materials, such that the performance of the work is not hindered.

3.03 SAMPLING AND ANALYSIS

A. Pre-Removal Dielectric Fluid: Conduct sampling of the dielectric fluid within each transformer identified on the Plans to determine PCB content (if any). Analysis shall be conducted using EPA SW-846 Method 8082A, or approved equivalent. Samples shall be analyzed at a NYSDOH ELAP laboratory and results shall be submitted to the Engineer prior to commencing transformer removal work. If the PCB results indicate 50 ppm PCBs or more, PCB handling, removal and disposal procedures shall be followed as identified herein. If PCB results indicate less than 50 ppm PCBs, the transformer shall be drained and scrapped and the dielectric fluid disposed of in accordance with Federal, State, and local regulations and in accordance with this Section.

3.04 PCB CONTAINMENT/DECONTAMINATION AREA

A. Establish a PCB Containment/Decontamination Area within the PCB Control Area. The PCB Containment/Decontamination Area shall be utilized for all personnel and equipment decontamination operations and PCB fluid transfers.

B. The PCB Containment/Decontamination Area shall be constructed with double layer 10-mil reinforced poly sheeting and raised edges. The PCB Containment/Decontamination Area shall be sized to contain 110% of the volume of the largest vessel intended to be staged/drained within the area and shall include a low-point for the removal of liquids. If located outside, the PCB Containment/Decontamination Area shall be covered during precipitation events and non-working hours to prevent accumulation and contamination of stormwater. Disposal of fluids accumulated in the Containment/Decontamination area are the responsibility of the Contractor. No fluids shall be left in the area during non-working hours.

C. Upon completion of all fluid transfer and decontamination operations, the PCB Containment/Decontamination Area shall be cleaned, disassembled, and disposed of in accordance with applicable laws and regulations. It is the responsibility of the Contractor to ensure that no PCB wastes spill or leak from the PCB Containment/Decontamination Area. Furthermore, the Contractor shall clean up any such spillage or leakage at no additional cost to the Owner.

3.05 HANDLING AND DISPOSAL OF MATERIALS

A. Contractor shall follow all Federal, State, and local regulations for waste handling, containerizing, transporting, and disposing of non-hazardous and hazardous waste.
   1. Containers must be compatible with the stored material.
   2. Any spills or leaks from any containers will be the responsibility of the Contractor to clean and dispose of in accordance with applicable regulatory requirements.
   3. Mixing of non-hazardous and hazardous waste is not permitted.
   4. Contractor is responsible for providing all waste receptacles required for disposal. All waste temporarily stored on-site shall be secured to prevent against unauthorized entry and vandalism. Contractor is responsible for all testing to properly classify the waste.
   5. Contractor is responsible for all sampling and analysis of waste, water, and contaminated materials (PPE) for determination of disposal requirements. A sampling plan, including laboratory credentials, shall be included in the Work Plan.
   6. The Contractor shall establish a manifest system that meets Federal and State regulations and accounts for all waste at all times.
   7. The transporter must possess an approved EPA identification number. The appropriate NYS Hazardous Waste Manifest must be completed by the Contractor.
   8. The Contractor shall provide the Hazardous Waste Management Unit with copies of the EPA ID number of the transporter, NYSDEC manifest form, and written acknowledgement from the disposal facility that they are authorized by the EPA and the State where they are located, to accept and dispose of hazardous waste.

3.06 PCB AND PCB-CONTAMINATED TRANSFORMER REMOVAL

A. Prior to the removal and disposal of the transformers, each transformer shall be individually sampled to determine the concentration of PCBs. The samples shall be analyzed at a New York State Department of Health ELAP certified laboratory.

B. Upon receipt of the sample analytical results, verify in writing, the final disposal location for the PCB and/or PCB-Contaminated Transformers and transformer dielectric fluid.

C. All free liquids shall be removed from the PCB Transformers and/or PCB-Contaminated Transformers prior to removal from the site, a general sequence of operations is outlined below. This sequence of operations is not comprehensive or limiting and shall be further detailed in the approved Work Plan, as identified herein. All work shall be completed in accordance with all rules and regulations as identified above or otherwise applicable to these operations.

1. Construct the PCB Containment/Decontamination Area around the transformer(s) and equipment prior to accessing the transformers to collect samples or remove the dielectric fluid. Ensure that the poly sheeting of the PCB Containment/Decontamination Area is not punctured.
2. Drain transformers and transfer dielectric fluid into approved containers, ensuring that all free-flowing dielectric fluid is removed and container is "RCRA Empty".
3. Remove fluid filled transformer bushings. Drain dielectric fluid into approved containers, ensuring that all free-flowing dielectric fluid is removed and container is "RCRA Empty". Draining is not required if each entire bushing can be placed into an approved container for transport and disposal.
4. Seal all transformer and bushing dielectric fluid reservoir ports and fittings liquid-tight.
5. Place transformers in a containment basin to be used during transport to the disposal facility.
6. Dispose of transformers and fluids at the approved permitted disposal facilities. Transport in a manner that prevents release of residual dielectric fluid.

D. At the time of removal from service, the PCB and/or PCB-Contaminated Transformers and PCB fluid containers shall be marked in accordance with 40 CFR 761.40, 761.45 and 6 NYCRR Part 372.2, or latest revisions. The marks on each container shall include the date of removal from service and generator information. If drums are used, each drum shall be placed into an approved overpack drum.

E. Temporary storage areas utilized for transformer and/or container storage shall be marked in accordance with 40 CFR 761.40 and 761.45, or latest revision and shall be located indoors. PCB Transformers and PCB fluids shall not be stored at the site for more than five (5) days after being drained and containerized, respectively.

3.07 NON-PCB TRANSFORMER REMOVAL

A. Prior to the removal and disposal of the transformers, each transformer, including fluid filled bushings, if applicable, shall be individually sampled to determine the concentration of PCBs in accordance with 3.03A.

B. All free liquids shall be removed from the Non-PCB Transformers (< 50 ppm PCB) prior to removal from the site, a general sequence of operations is outlined below. This sequence of operations is not comprehensive or limiting and shall be further detailed in the approved Work Plan, as identified above. All work shall be completed in accordance with all rules and regulations as identified above or otherwise applicable to these operations.

1. Drain transformers and transfer dielectric fluid into approved containers, ensuring that all free-flowing dielectric fluid is removed and container is "RCRA Empty".
2. Remove fluid filled transformer bushings. Drain dielectric fluid into approved containers, ensuring that all free-flowing dielectric fluid is removed and container is "RCRA Empty". Draining is not required if each entire bushing can be placed into an approved container for transport and disposal.
3. Seal all transformer and bushing dielectric fluid reservoir ports and fittings liquid-tight.
4. Place transformers in a containment basin to be used during transport to the disposal facility.
5. Contractor shall employ necessary equipment to prevent dielectric fluid spills during transfer process.
6. Dispose of transformers and fluids at the approved permitted disposal facilities.
7. Provide disposal receipts for non-PCB transformers and dielectric fluids.

3.08 ADDITIONAL PCB CLEANUP

A. Clean all dielectric fluid residue from the transformer shells with a solvent rinse while within the PCB Containment/Decontamination Area. Containerize and dispose of any residual cleaning fluids as required by law.

B. If potential PCB-containing dielectric fluid, residue or staining is observed in the vicinity of or underneath the transformers or is encountered in other areas, the Contractors shall immediately notify the Engineer and Owner upon discovery. The Contractor shall utilize the double wash/rinse method (as detailed in 40 CFR Part 761 Subpart S) to remove all visible dielectric fluid staining on concrete surfaces. Containerize and dispose of any residual cleaning fluids as required by law. Cleanup levels and remediation requirements shall be determined by the Engineer in consultation with the Owner and applicable regulatory agencies prior to implementation.

3.09 PCB DIELECTRIC FLUID HANDLING AND DISPOSAL

A. PCB Levels (≥500 ppm PCB) shall be disposed of by incineration in accordance with 40 CFR 761.60. A Certificate of Destruction, prepared in accordance with 40 CFR 761.218, or latest revision, shall be submitted to the Owner within thirty (30) days after disposal.

B. PCB Levels (≥ 50 ppm and ≤ 500 ppm PCBs) shall be disposed of by incineration in accordance with 40 CFR 761.60, unless otherwise approved in writing by EPA. A Certificate of Destruction / Disposal, prepared in accordance with 40 CFR 761.218, or latest revision, shall be submitted to the Owner within thirty (30) days after disposal.

C. Dielectric fluid (< 50 ppm PCBs): Dielectric fluid (< 50 ppm PCBs) shall be characterized for disposal in accordance with 40 CFR Part 262 and 6 NYCRR Part 371. Disposal shall comply with all applicable Federal and State regulations. Contractor shall provide disposal receipts for dielectric fluids.

3.10 TRANSPORT AND DISPOSAL OF MATERIALS

A. Transporters of hazardous waste shall comply with New York State Department of Environmental Conservation 6 NYCRR Part 364, "Waste Transporter Permits", EPA regulations of Title 40, DOT hazardous materials regulations of Title 49, and applicable permits of any other State through which transport occurs. Vehicles shall bear all markings required by Federal or State regulation.

B. The transporter shall not carry PCBs from an off-site source onto the Owner's property. Only PCB materials removed in conformance with these documents are to be transported on/off Owner's property.

C. Transporters shall not transport PCB waste without having received an EPA identification number.

D. PCB Articles (PCB Transformers, PCB capacitors, other PCB-containing electrical equipment, and PCB fluids) shall be disposed of by incineration in accordance with 40 CFR 761.60 or in a chemical waste landfill in accordance with 761.75 or in a RCRA approved hazardous waste landfill permitted for the disposal of PCB equipment. A Certificate of Disposal, prepared in accordance with 40 CFR 761.218, or latest revision, shall be submitted to the Owner within thirty (30) days after disposal.

E. All PCB wastes removed for transport and disposal shall be manifested in accordance with 40 CFR 761 and 6 NYCRR Part 372, or latest revision. Contractor shall submit to Owner all manifest copies to be retained by Generator, and, within five (5) days, shall distribute all copies required to be distributed by Generator; as specified on the manifests.

3.11 QUALITY CONTROL

A. Upon completion of the removal and disposal of all PCB related articles and wastes, the Owner reserves the right to require testing beyond that included herein of any areas of suspected contaminations resulting from the removal and disposal operations. All such confirmatory sampling will be conducted by the Owner at the Contractor's expense. Cleanup, if required, will be conducted by the Contractor at no cost to the Owner.

END OF SECTION

SECTION 03 21 00

REINFORCING STEEL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for installing all Reinforcing Steel, welded wire reinforcement and accessories for cast-in-place concrete as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. Reference to standard specifications for the following organizations is intended to specify minimum standards for quality of materials and performance of workmanship, and for standard test methods.
   1. American Society for Testing and Materials (ASTM) Publications, Latest Edition
   2. American Concrete Institute (ACI) Standards, Latest Edition
   3. American Welding Society (AWS) Publications, Latest Edition
   4. American National Standards Institute (ANSI) Publications, Latest Edition
   5. Concrete Reinforcing Steel Institute (CRSI) Publications, Latest Edition

1.03 SUBMITTALS

A. Shop Drawings: Indicate bar sizes, spacings, locations and quantities of reinforcing steel and welded wire reinforcement sheets, bending and cutting schedules, and supporting and spacing devices. No work on fabricating or placing steel shall be done until such drawings and schedules have been approved.

B. Manufacturer's Certificate: Submit certified copies of mill test report of reinforcement materials analysis.

C. Welder's Certificate: Submit certification from welders employed on the work, verifying AWS qualification within the previous twelve months.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Reinforcing steel bars shall be free from defects, kinks, bends, rust, scale or other irregularities. Welded wire reinforcement shall be of the electrically welded type, with wires arranged in rectangular or square patterns.

B. Reinforcing bars shall be deformed billet steel meeting the requirements of ASTM A615 Grade 60.

C. Steel welded wire reinforcement (WWR) shall meet the requirements of ASTM A1064.

D. Stirrup steel shall be cold drawn steel wire meeting the requirements of ASTM A82.

E. Where indicated, epoxy coated reinforcing bars shall be deformed billet steel meeting the requirements of ASTM A775, Grade 60.

F. Where indicated, galvanized reinforcing bars shall be deformed billet steel meeting the requirements of ASTM A767, Grade 60.

G. Accessory materials shall include: tie wire, minimum 16 gage annealed type. Epoxy-coated reinforcing bars shall be tied with plastic-; epoxy-; or nylon-coated tie wire. Chairs, bolsters, bar supports, and spacers shall be sized and shaped for strength and support of reinforcement during concrete placement conditions.

2.02 IDENTIFICATION AND PROTECTION OF REINFORCING BARS AND WELDED WIRE REINFORCEMENT:

A. Reinforcing steel shall be delivered to the work in strongly tied bundles identified with metal tags corresponding to the bar schedules and diagrams. Identification marks shall show quantity, producing mill, bar size, type of steel and grade mark.

B. All bars and WWR shall be stored off the ground and shall, at all times, be protected from moisture and be kept free from dirt, oil, or injurious coatings. Epoxy-coated reinforcing bars shall be stored on protective cribbing. If concreting is delayed for any considerable number of days after the reinforcing is placed in position, it shall be protected by covering with canvas or other satisfactory covering, or, if directed, shall be painted with a coat of neat cement grout.

C. Any bar or WWR having a scaly rust shall be cleaned. Epoxy-coated reinforcing bars that are cut, welded or otherwise damaged shall be repaired with patching material conforming to ASTM A775 and done in accordance with the Material Manufacturer's recommendation. Galvanized reinforcing bars that are cut, welded or otherwise damaged shall be repaired with patching material conforming to ASTM A767 and done in accordance with the Material Manufacturer's recommendation. The Contractor will be required to replace bars exhibiting severely damaged coatings.

PART 3 - EXECUTION

3.01 FABRICATION AND INSTALLATION:

A. Metal reinforcing shall be properly fabricated in accordance to references specified.

B. Metal reinforcing shall be properly placed in accordance to CRSI, ACI 301, ACI 318, ACI SP-66, as shown on the approved Shop Drawings and as herein directed.

C. Bars shall be bent in the shop to the shapes shown or required. Field bending shall be done only with the written approval of the Engineer. Field welding shall not be allowed without direct approval and supervision of the Engineer.

D. Unless otherwise shown, splices in tension reinforcement shall not be permitted, and splices in compression reinforcement shall be lapped 40 diameters. All bar splices shall be staggered, wherever possible. Locate splices not indicated on drawings, at point of minimum stress. Splice locations must be approved by the Engineer.

E. Reinforcing shall be securely tied and supported and must not be displaced during concrete placing operations. Epoxy-coated reinforcing bars shall rest on coated wire bar supports, or other acceptable materials. Dowels must be wired in place before concreting begins. All metal shall be kept away from exposed surfaces of concrete.

F. Conduit in slabs on grade shall be placed in a depression below the slab and the reinforcement run continuous over conduit. Conduit in slabs on forms shall be above the bottom reinforcing and below the top reinforcing. No conduit is permitted in thin joist slabs.

G. Cutting of bars to clear openings in walls or slabs is strictly prohibited. Warp bars around such openings.

H. Provide two #5 diagonal bars at each corner of every rectangular opening in walls, unless otherwise shown on the Plans.

I. All slabs, unless otherwise shown on the Plans, to be reinforced with not less than 6 x 6 - W2.9 x W2.9 WWR (welded wire reinforcement), supported on approved fabricated, corrosion resistant chairs and located as specified. Supports shall be spaced as required to continuously maintain the specified reinforcement location within the slab thickness prior to and during slab concrete placement.

J. Placing of concrete shall not be scheduled until all of the reinforcing for the section is secured in place and the reinforcing and forms have been approved by the Engineer or his representative. Contractor shall notify the Engineer 24 hours prior to a concrete pour.

K. Welded wire reinforcement in slabs is to be placed in the upper third of the depth of the slab. Lap 6" minimum. Reinforcement sheets shall be straightened as required before placement.

L. Provide bent bars 6'-0" long of same size and spacing as horizontal bars for all corners of foundation walls, unless otherwise shown on the Plans.

M. Do not displace or damage vapor barrier.

N. For footing reinforcement - support bars on small precast concrete blocks; space at intervals as shown on the Plans and within minimum height specified above underside of slab or footing.

O. Reinforcement shall not be bent after being partially embedded in hardened concrete.

3.02 CONCRETE PROTECTION FOR REINFORCEMENT:

A. Unless otherwise shown or directed, concrete protection, measured from the surface of the bar, shall be the following:

1. For concrete deposited against the ground, without the use of forms ..... 3 inches
2. For formed concrete in contact with the ground ..... 2 inches
3. For slabs and walls contacting water or sewage ..... 2 inches
   For beams, girders and columns not directly exposed to ground and weather ..... 1-1/2 inches
4. For formed concrete exposed to the weather ..... 2 inches
5. For slabs and walls, not directly exposed to ground, weather, water or sewage ..... 1 inch

B. Exposed reinforcing bars intended for bonding with future extensions shall be protected from corrosion by a covering of concrete or other approved material.

3.03 FIELD QUALITY CONTROL

A. Field inspection will be performed under the provisions of Section 03 30 00.

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for plain and reinforced Cast-In-Place Concrete work including accessory items of work herein described, as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. Reference to standard specifications for the following organizations is intended to specify minimum standards for quality of materials and performance of workmanship, and for standard test methods.
   1. American Society for Testing and Materials (ASTM) Publications, Latest Edition.
   2. American Concrete Institute (ACI) Standards, Latest Edition.
   3. Standard Specifications - Construction and Materials, New York State Department of Transportation (NYSDOT), Latest Edition, including Addenda thereto.

1.03 QUALITY ASSURANCE

A. Perform work in accordance with ACI 301 and ACI 302.

B. Acquire cement and aggregate from same source for all work.

C. Conform to ACI 305R when concreting during hot weather, except as herein modified.

D. Conform to ACI 306R when concreting during cold weather, except as herein modified.

1.04 SUBMITTALS, SAMPLES AND TESTS

A. Product Data: Provide data on joint devices, attachment accessories and admixtures.

B. Concrete:
   1. Samples and tests of all materials to be incorporated in the concrete shall be submitted in ample time for testing before delivery. All materials are subject to inspection and testing by a commercial testing laboratory approved by the Engineer at the Owner’s expense. All materials are subject to approval by the Engineer prior to their delivery to the site.
   2. The Contractor shall obtain from the manufacturer, prior to the actual delivery of the concrete, a statement giving the sources, specific gravities, and sieve analyses of the aggregates and the dry weights of cement and saturated-surface-dry weights of fine and coarse aggregate and quantities, type and name of admixture

(if any) and of water per cubic yard of concrete that will be used in the manufacture of each class of concrete to be provided. This data shall be sent to the Engineer for review and approval.

a. Aggregates shall be tested for gradation, purity and accelerated soundness. Tests shall comply with ASTM C33, C136, ASTM C40, and ASTM C88. The source of the material shall not be changed without retesting.
b. Cement shall have representative mill test reports on physical and chemical requirements. All cement stored at job site or at concrete supplier's place for over 60 days shall be tested for compliance with ASTM C150.
c. Contractor shall submit concrete mix design to be reviewed by the Engineer.
d. Tests of other materials may be required by the Engineer.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All materials shown, specified or required to be incorporated in cast-in-place concrete shall be of finest quality, and shall be delivered, stored and handled so as to prevent damage. Damaged or inferior materials will be rejected. Approved brands or sources must be used, without change for the entire project. All materials shall be proportioned to produce a well graded mixture of high density and maximum workability.

B. Portland Cement shall be a standard brand in compliance with ASTM C150 Type I. Only one brand shall be used for exposed work. Generally, Type I cement shall be used; however, Types II or III may be employed with the approval of the Engineer or if shown, or specified.

C. Fine Aggregates shall be clean, sharp, natural sand, free from loam, clay, organic impurities or frozen materials and shall conform to ASTM C33 in all respects. Sand shall be tested for impurities in accordance with ASTM C40.

D. Coarse Aggregates shall consist of strong, clean, crushed limestone or crushed gravel, free from harmful material and meeting all of the requirements of ASTM C33. Coarse aggregate shall also comply with New York State Department of Transportation Material Designation 703-02. Crushed limestone and crushed gravel shall meet the Physical Requirements (Testing) Designation 703-0201 and 703-0202, respectively.

E. Water used in mixing concrete shall be clean and free from all acid, alkali or organic matter and shall be obtained from a public water supply unless specifically permitted otherwise by the Engineer.

F. Ready Mix Concrete shall comply with ASTM Specification C94, this Specification, and used subject to the Engineer's approval.

G. Admixtures, where shown or specified, shall be as follows:

1. Air entraining agent shall be "Daravair" or "Darex AEA" as manufactured by W.R. Grace Co., or Master Builder's "MBVR", or equal meeting the requirements of ASTM C260.
2. Water reducing agent shall be Sika "Plastiment", Master Builder's "Pozzolith", W.R. Grace's "WRDA", or equal meeting the requirements of ASTM C494.
3. High range water reducers or superplasticizers shall be Sika "Sikament-FF", W.R. Grace's "Daracem-100" or "WRDA-19", or equal meeting the requirements of ASTM C494.

H. Bonding Agent, where shown or specified, shall be "Dural 104" bonding compound manufactured by Dural International Corporation, "Sikadur 32 Hi Mod" by Sika Corporation, or equal.

I. Anchorage Items, where shown or specified, shall be as follows:

1. Inserts for fastening shelf angles shall be malleable iron adjustable wedge type, with bolt and washer, if required, as manufactured by Hohman & Barnard, Inc., Richmond Screw Anchor Co., Inc., or equal.
2. Threaded inserts for fastening of soffits of concrete beams shall malleable iron, as manufactured by Hohman & Barnard, Inc., Richmond Screw Anchor Co., Inc., or equal.
3. Ceiling hanger inserts shall be standard type wire as manufactured by Hohman & Barnard, Inc., Heckman Building Products, Inc., or equal.
4. Masonry anchor slots shall be galvanized sheet metal, felt filled, as manufactured by Hohman & Barnard, Inc., Heckman Building Products, Inc., or equal.
5. Flashing reglets shall be O'Keefe's Inc., PVC "Watertite Type P", or equal to size and shape shown.

J. Flexible Sleeve, where shown or specified, shall be of resilient rubber with a flanged, serrated waterstop and shall be cast directly into the walls of the concrete structure as shown on the Contract Documents. Flexible sleeve shall conform to the following physical requirements:

PROPERTY	**ASTM TEST REQUIREMENTS**		
	METHOD	**MIN.**	**MAX.**
Tensile Strength, psi	D412	1500	-
Ultimate Elongation, percent	D412	450	-
Hardness, Type A durometer	D2240	45	55

1. Flexible sleeve must permit a minimum of 10 degrees deflection in all directions. Flexible sleeve shall be "Lockjoint Flexible Manhole Sleeve" as manufactured by Chardon Rubber Company, or equal.

K. Forms shall be wood, metal, or other approved materials as follows:
   1. Plywood shall be Commercial Standard Douglas Fir, moisture resistant, concrete form plywood, at least 5-ply 5/8" thick.
   2. Metal forms shall be as approved, and must produce surfaces equal to those specified for wood forms.
   3. Form oil shall be an approved non-staining mineral oil, such as "Duogaurd II" by W.R. Meadows, or equal.
   4. Form ties shall be of approved design, adjustable length and free of devices that will leave hole or depression larger than 7/8" diameter. When forms are removed no metal shall be left within 1" of finished surface.

L. Waterstops, where shown or specified, shall be minimum 3/8-inch thick across their entire section, heavy duty, serrated type manufactured from virgin polyvinyl chloride compound, "Model RB6-38H" as manufactured by Vinylex Corporation, or equal. They shall have a tensile strength of minimum 1800 psi and an elongation of minimum 200%.
   1. Waterstops shall be open bulb type, 6-inch wide unless otherwise shown or directed by the Engineer. The waterstops shall be supported during concrete placement to prevent dislodgement and to insure that the ends remain at right angles to the joint. Field joints shall be butt welded with an electric iron in accordance with the manufacturer's instructions.
   2. Sample of the waterstops to be used shall be submitted to the Engineer for approval.

M. Premolded Joint Filler, where shown or specified, shall be premolded, resilient, non-extruding type, 1/2-inch thick unless shown otherwise, full depth of concrete section as manufactured by Celotex Corporation, "Fibre Expansion Joint Filler" by W.R. Meadows, or equal.
   1. Sample of the premolded filler proposed to be used shall be submitted to the Engineer for approval.

N. Joint Sealant, where shown or specified, shall be elastomeric polyurethane sealant material, black in unexposed locations, and grey in exposed locations, and have balanced properties of elongation recovery and tensile strength, and shall be Sonneborn "Sonolastic NP1", Sika "Sikaflex 1A", or equal.

O. Protective Covering for concrete finish slabs, where shown or specified, shall be "Orange Label Sisalkraft", Polyethylene Film as manufactured by Fortifiber Corp., or equal.

P. Non-Shrink Grout, where shown or specified, shall be premixed compound consisting of non-metallic aggregate, natural aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 7,000 psi in 28 days; such as "Masterflow" as manufactured by Master Builders, "SikaGrout 212" as manufactured by Sika, or approved equal.
   1. Non-Shrink grout shall be used under structural steel column baseplates and all equipment baseplates. All work shall be done in strict accordance with the manufacturer's recommendations. At the request of the Engineer, the manufacturer's representative shall be called to the job site for consultation regarding detailed use of the grout.

Q. Grout for fillets, channels, or other non-structural applications shall consist of one (1) part cement (Portland Cement Type 2) and three (3) parts fine aggregate (sand) with sufficient mixing water for the intended application.

R. Cementitious Coating Materials, where shown or specified, shall be "Thoroseal" with "Acryle 60" bonding agent, as manufactured by Thoro System Products, "Anchor Masonry Surfacer" as manufactured by Anti Hydro Waterproofing Company, or equal.

S. Curing Compound shall be acrylic based "Kure-N-Seal" as manufactured by Sonneborn, acrylic based "CS-309", or water based "VOCOMP-20" as manufactured by W.R. Meadows, or equal.

T. Vapor Retarder, where shown or specified, shall be "Moistop" as manufactured by Fortifiber Corp. Vapor Barrier shall be "Premoulded Membrane Vaporseal" as manufactured by W.R. Meadows, or equal.

U. Perimeter Insulation, where shown or specified, shall be "Styrofoam Square Edge" as manufactured by the Dow Chemical Corporation, "Foamular 250" as manufactured by UC Industries, or equal.

V. Penetrating Sealer, where shown or specified, shall be two components, 50% solids penetrating epoxy sealer. The penetrating sealer shall be fully compatible with the types of form oil, curing compound and joint sealant used.

1. Concrete surfaces to be treated must be dry, cured for a minimum of 21 days, free from surface accumulations of dust, dirt, oil, debris, concrete curing compounds, bond breakers, or other compounds which would prevent penetration and intimate contact between the concrete surface and the penetrating sealer. Concrete surfaces require preparation per manufacturer's directions prior to sealer installation.
2. Penetrating sealer shall be "Spec-Seal" as manufactured by Conspec, Inc., or equal.

W. Metal Slab Joints, where shown or specified, shall be keyed type, minimum 18 gauge, galvanized steel by Heckmann Building Products, or equal.

X. Vapor Barrier: 10 mil 0.254 mm) thick clear polyethylene film type recommended for below grade application.

2.02 CONCRETE MIX DESIGN

A. The Contractor shall submit concrete mix designs to be reviewed by the Engineer. The mix designs shall be confirmed by making and testing trial mixes for each class of concrete to be incorporated in the work. All testing shall be made by an approved testing laboratory at the expense of the Contractor. Mix designs shall conform to the ACI 301, except as may be modified in the Plans and/or Specifications.

B. No job concrete shall be poured until the mix design for that concrete has been approved by the Engineer. Once the mix has been approved, it shall not be changed, except when requested by the Engineer, or if requested by the Contractor and approved by the Engineer.

C. Ready-mixed concrete from an established company will be approved, if conforming to ASTM C94, and to this specification. All concrete shall be batched, mixed, delivered to the site, and shall conform to these requirements and be controlled in a manner to assure uniform concrete for the quality specified.

D. Water/cement ratios of all mixes shall be determined from w/c curve plotted from tests of the cement and aggregates used on the job. If necessary to increase the water content of the mix due to field conditions, sufficient cement must be added to maintain the design water/cement ratio. Accelerating or retarding admixtures may be permitted by the Engineer if requested by the Contractor to compensate for adverse weather conditions.

1. The various classes of concrete shall be designated as follows:

MAXIMUM PERMISSIBLE WATER-CEMENT RATIOS FOR CONCRETE (WHEN STRENGTH DATA FROM TRIAL BATCHES OR FIELD EXPERIENCE ARE NOT AVAILABLE)
Maximum permissible water-cement ratio

CLASS	MIN. 28-DAY COMPRESSIVE STRENGTH IN PSI*	NON-AIR-ENTRAINED CONCRETE		AIR-ENTRAINED CONCRETE	
		ABSOLUTE RATIO BY WEIGHT	US GAL. PER 94-LB. BAG OF CEMENT	ABSOLUTE RATIO BY WEIGHT	US GAL. PER 94-LB. BAG OF CEMENT
A	5,000	**	**	**	**
B	4,000	0.44	5.0	0.35	4.0
C	3,000	0.58	6.6	0.46	5.2
D	2,500	0.67	7.6	0.54	6.1
E	2,000	0.71	8.0	-	-

*28-day strength. With most materials, water/cement ratios shown will provide average strengths
greater than indicated in Section 5.4 of ACI 318R as being required.
**For strength above 4,500 psi (non-air-entrained concrete) and 4,000 psi (air-entrained concrete)
proportions shall be established by methods of Section 5.3 of ACI 318R.

Unless otherwise specified, all concrete shall be Class "B", non-air-entrained except exposed concrete which shall be air-entrained. When foundation walls or grade beams are exposed to weather above grade, the entire wall shall be considered exposed concrete.

2. Maximum size aggregates shall be used as follows unless otherwise designated by the Engineer.

1-1/2"	general work
3/4"	thin sections; heavy reinforcing
3/4"	columns, beams and slabs
Over 1-1/2"	massive structures, with approval
3/8"	floor toppings

3. Slump - Maximum:

Reinforced concrete – general	4"
Reinforced concrete - thin walls, columns	5"
Non-reinforced concrete	3"
Pavements, including sidewalks	3"
Heavy mass concrete	3"

4. Air Content: Use an approved air entraining admixture. The entrained content shall be controlled between 4% - 6%. See Plans for concrete work requiring air entrainment.
   a. For mixes containing coarse aggregate with a top size of 3/4" or smaller and for exposed concrete subject to frost and salt action, air contents shall be increased to the range of 5% - 7%.
5. Should the Contractor feel it advantageous to employ concrete additives to improve workmanship or facilitate his work, he shall obtain the approval of the Engineer prior to his use of additives.
6. Use of accelerating admixtures in cold weather will not relax cold weather placement requirements.

2.03 STORAGE OF MATERIALS

A. Portland cement shall be stored in a weather-tight structure. No cement that has taken a warehouse set shall be used and any stored over sixty (60) days shall be rejected unless tested for soundness and setting time under ASTM C150. Such tests shall be at the Contractor's expense.

B. Fine and coarse aggregates shall be kept separated and free from deleterious substances. All topsoil shall be removed from the storage area. Materials shall be stockpiled in layers to prevent segregation; however, re-mixing may be required if gradation is not maintained. Care shall be taken not to inter-mix materials in the area with the aggregates.

C. Any materials that have deteriorated or become contaminated will be rejected for use in the concrete and must be promptly disposed of by the Contractor.

PART 3 - EXECUTION

3.01 FIELD QUALITY CONTROL

A. Before each pour, forms and reinforcing shall be inspected and approved by the Engineer. The Contractor shall give at least 24 hours' notice before such an inspection is required. No pour shall be started until the Engineer has given approval. No concreting may be done in the absence of the Engineer without written permission of the Engineer.

B. Concrete Batch Ticket:

1. The Contractor shall require the manufacturer of the concrete to furnish to the Engineer with each batch of concrete before unloading at the site, a delivery ticket on which is printed, stamped, or written, information concerning said concrete as follows:
   - Name of ready-mix batch plant
   - Serial number of ticket
   - Date
   - Truck number
   - Name of purchaser
   - Specific designation of job (name and location)
   - Designation of the concrete by compressive strength
   - Amount of concrete in cubic yards
   - Time loaded or of first mixing of cement and aggregates
   - Reading of revolution counter at the first addition of water
   - Type and brand, and amount of cement
   - Type and brand, and amount of admixtures
   - Total water added by producer (and W/C ratio)
   - Water added at job site (upon approval of the Engineer)
   - Maximum size of aggregate
   - Weights of fine and coarse aggregate
   - Ingredients certified as being previously approved
   - Signature or initials of ready-mix representative

C. Concrete Testing:

1. The Owner shall employ an approved commercial testing laboratory at its own expense to provide field sampling, testing and inspection of all concrete. Continuous inspection by the approved testing laboratory shall be provided during all concrete pours. The Contractor shall maintain a record set of plans at the site showing date and amount of each pour, test results and temperature. If any portion of the work shows low test results, the Engineer may require batch plant inspection, additional testing, load tests, cored samples, and/or replacement of the faulty work, etc., at the Contractor's expense.
2. The Owner, through its approved testing laboratory, shall make all laboratory or field tests as required and shall furnish all necessary equipment. The Owner, through its approved testing laboratory, shall transport all test cylinders from the site to the laboratory.

3. Field concrete inspection: The Owner, through its approved testing laboratory, shall provide a competent field concrete inspector whose minimum duties shall be as follows:
    a. Check each truck on arrival to make sure that the concrete is not retempered.
    b. Make necessary slump tests for uniformity control.
    c. Make air tests and yield tests as required.
    d. Make any and all test cylinders as may be required in the Specifications.
    e. Notify the Engineers and/or his representative if any test results vary from the specified limits.
4. Tests:
    a. Concrete shall be tested by an approved testing laboratory as follows:
        - Standard 6" x 12" compression cylinders shall be in compliance with ASTM C39 in sets of four and shall be moist cured. Break 2 at 7 days, and 2 at 28 days. One set shall be made for approval of each mix design, one set for first pour of 50 cubic yards or less, and one set for each additional pour of 50 cubic yards. If less than 50 cubic yards are placed in one day, one set shall be made for each day's pour.
        - All test cylinders shall be cast, moist cured and broken under laboratory conditions in accordance with the ASTM C31 and ASTM C39. All four cylinders of a test shall be taken from the middle third of a single load. Each cylinder shall be properly labeled with an identifying mark, the mix proportions, air content, amount of water, slump, and the location in the structure where the concrete was placed. Test reports shall include all this information. Distribute copies of reports as requested by the Engineer. Should any results be questionable, the Engineer shall be notified immediately so that corrective measures can be taken. Any test cylinder which has broken and fails to meet requirements shall be preserved for inspection by the Engineer.

D. Records:
1. Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

3.02 BATCHING AND MIXING

A. All Batching and Mixing shall conform to the following and the ACI 304, "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete".

B. Aggregates and bulk cement shall be measured to within 1% by weight. Cement in standard sacks need not be weighed. Water shall be measured by volume or by weight to within 1/2%. Aggregate weights shall be corrected for moisture content. Admixtures shall be added through appropriate dispensing equipment to an accuracy of 3%.

C. The complete plant assembly shall be approved by the Engineer and shall conform to the following requirements:
   1. Provide ready adjustment of aggregate weights for varying moisture contents.
   2. Provide means of accurately controlling and easily checking water-cement ratio.
   3. Provide accurate control of all materials with positive shut-off.
   4. Facilities shall be provided for prompt removal of excess materials in hoppers.
   5. Each specified size of aggregate shall be measured separately with a separate beam scale.
   6. Bulk cement shall be dropped through canvas drop chutes or telescopic flexible hose tremie.

D. Concrete mixers or mixer trucks shall not be loaded to more than the rated capacity of the truck.

E. All concrete shall be mixed not less than 60 revolutions in the drum of a modern power mixer, at the rated speed of rotation. Mix not less than an additional 30 revolutions after the addition of any further water to the mix.

F. Do not add raw materials to the drum until all of the preceding batch has been discharged. For transit mixers, the wash water shall be discharged and not used as part of the mix water for the next batch.

G. Transit-mixed concrete shall be transported to the job site unmixed and only after arrival at the job site shall mixing begin. All concrete shall be unloaded from the mixer within 45 minutes after completion of mixing. All concrete still remaining in the truck shall be rejected.

H. The total time interval from the time the cement makes contact with the aggregate to the complete unloading from the mixer shall not exceed 90 minutes, unless such time is extended by the Engineer. The time may be reduced in hot weather or under unusual conditions, if unsatisfactory results are obtained.

3.03 FORMWORK

A. The Contractor shall design and construct suitable and adequate formwork in conformance with ACI 347R. All shoring shall be properly braced to safely withstand all vertical, moving and lateral forces during the construction period. Responsibility for adequacy and safety rests with the Contractor. Materials shall be as stated in Paragraph 2.1.

B. General requirements for all forms shall be as follows:
   1. Forms shall be constructed of wood, plywood, or steel.
      a. All forms shall be set true to line, plumb, and properly braced so as to maintain the desired position and shape during and after pouring concrete. Forms shall be sufficiently tight to prevent leakage.

b. All joints between sheets shall be backed up to assure that both sheets are in the same plane. Edges of abutting sheets shall be straight and true and shall be forced tightly together to minimize fins. Quality of form contact surfaces shall be subject to Engineer's approval.

c. Form ties shall be designed for the specific wall thickness required, and after removal of the external portion, no metal shall remain closer than one inch (1") from the surface. Ties to be left in place shall be equipped with washers or other approved devices to prevent seepage of moisture along the tie. The removable portion shall be oil or grease coated.

d. Immediately following the removal of forms, the projecting ties shall be removed and all holes filled with grout flush with the wall. Care shall be taken to use the same brand of cement and same mix proportions used in the wall to prevent color differences.

e. Forms for walls and columns shall be provided with removable cleanout panels, to allow removal of chips and debris. All plywood forms must be new when first used on this job, but may be reused if kept in good condition. All forms shall be swept or flushed clean of shavings, debris, and other loose material. Loose earth and rock shall be scraped from footing trenches before pouring concrete.

f. Provide 3/4" chamfer strips, unless noted otherwise on the drawings, at all exposed corners of columns, beams and walls where later finish is not to be applied.

g. All forms and shores for floor and roof slabs and beams shall be "crowned" or "cambered" 1/4" for each 12 feet of span to eliminate dead load deflection. All forms shall be oiled with a non-staining mineral form oil before placing reinforcing.

h. Build into forms all hangers, anchors, bolts, inserts, sleeves, etc., required to be set as part of this work, place and secure in exact position.

C. Form removal shall be as follows:

1. It shall be the Contractor's responsibility to determine the time at which forms may be removed without endangering the structure, subject to the following limitations, unless documentation is provided to modify these requirements:

Footing forms - 24 hours minimum; continue curing as specified.

Wall forms - 2 days minimum for ten (10) feet high. Add one (1) day for each additional five (5) feet of height; continue curing as specified.

Superstructure slabs, beams and columns shall not be stripped until the concrete attains at least 75% of its design strength as proven by test cylinders, and until a minimum of 14 days has elapsed.

Reshoring - immediately after stripping, fully reshore all slabs which are to be used to support shores for upper slabs. All forms for upper floor pours must be supported by shoring to at least two levels of full strength concrete.

3.04 JOINTS FOR CONCRETE

A. Joints for concrete shall include all expansion joints, construction joints and contraction joints.

B. All joints shall be constructed at locations shown on the drawings, or as directed by the Engineer. Additional joints may be constructed by the Contractor subject to the approval of the Engineer.

C. Expansion Joints:

1. Expansion joints shall be constructed where shown and as directed. Reinforcement, corner protection angles or other fixed items embedded or bonded into concrete shall not be run continuously through expansion joints. Reinforcement shall be discontinued 2 inches from the joint face. A slightly rounded edging shall be provided to finish neatly all edges around expansion joints.
2. Preformed expansion joint filler material, sealant and waterstops, where shown on the drawings, shall be as specified in Paragraph 2.1.

D. Construction Joints:

1. The location of construction joints shall be chosen by the Contractor and shall be subject to the Engineer's approval except where specifically located on the Plans.
2. Horizontal construction joints in walls will not be permitted, except with the approval of the Engineer. In order to minimize shrinkage, long continuous walls shall not be poured at one time. No more than 50 feet in horizontal direction shall be poured without a construction joint, unless prior approval is obtained from the Engineer.
3. Reinforcing shall be discontinuous through a construction joint, unless otherwise noted on drawings. As shown or specified on the drawings, additional No. 3 reinforcing bars spaced at 12-inches on center shall be placed horizontally in each construction joint at the center of the section. These bars shall be 4-feet long and shall extend 2-feet on each side of the joint. Reinforcement projecting through joint shall be kept clean.
4. As indicated on the drawings, all construction joints shall be provided with a keyway and a PVC waterstop as specified in Paragraph 2.1. The joint surface of the concrete previously placed shall be cleaned of all foreign matter and laitance by means of sandblasting with steam and sharp sand, or by other approved methods, until coarse aggregate is exposed. The concrete surface shall be saturated for a period of 6 hours and excess water then removed.
5. The new concrete shall be preceded by about 1/2-inch of soft mortar of the same proportions as that in the concrete. When accessible, this shall be scrubbed into the surface of the joint with wire brooms. When waterproofing is required, the entire joint shall be parged with a grout of approved mixture as recommended by the manufacturer of the waterproofing admixture, or one composed of one part integral waterproofing, three parts water and sufficient Portland Cement to form a thick, creamy mixture. This grout shall be fresh when followed by the new concrete. In column forms and deep narrow forms, the concrete placement shall be started with an oversanded mix with 5/8-inch maximum aggregate, and extra

sack of cement per cubic yard, and a 5-inch slump. This mix shall be placed maximum 2 inches deep on the construction joint. A mortar layer shall not be used.

6. As indicated on drawings, a metal keyed floor slab joint may be used in lieu of above method.

E. Contraction (Control) Joints:

1. Contraction joints shall be located as shown on the drawings or as directed. Reinforcement through the joint shall be continuous as shown on the drawings and/or as directed by the Engineer.
2. Sawcut contraction joints (Type "A") shall be made by cutting the concrete surface and filling with the sealant material as specified under paragraph 2.1. Cutting shall be done after the surface is firm enough not to be damaged by the cutting blade. Time of cutting shall be approved by the Engineer.
3. Formed contraction joints (Type "B") shall be made by tooling with a 1/4-inch radius edging tool and filled with the sealant material as specified under paragraph 2.1.
4. Premolded Contraction Joints (Type AC@) shall be "Kold-Seal Zipper Strip" by Vinylex or "Zip Cap Control Joint" by Greenstreak Products, or equal.
5. As indicated on drawings, a metal keyed floor slab joint may be used in lieu of above method.

3.05 INSERTS AND SLEEVES

A. The Contractor shall cooperate with all other Contractors in permitting the placing of all necessary sleeves, conduit, or inserts for hangers for their trades. The Contractor shall notify the trades of all pours in ample time for the responsible Contractor to place all embedded items, sleeves, slots, holes or chases.

B. Accurately set all slots, chases, anchor bolts, opening, etc. All inserts for hanging mechanical equipment shall be provided and set by the Contractor for the trade involved. All sleeves for piping passing through floors and walls shall be provided by the Contractor for the trade involved and set by the General Contractor.

C. All conduit which must be placed in concrete slabs shall be installed after, and above the bottom reinforcing, but before, and under the top reinforcing. Where conduit cross-overs are necessary, they shall be located so that reinforcing is not displaced from its specified position.

D. All anchor bolts for the structural steel shall be carefully set as shown on the fabricator's approved anchor bolt plan.

E. If, in the judgement of the Engineer, embedded items are located or grouped in a manner that will weaken the structure, the Contractor shall take the necessary corrective steps.

F. All inserts and sleeves where the outside diameter is greater than the spacing between the reinforcing steel, the reinforcing bars shall be warped around such inserts and sleeves. Unless shown otherwise on the drawings, provide, as a minimum, two #4 diagonal bars per face at 90 degrees to each other all around the inserts and sleeves.

G. Where openings are left in new concrete or are made in existing concrete for the insertion of wall castings, pipes or other fixtures, the space around these fixtures shall be made watertight by completely filling with a non-shrinking concrete containing an admixture of "SikaSet-C", "Anti-Hydro" Concrete Waterproofing Agent, or equal.

3.06 CONVEYING AND PLACING CONCRETE

A. The placing or depositing of all concrete shall be done in accordance with ACI 304, and as modified herein.

B. Preparation Prior to Placing Concrete:
   1. Prepare previously placed concrete surfaces by cleaning with steel brush and applying bonding agent in accordance with manufacturer=s instructions.
   2. In locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
   3. Before placing concrete, all debris, water, snow and ice shall be removed from places to be occupied by concrete. Wood forms shall be wetted except in freezing weather or oiled, and the reinforcement cleaned of ice or other coatings.

C. Conveying, transporting, and placing shall be done as rapidly as practicable and without segregation, loss of ingredients, and without unnecessary rehandling. The tempering of concrete will not be permitted.

D. Concrete shall be deposited as nearly as practical to its final position to avoid segregation due to rehandling or flowing. The concreting shall be carried on at such a rate that the concrete is at all times plastic and workable and flows readily into the spaces between the reinforcing bars. No concrete that has partially hardened or been contaminated by foreign material shall be deposited on the work, nor shall retempered concrete be used. Once the concreting is started, it shall be carried on as a continuous operation until the placing of the panel or section is completed. All concrete shall be compacted by suitable means during the placing operation, and thoroughly worked around reinforcement and embedded fixtures and into corners of the forms. Tremies shall be used for deep forms, and concrete shall not be dropped more than 6'-0".

E. Vibrating:
   1. During and immediately after depositing, all concrete shall be thoroughly compacted by vibrating the concrete internally with mechanical vibrating equipment. Care must be taken not to over-vibrate the concrete. Maintain spare vibrator(s) at the site for use in the event of breakdowns.
   2. Spade and work the coarse aggregate away from forms, and work concrete around reinforcement to avoid air pockets, voids, and honeycombed sections. Hand spading slabs will be required in addition to mechanical vibration.

F. During concreting, check shoring frequently with level. Strengthen or adjust shoring as required. Ensure reinforcement, inserts, embedded parts and formed joints are not disturbed during concrete placement.

G. Placing of concrete in supported elements shall not be started until the concrete previously placed in columns and walls is no longer plastic and has been in place at least two hours.

H. Screed all work to level surfaces at the proper elevations. Rake surfaces to provide bond for floor finishes where specified.

I. No concrete shall be deposited under water without written permission of the Engineer and then only in accordance with his directions. Proper tremie equipment and techniques must be used, should the need arise.

J. The Contractor shall have available at all times, sufficient approved materials such that, when started, concrete shall be continuous operation until placement of panel or section is complete. Should placing of concrete be suspended or unavoidably interrupted once a pour has been started, provide bulkheads and keyways at formed surface at which to stop pour.

K. All laitance shall be removed from previous pours before additional concrete is placed.

L. Place concrete continuously between predetermined expansion, control and construction joints.

3.07 PROTECTION AND CURING

A. All concrete shall be protected against injury by sun, rain, freezing, mechanical damage, or premature drying. All concrete shall be maintained above 50^{o}F in a moist or wet condition for at least the first 7 days after placement.

B. On vertical surfaces keep forms on, or cover with burlap blankets, kept wet. When forms are exposed to the sun, minimize moisture loss by keeping the forms wet until they can be removed safety.

1. For the preservation of moisture, apply one of the following procedures to concrete not in contact with forms, immediately after completion of placement and finishing:
    a. continuous sprinkling
    b. application of absorptive mats or fabric kept continuously wet
    c. application of waterproof sheet materials as specified in Part 2, herein
    d. application of the curing agent specified in Part 2, herein

C. On horizontal surfaces and floors to receive later finishes, cover with wet burlap, wet sand, or curing paper and keep saturated. Cement finish floors shall be covered with protective covering material with lapped and sealed edges after the concrete has set sufficiently to carry worker's weight. Covering shall remain in place until floor is cleaned. Weight covering with planks as required to hold it in place.

D. Cold weather protection shall conform to A.C.I. 306R, except as modified herein.
   1. Prior to pouring, it shall be the Contractor's responsibility to keep the forms free from snow, ice, mud or debris at all times, by means of covers, enclosures, live steam or heating below the forms, as necessary. Use of torches, open flames, salts, straw, hay or chemical is prohibited.
   2. When air temperature is 40°F, or less, use only heated concrete, delivered to the forms at temperatures between 65°F and 85°F. All portions of freshly poured concrete shall be continually maintained at a temperature of not less than 50°F for seven days. Specified temperature shall be maintained by heated enclosures, insulating blankets, insulated forms, or whatever approved methods are required to attain the specified result.
   3. Concrete shall not be poured on frozen soil. After pouring, protect against freezing and heaving of subgrade. Any frozen concrete will be rejected and removed at the Contractor's expense. Accelerating admixtures shall not be accepted in lieu of winter protection.

E. Hot weather protection shall conform to ACI 305R, except as modified herein.
   1. During warm dry weather special care and precautions should be taken to prevent premature setting which may cause shrinkage and surface checking. No concrete shall be placed at temperatures above 90°F without approval of the Engineer.

F. No water (except curing spray) shall be allowed to come in contact with the concrete or masonry surface for a minimum of 24 hours. Should the rising water place a stress on the concrete, proper bracing shall be provided. Loading shall not occur without prior approval by the Engineer, and proper safety precautions shall be the responsibility of the Contractor.

G. Curing compound may be used as specified in Paragraph 2.1 provided discoloration does not occur and application is in accordance with manufacturer's direction and is compatible with concrete finish.

3.08 FOOTINGS AND MATS

A. Hand trim excavation to required levels.

B. Where shown on the drawings provide concrete mud mat to the thickness indicated.

C. Support reinforcing on bricks or precast blocks, or where mud mat is used, on chairs or bolsters, 3" clear of soil.

D. Columns and wall dowels shall be positioned, supported and tied in place before concrete is poured. Footing bottoms shall be inspected and approved by the Engineer before placing mud mat or footings.

3.09 SUPPORTED SLABS ON FORMS

A. Forms shall be built to required dimensions and camber as specified above. Reinforcing shall be located as shown on approved placing plans. Support bars at specified heights with bolsters, chairs, etc., so that reinforcing will not be moved from the specified position during placing of concrete.

B. Refer to Article 3.5 for installation of conduits.

3.10 SLABS ON GROUND

A. Subgrade and base to be prepared as specified in Contract Documents.

B. Form depressed ribs under partitions as required by sloping gravel, or provide permanent side forms to retain gravel.

C. Trench subgrade for electric conduit as detailed on Plans. All reinforcing shall be above electric conduit.

D. Place slabs of thickness shown on Plans, vibrate, screed, float level, and finish as specified below.

3.11 CONCRETE FINISHES - FORMED SURFACES

A. After the forms are removed, all concrete surfaces shall be inspected, and any poor joints, voids, stone pockets or other defective areas noted by the Engineer shall be repaired immediately at the Contractor's expense by cutting away the unsound area to a minimum depth of 1 inch, and refilling with mortar mixed using the same brand of cement as the original pour. Edges of the patch shall be square with the face, with feather-edging prohibited. Obtain approval of corrective action prior to repair.

B. Care shall be taken to saturate the patched area and holes shall be filled in 1/2-inch layers with a delay for an initial set to take place before the succeeding layer is applied. If, in the opinion of the Engineer, improper consolidation is too extensive, or if the structure appears weakened by the voids, complete removal of the concrete in question may be required. Patches shall be kept moist for a minimum of three days.

C. Rubbed finishes shall be as follows:

1. Type A: Surfaces shall be rubbed until all marks are obliterated and a uniformly smooth finish is obtained.
2. Type B: Surfaces shall be rubbed until they are uniformly smooth, but the complete obliteration of all marks is not required.
3. Type C: All fins, burrs and projections shall be removed, any honey-comb or tie-holes shall be filled and patched.

D. The type of finish to be used shall be as scheduled or as noted on the Plans. Where the type of finish is not shown or scheduled, exposed faces shall be given a Type B finish and unexposed faces shall be given Type C finish.

E. Rubbing shall begin as soon as practicable after removal of forms and shall be expedited to completion as rapidly as practicable.

F. Surfaces shall be rubbed with carborundum and water until all fins, bubbles, hollows and other defects are removed. Grout or mortar shall not be used in the rubbing process, and plastering of surfaces will not be permitted. Power tools shall be used for rubbing with hand work limited to inaccessible corners or very small areas.

3.12 FLOOR AND SLAB FINISHING

A. Finished floors and slabs shall be level to within 1/8" of finish floor elevation in ten feet. If this variation occurs, it must not be abrupt, but must taper so that the 1/8" variation takes place in not under 4 feet. Areas with drains shall have the surfaces sloped uniformly and true to the effect that no surface ponding occurs. If required by the Engineer, replace, grind or furnish underlayment to correct the variation, at the Contractor's expense. All floors and slabs shall be cured and protected as specified.

B. Troweled Finish: Provide a floated finish, followed by a power troweling and then a hand troweling thoroughly consolidating the surface. Provide a finished surface essentially free from trowel marks and uniform in texture and appearance.
   1. Where exposed concrete finish is specified, provide a steel troweled finish.
   2. Under quarry tile and ceramic tile screed to accurate lines and levels as required to receive these materials. Floors receiving tile are to be steel troweled finished and are indicated on the Plans.

C. Float Finish: A float finish shall be applied to all exterior concrete and those areas not intended for occupancy, such as culvert inverts, bottoms of manholes and catch basins, pads, etc.

D. Broom Finish: Provide a floated finish. While the surface is still plastic, provide a textured finish by drawing a fiber bustle broom uniformly over the surface in one direction only. Provide "medium" texturing unless noted otherwise on the Contract Drawings. Sidewalks, walkways, or exterior ramps shall be given a broom finish, perpendicular to traffic, sufficient to leave marks without appreciable disturbance of the surface.

E. Dusting with dry cement or cement sand mixtures, to hasten drying, is prohibited. Dry time shall be controlled by controlling the water content and slump of the concrete when placed.

3.13 BONDING

A. For the bonding of new and old concrete, such provisions shall be made by means of steps, dovetails, bonding agents as specified in Paragraph 2.1, or other devices as shown, or directed.

B. When placing of concrete is suspended or unavoidably interrupted, all necessary grooves for bonding future work shall be made before the concrete has attained its initial set. When the work is resumed, concrete previously placed shall be roughened, cleaned of all foreign material and laitance by means of sandblasting with steam and sharp sand or other approved methods, until coarse aggregate is exposed, and thoroughly wetted and slushed with mortar containing the same proportion of cement and fine aggregate as used in the concrete to be placed. Follow manufacturer's preparation recommendations when using a bonding agent.

3.14 MISCELLANEOUS CONCRETE WORK

A. Pour all sump pits, canopies, copings and provide all other miscellaneous concrete and cement work shown on the drawings. All such concrete shall be reinforced as shown. Provide all cement filled stair treads as detailed. Place bottoms and walls of pits and trenches monolithically or provide waterstops and keys.

B. Concrete Walks: Provide 4 inches thick minimum. Provide contraction joints spaced every 5 linear feet, unless otherwise indicated. Cut contraction joints 3/4-inch deep with a jointing tool after the surface has been finished. Provide 1/2-inch thick transverse expansion joints at changes in direction, where sidewalk abuts curb, steps, rigid pavement, or other similar structures. Provide a transverse slope of 1/4-inch per foot, and limit variation in cross section to 1/4-inch in 5 feet unless otherwise indicated.

C. Curbs and Gutters: Provide contraction joints spaced every 10 feet maximum, unless otherwise indicated. Cut contraction joints 3/4-inch deep with a jointing tool after the surface has been finished. Provide expansion joints 1/2-inch thick and spaced every 100 feet maximum, unless otherwise indicated. Provide a broom finish.

D. Equipment Bases: Unless otherwise shown, all equipment shall be erected on bases of Class "B" concrete. Thickness shall be as noted on the Plans, but at no time shall it measure less than 1 inch.

E. Concrete Stairs, Steps and Platforms: Stairs, steps and platforms shall be formed to required profiles shown on the Plans. Place reinforcing as required. Finish of stairs and steps shall be monolithic. Where shown on Plans, provide for nosings. Exterior stairs, steps and platforms shall have a non-slip finish. Before final troweling, embed abrasive grits, as specified in Paragraph 2.1, in the surface.

3.15 CEMENTITIOUS COATING

A. Cementitious Coating shall be applied to all exposed exterior and interior Cast-In-Place Concrete surfaces except concrete floors and walking surfaces in accordance with the schedule shown on the Plans, or otherwise directed.

B. The surfaces to be coated shall be clean, free of all laitance, dirt, grease, curing compound, form treatments, efflorescence, paint and other foreign matter. All formed tie-rod holes and honeycombed areas shall be patched flush with the surrounding area using mortar as recommended by cementitious coating manufacturer.

C. All areas scheduled to be coated will receive two coats of cementitious coating as specified in Paragraph 2.1, applied at a minimum rate of 2 pounds per square yard per coat. The first coat shall be allowed to set before the second coat is applied. Sufficient materials shall be applied to fully seal all pores and voids. All coatings shall be done strictly in accordance with the manufacturer's recommendations.

END OF SECTION

SECTION 03 41 13

PRECAST PRESTRESSED CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment, including accessories, required for manufacture, erection and grouting of Precast Prestressed Concrete, as shown in the Plans, as specified, and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. American Concrete Institute (ACI) Publications:
      a. 304R - Guide for Measuring, Mixing, Transporting and Placing Concrete
      b. 305R - Hot Weather Concreting
      c. 306R - Cold Weather Concreting
      d. 309R - Guide for Consolidation of Concrete
      e. 318R - Building Code Requirements for Reinforced Concrete and Commentary
   2. American Society for Testing and Materials (ASTM) Publications:
      a. A82 - Steel Wire, Plain, for Concrete Reinforcement
      b. A185 - Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
      c. A416 - Uncoated Seven-Wire Stress-Relieved Steel Strand for Prestressed Concrete
      d. A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
      e. C33 - Concrete Aggregates
      f. C94 - Ready-Mixed Concrete
      g. C150 - Portland Cement
      h. C260 - Air-Entraining Admixtures for Concrete
      i. C494 - Chemical Admixtures for Concrete
   3. Prestressed Concrete Institute (PCI) Publications:
      a. DHPPC - Design Handbook - Precast and Prestressed Concrete (Third Edition)
      b. MNL116 - Manual for Quality Control for Plants and Production of Precast Prestressed Concrete Products
      c. Underwriters' Laboratories, Inc. (UL) Publication:
      d. FRD - Fire Resistance Directory, January

4. American Welding Society, Inc. (AWS) Publication:
   a. D1.4 - Structural Welding Code, Reinforcing Steel

1.03 DESCRIPTION OF WORK

A. The work includes the provision of precast, prestressed concrete herein referred to as prestressed members. Prestressed members shall be the product of a manufacturer specializing in the production of precast prestressed concrete members. In the ACI publications, the advisory provisions shall be considered to be mandatory, as though the word "shall" has been substituted for "should" wherever it appears; reference to the "Building Official," the "Structural Engineer" and the "Architect/Engineer" shall be interpreted to mean the Engineer.

1.04 SUBMITTALS: Submit the following:

A. Design Data:
   1. Precast prestressed concrete design calculations.
   2. Concrete mix design and test reports.
      a. Design Calculations: Submit calculations reflecting design in accordance with the paragraph entitled "Precast Prestressed Concrete Member Design". Design calculations for members, including connections, shall be prepared and sealed by a Registered Professional Engineer, and submitted for approval prior to fabrication.
      b. Concrete Mix Design: Thirty days minimum prior to concrete placement, submit a mix design for each strength and type of concrete. Include a complete list of materials including type; brand; source and amount of cement, pozzolan, and admixtures; and applicable reference specifications.

B. Manufacturer's Catalog Data:
   1. Materials for curing concrete
   2. Joint sealing materials
   3. Anchorage and lifting inserts and devices
   4. Allowable load/span tables

C. Drawings:
   1. Precast prestressed concrete members
      a. Content of Drawings: Submit drawings indicating complete information for the fabrication, handling, and erection of the prestressed member. Drawings shall not be reproductions of Contract Drawings. Submit for approval prior to fabrication. The drawings shall indicate, as a minimum, the following information:
      b. Marking of members for erection
      c. Connections for work of other trades
      d. Connections between members, and connections between members and other construction, including grouting requirements

e. Location and size of openings which cut prestressing strands, or require the relocation of prestressing strands to be cast in the member
f. Joints between members, and joints between members and other construction, including grouting and/or caulking requirements
g. Reinforcing, including prestressing steel details
h. Material properties of steel and concrete used
i. Lifting and erection inserts
j. Dimensions and surface finishes of each member
k. Estimated camber
l. Erection sequence and handling requirements
m. All loads used in design (such as live, dead, handling, and erection)
n. Bracing/shoring required
o. Welding requirements to install fully
p. Steel anchorage items cast in

D. Statements:
1. Quality control procedures: Submit quality control procedures established in accordance with PCI MNL116 by the precast manufacturer.

E. Test Reports:
1. Concrete Mix Test: Submit copies of factory tests reports showing that the mix has been successfully tested in accordance with ASTM C39 to produce concrete with the properties specified and will be suitable for the job conditions. Obtain approval before concrete placement. Provide test reports for each mix design, each day of production or for each 100 cubic yards of concrete.

F. Certificates of Compliance:
1. Aggregates
2. Admixtures
3. Reinforcement
4. Weldability of reinforcing
5. Cement
6. Grout
7. Metal accessories

1.05 QUALITY ASSURANCE

A. Precast Prestressed Concrete Member Design: Design prestressed members (including connections) for the design load conditions and spans indicated, and for additional loads imposed by openings and supports of the work of other trades.

Design prestressed members for handling without cracking in accordance with the PCI DHPPC. Concrete toppings shall not be used in establishing the design strength of the prestressed members.

B. Mid-Span Deflection: Measured from original position of member, shall not exceed L/360, where "L" is design span. Provide camber to equal, plus 20%, anticipated deflection.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Lift and support prestressed members at the lifting and supporting points indicated on the shop drawings. Store prestressed members off the ground. Separate stacked prestressed members by battens across the full width of each bearing point. Protect from weather, marring, damage, and overload.

PART 2 - PRODUCTS

2.01 CONCRETE

A. ACI 318, for contractor furnished mix design. The minimum compressive strength of concrete at 28 days shall be 4,000 psi, unless otherwise indicated. Add air-entraining admixtures at the mixer to produce between 4 and 6 percent air by volume.

2.02 MATERIALS

A. Cement: ASTM C150, Type I.

B. Water: Water shall be fresh, clean, and potable.

C. Aggregates:
1. Grading and Composition: ASTM C33, Size 57, except as modified herein. Obtain aggregates for exposed concrete surfaces from one source. Aggregates shall not contain any substance which may be deleteriously reactive with the alkalis in the cement.

D. Nonshrink Grout: Shall be "Embeco" as manufactured by Master Builders, "Sikagrout 212" as manufactured by Sika, or equal.

E. Reinforcement:
1. Reinforcing Bars: ASTM A615, Grade 60.
2. Welded Wire Fabric: ASTM A185.
3. Prestressing Strands:
a. Uncoated Seven Wire Stressed Relieved: ASTM A416 or ASTM A416 with supplement for low relaxation wire.

F. Cementitious Grout: Shall be a mixture of Portland cement, sand, and water. Proportion one part cement to approximately 3 parts sand, with the amount of water based on placement method. Provide air entrainment for grout exposed to the weather.

2.03 FABRICATION

A. PCI MNL116, unless specified otherwise.

B. Reinforcement Placement: ACI 318 for placement and splicing. Reinforcement may be preassembled before placement in forms. Provide exposed connecting bars, or other approved connection methods, between prestressed and cast-in-place construction. Remove any excess mortar that adheres to the exposed connections. Provide curvature or drape of the prestressing strands using approved hold-down devices.

C. Concrete:
1. Concrete Mixing: ASTM C94. Mixing operations shall produce batch-to-batch uniformity of strength, consistency, and appearance.
2. Concrete Placing: ACI 304, ACI 305R for hot weather concreting, ACI 306R for cold weather concreting, and ACI 309, unless otherwise specified.
3. Concrete Curing: Commence curing immediately following the initial set and completion of surface finishing. Provide curing procedures to keep the temperature of the concrete between 50 and 190 degrees F. When accelerated curing is used, apply heat at controlled rate and uniformly along the casting beds. Monitor temperatures at various points in a product line in different casts.

D. Prestressing: Do not transfer prestressing forces during detensioning until the concrete has reached a minimum compressive strength of 3,500 psi, unless a higher strength is required by the Contractor furnished design.

E. Surface Finish: Repairs to honeycombed sections located in a bearing area shall be approved prior to repairs. Prestressed members which contain honeycombed sections deep enough to expose prestressing strands shall be rejected. Prestressed members containing hairline cracks which are visible and are less than 0.02 inches in width, may be accepted, except that cracks larger than .005 inch in width for surfaces exposed to weather shall be repaired. Prestressed members which contain cracks greater than 0.02 inch in width shall be approved by the Engineer, prior to being repaired. Any prestressed member that is structurally impaired shall be rejected.
1. Unformed Surfaces: Provide a floated finish.
2. Formed Surfaces: PCI MNL116 (Appendix A - Commentary), Chapter 3, for grades of surface finishes.
    a. Exposed Surfaces: Provide a standard grade surface finish.

2.04 PLANK

A. Plank shall be pretensioned, hollow core, flat plank. Reinforcement shall be multiple strand, stress-relieved, high-tensile steel wires with ultimate strength of 250,000 psi minimum.

2.05 MANUFACTURE

A. Planks shall be manufactured by Spancrete Northeast, Inc., or approved equal.

PART 3 - EXECUTION

3.01 SURFACE REPAIR

A. Prior to erection, and again after installation, prestressed members shall be checked for damage, such as cracking, spalling, and honeycombing. As directed by the Engineer, prestressed members that do not meet the surface finish requirements specified in Part 2 in paragraph titled, "Surface Finish" shall be repaired, or removed and replaced with new prestressed members.

3.02 ERECTION

A. Prestressed members shall be erected after the concrete has attained the specified compressive strength, unless otherwise approved by the prestressing manufacturer. Erect in accordance with the approved shop drawings. PCI MNL116 and PCI DHPPC (Chapter 8), for tolerances. Provide a 1:500 tolerance, if no tolerance is specified. Brace prestressed members, unless design calculations submitted with the detail drawings indicate bracing is not required. Follow the manufacturer's recommendations for maximum construction loads. Place prestressed members level, plumb, square, and true within tolerances. Align member ends.

3.03 BEARING SURFACES

A. Shall be flat, free of irregularities, and properly sized. Size bearing surfaces to provide for the indicated clearances between the prestressed member and adjacent prestressed members or adjoining field placed surfaces. Correct bearing surface irregularities with nonshrink grout. Provide bearing pads where indicated or required. Do not use hardboard bearing pads in exterior locations. Place prestressed members at right angles to the bearing surface, unless indicated otherwise, and draw-up tight without forcing or distortion, with sides plumb.

3.04 WELDING

A. AWS D1.4 for welding connections and reinforcing splices. Do not weld prestressing strands. Protect the concrete and prestressing strands from heat during welding. Welding to be done by certified welders. Such welding shall be included by this Contractor. Grind smooth visible welds in the finished installation.

3.05 OPENINGS

A. Holes or cuts requiring prestressing steel to be cut, which are not indicated on the approved shop drawing, shall only be made with the approval of the Engineer and the prestressing manufacturer. Drill holes less than 12 inches in diameter with a diamond tipped core drill.

3.06 GROUTING

A. Clean and fill indicated keyways between prestressed members, and other indicated areas, solidly with cementitious grout. Provide reinforcing where indicated. Remove excess grout before hardening.

3.07 SEALANTS

A. Provide as indicated and as specified in Section 07 92 00, "Joint Sealants".

END OF SECTION

SECTION 05 12 01

STRUCTURAL STEEL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall provide all labor, materials and equipment required to furnish, fabricate, deliver and erect Structural Steel as shown on the Plans, as specified, and/or directed.

B. Included are lintels, angles, anchor bolts for column bases, bearing plates, columns, beams, girders, bracing, clips, hangers and other framing.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. American Association of State Highway and Transportation Officials (AASHTO) Publication:
   a. Standard Specifications for Highway Bridges
2. American Institute of Steel Construction (AISC) Publications:
   a. Manual of Steel Construction
   b. Manual of Steel Construction - Load and Resistance Factor Design
   c. Detailing for Steel Construction
   d. Engineering for Steel Construction
3. American National Standards Institute (ANSI) Publication:
   a. B46.1 Surface Texture (Surface Roughness, Waviness and Lay)
4. American Railway Engineering Association (AREA) Publication:
   a. Manual for Railway Engineering (Fixed Properties)
5. American Society for Testing and Materials (ASTM) Publications:
   a. A36/A36M Structural Steel
   b. A53 Steel Pipe, Hot-Dipped, Zinc-Coated Welded and Seamless
   c. A108 Steel Bars, Carbon, Cold-Finished, Standard Quality
   d. A123 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
   e. A153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware

f.	A242/A242M	High-Strength Low-Alloy Structural Steel
g.	A307	Carbon Steel Externally Threaded Standard Fasteners
h.	A325	High-Strength Bolts for Structural Steel Joints
i.	A449	Quenched and Tempered Steel Bolts and Studs
j.	A490	Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints
k.	A500	Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
l.	A501	Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
m.	A514/A514M	High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding
n.	ASTM A529/ A529M	Structural Steel with 42 ksi Minimum Yield Point (1/2-Inch Maximum Thickness)
o.	A563	Carbon and Alloy Steel Nuts
p.	A568/A568M	General Requirements for Steel, Carbon and High Strength Low-Alloy Hot-Rolled Sheet and Cold-Rolled Sheet
q.	A572/A572	High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality
r.	A588/A588M	High-Strength Low-Alloy Structural Steel With 50 ksi (345 MPa) Minimum Yield Point to 4 in. (100 mm) Thick
s.	A618	Hot-Formed Welded and Seamless High-Strength Low-Alloy Structural Tubing
t.	A668	Steel Forgings, Carbon and Alloy, for General Industrial Use
u.	A780	Repair of Damaged Hot-Dip Galvanized Coatings
v.	A992/A992M	High Strength Low-Alloy Structural Steel With 50 ksi (345 MPa) Minimum Yield Point
w.	B695	Coatings of Zinc Mechanically Deposited on Iron and Steel
x.	C827	Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures
y.	F436	Hardened Steel Washers
z.	F844	Washers, Steel, Plain (Flat), Unhardened for General Use
aa.	F959	Compressible-Washer-Type Direct Tension Indicators for Use With Structural Fasteners

6. American Welding Society, Inc. (AWS) Publication:

a.	D1.1	Structural Welding Code - Steel

7. Crane Manufacturers Association of America (CMAA) Specification:
   a. 70 Electric Overhead Traveling Cranes
   b. 74 Top Running and Under Running Single Girder Electric Overhead Traveling Cranes Utilizing Under Running Trolley Hoist
8. Steel Structures Painting Council (SSPC) Publications:
   a. PA 1 Shop, Field, and Maintenance Painting
   b. Paint 25 Red Iron Oxide, Zinc Oxide, Raw Linseed Oil and Alkyd Primer
   c. SP 2 Hand Tool Cleaning
   d. SP 3 Power Tool Cleaning
   e. SP 6 Commercial Blast Cleaning

1.03 SYSTEM DESCRIPTION

A. Provide the structural steel system, including galvanizing, complete and ready for use. Structural steel systems including design, materials, installation, workmanship, fabrication, assembly, erection, inspection, and testing shall be provided in accordance with AISC "Manual of Steel Construction", and/or "Manual of Steel Construction - Load and Resistance Factor Design", except as modified in this Section.

1.04 MODIFICATIONS TO REFERENCES

A. The "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings", including Supplement No. 1; the "Code of Standard Practice for Steel Buildings and Bridges", and "Structural Joints Using ASTM A325 or A490 Bolts" except as modified in this Section, shall be considered a part of the AISC "Manual of Steel Construction" and is referred to in this Section as the AISC "Manual of Steel Construction". The "Load and Resistance Factor Design Specification for Structural Steel Buildings", the "Code of Standard Practice for Steel Buildings and Bridges", the "Load and Resistance Factor Design Specifications for Structural Joints Using ASTM A325 or A490 Bolts", and the "Allowable Stress Design Specification for Structural Joints Using ASTM A325 or A490 Bolts" including Appendix A shall be considered a part of the AISC "Manual of Steel Construction - Load and Resistance Factor Design" and is referred to in this Section as the AISC "Manual of Steel Construction - Load and Resistance Factor Design".

1.05 SUBMITTALS

A. Shop Drawings: Submit for approval prior to fabrication. Prepare in accordance with AISC "Detailing for Steel Construction" and AISC "Engineering for Steel Construction". Shop drawings shall not be reproductions of Contract Drawings. Include complete information for the fabrication and erection of the structure's

components, including the location, type, and size of bolts, welds, member sizes and lengths, connection details, blocks, copes, and cuts. Use AWS standard welding symbols Review of shop drawings shall be for size and arrangement of principal and auxiliary members and strength of connections. Dimensions and proper fit shall be the responsibility of the Contractor.

B. Erection Plan: Submit for record purposes. Indicate the sequence of erection, temporary shoring and bracing, and a detailed sequence of welding, including each welding procedure required.

C. Manufacturer's Data: Submit for the following:

D. Certificates of Compliance: Submit for the following:
1. Steel
2. Bolts, nuts, and washers
3. Shop primer
4. Welding electrodes and rods
5. Nonshrink grout
6. Galvanizing

E. Welder's, Welding Operator's, and Tacker's Qualifications: Prior to welding, submit certification for each stating the type of welding and positions qualified for, the code and procedure qualified under, date qualified, and the firm and individual certifying the qualification tests.

PART 2 - PRODUCTS

2.01 STEEL

A. Structural Steel: ASTM A36.

B. High-Strength Low-Alloy Structural Steel: ASTM A572, Grade 50.

C. Structural Steel Tubing: ASTM A500, Grade B

D. Steel Pipe: ASTM A53, Type E or S, Grade B, weight class STD (Standard); ASTM A501.

2.02 BOLTS, NUTS, AND WASHERS

A. Provide the following unless indicated otherwise.

B. Structural Steel Joints:
   1. Bolts: ASTM A325, Type 1; ASTM A490, Type 1 or 2.
   2. Nuts: ASTM A563, Grade C and heavy hex style or as specified in the applicable ASTM bolt standard.
   3. Washers: ASTM F436, plain carbon steel.

C. Weathering Structural Steel Joints:
   1. Bolts: ASTM A325, Type 3; ASTM A490, Type 3.
   2. Nuts: ASTM A563, heavy hex style, Grade DH3, except Grade C3 may be furnished for ASTM A325 bolts.
   3. Washers: ASTM F436, weathering steel.

D. Foundation Anchorage:
   1. Bolts: ASTM A307, Grade A
   2. Nuts: ASTM A563, Grade C, heavy hex style, except nuts under 1.5 inches may be provided in hex style.
   3. Washers: ASTM F844,

2.03 STRUCTURAL STEEL ACCESSORIES

A. Welding Electrodes and Rods: AWS D1.1. Welding rods for manual shielded metal arc-welding shall conform to E-70 series of ASTM A233.

B. Nonshrink Grout: Grout shall be nonmetallic such as "Embeco" as manufactured by Master Builders, "Introplast" as manufactured by Sika, or equal.

2.04 GALVANIZING

A. ASTM A123 or A153, as applicable, unless specified otherwise galvanize after fabrication where practicable. Touch up primer for galvanized surfaces SSPC 20, Type I.

2.05 FABRICATION

A. Markings: Prior to erection, members shall be identified by a painted erection mark. Connecting parts assembled in the shop for reaming holes in field connections shall be match marked with scratch and notch marks. Do not locate erection markings on areas to be welded. Do not locate match markings in areas that will decrease member strength or cause stress concentrations. Manufacturer's symbol and grade markings shall appear on all bolts and nuts.

B. Gas cutting may be used for concealed or minor items of work, i.e.: blocking, etc., but will not be allowed for cutting or enlarging of bolt holes. Bearing ends of columns shall be accurately milled to a plane surface perpendicular to the axis of the shaft.

C. Provide holes required for use of other trades that can be determined prior to fabrication of structural steel.

PART 3 - EXECUTION

3.01 INSTALLATION

3.02 ERECTION

A. Column baseplates and leveling plates shall be set level to correct elevations and temporarily supported on steel wedges or shims until the supported members have been plumbed and grouted.

B. After final positioning of steel members, provide full bearing under baseplates and bearing plates using nonshrink grout. Place nonshrink grout in accordance with the manufacturer's instructions. The entire bearing area under the plates shall be grouted solid.

C. Templates shall be furnished as required for the accurate placement of anchor bolts and bearing plates.

D. Structural steel framing shall be carried up true and plumb, and temporary bracing shall be used wherever necessary to withstand all loads to which the structure may be subjected, including erection equipment and its operation. Bracing shall be left in place as long as may be required for safety and then removed by the Contractor. As erection progresses, the work shall be securely connected to take care of all dead load, wind and erection stresses.

3.03 CONNECTIONS

A. Except as modified in this Section, connections not detailed shall be designed in accordance with AISC "Manual of Steel Construction". Build connections into existing work. Shop connections shall be welded. All connections shall be properly designed for the moments or shears shown on the drawing, or for the standard end loads of the members to be connected as tabulated for uniform loads in the AISC Handbook. Provide for unusual end loads where necessary. All welding shall be performed with procedures and by operators recently certified in accordance with the standards of the American Welding Society. Connections shall be types shown on the drawings and/or specified. No burning of holes for connections will be allowed. Field holes shall be drilled. Punch, sub-punch and ream, or drill bolt and pin holes. Bolts, nuts, and washers shall be clean of dirt and rust, and lubricated immediately prior to installation.

B. Tightening of Shear/Bearing Connections: ASTM A307 and ASTM A325N bolts, in connections not defined as slip critical or subject to direct tension loads, shall be tightened to a "snug tight" fit. "Snug tight" is the tightness that exists when plies in a joint are in firm contact. If firm contact of joint plies cannot be obtained with a few impacts of an impact wrench, or the full effort of a worker using a spud wrench, contact the Engineer for further instructions. Bolts which may be tightened only to a snug tight condition shall be clearly identified on the drawing.

C. Tightening of Foundation Bolts: Unless otherwise directed, anchor bolts shall be set prior to concrete pouring. Do not tighten with an impact torque wrench and/or until concrete has cured minimum of 14 days.

3.04 WELDING

A. AWS D1.1Provide AWS D1.1 qualified welders, welding operators, and tackers.

B. Removal of Temporary Welds, Run-Off Plates, and Backing Strips: Removal is not required.

C. Field welding will not be permitted on primed or painted steel. Contractor is responsible for properly cleaning steel before welding.

3.05 GALVANIZING REPAIR

A. Provide as indicated or specified. Galvanize after fabrication where practicable. Repair damage to galvanized coatings using ASTM A780 zinc rich paint for galvanizing damaged by handling, transporting, cutting, welding, or bolting. Do not heat surfaces to which repair paint has been applied.

3.06 FIELD QUALITY CONTROL

A. Perform field tests, and provide labor, equipment, and incidentals required for testing. The Engineer shall be notified in writing of defective welds within 7 working days of the date of weld inspection.

B. Welds:
   1. Furnish the services of AWS-certified welding inspectors for fabrication, erection, testing and verification inspections. Welding inspectors shall inspect and mark welds, including fillet weld end returns. All defective welds that have been repaired shall be retested.
   2. Shop welds required for structural connections shall be visually inspected and approved by an independent testing laboratory. All questionable welds shall be radiographically or ultrasonically tested. If questionable welds prove defective, Contractor shall test minimum 10% or all other welds at no additional cost.

3. Field welds required for structural connections shall be visually inspected and approved by independent testing laboratory. All questionable welds and at least 10% of all other welds shall be tested by magnetic particle testing or ultrasonic testing.

C. Bolts:

1. Fully Pretensioned Connections: Engineer shall require Contractor to verify bolt tension on a minimum of 10 percent of fasteners. Contractor shall provide and operate bolt tension indicator device.

END OF SECTION

SECTION 05 50 01

METAL FABRICATIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall provide all labor, materials and equipment required to fabricate and erect all Metal Fabrications, complete with anchorage devices, connections, accessories and incidental work, as shown on the Plans, as specified, and/or directed.

B. No attempt is made to enumerate or describe each item of miscellaneous metal work, but simply to describe major items, certain special items, and general construction requirements for all items.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. Aluminum Association, Inc. (AA) Publications:
      a. SAA46 - Standards for Anodized Architectural Aluminum
      b. DAF45 - Designation System for Aluminum Finishes
   2. American Institute of Steel Construction (AISC) Publications:
      a. M011 - Manual of Steel Construction
      b. S326 - Specifications for Structural Steel Buildings
   3. American National Standards Institute, Inc. (ANSI) Publications:
      a. SNT-101 - Safety Requirements for Heavy Duty, Portable, Compressed Air Actuated Fastener Driving Tools
      b. A14.3 - Safety Requirements for Fixed Ladders
      c. B18.2.1 - Square and Hex Bolts and Screws Inch Series Including Hex Cap Screws and Lag Screws
      d. B18.2.4 - Square and Hex Nuts
      e. B18.5 - Round Head Bolts
      f. B18.21.1 - Lock Washers
   4. American Society for Testing and Materials (ASTM) Publications:
      a. A36 - Structural Steel
      b. A48 - Gray Iron Castings
      c. A53 - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
      d. A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
      e. A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware

f. A167 - Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet and Strip
g. A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
h. A501 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
i. A525 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, General Requirements
j. A687 - High Strength Non-Headed Steel Bolts and Studs
k. A786 - Rolled Steel Floor Plates
l. B26 - Aluminum-Alloy Sand Castings
m. B108 - Aluminum-Alloy Permanent Mold Castings
n. B209 - Aluminum and Aluminum Alloy Sheet and Plate
o. B221 - Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes
p. B429 - Aluminum-Alloy Extruded Structural Pipe and Tube

5. American Welding Society, Inc. (AWS) Publication:
   a. D1.1 - Structural Welding Code, Steel
6. National Association of Architectural Metal Manufacturers (NAAMM) Publication:
   a. MFM - Metal Finishes Manual
7. National Fire Protection Association (NFPA) Publication:
   a. 101 - Code for Safety to Life from Fire in Buildings and Structures
8. Steel Structures Painting Council (SSPC) Publications:
   a. SP 2 - Hand Tool Cleaning
   b. SP 3 - Power Tool Cleaning
   c. SP 6 - Commercial Blast Cleaning
   d. Paint 25 - Red Iron Oxide, Zinc Oxide, Raw Linseed Oil and Alkyd Primer

1.03 SUBMITTALS: Submit the following.

A. Manufacturer's Catalog Data:
   1. Guardrails and Posts
   2. Handrails

B. Drawings:
   1. Guardrails and Posts
   2. Handrails

C. Certificates of Compliance: Attest that materials comply with requirements of this Specification and of referenced documents.
   1. Carbon steel
   2. Steel pipe and tubing
   3. Cast iron gratings
   4. Shop primer
   5. Welding electrodes and rods

D. Submit drawings for approval prior to fabrication. Include templates, and erection and installation details, indicating thickness, type, grade, class of metal, and dimensions. Show construction details, reinforcement, anchorage, and installation with relation to the building construction.

1.04 QUALIFICATION OF WELDERS

A. In accordance with AWS D1.1 using procedures, materials, and equipment of the type required for the work.

1.05 DELIVERY AND STORAGE

A. Protect from corrosion, deformation, and other types of damage. Store items in an enclosed area free from contact with soil and weather. Contractor shall replace and remove damaged items with new items.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Products shall conform to the respective reference specifications and standards and to the requirements specified herein.

B. Steel and Iron: If not specified otherwise, use standard mill finished structural steel shapes or bar iron in compliance with AISC Specifications for Structural Steel Buildings.

C. Structural Carbon Steel: ASTM A36.

D. Structural Tubing: ASTM A500, Grade B or ASTM A501.

E. Steel Pipe: ASTM A53, Type E or S, Grade B, standard weight unless otherwise specified.

F. Fittings for Steel Pipe: Standard malleable iron fittings.

G. Anchors and Fasteners: Where exposed, shall be of the same material, color, and finish as the metal to which applied.
   1. Expansion Shields: Group, type, class, and style best suited for the purpose. Provide shields recessed not less than 2-1/2 inches into concrete or masonry, unless indicated otherwise.
   2. Lag Screws and Bolts: ANSI B18.2.1, type and grade best suited for the purpose.
   3. Toggle Bolts: ANSI B18.2.1 and ANSI B18.5.
   4. Bolts, Nuts, Studs and Rivets: ANSI B18.2.4 and ASTM A687.

5. Powder Driven Fasteners: Use when permitted by ANSI. Follow safety provisions of ANSI SNT-101.
6. Lock Washers: Circular washers shall conform to ANSI B18.21.1. Beveled washers for American Standard beams and channels shall be square or rectangular, taper in thickness, and be smooth.

2.02 DISSIMILAR MATERIALS

A. Where dissimilar metals are in contact, or where aluminum is in contact with concrete, mortar, masonry, wood, or absorptive materials subject to wetting, protect the surfaces with a coat of bituminous paint, a coat of varnish or a coat of zinc chromate primer to prevent galvanic or corrosive action.

PART 3 - EXECUTION

3.01 FABRICATION

A. By mechanics skilled in the trade and in accordance with the manufacturer's directions. Metal work shall be well formed to shape and size, with sharp lines, angles, and true curves. All work shall be fabricated to allow for expansion and contraction of materials. Provide welding and bracing of adequate strength and durability, with tight, flush joints, dressed smooth and clean.

3.02 MEASUREMENTS

A. Before fabrication, provide necessary field measurements and verify all measurements. Wherever possible, field measurements shall be taken prior to fabrication. Do not delay job progress; allow for trimming where final dimensions cannot be established before fabrication. The Contractor is solely responsible for fit and shall make all corrections required to items fabricated off site at no additional cost to Owner.

3.03 METAL SURFACES

A. Shall be clean and free from mill scale, flake rust and rust pitting; well formed and finished to shape and size, with sharp lines, angles, and smooth surfaces. Shearing and punching shall leave clean true lines and surfaces. Weld or rivet permanent connections. Welds and flush rivets shall be used and finished flush and smooth on surfaces that will be exposed after installation. Do not use screws or bolts where they can be avoided; when used, heads shall be countersunk, screwed up tight and threads nicked to prevent loosening.

3.04 CONSTRUCTION

A. Thickness of metal and details of assembly and supports shall give ample strength and stiffness for the minimum loads specified or indicated.

3.05 FASTENING

A. Provide the necessary rabbets, lugs, and brackets so that the work can be assembled in a neat and substantial manner. Holes for bolts and screws shall be drilled. Joints exposed to the weather shall be formed to exclude water. Conceal fastenings where possible.

3.06 SHOP FABRICATION

A. Fabrication and assembly shall be done in the shop to the greatest extent possible. Provide holes required for connection of other adjacent or adjoining work.

3.07 MISCELLANEOUS ITEMS: Provide as noted on drawing.

A. Guardrails, Handrails and Railings:
   1. Steel Rails, Including Carbon Steel Inserts: Steel rails, including inserts in concrete, shall be steel pipe conforming to ASTM A53 or structural tubing conforming to ASTM A500, Grade B. Steel rails shall be 1-1/2-inch diameter nominal size, Schedule 40. Steel railings shall be hot-dip galvanized and shop painted.
      a. Fabrication: Jointing of posts, rail, and corners shall be by one of the following methods:
         1) Flush-type rail fittings of commercial standard, welded and ground smooth with railing splice locks secured with 3/8-inch hexagonal-recessed-head setscrews.
         2) Mitered and welded joints made by fitting post to top rail and intermediate rail to post, mitering corners, groove welding joints, and grinding smooth. Railing splices shall be butted and reinforced by a tight fitting interior sleeve not less than 6 inches long.
         3) Railings may be bent at corners in lieu of jointing, provided bends are made in suitable jigs and the pipe is not crushed.
      b. Installation: Shall be in pipe sleeves shall be anchored to concrete floor slab with removable setscrews. Rail ends shall be secured by steel pipe flanges.

3.08 WELDING

A. Perform welding, welding inspection, and corrective welding, in accordance with AWS D1.1. Weld in a manner to prevent permanent distortion of the connected parts. Weld continuously along the entire area of contact except where tack welding is permitted. Do not tack weld exposed connections. Grind smooth visible welds in the finished installation.

3.09 FINISHES

A. Galvanizing: Hot-dip galvanize items specified to be zinc-coated, after fabrication where practicable. Galvanizing: ASTM A123, ASTM A153 and ASTM A525, as applicable.
   1. Galvanize: Anchor bolts, grating fasteners, washers, and parts or devices necessary for proper installation, unless indicated otherwise.
   2. Repair of Zinc-Coated Surfaces: Repair surfaces damaged by welding or other means with galvanizing repair paint or by the application of stick or thick paste material specifically designed for repair of galvanizing, as approved. Clean areas to be repaired, and remove the slag from the welds. Surfaces to which stick or paste material is applied, shall be heated with a torch to a temperature sufficient to melt the metallics in stick or paste; spread the molten material uniformly over surfaces to be coated and wipe the excess material off.

B. Shop Cleaning and Painting: After surface preparation, apply pretreatment and primer as specified. Do not coat surfaces of items to be embedded in concrete or to be welded. Recoat damaged surfaces using surface preparation, treatment, primer and paint that was applied to the adjacent surfaces upon completion of work. Do not apply bituminous protective coatings to items to be finish painted.
   1. Environmental Conditions: Do not clean or paint surface when damp or exposed to foggy or rainy weather, when the metallic surfaces temperature is within 5 degrees F of the dew point of the surrounding air, or when the surface temperature is below 45 degrees F or over 95 degrees F, unless approved by the Engineer.
   2. Surface Preparation: Unless otherwise specified herein, abrasive blast clean exposed surfaces in accordance with SSPC SP 6. Surfaces that will be in spaces above ceiling, attic spaces, crawl spaces, furred spaces, and chases may be cleaned in accordance with SSPC SP 2 or SP 3 in lieu of being blast cleaned. Wash cleaned surfaces which become contaminated with rust, dirt, oil, grease, or other contaminants with solvents until thoroughly clean. Steel to be embedded in concrete shall be free of dirt and grease. Do not paint or galvanize bearing surfaces, including contact surfaces within slip-critical joints, but coat them with an approved rust preventive, applied in the shop. Remove such coating just prior to field erection using a remover approved by the rust preventive manufacturer. Surfaces, when assembled, shall be free of rust, grease, dirt and other foreign matter.
   3. Pretreatment, Priming and Painting: Apply pretreatment, primer, and paint in accordance with the manufacturer's standard practice. On surfaces concealed in the finished construction or not accessible for finish painting, apply an additional prime coat to a minimum dry film thickness of 0.1 mil. Tint the additional prime coat with a small amount of tinting pigment. Structural steel shall be shop primed with one coat SSPC Paint 25. Finish coat of paint is specified in Section 09 91 00, "Painting".

C. Nonferrous Metal Surfaces: Protect by plating, anodic, organic, or other coatings as specified.

END OF SECTION

SECTION 05 51 33

ALUMINUM LADDERS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section specifies aluminum ladders and accessories as shown and specified.

B. Fixed aluminum access ladders.

1.02 RELATED WORK

A. Section 05 50 00 – Metal Fabrications.

1.03 REFERENCES

A. ANSI A14.3 - Ladders, Fixed, Safety Requirements.

B. ASTM B209 - Aluminum and Aluminum-Alloy Sheet and Plate.

C. ASTM B211 - Aluminum-Alloy Extruded Bar, Rod, Wire, Shape, and Tube.

D. ISO 9001:2000 - Quality Management Systems - Requirements.

1.04 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be installed, including model number, material, and finish.

B. Shop Drawings: Manufacturer's shop drawings indicating elevations, dimensions, connections, and size and type of fasteners.

1.05 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with ANSI A14.3.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging until ready for installation. Handle in accordance with manufacturer's recommendations.

PART 2 - PRODUCTS

2.01 ROOF ACCESS LADDER

A. Model Number ACL-301 Heavy Duty, Roof Access Ladder with walk through safety handrail and safety cage as manufactured by ACL Industries or approved equal (For roof access ladder from new addition roof to existing building roof), and Model Number U-100 (Or 200) Light Duty Vertical Ladder as manufactured by ACL Industries or approved equal (For roof hatch access within new building addition)

B. Materials: ASTM B221, Alloy 6063, Temper T-6, non-spark extruded aluminum and ASTM B209, Alloy 6063 Temper T-6 sheet aluminum.

C. Aluminum Finish: Mill finish.

D. Nominal Height: As indicated on the Drawings AND 42 inches minimum above existing upper roof parapet wall level.

E. Side Rails: 1-3/4 inches (45 mm) wide by 3 inch (76 mm) tubes with 1/8 inch (3 mm) wall thickness.

F. Rail Extension Above Parapet (Existing Building Roof): 42 inches (1065 mm).

G. Extension (Existing Building Roof): At top of side rails provide 19 inch (480 mm) extension, 28 inches (710 mm) high, constructed from 1-1/4 inch (32 mm) square tube grab bars with corrugated surfaces.

H. Rungs: 1-1/4 inches (32 mm) wide by 1-1/4 inches (32 mm) tube with serrated surfaces and capable of 1,000 pound (455 kg) load. Space 12 inches (310 mm) on center. Attach rungs in centerline of side rails by welding.

I. Rung Length: 24 inches (610 mm).

2.02 ACCESSORIES

A. Wall Brackets: 2 inch (50 mm) by 1/4 inch (6 mm) minimum flat bar aluminum wall brackets. Allow 7 inches (180 mm) minimum clearance from wall to center line of rungs (Face of wall varies for roof access ladder between two different depths, wall bracket depth to vary for proper installation and clearances).

B. Safety Cage:
   1. Equip the roof access ladder with a safety cage. Fabricate from 2 inches (50 mm) wide by 1/4 inch (6 mm) thick aluminum vertical strips and horizontal loops welded to form a cage around the ladder.
   2. Bottom Loop Radius: 17-1/2 inches (445 mm).
   3. Radius of Other Loops: 13-1/2 inches (343 mm).
   4. Vertical Strips: 7 vertical strips equally spaced around perimeter of cage.

5. Horizontal Loops: 48 inches (1220 mm) maximum spacing.
6. Minimum clearance from ladder to back of cage shall be 27 inches (686 mm).
7. Cage Start Above Grade: 7 feet (2135 mm).
8. Extend safety cage 42 inches (1065 mm) minimum above top rung and attach to side rails as detailed on the Drawings and approved shop drawings.

PART 3 - EXECUTION

3.01 PREPARATION

A. Do not begin installation until substrates have been properly prepared. Notify COTR of unsatisfactory conditions before commencing work.

B. Field verify required dimensions. Coordinate with supporting construction to ensure adequate blocking and support.

C. Coordinate with requirements of access hatch to ensure height and position of ladder is compatible with hatch dimensions and required clearances.

D. Isolate dissimilar metals to prevent electrolysis with bituminous paint or non-absorptive isolation pad to prevent contact.

3.02 INSTALLATION

A. Install ladders and accessories in accordance with manufacturer's instructions and approved submittals.

B. Securely anchor support brackets with fasteners of type and size recommended by manufacturer.

C. Place brackets at top and bottom and at 48 inches (1219 mm) maximum intermediate points.

D. Allow 7 inches (180 mm) minimum clearance from wall to center line of rungs.

E. Inspect ladder to verify proper and secure installation.

3.03 CLEANING

A. Clean ladders as recommended by manufacturer. Do not use abrasive agents, steel wool or chemicals.

END OF SECTION

SECTION 07 21 13.02

PERIMETER AND UNDER-SLAB INSULATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Perimeter and Under-Slab Insulation, as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. American Society for Testing and Materials (ASTM) Publications:
      a. C552 - Cellular Glass Thermal Insulation
      b. C578 - Rigid, Cellular Polystyrene Thermal Insulation
      c. C591 - Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation
      d. C1289 - Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
      e. D2822 - Asphalt Roof Cement
      f. F1667 - Driven Fasteners: Nails, Spikes and Staples

1.03 SUBMITTALS

A. Manufacturer's Catalog Data: Manufacturer's Data: Include descriptive literature, and recommended instructions on installation methods and procedures for the following:
   1. Insulation
   2. Asphalt roof cement

1.04 DELIVERY AND STORAGE

A. Deliver materials to the site in the original sealed packages bearing the manufacturer's name and designation, specification number, type, and class. Protect material from damage during construction.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Insulation: ASTM C578 polystyrene board, extruded closed cell. Thickness required to achieve R-value indicated.
   1. Perimeter Insulation: ASTM C578, Type IV, minimum compressive strength of 25 pounds per square inch at 10 percent deformation.

B. Asphalt Roof Cement: ASTM D2822.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Insulation on Foundation Walls: Provide insulation on the interior side of the perimeter foundation walls that are backfilled and have slab on grade. Extend insulation from top edge of slab to not less than 4 feet below grade.

END OF SECTION

SECTION 07 21 16

CEILING, WALL, AND FLOOR INSULATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Ceiling, Wall, and Floor Insulation, as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. American Society for Testing and Materials (ASTM) Publications:
      a. C578 - Rigid Cellular Polystyrene Thermal Insulation
      b. C1289 - Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
      c. D4397 - Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications
      d. E84 - Surface Burning Characteristics of Building Materials

1.03 SUBMITTALS

A. Submit the following.
   1. Manufacturer's Catalog Data:
      a. Insulation
      b. Vapor retarder
      c. Adhesive

1.04 DELIVERY AND STORAGE

A. Deliver materials to the site in the original sealed wrapping bearing manufacturer's name and brand designation, specification number, type, grade, R-value, and class. Store and handle to protect materials from damage. Do not allow insulation materials to become wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage, and protection during installation.

PART 2 - PRODUCTS

2.01 THERMAL RESISTANCE VALUE (R-VALUE)

A. As indicated.

2.02 BLOCK OR BOARD INSULATION

A. Polystyrene: ASTM C578, Type I, Type II, Type IV, Type IX, except a flame spread rating of 75 or less and a smoke developed rating of 150 or less when tested in accordance with ASTM E84.

2.03 VAPOR RETARDER

A. ASTM D4397, 6-mil thick polyethylene sheeting with a water vapor permeance of 1 perm or less when tested in accordance with ASTM E96. Vapor retarder shall be flame retardant with a flame spread of 25 or less and a smoke developed rating of 150 or less when tested in accordance with ASTM E84.

2.04 ACCESSORIES

A. Adhesive: As recommended by the insulation manufacturer.

2.05 ACOUSTICAL VALUES:

A. ASTM C423.

PART 3 - EXECUTION

3.01 PREPARATION OF SURFACES

A. Surfaces shall be clean, dry, and free of any projections.

3.02 INSTALLATION OF BLOCK OR BOARD INSULATION

A. Walls: Apply insulation to the rear of electrical devices. Place insulation to the outside (cold side) of all pipes.
   1. Installation at Wood, Metal, and Insulated Furring Members: Install insulation between members as recommended by the insulation manufacturer.
   2. Adhesive Attachment on Concrete and Masonry Walls: Apply adhesive to the wall and completely cover wall with insulation using the full back bed method or the spot method with at least six spots, located at each corner and mid-points of each of the longer sides having a diameter of approximately 4 inches or as recommended by the insulation

manufacturer. Use the full back method for insulation less than one square foot. Butt all edges of insulation and seal edges with tape.

B. Elevated Concrete Floor Slab: Size insulation to cover underside of slab. Apply adhesive to slab and set fasteners in adhesive as recommended by the insulation manufacturer. After curing of adhesive, install insulation over fasteners and bend the split prongs flush with the insulation to secure. Butt all edges of insulation and seal edges with tape.

3.03 INSTALLATION OF VAPOR RETARDER

A. Apply a continuous retarder on the interior side (warm-in-winter) of the wall construction as recommended by the insulation manufacturer. Repair punctures or tears with duct tape.

END OF SECTION

SECTION 07 22 16.01

TAPERED ROOF INSULATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Tapered Roof Insulation as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. American Society For Testing and Materials (ASTM) Publications:
   a. C208 - Cellulosic Fiber Insulating Board
   b. C552 - Cellular Glass Thermal Insulation
   c. C578 - Rigid Cellular Polystyrene Thermal Insulation
   d. C591 - Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation
   e. C726 - Mineral Fiber Roof Insulation Board
   f. C728 - Perlite Thermal Insulation Board
   g. C1289 - Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
   h. D41 - Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
   i. D226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
   j. D312 - Asphalt Used in Roofing
   k. D2626 - Asphalt-Saturated and Coated Organic Felt Base Sheet Used in Roofing
   l. D2822 - Asphalt Roof Cement
   m. E84 - Surface Burning Characteristics of Building Materials
2. Factory Mutual Engineering and Research Corporation (FM) Publications:
   a. D/S1-28 - Design Wind Loads, Loss Prevention Data Sheet 1-28
   b. AG - Approval Guide
3. Underwriters Laboratories, Inc. (UL) Publication:
   a. BMD - Building Materials Directory

1.03 SUBMITTALS

A. Submit the following:
   1. Manufacturer's Catalog Data:
      a. Tapered roof insulation
   2. Tapered Roof Insulation Data: Show the recommendations for the following:
      a. Location and spacing of wood nailers
      b. Type of insulation material and sequence of laying
      c. Minimum thickness of insulation
   3. Drawings:
      a. Tapered roof insulation system
         1) Show a complete description of the procedures for the installation of each phase of the system indicating the type of materials, thicknesses, identity codes, sequence of laying insulation, location of ridges and valleys, special methods for cutting and fitting of insulation, and special precautions. The manufacturer's drawings, based on field measurements, may be submitted to supplement the information shown on the shop drawings.
   4. Statements:
      a. Installer qualifications
         1) Submit certificate from the insulation manufacturer attesting that the installer is qualified to install tapered roof insulation systems.
   5. Test Reports:
      a. Insulation
         1) Test insulation in accordance with ASTM E84 for flame spread and smoke developed ratings.
   6. Certificates of Compliance:
      a. Roof insulation
      b. Steep asphalt
      c. Asphalt roof cement
      d. Asphalt felt

1.04 DELIVERY AND STORAGE

A. Delivery: Deliver materials in original, sealed containers or packages. Label the containers with manufacturer's name and brand designation. Where materials are covered by a referenced specification, label the containers or packages with specification number, type, and class, as applicable. Each container of asphalt shall bear the flashpoint (FP), equiviscous temperature (EVT), and finished blowing temperature (FBT), or show this information on the accompanying bills of lading. Deliver materials in sufficient quantity to allow work to proceed without interruption.

B. Storage: Store and handle materials in a manner to protect them from damage, exposure to open flame or other ignition sources, and from wetting and moisture absorption during entire construction period. Store the materials on pallets or platforms and cover the materials with waterproof tarpaulins. Store felt rolls on ends and, for a period of 24 hours prior to laying the felt, store it in an area maintained at a temperature greater than 49 degrees F (10 degrees C). Bundle tapered insulation board in accordance with the manufacturer's identity codes. Replace damaged material with new material.

1.05 ENVIRONMENTAL CONDITIONS

A. Do not install roof insulation during any form of precipitation, fog; or when air temperature is below 40 degrees F (4 degrees C) or if the air temperature is forecast to be less than 40 degrees F (4 degrees C) within 24 hours after installation; or when there is ice, frost, or other visible moisture on the roof deck.

1.06 PROTECTION OF PROPERTY

A. Flame-Heated Equipment: Do not place flame-heated equipment on the roof. Provide and maintain fire extinguishers of appropriate type and size near flame-heated equipment and on the roof.

B. Protective Coverings: Prior to starting work, install protective coverings at paving and building walls adjacent to the hoist and kettles. Lap protective coverings at least 6 inches (153 millimeters). Secure the coverings against wind and vent coverings to prevent collection of moisture on covered surfaces. Keep protective coverings in place for the duration of the roofing work.

C. Special Protection: Provide approved special protection to avoid heavy traffic on completed work when ambient temperature is greater than 80 degrees F (27 degrees C).

D. Dripping of Bitumen: Seal joints in deck as necessary to prevent dripping of bitumen into building or down exterior walls.

PART 2 - PRODUCTS

2.01 ROOF INSULATION

A. One layer of the insulation shall be factory tapered to a slope of not less than 1/4 inch per foot (2.1 percent). Provide starter and filler blocks as required to provide the total thickness of insulation necessary to meet the specified slope and thermal conductance. Mitered joints shall be factory fabricated and shall consist of two diagonally cut boards or one board shaped to provide the required slopes. Identify each piece of tapered insulation board by color or other identity coding system,

allowing the identification of different sizes of tapered insulation board required to complete the roof insulation system. Use one of, or an assembly of, a maximum of three of the following materials:

1. Polystyrene board: ASTM C578, Type II, IV, or X.
2. Polyurethane or polyisocyanurate board: ASTM C591, Type 1.

B. Insulation Thickness: As required to provide minimum R-Value indicated.

2.02 PREFORMED CANTS AND TAPERED EDGE STRIPS

A. Provide the same material used for the roof insulation; or, if roof insulation material is unavailable, provide pressure-preservative treated wood, wood fiberboard, or rigid perlite board, as recommended by the roofing manufacturer.

2.03 ASPHALT PRIMER

A. ASTM D41.

2.04 LOW-SLOPE ASPHALT:

A. ASTM D312, Type I or II.

2.05 STEEP ASPHALT:

A. ASTM D312, Type III or IV.

2.06 ASPHALT ROOF CEMENT:

A. ASTM D2822, Type I.

2.07 ROSIN-SIZED BUILDING PAPER OR UNSATURATED FELT

A. A minimum of 5 pounds (2.3 kilograms) per 100 square feet (9.3 square meters).

2.08 ASPHALT-SATURATED FELTS

A. ASTM D226, Type I.

2.09 ASPHALT-SATURATED FELT BASE SHEET

A. ASTM D2626.

PART 3 - EXECUTION

3.01 SURFACE CONDITION

A. Surface Inspection: Surfaces receiving insulation shall be clean, smooth, and dry.

B. Surface Preparation: Correct all deficiencies in roof deck surfaces including those at roof drains and outlets prior to the start of work. Examine precast concrete decks to ensure that the joints between precast units are properly grouted and leveled to provide suitable surfaces for the installation of the insulation.

3.02 INSTALLATION

A. Install roof insulating materials as specified herein unless specified or recommended otherwise by the manufacturer's printed instructions. Keep roof insulating materials dry before, during, and after installation. Keep insulation 1/2 inch (13 millimeters) clear of vertical surfaces penetrating and projecting from the roof surface.

B. Insulation: Install insulation directly to roof deck surface primed as specified herein for the specific deck over the thermal barrier. Lay insulation so that end joints of each course are staggered with those of the adjoining courses. When using multiple layers of insulation, the joints of each succeeding layer shall be parallel and staggered in both directions with respect to the layer below. Firmly embed the first layer of insulation and each succeeding layer of insulation in a solid steep asphalt mopping; mop only sufficient area to provide complete embedment of one board at a time. On projects where polystyrene insulation is provided, install the first layer of polystyrene insulation as specified herein for other types of insulation, except allow the steep asphalt applied to the substrate to cool to a temperature range of between 250 degrees F (121 degrees C) and 200 degrees F (93 degrees C), before embedding the polystyrene insulation. Install each succeeding layer of polystyrene with a low-slope asphalt that has been allowed to cool to a temperature range of between 200 degrees F (93 degrees C) to 175 degrees F (79 degrees C), and apply asphalt at a rate of 15 pounds (7 kilograms) per 100 square feet (9.3 square meters). While asphalt is still tacky, embed the next layer of polystyrene over the preceding layer with joints staggered at least 6 inches (152 millimeters). Each piece of insulation shall be walked-in prior to the installation of succeeding pieces of insulation.

1. Insulation on Precast Concrete Decks: While solidly applying asphalt primer at the rate of one gallon (3.8 liters) per 100 square feet (9.3 square meters) of roof surface, prime and steep asphalt mop back approximately 4 inches (102 millimeters) from the joints between precast units. Place felt strips, 4 inches (102 millimeters) or more in width, over the joints 2 inches (51 millimeters) on each side in a cold-applied asphalt roof cement, and mop solidly before the roof insulation is installed.

C. Cant Strips: Where indicated, provide cant strips at intersections of the roof with walls, parapets, and curbs extending above the roof. The face of cant strips shall have an incline of 45 degrees, the minimum face dimension shall be 5 1/2 inches (140 millimeters), and the minimum thickness shall be 1 1/2 inches (38 millimeters). Cant strips shall bear on the wood nailers and fit flush against vertical surfaces. Where possible, nail cant strips to adjoining surfaces. Where cant strips are installed against nonnailable materials, install the cant strips in a heavy mopping of steep asphalt or set the cant strips in asphalt roof cement.

D. Tapered Edge Strips: Where indicated, provide edge strips in the right angle formed by the junction of the roof and wood nailing strips that extend above the level of the roof. Edge strips shall be tapered from the top of the wood nailing strips to approximately 1/8 inch (3 millimeters) at a slope of one to 1-1/2 inches per foot (8.4 to 13 percent). Install edge strips flush against vertical surfaces of wood nailing strips. Where possible, nail edge strips to adjoining surfaces. Where installed against non-nailable materials, install edge strips in a heavy mopping of steep asphalt or set the edge strips in asphalt roof cement.

3.03 PROTECTION OF APPLIED INSULATION

A. Completely cover each day's installation of insulation with finished roofing. Protect the open ends of each day's work with temporary water cutoffs; remove the cutoffs when work is resumed. Protect open spaces between insulation and parapets or other walls and spaces at curbs, scuttles, and expansion joints until permanent roofing and flashing are applied.

END OF SECTION

SECTION 07 53 00

ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING SYSTEM (EPDM)

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Ethylene-Propylene-Diene-Monomer Roofing System (EPDM), as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES:

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. American Society for Testing and Materials (ASTM) Publication:
      a. C136 - Sieve Analysis of Fine and Coarse Aggregates
   2. Factory Mutual Engineering and Research Corporation (FM) Publications:
      a. P7825 - Approval Guide - Equipment, Materials, Services for Conservation of Property
      b. D/S1-28 - Insulated Steel Deck, Loss Prevention Data Sheet
   3. Rubber Manufacturers Association (RMA) Publication:
      a. IPR1 - Minimum Requirements for Non-Reinforced Black EPDM Rubber Sheets for Use in Roofing Applications
   4. Underwriters Laboratories, Inc. (UL) Publications:
      a. 790 - Tests for Fire Resistance of Roof Covering Materials
      b. BMD - Building Materials Directory

1.03 SUBMITTALS

A. Submit the following.
   1. Manufacturer's Catalog Data:
      a. Elastomeric sheet
      b. Adhesive
      c. Water cutoff mastic
      d. Lap cleaner and sealant
      e. Flashing
      f. Flashing accessories
         1) Include materials' descriptions.
   2. Manufacturer's Instructions:
      a. Elastomeric sheet
      b. Adhesive
      c. Water cutoff mastic
      d. Lap cleaner and sealant

e. Flashing
f. Flashing accessories
1) Include standard installation detail drawings where applicable.

3. Statements:
a. Applicator qualifications
1) Submit the elastomeric sheet roofing system manufacturer's written approval of the applicator.

4. Administrative or Closeout Submittals:
a. Roofer information card
1) Submit in accordance with the paragraph entitled "Information Card".

1.04 QUALIFICATION OF APPLICATOR

A. The roofing system applicator shall be approved by the elastomeric sheet roofing system manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials in their original, unopened containers or wrappings with labels intact and legible. Where materials are covered by a referenced specification number, the labels shall bear the specification number, type, class, and shelf life expiration date where applicable. Deliver materials in sufficient quantity to allow continuity of work.

B. Storage: Store and protect materials from damage and weather in accordance with the manufacturer's instructions, except as specified otherwise. Keep materials clean and dry. Use pallets to support and canvas tarpaulins to completely cover stored material. Do not use polyethylene as a covering. Locate materials temporarily stored on the roof in approved areas, and distribute the load to stay within the live load limits of the roof construction.

C. Handling: When hazardous materials are involved, adhere to the special precautions of the manufacturer. Adhesives contain petroleum distillates and are extremely flammable; prevent personnel from breathing vapors, and do not use near sparks or open flame. Do not use materials contaminated by exposure to moisture. Remove contaminated materials from the site.

1.06 ENVIRONMENTAL CONDITIONS

A. Do not install elastomeric sheet roofing during high winds or inclement weather, or when there is ice, frost, moisture, or visible dampness on the substrate surface. Unless recommended otherwise by the elastomeric sheet manufacturer, do not install elastomeric sheet when air temperature is below 10 degrees F (-12 degrees C) or within 5 degrees F (3 degrees C) of the dewpoint. When the air temperature is 40 degrees F (4 degrees C) or colder, use adhesives within 4 hours following exposure.

1.07 WARRANTY

A. Furnish the elastomeric sheet manufacturer's standard warranty for the elastomeric sheet roofing system. The warranty shall run directly to the Government. In no event shall the warranty period be less than 10 years from the date of the Government's acceptance of the work. The warranty shall provide that if within the warranty period the elastomeric sheet roofing system becomes non-watertight, splits, tears, or separates at the seams because of defective materials and workmanship, the repair or replacement of defective materials and correction of defective workmanship shall be the responsibility of the elastomeric sheet manufacturer. If the manufacturer or his approved applicator fails to perform repairs within 72 hours of notification, emergency repairs performed by others will not void the warranty.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Elastomeric Sheet: RMA IPR1. Ethylene Propylene Diene Monomer (EPDM), 0.06 inch (1.5 millimeter) minimum thickness for fully adhered application. Width and length of sheet shall be as recommended by the manufacturer.

B. Adhesive: As recommended by the elastomeric sheet manufacturer's printed data.

C. Water Cutoff Mastic, Lap Cleaner, and Sealant: As recommended by the elastomeric sheet manufacturer's printed data.

D. Flashing and Flashing Accessories: Flashing, including perimeter flashing, flashing around roof penetrations, and prefabricated pipe seals, shall be 0.06 inch (1.5 millimeter) minimum thick uncured neoprene or uncured elastomeric sheet, as recommended by the elastomeric sheet manufacturer's printed data.

E. Fasteners: As recommended by the elastomeric sheet manufacturer's printed data.

F. Roof Insulation Below Elastomeric Sheet: As specified in Section 072216.01.

G. Fire Safety: The complete roof covering assembly shall have UL 790 Class A or B classification, be listed as fire-classified in the UL BMD, or listed as Class I roof deck construction in the FM P7825.

H. Windstorm Resistance: The complete roof covering assembly shall be capable of withstanding an uplift pressure of 60 pounds per square foot when tested in accordance with the uplift pressure test described in the FM D/S1-28.

PART 3 - EXECUTION

3.01 PREPARATION

A. Coordinate work with that of other trades to ensure that components which are to be incorporated into the roofing system are available to prevent delays or interruptions as the work progresses. Examine substrates to which the roofing materials are to be applied to ensure that their condition is satisfactory for its application. Do not permit voids greater than 1/4 inch (6 millimeters) wide in the substrate. Concrete substrates shall be cured and free of laitance and curing compounds. Install wood blocking at perimeters, curbs, and penetrations. Substrates for roofing materials shall be dry and free of oil, dirt, grease, sharp edges, and debris. Inspect substrates, and correct defects before application of elastomeric sheets.

3.02 SPECIAL PRECAUTIONS

A. Do not dilute coatings or sealants unless specifically recommended by the materials manufacturer's printed application instructions. Do not thin liquid materials with cleaners used for cleaning elastomeric sheet.

B. Keep all liquids in airtight containers, and keep containers closed except when removing materials.

C. Use liquid components, including adhesives, within their shelf life period. Store adhesives at 60 to 80 degrees F (15 to 26 degrees C) for at least 24 hours prior to use. Avoid excessive adhesive application and adhesive spills, as they can be destructive to some elastomeric sheets and insulations; follow adhesive manufacturer's printed application instructions.

D. Do not allow contact between various materials through mixing of remains, dual use of mixing, transporting, or application equipment. Do not use equipment containing the remains of previous materials.

E. Require workmen and others who walk on the membrane to wear clean, soft-soled shoes to avoid damage to roofing materials.
   1. Do not use equipment with sharp edges which could puncture the elastomeric sheet.

3.03 WORK SEQUENCE

A. Arrange work to prevent use of newly constructed roofing for storage, walking surface, or equipment movement. If access is necessary, provide temporary walkways, platforms, or runways to protect new roofing surfaces and flashings from mechanical damage.

3.04 APPLICATION

A. Apply elastomeric sheet roofing in accordance with the elastomeric sheet manufacturer's application instructions and the following requirements.

B. Elastomeric Sheet Roofing: Unroll prefabricated elastomeric sheet roofing in position without stretching membrane. Lap sheets a minimum of 3 inches (75 millimeters). Inspect for holes. Remove sections of elastomeric sheet roofing that are creased or damaged, and allow sheets to relax at least 30 minutes before seaming.

1. Fully Adhered Application: Apply adhesive evenly and continuously to substrate and underside of sheets at rates recommended by elastomeric sheet manufacturer's printed application instructions. Allow adhesive to dry to consistency prescribed by manufacturer before adhering sheets to the substrate. Roll each sheet into adhesive to avoid wrinkles; broom or roll to remove air pockets and "fishmouths" and to ensure full, continuous bonding of sheet to substrate. Clean both mating surfaces at splice area, apply adhesive, lap adjoining sheets, and seal seams according to instructions of elastomeric sheet manufacturer.
2. Perimeter Fastening: Mechanically secure the elastomeric sheet to nailers at roof perimeter and penetrations with specified fasteners. Space fasteners a maximum of 8 inches (203 millimeters) on centers, except as recommended otherwise by the elastomeric sheet manufacturer's printed data. Strip flash over the fasteners with a fully adhered layer of flashing material of the type recommended by the elastomeric sheet manufacturer's printed data.
3. Temporary Work: Install temporary cutoffs around incomplete edges of roofing assembly at the end of each day's work and when work must be postponed due to inclement weather. (Temporary cutoffs provide protection against moisture infiltration and absorption.) Straighten the insulation line using pieces of insulation loosely laid, and seal the elastomeric sheet membrane to the deck. Remove the temporary seals completely when work resumes. Provide temporary ballast on the roofing as necessary to prevent wind damage to the elastomeric sheet.

C. Flashing: Install flashing as roofing sheets are installed in accordance with printed instructions of the elastomeric sheet manufacturer. Extend base flashing not less than 8 inches (203 millimeters) above roofing surface. Completely adhere flashing sheets in place. Use prefabricated pipe seals at pipe penetrations where possible.

3.05 ROOF DRAIN TEST:

A. After the roofing system is complete but prior to Owner's acceptance of the roofing, perform the following test of roof drains and adjacent roofing for water tightness. Plug roof drains, and fill drains with water for 24 hours. To ensure some drainage from the roof, do not test all drains at the same time. Measure

water levels at the beginning and end of the 24-hour period. If precipitation occurs during the test period, repeat the test. If the water level falls, remove water, thoroughly dry and inspect the installation, and repair or replace roofing at the drain. Repeat the test until there is no water leakage.

3.06 INFORMATION CARD:

A. Provide a typewritten card, laminated in plastic and framed in a weather-tight frame, or a photo-engraved 0.032-inch (0.8-millimeter) thick aluminum card for each roof. This card shall be a minimum size of 8-1/2 by 11 inches (216 millimeters by 279 millimeters) and contain information listed in the attached Form 1. Install the card near access to the roof or where directed. Furnish framed card and a duplicate card to the Owner.

FORM 1

ELASTOMERIC SHEET ROOFING SYSTEM COMPONENTS

1. Contract Number:

2. Building Number & Location:

3. NAVFAC Specification Number:

4. Deck Type:

5. Slope of Deck:

6. Insulation Type & Thickness:

7. Insulation Manufacturer:

8. Vapor Retarder: [ ] Yes [ ] No

9. Vapor Retarder Type:

10. Sheet Elastomeric Roofing Description:
    Manufacturer (Name, address, & phone no.):
    Type:
    Method of attachment:
11. Statement of Compliance or Exception:

____

____

12. Date Roof Completed:

13. Warranty Period:

14. Roofing Contractor (Name & Address):

15. Prime Contractor (Name & Address):

Contractor's Signature: _____ Date: _____

Inspector's Signature: _____ Date: _____

END OF SECTION

SECTION 07 60 00

FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Flashing and Sheet Metal, as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. American Society for Testing and Materials (ASTM) Publications:
      a. B209 - Aluminum and Aluminum-Alloy Sheet and Plate
      b. B221 - Aluminum and Aluminum-Alloy Extruded Bar, Rod, Wire, Shape, and Tube
      c. D41 - Asphalt Primer Used in Roofing, Dampproofing and Waterproofing
      d. D1784 - Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
      e. D2822 - Asphalt Roof Cement
      f. D4022 - Coal Tar Roof Cement
   2. American Welding Society, Inc. (AWS) Publication:
      a. D1.2 - Structural Welding Code, Aluminum
   3. Federal Specifications (FS):
      a. QQ-L-201 - Lead Sheet
      b. UU-B-790 - Building Paper, Vegetable Fiber: (Kraft, Waterproofed, Water Repellent and Fire Resistant)
   4. Sheet Metal and Air Conditioning Contractors' National Association, Inc. (SMACNA) Publication:
      a. ASMM - Architectural Sheet Metal Manual

1.03 SUBMITTALS

A. Submit the following.
   1. Drawings:
      a. Copings
         1) Indicate thicknesses, dimensions, fastenings and anchoring methods, expansion joints, and other provisions necessary for thermal expansion and contraction. Scaled manufacturer's catalog data may be submitted for factory fabricated items.

1.04 DELIVERY, HANDLING, AND STORAGE

A. Package and protect materials during shipment. Uncrate and inspect materials for damage, dampness, and wet-storage stains upon delivery to the job site. Remove from the site and replace damaged materials that cannot be restored to like-new condition. Handle sheet metal items to avoid damage to surfaces, edges, and ends. Store materials in dry, weathertight, ventilated areas until immediately before installation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Furnish sheet metal items in 8 to 10-foot lengths. Single pieces less than 8 feet long may be used to connect to factory-fabricated inside and outside corners, and at ends of runs. Provide accessories and other items essential to complete the sheet metal installation. These accessories shall be made of the same materials as the items to which they are applied. Fabricate sheet metal items of the materials specified below and to the gage, thickness, or weight shown in Table I at the end of this Section. Sheet metal items shall have mill finish unless specified otherwise. Where more than one material is listed for a particular item in Table I, each is acceptable and may be used except as follows:

B. Exposed Sheet Metal Items: Shall be of the same material. The following items shall be considered as exposed sheet metal: gutters, including hangers; downspouts; gravel stops and fascias; cap, valley, steeped, base, and eave flashings and related accessories.

C. Lead Sheet: FS QQ-L-201, Grade B, minimum weight 4 pounds per square foot.

D. Aluminum Alloy Sheet and Plate: ASTM B209, form alloy, and temper appropriate for use, alloy 3003-H14 except allow used for color anodized aluminum shall be as required to produce specified color. Alloy required to produce specified color shall have the same structural properties as alloy 3003-H14.

1. Finish: Exposed exterior sheet metal items of aluminum shall have a baked-on, factory-applied color coating of polyvinylidene fluoride (PVF2) or other equivalent fluorocarbon coating applied after metal substrates have been cleaned and pretreated.

E. Aluminum Alloy, Extruded Bars, Rods, Shapes, and Tubes: ASTM B221.

F. Polyvinyl Chloride Reglet: ASTM D1784, Type II, 0.075 inch (1.9 mm) minimum thickness.

G. Bituminous Plastic Cement: ASTM D2822, Type I; ASTM D4022.

H. Building Paper: FS UU-B-790, Style 4, Grade B.

I. Asphalt Primer: ASTM D41.

J. Fasteners: Use the same metal or a metal compatible with the item fastened. Use stainless steel fasteners to fasten dissimilar materials.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Requirements: Make surfaces to receive sheet metal plumb and true, clean, even, smooth, dry, and free of defects and projections which might affect the application. For installation of items not shown in detail or not covered by specifications, conform to the applicable requirements of SMACNA ASMM, Architectural Sheet Metal Manual. Provide sheet metal flashing in the angles formed where roof decks abut walls, curbs, ventilators, pipes, or other vertical surfaces and wherever indicated and necessary to make the work watertight. Join sheet metal items together as shown in Table II.

B. Workmanship: Make lines, arrises, and angles sharp and true. Free exposed surfaces from visible wave, warp, and buckle, and tool marks. Fold back exposed edges neatly to form a 1/2-inch hem on the concealed side. Make sheet metal exposed to the weather watertight with provisions for expansion and contraction.

C. Nailing: Confine nailing of sheet metal generally to sheet metal having a maximum width of 18 inches. Confine nailing or flashing to one edge only. Space nails evenly not over 3 inches on centers and approximately 1/2 inch from edge unless otherwise specified or indicated. Face nailing will not be permitted. Where sheet metal is applied to other than wood surfaces, include in shop drawings, the locations for sleepers and nailing strips required to secure the work.

D. Cleats: Provide cleats for sheet metal 18 inches and over in width. Space cleats evenly not over 12 inches on centers unless otherwise specified or indicated. Unless otherwise specified, cleats shall be not less than 2 inches wide by 3 inches long and of the same material and thickness as the sheet metal being installed. Secure one end of the cleat with two nails and the cleat folded back over the nailheads. Lock the other end into the seam. Pre-tin cleats for soldered seams.

E. Loose-Lock Expansion Seams: Not less than 3 inches wide; provide minimum one-inch movement within the joint. Completely fill the joints with the specified sealant, applied at not less than 1/8-inch thick bed. Sealants are specified in Section 07 92 00, "Joint Sealants".

F. Welding and Mechanical Fastening: Use welding for aluminum of thickness greater than 0.040 inch. Aluminum 0.040 inch or less in thickness shall be butted

and the space backed with formed flashing plate; or lock joined, mechanically fastened, and filled with sealant as recommended by the aluminum manufacturer.

1. Welding of Aluminum: Use welding of the inert gas, shield-arc type. For procedures, appearance and quality of welds, and the methods used in correcting welding work, conform to AWS D1.2.
2. Mechanical Fastening of Aluminum: Use No. 12, aluminum alloy, sheet metal screws or other suitable aluminum alloy or stainless steel fasteners. Drive fasteners in holes made with a No. 26 drill in securing side laps, end laps, and flashings. Space fasteners 12 inches maximum on centers. Where end lap fasteners are required to improve closure, locate the end lap fasteners not more than 2 inches from the end of the overlapping sheet.

G. Protection from Contact with Dissimilar Materials:

1. Aluminum: Aluminum surfaces shall not directly contact other metals except stainless steel, zinc, or zinc coating. Where aluminum contacts another metal, paint the dissimilar metal with a primer followed by two coats of aluminum paint. Where drainage from a dissimilar metal passes over aluminum, paint the dissimilar metal with a non-lead pigmented paint.
2. Wood or Other Absorptive Materials: Paint surfaces that may become repeatedly wet and in contact with metal with two coats of aluminum paint or a coat of heavy-bodied bituminous paint.

H. Expansion and Contraction: Provide expansion and contraction joints at not more 32-foot intervals for aluminum and at not more than 40-foot intervals for other metals. Where the distance between the last expansion joint and the end of the continuous run is more than half the required interval, an additional joint shall be provided. Space joints evenly. Join extruded aluminum gravel stops and fascias by expansion and contraction joints spaced not more than 12 feet apart.

3.02 PAINTING

A. Field-paint sheet metal for separation of dissimilar materials.

3.03 CLEANING

A. Clean exposed sheet metal work at completion of installation. Remove grease and oil films, handling marks, contamination from steel wool, fittings and drilling debris, and scrub-clean. Free the exposed metal surfaces of dents, creases, waves, scratch marks, and solder or weld marks.

3.04 REPAIRS TO FINISH

A. Scratches, abrasions, and minor surface defects of finish may be repaired in accordance with the manufacturer's printed instructions and as approved. Repair damaged surfaces caused by scratches, blemishes, and variations of color and surface texture. Replace items which cannot be repaired.

TABLE I. SHEET METAL WEIGHTS AND THICKNESSES

Sheet Metal Items	Lead, Pounds Per Square Foot	Aluminum, Inch
Coping	-	.040

(a) 2.5-pound minimum lead sleeve with 4-inch flange. Where lead sleeve is impractical, refer to paragraph titled "Single Pipe Vents" for optional material.

END OF SECTION

SECTION 07 72 33

ROOF HATCHES

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provide factory-fabricated roof hatches for ladder access.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's product data.

B. Shop Drawings: Submit shop drawings including profiles, accessories, location, adjacent construction interface, and dimensions.

C. Warranty: Submit executed copy of manufacturer's standard warranty.

1.03 QUALITY ASSURANCE

A. Manufacturer: A minimum of 5 years experience manufacturing similar products.

B. Installer: A minimum of 2 years experience installing similar products.

C. Manufacturer's Quality System: Registered to ISO 9001 Quality Standards including in-house engineering for product design activities.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver products in manufacturer's original packaging. Store materials in a dry, protected, well-vented area. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.

1.05 WARRANTY

A. Manufacturer's Warranty: Provide manufacturer's standard warranty. Materials shall be free of defects in material and workmanship for a period of five years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Basis-of-Design Manufacturer: Type S-50TB Roof Hatch by The BILCO Company, P.O. Box 1203, New Haven, CT 06505, 1-800-366-6530, Fax: 1-203-535-1582, Web: www.BILCO.com. (Or approved equal)

2.02 ROOF HATCH

A. Furnish and install where indicated on plans metal roof hatch Type S-50TB, size width: 36" (914mm) x length: 30" (762mm). Length denotes hinge side. The roof hatch shall be single leaf. The roof hatch shall be pre-assembled from the manufacturer.

B. Performance characteristics:
1. Cover and curb shall be thermally broken to prevent heat transfer between interior and exterior surfaces.
2. Cover shall be reinforced to support a minimum live load of 40 psf (195kg/m^2) with a maximum deflection of 1/150th of the span or 20 psf (97kg/m^2) wind uplift.
3. Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.
4. Operation of the cover shall not be affected by temperature.
5. Entire hatch shall be weather tight with fully welded corner joints on cover and curb.

C. Cover: Shall be 11 gauge (2.3mm) aluminum with a 5” (127mm) beaded flange with formed reinforcing members. Interior and exterior surfaces shall be thermally broken to minimize heat transfer and to resist condensation. Cover shall have a heavy extruded EPDM rubber gasket bonded to the cover interior to assure a continuous seal when compressed to the top surface of the curb.

D. Cover insulation: Shall be 3” (75mm) thick polyisocyanurate with an R-value = 20.3 (U=0.279 W/m^2K), fully covered and protected by an 18 gauge (1mm) aluminum liner.

E. Curb: Shall be 12” (305mm) in height and of 11 gauge (2.3mm) aluminum. Interior and exterior surfaces shall be thermally broken to minimize heat transfer and to resist condensation. The curb shall be formed with a 5-1/2” (140mm) flange with 7/16” (11mm) holes provided for securing to the roof deck. The curb shall be equipped with an integral metal capflashing of the same gauge and material as the curb, fully welded at the corners, that features the Bil-Clip® flashing system, including stamped tabs, 6” (153mm) on center, to be bent inward to hold single ply roofing membrane securely in place.

F. Curb insulation: Shall be 3” (75mm) thick polyisocyanurate with an R-value = 20.3 (U=0.279 W/m^2K).

G. Lifting mechanisms: Manufacturer shall provide compression spring operators enclosed in telescopic tubes to provide, smooth, easy, and controlled cover operation throughout the entire arc of opening and closing. The upper tube shall be the outer tube to prevent accumulation of moisture, grit, and debris inside the lower tube assembly. The lower tube shall interlock with a flanged support shoe welded to the curb assembly.

H. Hardware
1. Heavy stainless steel pintle hinges shall be provided
2. Cover shall be equipped with a spring latch with interior and exterior turn handles
3. Roof hatch shall be equipped with interior and exterior padlock hasps.
4. The latch strike shall be a stamped component bolted to the curb assembly.
5. Cover shall automatically lock in the open position with a rigid hold open arm equipped with a 1” (25mm) diameter red vinyl grip handle to permit easy release for closing.
6. All hardware shall be zinc plated and chromate sealed. [For installation in highly corrosive environments or when prolonged exposure to hot water or steam is anticipated, specify Type 316 stainless steel hardware].
7. Cover hardware shall be bolted into heavy gauge channel reinforcing welded to the underside of the cover and concealed within the insulation space.

I. Finishes: Factory finish shall be mill finish aluminum.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and openings for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install products in strict accordance with manufacturer’s instructions and approved submittals. Locate units level, plumb, and in proper alignment with adjacent work.
1. Test units for proper function and adjust until proper operation is achieved.
2. Repair finishes damaged during installation.
3. Restore finishes so no evidence remains of corrective work.

3.03 ADJUSTING AND CLEANING

A. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Joint Sealants, as shown on the Plans, and/or as specified.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. American Society for Testing and Materials (ASTM) Publication:
      a. C920 - Elastomeric Joint Sealants

1.03 SUBMITTALS

A. Submit the following.
   1. Manufacturer's Catalog Data:
      a. Sealants
      b. Primers
      c. Backstop materials
         1) Data for the sealants shall include shelf life, recommended cleaning solvents.

1.04 ENVIRONMENTAL CONDITIONS

A. The ambient temperature shall be within the limits of 40 and 100 degrees F when sealant is applied.

1.05 DELIVERY AND STORAGE

A. Deliver materials to the job site in unopened manufacturers' external shipping containers, with brand names, date of manufacture, color, and material designation clearly marked thereon. Elastomeric sealant containers shall be labeled to identify type, class, grade, and use. Carefully handle and store materials to prevent inclusion of foreign materials or subjection to sustained temperatures exceeding 100 degrees F or less than 40 degrees F.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.
   1. Testing Agency Qualifications: Qualified in accordance with ASTM C1021 to conduct the testing indicated.

C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in the Section.

PART 2 - PRODUCTS

2.01 SEALANTS

A. Provide sealant that has been tested and found suitable for the substrates to which it will be applied.

B. Interior Sealant: ASTM C920, Type S or M, Grade NS, Class 12.5, Use NT. Location(s) of sealant shall be as follows:
   1. LOCATION
      a. Perimeter of frames at doors, windows, and access panels which adjoin exposed interior concrete and masonry surfaces.
      b. Joints of interior masonry walls and partitions which adjoin columns, pilasters, concrete walls, and exterior walls unless otherwise detailed.
      c. Interior locations, not otherwise indicated or specified, where small voids exist between materials specified to be painted.

C. Exterior Sealant: For joints in vertical surfaces, provide ASTM C920, Type S or M, Grade NS, Class 25, Use NT. For joints in horizontal surfaces, provide ASTM C920, Type S or M, Grade P, Class 25, Use T. Location(s) of sealant shall be as follows:
   1. LOCATION
      a. Joints and recesses formed where frames and subsills of windows, doors, louvers, and vents adjoin masonry, concrete, or metal frames. Use sealant at both exterior and interior surfaces of exterior wall penetrations.
      b. Joints between new and existing exterior masonry walls.
      c. Masonry joints where shelf angles occur.
      d. Joints in wash surfaces of stonework.
      e. Expansion and control joints.
      f. Interior face of expansion joints in exterior concrete or masonry walls where metal expansion joint covers are not required.
      g. Voids where items pass through exterior walls.

h. Metal reglets, where flashing is inserted into masonry joints, and where flashing is penetrated by coping dowels.
i. Metal-to-metal joints where sealant is indicated or specified.
j. Joints between ends of gravel stops, fascias, copings, and adjacent walls.

D. Floor Joint Sealant: ASTM C920, Type S or M, Grade P, Class 25, Use T. Location(s) of sealant shall be as follows:
1. LOCATION
a. Seats of metal thresholds for exterior doors.
b. Control and expansion joints in floors, slabs, ceramic tile, and walkways.

2.02 PRIMER FOR SEALANT

A. Provide a nonstaining, quick-drying type and consistency recommended by the sealant manufacturer for the particular application.

2.03 BOND BREAKERS

A. Provide the type and consistency recommended by the sealant manufacturer for the particular application.

2.04 BACKSTOPS

A. Provide glass fiber roving or neoprene, butyl, polyurethane, or polyethylene foams free from oil or other staining elements as recommended by sealant manufacturer. Backstop material shall be compatible with sealant. Do not use oakum and other types of absorptive materials as backstops.

2.05 CLEANING SOLVENTS

A. Provide type(s) recommended by the sealant manufacturer.

2.06 COLOR

A. Sealants exposed to view shall match the color of adjacent finished surfaces.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

A. Surfaces shall be clean, dry to the touch, and free from dirt, frost, moisture, grease, oil, wax, lacquer, paint, or other foreign matter that would tend to destroy or impair adhesion. When resealing an existing joint, remove existing calk or sealant prior to applying new sealant.

B. Steel Surfaces: Remove loose mill scale by sandblasting or, if sandblasting is impractical or would damage finish work, scraping and wire brushing. Remove protective coatings by sandblasting or using a residue-free solvent.

C. Aluminum or Bronze Surfaces: Remove temporary protective coatings from surfaces that will be in contact with sealant. When masking tape is used as a protective coating, remove tape and any residual adhesive just prior to sealant application. For removing protective coatings and final cleaning, use nonstaining solvents recommended by the manufacturer of the item(s) containing aluminum or bronze surfaces.

3.02 SEALANT PREPARATION

A. Do add liquids, solvents, or powders to the sealant. Mix multi-component elastomeric sealants in accordance with manufacturer's instructions.

3.03 APPLICATION:

A. Joint Width-To-Depth Ratios:
1. Acceptable Ratios:

JOINT WIDTH	**JOINT DEPTH**	
	Minimum	Maximum
For metal, glass, or other nonporous surfaces:		
1/4 inch (minimum)	1/4 inch	1/4 inch
over 1/4 inch	1/2 of width	Equal to width
For wood, concrete, masonry, stone, or _____:		
1/4 inch (minimum)	1/4 inch	1/4 inch
Over 1/4 inch to 1/2 inch	1/4 inch width	Equal to width
Over 1/2 inch to 2 inches	1/2 inch	5/8 inch
Over 2 inches	(As recommended by sealant manufacturer)	

2. Unacceptable Ratios: Where joints of acceptable width-to-depth ratios have not been provided, clean out joints to acceptable depths and grind or cut to acceptable widths without damage to the adjoining work. Grinding shall not be required on metal surfaces.

B. Backstops: Install backstops dry and free of tears or holes. Tightly pack the back or bottom of joint cavities with backstop material to provide a joint of the depth specified. Install backstops in the following locations:

1. Where indicated.
2. Where backstop is not indicated but joint cavities exceed the acceptable maximum depths specified in paragraph entitled, "Joint Width-to-Depth Ratios".

C. Primer: Immediately prior to application of the sealant, clean out loose particles from joints. Where recommended by sealant manufacturer, apply primer to joints in concrete masonry units, wood, and other porous surfaces in accordance with sealant manufacturer's instructions. Do not apply primer to exposed finish surfaces.

D. Bond Breaker: Provide bond breakers to the back or bottom of joint cavities, as recommended by the sealant manufacturer for each type of joint and sealant used, to prevent sealant from adhering to these surfaces. Carefully apply the bond breaker to avoid contamination of adjoining surfaces or breaking bond with surfaces other than those covered by the bond breaker.

E. Sealants: Provide a sealant compatible with the material(s) to which it is applied. Do not use a sealant that has exceeded shelf life or has jelled and cannot be discharged in a continuous flow from the gun. Apply the sealant in accordance with the manufacturer's instructions with a gun having a nozzle that fits the joint width. Force sealant into joints to fill the joints solidly without air pockets. Tool sealant after application to ensure adhesion. Sealant shall be uniformly smooth and free of wrinkles. Upon completion of sealant application, roughen partially filled or unfilled joints, apply sealant, and tool smooth as specified.

3.04 PROTECTION AND CLEANING

A. Protection: Protect areas adjacent to joints from sealant smears. Masking tape may be used for this purpose if removed 5 to 10 minutes after the joint is filled.

B. Final Cleaning: Upon completion of sealant application, remove remaining smears and stains, and leave the work in a clean and neat condition.
1. Masonry and Other Porous Surfaces: Immediately scrape off fresh sealant that has been smeared on masonry, and rub clean with a solvent as recommended by the sealant manufacturer. Allow excess sealant to cure for 24 hours then remove by wire brushing or sanding.
2. Metal and Other Nonporous Surfaces: Remove excess sealant with a solvent-moistened cloth.

END OF SECTION

SECTION 08 11 13

METAL DOORS AND FRAMES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Metal Doors and Frames, as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. American Society for Testing and Materials (ASTM) Publications:
      a. A526 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Commercial Quality
      b. A591 - Steel Sheet, Cold-Rolled, Electrolytic Zinc-Coated
      c. C578 - Preformed, Cellular Polystyrene Thermal Insulation
      d. C591 - Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation
      e. D2863 - Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index)
   2. Door and Hardware Institute (DHI) Publications:
      a. A115.1 - Preparation for Mortise Locks for 1-3/8 Inch and 1-3/4-Inch Doors
      b. A115.2 - Preparation for Bored Locks for 1-3/4 Inch and 1-3/8-Inch Doors
      c. A115.4 - Preparation for Lever Extension Flush Bolts
      d. A115.5 - Preparation for 181 Series and 190 Series Deadlock Strikes
      e. A115.7 - Preparation for Floor Closers -- Light Duty, Center Hung, Single or Double Acting; Center Hung, Single or Double Acting; Offset Hung, Single Acting
      f. A115.12 - Preparation for Offset Intermediate Pivots
      g. A115.13 - Preparation for Tubular Deadlocks
      h. A115.14 - Preparation for Open Back Strikes
   3. Hollow Metal Manufacturers Association (HMMA) Publications:
      a. 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames
      b. 862 - Guide Specifications for Commercial Security Hollow Metal Doors and Frames

c. 863 - Guide Specifications for Detention Security Hollow Metal Doors and Frames
d. 865 - Guide Specifications for Swinging Sound Control Hollow Metal Doors and Frames

4. National Fire Protection Association (NFPA) Publications:
   a. 80 - Fire Doors and Windows
   b. 252 - Fire Tests of Door Assemblies
5. Underwriters Laboratories, Inc. (UL) Publication:
   a. 10B - Fire Tests of Door Assemblies

1.03 SUBMITTALS

A. Submit the following.

1. Manufacturer's Catalog Data:
   a. Doors
   b. Frames
   c. Accessories
      1) Submit manufacturer's descriptive literature for doors, frames, and accessories. Include data and details on door construction, panel (internal) reinforcement, insulation, and door edge construction.
2. Drawings:
   a. Steel doors
      1) Show elevations, construction details, metal gauges, hardware provisions, method of glazing, and installation details.
3. Schedules:
   a. Doors and frames
      1) Submit door and frame locations.

1.04 DELIVERY AND STORAGE

A. Deliver doors, frames, and accessories undamaged and with protective wrappings or packaging. Store doors and frames on platforms under cover in clean, dry, ventilated, and accessible locations, with 1/4-inch airspace between doors. Remove damp or wet packaging immediately, and wipe affected surfaces dry. Replace damaged materials with new.

PART 2 - PRODUCTS

2.01 STANDARD STEEL DOORS

A. SDI 100, except as specified otherwise. Doors shall be either hollow steel construction or composite construction. Prepare doors to receive hardware specified in Section 08 71 00, "Door Hardware".

B. Exterior doors shall have top edge closed flush. Doors shall be 1-3/4 inches thick, unless otherwise indicated.

C. Door Grades:
1. Heavy Duty Doors: HMMA 862, of size(s) and design(s) indicated. Fill hollow steel exterior doors with mineral fiber insulation.

2.02 SHELVES, LOUVERS, ASTRAGALS, AND MOLDINGS:

2.03 PLASTIC FOAM CORES

A. Rigid Polyurethane Foam: ASTM C591, Type 1 or 2, foamed-in-place or in board form, with an oxygen index of not less than 22 percent when tested in accordance with ASTM D2863; or

B. Rigid Polystyrene Foam Board: ASTM C578, Type I or II.

2.04 STANDARD STEEL FRAMES

A. HMMA Guide Specification shall match door as specified. Form frames to sizes and shapes indicated, with knock-down field-assembled corners. Provide steel frames for doors unless otherwise indicated.

B. Welded Frames: Continuously weld frame faces at corner joints. Mechanically interlock or continuously weld stops and rabbets. Grind welds smooth.

C. Knock-Down Frames: Design corners for simple field assembly by concealed tenons, splice plates, or interlocking joints that produce square, rigid corners and a tight fit and maintain the alignment of adjoining members. Provide locknuts for bolted connections.

D. Stops and Beads: Form stops and beads from 20-gauge steel. Provide for glazed and other openings in standard steel frames. Secure beads to frames with oval-head, countersunk Phillips-head self-tapping sheet metal screws or concealed clips and fasteners. Space fasteners approximately 12 to 16 inches on centers. Miter molded shapes at corners. Butt or miter square or rectangular beads at corners.

E. Terminated Stops: Where indicated, terminate interior door frame stops 6 inches above floor. Do not terminate stops of frames for lightproof, soundproof, or lead-lined doors.

F. Cased Openings: Fabricate frames for cased openings of same material, gauge, and assembly as specified for metal door frames, except omit door stops and preparation for hardware.

G. Anchors: Provide anchors to secure the frame to adjoining construction. Provide steel anchors, zinc-coated or painted with rust-inhibitive paint, not lighter than 18 gauge.

1. Wall Anchors: Provide a minimum of three anchors for each jamb. Locate anchors opposite top and bottom hinges and midway between.
   a. Masonry: Provide anchors of corrugated or perforated steel straps or 3/16-inch diameter steel wire, adjustable or T-shaped;
2. Floor Anchors: Provide floor anchors drilled for 3/8-inch anchor bolts at bottom of each jamb member. Where floor fill occurs, terminate bottom of frames at the indicated finished floor levels and support by adjustable extension clips resting on and anchored to the structural slabs.

2.05 WEATHERSTRIPPING

A. As specified in Section 08 71 00, "Door Hardware".

B. Integral Gasket: Black synthetic rubber gasket with tabs for factory fitting into factory slotted frames, or extruded neoprene foam gasket made to fit into a continuous groove formed in the frame, may be provided in lieu of head and jamb seals specified in Section 08 71 00, "Door Hardware". Insert gasket in groove after frame is finish painted.

2.06 HARDWARE PREPARATION

A. Reinforce, drill, and tap doors and frames to receive finish hardware. Prepare doors and frames for hardware in accordance with the applicable requirements of SDI 107 and DHI A115.1, DHI A115.2, DHI A115.4, DHI A115.5. Drill and tap for surface-applied hardware at the project site. Build additional reinforcing for surface-applied hardware into the door at the factory. Locate hardware in accordance with the requirements of SDI 100, as applicable. Punch door frames, with the exception of frames that will have weatherstripping to receive a minimum of two rubber or vinyl door silencers on lock side of single doors and one silencer for each leaf at heads of double doors. Set lock strikes out to provide clearance for silencers.

2.07 FINISHES

A. Hot-Dip Zinc-Coated and Factory-Primed Finish: Fabricate doors and frames from galvanized steel, ASTM A526, Coating Designation G60 or A60 (galvannealed). Repair damaged zinc-coated surfaces by the application of zinc dust paint conforming to DOD-P-21035. Phosphate treat and factory prime zinc-coated surfaces as specified in SDI 100. Provide for all exterior doors.

2.08 FABRICATION AND WORKMANSHIP

A. Finished doors and frames shall be strong and rigid, neat in appearance, and free from defects, waves, scratches, cuts, dents, ridges, holes, warp, and buckle.

Molded members shall be clean cut, straight, and true, with joints coped or mitered, well formed, and in true alignment. Dress exposed welded and soldered joints smooth. Design door frame sections for use with the wall construction indicated. Corner joints shall be well formed and in true alignment. Conceal fastenings where practicable. Design frames in exposed masonry walls or partitions to allow sufficient space between the inside back of trim and masonry to receive caulking compound.

B. Grouted Frames: For frames to be installed in exterior walls and to be filled with mortar or grout, fill the stops with strips of rigid insulation to keep the grout out of the stops and to facilitate installation of stop-applied head and jamb seals.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Frames: Set frames in accordance with HMMA Guide Specifications. Plumb, align, and brace securely until permanent anchors are set. Anchor bottoms of frames with expansion bolts or powder-actuated fasteners. Build in or secure wall anchors to adjoining construction. Backfill frames with mortar. When an additive is provided in the mortar, coat inside of frames with corrosion-inhibiting bituminous material. For frames in exterior walls, assure that stops are filled with rigid insulation before grout is placed.

B. Doors: Hang doors in accordance with clearances specified in HMMA Guide Specifications. After erection and glazing, clean and adjust hardware.

3.02 PROTECTION

A. Protect doors and frames from damage. Repair damaged doors and frames prior to completion and acceptance of the project or replace with new, as directed. Wire brush rusted frames until all rust is removed, clean thoroughly, and apply an all-over coat of rust-inhibitive paint of the same type used for shop coat.

3.03 CLEANING

A. Upon completion, clean exposed surfaces of doors and frames thoroughly. Remove mastic smears and other unsightly marks.

END OF SECTION

SECTION 08 33 23

OVERHEAD COILING DOORS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Overhead Coiling Doors, as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. American Society for Testing and Materials (ASTM) Publications:
      a. A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
      b. A525 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, General Requirements
   2. Military Specification (MIL):
      a. DOD-P-21035 - Paint, High Zinc Dust Content, Galvanizing Repair (Metric)
   3. National Electrical Manufacturers Association (NEMA) Publications:
      a. ICS1 - General Standards for Industrial Control and Systems
      b. ICS2 - Standards for Industrial Control Devices, Controllers and Assemblies
      c. ICS6 - Enclosures for Industrial Controls and Systems
      d. MG1 - Motors and Generators
   4. National Fire Protection Association (NFPA) Publications:
      a. 70 - National Electrical Code
      b. 80 - Fire Doors and Windows
   5. Underwriters Laboratories, Inc. (UL) Publication:
      a. 506 - Specialty Transformers

1.03 SUBMITTALS

A. Submit the following.
   1. Manufacturer’s Catalog Data:
      a. Overhead coiling doors
      b. Motor and controls
         1) For electrically operated system, submit wiring diagrams for motor and controls.

2. Drawings:
   a. Overhead coiling door system
      1) Submit drawings for doors showing types, sizes, locations, metal gauges, hardware provisions, installation details, and other details of construction. For motor-operated doors include supporting brackets for motors, location, type, and ratings of motors, and safety devices. Submit manufacturer's currently recommended installation procedures for doors with the shop drawings.

1.04 DELIVERY AND STORAGE

A. Protect doors and accessories from damage during delivery, storage, and handling. Clearly mark manufacturer's brand name. Store door in dry locations with adequate ventilation, free from dust and water, and in such a manner as to permit access for inspection and handling. Handle doors carefully to prevent damage. Remove damaged items that cannot be restored to like-new condition and provide new items.

PART 2 - PRODUCTS

2.01 OVERHEAD COILING DOORS

A. Shall be spring counterbalanced, rolling type, and shall be designed for use as indicated. Doors shall be operated by means of lifting handles, by hand chain with gear or sprocket reduction and by electric-power with auxiliary hand chain operation. Doors shall be complete with guides, hardware, fastenings, operating mechanisms, and accessories. Doors shall be surface-mounted type with guides at jambs set back a sufficient distance to provide a clear opening when door is in open position. Doors, hardware, and anchors shall be designed to withstand a wind pressure of 20 pounds per square foot of door area without damage. Doors shall be mounted as indicated on interior side of wall. Where doors are indicated to be chain operated, the door design and construction shall allow for electric-power operation.

2.02 FABRICATION

A. Curtains: Shall be formed of interlocking galvanized steel slats of shapes standard with the manufacturer, except that slats for exterior doors shall be flat type. Curtain shall roll up on a barrel supported at head of opening on brackets and be balanced by a torsional spring system in the barrel. Slats for doors less than 15 feet wide shall be not lighter than 22 gauge; slats for doors from 15 feet wide to 21 feet wide shall be not lighter than 20 gauge; slats for doors 21 feet wide and wider shall be not lighter than 18 gauge. Slats shall be of the gauge required for the width indicated and the wind pressure specified above. Slats for exterior doors shall be insulated with not less than 1/2 inch thick polyurethane or

polyisocyanurate foam insulation. Interior side of insulation shall be covered with interlocking galvanized steel slats not lighter than 24 gauge.

B. Endlocks and Windlocks: The ends of each slat or each alternate slat shall have malleable iron or galvanized steel endlocks of manufacturer's stock design. In addition to endlocks, exterior doors which are more than 16 feet wide or which have a design wind load of more than 20 pounds per square foot, shall have wind locks or integral slat lugs of manufacturer's standard design at ends of at least every sixth slat. Wind locks or lugs shall prevent curtain from leaving guide because of deflection from wind pressure or other forces.

C. Bottom Bar: The curtain shall have a steel bottom bar consisting of two angles of equal weight, one on each side, or an equivalent extruded aluminum section, fastened to bottom of curtain. Do not use aluminum on doors more than 16 feet wide. In addition, exterior doors shall have a compressible and replaceable rubber, neoprene, or vinyl weather seal attached to bottom bar. Attached a combination compressible seal and fail-safe safety device for stopping and reversing the travel of the door to the bottom bar of doors that are electric-power operated.

D. Guides: Steel structural shapes or formed steel shapes fastened to wall with steel shapes not less than 3/16 inch thick. Guides shall be of sufficient depth or shall incorporate a steel locking bar to retain the curtain in place under the wind pressure specified. Provide continuous vinyl or neoprene weather seals on guides at exterior doors. Securely attach guides to adjoining construction with not less than 3/8-inch diameter bolts, spaced near each end and not over 30 inches apart.

E. Barrel: Steel pipe or commercial welded steel tubing of proper diameter and thickness for the size of curtain. Deflection shall not exceed 0.03 inch per foot of span. Close ends of barrel with cast-iron plugs, machined to fit the pipe and either pinned or attached with screws in the spring barrel, except that drive end plug may be steel welded in place. Welding shall not be used on the tension end. Install within the barrel an oil-tempered, stress relieved, helical, counterbalancing steel spring, capable of producing sufficient torque to assure easy operation of the door curtain from any position. At least 80 percent of the door weight shall be counterbalanced at any position. Spring-tension shall be adjustable without removing the hood.

F. Brackets: Fabricate of steel plate or heavy cast iron to support the barrel, curtain, and operator and to form a supporting ring and end closure for the hood. Provide pre-lubricated, self-aligning ball bearings, shielded or sealed.

G. Hoods: Steel, not lighter than 24 gauge formed to fit contour of end brackets and reinforced with steel rods, or rolled beads at top and bottom edges. Hoods for openings more than 12 feet in width shall have intermediate supporting brackets. Provide a weather baffle at the lintel or inside the hood of each exterior door.

H. Locking Device: For each manually operated exterior rolling door provide manufacturer's standard chain- or bar-type locking device on the inside. The locking device shall be of type to receive a padlock with a 5/16-inch diameter shackle.

2.03 MANUAL OPERATION

A. Manual Push-Up Operation: Provide lifting handles on both sides of door and counterbalance in a manner to provide easy operation while raising or lowering the curtain by hand. The force required to operate the door shall not exceed 25 pounds. Provide pull-down straps or pole hooks on bottom rail of doors over 7 feet high.

B. Manual Hand-Chain Operation: Provide galvanized, endless chain operating over a sprocket and extending to within 3 feet of floor. Obtain reduction by use of roller chain and sprocket drive or suitable gearing. Gears shall be high-grade gray iron, cast from machine-cut patterns. The pull required to operate the door shall not exceed 35 pounds.

2.04 ELECTRIC OPERATION

A. Operator Features: Provide operations complete with electric motor, machine-cut reduction gears, steel chain and sprockets, magnetic brake, overload protection, brackets, push button controls, limit switches, magnetic reversing contactor, and other accessories necessary for proper operation. The operator shall be so designed that the motor may be removed without disturbing the limit-switch timing and without affecting the emergency auxiliary operators. Make provision for immediate emergency manual operation of door by chain-gear mechanism in case of electrical failure. The emergency manual operating mechanism shall be so arranged that it may be put into and out of operation from the floor, and its use shall not affect the timing of the limit switches. Provide an electrical of mechanical device which will disconnect the motor form the operating mechanism when the emergency manual operating mechanism is engaged.

B. Motors: Shall conform to NEMA MG1, high-starting torque, reversible type of sufficient horsepower and torque output to move the door in either direction from any position, and produce a door travel speed of not less than two-thirds foot or more than one foot per second, without exceeding the rated capacity. Motors shall be suitable for operation on current of the characteristics indicated and shall operate at not more than 3600 rpm. Single-phase motors shall not have commutation or more than one starting contact. Motor enclosures shall be the drip-proof type of NEMA TENV type. Install motors in approved locations.

C. Controls: Each door motor shall have an enclosed, across-the-line type, magnetic reversing contactor, thermal-overload protection, solenoid-operated brake, limit switches, and remote control switches at location indicated. Remote control switches shall be at least 5 feet above the floor line, and all switches shall be

located so that the operator will have complete visibility of the door at all times. The control equipment shall conform to NEMA ICS1 and NEMA ICS2. Control enclosures shall be NEMA ICS6, Type 12 or Type 4, for interior locations and Type 4 for exterior locations, except that contactor enclosures may be Type 1. Locate control switches inside the building unless otherwise indicated. Each switch control station shall be of the three-button type, with the buttons marked "OPEN", "CLOSE" and "STOP". The "OPEN" and "STOP" buttons shall be of the type requiring only momentary pressure to operate. The "CLOSE button shall be of the type requiring constant pressure to maintain the closing motion of the door. When the door is in motion, and the "STOP" button is pressed or the "CLOSE" button released, the door shall stop instantly and remain in the stop position; from the stop position, the door may then be operated in either direction by the "OPEN" or "CLOSE" buttons. Push buttons shall be full-guarded to prevent accidental operation. Provide limit switches to automatically stop the doors at their fully open and closed positions. Positions of the limit switches shall be readily adjustable.

D. Safety Device: The bottom bar of power-operated doors shall have a safety device that will immediately stop and reverse the door in its closing travel upon contact with an obstruction in the door opening or upon failure of the device or any component of the control system and cause the door to return to its full open position. The door-closing circuit shall be automatically locked out, and the door shall be operable manually until the failure or damage has been corrected. Do not use safety device as a limit switch.

E. Control Transformer: Shall be provided in power circuits as necessary to reduce the voltage on the control circuits to 120 volts or less (preferably 24 volts). The transformer shall conform to UL 506.

F. Electrical Work: Electrical components and installation shall conform to NFPA 70. The door manufacturer shall furnish manual or automatic control and safety devices, including extra flexible type SO cable and spring-loaded automatic take-up reel or equivalent device, as required for proper operation of the doors. Conduit, wiring, and mounting of controls is specified in Section titled "Interior Wiring Systems".

2.05 FINISHES

A. Slats, steel bottom bars, and hoods shall be hot-dip galvanized and shop primed. Shop prime other parts of coiling doors, except faying surfaces.

B. Galvanized and Shop-Primed Finish: Surfaces specified shall have a zinc coating, a phosphate treatment, and a shop prime coat of rust-inhibitive paint. The galvanized coating shall conform the ASTM A525, coating designation G90, for steel sheets, except that hoods located on interior of the building may be G60, and ASTM A123 for iron and steel products. The weight of coatings for products

shall be as designated in Table I of ASTM A123 for the thickness of base metal to be coated. The prime coat shall be a type especially developed for materials treated by phosphates and adapted to application by dipping or spraying. Repair damaged zinc-coated surfaces by the application of galvanizing repair paint conforming to DOD-P-21035 and spot prime. At the option of the Contractor, a two-part system including bonderizing, baked-on epoxy primer, and baked-on enamel top coat may be applied to slats before forming, in lieu of prime coat specified.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install doors in accordance with approved detail drawings and manufacturer's direction. Location anchors and inserts for guides, brackets, motors, switches, hardware, and other accessories accurately. Upon completion, doors shall be weathertight and shall be free from warp, twist, or distortion.

3.02 FINAL ADJUSTMENT

A. Doors shall be lubricated and properly adjusted to operate freely.

3.03 CLEANING

A. Clean curtain and components using non-abrasive materials and methods recommended by manufacturer, remove labels and visible markings, touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Door Hardware, as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. Builders Hardware Manufacturers Association, Inc. (BHMA) Publications:
      a. 101 - Butts and Hinges (ANSI/BHMA A156.1)
      b. 111 - Template Hinge Dimensions (ANSI/BHMA A156.7)
      c. 301 - Door Controls - Closers (ANSI/BHMA A156.4)
      d. 311 - Door Controls - Overhead Holders (ANSI/BHMA A156.8)
      e. 321 - Life Safety Closer/Holder/Release Devices (ANSI/BHMA A156.15)
      f. 501 - Auxiliary Locks and Associated Products (ANSI/BHMA A156.5)
      g. 601 - Bored and Preassembled Locks and Latches (ANSI/BHMA A156.2)
      h. 621 - Mortise Locks and Latches (ANSI/BHMA A156.13)
      i. 701 - Exit Devices (ANSI/BHMA A156.3)
      j. 1001 - Architectural Door Trim (ANSI/BHMA A156.6)
      k. 1101 - Self-Closing Hinges and Pivots (ANSI/BHMA A156.17)
      l. 1201 - Auxiliary Hardware (ANSI/BHMA A156.16)
      m. 1301 - Materials and Finishes (ANSI/BHMA A156.18)
   2. National Fire Protection Association (NFPA) Publications:
      a. 80 - Fire Doors and Windows
      b. 101 - Life Safety Code
   3. Steel Door Institute (SDI) Publication:
      a. 100 - Standard Steel Doors and Frames
   4. Underwriters Laboratories, Inc. (UL) Publications:
      a. BMD - Building Materials Directory, January
      b. 14C - Swinging Hardware for Standard Tin-Clad Fire Doors Mounted Singly and in Pairs

1.03 SUBMITTALS

A. Submit the following.
   1. Design Data:
      a. Keying system
         1) Submit keying system for approval by the Owner.
   2. Manufacturer's Catalog Data:
      a. Door hardware
         1) Submit for each different item of hardware.
   3. Schedules:
      a. Hardware list
      b. Hardware schedule
         1) Hardware List: Submit in the following form:

Hardware Item	Reference Publication Type No.	Mfr. Name and Catalog No.	UL Mark (If fire rated and listed)	BHMA Finish Designation

   4. Hardware Schedule: Submit to the Engineer. Include for each item the quantity, manufacturer's catalog number, corresponding reference publication type number, size, finish, key control symbols, and UL mark if fire rated and listed. Indicate that each item listed under the paragraph entitled "Hardware Items" meets the standard listed for that item. A copy of the listing of proposed hardware items in the current applicable BHMA directories of certified products may be submitted in lieu of test reports.

1.04 DELIVERY AND MARKING

A. Deliver hardware in original individual containers, complete with necessary appurtenances including fasteners and instructions. Mark each individual container with manufacturer's name and catalog number as shown in hardware schedule. Deliver permanent keys and removable cores to the Engineer, either directly or by certified mail. Deliver construction master keys with the locks.

PART 2 - PRODUCTS

2.01 HARDWARE MANUFACTURERS AND MODIFICATIONS

A. Provide, as far as practicable, locks, hinges, pivots, and closers of one lock, hinge, pivot, or closer manufacturer's make. Modify hardware as necessary to provide features indicated or specified.

2.02 HARDWARE DESIGNATIONS

A. Hardware items covered by BHMA standards are specified by BHMA designations. Items covered by Federal Specifications are specified by Federal Designations.

2.03 TEMPLATE HARDWARE

A. Hardware to be applied to metal or to prefinished doors shall be made to template. Promptly furnish template information or templates to door and frame manufacturers. Template hinges shall conform to BHMA 111. Coordinate hardware items to prevent interference with other hardware.

2.04 HARDWARE ITEMS

A. Conform to the respective standards listed and to requirements specified herein. Hinges, pivots, locks, latches, exit devices, bolts, and closers shall be clearly and permanently marked with the manufacturer's name or trademark where it will be visible after the item is installed. For closers with covers, the name or trademark may be beneath the cover. Provide hardware items as specified below and as listed under "Hardware Sets".

B. Hinges: BHMA 101, 4-1/2 by 4-1/2 inches unless otherwise specified. Construct loose pin hinges for exterior doors and reverse-bevel interior doors so that pins will be nonremovable when door is closed. Other antifriction bearing hinges may be provided in lieu of ball-bearing hinges.

C. Locks and Latches: BHMA 621, Series 1000, Operational Grade 1, Security Grade 2 and BHMA 601, Series 4000, Grade 1. Provide mortise locks with escutcheons not less than 7 by 2-1/4 inches with a bushing at least 1/4 inch long. Cut escutcheons to suit cylinders and provide trim items with straight, beveled, or smoothly rounded sides, corners, and edges. Knobs and roses of mortise locks shall have screwless shanks and no exposed screws. BHMA 601, Series 4000, Grade 2. Locks for exterior doors shall have threaded roses or concealed machine screws.

D. Exit Devices: Exit Devices (Panic Hardware or Fire Exit Hardware) and Auxiliary Items: BHMA 701, Grade 1. Provide adjustable strikes for rim type and vertical rod devices. Provide open back strikes for pairs of doors with mortise and vertical rod devices. Provide escutcheons, not less than 7 by 2-1/4 inches. Cut escutcheons to suit cylinders and operating trim.

E. Lock Cylinders: Provide cylinders for new locks, including locks provided under other sections of this Specification. Cylinders shall have six or seven pin tumblers and shall be products of the same manufacturer. Cylinders shall have interchangeable cores which are removable by a special control key.

F. Lock Trim: Cast, forged, or heavy wrought construction and commercial plain design. In addition to meeting the test requirements of BHMA 601 and BHMA 621, knobs, roses, and escutcheons shall be 0.050 inch thick if unreinforced. If reinforced, the outer shell shall be 0.035 inch thick and the combined thickness shall be 0.070 inch, except that knob shanks shall be 0.060 inch thick.

G. Keys: Furnish one file key, one duplicate key, and one working key for each key change, furnish one additional working key for each lock of each keyed-alike group.

H. Door Bolts: BHMA 1201. Provide dustproof strikes for bottom bolts, except for doors having metal thresholds. Automatic latching flush bolts: BHMA 701, Type 25.

1. Closers: BHMA 301, Series C02000, Grade 1, with optional feature (o.f.) PT 4C, unless otherwise specified. Provide closers complete with brackets, arms, mounting devices, fasteners, pivots, cement cases and other features necessary for the particular application. Size closers in accordance with manufacturer's recommendations and list sizes in the Hardware Schedule.

a. Identification Marking: In addition to the manufacturer's name or trademark, each closer shall bear the manufacturer's size designation where it will be visible after installation.

b. Special Tools: Provide special tools for adjustment of door closing devices, such as spanner and socket wrenches.

I. Overhead Holders: BHMA 311.

J. Closer Holder-Release Devices: BHMA 321.

K. Edge Guards: BHMA 1001, stainless steel, of same height as armor plates. Apply to hinge stile.

L. Door Stops and Silencers: BHMA 1201. Silencers Type L03011. Provide one silencer for each hole punched in hollow metal frames.

M. Thresholds: BHMA 701, Type 26, with vinyl or silicone rubber insert in face of stop, and BHMA 1001.

N. Weatherstripping: A set shall include head and jamb seals, sweep strips, and, for pairs of doors. Weatherstripping shall consist of extruded aluminum retainers not less than 0.07 inch wall thickness with vinyl, neoprene, silicone rubber, or polyurethane inserts. Aluminum shall be clear (natural) anodized. Fasten weatherstripping in place with color-matched sheet metal screws not more than 9 inches o.c. after doors and frames have been finish painted.

O. Rain Drips: Extruded aluminum, not less than 0.08 inch thick, clear anodized. Set drips in sealant conforming to Section 07 92 00, "Joint Sealants", and fasten with stainless steel screws.

1. Door Rain Drips: Approximately 1-3/4 inches high by 5/8-inch projection. Align bottom with bottom edge of door.

P. Special Tools: Provide special tools, such as spanner and socket wrenches and dogging keys, required to service and adjust hardware items.

2.05 FASTENERS

A. Furnish fasteners of proper type, quality, size, quantity, and finish with hardware. Fasteners exposed to weather shall be of nonferrous metal or stainless steel. Use fasteners of type necessary to accomplish a permanent installation.

2.06 FINISHES

A. BHMA 1301. Hardware shall have BHMA 630 finish (satin stainless steel), unless specified otherwise. Provide items not manufactured in stainless steel in BHMA 626 finish (satin chromium plated) over brass or bronze, except surface door closers which shall have prime coat finish, and except steel hinges which shall have BHMA 600 finish (primed for painting). Exit devices may be provided in BHMA 626 finish in lieu of BHMA 630 finish except where BHMA 630 is specified under "Hardware Sets". Exposed parts of concealed closers shall have finish to match lock and door trim.

PART 3 - EXECUTION

3.01 INSTALLATION

Install hardware in accordance with manufacturers' printed instructions. Fasten hardware to wood surfaces with full-threaded wood screws or sheet metal screws. Use machine screws set in expansion shields for fastening hardware to solid concrete and masonry surfaces. Use toggle bolts where required for fastening to hollow core construction. Use through bolts where necessary for satisfactory installation.

3.02 ACCEPTANCE OF WORK

A. After installation, protect hardware from paint, stains, blemishes, and other damage until acceptance of work. Submit notice of testing 15 days before scheduled, so that the testing can be witnessed. Adjust hinges, locks, latches, bolts, holders, closers, and other items to operate properly. Correct, repair, and finish, as directed, errors in cutting and fitting and damage to adjoining work.

3.03 HARDWARE SETS

A. Hardware sets should be provided as specified below, or approved equal. Finishes to be selected by Owner from manufacturer’s full range of finish options.

HW-1 (Entrance Set) Double Exterior Door (Insulated Hollow Metal)

2 Panic Device	Precision 2208 – Surface Vertical Rod Exit Device with Lever (Exit/Panic Device with 4908A Lever Trim) (Best Precision Brand)
1 Rim Cylinder	12E-7-2-S2-RP (Best Brand) (To match existing keying system, coordinate with Owner)
6 Each Hinges	PBB 4B81 Commercial Grade Heavy Duty Weight Ball Bearing Hinge (PBB Brand)
2 Kick Plates	K1050 10" CSK BEV (Rockwood Brand)
1 Threshold	Pemko 254X226_V Latching Panic Saddle Threshold (6" Wide)
1 Set - Weatherstripping	Head and Jamb (Pemko Brand)
2 Closer/Holder	Best EHD9016 AF90P Door Closer with cover (Best Brand)
1 Set – Astragal	Pemko 18041_NB(MS) Brush Seal Meeting Stile Split Astragal

HW-2 (Passage Set) Single Door

1 Lockset	Best 9K30N-15-D-S3 Passage Lever (Best Brand)
3 Each Hinges	PBB 4B81 Commercial Grade Heavy Duty Weight Ball Bearing Hinge (PBB Brand)
3 Door Silencers	DCI 307D Metal Frame Door Silencers (DCI Brand)
1 Threshold	Pemko 2716 Heavy-Duty Saddle Threshold – 6" Wide x ¼" High (Pemko Brand)
1 Bottom Sweep	Pemko 315_N Door Bottom Sweep with EPDM Insert (Pemko Brand)
1 Closer/Holder	Best EHD9016 AF90P Door Closer with cover (Best Brand)

END OF SECTION

SECTION 09 21 16

GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Gypsum Board Assemblies, as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. American Society for Testing and Materials (ASTM) Publications:
      a. C36 - Gypsum Wallboard
      b. C442 - Gypsum Backing Board and Coreboard
      c. C475 - Joint Treatment Materials for Gypsum Wallboard Construction
      d. C514 - Nails for the Application of Gypsum Wallboard
      e. C557 - Adhesives for Fastening Gypsum Wallboard to Wood Framing
      f. C1396/1396M - Water-Resistant Gypsum Backing Board
      g. C840 - Application and Finishing Gypsum Board
      h. C931 - Exterior Gypsum Soffit Board
      i. C960 - Predecorated Gypsum Board
      j. C1002 - Steel Drill Screws for the Application of Gypsum Board
      k. E84 - Surface Burning Characteristics of Building Materials
   2. Gypsum Association (GA) Publications:
      a. 224 - Installation of Predecorated Gypsum Board
      b. 600 - Fire Resistance Design Manual
   3. Underwriters Laboratories, Inc. (UL) Publication:
      a. FRD - Fire Resistance Directory

1.03 SUBMITTALS

A. Submit the following.
   1. Manufacturer's Catalog Data:
      a. Gypsum board
      b. Fasteners
      c. Joint treatment materials
      d. Adhesives
      e. Metal trim

2. Color Selection Samples:
   a. Predecorated gypsum board
      1) Submit sample of each color and pattern of predecorated gypsum board. Where colors are not indicated, submit samples of not less than eight of the manufacturer's standard colors for selection by the Engineer.

1.04 DELIVERY, HANDLING, AND STORAGE

A. Delivery: Deliver materials in the original packages, containers, or bundles with each bearing the brand name, applicable standard designation, and name of manufacturer, or supplier.

B. Handling: Neatly stack gypsum board flat to prevent sagging or damage to the edges, ends, and surfaces.

C. Storage: Keep materials dry by storing inside a sheltered building. Where necessary to store gypsum board outside, store off the ground, properly supported on a level platform, and protected from direct exposure to rain, snow, sunlight, and other extreme weather conditions. Provide adequate ventilation to prevent condensation.

1.05 ENVIRONMENTAL CONDITIONS

A. Temperature: Maintain a uniform temperature of not less than 50 degrees F in the structure for at least 48 hours prior to, during, and following the application of gypsum board and joint treatment materials, or the bonding of adhesives.

B. Exposure to Weather: Protect gypsum board products from direct exposure to rain, snow, sunlight, and other extreme weather conditions.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Shall conform to the respective specifications and standards and to the requirements specified herein. Provide gypsum board manufactured from asbestos-free materials.

B. Gypsum Wallboard: ASTM C36.
   1. Type X: 48 inches wide, 5/8-inch thick, tapered and featured edges.

C. Joint Treatment Materials: ASTM C475.
   1. Embedding Compound: Specifically formulated and manufactured for use in embedding tape at gypsum board joints and completely compatible with tape, substrate and fasteners.

2. Finishing or Topping Compound: Specifically formulated and manufactured for use as a finishing compound.
3. All-Purpose Compound: Specifically formulated and manufactured to serve as both a taping and a finishing compound and compatible with tape, substrate and fasteners.
4. Joint Tape: Cross-laminated, tapered edge, reinforced paper, or special tape recommended by the manufacturer.

D. Screws: ASTM C1002. Type "G," Type "S" or Type "W" steel drill screws. Use specially designed steel screws as recommended by the manufacturer of the gypsum board for the screw application of gypsum board to gypsum board or to steel or wood framing.

E. Adhesives: Adhesive containing benzene, carbon tetrachloride, or trichloroethylene shall not be used.
1. Adhesive for Fastening Gypsum Board to Metal Framing: Type as recommended by the gypsum board manufacturer.

F. Corner Bead and Edge Trim: Fabricate from corrosive protective coated steel or plastic designed for its intended use. Flanges shall be free of dirt, grease, and other materials that may adversely affect the bond of joint treatment. Materials shall be prefinished or job decorated.

G. Water: Clean, fresh, and potable.

PART 3 - EXECUTION

3.01 INSPECTION

A. Framing and Furring: Verify that framing and furring are securely attached and of sizes and spacing to provide a suitable substrate to receive gypsum board. Verify that all blocking, headers and supports are in place to support plumbing fixtures and to receive soap dishes, grab bars, towel racks, and similar items. Do not proceed with work until framing and furring are acceptable for application of gypsum board.

B. Gypsum Board: Verify that surfaces of gypsum board and framing to be bonded with an adhesive are free of dust, dirt, grease, and any other foreign matter. Do not proceed with work until surfaces are acceptable for application of gypsum board with adhesive.

3.02 APPLICATION OF GYPSUM BOARD

A. Apply gypsum board to framing and furring members in accordance with ASTM C840 and the requirements specified herein. Apply gypsum board with separate boards in moderate contact; do not force in place. Stagger end joints of adjoining

boards. Neatly fit abutting end and edge joints. Use gypsum board of maximum practical length. Cut out gypsum board as required to make neat close joints around openings. In vertical application of gypsum board, panels shall be of length required to reach full height of vertical surfaces in one continuous piece. Surfaces of gypsum board and substrate members may be bonded together with an adhesive, except where prohibited by fire rating(s). Leave a space approximately 1/4 inch at bottom of gypsum board for calking.

3.03 FINISHING OF GYPSUM BOARD

A. Tape and finish gypsum board in accordance with ASTM C840. Provide joint, fastener depression, and corner treatment.

3.04 CAULKING

A. Calk openings around pipes, fixtures, and other items projecting through gypsum board as specified in Section 07 92 00, “Joint Sealants”. Apply caulking material with exposed surface flush with gypsum board.

3.05 PATCHING

A. Patch surface defects in gypsum board to a smooth, uniform appearance, ready to receive finish as specified.

END OF SECTION

SECTION 09 22 16

NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Non-structural Metal Framing, as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. American Society for Testing and Materials (ASTM) Publications:
      a. A463 - Steel Sheet, Cold-Rolled, Aluminum-Coated Type 1
      b. A525 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
      c. C754 - Installation of Steel Framing Members to Receive Screw-Attached Gypsum Wallboard, Backing Board, or Water-Resistant Backing Board
   2. Underwriters Laboratories, Inc. (UL) Publication:
      a. Fire Resistance Directory

1.03 DESCRIPTION OF WORK

A. Work includes nonload-bearing cold-formed metal framing.

1.04 SUBMITTALS

A. Certificates of Compliance: Manufacturer's certificates attesting that materials meet the requirements specified herein and in referenced publications.

B. Shop Drawings: Necessary for the erection of metal framing. Indicate materials, sizes, thicknesses, and fastenings.

1.05 DELIVERY AND STORAGE

A. Deliver materials to the job site and store in ventilated dry locations. Storage area shall permit easy access for inspection and handling. If it is necessary to store materials outdoors, stack materials off the ground, properly supported on a level platform, and fully protected from the weather. Handle materials carefully to

prevent damage. Remove damaged items that cannot be restored to like-new condition and provide new items.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide steel materials for metal support systems with galvanized coating ASTM A525, G-60; aluminum coating ASTM A463, T1-25; or a 55 percent aluminum-zinc coating.
   1. 1-1/4” Flange Depth
   2. 3-5/8” Stud Depth
   3. 20 Gauge (Min.)

B. Materials for Use in Nonload-Bearing Wall Framing and Furring for Attachment of Gypsum Wallboard: ASTM C754.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Nonload-Bearing Wall Framing and Furring for Attachment of Gypsum Wallboard: ASTM C754, except as indicated otherwise.

END OF SECTION

SECTION 09 91 00

PAINTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Painting as shown on the Plans, as specified and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. Code of Federal Regulations (CFR) Publications:
      a. 29 1910.1000 - Occupational Safety and Health Standards
      b. 29 1910.1025 - Occupational Safety and Health Standards (Lead)
   2. Federal Standard (FED-STD):
      a. 313 - Material Safety Data Sheets Preparation and Submission of
   3. Steel Structures Painting Council (SSPC) Publications:
      a. Paint-1 - Shop, Field, and Maintenance Painting
      b. Paint-3 - A Guide to Safety in Paint Application
      c. Paint-20 - Zinc-Rich Primers (Type I, Inorganic, and Type II Organic)
      d. SP 1 - Solvent Cleaning
      e. SP 2 - Hand Tool Cleaning
      f. SP 3 - Power Tool Cleaning
      g. SP 6 - Commercial Blast Cleaning
      h. SP 7 - Brush-Off Blast Cleaning
      i. SP 10 - Near-White Blast Cleaning

1.03 SUBMITTALS

A. Submit the following.
   1. Manufacturer's Instructions:
      a. Paint application instructions
      b. Manufacturer's material safety data sheets
         1) Submit Manufacturer's material safety data sheets for coatings, solvents, and other potentially hazardous materials, as defined in FED-STD-313.

1.04 REGULATORY REQUIREMENTS

A. Lead Content: Do not use coatings having a lead content over 0.06 percent by weight of nonvolatile content.

B. Chromate Content: Do not use coatings containing zinc-chromate or strontium-chromate.

C. Asbestos Content: Materials shall not contain asbestos.

1.05 DELIVERY AND STORAGE

A. Deliver materials in sealed, labeled containers bearing the manufacturer's name, brand designation, specification number, batch number, color, and date of manufacture. Restrict storage and mixing of materials to locations designated by the Engineer.

1.06 SAFETY METHODS

A. Apply coating materials using safety methods and equipment in accordance with the following:

B. Safety Methods Used During Coating Application: Comply with the requirements of SSPC Paint-3.

C. Toxic Materials: To protect personnel from overexposure to toxic materials, conform to the most stringent guidance of:
   1. The chemical manufacturer when using mineral spirits, or other chemicals. Use impermeable gloves, chemical goggles or face shield, and other recommended protective clothing and equipment to avoid exposure of skin, eyes, and respiratory system. Conduct work in a manner to minimize exposure of building occupants and the general public.
   2. The appropriate OSHA standard in 29 CFR 1910.1025 for surface preparation on painted surfaces containing lead, zinc-chromate, strontium-chromate, asbestos, or other toxic ingredients.
   3. 29 CFR 1910.1000.
   4. Threshold Limit Values (R) of the American Conference of Governmental Industrial Hygienists.
   5. Manufacturer's Material Safety Data Sheets (MSDS).

1.07 ENVIRONMENTAL CONDITIONS

A. Exterior Coatings: Do not apply coating to surfaces during foggy or rainy weather, or under the following surface temperature conditions:
   1. Less than 5 degrees F above the dew point;
   2. Below 40 degrees F (for oil-based paints), 50 degrees F (for latex paints), or over 95 degrees F, unless approved by the Engineer.

B. Interior Coatings: Apply coatings when surfaces to be painted are dry and the following surface temperatures can be maintained:
   1. Between 65 and 95 degrees F during the application of enamels and varnishes;
   2. Between 50 and 95 degrees F during the application of other coatings.

1.08 COLOR SELECTION

A. Colors of finish coats shall be as indicated or specified. Where not indicated or specified, colors shall be selected by the Owner.

1.09 LOCATION AND SURFACE TYPE TO BE PAINTED

A. Painting Included: Where a space or surface is indicated to be painted, include the following unless indicated otherwise.
   1. Surfaces behind portable objects and surface mounted articles readily detachable by removal of fasteners, such as screws and bolts.
   2. New factory finished surfaces that require identification or color coding and factory finished surfaces that are damaged during performance of the work.
   3. Existing coated surfaces that are damaged during performance of the work.

B. Painting Excluded: Do not paint the following unless indicated otherwise.
   1. Surfaces concealed and made inaccessible by panelboards, fixed ductwork, machinery, and equipment fixed in place.
   2. Surfaces in concealed spaces. Concealed spaces are defined as spaces above suspended ceilings, furred spaces, attic spaces, crawl spaces, and chases.
   3. Steel to be embedded in concrete.
   4. Copper, stainless steel, aluminum, brass, and lead except existing coated surfaces.

C. Interior Painting: Includes new surfaces of the building and appurtenances as indicated and existing coated surfaces made bare by cleaning operations. Where a space or surface is indicated to be painted, include the following items, unless indicated otherwise.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS OF PAINT MATERIALS:

A. Products shall comply with MPI standards indicated and shall be listed in the "MPI Approved Product List."

2.02 MATERIALS

A. Provide as far as practical, pretreatments, primers and top coats from one coating manufacturer. Coatings shall be applied as a complete system and must be compatible with the substrate and each coating component. Coating systems shall be the manufacturer's industrial or commercial systems and are specified by generic type only. Residential coating systems shall not be permitted.

B. See painting schedule at the end of this Section.

C. Provide brands and qualities of materials for use on work exactly as specified, or an approved equal.

D. Coordination: Provide finish coats which are compatible with prime paints used. Provide barrier coats over incompatible primers where required. Submit written notification of anticipated problems using specified coatings with substrates primed by others.

E. Paint Colors:
   1. Provide colors as indicated or selected by Owner.
   2. Paint area of each color for observation, review and revisions before batch mixing of colors, or shipping large quantities of that color to job. Allow revisions to approved colors and textures after review of initial area of each color.
      a. Vary top coats in shade from preceding coat without affecting finish color.

F. Mixing and Tinting:
   1. Job mix or job tint only if approved. Mix only in pails in suitably sized non-ferrous or oxide-resistant metal pans.
   2. Strain to remove lumps and specks.
   3. Use tinting colors recommended by manufacturer for the specific type of finish.
   4. Add non-mercuric fungicidal agent to exterior finishes by manufacturer.

PART 3 - EXECUTION

3.01 PROTECTION OR AREAS AND SPACES

A. Prior to surface preparation and coating applications, remove, mask, or otherwise protect, hardware, hardware accessories, machined surfaces, radiator covers, plates, lighting fixtures, public and private property, and other such items not to be coated that are in contact with surfaces to be coated. Following completion of painting, workmen skilled in the trades involved shall reinstall removed items. Restore surfaces contaminated by coating materials, to original condition and repair damaged items.

3.02 SURFACE PREPARATION

A. Remove dirt, splinters, loose particles, grease, oil, disintegrated coatings, and other substances deleterious to coating performance as specified for each substrate.

3.03 PREPARATION OF CONCRETE AND CEMENTITIOUS SURFACE

A. Concrete and Masonry:
   1. Surface Cleaning: Remove the following deleterious substances.
      a. Dirt, Chalking, Grease, and Oil: Wash new and existing uncoated surfaces with a solution composed of 3 ounces (2/3 cup) trisodium phosphate, 1 ounce (1/3 cup) household detergent, and 3 quarts of warm water. Then rinse thoroughly with fresh water. Wash existing coated surfaces with a suitable detergent and rinse thoroughly. Fungus and Mold: Wash ,and existing uncoated surfaces with a solution composed of 3 ounces (2/3 cup) trisodium phosphate, 1 ounce (1/3 cup) household detergent, 1 quart 5 percent sodium hypochlorite solution and 3 quarts of warm water. Rinse thoroughly with fresh water.
      b. Glaze and Loose Particles: Remove by wire brushing.
      c. Efflorescence: Remove by scraping or wire brushing followed by washing with a 5- to 10-percent by weight aqueous solution of hydrochloric (muriatic) acid. Do not allow acid to remain on the surface for more than five minutes before rinsing with fresh water. Do not acid clean more than 4 square feet of surface, per workman, at one time.

B. Gypsum Board:
   1. Surface Cleaning: Gypsum board shall be dry. Remove loose dirt and dust by brushing with a soft brush or rubbing with a dry cloth prior to application of the first coat material.
   2. Repair of Minor Defects: Prior to painting, repair joints, cracks, holes, surface irregularities, and other minor defects with spackling compound and sand smooth.

3.04 APPLICATION

A. Coating Application: Apply coating materials in accordance with SSPC Paint-1. SSPC Paint-1 methods are applicable to all substrates, except as modified herein. Thoroughly work coating materials into joints, crevices, and open spaces. Touch up damaged coatings before applying subsequent coats. Interior areas shall be broom clean and dust free before and during the application of coating material.
   1. Drying Time: Allow time between coats, as recommended by the coating manufacturer, to permit thorough drying. Provide each coat in specified condition to receive the next coat.

2. Primers, and Intermediate Coats: Do not allow primers or intermediate coats to dry more than 30 days, or longer than recommended by the manufacturer, before applying subsequent coats. Follow manufacturer's recommendations for surface preparation if primers or intermediate coats are allowed to dry longer than recommended by manufacturers of subsequent coatings. Each coat shall cover the surface of the preceding coat or surface completely, and there shall be a visually perceptible difference in shades of successive coats.
3. Finished Surfaces: Provide finished surfaces free from runs, drops, ridges, waves, laps, brush marks, and variations in colors.

B. Equipment: Apply coatings with approved brushes, approved rollers, or approved spray equipment, unless specified otherwise. Spray areas made inaccessible to brushing by items such as ducts and other equipment.

C. Thinning of Paints: Reduce paints to proper consistency by adding fresh paint, except when thinning is mandatory for the type of paint being used. Obtain written permission from the Engineer to use thinners. The written permission shall include quantities and types of thinners to use.

D. Coating Systems:
1. Systems by Substrates: Apply coatings that conform to the respective specifications listed in the following Tables:

Table	
I	Metal Surfaces (Doors & Frames)
II	Interior Masonry Surfaces
III	Interior Gypsum Wallboard Surfaces

2. Minimum Dry Film Thickness (DFT): Apply paints, primers, varnishes, enamels, undercoats, and other coatings to a minimum dry film thickness of 1.5 mil each coat unless specified otherwise in the Tables. Coating thickness where specified, refers to the minimum dry film thickness.
3. Coatings for Surfaces Not Specified Otherwise: Coat surfaces which have not been specified, the same as surfaces having similar conditions of exposure.
4. Existing Surfaces Damaged During Performance of the Work, Including New Patches In Existing Surfaces: Coat surfaces with the following:
   a. One coat of primer.
   b. One coat of undercoat or intermediate coat.
   c. One top coat to match adjacent surfaces.
5. Existing Coated Surfaces To Be Painted: Apply coatings conforming to the respective specifications listed in the Tables herein, except that pretreatments, sealers, fillers, and primers need not be provided on surfaces where existing coatings are soundly adhered and in good condition.

3.05 COATING SYSTEMS FOR METAL

A. Primer: Apply specified ferrous metal primer on the same day that surface is cleaned. If flash rusting occurs, re-clean the surface prior to application of primer.
   1. Inaccessible Surfaces: Prior to erection, use two coats of the specified primer on metal surfaces that will be inaccessible after erection.
   2. Shop-primed Surfaces: Touch up exposed substrates and damaged coatings to protect from rusting prior to applying field primer.

3.06 INSPECTION AND ACCEPTANCE

A. In addition to meeting the previously specified requirements, demonstrate the mobility of moving components, including but not limited to swinging and sliding doors, cabinets, and windows with operable sash, for inspection by the Engineer. Perform this demonstration after appropriate curing and drying times of the coatings have elapsed and prior to invoicing for final payment.

TABLE I
METAL SURFACES

CONDITION	PREPARATION	FIRST COAT	DFT	SECOND COAT	DFT	THIRD COAT	DFT
New	-	Shop Primed	2.0	Acrylic	1.5	Acrylic	1.5

TABLE II
INTERIOR MASONRY SURFACES

CONDITION	PREPARATION	FIRST COAT	DFT	SECOND COAT	DFT	THIRD COAT	DFT
New	Clean and Dry	Primer	75 sf/gal	Acrylic	4.0	Acrylic	4.0

TABLE III
INTERIOR GYPSUM WALL BOARD SURFACES

CONDITION	PREPARATION	FIRST COAT	DFT	SECOND COAT	DFT	THIRD COAT	DFT
New	Clean and Dry	Emulsified-Acrylic	2.0	Emulsified-Acrylic	2.0	-	-

END OF SECTION

SECTION 22 00 00

PLUMBING GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Plumbing General Requirements, as shown on the Plans, as specified and/or directed.

B. Related work specified elsewhere:
   1. Division 1, “General Requirements”
   2. Division 22, “Plumbing”
   3. Division 23, “Mechanical”
   4. Division 26, “Electrical”

1.02 REFERENCE STANDARDS

A. The following is a list of standards that may be referenced in this Section:
   1. Code of Federal Regulations (CFR) Publications:
      a. 29-1910 SUBPART O – Machinery and Machine Guarding
      b. 29-1910.219 – Mechanical Power Transmission Apparatus

1.03 SUBMITTALS

A. Submit shop drawings, manufacturer's data, publication compliance, certified test reports, and manufacturer's certificates of compliance for equipment, materials and finish, and pertinent details for each system where specified in each individual section, and have them approved before procurement, fabrication or delivery of the items to the job site. Shop drawings shall be accompanied by a letter of transmittal in duplicate, and all shop drawings shall be suitably identified with the name of the project, contract number, Contractor's name, date and initials indicating approval of such submittal by the Contractor under the applicable specification. Partial submittals will not be acceptable and will be returned without review. Submittals shall include the manufacturer's name, trade name, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and the specific technical paragraph reference which specifies each item, applicable industry and technical society publication references, and other information necessary to establish contract compliance of each item to be furnished.
   1. Manufacturer's Data: Submittals for each manufactured item shall be current manufacturer's descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves, and catalog cuts.

2. Shop Drawings: Drawings shall be a minimum of 8.5 inches by 11 inches in size, except as specified otherwise. Drawings shall include floor plans, sectional views, wiring diagrams, and installation details of equipment; and equipment spaces identifying and indicating proposed location, layout and arrangement of items of equipment, control panels, accessories, piping, ductwork, and other items that must be shown to ensure a coordinated installation. Wiring diagrams shall identify circuit terminals, and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices.

3. Manufacturer's Certificates of Compliance: Submit certification from manufacturer attesting that materials and equipment to be furnished for this project comply with the requirements of this specification and of the reference publications. Pre-printed certifications will not be acceptable; certifications shall be the manufacturer's original; certifications shall be not more than one year old. The certification shall not contain statements that could be interpreted to imply that the product does not meet all requirements specified, such as "as good as"; "achieve the same end use and results as materials formulated in accordance with the referenced publications"; "equal or exceed the service and performance of the specified material". The certification shall simply state that the product conforms to the requirements specified. Certificates shall be signed by the manufacturer's official authorized to sign certificates of compliance.

4. Reference Standards Compliance: Where equipment or materials are specified to conform to industry and technical society reference standards of organizations such as the American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturers Association (NEMA), American Society of Mechanical Engineers (ASME), American Gas Association (AGA), American Refrigeration Institute (ARI), and Underwriters' Laboratories (UL), proof of such conformance shall be submitted. If an organization uses a label or listing to indicate compliance with a particular reference standard, the label or listing will be acceptable evidence, unless otherwise specified in the individual sections.

    a. Independent Testing Organization Certificate: In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing and approved by the Engineer. The certificate shall state that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

1.04 OPERATION AND MAINTENANCE MANUAL

A. Furnish an operation and maintenance manual for each item of equipment. Furnish three copies of the manual bound in hardback binders or an approved

equivalent. Furnish one complete manual to the Owner's Representative for review and approval not more than 90 calendar days after an item is approved, but at least 60 calendar days prior to field acceptance testing of the item. Furnish the remaining manuals at least 60 days prior to contract completion. Inscribe the following identification on the cover: the words "OPERATION AND MAINTENANCE MANUAL", the name and location of the equipment or the building, the name of the Contractor, and the contract number. The manual shall include the names, addresses, and telephone numbers of each subcontractor installing equipment, and of the local representatives for each item of equipment. The manual shall have a table of contents and be assembled to conform to the table of contents with the tab sheets placed before instructions covering the subject. The instructions shall be legible and easily read, with large sheets of drawings folded in. The manual shall include: wiring and control diagrams with data to explain detailed operation and control of each item of equipment; a control sequence describing start up, operation and shut down; description of the function of each principal item of equipment; the procedure for starting; the procedure for operating; shut down instructions; installation instructions; maintenance instructions; lubrication schedule including type, grade, temperature range, and frequency; safety precautions, diagrams, and illustrations; test procedures; performance data; and parts list. The parts lists for equipment shall indicate the sources of supply, recommended spare parts, and the service organization which is reasonably convenient to the project site. The manual shall be complete in all respects for equipment, controls, accessories, and associated appurtenances provided.

1.05 CATALOGED PRODUCTS

A. Materials and equipment shall be cataloged products of manufacturers regularly engaged in production of such materials or equipment and shall be manufacturer's latest design that complies with the specification requirements. Materials and equipment shall duplicate items that have been in satisfactory commercial or industrial use. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the items need not be the products of the same manufacturer. Each item of equipment shall have the manufacturer's name, address, model number and serial number on the nameplate securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

1.06 MANUFACTURER'S RECOMMENDATIONS

A. Unless otherwise stated in the Contract Specifications, all new equipment items, and specialties shall be installed in strict accordance with the recommendations of the manufacturer of the items being installed. Prior to the installation of new items, the Contractor shall submit to the Owner's representative printed copies of the manufacturer's installation recommendations. Installation of the item will not be allowed to proceed until the recommendations are received. Failure to furnish these recommendations can be cause for rejection of the material. Failure to

install items in accordance with manufacturer's recommendations can be cause for rejection of the work items installed.

1.07 LAYOUT OF THE WORK

A. Coordinate the proper relation of the work to the building structure, existing utilities and to the work of all trades. The Contractor shall advise the Owner's Representative of any discrepancy before performing any work.

1. Contract Drawings: The Contract Drawings represent the general intent as to piping and equipment arrangements. All locations and dimensions shown shall be field verified and minor alterations made if so required. Where dimensions are not given for the location and arrangement of mechanical systems, locations may be assumed to be approximate, and may be altered if required. Major modifications to the indicated arrangements shall be approved by the Owner's Representative prior to the installation of mechanical systems. Schematic diagrams represent the overall system requirements and do not necessarily indicate the physical orientation, location or dimensions of that system.
2. Record Drawings: The Contractor shall maintain a record of the progress of the work and shall submit three (3) sets of As-Built Drawings upon completion of the project.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Properly store, adequately protect, and carefully handle equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Engineer. Replace damaged or defective items.

1.09 SAFETY REQUIREMENTS

A. Equipment Safety: Fully enclose or properly guard in accordance with 29 CFR 1910.219 belts, pulleys, chains, gears, couplings, projecting setscrews, keys, rotating parts, and other power transmission apparatus, located where persons can come in close proximity thereto. Points of operation, ingoing nip points, and machinery producing flying chips and sparks shall be guarded in accordance with the applicable portions of 29 CFR 1910 SUBPART O. Provide positive means of locking out equipment so that equipment cannot be accidentally started during maintenance procedures. High temperature equipment and piping so located as to endanger personnel or create a fire hazard shall be properly guarded or covered with insulation of the type specified. Provide catwalks, maintenance platforms, and guardrails where required for safe operation and maintenance of equipment. Provide ladders or stairways to reach catwalks and maintenance platforms. Ensure that access openings leading to equipment are large enough to carry through routine maintenance items such as filters and tools.

1.10 ELECTRICAL REQUIREMENTS

A. Furnish motors, controllers, disconnects and contactors with their respective pieces of equipment. Motors, controllers, disconnects and contactors shall conform to and have electrical connections provided under Division 26-Electrical. Furnish internal wiring for components of packaged equipment as an integral part of the equipment. Extended voltage range motors will not be permitted. Controllers and contactors shall have a maximum of 120 volt control circuits, and shall have auxiliary contacts for use with the controls furnished. When motors and equipment furnished are larger than sizes indicated, the cost of additional electrical service and related work shall be included under this Section. Power wiring and conduit for field installed equipment shall be provided under and conform to the requirements of Division 26 – Electrical. Unless specifically noted otherwise, all control wiring (120 volt or less) shall be provided by Mechanical Contractor and conform to the requirements of Division 26 – Electrical.

1.11 INSTRUCTION TO OWNER'S PERSONNEL

A. When specified in other sections, furnish the services of competent instructors to give full instruction to the designated Owner's personnel in the adjustment, operation, and maintenance, including pertinent safety requirements, of the specified equipment or system. Instructors shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work. Instruction shall be given during the first regular work week after the equipment or system has been accepted and turned over to the Owner for regular operation. The number of days (8 hours per day) of instruction furnished shall be as specified in the individual section. When more than 4 days of instruction are specified, use approximately half of the time for classroom instruction. Use other time for instruction with the equipment or system. When significant changes or modifications in the equipment or system are made under the terms of the Contract, provide additional instruction to acquaint the operating personnel with the changes or modifications.

1.12 INSPECTIONS AND CERTIFICATIONS

A. The Contractor shall provide and pay for any third party inspections or certifications required by applicable regulatory agencies for boilers and other mechanical equipment components modified, or furnished and installed as a part of the Contract work.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 FIELD PAINTING

A. Conform to Section 09 91 00 – Painting

END OF SECTION

SECTION 22 13 16

SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Sanitary Waste and Vent Piping as shown on the Plans, as specified and/or directed.

B. Related work specified elsewhere:
1. Section 22 00 00 – Plumbing General Requirements

1.02 REFERENCE STANDARDS

A. The following is a list of standards that may be referenced in this Section:
1. American National Standards Institute (ANSI) Publication:
a. B16.1 – Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250 and 800
b. B16.3 – Malleable Iron Threaded Fittings
c. B16.12 – Cast Iron Threaded Drainage Fittings
d. B16.18 – Cast Copper Alloy Solder Joint Pressure Fittings
e. B16.22 – Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
f. B16.23 – Cast Copper Alloy Solder Joint Drainage Fittings –DWV
g. B16.24 – Bronze Pipe Flanges and Flanged Fittings, Class 150 and 300
h. B16.26 – Cast Copper Alloy Fittings for Flared Copper Tubes
i. B16.29 – Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings DWV
j. B16.32 – Cast Copper Alloy Solder Joint Fittings for Solvent Drainage Systems
k. B16.39 – Malleable Iron Threaded Pipe Unions, Class 150, 250 and 300
2. American Society for Testing and Materials (ASTM) Publication:
a. A47 – Ferritic Malleable Iron Castings
b. A53 – Pipe, Steel, Black and Hot Dipped, Zinc Coated Welded and Seamless
c. A74 – Cast Iron Soil Pipe and Fittings
d. A120 – Pipe, Steel, Black and Hot Dipped, Zinc Coated (Galvanized) Welded and Seamless for Ordinary Uses
e. A183 – Carbon Steel Track Bolts and Nuts
f. A536 – Ductile Iron Castings
g. B32 – Solder Metal
h. B61 – Steam or Valve Bronze Castings

i. B62 – Composition Bronze or Ounce Metal Castings
j. B88 – Seamless Copper Water Tube
k. B306 – Copper Drainage Tube (DWV)
l. C564 – Rubber Gaskets for Cast Iron Soil Pipe and Fittings
m. D2000 – Classification System for Rubber Products in Automotive Applications
n. D2564 – Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings
o. D2661 – Acrylonitrile Butadiene Styrene (ABS) Plastic Drain, Waste, and Vent Pipe and Fittings
p. D2665 – Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste and Vent Pipe and Fittings

3. American Water Works Association (AWWA) Publication:
   a. C104 – Cement Mortar Lining for Ductile Iron and Gray Iron Pipe and Fitting for Water
   b. C105 – Polyethylene Encasement for Ductile Iron Piping for Water and Other Liquids
   c. C110 – Gray Iron and Ductile Iron Fittings, 3 in. Through 48 in. for Water and Other Liquids
   d. C111 – Rubber Gasket Joints for Ductile Iron and Gray Iron Pressure Pipe and Fittings
   e. C115 – Flanged Ductile Iron and Gray Iron Pipe with Threaded Flanges
   f. C151 – Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand Lined Molds, for Water and Other Liquids
   g. C500 – Gate Valves, 3 Through 48 inch NPS, for Water and Sewage Systems
4. Cast Iron Soil Pipe Institute (CISPI) Publication:
   a. 301 – Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications
   b. 310 – Patented Joint for Use in Connection with Hubless Cast Iron Sanitary System
   c. HSN – Neoprene Rubber Gaskets for Hub and Spigot Cast Iron Soil Pipe and Fittings
5. Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) Publication:
   a. SP 58 – Pipe Hangers and Supports-Materials, Design and Manufacture
   b. SP 69 – Pipe Hangers and Supports-Selection and Application
   c. SP 70 – Cast Iron Gate Valves, Flanged and Threaded Ends
   d. SP 80 – Bronze Gate, Globe, Angle and Check Valves
   e. SP 85 – Cast Iron Globe and Angle Valves, Flanged and Threaded Ends
6. Plumbing and Drainage Institute (PDI) Publication:
   a. G101 – Testing and Rating Procedure for Grease Interceptors

7. Uniform Fire Prevention and Building Code of New York State Publication:
   a. 2020 – Plumbing Code of New York State

1.03 GENERAL REQUIREMENTS

A. Section 22 00 00, "Plumbing General Requirements", applies to this Section, with the additions and modifications specified herein. Plumbing systems including equipment, materials, installation, and workmanship shall be in accordance with the Plumbing Code of New York State, except as modified herein. In the Plumbing Code referred to herein, the advisory provisions shall be considered to be mandatory, as though the word "shall" had been substituted for the word "should" wherever it appears. Capacity of equipment shall be not less than that indicated. Plumbing systems shall include all water piping buried and aboveground to a limit of 5 feet outside of the building walls unless otherwise specified, or indicated by the Contract Drawings.

1.04 SUBMITTALS

A. Manufacturer's Data:
   1. Pipe and fittings
   2. Pipe supports (hangers)
   3. Drains

PART 2 - PRODUCTS

2.01 DWV (DRAIN, WASTE, AND VENT) PIPING

A. Fittings shall be long radius fittings, except fittings in vent piping may be short radius fittings. Minimum size piping shall be 2 inches for buried piping and 1.5 inches for aboveground piping.
   1. Buried Piping: Buried piping includes piping up to but not more than 6 inches aboveground or floor slab on grade.
      a. Plastic Pipe, Fittings, and Solvent Cement:
         1) Polyvinyl Chloride (PVC) System: ASTM D2665.
         2) Acrylonitrile Butadiene Styrene (ABS) System: ASTM D2661, single extrusion pipe.
   2. Aboveground Piping:
      a. Plastic Pipe, Fittings, and Solvent Cement:
         1) Polyvinyl Chloride (PVC) System: ASTM D2665.
         2) Acrylonitrile Butadiene Styrene (ABS) System: ASTM D2661, single extrusion pipe.
   3. Drains: ANSI A112.21.1M; provide cast iron drains and clamping rings for use with membrane waterproofing.
      a. Roof Drains: ANSI A112.21.2M; provide hot dip galvanized cast iron drains, with minimum of 10 inch diameter body, nonpuncturing flashing clamp device with integral gravel stop and

deck clamp, and removable cast iron or polypropylene locking dome. Free area of dome shall be not less than two times the free area of drain outlet. Provide drain flashing ring seat flush with adjacent roof deck, and secure rigidly in place with deck clamp.

2.02 MISCELLANEOUS PIPING MATERIALS

A. Pipe Nipples: ANSI B16, copper alloy for use in copper tubing and hot dip galvanized Schedule 80 steel pipe for use in steel piping.

B. Unions: ANSI B16 for use in copper tubing; ANSI B16.39 hot dip galvanized steel for use in steel piping.

C. Flanges: ANSI B16.1, Class 125, for use in ferrous piping; ANSI B16.22 or ANSI B16.24 for use in copper tubing; with full face flat type synthetic rubber gaskets.

D. Escutcheon Plates: One piece or split hinge type metal plates for piping passing through floors, walls, and ceilings in exposed spaces, chromium plated finish on plates in finished spaces, paint finish on plates in unfinished spaces, and with setscrews or other approved positive means to anchor plates in place securely.

E. Pipe Sleeves:
1. Sleeves in Masonry and Concrete Walls, Floors, and Roofs: ASTM A53 or ASTM A120, Schedule 40 or Standard Weight, hot dip galvanized steel pipe sleeves.
2. Sleeves in Partitions and Other Than Masonry and Concrete Walls, Floors, and Roofs: Hot dip galvanized steel sheet having a nominal weight of not less than 0.90 pounds per square foot.

F. Pipe Hangers and Supports: Provide MSS SP 58 and MSS SP 69, Type 1 or 6, of the adjustable type, except as modified herein or indicated otherwise. Attachments to steel W or S beams shall be with Type 21, 28, 29, or 30 clamps. Attachments to steel angles and channels (with web vertical) shall be with Type 20 clamp with a beam clamp channel adaptor. Attachments to steel channel web horizontal) shall be with drilled hole on center line and double nut and washer. Attachments to concrete shall be with Type 18 insert or a drilled hole with expansion anchor. Attachments to wood shall be as indicated. Hanger rods and attachments shall be full size of the hanger threaded diameter. Provide Type 40 insulation protection shields for insulated piping. Provide steel support rods. Provide nonmetallic, hair felt, or plastic piping isolators between copper tubing and the hangers.

G. Access Doors: Provide 12 by 12 inch factory prefabricated and primed flush face steel access doors including steel door frame with continuous hinges and turn screw operated latch. Door frame shall be for installation in plaster and masonry walls. Furnish doors under this Section to provide proper access to concealed valves; install doors under the appropriate section of this Specification.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation of sanitary waste and vent systems including equipment, materials, and workmanship shall be in accordance with the Plumbing Code of New York State, except as modified herein. Plastic piping shall not penetrate fire walls or fire floors and shall be used on one side of fire walls and fire floors not closer than 6 inches to the penetration.

1. Threaded Connections: Jointing compound for pipe threads shall be polytetrafluoroethylene (PTFE) pipe thread tape, pipe cement and oil, or PTFE powder and oil; apply only on male threads.
2. Solder End Valves: Remove stems and washers and other item subject to damage by heat during installation. Reassemble valve after soldering is completed. Valves without heat sensitive parts do not require disassembly but shall be opened at least two turns during soldering.
3. Pipe Supports (Hangers): Provide additional supports at the concentrated loads in piping between supports, such as for in-line water pumps and flanged valves.
4. Maximum Spacing Between Supports:
   a. Vertical Piping: Support metal piping at each floor, but at not more than 10 foot intervals. Support plastic at each floor and at midpoint between floors, but at not more than 5 foot intervals
   b. Horizontal Piping: Support cast iron piping at 5 foot intervals, except for pipe exceeding 5 foot length, provide supports at intervals equal to the pipe length but not exceeding 10 feet. Support plastic and glass piping at 4 foot intervals and support plastic piping at each change of direction. Support steel piping and copper tubing as follows:

MAXIMUM SPACING (FEET)						
Nominal Pipe Size (Inches)	One and Under	1.25	1.5	2	2.5	3 and Over
Steel Pipe	7	8	9	10	11	12
Copper Tube	6	6	8	8	9	10

5. Installation of Pipe Sleeves: Provide pipe sleeves where piping passes through walls, floors, roofs, and partitions. Secure sleeves in proper position and location during construction. Provide sleeves of sufficient length to pass through entire thickness of walls, floors, roofs, and partitions. Provide not less than 0.25 inch space between exterior of piping or pipe insulation and interior of sleeve. Firmly pack space with insulation, and calk at both ends of the sleeve with plastic waterproof cement which will dry to a firm but pliable mass, or provide a segmented elastomeric seal. Seal both ends of penetrations through fire walls and fire floors to maintain fire resistive integrity with UL listed fill, void, or cavity

material. Extend sleeves in floor slabs 3 inches above the finished floor, except sleeves are not required where DWV piping passes through concrete floor slabs located on grade.

3.02 NAMEPLATES

A. Provide laminated plastic nameplates for equipment and valves. Laminated plastic shall be 0.125 inch thick melamine plastic, black with white center core. Surface shall be a matte finish. All corners shall be square. Accurately align lettering and engrave into the white core. Minimum size of nameplates shall be 1.0 inch by 2.5 inches. Lettering shall be a minimum of 0.25 inch high normal block lettering. Key the nameplates to a chart and schedule for each system. Frame charts and schedules under glass and place where directed near each system. Furnish two copies of each chart and schedule. Each inscription shall identify its function. Equipment nameplates shall show the following information.

1. Manufacturer, type, and model number
2. Contract number and accepted date
3. Capacity or size
4. System in which installed
5. System which it controls

3.03 FIELD TESTING

A. Before final acceptance of the work, test each system as in service to demonstrate compliance with the contract requirements. Perform the following tests in addition to the tests specified in the Plumbing Code of New York State, except as modified herein. Correct all defects in the work provided by the Contractor, and repeat the tests until the work is in compliance with contract requirements. Furnish water, electricity, instruments, connecting devices, and personnel for the tests.

END OF SECTION

SECTION 23 05 00

MECHANICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Mechanical General Requirements, as shown on the Plans, as specified and/or directed.

B. Related work specified elsewhere:
   1. Division 1, “General Requirements”
   2. Division 22, “Plumbing”
   3. Division 23, “Mechanical”
   4. Division 26, “Electrical”

1.02 REFERENCE STANDARDS

A. The following is a list of standards that may be referenced in this section:
   1. Code of Federal Regulations (CFR) Publications:
      a. 29-1910 SUBPART O - Machinery and Machine Guarding
      b. 29-1910.219 - Mechanical Power Transmission Apparatus

1.03 SUBMITTALS

A. Submit shop drawings, manufacturer's data, publication compliance, certified test reports, and manufacturer's certificates of compliance for equipment, materials and finish, and pertinent details for each system where specified in each individual section, and have them approved before procurement, fabrication or delivery of the items to the job site. Shop drawings shall be accompanied by a letter of transmittal in duplicate, and all shop drawings shall be suitably identified with the name of the project, contract number, Contractor's name, date and initials indicating approval of such submittal by the Contractor under the applicable specification. Partial submittals will not be acceptable and will be returned without review. Submittals shall include the manufacturer's name, trade name, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and the specific technical paragraph reference which specifies each item, applicable industry and technical society publication references, and other information necessary to establish contract compliance of each item to be furnished.
   1. Manufacturer's Data: Submittals for each manufactured item shall be current manufacturer's descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves, and catalog cuts.

2. Shop Drawings: Drawings shall be a minimum of 8.5 inches by 11 inches in size, except as specified otherwise. Drawings shall include floor plans, sectional views, wiring diagrams, and installation details of equipment; and equipment spaces identifying and indicating proposed location, layout and arrangement of items of equipment, control panels, accessories, piping, ductwork, and other items that must be shown to ensure a coordinated installation. Wiring diagrams shall identify circuit terminals, and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices.

3. Manufacturer's Certificates of Compliance: Submit certification from manufacturer attesting that materials and equipment to be furnished for this project comply with the requirements of this specification and of the reference publications. Pre-printed certifications will not be acceptable; certifications shall be the manufacturer's original; certifications shall be not more than one year old. The certification shall not contain statements that could be interpreted to imply that the product does not meet all requirements specified, such as "as good as"; "achieve the same end use and results as materials formulated in accordance with the referenced publications"; "equal or exceed the service and performance of the specified material". The certification shall simply state that the product conforms to the requirements specified. Certificates shall be signed by the manufacturer's official authorized to sign certificates of compliance.

4. Reference Standards Compliance: Where equipment or materials are specified to conform to industry and technical society reference standards of organizations such as the American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturers Association (NEMA), American Society of Mechanical Engineers (ASME), American Gas Association (AGA), American Refrigeration Institute (ARI), and Underwriters' Laboratories (UL), proof of such conformance shall be submitted. If an organization uses a label or listing to indicate compliance with a particular reference standard, the label or listing will be acceptable evidence, unless otherwise specified in the individual sections.

B. Independent Testing Organization Certificate: In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing and approved by the Engineer. The certificate shall state that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

1.04 OPERATION AND MAINTENANCE MANUAL

A. Furnish an operation and maintenance manual for each item of equipment. Furnish three copies of the manual bound in hardback binders or an approved equivalent. Furnish one complete manual to the Owner's Representative for

review and approval not more than 90 calendar days after an item is approved, but at least 60 calendar days prior to field acceptance testing of the item. Furnish the remaining manuals at least 60 days prior to contract completion. Inscribe the following identification on the cover: the words "OPERATION AND MAINTENANCE MANUAL", the name and location of the equipment or the building, the name of the Contractor, and the contract number. The manual shall include the names, addresses, and telephone numbers of each subcontractor installing equipment, and of the local representatives for each item of equipment. The manual shall have a table of contents and be assembled to conform to the table of contents with the tab sheets placed before instructions covering the subject. The instructions shall be legible and easily read, with large sheets of drawings folded in. The manual shall include: wiring and control diagrams with data to explain detailed operation and control of each item of equipment; a control sequence describing start up, operation and shut down; description of the function of each principal item of equipment; the procedure for starting; the procedure for operating; shut down instructions; installation instructions; maintenance instructions; lubrication schedule including type, grade, temperature range, and frequency; safety precautions, diagrams, and illustrations; test procedures; performance data; and parts list. The parts lists for equipment shall indicate the sources of supply, recommended spare parts, and the service organization which is reasonably convenient to the project site. The manual shall be complete in all respects for equipment, controls, accessories, and associated appurtenances provided.

1.05 CATALOGED PRODUCTS

A. Materials and equipment shall be cataloged products of manufacturers regularly engaged in production of such materials or equipment and shall be manufacturer's latest design that complies with the specification requirements. Materials and equipment shall duplicate items that have been in satisfactory commercial or industrial use. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the items need not be the products of the same manufacturer. Each item of equipment shall have the manufacturer's name, address, model number and serial number on the nameplate securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

1.06 MANUFACTURER'S RECOMMENDATIONS

A. Unless otherwise stated in the Contract Specifications, all new equipment items, and specialties shall be installed in strict accordance with the recommendations of the manufacturer of the items being installed. Prior to the installation of new items, the Contractor shall submit to the Owner's representative printed copies of the manufacturer's installation recommendations. Installation of the item will not be allowed to proceed until the recommendations are received. Failure to furnish

these recommendations can be cause for rejection of the material. Failure to install items in accordance with manufacturer's recommendations can be cause for rejection of the work items installed.

1.07 LAYOUT OF THE WORK

A. Coordinate the proper relation of the work to the building structure, existing utilities and to the work of all trades. The Contractor shall advise the Owner's Representative of any discrepancy before performing any work.

1. Contract Drawings: The Contract Drawings represent the general intent as to piping and equipment arrangements. All locations and dimensions shown shall be field verified and minor alterations made if so required. Where dimensions are not given for the location and arrangement of mechanical systems, locations may be assumed to be approximate, and may be altered if required. Major modifications to the indicated arrangements shall be approved by the Owner's Representative prior to the installation of mechanical systems. Schematic diagrams represent the overall system requirements and do not necessarily indicate the physical orientation, location or dimensions of that system.
2. Record Drawings: The Contractor shall maintain a record of the progress of the work and shall submit three (3) sets of As-Built Drawings upon completion of the project.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Properly store, adequately protect, and carefully handle equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Engineer. Replace damaged or defective items.

1.09 SAFETY REQUIREMENTS

A. Equipment Safety: Fully enclose or properly guard in accordance with 29 CFR 1910.219 belts, pulleys, chains, gears, couplings, projecting setscrews, keys, rotating parts, and other power transmission apparatus, located where persons can come in close proximity thereto. Points of operation, ingoing nip points, and machinery producing flying chips and sparks shall be guarded in accordance with the applicable portions of 29 CFR 1910 SUBPART O. Provide positive means of locking out equipment so that equipment cannot be accidentally started during maintenance procedures. High temperature equipment and piping so located as to endanger personnel or create a fire hazard shall be properly guarded or covered with insulation of the type specified. Provide catwalks, maintenance platforms, and guardrails where required for safe operation and maintenance of equipment. Provide ladders or stairways to reach catwalks and maintenance platforms. Ensure that access openings leading to equipment are large enough to carry through routine maintenance items such as filters and tools.

1.10 ELECTRICAL REQUIREMENTS

A. Furnish motors, controllers, disconnects and contactors with their respective pieces of equipment. Motors, controllers, disconnects and contactors shall conform to and have electrical connections provided under Division 26-Electrical. Furnish internal wiring for components of packaged equipment as an integral part of the equipment. Extended voltage range motors will not be permitted. Controllers and contactors shall have a maximum of 120 volt control circuits, and shall have auxiliary contacts for use with the controls furnished. When motors and equipment furnished are larger than sizes indicated, the cost of additional electrical service and related work shall be included under this Section. Power wiring and conduit for field installed equipment shall be provided under and conform to the requirements of Division 26 – Electrical. Unless specifically noted otherwise, all control wiring (120 volt or less) shall be provided by Mechanical Contractor and conform to the requirements of Division 26-Electrical.

1.11 INSTRUCTION TO OWNER'S PERSONNEL

A. When specified in other sections, furnish the services of competent instructors to give full instruction to the designated Owner's personnel in the adjustment, operation, and maintenance, including pertinent safety requirements, of the specified equipment or system. Instructors shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work. Instruction shall be given during the first regular work week after the equipment or system has been accepted and turned over to the Owner for regular operation. The number of days (8 hours per day) of instruction furnished shall be as specified in the individual section. When more than 4 days of instruction are specified, use approximately half of the time for classroom instruction. Use other time for instruction with the equipment or system. When significant changes or modifications in the equipment or system are made under the terms of the Contract, provide additional instruction to acquaint the operating personnel with the changes or modifications.

1.12 INSPECTIONS AND CERTIFICATIONS

A. The Contractor shall provide and pay for any third party inspections or certifications required by applicable regulatory agencies for boilers and other mechanical equipment components modified, or furnished and installed as a part of the Contract work.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 FIELD PAINTING

A. Conform to Section 09 91 00 – Painting.

END OF SECTION

SECTION 23 34 01

HVAC FANS

PART 1 - GENERAL

1.01 SUMMARY

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for HVAC Fans, as shown on the Plans, as specified and/or directed.

B. Related work specified elsewhere:
   1. Section 23 05 00 – Mechanical General Requirements
   2. Division 26 – Electrical

1.02 REFERENCE STANDARDS

A. The following is a list of standards that may be referenced in this Section:
   1. Air Movement and Control Association, Inc. (AMCA) Publications:
      a. 210 – Laboratory Method of Testing Fans for Rating
      b. 220 – Test Method for Air Curtains
      c. 300 – Reverberant Room Method for Sound Testing of Fans
   2. Air-Conditioning, Heating and Refrigeration Institute (AHRI) Publications:
      a. 880 – Air Terminals
   3. Acoustical Society of America (ASA) Publication:
      a. 13 – Determination of Sound Levels of Noise Sources in a Special Reverberation Test Room
   4. American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) Publication:
      a. 68 – Testing In-Duct Sound Power Measurement Procedure for Fans
   5. American Society for Testing and Materials (ASTM) Publications:
      a. A123 – Zinc (Hot Dip Galvanized) Coatings on Iron Steel Products
      b. B117 – Salt Spray (Fog) Testing
      c. D1654 – Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
   6. National Electrical Manufacturers Association (NEMA) Publications:
      a. ICS2 – Industrial Control Devices, Controllers and Assemblies
      b. ICS6 – Enclosures for Industrial Controls and Systems
      c. MG1 – Motors and Generators
   7. National Fire Protection Association (NFPA) Publications:
      a. 70 – National Electrical Code
      b. 90A – Installation of Air Conditioning and Ventilating Systems

8. Sheet Metal and Air Conditioning Contractors' National Association, Inc. (SMACNA) Publications:
    a. HVACTAB - HVAC Systems Testing, Adjusting and Balancing (HVACTAB)
9. Underwriters Laboratories, Inc. (UL) Publications:
    a. 507 – Electric Fans
    b. 705 – Power Ventilators
    c. 1278 – Wall- or Ceiling-Hung Electric Room Heaters
    d. 1995 – Terminal Units
10. Uniform Fire Prevention and Building Code of New York State Publications:
    a. 2020 Mechanical Code
    b. 2020 Energy Conservation Construction Code

1.03 SUBMITTALS

A. Manufacturer’s Data: Shop Drawings and Catalog Cuts. Submit shop drawings and catalog information showing plan, elevations, dimensions, capacities, accessories, controls, wiring diagrams, and ratings for the following:
    1. Fans

B. Certificates of Compliance:
    1. Fans

C. Operation and Maintenance Manuals:
    1. Fans

1.04 MOTORS

A. NEMA MG1. Motor starters shall conform to NEMA ICS1 and NEMA ICS2. Determine specific motor characteristics to insure provision of correctly sized starters and overload heaters. Motors shall be designed to operate at full capacity with a voltage variation of plus or minus 10 percent of the motor voltage rating. Motor size shall be sufficient for the duty to be performed and shall not exceed its full load nameplate current rating when driven equipment is operated at specified capacity under the most severe conditions likely to be encountered. When motor size provided differs from the size indicated or specified, the Contractor shall make the necessary adjustments to the wiring, disconnect devices, and branch circuit protection to accommodate the equipment actually provided.

1.05 TESTING FOR CORROSION PROTECTION

A. Comply with ASTM A123, or protect the equipment with a corrosion inhibiting coating or paint system that has proved capable of satisfactorily withstanding corrosion in accordance with ASTM B117. Test 125 hours for equipment installed indoors and 500 hours for equipment installed outdoors or subjected to a marine atmosphere. Each specimen shall have a standard scratch as defined in ASTM D1654.

B. Corrosion Criteria: Upon completion of exposure, coating or paint shall show no indication of deterioration, loss of adhesion, or any indication of rust or corrosion extending further than 1/8 inch on either side of original scratch.

C. Thickness of Coating: Thickness of coating or paint system on the actual equipment shall be identical to that on the test specimens with respect to materials, conditions of application, and dry film thickness.
   1. Mild Steel and Factory Primed Surfaces:
      a. Synthetic Resin Primer: 36 percent plus or minus 6 percent solids content by volume; 1 coat, 3 mils minimum dry film thickness.
      b. Vinyl Copolymer: 23 percent plus or minus 4 percent solids content by volume; 2 coats, 1-1/2 mils minimum dry film thickness per coat.
   2. Nonferrous Heat Exchanger Fin Coil Surfaces: Vinyl copolymer, 4 coats, 1-1/2 mils minimum dry film thickness per coat.
   3. Galvanized Surfaces:
      a. Polyamide Epoxy Primer: 48 percent plus or minus 2 percent solids content by volume; 1 coat, 2 mils minimum dry film thickness.
      b. Vinyl Copolymer: 23 percent plus or minus 4 percent solids content by volume; 2 coats, 1-1/2 mils minimum dry film thickness per coat.
   4. Aluminum Surfaces Other than Fin Coil Surfaces:
      a. Polyamide Epoxy Primer: 48 percent plus or minus 2 percent solid contact by volume; 1 coat, 2 mils minimum dry film thickness.
      b. Vinyl Copolymer: 23 percent plus or minus 4 percent solids content by volume; 2 coats, 1-1/2 mils minimum dry film thickness per coat.

PART 2 - PRODUCTS

2.01 FANS

A. Sound rating per AMCA 300; statically and dynamically balanced, with air capacities, brake horsepowers, fan types, fan arrangement, sound power levels or loudness level, and static pressure, as indicated. Fan bearing life shall have a minimum average life of 200,000 hours at design operating conditions. Provide guard (bird) screens for outdoor inlets and outlets. Equip with automatic (back-draft) dampers. Have thermal overload protection in the operating disconnect switches within the building.

B. Propeller Fans: AMCA 210 with AMCA seal, UL listed, V belt drive motors. Fan shall be of bolted and welded construction utilizing corrosion resistant fasteners, with motor, bearings and drive mounted on a tubular steel power assembly and bolted to a minimum 14-gauge wall panel with continuously welded

corners and an integral venturi. All steel fan components shall be coated with an electrostatically applied 2 mil baked polyester powder coating. Propeller shall be a high-efficiency fabricated extruded aluminum airfoil design with blades securely fastened to a cast aluminum hub. The hub shall be keyed and locked to the fan shaft utilizing two set screws. Propeller shall be balanced in accordance with AMCA Standard 204-05. Motor shall be NEMA design B with class B insulation rated for continuous duty and furnished at the specified voltage, phase and enclosure. Bearing shall be of heavy-duty regreasable ball type in a cast iron pillow block housing selected for a minimum L50 life in excess of 200,000 hours at maximum cataloged operating speed. Belts shall be oil and heat resistance, static conducting. Drives shall be precision machined cast iron type, keyed and security attached to the wheel and motor shafts. Provide unit with motorized discharge shutter, galvanized steel blades and frame, stainless steel pivots, vinyl blade edge seals and 120 V actuator. Unit shall be provided with galvanized steel wall collar, wire guard, wall-mounted on-off switch, and minimum 18-gauge galvanized steel knock-down type weather hood with ½-inch mesh bird screen. Manufacture shall be as by Greenheck Model SE1, or approved equal.

C. Rooftop Exhaust Fans: AMCA 210 with AMCA seal, UL listed, downblast type with aluminum wheel, backward inclined centrifugal, statically and dynamically balanced, rigid internal support structure, leak proof, 16-gauge aluminum motor cover, shroud, curb cap and lower windband. Shroud shall have integral rolled bead, and lower windband shall have a formed edge. Drive frame assemblies shall be constructed of 14-gauge steel and mounted on rubber vibration isolators. Fan shall have aluminum bird screen, aluminum hinges, and 120v automatic air damper. Manufacture shall be as by Greenheck Model GB, or approved equal.

2.02 LOUVERS

A. Louvers: Fixed type, performance based on testing in accordance with AMCA Standard 500. Fold or bead the edges of louver blades to exclude driving rain. Make louver frames of 16 gauge extruded aluminum. Provide bird (insect) screen constructed of the same type metal as the louvers in a removable, rewireable frame. All louver components to be factory assembled. All performance and size characteristics shall be as scheduled.

B. Bird Screens: ASTM E437, general industrial-use wire cloth, Grade C, (medium light) or heavier, nominal 2 mesh 0.063-inch wire diameter, aluminum bird screens. Provide removable insect screens of grooved type, with vinyl or neoprene spline insert for securing screen cloth.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install air distribution equipment as indicated and in accordance with the manufacturer's instructions. Provide clearance for inspection, repair, replacement, and service. Electrical work shall conform with NFPA 70 and Division 26, "Electrical". Provide overload protection in the operating disconnect switches and magnetic starters.

3.02 FIELD INSPECTION AND TESTS

A. Schedule and administer the specified tests. Provide personnel, instruments, and equipment for such tests. Correct defects and repeat the respective inspection and tests. Give the Engineer ample notice of the dates and times scheduled for tests and trial operations. Conduct inspection and testing in the presence of the Engineer.
   1. Field Inspection: Prior to initial operation, inspect equipment installation for conformance with drawings and specifications.

B. Field Tests:
   1. Preliminary Tests: For each item of air handling and distribution equipment and its components, perform an operational test for a minimum period of 4 hours.
   2. Testing and Balancing: Comply with SMACNA HVACTAB to achieve and confirm compliance with drawings and specifications, prepare complete report of final test results and submit in quadruplicate.

3.03 INSTRUCTION OF OPERATING PERSONNEL

A. Upon completion of the work, and acceptance of the installation, and at a time designated by the Owner, the services of a competent technician regularly employed or authorized by the manufacturer of the compactor shall be provided for instructing personnel in the proper operation, maintenance, safety and emergency procedures. The period of instruction shall be not less than two hours. The training shall be conducted at the job site during actual operation and coordinated with the Owner one week in advance.

END OF SECTION

SECTION 23 81 26

UNITARY AIR CONDITIONING SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Unitary Air Conditioning Systems, as shown on the Plans, as specified, and/or directed.

B. Related Work specified elsewhere:
   1. Section 23 05 00 – Mechanical General Requirements
   2. Division 26 – Electrical

1.02 REFERENCE STANDARDS

A. The following is a list of standards that may be referenced in this section:
   1. Air Conditioning, Heating and Refrigeration Institute (AHRI) Publication:
      a. 210 – Unitary Air Conditioning Equipment
      b. 260 – Application, Installation and Servicing of Unitary Systems
      c. 350 – Sound Rating of Non-Ducted Indoor Air Conditioning Equipment
      d. 360 – Commercial and Industrial Unitary Air Conditioning Equipment
      e. DCAACP – Directory of Certified Applied Air Conditioning Products
      f. DCUAC – Directory of Certified Unitary Air Conditioners
   2. American National Standards Institute (ANSI) Publication:
      a. Z21.47 – Gas-fired Central Furnaces
   3. American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) Publication:
      a. 15 – Safety Code for Mechanical Refrigeration
      b. 52 – Method of Testing Air-Cleaning Devices Used in General Ventilation for Removing Particular Matter
      c. 90.1-2016 - Energy Standard for Buildings Except Low-rise Residential Buildings
      d. 193 – Method of Testing for Determining the Airtightness of HVAC Equipment
      e. SHPD – Handbook and Product Directory Systems
   4. American Society of Mechanical Engineers (ASME) Publication:
      a. BPVSEC8 – Boiler and Pressure Vessels Code Section VIII – Pressure Vessels, Division 1
   5. American Society for Testing and Materials (ASTM) Publication:
      a. A53 – Pipe, Steel, Black and Hot Dipped, Zinc Coated, Welded and Seamless

b. A120 – Pipe, Steel, Black and Hot Dipped Zinc Coated (Galvanized) Welded and Seamless, for Ordinary Uses
c. A386 – Zinc Coating (Hot Dip) on Assembled Steel Products
d. B88 – Seamless Copper Water Tube
e. B117 – Salt Spray (Fog) Testing
f. B209 – Aluminum and Aluminum Alloy Sheet and Plate
g. B210 – Aluminum Alloy Drawn Seamless Tubes
h. C534 – Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form
i. D1654 – Painted or Coated Specimens Subjected to Corrosive Environments
j. D1785 – PolyVinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120
k. D2564 – Solvent Cements for PolyVinyl Chloride (PVC) Plastic Piping Systems
l. E84 – Test for Surface Burning Characteristics of Building Materials

6. Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) Publication:
   a. SP 58 – Pipe Hangers and Supports - Materials and Design
   b. SP 69 – Pipe Hangers and Supports - Selection and Application
7. National Electrical Manufacturers Association (NEMA) Publication:
   a. MG1 – Motors and Generators
   b. ICS1 – Industrial Control and Systems
   c. ICS2 – Industrial Controls Devices, Controllers and Assemblies
   d. ICS6 – Enclosures For Industrial Controls and Systems
8. National Fire Protection Association (NFPA) Publication:
   a. 54 – National Fuel Gas Code
   b. 58 – Liquefied Petroleum Gas Code
   c. 211 – Chimneys, Fireplaces, and Vents
9. Underwriters Laboratories, Inc. (UL) Publication:
   a. 484 – Room Air Conditioners
   b. 873 – Temperature Indicating and Regulating Equipment
   c. 1738 – Venting Systems for Gas-Burning Appliances, Categories II, III, and IV
   d. 1995 – Heating and Cooling Equipment
10. Uniform Fire Prevention and Building Code of New York State Publication:
    a. 2020 Energy Conservation Construction Code
    b. 2020 Fuel Gas Code
    c. 2020 Mechanical Code

1.03 SUBMITTALS

A. Manufacturer's Data:
   1. Packaged Terminal Air Conditioning Units Operation and Maintenance Manuals.
   2. Packaged Terminal Air Conditioning Units Posted Operating Instructions.

1.04 PACKAGED TERMINAL AIR CONDITIONING UNITS

1.05 SAFETY STANDARD

A. Design, manufacture, and installation of mechanical refrigeration equipment shall conform to ASHRAE 15.

1.06 CORROSION PREVENTION:

A. Special protection is not required for equipment that has a zinc coating conforming to ASTM A386 or a duplex coating of zinc and paint. Where expressly stipulated in equipment requirements paragraphs below, the affected equipment items shall be protected by the manufacturer with a corrosion inhibiting coating or paint system that has been proved capable of satisfactorily withstanding the following test. Test method shall be ASTM B117. Period of test shall be 125 hours for equipment intended for installation indoors; test period shall be 500 hours for equipment which will be installed outdoors or which will be otherwise subjected to marine atmosphere. Each specimen shall have a standard scratch as defined in ASTM D1654.
   1. Corrosion Criteria: Upon completion of exposure, coating or paint shall show no indication of deterioration or loss of adhesion, nor shall there be indication of rust or corrosion extending further than 1/8 inch on either side of original scratch.
   2. Thickness of Coating: Thickness of coating or paint system on the actual equipment shall be identical to that on the test specimens with respect to materials, conditions of application, and dry film thickness.

1.07 MOTORS

A. Motor starters shall conform to NEMA ICS1 and NEMA ICS2. Determine specific motor characteristics to insure provision of correctly sized starters and overload heaters. Motors shall be designed to operate at full capacity with a voltage variation of plus or minus 10 percent of the motor voltage rating. Motor size shall be sufficient for the duty to be performed and shall not exceed its full load nameplate current rating when driven equipment is operated at specified capacity under the most severe conditions likely to be encountered. When motor size provided differs from the size indicated or specified, the Contractor shall make the necessary adjustments to the wiring, disconnect devices, and branch circuit protection to accommodate the equipment actually provided.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Packaged Terminal Air Conditioners: AHRI 310, air-cooled, thru-wall type, AHRI certified, and UL listed. Provide units with heat pump heating and cooling and electric heating sections with indicated capacity and minimum EER rating of 12.6. Units shall be listed in ARI DCAACP, "Directory of Certified Applied Air Conditioning Products".

1. Components: In addition to heating and refrigeration section, each unit shall include room cabinet, fans and motors, integral temperature controls, outdoor louver, wall sleeve, filter, dampers, and accessories for controlled ventilation, and electrical box for power connection to air conditioner.
2. Room Cabinet: Fabricated of 18-gage minimum steel (MSS), phosphatized, and finished with two coats of baked enamel or epoxy of a color selected by the owner. Provide removable front panel and access panels for equipment machinery, coils, controls, and filters. In lieu of steel, the front panel may be constructed of high impact styrene structural foam conforming to the requirements of UL 484. The structural foam shall pass tests specified in UL 484 for classification of 94 HB. Interior of metal enclosure shall be lined with insulation having a fire hazard rating not to exceed 25 for flame spread and 50 for smoke developed as determined by ASTM E84.
3. Grilles: Provide manufacturers architectural anodized aluminum outdoor grilles and calk and seal on all sides when required by manufacturer's instructions. Provide four-way fixed or adjustable deflection inside air supply grilles. Provide for air return under the front panel or a return air grille in the lower part of the front panel.
4. Wall Sleeves and Mounts: Provide manufacturers standard insulated wall sleeves and mounts. Wall sleeves shall have seals designed to restrict driving rain.
5. Heating Section for Air Conditioners:
    a. Electric Coil: Electric resistance heating element with high temperature-limit safety device, factory-mounted, and wired to chassis.
6. Refrigeration Section: Completely self-contained, slide-in assembly or removable chassis with welded hermetically sealed air-cooled refrigeration system, outdoor fan, indoor fan, control box, and ventilation damper. Refrigeration section shall be readily installed or removed without the use of tools. Refrigeration section shall also include all refrigeration circuit tubing, wiring, and safety controls, and shall be suitable for operation down to 35 degrees F, without compressor short cycling while delivering not less than 100 percent of rated cooling capacity. Unit shall have drains to the building exterior to eliminate excess driving rain. Neither rainwater not condensate shall drain onto the building exterior.

a. Compressor: Inverter type with vibration isolation devices.
b. Coils: Constructed of seamless copper or aluminum tubing with copper or aluminum fins with fins bonded to tubes.
c. Outdoor Fans: Direct connected centrifugal type with aluminum or plastic wheel and forward curved blades or direct connected aluminum propeller type. Fans shall be designed to re-evaporate all condensate without drip, splash, or spray on building exterior. Fan motor shall be permanent-split-capacitor type.
d. Indoor Fans: Direct connected centrifugal type with aluminum, galvanized steel, or plastic wheel and forward curved blades. Provide minimum 2-speed, permanent-split-capacitor motor with built-in overload protection.

7. Ventilation Damper Assembly: Operated by automatic actuator. Damper shall close on unit shutdown or loss of power and shall open on heating or cooling.
8. Air Filter: Air filter shall be easily removable without use of tools and shall filter both recirculated and ventilating air.
9. Corrosion Protection: Units shall be factory corrosion protected in accordance with the paragraph herein entitled "Corrosion Prevention".
10. Controls: Provide controls with each unit consisting of an adjustable thermostat and switches to regulate room air temperature through control of refrigerant compressor or heating elements. Controls shall have positions for off, high and low speeds for heating and cooling, and fan only.

PART 3 - EXECUTION

3.01 INSTALLATION

A. ARHI 260, and as specified herein. Install system as indicated, in accordance with the requirements of ASHRAE 15, and as recommended in the manufacturer's installation and operational instructions.
1. General: Install equipment and components in a manner to insure proper and sequential operation of the equipment and equipment controls. Installation of equipment not covered herein or in manufacturer's instructions shall be installed as recommended by manufacturer's representative.
2. Provide proper foundations for mounting of equipment, accessories, appurtenances, piping and controls including, but not limited to, supports, vibration isolators, stands, guides, anchors, clamps and brackets. Foundations for equipment shall conform to equipment manufacturer's recommendation, unless otherwise indicated on drawings. Set anchor bolts and sleeves accurately using properly constructed templates. Anchor bolts shall be of adequate length and provided with welded on plates on the head end embedded in the concrete. Level equipment bases, using

jacks or steel wedges, and neatly grout in with a nonshrinking type of grouting mortar. Locate equipment to allow working space for all necessary servicing such as shaft removal, disassembling compressor cylinders and pistons, replacing or adjusting drives, motors, or shaft seals, access to automatic controls, refrigerant charging, lubrication, oil draining and working clearance under overhead lines. Provide electric isolation between dissimilar metals for the purpose of minimizing galvanic corrosion.

3. Venting and combustion air connections and piping must be sloped with condensate connections as required by manufacturer's installation instructions. Extend condensate lines to condensate neutralizer kit prior to termination at floor drains.
4. Electrical Work: Electric motor driven equipment specified herein shall be provided complete with motors, motor starters, and controls. Electrical equipment and wiring shall be in accordance with Division 26. Provide manual or automatic control and protective devices required for the operation herein specified and any control wiring required for controls and devices but not indicated.
5. Refrigerant Piping: In accordance with Section 23 23 13, "Refrigerant Piping & Specialties".
6. Air Filters: Install air filters to allow access space for servicing the filters. Install filters with suitable sealing to prevent bypassing of air.

3.02 FIELD TESTS

A. Tests: All tests shall be performed by and everything required for test shall be furnished by the Contractor, including personnel. Equipment and materials certified as having been successfully tested by the manufacturer in accordance with referenced specifications and standards will not require retesting before installation. Equipment and materials not tested at the place of manufacture shall be tested before or after installation, as applicable, where necessary to determine compliance with referenced specifications and standards.

1. Leak Testing: Upon completion of installation of the air conditioning equipment, test all factory and field installed refrigerant piping with an electronic type leak detector to acquire a leak tight refrigerant system. If leaks are detected at time of installation or during the guarantee period, remove the entire refrigerant charge from the system, correct the leaks, and retest the system.
2. Evacuation, Dehydration, and Charging: After field charged refrigerant system is found to be without leaks or after leaks have been repaired on field charged and factory charged systems, evacuate the system using a reliable gage and a vacuum pump capable of pulling a vacuum of at least 1 mm Hg absolute. Evacuate system in accordance with the triple evacuation and blotter method or, in accordance with equipment manufacturer's printed instructions. System leak testing, evacuation, dehydration, and charging with refrigerant shall comply with the requirements contained in ARI 260.

3. Startup and Operation Tests: Test the air conditioning systems and systems components for proper operation. Adjust safety and automatic control instruments as necessary to insure proper operation and sequence. The operational test shall be not less than 8 hours.
4. Performance Tests: Upon completion of evacuation, charging, startup, final leak testing, and proper adjustment of controls, systems shall be performance tested to demonstrate compliance with performance and capacity requirements. Test systems for not less than 8 hours, during which time hourly readings shall be recorded. At the end of the test period, the readings shall be averaged and the average shall be considered to be the system performance.

3.03 INSTRUCTION OF OPERATING PERSONNEL

A. Upon completion of the work, and acceptance of the installation, and at a time designated by the Owner, the services of a competent technician regularly employed or authorized by the manufacturer of the system shall be provided for instructing personnel in the proper operation, maintenance, safety and emergency procedures. The period of instruction shall be not less than four hours. The training shall be conducted at the job site during actual operation and coordinated with the Owner one week in advance.

END OF SECTION

SECTION 26 05 01

ELECTRICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Electrical General Requirements, as shown on the Plans, as specified and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. Federal Specification (Fed. Spec.):
      a. L-P-387A - Plastic Sheet, Laminated, Thermosetting (for Design Plates)
   2. American National Standards Institute (ANSI) Publications:
      a. C37.20 - Switchgear Assemblies, Including Metal-Enclosed Bus
      b. Z35.1 - Accident Prevention Signs
   3. Institute of Electrical and Electronics Engineers (IEEE) Publication:
      a. 100 - Standard Dictionary of Electrical and Electronics Terms
   4. National Electrical Manufacturers Association (NEMA) Publication:
      a. ICS 6 - Enclosures for Industrial Controls and Systems
   5. National Fire Protection Association (NFPA) Publications:
      a. 70B - Electrical Equipment Maintenance
      b. 70 - National Electrical Code

1.03 APPLICATION

A. This Section applies to all sections of Division 26, "Electrical", of this project except as specified otherwise in each individual section.

1.04 DEFINITION OF ELECTRICAL TERMS

A. Unless otherwise specified or indicated, electrical terms used in these Specifications, and on the drawings, shall be as defined in IEEE Standard No. 100.

1.05 ELECTRICAL UTILITY COORDINATION & ELECTRICAL SYSTEM VERIFICATION

A. Contractor shall coordinate all pre and post construction activities with the Electrical Utility (EU) provider per the EUs written bulletin/specification requirements.

B. Prior to shop drawing submittals, prior to commencing any demolition and/or prior to commencing any new construction activities, electrical characteristics for all existing and/or proposed electrical systems (including service, premises wiring systems and/or separately derived systems) shall be verified by this Contractor.

C. The Contractor shall coordinate and confirm, in writing, the following information from the Electrical Utility prior to commencement of any work under this Contract:
   1. Voltage
   2. Number of phases
   3. Type of system grounding
   4. Metering arrangement and Style
   5. Electrical Service Capacity

D. Should the Contractor's verification of any existing or proposed electrical system indicate a discrepancy with the Contract Documents, report them immediately to the Owner and/or Owners designated representative.

E. Submitting shop drawings and/or commencing any work under this Contract prior to all electrical systems verification/confirmation as required above signifies that Contractor accepts all existing and proposed electrical system characteristics and conditions.

1.06 SUBMITTALS

A. Obtain approval before procurement, fabrication, or delivery of items to the job site. Partial submittals will not be acceptable and will be returned without review. Submittals shall include the manufacturer's name, trade name, place of manufacture, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable Federal, Military, industry, and technical society publication references, and other information necessary to establish contract compliance of each item to be furnished. Furnish a minimum of six (6) copies of shop drawings for each major device specified or electronic shop drawings as specified herein. All hard copy shop drawings shall be a minimum of 8.5 inches by 11 inches in size.

B. Shop Drawings: In addition to the requirements specified elsewhere, shop drawings shall meet the following requirements. Drawings shall include complete ratings information, wiring diagrams, and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to assure a coordinated

installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices. If equipment is disapproved, revise drawings to show acceptable equipment and resubmit.

C. Manufacturer's Data: Submittals for each manufactured item shall be current manufacturer's descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves, and catalog cuts.

D. Publication Compliance: Where equipment or materials are specified to conform to industry and technical society publications of organizations such as American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), and Underwriters' Laboratories Inc. (UL), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word "shall" had been substituted for "should" wherever it appears. In lieu of the label or listing, submit a certificate from an approved independent testing organization, adequately equipped and competent to perform such services, stating that the item has been tested in accordance with the specified organization's test methods and that the item conforms to the specified organization's publication.

E. Submittals Required: Supply shop drawing submittal information as otherwise noted in each individual section.

F. Electronic Shop Drawings: If allowed by other sections of these Contract Documents, electronic submittals shall be submitted to Engineer in accordance with procedures outlined in these Contract Documents, as established at a preconstruction meeting and/or per Engineer’s written instructions.

1. Electronic shop drawings shall be submitted in an OCR (searchable) PDF file format or per Engineer’s instructions. Each shop drawing shall be a single electronic file with correct orientation of all sheets contained within.
2. Electronic shop drawings shall be scaled to print at 8.5 inches by 11 inches (for general information, manufacturer’s product data, etc.) and as required for drawings (layout drawings, coordination drawings, schematics, site drawings, electronic copy), except as specified otherwise.
3. Engineer shall make final determination on clarity of electronic shop drawings and will reject electronic shop drawing if resolution is not acceptable.

1.07 OPERATION AND MAINTENANCE MANUAL

A. Submit as required for systems and equipment indicated in the technical sections. Furnish 6 copies, bound in hardback binders or an approved equivalent. Furnish one complete manual prior to performance of systems or equipment tests, and

furnish the remaining manuals prior to contract completion. Inscribe the following identification on the cover: the words "OPERATION AND MAINTENANCE MANUAL", the name and location of the system, equipment, building, name of Contractor, and contract number. Include in the manual the names, addresses, and telephone numbers of each subcontractor installing the system or equipment and the local representatives for the system or equipment. Include a table of contents and assemble the manual to conform to the table of contents, with the tab sheets placed before instructions covering the subject. The instructions shall be legible and easily read, with large sheets of drawings folded in. The manual shall include:

1. Internal and interconnecting wiring and control diagrams with data to explain detailed operation and control of the system or equipment.
2. A control sequence describing startup, operation, and shutdown.
3. Description of the function of each principal item of equipment.
4. Installation and maintenance instructions.
5. Safety precautions.
6. Diagrams and illustrations.
7. Testing methods.
8. Performance data.
   Lubrication schedule including type, grade, temperature range, and frequency.
9. Parts list. The list shall indicate sources of supply, recommended spare parts, and name of servicing organization.
10. Appendix: List qualified permanent servicing organizations for support of the equipment, including addresses and certified qualifications.

B. Electronic Version: Provide a complete O&M as a single PDF file, or multiple files if there are significant amounts of data. PDF file(s) shall be an optical character recognition (OCR) or searchable file.

1.08 SPARE PARTS

A. Provide spare parts for all equipment installed under this Contract, as indicated in individual specification sections.

1.09 POSTED OPERATING INSTRUCTIONS

A. Furnish approved operating instructions for systems and equipment indicated in the technical sections for use by operation and maintenance personnel. The operating instructions shall include wiring diagrams, control diagrams, and control sequence for each principal system and equipment. Print or engrave operating instructions and frame under glass or in approved laminated plastic. Post instructions as directed. Attach or post operating instructions adjacent to each principal system and equipment including startup, proper adjustment, operating, lubrication, shutdown, safety precautions, procedure in the event of equipment failure, and other items of instruction as recommended by the manufacturer of each system or equipment. Provide weather-resistant materials or weatherproof

enclosures for operating instructions exposed to the weather. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

1.10 INSTRUCTION TO OWNER'S PERSONNEL

A. Where indicated in the technical sections, furnish the services of competent instructors to give full instruction to Owner's personnel in the adjustment, operation, and maintenance of systems and equipment, including pertinent safety requirements as required. Each instructor shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work. Instruction shall be given during the first regular work week after the equipment or system has been accepted and turned over to the Owner for regular operation. The number of man days (8 hours) of instruction furnished shall be as specified in each individual section.

1.11 LAYOUT OF THE WORK

A. Coordinate the proper relation of the work to the building structure, existing utilities and to the work of all trades. The Contractor shall advise the Owner's Representative of any discrepancy before performing any work.
   1. Contract Drawings: The Contract Drawings represent the general intent as to layout and equipment arrangements. All locations and dimensions shown shall be field verified and minor alterations made if so required. Where dimensions are not given for the location and arrangement of mechanical systems, locations may be assumed to be approximate, and may be altered if required. Major modifications to the indicated arrangements shall be approved by the Owner's Representative prior to the installation of mechanical systems. Schematic diagrams represent the overall system requirements and do not necessarily indicate the physical orientation, location or dimensions of that system.
   2. Coordination Drawings: Each Contractor and/or his Subcontractor shall submit drawings showing the coordination of work between work of their respective trade and with the work of the other trades and structural and architectural elements of the work. Items to be shown on the drawings shall include, but are not limited to, ductwork systems, control dampers, HVAC piping, plumbing piping, plumbing fixtures, fire protection piping, sprinkler head layout, smoke detectors, heat detectors, light fixtures, electrical equipment, pull boxes, and conduit runs that utilize a 1-inch diameter or larger conduit. Drawings shall be in sufficient detail to show overall dimensions of related items, clearances and relative location of work in the allotted spaces. Drawings shall indicate any routing changes that are required to be made to resolve clearance problems between the elements of various trades.
      a. Each Contractor and/or his Subcontractor shall be solely responsible for the generation of the coordination drawings including distribution to, and collection of related information

from each Contractor or Subcontractor. Drawings shall be produced in AutoCAD format and submitted on sheets no larger than 24 x 36-inches. Upon written request, background drawings will be provided to the Contractor for the purpose of coordination drawing development. The Owner or Engineer does not warranty the accuracy of any background drawings provided and the Contractor shall be responsible to field verify all background drawings. Submit complete drawings to Engineer a minimum of one week prior to the intended start of the related construction.

3. Record Drawings: The Contractor shall maintain a record of the progress of the work and shall submit three (3) hard copy sets of As-Built Drawings upon completion of the project.

1.12 DELIVERY AND STORAGE

A. Handle, store, and protect equipment and materials in accordance with the manufacturer's recommendations and with the requirements of NFPA 70B, Appendix I, titled "Equipment Storage and Maintenance During Construction". Replace damaged or defective items with new items.

1.13 SPECIAL CONDITIONS

A. When performing work within active raw water pump station areas, the Contractor shall be responsible to coordinate with the Owner regarding planned interruptions to electrical services and/or road access. Contractor must maintain in service the existing electrical services at the existing raw water pump station unless otherwise coordinated with the Owner.

B. Protection of Existing Work: The Contractor shall take all necessary precautions to ensure against damage to existing work to remain in place, or to be reused. The Contractor shall ensure that structural elements are not overloaded and additional structural supports required as a result of any cutting, removal or demolition work performed under any part of this Contract are added. Unless specified otherwise, the Contractor shall submit for review detailed shop drawings applicable to the Contract work for all structural supports, hangers and related devices, structural modifications, temporary rigging and associated rigging plans. Commencement of such work prior to the submission and review of applicable shop drawings shall be at the sole risk of the Contractor.

C. Upon damage to existing equipment, buildings, and/or structures, the Contractor shall immediately notify the Owner. All damages shall be repaired by the Contractor, or shall be replaced if beyond repair, to match the existing to the Owner's satisfaction.

D. Protection of Buildings from the Weather: The interior of the buildings and all materials and equipment shall be protected from the weather at all times.

E. Protection of Personnel: Where the safety of non-contractor personnel is endangered in the area of the work, barricades shall be used. Additional protection shall be provided if required, to preserve the safety of non-contractor personnel in the immediate area of the work.

F. Contractor shall maintain open road access at all times to the existing raw water pump station. Contractor shall stage construction such that at least one lane of the existing access road is open at all times. Contractor shall coordinate with the Owner a minimum of one week prior to any planned road closings.

G. Construction in Existing Buildings: Verify with Owner expected routing of new wire and/or conduit within existing equipment or buildings prior to field construction of systems. Coordinate with the Owner a minimum of ten (10) working days prior to any planned disruption of existing working systems.

1.14 CATALOGED PRODUCTS/SERVICE AVAILABILITY

A. Materials and equipment shall be current products by manufacturers regularly engaged in the production of such products. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The 2-year period shall be satisfactorily completed by a product for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures. Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished. The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the Contract.

1.15 MANUFACTURER'S RECOMMENDATIONS

A. Where installation procedures or any part thereof are required to be in accordance with manufacturer's recommendations, furnish printed copies of the recommendations prior to installation. Installation of the item shall not proceed until recommendations are received. Failure to furnish recommendations shall be cause for rejection of the equipment or material. Obtain manufacturer's recommendations from the Owner for equipment and/or material provided by the Owner.

1.16 MOTORS AND MOTOR CONTROLS FOR MECHANICAL EQUIPMENT

A. The electrical components of mechanical equipment, such as motors, motor starters, control or push button stations, float or pressure switches, solenoid valves, and other devices functioning to control mechanical equipment, and control wiring and conduit for circuits rated 100 volts or less, are specified in the section covering the associated mechanical equipment, rather than in Division 26,

unless otherwise shown. The interconnecting power wiring and conduit, control wiring rated 120 volts (nominal) and conduit, and the electrical power circuits shall be furnished and installed under Division 26 in accordance with other sections and/or as shown on the Contract Drawings.

1.17 ARC FLASH HAZARD ANALYSIS

A. Power study, including arc flash analysis and labeling to be provided by Owner.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. All materials, equipment, and devices shall, as a minimum, meet the requirements of UL where UL standards are established for those items, and the requirements of NFPA 70. All items shall be new unless specified or indicated otherwise.

2.02 NAMEPLATES

A. Fed. Spec. L-P-387. Provide laminated plastic nameplates for each panelboard, equipment enclosure, relay, switch, and device. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125-inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the black core. Minimum size of nameplates shall be 1.0 inch by 2.5 inches. Lettering shall be a minimum of 0.25-inch high normal block style.

B. For sites with power generation equipment: Provide permanent nameplate at service entrance equipment indicating type and location of on-site generation power source (generator, PV, co-gen, etc.) in accordance with NEC Article 705. Provide same nameplate at generation sources main disconnect indication type and location of service entrance equipment.

PART 3 - EXECUTION

3.01 NAMEPLATE MOUNTING

A. Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two sheet-metal screws or two rivets.

B. Provide nameplates for all equipment as required by other sections.

C. Provide nameplates for all owner furnished equipment that is installed by this Contractor.

3.02 PAINTING OF EQUIPMENT

A. Factory Applied: Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA ICS 6 corrosion-resistance test, except equipment specified to meet requirements of ANSI C37.20 shall have a finish as specified in ANSI C37.20.

3.03 TESTS

A. General: Perform and record all tests in the presence of the Owner's authorized representative and/or the Engineer. Furnish all instruments and personnel. Perform preliminary tests and correct all defective material and/or workmanship prior to witness of tests. Perform tests as indicated and as otherwise noted in other Sections of the Division 26.

B. Conduct field tests in the sequence listed below:
   1. Insulation Resistance Tests: As required per individual specification sections.

C. Load Balance Test: Make test by energizing all lighting, motors and other electrical equipment simultaneously for a three-hour period. Alter fuses, circuit breakers, circuit connections, etc., as required for satisfactory performance. Take voltage and amperage readings on each circuit at all panels.

D. Check the amperage draw, voltage and direction of rotation of each motor in the presence of the equipment contractor and the Owner's representative. Make all necessary changes to obtain proper rotation, motor terminal voltage, motor protection, etc. Revise heater elements as necessary for proper motor protection. Similarly check all other electrically connected equipment.
   1. Make the test at a time during the day or night that is mutually satisfactory to the Owner at least one week prior to substantial completion. Make all arrangements and notify all parties in writing at least seventy-two hours prior to the test.

E. Equipment Operation Test - Show by demonstration in service that all circuits are in good operating condition. Cycle all control equipment under load at least five times.

F. Equipment and apparatus factory tests - Manufacturer's normal quality control tests are acceptable, unless specific factory witnessed tests are specified in other sections.

G. Perform all other field tests as required in individual specification sections.

3.04 CLEANING

A. When directed, just prior to final acceptance, clean all equipment including, but not limited to, the following:

1. Lighting fixtures, panelboards, control centers, switchgear, receptacles and switch plates - Remove all tags and labels; leave ready for use
2. All equipment to be painted, removing all rust, etc., and leave ready for painting
3. Building, by removing all debris, conduits, wire, insulation, cartons, etc., left as a result of this work.

3.05 THIRD PARTY INSPECTION AND MISC SERVICES COORDINATION

A. Contractor shall provide and pay for inspection of electrical work by an AHJ approved electrical inspection agency.

B. Contractor shall coordinate with the Owner regarding connections to existing systems and work within existing buildings and equipment.

3.06 WORK WITHIN EXISTING BUILDINGS

A. Contractor shall install new feeder breakers in existing panels and shall install new conduit and wire systems within existing buildings. Contractor shall use care in installation of new work and shall protect existing work and finishes in his work area. Contractor shall immediately notify Owner of any damages to existing equipment or finishes and shall restore damaged items to Owner's satisfaction.

END OF SECTION

SECTION 26 05 02

MINOR ELECTRICAL DEMOLITION FOR REMODELING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Interior demolition, removal and abandonment of interior electrical systems.

B. Cleaning and repair of existing equipment to remain.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching work: As specified in individual sections.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify field measurements and circuiting arrangements are as shown on drawings.

B. Verify that abandoned wiring and equipment serve only abandoned facilities.

C. Demolition drawings are based on casual field observation and existing record documents. Report discrepancies to Engineer before disturbing existing installation.

D. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

A. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.

B. Provide temporary wiring and connections to maintain existing systems in service during construction.

C. Maintain existing systems in service until new systems are complete and ready for operation. Disable systems only to make switch overs and connections. Closely coordinate interruptions with Owner, providing at least 48 hours notice prior to outages. Minimize outage durations. Such work will normally be performed nights, weekends, or other times when building is not occupied for normal operations.

3.03 DEMOLITION EXISTING ELECTRICAL WORK

A. Remove existing installations to accommodate requirements for new construction.

B. Remove abandoned wiring to source of supply, unless otherwise noted on Contract Drawings.

C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.

D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.

E. Disconnect and remove abandoned panelboards and distribution equipment.

F. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

G. Repair adjacent construction and finishes damaged during demolition work.

H. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.

3.04 CLEANING AND REPAIR

A. Clean and repair existing materials and equipment which remain or are to be reused.

B. Panelboards: Clean exposed surfaces and check tightness of electrical connections.

C. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

END OF SECTION

SECTION 26 05 13

PRIMARY WIRING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Primary Wiring, as shown on the Plans, as specified, and/or directed. Note this section specifies Primary Wiring for use underground or in conduit only (up riser poles).

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of the Specifications to the extent referenced. The publications are referred to in the text by the basic designation only and shall be the most current version.
   1. Insulated Cable Engineers Association (ICEA) Publication:
      a. S-94-649/NEMA WC-74 - Ethylene-Propylene Rubber Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy
   2. Association of Edison Illuminating Companies (AEIC) Publication:
      a. CS-8 - Ethylene Propylene Rubber Insulated Shielded Power Cables Rated 5 through 69KV
   3. Institute of Electrical and Electronics Engineers (IEEE) Publications:
      a. 48 - Standard Test Procedures and Requirements for High-Voltage Alternating-Current Cable Terminations
      b. 400 - Guide for Field testing and Evaluation of the Insulation of Shielded Power Cable Systems Rated 5kV and above
   4. Underwriters Laboratories (UL) Publication:
      a. 1072 - Medium Voltage Power Cables

1.03 SUBMITTALS

A. Submittals Package: Submit the data specified below for preliminary approval all at the same time as a package. After preliminary approval, submit the data and samples specified below for final approval all at the same time as a package.

B. Submit the following:
   1. Complete manufacturer's construction details and specifications for the cables, including physical and electrical characteristics of insulation, shields and jackets.
   2. Overall dimension and ampacity of cable.
   3. Catalog sheets, specifications and installation instructions for all products.
   4. Qualifications for cable splicer.

C. Contract Closeout Submittals:
   1. Test Report: High voltage (Hipot) after installation test report.
   2. Certificates:
      a. Affidavit, signed by the cable manufacturer's Company Field Advisor and notarized, certifying that the cable has been installed in accordance with the manufacturer's recommendations and is operating properly.
      b. Affidavit, signed by the splice and termination manufacturer's Company Field Advisor and notarized, certifying that the splices (if required) and terminations were constructed in accordance with the manufacturer's recommendations and are operating properly.

1.04 QUALITY ASSURANCE

A. Equipment Qualifications For Products Other Than Those Specified:
   1. If products other than those specified are proposed for use furnish the name, address, and telephone numbers of at least 5 comparable installations that can prove the proposed products have performed satisfactorily for 10 years.
   2. Provide written certification from the manufacturer that the proposed products are compatible for use with all other equipment proposed for use for this system and meet all contract requirements. Include proof that the installed cables:
      a. Have the same rating and construction as the proposed cable.
      b. Have the same insulation compound as the proposed cable.

B. Company Field Advisor: Secure the services of the cable manufacturer's Company Field Advisor for a minimum of 16 working hours for the following:
   1. Render advice regarding method of installing cable.
   2. Inspection of equipment for installing cable.
   3. Witness representative amount of cable pulling.
   4. Witness construction of at least one splice and one termination by each cable splicer who will be doing the actual cable splicing. If cable splices are necessary.
      a. If the splices or terminations are other than the cable manufacturers, secure the services of the splice and termination manufacturer's Company Field Advisor to concurrently witness construction of the splices and terminations and also certify with an affidavit that the splices and terminations were constructed in accordance with the splice and termination manufacturer's recommendations.
         1) Witness high voltage after installation test.
      b. Certify with an affidavit that the aforementioned particulars are satisfactory and the cable is installed in accordance with cable manufacturer's recommendations.

C. Testing Company: Secure the services of an approved testing company for a high voltage after installation test.

1.05 DELIVERY, STORAGE AND HANDLING

A. Cable Delivery:
1. No insulated cable over one year old when delivered to the site will be acceptable.
2. Keep ends of cables sealed at all times, except when making splices or terminations. Use soldered seals for lead sheath cables. For other type cables use heat shrinkable plastic end caps with sealant as produced by Raychem Corp., or Thomas & Betts Corp., or other methods approved by cable manufacturer.
3. Include the following data durably marked on each reel:
a. Facility name and address.
b. Contractor's name.
c. Project title and number.
d. Date of manufacture.
e. Cable size and voltage rating.
f. Manufacturer's name.
g. Linear feet of cable.
h. Location where cable is to be installed.

B. Cable Storage: Store where cable will be at optimum workability temperature recommended by cable manufacturer.

1.06 MAINTENANCE

A. Special Tools: Furnish one set of special tools for the assembly of pre-molded splices (if used). Store them at the Site where directed.

PART 2 - PRODUCTS

2.01 CABLES

A. Cable Configuration: Single conductors.

B. 34.5 kV Cable Construction (underground or riser portions only)
1. Compact stranded copper conductors.
2. 133%, 220 mils EPR insulation (discharge resistant).
3. Conductor Shield: non-conducting permashield stress control layer.
4. Jacket: Insulating Polyethylene (PE) with 3 red stripes, sunlight resistant, -40 Deg.C.
5. Insulation Shield: Extruded free stripping, semi-conducting layer, cross-linked polyethylene.
6. Temperature Ratings: 90°C normal.
7. Rated 34.5 kV.

8. Direct Burial Rated.
9. UL Listed.
10. Full Rated copper concentric neutral.

2.02 FIXED TERMINATIONS

A. Materials: All materials required for a complete termination the standard product of one manufacturer, designed specifically for the type of cable and conductor to be terminated.

B. Ampere Rating: Not less than ampere rating of cable.

C. Voltage Rating: Not less than voltage rating of cable.

D. Manufacturer: Furnish terminations by one of the manufacturers listed below, if acceptable to the cable manufacturer.
1. IEEE 48 Class 1 Terminations: Elastimold's 16THG, or 35MTG, with cable shield adapter, Kerite Co.'s Outdoor Terminal OT, Minnesota Mining & Mfg. Co.'s 3M Cold-Shrink Terminations, or Raychem Corp.'s Heat-Shrinkable High Voltage Termination System. Equip terminations with or without skirts as recommended by manufacturer.

2.03 34.5KV DEAD BREAK ELBOW TERMINATIONS AND EQUIPMENT (AT OUTDOOR PAD MOUNTED TRANSFORMERS)

A. The high voltage bushings shall consist of six (6) 35kV, 200A bushing wells with loadbreak bushing inserts installed and in accordance with IEEE requirements. Provide three (3) 200A loadbreak elbows rated for full three-phase duty and three (3) deadfront elbow surge arresters.

B. Materials: All materials required for a complete termination shall be the standard product of one manufacturer, designed specifically for the type of cable and conductor to be terminated.

C. Ampere Rating: 200 amp continuous.

D. Voltage Rating: Not less than voltage rating of cable.

E. Manufacturer: Elastimold, Cooper, or approved equal. For each phase conductor at transformers and sectionalizer cabinets, provide a 200A Series dead-break elbow kit with:
1. insulating plug
2. cap
3. compression lug
4. cable shield adapter
5. test point

F. Transformer bushing wells, bushing well inserts and sectionalizing elbow style junction bars shall be of same manufacture as elbow connectors.

G. Provide loadbreak protective cap for all un-used sectionalizing spare junction inserts.

2.04 ACCESSORIES

A. Arc Proofing Tapes:
1. Arc Proofing Tape: Mac Products Inc's AP30-30 or AP, Minnesota Mining & Mfg. Co.'s 3M 77, Plymouth Rubber Co.'s Plymouth Bishop 53 Plyarc, or Quelcor Inc.'s Quelpyre.
2. Glass Cloth Tape: Mac Products Inc.'s TAPGLA 5066, Minnesota Mining & Mfg. Co.'s 3M 69, or Plymouth Rubber Co.'s Plymouth Bishop 77 Plyglas.
3. Glass-Fiber Cord: Mac Products Inc.'s MAC 0527, or Quelcor Inc.'s QTC-250.

B. Tags:
1. Precision engrave letters and numbers with uniform margins, character size minimum 3/16 inches high.
a. Phenolic: Two color laminated engraver's stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).
b. Aluminum: Standard aluminum alloy plate stock, minimum .032 inches thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.

C. Heat Shrink Seal:
1. Cable ends to be sealed at all times and resealed when cut to prevent contamination of the cables by moisture and dirt. Provide heat shrink seal designed specifically for the type of cable and conductor to be installed.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Cables:
1. Cables to be installed in combination of new and existing conduit/duct bank systems as shown on the Contract Drawings. Coordinate installation of primary wiring with utility company.
2. Keep ends of cables sealed watertight at all times, except when making splices or terminations.
3. No grease, oil, lubricant other than approved pulling compound may be used to facilitate the pulling-in of cables.
4. Use pulling eye attached to conductor(s) for pulling-in cables. Cable grip will not be allowed. Seal pulling eye attachment watertight.

5. Pull all cables with a dynamometer or strain gage incorporated into the pulling equipment. Do not pull cables unless the Owner's Representative is present to observe readings on the dynamometer or strain gage during the time of actual pulling. Do not exceed manufacturer's recommended maximum strain on cable for a 3 conductor pull (3 single conductor cables).

B. Terminations and Splices:
   1. General: Splice and terminate cable in accordance with manufacturer's approved installation instructions, employing specific tools recommended by the manufacturer.
      a. Use IEEE 48 Class 1 terminations to terminate cable in wet locations.
      b. Use IEEE 48 Class 1 terminations to terminate cable inside of outdoor equipment which is not equipped with space heaters (pad mounted switches, pad mounted transformers, etc).
      c. Use IEEE 48 Class 1 terminations to terminate cable in dry locations.
      d. Ground shield at terminations.
      e. Incorporate solder dam or use other approved method to prevent moisture from entering splices through grounding conductor.
      f. Contractor to provide and use dead-break elbows at transformer primary bushing wells/inserts.

C. Arc Proofing: Arc proof feeders installed in a common pull box or manhole as follows:
   1. Arc proof new feeders.
   2. Arc proof existing feeders that are spliced to new feeders.
   3. Arc proof each feeder as a unit with half-lapped layer of 55 mils thick arc proofing tape, random wrapped or laced with glass cloth tape or glass-fiber cord. For arc proofing tape less than 55 mils thick add layers to equivalent of 55 mils thick arc proofing tape.

D. Identification of Feeders: Identify feeders in manholes, pull boxes and in equipment to which they connect:
   1. Install tags on each insulated conductor indicating phase leg. Attach tags with non-ferrous metal wire. Install phase leg tags under arc proofing tapes.
   2. Install tags on each feeder indicating feeder number, date installed (month, year), type of cable, voltage rating, size, and manufacturer. Attach tags to feeders with non-ferrous metal wire or brass chain. Install tags so that they are easily read without moving adjacent feeders or require removal of arc proofing tapes.

E. Phase Relationship: Connect feeders to maintain phase relationship through system. Phase legs of feeders shall match bus arrangements in equipment to which the feeders are connected.

3.02 FIELD QUALITY CONTROL

A. High Voltage (Hipot) After Installation Test: test to verify electrical insulation on installed cables has not been damaged and that leakage current is minimal.
   1. Have the cable installation tested by the testing company.
   2. Perform test after cable has been installed complete with all splicing, bonding, etc., and prior to placing cable into service.
   3. Perform test in the presence of the Owner's Representative and the Company Field Advisor.
   4. Perform Acceptance Test following all National Electrical Testing Association (NETA) and IEEE Standard 400 requirements and all applicable test methods in ICEA and AEIC specifications.

END OF SECTION

SECTION 26 05 19

WIRING/CABLE, 600 VOLTS AND UNDER

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials, equipment and accessories for Wiring/Cable, 600 Volts and Under, as shown on the Plans, as specified and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only and shall be the most current version.
   1. National Electrical Manufacturers Association (NECA) Publication:
      a. Standard of Installation
   2. International Electrical Testing Association (NETA) Publication:
      a. ATS - Electrical Power Distribution Equipment and Systems
   3. National Fire Protection Association (NFPA) Publication:
      a. 70 - National Electrical Code
   4. American Society for Testing and Materials (ASTM) Publications:
      a. B1 - Hard-Drawn Copper Wire
      b. B8 - Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
      c. E14 - Fire Tests of Through-Penetration Fire Stops
   5. Underwriters Laboratories, Inc. (UL) Publications:
      a. 854 - Service Entrance Cables
      b. 486A - Wire Connector and Soldering Lugs for Use with Copper Conductors
      c. 486C - Splicing Wiring Connectors
      d. 1569 - Metal-Clad Cables

1.03 SUBMITTALS

A. Product Data: Catalog sheets, specifications and installation instructions.

B. Specification required test results.

1.04 PRODUCT DELIVERY

A. Mark and tag insulated conductors and cables for delivery to the site. Include:
   1. Contractor’s name.
   2. Project title and number.

3. Date of manufacture (month & year).
4. Manufacturer's name.
5. Environmental suitability information (listed or marked "sunlight resistant" where exposed to direct rays of sun; wet locations listed/marked for use in wet locations; other applications listed/marked suitable for the applications).

PART 2 - PRODUCTS

2.01 INSULATED CONDUCTORS AND CABLES

A. Date of Manufacture: No insulated conductor more than one year old when delivered to the site will be acceptable.

B. Acceptable Companies: American Insulated Wire Corp., BICC General Cable Industries, Inc., Cerro Wire & Cable Co. Inc., Pirelli Cable Corp., Owl Cable Corp., or Southwire Co.

C. Conductors: Annealed uncoated copper or annealed coated copper in conformance with the applicable standards for the type of insulation to be applied on the conductor. Conductor sizes No. 12 and larger shall be stranded.

D. Types:
1. Lighting and Power Wiring:
   a. Insulation: Unless specified or indicated otherwise or required by NFPA 70, power and lighting wires shall be 600-volt, Type THW, THWN, XHHW, or RHW, except that grounding wire may be Type TW. Where lighting fixtures require 90-degree C conductors, provide only conductors with 90-degree C insulation or better.
2. Class 1, 2, 3 Wiring: Minimum size for branch circuits shall be No. 12 AWG; for Class 1 remote-control and signal circuits, No. 14 AWG; and for Class 2 low-energy, remote-control and signal circuits, No. 16 AWG.
3. VFD Cables: VFD equipment shall be wired from line side (for standalone VFDs) and load side of VFD (standalone VFDs and MCC VFDs) to motor utilizing VFD rated cable. Cable specifications are as follows:
   a. 1000V UL 1277 Type TC per 2005 NEC Article 336
   b. Copper Conductors
   c. Class B Stranding per ASTM
   d. XLPE Insulation XHHW-2 Rated Circuit Conductors (14 AWG and larger)
   e. 90°C Wet/Dry
   f. Class I & II; Division 2 Hazardous Locations
   g. Overall UL 1685 Vertical Tray Flame Test

h. IEEE 1202/383 Vertical Tray Flame Test
i. Overall Shield

2.02 CONNECTORS

A. General:
1. Connectors specified are part of a system. Furnish connectors and components, and use specific tools and methods as recommended by connector manufacturer to form complete connector system.
2. Connectors shall be capable of continuous operation at the current rating of the cables on which they are used.
3. Connectors shall be UL 486 A listed, or UL 486 B listed for combination dual rated copper/aluminum connectors (marked AL7CU for 75 degrees C rated circuits and AL9CU for 90 degrees C rated circuits).

B. Splices:
1. Spring Type:
a. Rated 105° C, 600V; Buchanan/Ideal Industries Inc.'s B-Cap, Electrical Products Div./3M's Scotchlok Type Y, R, G, B, O/B+, R/Y+, or B/G+, or Ideal Industries Inc.'s Wing Nuts or Wire Nuts.
b. Rated 150° C, 600V; Ideal Industries Inc.'s High Temperature Wire-Nut Model 73B, 59B.
2. Indent Type with Insulating Jacket: Rated 105° C, 600V; Buchanan/Ideal Industries Inc.'s Crimp Connectors, Ideal Industries Inc.'s Crimp Connectors, Penn-Union Corp.'s Penn-Crimps, or Thomas & Betts Corp.'s STA-KON.
3. Indent Type (Uninsulated): Anderson/Hubbell's Versa-Crimp, VERSAtile, Blackburn/T&B Corp.'s Color-Coded Compression Connectors, Electrical Products Div./3M's Scotchlok 10000, 11000 Series, Framatome Connectors/Burndy's Hydent, Penn-Union Corp.'s BCU, BBCU Series, or Thomas & Betts Corp.'s Compression Connectors.
4. Connector Blocks: NIS Industries Inc.'s Polaris System, or Thomas & Betts Corp.'s Blackburn AMT Series.
5. Resin Splice Kits: Electrical Products Div./3M's Scotchcast Brand Kit Nos. 82A Series, 82-B1 or 90-B1, or Scotchcast Brand Resin Pressure Splicing Method.
6. Heat Shrinkable Splices: Electrical Products Div./3M's ITCSN, Raychem Corp.'s Thermofit Type WCS, or Thomas & Betts Corp.'s SHRINK-KON Insulators.
7. Cold Shrink Splices: Electrical Products Div./3M's 8420 Series.

C. Gutter Taps: Anderson/Hubbell's GP/GT with GTC Series Covers, Blackburn/T&B Corp.'s H-Tap Type CF with Type C Covers, Framatome Connectors/Burndy's Polytap KPU-AC, H-Crimpit Type YH with CF-FR Series Covers, ILSCO's GTA Series with GTC Series Covers, Ideal Industries Inc.'s Power-Connect GP, GT Series with GIC covers, NSI Industries Inc.'s Polaris

System, OZ/Gedney Co.'s PMX or PT with PMXC, PTC Covers, Penn-Union Corp.'s CDT Series, or Thomas & Betts Corp.'s Color-Keyed H Tap CHT with HTC Covers.

D. Terminals: Nylon insulated pressure terminal connectors by Amp-Tyco/Electronics, Electrical Products Div./3M, Framatome Connectors/Burndy, Ideal Industries Inc., Panduit Corp., Penn-Union Corp., Thomas & Betts Corp., or Wiremold Co.

E. Lugs:
1. Single Cable (Compression Type Lugs): Copper, 1 or 2 hole style (to suit conditions), long barrel; Anderson/Hubbell's VERSAtile VHCL, Blackburn/T&B Corp.'s Color-Coded CTL, LCN, Framatome Connectors/Burndy's Hylug YA, Electrical Products Div./3M Scotchlok 31036 or 31145 Series, Ideal Industries Inc.'s CCB or CCBL, NSI Industries Inc.'s L, LN Series, Penn-Union Corp.'s BBLU Series, or Thomas & Betts Corp.'s 54930BE or 54850BE Series.
2. Single Cable (Mechanical Type Lugs): Copper, one or 2 hole style (to suit conditions); Blackburn/T&B Corp.'s Color-Keyed Locktite Series, Framatome Connectors/Burndy's Qiklug Series, NSI Industries Inc.'s Type TL, Penn-Union Corp.'s VI-TITE Terminal Lug Series, or Thomas & Betts Corp.'s Locktite Series.
3. Multiple Cable (Mechanical Type Lugs): Copper, configuration to suit conditions; Framatome Connectors/Burndy's Qiklug Series, NSI Industries Inc.'s Type TL, Penn-Union Corp.'s VI-TITE Terminal Lug Series, or Thomas & Betts Corp.'s Color-Keyed Locktite Series.

2.03 TAPES

A. Insulation Tapes:
1. Plastic Tape: Electrical Products Div./3M's Scotch Super 33+ or Scotch 88, Plymouth Rubber Co.'s Plymouth/ Bishop Premium 85CW.
2. Rubber Tape: Electrical Products Div./3M's Scotch 130C, or Plymouth Rubber Co.'s Plymouth/Bishop W963 Plysafe.

B. Moisture Sealing Tape: Electrical Products Div./3M's Scotch 2200 or 2210, or Plymouth Rubber Co.'s Plymouth/Bishop 4000 Plyseal-V.

C. Electrical Filler Tape: Electrical Products Div./3M's Scotchfil, or Plymouth Rubber Co.'s Plymouth/Bishop 125 Electrical Filler Tape.

D. Color Coding Tape: Electrical Products Div./3M's Scotch 35, or Plymouth Rubber Co.'s Plymouth/Bishop Premium 37 Color Coding.

E. Arc Proofing Tapes:

1. Arc Proofing Tape: Electrical Products Div./3M's Scotch 77, Mac Products Inc.'s AP Series, or Plymouth Rubber Co.'s Plymouth/Bishop 53 Plyarc.
2. Glass Cloth Tape: Electrical Products Div./3M's Scotch 27/Scotch 69, Mac Products Inc.'s TAPGLA 5066,, or Plymouth Rubber Co.'s Plymouth/Bishop 77 Plyglas.
3. Glass-Fiber Cord: Mac Products Inc.'s MAC 0527.

2.04 WIRE-PULLING COMPOUNDS

A. To suit type of insulation; American Polywater Corp.'s Polywater Series, Electric Products Div./3M's WL, WLX, or WLW, Greenlee Textron Inc.'s Y-ER-EAS, Cable Cream, Cable Gel, Winter Gel, Ideal Industries Inc.'s Yellow 77, Aqua-Gel II, Agua-Gel CW, or Thomas & Betts Corp.'s Series 15-230 Cable Pulling Lubricants, or Series 15-631 Wire Slick.

2.05 TAGS

A. Precision engrave letters and numbers with uniform margins, character size minimum 3/16 inch high.

B. Phenolic: Two color laminated engraver's stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).

C. Aluminum: Standard aluminum alloy plate stock, minimum .032 inch thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.

2.06 WIRE MANAGEMENT PRODUCTS

A. Cable Clamps and Clips, Cable Ties, Spiral Wraps, etc: Catamount/T&B Corp., or Ideal Industries Inc.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install conductors in raceways after the raceway system is completed. Exceptions: Type specifically indicated or required to not be installed in raceways.

B. No grease, oil, or lubricant other than wire-pulling compounds specified may be used to facilitate the installation of conductors. Completely and thoroughly swab raceway/wire before installing wire/cable.

C. All splices and connections shall be made in accessible boxes and cabinets only.

3.02 CIRCUITING

A. Wiring and cables of different systems shall not be run in same raceway. Power wiring shall not be run in same raceway for remote control/signal wiring.

B. Class 2, 3 plenum rated cables shall be run without raceway when concealed above accessible ceilings unless otherwise indicated on Contract Drawings. These cables shall be run parallel and perpendicular to building surfaces, and shall be neatly bundled and shall be supported independently from the accessible ceiling utilizing bridle rings or similar. Cables shall effectively be routed horizontal. Provide conduit sleeves at wall penetrations.

3.03 COMMON NEUTRAL CONDUCTOR

A. A common neutral shall not be used. Provide individual neutral per each circuit.

3.04 COLOR CODING

A. Color Coding for 120/208/240 Volt Electric Light and Power Wiring:
   1. Color Code:
      a. 2 wire circuit - black, white.
      b. 3 wire circuit - black, red, white.
      c. 4 wire circuit - black, red, blue, white.
   2. White to be used only for an insulated grounded conductor (neutral). If neutral is not required use black and red, or black, red and blue for phase to phase circuits.
      a. “White” for Sizes No. 6 AWG or Smaller:
         1) Continuous white outer finish, or:
         2) Three continuous white stripes on other than green insulation along its continuous length.
      b. “White” for Sizes Larger Than No. 6 AWG:
         1) Continuous white outer finish, or:
         2) Three continuous white stripes on other than green insulation along its continuous length, or:
         3) Distinctive white markings (color coding tape) encircling the conductor, installed on the conductor at time of its installation. Install white color coding tape at terminations, and at 1’ 0” intervals in gutters, pull boxes, and manholes.
   3. Colors (Black, Red, Blue):
      a. For Branch Circuits: Continuous color outer finish.
      b. For Feeders:
         1) Continuous color outer finish, or:
         2) Color coding tapes encircling the conductors, installed on the conductors at time of their installation. Install color

coding tapes at terminations, and at 1’ 0” intervals in gutter, pull boxes, and manholes.

B. Color Coding For 277/480 Volt Electric Light and Power Wiring:
   1. Color Code:
      a. 2 wire circuit – brown, gray.
      b. 3 wire circuit – brown, yellow, gray.
      c. 4 wire circuit – brown, orange, yellow, gray.
   2. Gray to be used only for an insulated grounded conductor (neutral). If neutral is not required use brown and yellow, or brown, yellow and orange for phase to phase circuits.
      a. “Gray” For Sizes No. 6 AWG or Smaller:
         1) Continuous gray outer finish.
      b. “Gray” For Sizes Larger Than No. 6 AWG:
         1) Distinctive gray markings (color coding tape) encircling the conductor, installed on the conductor at time of its installation. Install gray color coding tape at terminations, and at 1’ 0” intervals in gutters, pull boxes, and manholes.
      c. Colors (Brown, Yellow, Orange):
      d. For Branch Circuits: Continuous color outer finish.
      e. For Feeders:
         1) Continuous color outer finish, or:
         2) Color coding tapes encircling the conductors, installed on the conductors at the time of their installation. Install color coding tapes at terminations, and at 1’ 0” intervals in gutters, pull boxes, and manholes.

C. More Than One Nominal Voltage System Within A building: Permanently post the color coding scheme at each branch-circuit panelboard.

D. Existing Color Coding Scheme: Where an existing color coding scheme is in use, match the existing color coding if it is in accordance with the requirements of NFPA 70.

E. Color Code For Wiring Other Than Light and Power: In accordance with ICEA/NEMA WC-30 “Color Coding of Wires and Cables”. Other coding methods may be used, as approved.

F. On 3-phase, 4-wire delta system, high leg shall be orange, as required by NFPA 70.

3.05 IDENTIFICATION

A. Identification Tags: Use tags to identify feeders and designated circuits. Install tags so that they are easily read without moving adjacent feeders or requiring removal of arc proofing tapes. Attach tags with non-ferrous wire or brass chain.

1. Interior Feeders: Identify each feeder in pull boxes and gutters. Identify by feeder number and size.
2. Exterior Feeders: Identify each feeder in manholes and in interior pull boxes and gutters. Identify by feeder number and size, and also indicate building number and panel designation from which feeder originates.
3. Street and Grounds Lighting Circuits: Identify each circuit in manholes and lighting standard bases. Identify by circuit number and size, and also indicate building number and panel designation from which circuit originates.

B. Identification Plaque: Where a building or structure is supplied by more than one service, or has any combination of feeders, branch circuits, or services passing through it, install a permanent plaque or directory at each service, feeder and branch circuit disconnect location denoting all other services, feeders, or branch circuits supplying that building or structure or passing through that building or structure and the area served by each.

C. All control conductors as specified herein shall be labeled at each termination point. Labeling shall be permanently labeled with printed Brady type labels or equivalent.

3.06 WIRE MANAGEMENT

A. Use wire management products to bundle, route, and support wiring in junction boxes, pull boxes, wireways, gutters, channels, and other locations where wiring is accessible.

3.07 EQUIPMENT GROUNDING CONDUCTOR

A. Install Equipment Grounding Conductor:
1. Where specified in other Sections or indicated on the Contract Drawings.
2. In conjunction with circuits recommended by equipment manufacturers to have equipment grounding conductor.

B. Equipment grounding conductor is not intended as a current carrying conductor under normal operating circumstances.

C. Color Coding For Equipment Grounding Conductor:
1. Color Code: Green.
2. “Green” For sizes No. 6 AWG or Smaller:
   a. Continuous green outer finish, or:
   b. Continuous green outer finish with one or more yellow stripes, or:
   c. Bare copper (see exception below).
3. “Green” For Sizes Larger Than No. 6:
   a. Stripping the insulation or covering from the entire exposed length (see exception below).

b. Marking the exposed insulation or covering with green color coding tapes.
c. Identify at each end and at every point where the equipment grounding conductor is accessible.

4. Exception For use of Bare Copper: Not allowed for use where NFPA 70 specifically requires equipment grounding conductor to be insulated, or where specified in other sections or indicated on the drawings to be insulated.

3.08 INSULATED CONDUCTOR AND CABLE SCHEDULE - TYPES AND USE

A. Electric Light and Power Circuits:
1. FEP, THHN, THW, THW-2, THWN, THWN-2, XHH, XHHW, or XHHW-2: Wiring in dry or damp locations (except where special type insulation is required).
2. THWN, THWN-2, XHHW, XHHW-2, USE, or USE-2: Wiring in wet locations (except where type USE or USE-2 insulated conductors are specifically required, or special type insulation is required).
3. THHN, THWN or THWN-2: Wiring installed in existing raceway systems (except where special type insulation is required).
4. THHN, THW-2, THWN-2, XHHW, or XHHW-2: Wiring for electric discharge lighting circuits (fluorescent, HID), except where fixture listing requires wiring rated higher than 90° C.
5. THWN Marked “Gasoline and Oil Resistant”: Wiring to gasoline and fuel oil pumps.
6. USE, or USE-2: Wiring indicated on the drawings to be direct burial in earth.
7. USE, or USE-2 Marked “Sunlight Resistant”:
a. Service entrance wiring from overhead service to the service equipment.
b. Wiring exposed to the weather and unprotected (except where special type insulation is required).

B. Emergency Feeder Circuits: Use electrical circuit protective system.

C. Class 1 Circuits: Use Class 1 wiring specified in Part 2 (except where special type insulation is required).

D. Class 2 Circuits: Use Class 2 wiring specified in Part 2 (except where special type insulation is required).

E. Class 3 Circuits: Use Class 3 wiring specified in Part 2 (except where special type insulation is required).

3.09 CONNECTOR SCHEDULE - TYPES AND USE

A. Temperature Rating: Use connectors that have a temperature rating, equal to, or greater than the temperature rating of the conductors to which they are connected.

B. Splices:
   1. Dry Locations:
      a. For Conductors No. 8 AWG or Smaller: Use spring type pressure connectors, indent type pressure connectors with insulating jackets, or connector blocks (except where special type splices are required).
      b. For Conductors No. 6 AWG or Larger: Use connector blocks or uninsulated indent type pressure connectors. Fill indentions in uninsulated connectors with electrical filler tape and apply insulation tape to insulation equivalent of the conductor, or insulate with heat shrinkable splices or cold shrink splices.
      c. Gutter Taps in Panelboards: For uninsulated type gutter taps fill indentions with electrical filler tape and apply insulation tape to insulation equivalent of the conductor, or insulate with gutter tap cover.
   2. Damp Locations: As specified for dry locations, except apply moisture sealing tape over the entire insulated connection (moisture sealing tape not required if heat shrinkable splices or cold shrink splices are used).
   3. Wet Locations: Use uninsulated indent type pressure connectors and insulate with resin splice kits, cold shrink splices or heat shrinkable splices. Exception: Splices aboveground which are totally enclosed and protected in NEMA 3R, 4, 4X enclosures may be spliced as specified for damp locations.

C. Terminations:
   1. For Conductors No. 10 AWG or Smaller: Use terminals for:
      a. Connecting wiring to equipment designed for use with terminals.
   2. For Conductors No. 8 AWG or Larger: Use compression or mechanical type lugs for:
      a. Connecting cables to flat bus bars.
      b. Connecting cables to equipment designed for use with lugs.
   3. For Conductor Sizes Larger Than Terminal Capacity On Equipment: Reduce the larger conductor to the maximum conductor size that terminal can accommodate (reduced section not longer than one foot). Use compression or mechanical type connectors suitable for reducing connection.

3.10 TESTING

A. Insulation Resistance Tests: Make tests after all wiring is completed and connected ready for the attachment of fixture and/or equipment. Repeat test when all fixtures and/or equipment are connected ready for use. Make tests with an instrument capable of measuring the resistance involved at a voltage of at least 500 VDC for equipment rated at 100 to 500 VAC, 1500 VDC for equipment rated at 151 to 600 VAC. Apply voltage continuously for one minute prior to taking reading. Measure insulation resistance between each pair of insulated conductor separately and between each insulated conductor and ground. Make tests at each panelboard distribution panel, and switchboard on every circuit with the circuit protective device open but connected. The minimum acceptable measured insulation resistance for wiring completed and ready for connection of fixtures and/or equipment is 50 meg ohms.

END OF SECTION

SECTION 26 05 34

CONDUIT

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Conduit as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. American National Standards Institute (ANSI) Publications:
      a. C80.1 - Rigid Steel Conduit, Zinc Coated
      b. C80.3 - Electrical Metallic Tubing, Zinc Coated
      c. C80.5 - Rigid Aluminum Conduit
   2. National Electrical Manufacturers Association (NEMA) Publications:
      a. FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies
      b. RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
      c. TC 2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80)
      d. TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing
   3. National Electrical Contractors Association (NECA) Publication:
      a. Standard of Installation

1.03 SECTION INCLUDES

A. Rigid steel conduit.

B. PVC coated rigid steel conduit.

C. Flexible metal conduit.

D. Liquid-tight flexible metal conduit.

E. Nonmetallic conduit.

F. Flexible nonmetallic conduit.

G. Fittings and conduit bodies.

1.04 RELATED SECTIONS

A. Section 26 05 01, “Electrical General Requirements”, applies to this Section with additions and modifications specified herein.

1.05 SUBMITTALS

A. Conduit and fittings (each type).

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

B. Protect PVC conduit from sunlight.

1.07 PROJECT CONDITIONS

A. Verify that field measurements are as shown on the Contract Drawings.

B. Field verify all conduit routing and coordinate proposed conduit routing with all existing equipment, structure features, proposed equipment locations for equipment furnished by this Contractor and all other Contractors, Owner furnished equipment, etc. prior to rough-in.

C. Conduit routing, when shown on the Contract Drawings, are in approximate locations unless dimensioned. Route as required to complete wiring system.

D. Plans (drawings) are diagrammatic and show only approximate locations of equipment, fixtures, devices, etc. Plans may not show exact quantity and locations of junction and pull boxes required for a complete installation. Exact locations and routing of conduit shall be determined in the field and shall suit the job conditions. Quantities and locations of outlet, junction, and pull boxes shall be provided to suit the installed arrangement and meet all NEC and local code requirements.

1.08 QUALITY ASSURANCE

A. In each standard referred to herein, consider the advisory provisions to be mandatory, as though the word “shall” has been substituted for “should” wherever it appears.

B. Verify routing and termination locations of conduit prior to rough-in.

C. Conduit routing when shown on the Contract Drawings are in approximate locations unless dimensioned. Route as required to complete wiring system.

1.09 QUALITY ASSURANCE

A. In each standard referred to herein, consider the advisory provisions to be mandatory, as though the word “shall” has been substituted for “should” wherever it appears.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials, equipment, and devices shall, as a minimum, meet requirements of UL, where UL standards are established for these items, and requirements of NFPA 70.

B. Provide conduit types in specific installations as scheduled on Contract Drawings. Specific conduit material and installation specifications for the scheduled conduit type are specified herein.

2.02 CONDUIT AND FITTINGS

A. Rigid Steel Conduit (Zinc-coated): ANSI C80.1, UL 6.

B. Rigid Nonmetallic Conduit: UL 651, UL 1684
   1. PVC Type EPC-40 and EPC-80, in accordance with NEMA TC2.

C. Plastic-coated Rigid Steel and IMC Conduit: NEMA RN1, Type 40 (40 mils thick).

D. Flexible Metal Conduit: UL 1.
   1. Liquid-tight Flexible Metal Conduit, Steel: UL 360.

E. Fittings for Metal Conduit and Flexible Metal Conduit: UL 514B. Ferrous fittings shall be cadmium- or zinc-coated in accordance with UL 514B. Fittings shall match conduit type and material.
   1. Fittings for Rigid Metal Conduit and IMC: Threaded-type. Split couplings unacceptable.

F. Fittings for Rigid Nonmetallic Conduit: NEMA TC3. Fittings shall match conduit type and material.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Electrical installations shall conform to requirements of NFPA 70 and to requirements specified herein.

B. Underground Service: Underground service conductors and associated conduit shall be continuous from service entrance equipment to outdoor power system connection.

C. Service Entrance Identification: Service entrance disconnect devices, switches, or enclosures shall be labeled or identified as such.

1. Labels: Wherever work results in service entrance disconnect devices in more than one enclosure, as permitted by NFPA 70, each enclosure, new and existing, shall be labeled as one of several enclosures containing service entrance disconnect devices. Label, at minimum, shall indicate number of service disconnect devices housed by enclosure and shall indicate total number of enclosures that contain service disconnect devices. Provide laminated plastic labels. Use lettering of at least 0.25 inch in height, and engrave on black-on-white matte finish. Service entrance disconnect devices in more than one enclosure shall be provided only as permitted by NFPA 70.

D. Wiring Methods: Provide insulated conductors installed in conduit, except where specifically indicated or specified otherwise or required by NFPA 70 to be installed otherwise. Provide insulated, green equipment grounding conductor in feeder and branch circuits, including lighting circuits. Grounding conductor shall be separate from electrical system neutral conductor. Provide insulated, green conductor for grounding conductors installed in conduit or raceways. Minimum conduit size shall be 1/2 inch in diameter for low voltage lighting and power circuits. Vertical distribution in multiple story buildings shall be made with metal conduit in fire-rated shafts. Metal conduit shall extend through shafts for minimum distance of 6 inches. Conduit which penetrates fire walls, fire partitions, or floors shall be metallic on both sides of fire walls, fire partitions, or floors for minimum distance of 6 inches.

1. Restrictions applicable to PVC Schedule 40 and PVC Schedule 80.
    a. Do not penetrate fire walls, fire partitions, or floors.
    b. Do not use in feeder circuits unless otherwise indicated.
    c. Do not use in areas subject to severe physical damage including, but not limited to, mechanical equipment rooms, electrical equipment rooms, hospitals, power plants, missile magazines, and other such areas.
    d. Do not use in hazardous areas.
    e. Do not use in penetrating fire-rated walls or partitions, fire rated floors, etc.

E. Conduit Installation: Unless indicated otherwise, conceal conduit within finished walls (existing or proposed), above ceilings, below floors or within floor slabs. With written approval by the Owner's Designated Representative where conduit cannot physically be installed concealed, install decorative surface metal raceway as manufactured by Wiremold Series 2400, or approved equal.

1. For new conduit runs in existing locations, Contractor to field verify all proposed locations prior to installation. Installation of conduit shall be located and installed:
   a. So as to not interfere with existing utilization equipment.
   b. Not in front of intake/exhaust fans and louvers.
   c. Not in front of access panels.
   d. Not in front of doors or windows.
   e. In a location that does not allow maintenance and clearance to existing and proposed mechanical and electrical equipment
   f. Not on floor or at a height above floor so as to be a tripping hazard,
   g. Not installed in dedicated space that would limit an overhead cranes or similar lifting device's ability to remove intended equipment below. This includes but is not limited to access hatches, crane trucks, crane hoists, movement along crane rails, jib crane full swinging arc/areas, etc.
2. Contractor to notify Owner and Owners Designated Representative of all potential conduit installation conflicts with existing equipment, HVAC, plumbing, building or structural systems prior to field construction of conduit systems.

F. Keep conduit minimum 6 inches away from parallel runs of flues and steam or hot water pipes. Install conduit parallel with or at right angles to ceilings, walls, and structural members where located above accessible ceilings and where conduit will be visible after completion of project.

1. Conduit Through Floor Slabs: Where conduits rise through floor slabs, curved portion of bends shall not be visible above finish slab.
2. Conduit Support: Support conduit by pipe straps, wall brackets, hangers, or ceiling trapeze. Fasten by wood screws to wood; by toggle bolts on hollow masonry units; by concrete inserts or expansion bolts on concrete or brick; and by machine screws, welded threaded studs, or spring-tension clamps on steel work. Threaded C-clamps may be used on rigid steel conduit only. Do not weld conduits or pipe straps to steel structures. Load applied to fasteners shall not exceed one-fourth proof test load. Fasteners attached to concrete ceiling shall be vibration- resistant and shock-resistant. Holes cut to depth of more than 1-1/2 inches in reinforced concrete beams or to depth of more than 3/4 inch in concrete joints shall not cut main reinforcing bars. Fill unused holes. In partitions of light steel construction, use sheet metal screws. In suspended- ceiling construction, run conduit above ceiling. Do not support conduit by ceiling support system. Spring-steel fasteners may be used for lighting branch circuit conduit supports in suspended ceilings in dry locations. Where conduit crosses building expansion joints, provide suitable watertight

expansion fitting that maintains conduit electrical continuity by bonding jumpers or other means. Support raceways within three (3) feet of each outlet box, junction box, cabinet or enclosure.

3. Directional Changes in Conduit Runs: Make changes in direction of runs with symmetrical bends or cast-metal fittings. Make field-made bends and offsets with hickey or conduit-bending machine. Do not install crushed or deformed conduits. Avoid trapped conduits. Prevent plaster, dirt, or trash from lodging in conduits, boxes, fittings, and equipment during construction. Free clogged conduits of obstructions.
4. Pull Wire: Install pull wires in empty conduits in which wire is to be installed by others. Pull wire shall be plastic having minimum 200-pound tensile strength. Leave minimum 12 inches of slack at each end of pull wire.
5. Telephone and Signal System Conduits: Install in accordance with specified requirements for conduit and with additional requirement that no length of run shall exceed 150 feet for trade sizes 2 inches and smaller and shall not contain more than two 90-degree bends or equivalent. Provide pull or junction boxes where necessary to comply with these requirements. Inside radii of bends in conduits 1-inch trade size and larger shall be minimum five times nominal diameter. Terminate conduit terminal cabinet with two locknuts and plastic bushing.
6. Conduit Installed in Concrete Floor Slabs: Locate so as not to adversely affect structural strength of slabs. Install conduit within middle 1/3 of concrete slab. Space conduits horizontally minimum three diameters, except at cabinet locations. Curved portions of bends shall not be visible above finish slab. Increase slab thickness as necessary to provide minimum 1-inch cover over conduit. Where embedded conduits cross expansion joints, provide suitable watertight expansion fittings and bonding jumpers. Conduit larger than 1-inch trade size shall be parallel with or at right angles to main reinforcement; when at right angles to reinforcement, conduit shall be close to one of supports of slab.
7. Locknuts and Bushings: Fasten conduits to sheet metal boxes and cabinets with two locknuts where required by NFPA 70, where insulated bushings are used, and where bushings cannot be brought into firm contact with the box; otherwise, use minimum single locknut and bushing. Locknuts shall have sharp edges for digging into wall of metal enclosures. Install bushings on ends of conduits, and provide insulating type where required by NFPA 70.
8. Stub-ups: Provide conduits stubbed up through concrete floor for connection to free-standing equipment with adjustable top or coupling threaded inside for plugs, set flush with finished floor. Extend conductors to equipment in rigid steel conduit, except that flexible metal conduit may be used 6 inches above floor. Where no equipment connections are made, install screwdriver-operated threaded flush plugs in conduit end.
9. Flexible Connections: Provide flexible connections of short length, 6-foot maximum, for recessed and semi-recessed lighting fixtures; for equipment

subject to vibration, noise transmission, or movement; and for motors. Provide liquid-tight flexible conduit in wet locations. Provide separate ground conductor across flexible connections.

10. Arrange conduit to maintain headroom and present neat appearance.
11. Cut conduit square using saw or pipe cutter; deburr cut ends. For field cut threaded conduits, provide field applied anti-corrosion material to the threads in accordance with the manufacturer's instructions and per the NEC. Product shall be Thomas & Betts KOPR-Shield or approved equal.
12. Use conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.
13. Install no more than equivalent of three 90 degree bends between boxes.
14. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
15. Provide suitable fittings to accommodate expansion and deflection where conduit crosses expansion joints.
16. Use Suitable caps to protect installed conduit against entrance of dirt and moisture.
17. Ground and bond conduit under as per NEC 250.

3.02 INTERFACE WITH OTHER PRODUCTS

A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods specified in other sections.

B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation. Coordinate installation with representative of roofing material manufacturer to maintain any roof warranty.

END OF SECTION

SECTION 26 05 41

OVERHEAD ELECTRICAL WORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Overhead Electrical Work, as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. Association of Edison Illuminating Companies (AEIC) Publications:
      a. CS5 - Specifications for Polyethylene and Cross-Linked Polyethylene Insulated Shielded Power Cables Rated 5 through 69 kV (6th Edition)
      b. CS6 - Specification for Ethylene Propylene Rubber Insulated Shielded Power Cables Rated 5 through 60 KV (3rd Edition)
   2. American National Standards Institute, Inc. (ANSI) Publications:
      a. B16.11 - Forged Steel Fittings, Socket-Welded and Threaded
      b. C2 - National Electrical Safety Code
      c. C12.10 - Watt-Hour Meters
      d. C12.11 - Instrument Transformers for Metering Purposes, 15 KV and Less
      e. C29.2 - Wet Process Porcelain Insulators and Toughened Glass Insulators (Suspension Type)
      f. C29.3 - Wet Process Porcelain Insulators (Spool Type)
      g. C29.4 - Wet Process Porcelain Insulators (Strain Type)
      h. C29.5 - Wet Process Porcelain Insulators (Low and Medium Voltage Pin Type)
      i. C29.7 - Wet Process Porcelain Insulators (High Voltage Line-Post Type)
      j. C37.32 - Schedules of Preferred Ratings, Manufacturing Specifications and Application Guide for High Voltage Air Switches, Bus Supports, and Switch Accessories
      k. C37.42 - Distribution Cutouts and Fuse Links
      l. C37.43 - Distribution Fuse Cutout Links for Use in Distribution Enclosed, Open, and Open-Link Cutouts
      m. C57.12.20 - Overhead Type Distribution Transformers 500 KVA and Smaller: High Voltage 67,000 Volts and Below: Low Voltage, 15,000 Volts and Below

n. O5.1 - Specifications and Dimensions for Wood Poles
o. Z55.1 - Gray Finishes for Industrial Apparatus and Equipment

3. American Society for Testing and Materials (ASTM) Publications:
   a. A120 - Pipe, Steel, Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless, for Ordinary uses
   b. A153 - Zinc-coating (Hot-Dip) on Iron and Steel Hardware
   c. A475 - Zinc-Coated Steel Wire Strand
   d. B1 - Hard-Drawn Copper Wire
   e. B2 - Medium Hard-Drawn Copper Wire
   f. B3 - Soft or Annealed Copper Wire
   g. B8 - Concentric-Lay-Stranded Copper Conductors, Hard, Medium Hard, or Soft
   h. B228 - Concentric-Lay-Stranded Copper-Clad Steel Conductors
   i. B231 - Concentric-Lay-Stranded Aluminum 1350 Conductors
   j. B232 - Concentric-Lay-Stranded Aluminum Conductors, Coated Steel Reinforced (ACSR)
   k. B397 - Concentric-Lay-Stranded 500-H19 Aluminum-Alloy 5005-H19 Conductors
   l. B399 - Concentric-Lay-Stranded Aluminum-Alloy 6201-T81 Conductors
4. American Wood-Preservers' Association (AWPA) Publications:
   a. C1 - All Timber Products - Preservative Treatment by Pressure Processes
   b. C4 - Poles Preservative Treatment by Pressure Process
   c. C25 - Standard for the Preservative Treatment of Cross Arms by the Pressure Process
   d. M6 - Brands Used on Forest Products
5. Institute of Electrical and Electronic Engineers (IEEE) Publication:
   a. 48 - High Voltage Alternating Current Cable Terminations
6. National Electrical Manufacturers Association (NEMA) Publications:
   a. LA1 - Surge Arresters
   b. SG13 - Automatic Circuit Reclosers, Automatic-Line Sectionalizers, and Oil Filled Capacitor Switches for Alternating Current Systems
   c. TC2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80)
   d. TC3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing
   e. TR1 - Transformers, Regulators, and Reactors
   f. WC7 - Cross-Linked Thermosetting Polyethylene Insulated Wire and Cable for the Transmission and Distribution of Electric Energy (IPCEA S-66-52A)
   g. WC8 - Ethylene-Propylene-Rubber Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy (IPCEA S-68-516)
7. National Fire Protection Association (NFPA) Publication:
   a. 70 - National Electrical Code

8. Rural Electrification Administration (REA) Publications:
    a. 43-5 - List of Materials Acceptable for Use On Systems of REA Electrification Borrowers
    b. 44-3 - Wood Cross Arms (Solid and Laminated), Transmission Timbers and Pole Keys (DT-5B/PE-16), DEC
    c. 50-17 - REA Specification DT-5C for Wood Poles, Stubs, and Anchor Logs
9. Underwriters Laboratories, Inc. (UL) Publications:
    a. 6 - Rigid Metallic Conduit
    b. 83 - Thermoplastic-Insulated Wires & Cables
    c. 510 - Insulating Tape

1.03 GENERAL REQUIREMENTS

A. Section 26 05 01, "Electrical General Requirements", applies to this Section with additions and modifications specified herein.

B. Electrical Characteristics: Electrical characteristics for this project shall be 34.5 KV primary, three phase, three wire, 60 hertz, wye connected and 480 volts secondary, three phase, four wire, wye connected. Final connections to the power distribution system at the existing primary metering structure shall be made by the Contractor.

C. Connections to Existing Electrical Systems: Notify the Engineer in writing at least 15 days prior to the date the connections are required; approval shall be received before any service is interrupted. Furnish all material required to make connections into the existing systems, and perform all excavating, backfilling, and other incidental labor as required.

D. Utility line outages including grounding and guarantee shall be coordinated by the Contractor.

1.04 SUBMITTALS: Submit the following:

A. Manufacturer's Catalog Data:
    1. Group Operated Switch
    2. Hardware and Fittings

B. Drawings:
    1. Installation details for Group Operated Switch

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials specified herein or shown on the contract drawings which are identical to materials listed in REA 43-5 shall be considered as conforming to all requirements.

2.02 GANG OPERATED SWITCH

A. Aluminum, three phase, group operated vertical break switch of current design and shall be specifically designed for installation on the existing steel receiving structure. The switch shall match the existing in form and function, including existing options.

B. Manufacturer and Model: Cleaveland/Price type V2 CA, Southern States type EV, Hubble USCO type AVR, Morpac type EA, or approve equal.

C. The switch shall meet the following ratings:
1. Operating Voltage: 34.5kV
2. Rated Voltage: 38kV
3. BIL: 200kV
4. Current: 600A (min)
5. Momentary: 400kA (min)

D. Switch Operator: Swing arm type with an “Open/Close” indicator and shall include provisions for padlocking in both the opened and closed positions. The operating down rod shall be 1 ½” IPS galvanized steel pipe. Provide vertical pipe insulator.

E. Options: Provide with arcing horns.

F. Connectors: All connectors shall be new mechanical substation type and shall be selected to attach the existing bus work/cable to the new switch. Connector material shall be selected to prevent cathodic reaction due to dissimilar metals.

G. Hardware: All mounting hardware shall be new material. Hardware on current carrying components shall be stainless steel. Hardware on non-current carrying components shall be appropriately rated galvanized steel.

H. Spare Parts: Provide three (3) spare TR210 porcelain insulators and one (1) set of arcing horns.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Group Operated Switch: The contractor shall provide all equipment, materials, tools, rigging and labor required to remove and replace the existing 34.5kV Group Operated Switch.
   1. Installation, lubrication, and adjustments shall be in accordance with the manufacturer's instructions.
   2. Where removals reveal rust or corrosion on the existing structure; the area shall be wire brush cleaned and coated with a galvanizing paint.
   3. The switch mounting plates shall be connected to the existing structure ground wire.
   4. The switch operator shall be bonded to the existing ground grid.

3.02 FIELD TESTS

A. The completed installation shall be tested as outlined in the latest version of NETA ATS.

END OF SECTION

SECTION 26 05 43

UNDERGROUND ELECTRICAL WORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Underground Electrical Work, as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
   1. Federal Specification (Fed. Spec.):
      a. RR-F-621C - Frame, Covers, Gratings, Steps, Sump and Catch Basin, Manhole
   2. American Association of State Highway and Transportation Officials (AASHTO) Publications:
      a. HB-12 - Highway Bridges, Including Interim Specifications
      b. M 198 - Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets
   3. American Concrete Institute (ACI) Publications:
      a. 315 - Details and Detailing of Concrete Reinforcement
      b. 318 - Building Code Requirements for Reinforced Concrete
   4. American National Standards Institute (ANSI) Publication:
   5. C2 - National Electrical Safety Code (NESC)
   6. American Society for Testing and Materials (ASTM) Publications:
      a. B1 - Hard-Drawn Copper Wire
      b. B8 - Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
      c. C32 - Sewer and Manhole Brick (Made from Clay or Shale)
      d. C260 - Air-Entraining Admixtures for Concrete
      e. C309 - Liquid Membrane-Forming Compounds for Curing Concrete
      f. D698 - Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5-lb (2.49-kg) Rammer and 12-in. (305-mm) Drop
      g. D1556 - Density of Soil in Place by the Sand-Cone Method
      h. D1557 - Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54-kg) Rammer and 18-in. (457-mm) Drop
      i. D1682 - Breaking Load and Elongation of Textile Fabrics

7. Association of Edison Illuminating Companies (AEIC) Publications:
    a. Impregnated-Paper-Insulated Lead Covered Cable, Solid Type (10th Edition)
8. National Electrical Manufacturer's Association (NEMA) Publications:
    a. RN 1 - Polyvinyl-Chloride Externally Coated Galvanized Rigid Steel Conduit and Electrical Metallic Tubing
    b. TC 2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80)
    c. TC 3 - PVC Fittings for Use With Rigid PVC Conduit and Tubing
    d. TC 6 - PVC and ABS Plastic Utilities Duct for Underground Installation
    e. TC 9 - Fittings for ABS and PVC Plastic Utilities Duct for Underground Installation
    f. WC 7 - Cross-Linked-Thermosetting- Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy (ICEA S-66-524)
    g. WC 8 - Ethylene-Propylene-Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy (ICEA S-68-516)
9. National Fire Protection Association (NFPA) Publication:
    a. 70 - National Electrical Code (NEC)
10. U.S. Department of Agriculture, Rural Electrification Administration (REA) Bulletins:
    a. 344-2 - List of Materials Acceptable for Use on Telephone Systems of REA Borrowers
    b. 345-6 - Splicing Plastic-Insulated Cables (PC-2)
    c. 345-14 - Direct Burial Telephone Cable (Air Core) (PE-23)
    d. 345-26 - Buried Plant Housings (PE-35)
    e. 345-67 - Filled Telephone Cables (PE-39)
11. Underwriters Laboratories Inc. (UL) Publications:
    a. 6 - Rigid Metal Conduit
    b. 467 - Grounding and Bonding Equipment
    c. 510 - Insulating Tape
    d. 514A - Metallic Outlet Boxes
    e. 514B - Fittings for Conduit and Outlet Boxes
    f. 854 - Service-Entrance Cables
    g. 1242-83 - Intermediate Metal Conduit

1.03 GENERAL REQUIREMENTS

A. The following Sections apply to this Section with additions and modifications specified herein:
    1. Section 26 05 01, "Electrical General Requirements"
    2. Section 26 05 19, “Wiring/Cable, 600Volts and Under”.
    3. Section 26 05 26, “Grounding”.
    4. Section 26 05 34, “Conduit”.

5. Laboratory Tests:
    a. Determine soil-density relationships for compaction of backfill material in accordance with ASTM D1557, Method D.

1.04 SUBMITTALS

A. Shop Drawings including Manufacturer's Data:
    1. Conduit spacers for encased concrete duct bank buried detectable warning tape
    2. Bedding material
    3. Backfill material
    4. Concrete
    5. Rebar and reinforcing materials
    6. Splice box
    7. Insulating tape

B. Manufacturer's Instructions:
    1. Manufacturer's directions for use of ground megger with proposed method indicated.
    2. Terminator manufacturer's installation instructions.

C. Certificates of Compliance:
    1. Material and Equipment: Provide manufacturer's statement certifying that the product supplied meets or exceeds contract requirements.
        a. Precast hand hole and accessories
        b. Hand hole frame and cover

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Provide materials and equipment listed by UL or approved by Factory Mutual (FM) System when such equipment is listed or approved.

B. Conduit: Shall be per Section 26 05 34 “Conduit”.

C. Plastic Insulating Tape: UL 510.

D. Wire and Cable Shall be per Section 26 05 19 “Wiring/Cable, 600Volts and Under”
    1. Connectors and Terminals: Shall be designed and approved for use with the associated conductor material and shall provide a uniform compression over the entire contact surface. Solderless terminal lugs shall be used on stranded conductors. For connecting aluminum to copper, connectors shall be the circumferentially compressed, metallurgically bonded type.

E. Grounding and Bonding Equipment: Per Section 26 05 26 “Grounding”.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Underground installation shall conform to ANSI C2 and NFPA 70 except as otherwise specified or indicated.

B. Contractor Damage: The Contractor shall promptly repair any indicated utility lines or systems damaged by Contractor operations. If the Contractor is advised in writing of the location of a non-indicated line or system, such notice shall provide that portion of the line or system with "indicated" status in conformance with the Contract Documents. The Contractor shall immediately notify the Engineer of any such damage to any underground line that is indicated on Contract Drawings, indicated by supplemental information from the Engineer or not indicated.

C. Underground Duct Without Concrete Encasement: Direct buried ductbank systems. Shall be as shown on the Contract Documents.

1. The top of the conduit shall be not less than 24 inches below grade, shall have a minimum slope of 3 inches in each 100 feet away from buildings and toward manholes and other necessary drainage points, and shall run in straight lines except where a change of direction is necessary. As each conduit run is completed, a testing mandrel not less than 12 inches long with a diameter 1/4 inch less than the inside diameter of the conduit shall be drawn through each conduit, after which a stiff-bristled brush shall be drawn through until the conduit is clear of earth, sand, or gravel particles. Conduit plugs shall then immediately be installed. Ensure a minimum 3-inch clearance from the conduit to each side of the trench. Grade the bottom of the trenches smooth; where rock, soft spots, or sharp-edged materials are encountered, excavate the bottom for an additional 3 inches; fill with sand or earth, free from particles that would be retained on a 1/4-inch sieve; and tamp level with the original bottom.
2. Under roads, paved areas, and railroad tracks, install conduits in concrete encasement of rectangular cross-section providing a minimum of 3-inch concrete cover around ducts. The concrete encasement shall extend at least 8 feet beyond the edges of paved areas and roads, and 12 feet beyond the rails on each side of railroad tracks. Conduits to be installed under existing paved areas which are not to be disturbed, and under roads and railroad tracks, shall be zinc-coated, rigid steel, jacked into place.
3. Separate multiple conduits with a minimum concrete thickness of 2 inches, except that light and power conduits shall be separated from control, signal, and telephone conduits by a minimum distance of 12 inches. Stagger the joints of the conduits by rows and layers to strengthen

the conduit assembly. Provide plastic duct spacers that interlock vertically and horizontally. Spacer assembly shall consist of base spacers, intermediate spacers, and top spacers to provide a completely enclosed and locked-in conduit assembly. Install spacers per manufacturer's instructions, but provide a minimum of two spacer assemblies per 10 feet of conduit assembly.

D. Underground Duct With Concrete Encasement: Encased only and reinforced concrete duct banks. Shall be constructed of individual conduits encased in concrete. Except where rigid galvanized steel conduit is indicated or specified, the conduit shall conform to NEMA TC 6, Type EB. The type of conduit used shall not be mixed in any one duct bank. Ducts shall be a minimum of 4 inches in diameter unless otherwise indicated. The concrete encasement surrounding the bank shall be rectangular in cross-section and shall provide at least 3 inches of concrete cover around ducts. Separate conduit by a minimum concrete thickness of 2 inches, except separate light and power conduits from control, signal, and telephone conduits by a minimum concrete thickness of 12 inches.

1. The top of the concrete envelope shall be a minimum of 18 inches below grade.
2. Duct banks shall have a continuous slope downward toward underground structures and away from buildings with a minimum pitch of 3 inches in 100 feet. Except at conduit risers, changes in direction of runs exceeding a total of 10 degrees, either vertical or horizontal, shall be accomplished by long sweep bends having a minimum radius of curvature of 25 feet; sweep bends may be composed of one or more curved or straight sections or combinations thereof. Manufactured bends shall have a minimum radius of 18 inches for use with conduits of less than 3 inches in diameter and a minimum radius of 36 inches for ducts of 3 inches in diameter and larger. Excavate trenches along straight lines from structure to structure before ducts are laid or structure constructed so the elevation can be adjusted, if necessary, to avoid unseen obstruction.
3. Terminate conduits in end-bells where ducts enter underground structures. Stagger the joints of the conduits by rows and layers to strengthen the duct bank. Provide plastic duct spacers that interlock vertically and horizontally. Spacer assembly shall consist of base spacers, intermediate spacers, and top spacers to provide a completely enclosed and locked-in duct bank. Install spacers per manufacturer's instructions, but provide a minimum of two spacer assemblies per 10 feet of duct bank. Before pouring concrete, anchor duct bank assemblies to prevent the assemblies from floating during concrete pouring. Anchoring shall be done by driving reinforcing rods adjacent to every other duct spacer assembly and attaching the rod to the spacer assembly.
4. As each section of a duct bank is completed from structure to structure, a testing mandrel not less than 12 inches long with a diameter 1/4 inch less than the inside diameter of the conduit shall be drawn through each conduit, after which a stiff-bristled brush, having the diameter of the

conduit shall be drawn through until the conduit is clear of earth, sand, and gravel particles. Conduit plugs shall then be immediately installed.

5. New conduit indicated as being unused or empty shall be provided with plugs on each end. Plugs shall contain a weep hole or screen to allow water drainage. Provide a plastic pull rope (minimum 200# rating) having 3 feet of slack at each end of unused or empty conduits.
6. Connections to Manholes/Handholes: Duct bank envelopes connecting to underground structures shall be flared to have an enlarged cross-section at the manhole entrance to provide additional shear strength. The dimensions of the flared cross-section shall be larger than the corresponding manhole opening dimensions by no less than 12 inches in each direction. The perimeter of the duct bank opening in the underground structure shall be flared toward the inside or keyed to provide for a positive interlock between the duct bank and the wall of the structure. Vibrators shall be used when this portion of the envelope is poured to assure a seal between the envelope and the wall of the structure.
    a. For connection to precast concrete and cast-in-place concrete handholes/manholes: Provide concrete encasement for all conduit ductbank systems (direct buried conduit ductbank, concrete encased conduit ductbank, reinforced concrete encased ductbank) connections at handholes a minimum of 48” from manhole/handhole. Concrete shall be keyed into manhole/handhole.
7. Connections to Existing Hand Holes: For duct bank connections to existing structures, break the structure wall out to the dimensions required and preserve the steel in the structure wall. Cut the steel and extend it into the duct bank envelope. Chip the perimeter surface of the duct bank opening to form a key or flared surface, providing a positive connection with the duct bank envelope.
8. Connections to Concrete Pads: For duct bank connections to concrete pads, break an opening in the pad out to the dimensions required and preserve the steel in the pad. Cut the steel and extend it into the duct bank envelope. Chip out the opening in the pad to form a key for the duct bank envelope.
9. Connections to Existing Ducts: Where connections to existing duct banks are indicated, excavate the banks to the maximum depth necessary. The banks shall be cut off and loose concrete removed from the conduits before new concrete-encased ducts are installed. A reinforced concrete collar, poured monolithically with the new duct bank, shall be provided to take the shear at the joint of the duct banks Abandon in place the unused ducts and cables which do not interfere with the work.
10. Partially Completed Duct Banks: During construction wherever a construction joint is necessary in a duct bank, prevent debris such as mud, sand, and dirt from entering ducts by providing suitable conduit plugs. Fit concrete envelope of a partially completed duct bank with reinforcing steel extending a minimum of 2 feet back into the envelope and a minimum of 2

feet beyond the end of the envelope. Provide one No. 4 bar in each corner, 3 inches from the edge of the envelope. Secure corner bars with two No. 3 ties, spaced approximately 1 foot apart. Restrain reinforcing assembly from moving during concrete pouring.

E. Concrete for Electrical Requirements: Concrete shall be 4,000 psi minimum ultimate 28-day compressive strength with 1-inch maximum aggregate.

F. Buried Utility Warning and Identification Tape: Provide detectable aluminum foil plastic-backed tape or detectable magnetic plastic tape manufactured specifically for warning and identification of buried cable and conduit. Tape shall be detectable by an electronic detection instrument. Provide tape in rolls, 2 inches minimum width, color coded for the utility involved with warning and identification imprinted in bold black letters continuously and repeatedly over entire tape length. Warning and identification shall be CAUTION BURIEDELECTRICCABLE BELOW or similar. Use permanent code and letter coloring unaffected by moisture and other substances contained in trench backfill material. Bury tape with the printed side up at a depth of 12 inches below the top surface of earth or the top surface of the subgrade under pavements.

G. Reconditioning of Surfaces:

1. Unpaved surfaces disturbed during the installation of duct or direct burial cable shall be restored to the original elevation and condition. Sod or topsoil shall be preserved carefully and replaced after the backfilling is completed. Replace damaged sod with sod of equal quality. Where the surface is disturbed in a newly seeded area, the disturbed surface shall be reseeded with the same quantity and formula of seed as that used in the original seeding.
2. Paving Repairs: Where trenches, pits, or other excavations are made in existing roadways and other areas of pavement where surface treatment of any kind exists, such surface treatment or pavement shall be restored to the same thickness and in the same kind as previously existed, except as otherwise specified, and to match and tie into the adjacent and surrounding existing surfaces in a neat and acceptable manner.

H. Cable Pulling: Test existing ducts with a mandrel and thoroughly swab out to remove foreign material before the pulling of cables. Cables shall be pulled down grade with the feed-in point at the manhole or buildings of the highest elevation. Flexible cable feeds shall be used to convey cables through the manhole opening and into the ducts. Cable lubricants shall be lubricants specifically recommended by the cable manufacturer. Cable-pulling tensions shall not exceed the maximum pulling tension recommended by the cable manufacturer. Do not exceed the specified cable bending radii when installing cable under any conditions, including turnups into switches, transformers, switchgear, switchboards, and other enclosures. Cable with tape shield shall have a bending radius not less than 12 times the overall diameter of the completed cable. Cable with wire shield shall have a bending radius not less than eight times the overall diameter of the

completed cable. If basket-grip type cable-pulling devices are used to pull cable in place, cut off the section of cable under the grip before splicing and terminating.

1. Installation of Cables in Manholes, Hand Holes, and Vaults: Route cables along walls providing the longest route and the maximum spare cable lengths. Form cables to closely parallel walls without interference to duct entrances. Support cables on brackets and cable insulators at a maximum of 4 feet. In existing manholes, hand holes, and vaults where new ducts are to be terminated, or where new cables are to be installed, the existing installation of cables, cable supports, and grounding shall be modified as required with cables arranged and supported as specified for new cables. Identify each cable by corrosion-resistant embossed metal tags attached in each underground structure in accordance with the cable schedule and as approved by the Engineer. Example: 600V cable, Circuit 4-Sub. NB - to SP. Identify each phase of the 600V cable.

I. Excavating, Backfilling, and Compacting: Excavate underground structures to depths indicated. If hard material is encountered, the provisions of the Contract respecting an adjustment for changed conditions shall apply, subject to the requirements of notification thereunder being given. Hard material shall be defined as solid rock; firmly cemented unstratified masses; conglomerate deposits possessing the characteristics of solid rock not ordinarily removed without systematic drilling and blasting; or any boulder, masonry, or concrete (except pavement) exceeding 1/2 cubic yard in volume.

1. Excavated materials not required or suitable for backfill shall be removed from the project site. Provide sheeting and shoring as necessary for protection of work and safety of personnel. Remove water from excavation by pumping or other approved method.
2. Backfilling around structures shall consist of earth, loam, sand-clay, or sand and gravel, free from large clods of earth or stones over 1 inch in size. Backfill materials shall be placed symmetrically on all sides in loose layers not more than 9 inches deep. Each layer shall be moistened, if necessary, and compacted with mechanical or hand tampers to 90 percent compaction.
3. Backfilling Trenches: Place backfill in layers not more than 6 inches thick, and compact each layer. Backfilling shall progress as rapidly as the construction, testing, and acceptance of the work permits. Backfill shall be free from roots, wood scrap material, and other vegetable matter and refuse. Compaction of backfill shall be to 90 percent of ASTM D698 density. The first layer shall be earth or sand, free from particles that would be retained on a 1/4-inch sieve and extending not less than 3 inches above the top of the conduit or cables. The succeeding layers shall be excavated material having stones no larger than would pass through a 4-inch ring. The backfill may be moistened. The backfill shall be level with the adjacent surface, except that in sodded areas, leave a space equal to the thickness of the sod.

J. Cable Terminating: Protect terminations of insulated power and lighting cables from accidental contact, deterioration of coverings, and moisture by the use of terminating devices and materials. Make terminations by using materials and methods indicated or specified herein or as designated by the written instruction of the cable manufacturer and termination kit manufacturer. Adequately support cables and cable terminations to avoid any excessive strain on the termination and the conductor connection.

K. Splices for 600-Volt Class Cables: Splices in underground conduit systems shall be made only in accessible locations such as manholes and hand holes, using a compression connector on the conductor and by insulating and waterproofing by one of the following methods suitable for continuous submersion in water.

1. Cast-type splice insulation shall be provided by means of a molded casting process employing a thermosetting epoxy resin insulating material which shall be applied by a gravity-poured method or by a pressure-injected method. The component materials of the resin insulation shall be in a packaged form ready for convenient mixing without removing from the package. Do not allow the cables to be moved until after the splicing material has completely set.
2. Gravity-poured method shall employ materials and equipment contained in an approved commercial splicing kit which includes a mold suitable for the cables to be spliced. When the mold is in place around the joined conductors, prepare and pour the resin mix into the mold. Do not allow cables to be moved until after the splicing materials have completely set.

L. Grounding: Shall be per Section 26 05 26, “Grounding”.

M. Special Conditions: During the construction of duct banks and underground structures located in access roads, streets and similar traffic areas, these area shall remain open to traffic. Plan and execute the work to meet this condition. At locations where duct banks cross railroad tracks and the work requires closing of the tracks, secure permission from the Engineer and Railroad Owner for each track closure.

3.02 FIELD TESTS

A. As an exception to requirements that may be stated elsewhere in the Contract, notify the Engineer in writing at least 5working days prior to each tests. Furnish labor, equipment, and incidentals required for testing, except that the Owner will provide electric power required for the tests. Correct defects in the work provided by the Contractor and repeat tests until the work is in compliance with contract requirements. Show by demonstration in service that circuits and devices are in good operating condition. Tests shall be such that each item of control equipment will function not less than five times.

B. Compaction: Backfill shall be tested in accordance with ASTM D1556, one test per lift per 2000 square feet.

END OF SECTION

SECTION 26 05 90

INSTALLATION OF OWNER-FURNISHED ELECTRICAL EQUIPMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall provide all labor, equipment, incidentals and materials required to store, install and place into operation items that will be furnished by the Owner. The following is a list of equipment being furnished by the Owner.
   1. Main Transformer – 1500kVA
   2. Switchboard (Main Circuit Breaker) – 1600A
   3. Motor Control Center – 1600A
   4. Automatic Transfer Switch – 1600A

1.02 GENERAL INFORMATION: PRE-PURCHASED EQUIPMENT

A. The Southern Cayuga Lake Intermunicipal Water Commission is herein defined as the “Owner”.

B. The manufacturer or supplier who the Owner has purchased the equipment from is herein defined as the “Vendor”.

C. The Vendor will furnish and deliver all pre-purchased equipment specified herein to the Raw Water Pump Station. The Contractor is required to coordinate with the vendors and unload the equipment at the Raw Water Pump Station.

D. The equipment specified herein is to be pre-purchased by the Owner. Rigging, installation, startup, and testing of the equipment specified herein shall be done by the Contractor. Contractor shall coordinate with the Vendor for all information necessary for the Contractor to rig and install the provided equipment as specified herein:
   1. All rigging of the equipment
   2. Field wiring connection requirements
   3. Concrete pad/support requirements
   4. After installation testing and commissioning

E. The Contractor is required to provide an authorized equipment representative for the following:
   1. Installation inspection.
   2. Testing assistance.
   3. Commissioning assistance.

F. The Contractor is responsible to accept delivery of all equipment. The Contractor is responsible for any damage to this equipment once it is received by the Contractor. The Contractor is responsible for the protection, installation and connection of the equipment at the final locations in accordance with the Vendor's written instructions.

1.03 SERVICES

A. Coordinate the delivery of the equipment with the Vendor. The Contractor shall provide the following:
   1. Provide for receiving, rigging and off-loading and protecting all equipment. This shall include at Raw Water Pump Station and all other locations where equipment may be stored until Raw Water Pump Station is available to receive the equipment.
   2. Provide indoor, covered and environmentally controlled storage for all items of material until such time that they are ready to be installed at the Raw Water Pump Station.
   3. Request delivery date for the products and associated components from the Vendor.
   4. Request instructions for receiving, handling, and storage at least 2 weeks prior to the equipment shipment from the Vendor.
   5. Be ready to receive all equipment specified at time of delivery.
   6. Should the Raw Water Pump Station location not be ready to receive the equipment for immediate installation as per submitted Manufacture/Vendor's delivery date(s), the Contractor shall provide an alternate delivery address and all additional transportation and rigging to get the equipment to the Raw Water Pump Station. .
   7. Provide for protection of the equipment while in transit from the Contractor's indoor storage area to the Raw Water Pump Station.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. Division 26, Electrical.

1.05 PRODUCT DELIVERY. STORAGE AND HANDLING

A. The Owner furnished equipment will be delivered to the Raw Water Pump Station by the Vendor or an alternate location if the Raw Water Pump Station is not ready for receiving of equipment. Coordinate the delivery of equipment with the Vendor as required to provide necessary site access for delivery of equipment, labor and equipment for equipment inspection and unloading, and acceptable areas for the proper off-loading of equipment as specified or recommended by the Vendor.

B. Accept the equipment from the Vendor, and assume full responsibility for the equipment after acceptance, until final acceptance (after installation and commissioning) by the Owner. Acceptance of equipment shall occur at the first

delivery point of the equipment (at the Contractor's Indoor Storage Facility or the Raw Water Pump Station).

C. Prior to removal of any equipment from the Vendor's delivery vehicles, Owner, Contractor, and Vendor, shall jointly inspect the equipment upon delivery for the sole purpose of identifying the equipment and general verification of quantities. Such inspection shall occur at the first delivery point of the equipment from the vendor. This inspection will not be construed as final or as acceptance of any equipment not in conformance with the Contract Documents, and such inspection shall in no respect prejudice or operate as a waiver of any right the Owner has or may have against the carrier or the Vendor for damage to the equipment, nor shall it operate as a waiver of any obligation of the Vendor or the carrier. If when delivered, there are apparent defects in the equipment (through damage or otherwise), Owner and Contractor will give prompt written notice thereof to the Vendor. Contractor may refuse to accept delivery of any equipment that is apparently defective. If, in the opinion of the Owner, the equipment is in satisfactory condition, subject to the provisions of this paragraph, the Owner can furnish the Vendor with a written statement releasing the equipment to the Contractor. It shall become the sole responsibility of the Contractor upon its acceptance of the equipment to unload, store and provide safe handling for the equipment at no cost to the Owner or Vendor, until such time that the equipment is placed in operation and accepted by the Owner.

D. It is expressly understood and agreed that the inspection provided for in Paragraph C. above, is solely for the purpose of determining for the benefit of the Owner, whether the equipment is so obviously defective or damaged as to deem the Vendor the right to release the equipment to the Contractor. In no respect shall the Owner or Contractor be responsible for the discovery of any defect or damage, hidden or otherwise and the same shall remain the sole responsibility of the Vendor.

E. After the representatives of the Owner and Contractor have mutually agreed that the equipment is free of obvious damage, the equipment shall become the Contractor's responsibility.

F. The Contractor shall be solely responsible for safely and properly unloading, transporting, storing and installing the Owner furnished equipment commencing with his acceptance of the equipment, and shall have total responsibility for prevention of, and risk of, damage or loss to said equipment and protection of same until Substantial Completion of the Project. It shall be the sole and mutual responsibility of the Vendor and the Contractor to coordinate their operations during installation and testing. If through acts of neglect or failure or refusal on the part of either party to cooperate or properly coordinate their activities or for any other cause or reason, the other party shall suffer loss, expense or damage of whatever nature, the parties (the Contractor and the Vendor) shall settle any resulting claim or claims with each other by agreement, and the Owner shall not be in any manner liable with respect to any such claim.

G. Should the Raw Water Pump Station location not be ready to receive the equipment for immediate installation as per submitted Manufacture/Vendor's delivery date(s), the Contractor shall provide an alternate delivery address for the required Indoor Storage Facility. The Contractor will be responsible for all protection, delivery, rigging, insurance, etc. from the alternate delivery address to the final location.

H. Contractor shall be solely responsible for the protection and care of the equipment during and after unloading at the project site.

I. Cost of replacement and/or repair of equipment, which has been lost or damaged as a result of Contractor's failure to properly handle and protect equipment, shall be borne by the Contractor.

J. Contractor shall be responsible for coordination of all deliveries of equipment with the Vendor, including time for deliveries.

K. Equipment shall be stored in accordance with the Vendor's written instructions.

PART 2 - PRODUCTS

2.01 GENERAL

A. Equipment for installation shall be as described in this specification and the information in the Contract Documents.

B. Contractor shall furnish all required electrical connections, cable, conduit, anchorage devices, mechanical connections, equipment pads, and other accessories and appurtenances required to store, install, place in operation and test the Owner equipment, which are not furnished by the Owner, as described in the Contract Documents.

2.02 EQUIPMENT DATA AND DRAWINGS

A. To the extent that information is attainable the Owner will make available for the Contractors inspection and review, Vendor's drawings and data covering the Owner furnished equipment. The Owner does not warrant the drawings and data, if any, are complete nor shall the incompleteness or lack of such drawings, data and information in any way relieve the Contractor of his ultimate responsibility under this Contract for the proper coordination and installation of the equipment.

PART 3 - EXECUTION

3.01 GENERAL

A. Contractor shall coordinate all aspects of the Work and perform all operations required for the proper storage, installation, placing in operation and testing of all equipment pre-purchased by the Owner and included for installation under this Contract.

B. Storage, installation, placing in operation and testing of equipment shall be in complete accordance with the Vendor's instructions and recommendations.

C. Contractor shall review all approved Shop Drawings describing Owner furnished equipment to the extent that they affect storage, installation, placing in operation and testing requirements. Any ambiguities in the drawings or discrepancies between the drawings and equipment furnished shall be brought to the attention of the Owner.

D. Contractor shall prepare all necessary concrete bases as shown on the Drawings. Sizes shall be as shown, specified and/or in accordance with the Vendor's recommendations.

E. Contractor shall verify that equipment and structures are compatible prior to installation of the equipment. Contractor shall anchor all equipment in accordance with the Contract Documents.

F. Contractor shall employ competent workers experienced in the installation of the type of equipment furnished. All temporary supports, which are required to complete the installation, shall be provided by the Contractor, and shall conform to the applicable requirements of the Vendor.

G. Each piece of equipment shall be installed, adjusted, lubricated and made completely ready in all respects for operation and testing.

H. All miscellaneous work required for proper storage, installation, placing in operation and testing of the Owner furnished equipment shall be provided including, but not limited to, piping, electrical connections, and mounting items.

I. Contractor shall be responsible for the safety and integrity of the equipment. Any component or piece of equipment damaged or rendered defective as a result of the Contractor’s operation shall be repaired or replaced to the full satisfaction of the Owner, completely at the Contractor’s expense.

3.02 MAIN TRANSFORMER INSTALLATION SERVICES

A. Conform to the manufacturer's shop drawings and mounting instructions including securing the transformer to the concrete slab with a minimum of four anchor bolts.

B. Install and connect transformer as indicated on project drawings, the approved shop drawings, and as specified herein.

C. Transformer installation to be in compliance with ANSI C2.

D. Testing:
   1. Ground test
   2. Applicable NETA acceptance tests for Transformers
   3. Doble Insulation power factor tests
   4. Transformer turns ratio tests
   5. DC winding resistance tests
   6. Base line dielectric fluid analysis

E. Install "DANGER HIGH VOLTAGE" signs with tamper-proof screws on each side of pad mounted transformers, except when the transformer is surrounded by a fence, mount the signs on each side of the fence.

F. Instructing Operating Personnel:
   1. Provide training plan and training services

3.03 SWITCHBOARD (MAIN CIRCUIT BREAKER) INSTALLATION SERVICES

A. Conform to the manufacturer's shop drawings and mounting instructions including securing the Switchboard to the equipment pad with anchor bolts.

B. Install and connect switchboard as indicated on project drawings, the approved shop drawings, and as specified herein.

C. Switchboard installation to be in compliance with NEMA PB 2.1.

D. Testing and Inspections:
   1. Performance of Acceptance Checks, Settings, and Tests: Perform in accordance with the manufacturer's recommendations, NFPA 70B, and referenced ANSI standards. Perform tests to obtain information about the performance of the breakers, meters, wiring, and instrument transformers together as a unit, as well as separately. Tests shall include, but not be limited to, the following:
      a. Compare actual connections with wiring diagrams. If differences are found, determine if error is in diagram or in actual wiring; correct as necessary.

b. Inspect devices and equipment for damage or maladjustment caused by shipment or installation.
c. Use calibrated torque wrench to assure that tightness of bolted bus joints are in accordance with manufacturer's recommendations.
d. Perform mechanical operator and contact alignment tests on breakers and operating mechanisms in accordance with manufacturer's recommendations. Adjust as necessary.
e. Check electrical continuity of current, potential, and control circuits in accordance with wiring diagrams.
f. Perform insulation resistance test at 500 volts dc on field installed control wiring. Disconnect field installed control wiring from equipment and from factory installed wiring before testing. Minimum insulation resistance shall be 1,000,000 ohms.
g. Verify type, range, and connections of instrument transformers. Confirm correct polarity of current transformers electrically.
h. Remove short circuiting links from current transformers after checking that secondary circuits are complete.
i. Verify meter connections and ensure calibration.
j. Remove wedges, ties, and blocks installed by the manufacturer to prevent damage during shipment.
k. Check low voltage circuit breakers in accordance with manufacturer's instructions. Set trip devices in accordance with designated settings.
l. Verify maximum resistance to ground of grounding systems.
m. CAUTION: Changes of connection, insertion, and removal of instruments and meters must be performed in such a manner that the secondary circuits of energized current transformers are not opened, even momentarily.
n. Field Dielectric Tests: Perform on low voltage switchgear according to ANSI C37.20.
o. Follow-up Verification: Upon completion of acceptance checks, settings, and tests, the Contractor shall show by demonstration in service that circuits and devices are in good operating condition and performing the intended function. Test shall require each item to perform its function not less than three times. As an exception to requirements stated elsewhere in the Contract, the Owner shall be given 5 working days advance notice of the dates and times for checks, settings, and tests.

E. Instructing Operating Personnel:
1. Provide training plan and training services

3.04 AUTOMATIC TRANSFER SWITCH INSTALLATION SERVICES

A. Conform to the manufacturer's shop drawings and mounting instructions including securing the Automatic Transfer Switch to the equipment pad with anchor bolts.

B. Install and connect Automatic Transfer Switch as indicated on project drawings, the approved shop drawings, and as specified herein.

C. Switchboard installation to be in compliance with NFPA.

D. Testing and Inspections:
1. The Contractor shall furnish labor, equipment, and incidentals for, and shall perform all field tests. The Contractor shall give the Engineer 7 calendar days' notice of the times scheduled for tests so that the Engineer may be present. Work affected by deficiencies shall be completely retested at the Contractor's expense. Field tests shall include the following:
2. Simulate power failure and demonstrate complete ATS operation. Contractor shall show by demonstration in service that the ATS are in good operating condition.
3. Conduct 3 hour load run utilizing Contractor furnished portable load banks with each power source as follows:
   a. 50% load: One hour
   b. 75% load: One Hour
   c. Full load: Two hours
4. Provide for complete system operational test by opening load side overcurrent protective device, simulating a loss of utility power. Allow emergency generator system to operate all connected loads for a minimum of 1 hour. Close load side overcurrent protective device to simulate utility power back on-line.

E. Instructing Operating Personnel:
1. Provide training plan and training services

3.05 MOTOR CONTROL CENTER INSTALLATION SERVICES

A. Conform to the manufacturer's shop drawings and mounting instructions including securing the Motor Control Center to the equipment pad with anchor bolts.

B. Install and connect switchboard as indicated on project drawings, the approved shop drawings, and as specified herein.

C. Motor Control Center installation to be in compliance with NEMA IA 10028-2024.

D. Testing and Inspections:
1. Performance of Acceptance Checks, Settings, and Tests: Perform in accordance with the manufacturer's recommendations, NFPA 70B, and referenced ANSI standards. Perform tests to obtain information about the performance of the breakers, meters, wiring, and instrument transformers together as a unit, as well as separately. Tests shall include, but not be limited to, the following:

a. Compare actual connections with wiring diagrams. If differences are found, determine if error is in diagram or in actual wiring; correct as necessary.
b. Inspect devices and equipment for damage or maladjustment caused by shipment or installation.
c. Use calibrated torque wrench to assure that tightness of bolted bus joints are in accordance with manufacturer's recommendations.
d. Perform mechanical operator and contact alignment tests on breakers and operating mechanisms in accordance with manufacturer's recommendations. Adjust as necessary.
e. Check electrical continuity of current, potential, and control circuits in accordance with wiring diagrams.
f. Perform insulation resistance test at 500 volts dc on field installed control wiring. Disconnect field installed control wiring from equipment and from factory installed wiring before testing. Minimum insulation resistance shall be 1,000,000 ohms.
g. Verify type, range, and connections of instrument transformers. Confirm correct polarity of current transformers electrically.
h. Remove short circuiting links from current transformers after checking that secondary circuits are complete.
i. Verify meter connections and ensure calibration.
j. Remove wedges, ties, and blocks installed by the manufacturer to prevent damage during shipment.
k. Check low voltage circuit breakers in accordance with manufacturer's instructions. Set trip devices in accordance with designated settings.
l. Verify maximum resistance to ground of grounding systems.
m. CAUTION: Changes of connection, insertion, and removal of instruments and meters must be performed in such a manner that the secondary circuits of energized current transformers are not opened, even momentarily.
n. Field Dielectric Tests: Perform on low voltage switchgear according to ANSI C37.20.
o. Follow-up Verification: Upon completion of acceptance checks, settings, and tests, the Contractor shall show by demonstration in service that circuits and devices are in good operating condition and performing the intended function. Test shall require each item to perform its function not less than three times. As an exception to requirements stated elsewhere in the Contract, the Owner shall be given 5 working days advance notice of the dates and times for checks, settings, and tests.

E. Instructing Operating Personnel:
1. Provide training plan and training services

3.06 START-UP AND ADJUSTMENTS

A. If any part of the system does not function correctly or to the satisfaction of the Owner, the Owner or Vendor shall instruct the Contractor as to the measures to be taken to correct the problem.

3.07 TESTING AND ACCEPTANCE

A. The Contractor shall furnish all labor, materials, tools, equipment and incidentals to conduct acceptance testing of the Owner furnished equipment, and shall follow the instructions and recommendations of the Vendor.

B. The Contractor shall include cost to secure the Vendor's designated representative in the testing and acceptance phase for the Owner's equipment. Contractor shall be responsible for all coordination.

END OF SECTION

SECTION 26 22 01

TRANSFORMERS - DRY TYPE, UNDER 600V

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Transformers – Dry Type, Under 600V, as shown on the Plans, as specified and/or directed.

B. All dry type transformers over 15kVA shall be DOE certified/rated.

1.02 REFERENCES

A. Energy Act PUBLIC LAW 109–58: Comply with all Rules from Department of Energy.
   1. 10 CFR 429
   2. 10 CFR 431

B. National Electrical Manufacturers Association (NEMA) Publications:
   1. ST 20 - Dry-Type Transformers for General Applications

C. National Fire Protection Association (NFPA) Standard
   1. 70 - National Electrical Code (NEC)

D. Underwriters Laboratories, Inc. (UL) and Canadian Standard Association Publications:
   1. UL 250 - Enclosure for Electrical Equipment
   2. UL 1561 - Dry-Type General Purpose and Power Transformers
   3. CSA C22.2 - No.47-M90 Air-Cooled Transformer (Dry Type)

1.03 SUBMITTALS

A. For Transformers Rated 75KVA and Below: Submit the product data, and quality control submittals specified below all at the same time as a package.

B. For Transformers Rated over 75KVA: Submit the product data, and quality control submittals preliminary data specified below all at the same time as a package.

C. Product Data The following information shall be submitted:
   1. Outline dimensions and weights
   2. Transformer ratings including: kVA, Primary and secondary voltage, Taps, Design impedance, Insulation class and temperature rise, Sound level.
   3. Connection diagrams
   4. Product data sheets

5. Manufacturer's installation instructions

D. Quality Control Submittals:
   1. Transformers Rated 75KVA and Below: Submit certified report of the Company's routine commercial NEMA tests for each type transformer.
   2. Transformers Rated over 75KVA.
      a. Preliminary Data: Submit certified report of the Company's standard tests for each type transformer.
      b. Final Approval: After approval of preliminary data and after construction of transformers, make routine commercial NEMA tests at the factory on the actual transformers and submit certified test reports.

E. Contract Closeout Submittals:
   1. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, to the Owner's Representative.

1.04 DELIVERY, STORAGE AND HANDLING

A. Storage of Transformers: Provide supplemental heating devices, such as incandescent lamps or low wattage heaters within the enclosure or under a protective covering to control dampness. Maintain this protection from the time equipment is delivered to the site until it is energized.

1.05 QUALIFICATIONS

A. The manufacturer of the dry-type distribution transformers shall be the same as the manufacturer of the other major electrical distribution equipment on the project.

B. For the equipment specified herein, the manufacturer shall be ISO 9001 or 9002 certified.

C. The manufacturer shall be a participant in the UL Data Acceptance Program (DAP) under the Client Test Data Program (CTDP) certification to ensure UL test methodologies and record traceability complies with the requirements of ISO 17025.

D. Transformer must bear the UL Energy Efficiency Verification Mark to confirm that the unit meets the requirements of 10 CFR Part 431.

E. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of five (5) years.

F. Provide Seismic tested equipment as follows:
   1. The equipment and major components shall be suitable for and certified by actual seismic testing to meet all applicable seismic requirements of the latest International Building Code (IBC).

2. The Project Structural Engineer will provide site specific ground motion criteria for use by the manufacturer to establish SDS values required.
3. The IP rating of the equipment shall be 1.5.
4. The following minimum mounting and installation guidelines shall be met, unless specifically modified by the above referenced standards.
    a. The Contractor shall provide equipment anchorage details, coordinated with the equipment mounting provision, prepared and stamped by a licensed civil engineer in the state. Mounting recommendations shall be provided by the manufacturer based upon the above criteria to verify the seismic design of the equipment.
    b. The equipment manufacturer shall certify that the equipment can withstand, that is, function following the seismic event, including both vertical and lateral required response spectra as specified in above codes.
    c. The equipment manufacturer shall document the requirements necessary for proper seismic mounting of the equipment. Seismic qualification shall be considered achieved when the capability of the equipment, meets or exceeds the specified response spectra.

PART 2 - PRODUCTS

2.01 DRY TYPE TRANSFORMERS

A. By Acme Electric Corp. Power Products Div., Cutler-Hammer Inc., General Electric Co., Niagara Transformer Corp., Square D Co., or approved equal.

2.02 CONSTRUCTION

A. Transformer coils shall be of the continuous wound construction and shall be impregnated with non-hydroscopic, thermosetting varnish and cured to reduce hot spots and seal out moisture; the core shall be coated with HAPs (Hazardous Air Pollutants) free water reducible electrical varnish to give good corrosion resistance. The assembly shall be installed on vibration-absorbing pads.

B. All windings shall be electrical grade copper.

C. All cores to be constructed with low hysteresis and eddy current losses. Magnetic flux densities are to be kept well below the saturation point to prevent core overheating.

D. The completed core and coil shall be bolted to the base of the enclosure but isolated by means of rubber vibration-absorbing mounts. There shall be no metal-to-metal contact between the core and coil and the enclosure except for a flexible safety ground strap. Sound isolation systems requiring the complete removal of all fastening devices will not be acceptable.

E. Transformer core shall be constructed with high-grade, non-aging, silicon steel with high magnetic permeability, and low hysteresis and eddy current losses. Maximum magnetic flux densities shall be substantially below the saturation point. The transformer core volume shall allow efficient transformer operation at 10% above the nominal tap voltage. The core laminations shall be tightly clamped and compressed.

F. On three-phase units rated 9 kVA and below and single-phase units rated 10 kVA and below the core and coil assembly shall be completely encapsulated in a proportioned mixture of epoxy or resin and aggregate to provide a moisture proof, shock-resistant seal. The core and coil encapsulation system shall minimize the sound level.

G. The core of the transformer shall be visibly grounded to the enclosure by means of a flexible grounding conductor sized in accordance with applicable UL and NEC standards.

H. All terminals, including those for changing taps, must be readily accessible by removing a front cover plate.

I. Taps shall have a 5% FCAN and 10% FCBN. Taps shall be as per Deg C rise.
   1. 2.5% Steps On all voltages 350 V and above:
      a. 15 to 225kVA
      b. 300kVA
         1) 150°C Rise
         2) 80°C Rise change to 5% FCBN instead of 10%
      c. 500 and 750kVA range change to 5% FCBN instead of 10%
      d. 1000kVA and greater per Manufacture Design
   2. 5% Steps On all voltages below 350 V:
      a. 15 to 225kVA
      b. 300kVA
         1) 150°C Rise
         2) 80°C Rise change to 5% FCBN instead of 10%
      c. 500 and 750kVA range change to 5% FCBN instead of 10%
      d. 1000kVA and greater per Manufacture Design

J. Transformers shall have provisions for Bonding Neutral to Ground.

K. Insulation and Temperature Rise: 115 Degree C. Rise Transformers: Reduced average winding temperature rise of 115degrees C. over 40 degrees C maximum ambient temperature with transformer utilizing a Class 220 insulation system.

L. Where indicated on drawings, provide “K” factor rating:
   1. Suitable for non-sinusoidal current load with K factor not to exceed standard K factor rating of 4, 9, 13, 20, 30, 40, or 50 as indicated for each specific transformer.
   2. Oversized neutral (200 percent).

2.03 ENCLOSURE

A. The transformer enclosures shall be ventilated and be fabricated of heavy gauge, sheet steel construction. The entire enclosure shall be finished utilizing a continuous process consisting of degreasing, cleaning, and phosphatizing, followed by electrostatic deposition of polymer polyester powder coating and baking cycle to provide uniform coating of all edges and surfaces. The coating shall be UL recognized for outdoor use. The coating color shall be ANSI 49.
   1. Minimum clearance from rear and sides ½".
   2. Units 75kVA and smaller shall have manufacturer's kit to convert to wall mounted.
   3. Units 150kVA and smaller shall have provisions to be trapeze mounted.
   4. All enclosures shall have manufacturer's kit to convert from Type 2 to Type 3R.

2.04 WIRING/TERMINATIONS

A. Recommended external cable shall be rated 90 degrees C (sized at 75 degrees C ampacity) for encapsulated and 75 degrees C for ventilated designs. Connectors should be selected on the basis of the type and cable size used to wire the specific transformer.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install dry type transformers where indicated on the drawings.

B. Install transformers per manufacturer's instructions. Permanently secure transformer to pad or wall brackets.

C. Install interior transformers minimum of 6" from non-combustible construction, 12" from combustible construction or greater minimum distances if required by transformer manufacturer.

D. Provide manufactures wall mounting brackets, rated for the weight of the transformer, where wall mounting is shown or specified.

E. Provide a minimum of 4" high concrete housekeeping pad for all transformers mounted on a concrete slab, unless otherwise shown on Contract Drawings. Housekeeping pad to be a minimum of 2" wider in all dimensions than final installed location of transformer.

F. Transformer shall not be installed on a combustible surface.

G. Provide flexible conduit connections for all conduit systems connected to transformer.

END OF SECTION

SECTION 26 24 16

PANELBOARDS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials, equipment and accessories for Panelboards, as shown on the Plans, as specified and/or directed.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only and shall be the most current version.
   1. National Electrical Contractors Association (NECA) Publication:
   2. Standard of Installation
   3. National Electrical Manufacturers Association (NEMA) Publications:
      a. AB1 - Molded Case Circuit Breakers
      b. PB 1 - Panelboards
      c. PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less
   4. National Fire Protection Association (NFPA) Publication:
      a. 70 - National Electrical Code

1.03 SUBMITTALS

A. Submittal Packages: Submit the shop drawings, product data, and the quality control submittals specified below at the same time as a package.

B. Shop Drawings: Include the following for each panelboard.
   1. Cabinet and gutter size.
   2. Voltage and current rating.
   3. Panelboard short circuit rating. Indicate if rating is Fully Rated Equipment Rating, or where acceptable, UL listed Integrated Equipment Short Circuit Rating.
   4. Circuit Breaker Enumeration (Frame, Poles, KAIC.): Indicate if circuit breakers are suitable for the panelboards' Fully Rated Equipment Rating, or where acceptable, are series connected devices that have been test verified and listed with UL (include documentation proving the compatibility of the proposed circuit breaker combinations). Circuit breakers do not have to be listed as series connected devices when all of the circuit breaker interrupting ratings are equal to, or greater than, the short circuit rating of the panelboard.

5. Accessories.

C. Product Data:
   1. Catalog sheets, specifications and installation instructions.
   2. Bill of materials.

D. Maintenance Data: Include spare parts listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

E. Contract Closeout Submittals:
   1. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, to Owner.

PART 2 - PRODUCTS

2.01 PANELBOARDS

A. As produced by Cutler-Hammer/Eaton Corp, General Electric Co., , or Square D Co., having:
   1. Flush or surface type cabinets as indicated on the Contract Drawings.
   2. Increased gutter space for gutter taps, sub-feed wiring, through-feed wiring, oversize lugs.
   3. UL label "SUITABLE FOR USE AS SERVICE EQUIPMENT" where used as service equipment.
      a. Where indicated, equip panelboards used as service equipment with secondary surge arresters; GE's Tranquell Series, Joslyn's Mfr. Co.'s Surge Tec Series, Intermatic Incorp.'s AG2401 or AG6503, Square D Co.'s SDSA 1175 or SDSA 3650, to suit system primary (transformer size, available current) and secondary characteristics.
   4. Door and one piece trim. Door fastened to trim with butt or piano hinges. Trim fastened to cabinet with devices having provision for trim adjustment. Provide door-in-door trim.
   5. Door lock. 2 keys with each lock. All locks shall be keyed alike.
   6. Solid copper bus bars. Ampere rating of bus bars not less than frame size of main circuit breaker.
   7. Full capacity copper isolated neutral bus in panelboards where neutrals are required and the panel is not utilized as service equipment.
   8. Copper equipment grounding bus in panelboards where equipment grounding conductors are required.
   9. Sections designated "space" or "provision for future breaker" equipped to accept future circuit breakers.
   10. Lock on devices for exit light, fire alarm, stair well circuits or as indicated on Contract Drawings.

11. Provisions for padlocking circuit breaker handle in OFF position where indicated.
12. Blank circuit directories in plastic pockets.
13. Short circuit rating not less than indicated on panelboard schedule. Furnish panelboards having Fully Rated Equipment Rating (the short circuit rating of the panelboard is equal to the lowest interrupting rating of any device installed in the panelboard).
14. Molded Case Circuit Breakers.
    a. Molded Case Circuit Breakers: NEMA AB 1, type thermal magnetic trip circuit breakers, with common trip handle for all poles. Do not use tandem circuit breakers. Type HACR for air conditioning equipment circuits, Class A ground fault interrupter circuit breakers where scheduled. The fault interrupter shall detect and trip on current imbalance of 6 milliamperes or greater per requirements of UL 943 for Class A GFCI devices.
    b. Components: See panelboard schedule for specific components required for each circuit breaker. In addition to the specific components, equip each circuit breaker with additional components as required to achieve a coordinated selective scheme between the main circuit breaker and the branch/feeder circuit breakers when indicated on the panelboard schedule that a coordinated selective scheme is required.
    c. Single pole 15 amp and 20 amp circuit breakers marked SWD where used as switches.
    d. Single pole and two pole 15, 20, and 30 amp circuit breakers rated for high intensity discharge lighting loads when applicable.
15. Size of circuit breakers and rating of main lugs shall be as indicated on Contract Drawings.
16. Enclosure: NEMA 1.

2.02 NAMEPLATES

A. General: Precision engrave letters and numbers with uniform margins, character size minimum 3/16 inch high.
    1. Phenolic: Two color laminated engravers stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).
    2. Aluminum: Standard aluminum alloy plate stock, minimum .032 inches thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.
    3. Materials for Outdoor Applications: As recommended by nameplate manufacturer to suit environmental conditions.
    4. Provide the following information on the panelboard door:
        a. Panel designation
        b. “Fed from”. Descriptive location and/or main feeder connection indication.
        c. Volts
        d. 1 or 3 Phase indication and wire indication

e. Bus Amperage
f. Feeder phase/wire color designations.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install panelboards in accordance with NEMA Publication No. PB1.1 “General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less”.

B. Flush Cabinets: Set flush cabinets so that edges will be flush with the finished wall line. Where space will not permit flush type cabinets to be set entirely in the wall, set cabinet as nearly flush as possible, and cover the protruding sides with the trim extending over the exposed sides of the cabinet and back to the finished wall line.

C. Directory: Indicate on typewritten directory the equipment controlled by each circuit breaker, and size of feeder servicing panelboard. For power panelboards also include ATE rating and feeder size for each breaker.

D. Identification:
1. Install nameplates on front of each panelboard.
a. Identification of 120/208 Volt Circuit Conductors:
1) 2 wire circuit - white*, black.
2) 3 wire circuit - white*, black, red.
3) 4 wire circuit - white*, black, red, blue.
*White is used only as neutral. Where neutral is not required, black, red, or black, red, blue is used for phase to phase circuits.
b. Identification of 277/480 Volt Circuit Conductors:
1) 2 wire circuit - natural gray**, brown.
2) 3 wire circuit - natural gray**, brown, yellow.
3) 4 wire circuit - natural gray**, brown, yellow, orange.
**Natural gray is used only as neutral. Where neutral is not required, brown, yellow, or brown, yellow, orange is used for phase to phase circuits.

E. Height: 6 feet to top of panelboard; install panelboards taller than 6 feet with bottom no more than 4 inches above floor.

F. Provide filler plates for unused spaces in panelboards.

G. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.

H. Provide spare conduits out of each recessed panelboard to an accessible location below floor. Minimum spare conduits: 5 empty 1 inch. Identify each as SPARE.

3.02 FIELD QUALITY CONTROL

A. System Acceptance Test:
   1. Preparation: Notify Owner/Engineer at least 3 working days prior to the test so arrangements can be made prior to the test to have a Facility Representative witness the test.
   2. Make the following tests:
      a. Test circuit breakers that have ground fault protection.
      b. Test programmable solid state trip devices in accordance with the manufacturer's recommendations.
      c. Supply all equipment necessary for system adjustment and testing.
      d. Measure steady state load currents at each panelboard feeder; rearrange circuits in the panelboard to balance the phase loads to within 20percent of each other. Maintain proper phasing for multi-wire branch circuits.

END OF SECTION

SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Wiring Devices as shown on the Plans, as specified, and/or directed.

1.02 REFERENCES

A. NEMA

B. UL

C. NFPA 70

1.03 SUBMITTALS

A. Product Data: Catalog sheets, specifications and installation instructions.

1.04 RELATED SECTIONS

A. Section 26 05 01, “Electrical General Requirements”, applies to this Section, with the additions and modifications specified herein.

PART 2 - PRODUCTS

2.01 SWITCHES

A. Local Switches, Single Pole: 20A, 120/277 V ac; Bryant’s 4901, Crouse-Hinds/AH’s 1991, Hubbell’s 1121/1221, Leviton’s 1121/1221, Pass & Seymour’s 20AC1.

B. Local Switches, Double Pole: 20A, 120/277 V ac; Bryant’s 4902, Crouse-Hinds/AH’s 1992, Hubbell’s 1222/1122, Leviton’s 1222/1122, Pass & Seymour’s 20AC2.

C. Local Switches, Three-Way: 20A, 120/277 V ac; Bryant’s 4903, Crouse-Hinds/AH’s 1993, Hubbell’s 1223/1123, Leviton’s 1223-2/1123-2, Pass & Seymour’s 20AC3.

D. Local Switches, Four-Way: 20A, 120/277 V ac; Bryant's 4904, Crouse-Hinds/AH's 1994, Hubbell's 1224/1124, Leviton's 1224-2/1124-2, Pass & Seymour's 20AC4.

E. Local Switches, Dimming: 20A, 120/277 V ac; Eaton's WBSD-010SLD, Leviton's 66EV-10W, Pass & Seymour's WS4FBL3PW.

2.02 RECEPTACLES

A. Federal Spec./NEMA Grade Receptacles:
   1. Single receptacle, NEMA 5-20R (20A, 125 V, 2P, 3W); Bryant's 5361, Crouse-Hinds/AH's 5361, Hubbell's 5361, Leviton's 5361, or Pass & Seymour's 5361.
   2. Duplex receptacle, NEMA 5-20R (20A, 125 V, 2P, 3W); Bryant's 5362, Crouse-Hinds/AH's 5739-S, Hubbell's 5362, Leviton's 5362, Pass & Seymour's 5362, or Daniel Woodhead's 5362 DW.

B. Ground Fault Interrupter Receptacles: Duplex receptacle rated 20A (NEMA 5-20R), circuit ampacity 20A; Bryant's GFR53FT, Crouse-Hind/AH's GF5342, Hubbell's GF 5352, Leviton's 6899, Pass & Seymour's 2091S,

2.03 WALL PLATES

A. Stainless Steel Wall Plates: Type 302 stainless steel with satin finish. All areas except finished spaces or wet locations.

B. Weatherproof/Wet Location Covers: UL 514D type "extra duty". Thomas & Betts Red Dot Code Keeper type 2CKU or equal.

C. Finished areas: Polycarbonate. Color to match device color.

2.04 NAMEPLATES

A. Phenolic Type: Standard phenolic nameplates with 3/16 inch minimum size lettering engraved thereon.

B. Embossed Aluminum: Standard stamped or embossed aluminum tags, 3/16 inch minimum size lettering, as produced by Seton Name Plate Corp. or Tech Products Inc.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install wiring devices in outlet boxes.

B. Local Switches:
1. Install local switches rated 20A, 120/277 V ac for switches unless otherwise shown on the drawings or specified.
2. Where more than one switch occurs at same location in a 120 volt system, arrange switches in gangs and cover with one face plate.
3. Install single and double pole switches so that switch handle is up when switch is in the “On” position.

C. Receptacles:
1. Install Specification Grade receptacles, NEMA 5-20R, 20A, 125 V, 2P, 3W, for duplex receptacles and single receptacles unless otherwise shown on the drawings or specified.
2. Install receptacles with ground pole in the down position.

D. Wall Plates:
1. Install wall plates on all wiring devices in dry locations, with finish to match hardware in each area.

E. Weatherproof In-use Covers: Install weatherproof covers on wiring devices in damp and wet locations.

F. Nameplates: Provide phenolic or embossed aluminum nameplate for each special purpose receptacle indicating phase, ampere and voltage rating of the circuit. Attach nameplate with rivets or tamperproof fasteners to wall plate or to wall above receptacle. Wall plates may be engraved with required data in lieu of separate nameplates.

G. Labels: Provide electronically generated, self-sticking label at each wiring device. Label shall indicate panel designation and circuit number associated with respective device. Label shall be attached to outside of wall plate.

H. Where Contract Drawings call out a classified area all equipment/devices and wiring methods to be suitable for this area per NEC. Refer to Contract Drawings for classified area locations.

END OF SECTION

SECTION 26 28 16

SAFETY SWITCHES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Safety Switches as shown on the Plans, as specified, and/or directed.

1.02 SUBMITTALS

A. Product Data: Catalog sheets, specifications and installation instructions.

PART 2 - PRODUCTS

2.01 SAFETY SWITCHES (SINGLE THROW)

A. NEMA KS1, switches serving as motor-disconnect means shall be horsepower rated. Provide heavy-duty type switches where indicated, where switches are rated higher than 240 volts, and for double-throw switches.

B. Fused Switches: Provide fused switch as required or indicated. Fused switches shall utilize Class R fuse holders and fuses unless otherwise indicated.

C. Enclosure: Enclosure shall be NEMA rated for installation environment.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install switches so that the maximum height above the floor to the center of the operating handle does not exceed 6'-6".

B. Identify each safety switch, indicating purpose or load served:
1. NEMA 1 Enclosures: Rivet or bolt nameplate to the cover.

END OF SECTION

SECTION 26 51 01

INTERIOR LIGHTING

PART 1 - GENERAL

1.01 SCOPE

A. The work under this Interior Lighting includes interior luminaires and accessories, exit signs, and building-mounted exterior lighting.

1.02 RELATED WORK

A. Applicable provisions of Division 1 govern work under this Section.

1.03 REFERENCE STANDARDS

A. RoHS – Restriction of Hazardous Substances. Council of the European Union (EC) Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

B. LM-79-08 (or latest) – IES Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.

C. LM-80-08 (or latest) – IES Approved Method for Measuring Lumen Maintenance of LED Light Sources.

D. TM-21-11 (or latest) – IES Technical Memorandum on Projecting Long Term Lumen Maintenance of LED Light Sources.

E. NEMA SSL 1-2010 (or latest) – Electronic Drivers for LED Devices, Arrays, or Systems.

1.04 SUBMITTALS

A. Include outline drawings, lamp and ballast data, support points, weights, accessory information and performance data for each luminaire type.

B. For each luminaire type, submit luminaire information including catalog cuts with highlighted catalog numbers and required accessories:
   1. Luminaire:
      a. Manufacturer and catalog number,
      b. Type (identification) as indicated on the plans and schedule,
      c. Delivered lumens,
      d. Input watts,
      e. Efficacy,
      f. Color rendering index.

2. Driver:
    a. Manufacturer and catalog number,
    b. Type (Non-Dimming, Step-dimming, Continuous dimming, etc.),
    c. Power Factor, Crest Factor, THD, etc.

1.05 OPERATION AND MAINTENANCE DATA

A. All operations and maintenance data shall comply with the submission and content requirements specified under Section General Requirements.

1.06 EXTRA MATERIALS

A. Provide three (3) percent of each lamp type, but not less than one (1) of each type.

B. Provide one (1) of each type of LED module, light bar, or array (if applicable). If the LEDs are integrated into the luminaire and are not separate components, provide one (1) of each of these types of luminaires.

C. Provide one (1) LED driver or ballast of each type.

1.07 DEFINITIONS

A. Driver: The power supply used to power LED luminaires, modules, or arrays.

B. L70, $L_{70,}$ or $L_{70\%}$: The reported life of an LED component or system to reach 70% lumen maintenance, or 70% of the LED's original light output. This test is being developed by the IES and is currently described by TM-21-11.

C. LEDs: Broadly defined as complete luminaire with light emitting diode (LED) packages, modules, light bars or arrays, complete with driver.

D. LED luminaire failure: Negligible light output from more than 10 percent of the LED's constitutes luminaire failure.

PART 2 - PRODUCTS

2.01 INTERIOR LUMINAIRES AND ACCESSORIES

A. See the Luminaire Schedule on the drawings for type of luminaires and catalog numbers. Catalog numbers are shown on the drawings for quality and performance requirements only. Luminaires manufactured by others are equally acceptable provided they meet or exceed the performance of the indicated luminaires, and meet the intent of the design.

B. Luminaire shall be listed by a NRTL (Nationally Recognized Testing Laboratory: e.g., UL, ETL, etc.).

C. Provide luminaires with quick-connect disconnecting means, similar to Thomas & Betts Sta-Kon.

D. Fluorescent T8 lamps and ballasts shall be listed on CEE high-performance qualifying product list and approved by Focus–On–Energy.

2.02 LED LUMINAIRES

A. LED Luminaires shall meet all DesignLights Consortium® (DesignLights.org) Product Qualification Criteria. This does not require that the luminaire be listed on the DesignLights Consortium's® Qualified Products List, but they must meet the Product Qualification Criteria. The technical requirements that the luminaire shall meet for each Application Category are:
   1. Minimum Light Output.
   2. Zonal Lumen Requirements.
   3. Minimum Luminaire Efficacy.
   4. Minimum CRI.
   5. L70 Lumen Maintenance.
   6. Minimum Luminaire Warranty of 5 years (not pro-rated) to include LED driver and all LED components.

B. Color Temperature of 3000K-4100K for interior luminaires as listed in the Luminaire Schedule on the Plans. The color temperature of exterior LED luminaires should not exceed 4100K (nominal).

C. Color Consistency: LED manufacturer shall use a maximum 3-step MacAdam Ellipse binning process to achieve consistent luminaire-to-luminaire color for interior luminaires. Exterior luminaires shall use a maximum 5-step MacAdam Ellipse binning process.

D. Glare Control: Exterior luminaires shall meet DesignLights Consortium's® criteria for Zonal Lumen Distribution requirements or Backlight-Uplight-Glare (BUG) standards for exterior luminaires.

E. Luminaire shall be mercury-free, lead-free, and RoHS compliant.

F. Luminaire shall comply with FCC 47 CFR part 15 non-consumer RFI/EMI standards.

G. Light output of the LED system shall be measured using the absolute photometry method following IES LM-79 and IES LM-80 requirements and guidelines.

H. Luminaire shall maintain 70% lumen output (L70) for a minimum of 50,000 hours.

I. Lumen output shall not depreciate more than 20% after 10,000 hours of use.

J. Luminaire and driver shall be furnished from a single manufacturer to ensure compatibility.

K. Luminaire Color Rendering Index (CRI) shall be a minimum of 80 for interior luminaires, and a minimum of 70 for exterior luminaires.

L. LED luminaire shall be thermally designed as to not exceed the maximum junction temperature of the LED for the ambient temperature of the location the luminaire is to be installed. Rated case temperature shall be suitable for operation in the ambient temperatures typically found for the intended installation. Exterior luminaires to operate in ambient temperatures of -40°F to 104°F (-40°C to 40°C).

M. Luminaire shall operate normally for input voltage fluctuations of plus or minus 10 percent.

N. Luminaire shall have a maximum Total Harmonic Distortion (THD) of $\leq$20% at full input power and across specified voltage range.

O. All connections to luminaires shall be reverse polarity protected and provide high voltage protection in the event connections are reversed or shorted during the installation process.

P. All luminaires shall be provided with knockouts for conduit connections.

Q. The LED luminaire shall carry a limited 5-year warranty minimum for LED light engine(s)/board array, and driver(s).

R. Provide all of the following data on submittals:
1. Delivered lumens
2. Input watts
3. Efficacy
4. Color rendering index.

S. LED Luminaires used for Emergency Egress Lighting: The failure of one LED shall not affect the operation of the remaining LEDs.

T. Emergency LED Luminaire Compatibility with Inverters shall be sine-wave type, or have written confirmation from the luminaire manufacturer that the luminaire will function with a square-wave inverter.

2.03 LED DRIVERS

A. General Drivers:
1. Provide driver type (non-dimmed, step-dimmed, continuous-dimming, etc.) as indicated on the luminaire schedule on the drawings.
2. Minimum Warranty of 5 years (not pro-rated) to include LED driver and all LED components.
3. Driver shall have a rated life of 50,000 hours, minimum.

4. Driver and LEDs shall be furnished from a single manufacturer to ensure compatibility.
5. Driver shall have a minimum power factor (pf) of 0.9 and a maximum crest factor (cf) of 1.5 at full input power and across specified voltage range.
6. Driver shall operate normally for input voltage fluctuations of plus or minus 10 percent.
7. Driver shall have a maximum Total Harmonic Distortion (THD) of $\leq$20% at full input power and across specified voltage range.
8. Wiring connections to LED drivers shall utilize polarized quick-disconnects for field maintenance.
9. Fuse Protections: All luminaires shall have built-in fuse protection. All power supply outputs shall be either fuse protected or be Polymeric Positive Temperature Coefficient (PTC)-protected as per Class 2 UL listing.
10. Provide all of the following data on submittals:
    a. Input watts
    b. Power Factor (pf)
    c. Crest Factor (cf) at full input power
    d. Total Harmonic Distortion (THD).

PART 3 - EXECUTION

3.01 INSTALLATION

A. Verify ceiling types with Architectural plans or with existing ceilings. Verify specified luminaires are compatible with specified ceiling type(s) prior to ordering luminaires.

B. Install in accordance with manufacturer's instructions.

C. Install suspended luminaires using aircraft cable, or pendants supported from swivel hangers. Heavy-duty chain supports may be used where indicated on the luminaire schedule. Provide aircraft cable, pendants, or chain lengths required to suspend luminaire at indicated height. All aircraft cables or pendant supported luminaires shall have an independent support to structure at all cable or pendant support locations. When chain is used, tie-wrap the luminaire wiring method to the chain.

D. Support luminaires larger than 2 x 4 foot (600 x 1200 mm) size independent of ceiling framing.

E. Provide independent support for all luminaires over 50 lbs.

F. Locate ceiling luminaires as indicated on reflected ceiling plan.

G. Install surface mounted luminaires and exit signs plumb and adjust to align with building lines and with each other. Secure to prohibit movement.

H. The Contractor shall install luminaire supports as required. Luminaire installations with luminaires supported only by insecure boxes will be rejected. It shall be the Contractor's responsibility to support all luminaires adequately, providing extra steel work for the support of luminaires if required. Any components necessary for mounting luminaires shall be provided by the Contractor. No plastic, composition or wood type anchors shall be used.

I. Install code required hardware to secure recessed grid-supported luminaires in place.

J. Install wall mounted luminaires and exit signs at height as scheduled. Use pendants supported from swivel hangers in exposed ceiling/structure locations where necessary to mount exit signs at the specified height.

K. Install accessories furnished with each luminaire.

L. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.

M. Bond luminaires and metal accessories to branch circuit equipment grounding conductor.

N. Install specified lamps in each luminaire and exit sign.

O. HID High-Bay or Low-Bay Luminaires: Use power hook hangers rated 500 pounds (225 kg) minimum and provide safety chain between ballast and structure. Also provide safety chain between reflector and ballast.

P. All lamps shall be delivered to the job in sealed cartons and protected from dirt and dust during storage on the project. Lamps shall be taken directly from the cartons and installed in the luminaire with special care so that they do not become dusty and are not soiled in the operation.

Q. Lamps installed in luminaires using dimming ballasts shall be burned in at 100% rated output by the contractor for a minimum of 100 hours as recommended by the ballast manufacturer.

R. All new lamps shall be operational at the Substantial Completion of the project.

3.02 ADJUSTING AND CLEANING

A. Align luminaires and clean lenses and diffusers at completion of work. Clean paint splatters, dirt, and debris from installed luminaires.

B. Aim and adjust luminaires as indicated on drawings or as directed by the A/E.

C. Touch up luminaire finish at completion of work.

3.03 INTERFACE WITH OTHER PRODUCTS

A. Interface with air handling accessories furnished and installed under Division 23.

B. Provide controls as indicated on the plans. Refer to Section 26 27 26, “Wiring Devices”. Controls shall be compatible with the luminaires/ballasts/drivers being installed.

3.04 FIELD QUALITY CONTROL

A. Operate each luminaire after installation and connection. Inspect for proper connection and operation.

3.05 LUMINAIRE CONNECTIONS

A. Metal-Clad (MC) Cable Whips

1. Metal-Clad (MC) type cable that combines power and Class 2 circuits into a single cable may be used for luminaire whips where 0-10V dimming control wiring is required. Whips may not exceed six (6) feet in length. Examples of such products are Encore Wire® MC-LED™ or Southwire® MC-PCS Duo™. Manufacturer's names and catalog numbers are used for quality and performance only. MC Cables manufactured by others shall be equally acceptable provided they meet or exceed in performance and quality as specified.

B. \Chain or Cable Hung (unfinished spaces):

1. Use manufacturer’s SO cord or a luminaire fixture whip from a J-box. Luminaire fixture whips shall be aluminum or steel AC Cable (Armored Cable) or Flexible Metal Conduit (FMC). Metal Clad (MC) cable that combines power and Class 2 circuits (for 0-10V dimming control) into a single cable may be used as a whip for luminaires that are dimmed.
2. Conduit whips shall be 3/8" (10 mm) minimum diameter. Conduit whip or SO cord shall be cut to length (six feet (1.8 m) maximum) and shall allow movement of the chain/cable/luminaire, but shall not be long enough to “loop” and shall present a neat and workmanlike appearance.
3. Luminaire field wired flexible cord installations shall be connected per NEC 410.62.
4. The flexible connectors shall be steel, galvanized, clamp type with locknut, snap-in type with locknut, or snap-in connector type, including those used on the master-satellite units.
5. Conduit whip slack shall be tie-wrapped to the chain supports. Tie-wraps shall be UL listed for UV resistance.

C. Cable Hung (finished spaces):
   1. Use manufacturer's SO cord from luminaire to a J-box.
   2. SO cord shall be cut to length (six feet (1.8 m) maximum) and shall allow movement of the cable/luminaire, but shall not be long enough to "loop" and shall present a neat and workmanlike appearance.
   3. SO cord slack may be tie-wrapped to the cable supports. Tie-wraps shall be UL listed for UV resistance.
   4. Luminaire field wired flexible cord installations shall be connected per NEC 410.62.

D. Surface Mounted (unfinished spaces): Provide direct conduit and box connection.

E. Surface Mounted (finished spaces): Provide direct conduit and box connection. Use surface metal raceway where indicated on drawings. Conceal box and conduit where appropriate. Flexible metal conduit shall not be used where the conduit is exposed.

END OF SECTION

SECTION 31 05 13

SOILS FOR EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:
   1. General Fill.
   2. Select General Fill.

B. Related work specified elsewhere:
   1. Section 01 57 13, Temporary Erosion and Sediment Control
   2. Section 31 05 16, Aggregates for Earthwork
   3. Section 31 22 13, Subgrade Preparation
   4. Section 32 92 00, Turf and Grasses

REFERENCE STANDARDS

A. The following is a list of standards that may be referenced in this section:
   1. ASTM International (ASTM):
      a. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
      b. D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
      c. D4318, Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
      d. D4972, Standard Test Method for pH of Soils.
      e. D6913, Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis.
      f. D6938, Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods.
      g. D7928, Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis.
      h. F1647, Standard Test Methods for Organic Matter Content of Athletic Field Rootzone Mixes.

1.03 SUBMITTALS

A. Comply with Section 01 33 00, Submittal Procedures.

B. Action submittals:
   1. Submit gradations and sieve analyses, Atterberg limits, and Proctor densities to demonstrate conformance with these requirements.
   2. Submit name of imported materials source.

3. Submit mineral analysis and nutrient content.

C. Informational submittals:
1. Copies of agreements between Contractor and private landowner accepting spoil material.

1.04 QUALITY ASSURANCE

A. Furnish each General Fill and Select General Fill material from single source throughout Work.

PART 2 - PRODUCTS

2.01 FILL AND BACKFILL MATERIALS

A. Material specifications included herein are designated as “fill” materials and apply to both fill and backfill unless otherwise specified.

B. General Fill:
1. Excavated and reused material, graded.
2. Free of lumps larger than 2 inches, rocks larger than 3 inches in any dimension, debris, roots wood, scrap material, vegetable matter, refuse, soft unsound particles, frozen deleterious, or other objectionable materials.
3. Conforming to ASTM D2487 Group Symbol GW, GM, GC, SW, or SM, or as otherwise approved by the Engineer.

C. Imported General Fill:
1. Bank run gravel, conforming to NYSDOT 733-11.
2. Percent passing by weight per sieve size:
a. 4-inch: 100.
b. No. 40: 0 to 70.
c. No. 200: 0 to 15.

D. Borrow Material: When insufficient job-excavated material is available, off-site borrow material meeting the requirements of General Fill and Imported General Fill and Select General Fill may be used.

2.02 SOURCE QUALITY CONTROL

A. Furnish materials of each type from the same source throughout Work.

B. When tests indicate materials do not meet specified requirements, change material and retest.

C. Furnish materials of each type from same source throughout Work.

PART 3 - EXECUTION

3.01 EXCAVATION

A. Excavate subsoil from areas designated.

B. All sod cut during excavation shall be removed and stored during construction so as to preserve the grass growth, and shall be replaced in position on completion of the Work.

C. Stockpile excavated material meeting requirements for General Fill materials and Select General Fill materials.

D. Remove excess excavated materials not intended for reuse from the Site.

E. All spoil materials shall be lawfully disposed off-site at appropriate locations selected and obtained by Contractor.

F. No environmentally sensitive areas shall be used for spoil areas.

G. Comply with requirements for stockpile storage included in the SWPPP.

H. A copy of the signed agreement between the property owner and Contractor granting permission to deposit spoil shall be submitted to Engineer prior to placement.

I. Remove excavated materials not meeting requirements for General Fill materials and Select General Fill materials from the Site.

3.02 HAULING MATERIAL

A. When it is necessary to haul material over the streets or pavements, Contractor shall provide suitable tight vehicles so as to prevent deposits on the streets or pavements.

B. In all cases where any materials are dropped from the vehicles, Contractor shall clean up the same at least daily or as often as directed and keep the crosswalks, streets and pavements clean and free from dirt, mud, stone and other hauled materials.

3.03 STOCKPILING

A. Stockpile materials on Site at locations designated and approved by Engineer and as otherwise required by Contract Documents.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. All excavation materials shall be stored in locations as to not endanger the Work, and so that easy access may be had at all times to all parts of the excavation.

D. Separate differing materials with dividers or stockpile apart to prevent mixing.

E. Prevent intermixing of soil types or contamination.

F. Direct surface water away from stockpile sites to prevent erosion or deterioration of materials.

G. Stockpile unsuitable materials on impervious material and cover to prevent erosion and leaching, until disposed.

H. All excavated materials shall be kept clear of sidewalks, driveway entrances/exits, street crossings, and any other points that may inconvenience the public.

I. Special precautions must be taken to permit access at all times to fire hydrants, fire alarm boxes, police and fire department driveways, and other points of public convenience.

J. Where traffic is to be maintained, at least one-half of the street width must be kept open at all times.

K. Approved types of bridging across trenches shall be constructed and maintained where necessary.

L. Where conditions do not allow for storage of materials, materials excavated from the first 100 feet of any opening, or from such additional length as may be required, shall be removed from the street by Contractor as soon as excavated.

M. The material subsequently excavated shall be used to refill the trench where the utility has been built, provided it fulfills the requirements for fill materials.

N. If more material is excavated from any trench, excavation, or pit than can be refilled over the completed work or stored on the street, leaving space for traffic as herein provided, or within the limits of the right-of-way, the excess material shall be spoiled at locations selected and obtained by Contractor.

O. When the facility is complete, Contractor shall bring back adequate amounts of satisfactory excavated materials as may be required to properly refill the trenches, excavations, or pits.

P. If directed by Engineer, Contractor shall refill such trenches, excavations, or pits with special backfill or other suitable materials, and excess excavated materials shall be disposed as spoil.

3.04 STOCKPILE CLEANUP

A. Remove stockpile, leave area in clean and neat condition. Grade Site surface to prevent free standing surface water.

B. When borrow area is indicated, leave area in clean and neat condition.

C. Grade Site surface to prevent free standing surface water.

END OF SECTION

SECTION 31 05 16

AGGREGATES FOR EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes material requirements and gradations for all unbound aggregates required by the Contract Documents.

B. Aggregate mixes including in this specification include:
   1. Granular Fill.
   2. Pipe Bedding.
   3. Select Structural Fill.
   4. Sand Fill.

1.02 REFERENCE STANDARDS

A. The following is a list of standards that may be referenced in this Section:
   1. American Association of State Highway Transportation Officials (AASHTO):
      a. M147, Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses.
      b. T180, Standard Specification for Moisture-Density Relations of Soils Using a 10-lb Rammer and a 18-in. Drop.
   2. ASTM International (ASTM):
      a. C88, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
      b. C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
      c. D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3).
      d. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3).
      e. D2487, Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
      f. D4318, Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.03 SUBMITTALS

A. Comply with Section 01 33 00, Submittal Procedures.

B. Materials Source: Name of imported materials Suppliers.

1.04 QUALITY ASSURANCE

A. Furnish each aggregate material from single source throughout Work.

PART 2 - PRODUCTS

2.01 GENERAL

A. All granular materials shall be free from any organic or other deleterious materials.

B. The quality of the gravel or stone particles shall be demonstrated per ASTM C88.

C. The maximum weight loss at four (4) cycles shall be 20 percent.

2.02 MATERIALS

A. Granular Fill:
   1. Crusher run gravel, conforming to NYSDOT 733-04, Type 2 or Type 4.
   2. Percent passing by weight per sieve size:
      a. 2-inch: 100.
      b. 1/4-inch: 25 to 65.
      c. No. 40: 5 to 40.
      d. No. 200: 0 to 10.

B. Pipe Bedding:
   1. Shall consist of clean, sound, crushed stone and shall be free from coatings.
   2. Conform to NYSDOT 703-02 for coarse aggregate requirements.
   3. NYSDOT No. 1 Stone Gradation, Table 703-4:
      a. Percent passing by weight per sieve size:
         1) 1 inch: 100.
         2) 1/2 inch: 90 to 100.
         3) 1/4 inches: 0 to 15.
         4) No. 200: 0 to 1

C. Structural Fill:
   1. Shall be “Granular Fill” as specified herein.

D. Select Structural Fill:
   1. Shall consist of clean, sound crushed stone and shall be free from coatings.
   2. Shall conform to NYSDOT 703-02 for coarse aggregate requirements.
   3. NYSDOT No. 2 Stone Gradation, Table 703-4:
      a. Percent passing by weight per sieve size:
         1) 1-1/2 inch: 100.
         2) 1 inch: 90 to 100.
         3) 1/2 inch: 0 to 15.

4) No. 200: 0 to 1.

E. Sand Fill:
1. Clean, hard, durable, uncoated particles, free from clay lumps and all deleterious substances.
2. Cushion sand, conforming to NYSDOT 703-06
3. Dry gradation, per Table 703-9:
a. Percent passing by weight per sieve size:
1) 1/4-inch: 100.
2) No. 50: 0 to 35.
3) No. 100: 0 to 10.

2.03 SOURCE QUALITY CONTROL

A. Coarse Aggregate Material, Testing and Analysis: Perform sieve analysis, plasticity index, and soundness tests in accordance with ASTM C136, ASTM D4318.

B. When tests indicate materials do not meet specified requirements, change material and retest at Contractor's expense.

PART 3 - EXECUTION

3.01 HAULING MATERIAL

A. When it is necessary to haul material over the streets or pavements, Contractor shall provide suitable tight vehicles so as to prevent deposits on the streets or pavements.

B. In all cases where any materials are dropped from the vehicles, Contractor shall clean up the same at least daily or as often as directed and keep the crosswalks, streets and pavements clean and free from dirt, mud, stone and other hauled material.

3.02 STOCKPILING

A. Stockpile materials on Site at locations designated on the Drawings, the SWPPP, or as otherwise approved by Engineer.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. Separate different aggregate materials with dividers or stockpile individually to prevent mixing.

D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

E. Stockpile unsuitable materials on impervious material and cover to prevent erosion and leaching, until disposed.

3.03 STOCKPILE CLEANUP

A. Remove stockpile, leave area in clean and neat condition.

B. Grade Site surface to prevent free standing surface water.

END OF SECTION

SECTION 31 05 19.13

GEOTEXTILES FOR EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes performance and material requirements of geotextile underlayments as called on the Drawings, including:
   1. Filter fabric.
   2. Soil stabilization fabric.

1.02 REFERENCE STANDARDS

A. The following is a list of standards which may be referenced in this section:
   1. American Association of State Highway and Transportation Officials (AASHTO):
      a. M288, Standard Specification for Geotextile Specification for Highway Applications.
   2. ASTM International (ASTM):
      a. D4355, Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus.
      b. D4491, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
      c. D4533, Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
      d. D4632, Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
      e. D4751, Standard Test Method for Determining Apparent Opening Size of a Geotextile.
      f. D4833, Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products.
      g. D4873, Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples.
      h. D4884, Standard Test Method for Strength of Sewn or Bonded Seams of Geotextiles.
      i. D4886, Standard Test Method for Abrasion Resistance of Geotextiles (Sand Paper/Sliding Block Method).
      j. D6524, Standard Test Method for Measuring the Resiliency of Turf Reinforcement Mats (TRMs).
      k. D6525, Standard Test Method for Measuring Nominal Thickness of Rolled Erosion Control Products.
      l. D6566, Standard Test Method for Measuring Mass per Unit Area of Turf Reinforcement Mats.

m. D6567, Standard Test Method for Measuring the Light Penetration of a Turf Reinforcement Mat (TRM).
n. D6575, Standard Test Method for Determining Stiffness of Geosynthetics Used as Turf Reinforcement Mats (TRMs).
o. D6818, Standard Test Method for Ultimate Tensile Properties of Rolled Erosion Control Products.

1.03 SUBMITTALS

A. Comply with Section 01 33 00, Submittal Procedures.

B. Action submittals:
1. Product Data:
a. Manufacturer information including tensile strength, elongation, thickness, UV resistance, and other material specifications.
2. Manufacturer's Certificate: Products meet or exceed specified requirements.
3. Manufacturer Instructions: Installation requirements, including storage and handling procedures.

1.04 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.

B. Installer: Company specializing in performing Work of this Section with minimum three years of experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Inspection: Accept materials on Site in Manufacturers' original packaging and inspect for damage.

B. Comply with ASTM D4873.

C. Store materials according to manufacturer instructions.

D. Protection:
1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

1.06 WARRANTY

A. The Contractor shall obtain and submit to the Owner from the manufacturer a standard warranty provided for the geotextiles.

B. The warranty shall guarantee that the geotextile shall remain free from defects for a minimum of one (1) year from the date of substantial completion of the project.

C. The Engineer will review the warranty for completeness prior to the Owner accepting its provisions.

PART 2 - PRODUCTS

2.01 FILTER FABRIC

A. Description: Non-woven polypropylene, needle-punched fabric.

B. Performance and design criteria:
1. Weight: 4.5 oz / sq. yd., per ASTM D5261.
2. Grab tensile: 120 lbs, per ASTM D4632.
3. Grab elongation: 50%, per ASTM D4632.
4. Trapezoidal tear strength: 50 lbs, per ASTM D4533.
5. CBR puncture Resistance: 340 lbs, per ASTM D6241.
6. Permittivity: 1.7 per second, per ASTM D4491.
7. Water flow: 120 gpm / sq ft.
8. AOS: No. 70 U.S. Sieve, per ASTM D4751.
9. UV Resistance: 70%, per ASTM D4355.

C. Manufacturer:
1. GEI Works.
2. Or approved equal.

2.02 SOIL STABILIZATION FABRIC

A. Description:
1. Non-biodegradable, UV-resistant, woven geotextile fabric.
2. Material: Polypropylene.
3. Edges: Salvaged or finished to prevent separation of outer material.
4. Calendar such that yarns will retain relative positions.

B. Performance and design criteria:
1. Comply with AASHTO M288.
2. Mass per unit area: 6.0 oz./sq. yd. in accordance with ASTM D5261.
3. Tensile Strength (Grab): 315 lbs.
4. Maximum Elongation (at Break): 15 percent, in accordance with ASTM D4632.
5. Trapezoidal Tear: 120 lbs., in accordance with ASTM D4533.
6. CBR puncture Resistance: 1000 lbs, per ASTM D6241.
7. Permittivity: 0.005 per second, per ASTM D4491.
8. Water flow: 4 gpm / sq ft.
9. AOS: No. 40 U.S. Sieve, per ASTM D4751.
10. UV Resistance (at 500 hours): 70%, in accordance with ASTM D4355.

C. Manufacturers:
   1. U.S. Fabrics.
   2. Or approved equal.

2.03 ACCESSORIES

A. Sewing thread: Durability equal to or greater than durability of geotextile.

2.04 SOURCE QUALITY CONTROL

A. Certificate of Compliance:
   1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
   2. Specified shop tests are not required for Work performed by approved manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that underlying surface is smooth and free of ruts or protrusions that could damage geotextile material.

3.02 PREPARATION

A. Subgrade Material and Compaction Requirements: As specified in Section 31 22 13, Subgrade Preparation.

3.03 INSTALLATION

A. Geotextile material:
   1. Lay and maintain smooth and free of tensile stresses, folds, wrinkles, or creases.
   2. Ensure that material is in direct contact with subgrade.
   3. Orient with long dimension of each sheet parallel to direction of slope.
   4. Minimum unseamed joints overlap: 18 inches.

B. Sand bags: Secure all geotextiles with sandbags, or an equivalent approved anchoring system.

C. Seams:
   1. Minimum seamed joints overlap: 18 inches at longitudinal and transverse joints.
   2. Seams across slope: Lap upper panel over lower panel.

3. Side Slopes:
   a. In all cases, seams on side slopes shall be parallel to the line of slope and sewn or fusion welded 5 feet from the toe-of-slope upward over the length of the slope and into the anchor trench.
   b. No horizontal seams shall be allowed on side slopes, except for patching.
4. Sewn Seams:
   a. Continuously sew seams on slopes greater than 10 percent.
   b. Stitch Type: As recommended by geotextile manufacturer.
   c. Tie off thread at the end of each seam to prevent unraveling.

D. Penetrations: As recommended by geotextile manufacturer.

E. Repairing Damaged Geotextiles:
1. On slopes:
   a. A patch made from the same geotextile shall be double seamed into place; with each seam 1/4-inch to 3/4-inch apart and no closer than 1 inch from any edge.
   b. Should any tear exceed 10% of the width of the roll, that roll shall be removed from the slope and replaced.
2. Flat slopes:
   a. A patch made from the same geotextile shall be spot-seamed in place with a minimum of 24 inches of overlap in all directions.
   b. Remove and replace geotextile rolls which cannot be repaired.

F. Fill and Cover:
1. Place fill to prevent tensile stress or wrinkles in geotextile.
2. Place fill from bottom of side-slopes upward.
3. Do not drop fill from height greater than 3 feet.

3.04 PROTECTION

A. Ballast: Provide adequate ballast to prevent uplift.

B. UV Exposure: Do not leave material uncovered for more than 14 days after installation.

C. Do not use staples or pins to hold geotextiles in place where located adjacent to other geosynthetic layers that could be damaged.

D. Do not operate equipment directly on top of geotextile.

3.05 POST-CONSTRUCTION

A. Upon completion of installation, the Contractor shall submit to the Engineer:
1. All quality control documentation.
2. The warranty obtained from the Manufacturer/Fabricator.

END OF SECTION

SECTION 31 21 00

EXCAVATING, BACKFILLING AND COMPACTING FOR STRUCTURES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Excavating, Backfilling and Compacting For Structures, as shown on the Plans and specified.

B. Excavation, in open cut, includes the loosening, removing, transporting, storage and disposal of all materials necessary to be removed for the construction and completion of all work under the Contract. Excavations shall be made to the widths and depths shown on the Plans and specified.

C. The Contractor shall be responsible for maintaining the stability of any excavations and for any damage or injury to any persons property or structures as a result.

D. Where rock is encountered, the excavations shall be done in accordance with the applicable provisions hereof.

1.02 REFERENCES

A. The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. American Society for Testing and Materials (ASTM) Publications. Reference to standard Specifications is intended to specify minimum standards for quality of materials and performance of workmanship, and for standard test methods.

1.03 DEFINITIONS

A. The term "excavation" and the term "trenching" where used, shall be deemed and understood to cover the following described work, and the price bid for any and all items including "excavation", or "trenching" shall be deemed to include and cover all of the several following detailed operations:

1. The loosening, removing, transporting, storage and rehandling of all materials;
2. All sheeting, bracing and shoring, and the placing, cutting off and removing of the same;
3. All ditching, pumping, bailing, dewatering and draining or otherwise disposing of water (surface and subsurface);

4. The refilling of trenches, excavations and pits, and the furnishing and placing of material over trenches, excavations and pits to the original surface of the ground or to other grades as may be shown or directed;
5. The compacting of all materials used in filling or refilling by rolling, ramming, watering, puddling, etc., as may be required;
6. The removing and disposing of all surplus materials from all excavations in the manner specified;
7. The maintenance, accommodation and protection of travel;
8. All temporary bridging, fencing and barricades and the removing of same.
9. The removing and clearing away of all construction rubbish, refuse, unused materials, plant and tools from the site;
10. The dressing, topsoiling, sodding and/or seeding of all unpaved areas disturbed by the Contractor within and outside the limits of the Contract as may be necessary to leave the surface in as good condition as it was previous to the commencement of the work.

B. "Earth" includes all materials, such as sand, gravel, clay loam, pavements, ashes, cinders, muck, roots, or pieces of timber, soft or disintegrated rock, not requiring barring or wedging from their original beds, and specifically excludes all ledge or bed rock, and individual boulders or masonry larger than one-half cubic yard in volume.

C. "Backfill" includes selected materials for the backfilling or refilling of all excavations and trenches up to the original surface of the ground or to other grades as may be shown or directed.

D. "Lining" includes selected materials utilized for the embedment of underground piping for the purpose of structural support and/or protection of the piping installed.

E. "Spoil" includes surplus excavated materials not required or not suitable for backfills or embankments.

F. "Embankments" include fills constructed of selected materials above the original surface of the ground.

G. “Rock" includes ledge or bedrock requiring barring or wedging from their original beds and individual boulders or masonry larger than one-half cubic yard in volume.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS/COMMON FILL

A. Where used for general site fill or suitable backfill, soil material shall be free of debris, roots, wood, scrap material, vegetable matter, refuse, soft unsound particles, frozen, deleterious, or objectionable materials.

2.02 CONTROLLED FILL

A. Controlled fill material shall be structural fill as specified in Section 31 05 16, "Aggregates For Earthwork." Indigenous soils subgrade shall be removed and replaced with in accordance with geotechnical report no. 27941-05 written by CME Associates, Inc. on July 21, 2022.

2.03 LINING

A. Lining material, where specified, for the embedment of piping shall be clean sand or pea stone.

2.04 PEA STONE

A. Where specified as backfill, pea stone shall consist of clean sound screened gravel with a minimum quality of 20 percent maximum loss weight at 4 cycles as tested by the magnesium sulfate soundness test. Gradation shall be as follows:

% Passing	Sieve
100	½"
20-100	¼"
0-15	No. 10
0-5	No. 20

PART 3 - EXECUTION

3.01 EXCAVATION FOR STRUCTURES

A. Excavation shall be of sufficient size, and only of sufficient size, to give suitable room for the proper construction of structures and appurtenances, including allowances for sheeting, dewatering, and other similar work necessary for completion of the Contract.

B. Excavations for structures shall be made only to the lines and grades shown on the Plans, specified or directed.

C. In no case will under cutting excavation faces be permitted.

D. Subgrade for all footings and foundations shall be undisturbed original earth, thoroughly compacted where noted on drawings. Keep all excavations free from water. Excavate soil disturbed or weakened by Contractor's operations and soils softened or made unsuitable for subsequent construction due to exposure to weather.

1. Where excavation below subgrade is ordered, it shall be thoroughly compacted and consolidated structural fill as directed and as specified in Section 31 05 16. It shall be sufficiently stable to remain firm and intact during the surfacing of subgrade, laying reinforcing steel and placing concrete thereon.

3.02 BACKFILLING AROUND STRUCTURES

A. Backfilling around structures shall not be commenced until all lumber, refuse, rubbish and other similar materials are removed from the excavated area. Backfill around structures may be placed by machine, provided the work shall be done carefully to prevent damage to the structure. In no case shall backfill materials be allowed to fall directly on a structure, until at least twelve (12) inches of hand-placed material has been placed thereon and compacted.

B. Backfill around structures shall be deposited in horizontal layers not more than eight (8) inches in thickness and shall be thoroughly compacted. Compaction shall be by a vibrating tamper or other approved method and shall be to a minimum dry density of ninety-five (95) percent of the maximum dry weight density in pounds per cubic foot as determined by the Modified Proctor Compaction Test (ASTM D1557). Compact adjacent areas, beyond five (5) feet of a slab or structure, to ninety (90) percent of ASTM D1557.

C. Backfilling shall be done immediately after work has been inspected and approved. No frozen material shall be used, nor shall backfilling be placed on or against frozen earth, debris or other deleterious matter not conducive to proper compaction.

D. Contractor shall take every necessary precaution during compaction of fill adjacent to foundations, walls, etc., that such items are not displaced from their proper location or damaged by compacting equipment. In the event damage or displacement occurs during or resulting from compaction of fill as specified above, the Contractor shall be responsible for correcting the same, to approval of the Engineer and at no expense to the Owner.

E. Controlled fill within building lines, under concrete slabs and aprons shall be structural fill as specified in Section 31 05 16. Areas of completed fill which are to receive slabs, pavements and structures, etc., shall be kept free of standing water or otherwise protected from any loss of compaction density.

3.03 TRENCHING

A. The alignment, depth and pipe subgrades of all pipe trenches shall be determined by electrical laser beam or other grade control devices, installed and maintained by the Contractor.

B. Width and Depth of Trenches: The trenches in which pipelines are to be constructed, shall be excavated in all cases in such manner and to such depths and widths as will give suitable room for the pipelines which the trenches are to contain, for stability, sheeting, pumping, dewatering, and draining of water, and for removing the material not suitable for pipe subgrade.

C. Unless otherwise specified, trenches for pipes shall be not less than six (6) inches wider and deeper than the hubs of the pipe on each side and below, when measured from the hubs of the pipe.

3.04 EARTH SUBGRADE PREPARATION FOR PIPES

A. Unless otherwise permitted by the Engineer, the trench shall have a flat bottom conforming to the grade to which the pipe is to be laid.

B. Pipe subgrade preparation shall be performed immediately prior to installing the pipe in the trench. The trench bottom shall be accurately graded by means of hand tools in such a manner that a uniform and continuous bearing and support on solid and undisturbed ground is provided for each pipe for its entire length.

C. All trenches shall be so graded that the pipe will be accurately centered when laid, without raising the pipe off the trench bottom. Regrading of a trench bottom which is too high will be permitted. Correction of a subgrade that is too low shall be done only by placing and compacting structural fill over the entire width of the trench and regrading.

3.05 PIPE LINING

A. All pipe shall be protected from lateral displacement and possible damage resulting from superimposed backfill loads, impact or unbalanced loading during backfilling operations by being adequately embedded in the specified pipe lining material. Except where loading or subsoil conditions require the use of concrete cradle or encasement, all pipe lining shall be placed so as to insure adequate lateral and vertical stability of the installed pipe during embedment operations. The amount of the specified pipe lining material to hold the pipe in alignment shall extend not less than 6 inches in any direction from the pipe and shall be uniformly deposited on each pipe laid.

B. Pipe lining materials placed at any point below an elevation six (6) inches above the top of pipe, shall be deposited and compacted in layers not to exceed four (4) inches in uncompacted depth, and such deposition and compactions shall be done simultaneously and uniformly on both sides of the pipe. Compaction shall be by

vibrating tamper or other approved method and shall be to a minimum dry density of ninety-five (95) percent of the maximum dry weight density in pounds per cubic foot as determined by the Modified Proctor Compaction Test. All such materials shall be placed in the trench with hand tools in such a manner that they will be scattered alongside the pipe and not dropped into the trench in compact masses.

3.06 BACKFILL ABOVE PIPE LINING

A. The portion of pipe trenches between the top of the pipe lining and the upper limit of backfill shall be refilled with suitable materials as shown or indicated on drawings, or as specified herein.

B. Where trenches are within structures or the ditch-to-ditch or edge of pavement limits of any road, driveway or other recognized traveled vehicular way, or within other limits that may be specifically shown or specified for this purpose, the backfill materials shall be deposited in the trench in horizontal layers not more than six (6) inches in thickness, and each layer shall be compacted by vibrating tamper or other approved method and shall be to a minimum dry density of ninety-five (95) percent of the maximum dry weight density in pounds per cubic foot as determined by the Modified Proctor Compaction Test (ASTM D1557).

3.07 REMOVAL OF WATER

A. The Contractor shall at all times during construction provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the prosecution of the work or the proper placing of pipe, masonry, concrete, structures, or other work.

B. Removal of water includes the construction and removal of sheeting and bracing, the furnishing of materials, equipment and labor necessary therefore, the excavation and maintenance of ditches and sluice-ways and the furnishing and operation of pumps, and appliances needed to maintain thorough drainage of the work in a satisfactory manner.

C. Water shall not be allowed to rise over or come in contact with any masonry, concrete or mortar, until at least twenty-four (24) hours after placement, and no stream of water shall be allowed to flow over such work until such time as the Engineer may permit.

D. Unless otherwise specified, all excavations which extend down to below the groundwater elevation at the sites of structures shall be dewatered by lowering and maintaining the groundwater beneath such excavations at an elevation not less than that specified herein at all times when work thereon is in progress, during subgrade preparation and the placing of the structures or pipe thereon.

E. Where an upward pressure or flow of water in combination with a fine-grained subsurface material causes a quick condition, the Contractor shall install wellpoints to stabilize the subgrade. Where wellpoints are used, the groundwater table shall be continuously (day and night) maintained to an elevation of not less than twenty-four (24) inches below the excavation and when subgrade is reached the groundwater shall be maintained not less than twenty-four (24) inches below the subgrade. Unless otherwise permitted by the Engineer, the groundwater shall be maintained not less than twenty-four (24) inches below the subgrade until completion of the backfilling to an elevation at least twelve (12) inches above natural groundwater level. Wellpoint headers, points, and other pertinent equipment shall not be placed within the limits of the excavation in such a manner or location as to interfere with the laying of pipe or trenching operations or with the excavation for and construction of other structures.

F. In areas where groundwater enters the excavation but does not cause a quick condition, the groundwater may be removed by any practical method which does not damage the subgrade, cause the same to become unstable or interferes with construction operations.

G. The groundwater control requirements specified for wellpointing operations apply to other dewatering methods.

H. Suitable stand-by pumping equipment shall be provided to insure the maintenance of the specified lowering of the water table.

I. Water pumped or drained from excavations, or drains, or water courses encountered in the work, shall be disposed of in a suitable and environmental manner without injury to adjacent property, the work under construction, or to pavements, roads, and drives. No water shall be discharged to sanitary sewers. If petroleum contaminated groundwater is encountered, the Contractor shall notify the Engineer immediately.

J. Any damage caused by improper handling of water shall be repaired by the Contractor at his own expense.

3.08 SHEETING & BRACING

A. The Contractor shall furnish, place and maintain such sheeting, bracing and shoring as may be required to support the sides and ends of excavations in such manner as to prevent any movement which could, in any way, injure the pipe, sewers, masonry, or other work; diminish the width necessary; otherwise damage or delay the work; or endanger existing structures, pipes or pavements; cause the excavation limits to exceed the right-of-way limits; or to occasion a hazard to persons engaged on the project or to the general public.

B. In no case will bracing be permitted against pipes or structures in trenches or other excavations.

C. The Contractor shall be solely responsible for the safety and adequacy of all sheeting and bracing. He shall make good any damage resulting from failure of supports with no additional cost to Owner.

D. Removal of Sheeting & Bracing:

1. In general, all sheeting and bracing, whether of steel, timber or other material, used to support the sides of trenches or other open excavations, shall be withdrawn as the trenches or other open excavations are being refilled. That portion of the sheeting extending below the top of a pipe or structure shall be withdrawn, unless directed, before more than six (6) inches of earth is placed above the top of the pipe or structure and before any bracing is removed. The voids left by the sheeting shall be carefully refilled with selected material and rammed tight with tools especially adapted for the purpose, or otherwise as may be approved.
2. The Engineer may order the Contractor to delay the removal of sheeting and bracing, if in his judgment the installed work has not attained the necessary strength to permit placing of backfill.

3.09 STORAGE OF MATERIAL

A. All excavation materials shall be stored in locations so as not to endanger the work, and so that easy access may be had at all times to all parts of the excavation. Stored materials shall be kept neatly piled and trimmed. All stockpiled fill material shall be stored only in those fill areas as approved by the Owner.

3.10 ADDITIONAL EXCAVATION

A. In case the materials encountered at the locations and grades shown on the Plans or specified are not suitable, or in case it is found desirable or necessary to excavate additional materials to secure good support for the structure or pipeline, the excavation shall be carried to such additional limits as the Engineer may direct. The Contractor shall refill such additional excavated space with either structural fill, Class "D" or "E" concrete or other material, as the Engineer may direct. Additional excavation, backfill material, concrete or other materials so ordered, will be paid for under the appropriate items of the Contract.

3.11 UNAUTHORIZED EXCAVATION

A. Whenever excavations are carried beyond or below the lines and grades shown on the Plans, or as given or directed by the Engineer, all such excavated space shall be refilled with structural fill, concrete or other materials as directed by the Engineer. All refilling of unauthorized excavations shall be at the Contractor's own expense.

B. All material which slides, falls or caves into the established limits of excavations due to any cause whatsoever shall be removed and disposed of at the Contractor's own expense, and no extra compensation will be paid the Contractor for any materials ordered for refilling the void areas left by the slide, fall or cave-in.

3.12 DISPOSAL OF MATERIALS

A. All clean spoil shall be transported and placed on-site at a location approved by Owner. No environmental sensitive areas shall be used for spoil areas.

B. The surface of all spoil placed on the Site shall be graded and dressed, and no unsightly mounds or heaps shall be left on completion of the work.

END OF SECTION

SECTION 31 22 13

SUBGRADE PREPARATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:
1. Cutting, grading, filling, rough contouring, and compacting Site for structures, building pads, features, and roadways.

1.02 REFERENCES

A. The following is a list of standards which may be referenced in this section:
1. ASTM International (ASTM):
a. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
b. D5519, Standard Test Methods for Particle Size Analysis of Natural and Man-Made Riprap Materials.
c. D6913, Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis.
d. D6938, Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods.
e. D7928, Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Graded Soils Using the Sedimentation (Hydrometer) Analysis.

1.03 SUBMITTALS

A. Comply with Section 01 33 00, Submittal Procedures.

B. Informational submittals:
1. Submit field Proctor curves for each subgrade soil type to be prepared.

1.04 DEFINITIONS

A. Optimum moisture content: As defined in Section 31 23 23, Fill.

B. Prepared ground surface: Ground surface after completion of clearing and grubbing, scalping of sod, stripping of topsoil, excavation to grade and scarification and compaction of subgrade.

C. Relative compaction: As defined in Section 31 23 23, Fill.

D. Subgrade: Layer of existing soil after completion of clearing, grubbing, scalping of topsoil prior to placement of fill, roadway structures or base for floor slab.

E. Proof-rolling: Testing of subgrade by compactive effort to identify areas that will not support the future loading without excessive settlement.

1.05 SCHEDULING AND SEQUENCING

A. Prepare subgrade when unfrozen and free of ice and snow.

1.06 QUALITY ASSURANCE

A. Notify the Engineer when subgrade is ready for compaction or proof-rolling or whenever compaction or proof-rolling is resumed after a period of extended inactivity.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. Verify survey bench mark and intended elevations for Work are as indicated.

B. Keep subgrade free of water, debris and foreign matter during compaction or proof-rolling.

C. Bring subgrade to proper grade and cross-section and uniformly compact surface.

D. Do not use sections of prepared ground as haul roads. Protect prepared subgrade from traffic.

E. Maintain prepared ground surface in finished condition until next course or lift is placed.

3.02 FIELD PROCTORS

A. Contractor shall collect representative samples of the subgrade soils to be prepared for improvement and send to an approved soils laboratory for determination maximum consolidation and optimum moisture in accordance with ASTM D1557.

B. The Contractor shall determine optimum moisture and maximum density for each soil type incorporated into the Work and when the same subsoils are sourced from different suppliers.

3.03 PREPARATION

A. Comply with 16 NYCRR 753 and call UDIG NY not less than three working days before performing Work.

B. Request underground utilities to be located and marked within and surrounding construction areas.

C. Identify required lines, levels, contours, and datum.

D. Protect utilities and/or site features indicated to remain from damage.

E. Protect plant life, lawns, and other features remaining as portion of final landscaping.

F. Protect benchmarks from excavating equipment and vehicular traffic.

3.04 SUBSOIL EXCAVATION

A. Excavate subsoil from areas to be further excavated, or regraded.

B. Do not excavate wet subsoil or excavate and process wet material to obtain optimum moisture content.

C. When excavating through roots, perform Work by hand and cut roots with sharp axe.

D. Stockpile subsoil in area designated on Site to depth not exceeding 8 feet and protect from erosion.

3.05 FILLING

A. Fill areas to contours and elevations with unfrozen materials.

B. Tolerances: Top surface of subgrade shall be filled to +/-0.10 foot from Plan elevation.

3.06 COMPACTION

A. Under Unpaved Areas:
   1. Compact upper 6 inches to minimum of 90 percent of the Modified Proctor.

B. Under Pavement Structure, Floor Slabs on Grades, or Granular Fill Under Structures: Compact the 6-inch lifts to minimum 95 percent of the Modified Proctor.

3.07 MOISTURE CONDITIONING

A. Acceptable subgrade moisture range shall be between +3% and -2% of Optimum Moisture, as determined by the field Proctor.

B. Dry subgrade: Add water, then mix to make moisture content uniform throughout.

C. Wet subgrade: Aerate material by blading, disking, harrowing, or other methods to hasten the drying process.

3.08 FIELD QUALITY CONTROL

A. Proof-roll subgrade with equipment specified herein to detect soft or loose subgrade or unsuitable material.

B. Suitability Determination:
   1. Test soft areas identified through proof-rolling for Optimum Moisture and density, per ASTM D6938.
   2. Unsuitable subgrade:
      a. If moisture is within optimum tolerances established by the field Proctors and the material is still yielding under compactive effort, relative to adjacent subgrade, then the material will be deemed unsuitable.
      b. Notify the Engineer of unsuitable material prior to over-excavation.

C. Perform laboratory material tests according to ASTM D1557 and ASTM D422.

D. Perform in place compaction tests according to following:
   1. Density and moisture tests: ASTM D6938.

E. Minimum frequency of testing: Every 500 square feet of the prepared subgrade.

3.09 CORRECTIVE ACTION

Soft or loose subgrade:
   1. Over-excavate the unsuitable material to no deeper than 2 feet, in accordance with Section 31 23 16, Excavation.
   2. Line over-excavation with soil stabilization fabric, backfill with Select Structural Fill, and compact to maximum density.
   3. Notify Engineer if unsuitable material extends to greater than 2 feet deep.

END OF SECTION

SECTION 31 23 19

DEWATERING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:
1. Surface water control system.
2. Water disposal.

B. Related Work specified elsewhere:
1. Section 01 57 13, Temporary Erosion and Sediment Control
2. Section 31 05 16, Aggregates for Earthwork

1.02 REFERENCE STANDARDS

A. The following is a list of standard which may be referenced in this Section:
1. ASTM International (ASTM):
a. C33, Standard Specification for Concrete Aggregates.

1.03 SUBMITTALS

A. Comply with Section 01 33 00, Submittal Procedures.

Informational submittals:
1. Submit proposed dewatering plan, including the following:
a. Product information for sediment control.
b. Pump product information, cut sheets, and performance curves.

1.04 DEFINITIONS

A. Dewatering includes the following:
1. Surface Water Control: Removal of surface water within open excavations or cofferdams.

1.05 SYSTEM DESCRIPTION

A. Augment this article as required for project conditions.

B. Provide dewatering and surface water control systems to permit Work to be completed on dry and stable subgrade.

C. Furnish standby equipment stored at Project site and ready for immediate use upon failure of dewatering equipment.

1.06 PERFORMANCE REQUIREMENTS

A. Design dewatering systems to:
   1. Lower water table within areas of excavation to minimum of 2 feet below bottom of excavation to permit Work to be completed on dry and stable subgrade.
   2. Relieve hydrostatic pressures in confined water bearing strata below excavation to eliminate risk of uplift or other instability of excavation.
   3. Prevent damage to adjacent properties, buildings, structures, utilities, and facilities from construction operations.
   4. Prevent loss of fines, quick condition, or softening of foundation subgrade.
   5. Maintain stability of sides and bottoms of excavations and trenches; face, walls, and bottoms of tunnels; and side and bottoms of shafts.

B. Design surface water control systems to:
   1. Collect and remove surface water and seepage entering excavation.

1.07 QUALITY ASSURANCE

A. Comply with authorities having jurisdiction for the following:
   1. Drilling and abandoning of wells used for dewatering systems.
   2. Water discharge and disposal from pumping operations.
   3. Assume sole responsibility for dewatering and surface water control systems and for loss or damage resulting from partial or complete failure of protective measures and settlement or resultant damage caused by ground water control operations.

1.08 SEQUENCING

A. Sequence work to obtain required permits before start of dewatering operations.

B. Sequence Work to install and test monitoring systems minimum 3 days before testing and operating dewatering systems.

C. Sequence work to install and test dewatering and surface water control systems minimum 3 days before starting excavation, trenching, tunneling, and/or shaft drilling.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

3.01 EXAMINATION

A. Comply with 16 NYCRR 753 and call Dig Safely New York Utility Line Information service at 811 not less than three (3) working days before performing Work.

B. Request underground utilities to be located and marked within and surrounding construction areas.

3.02 PREPARATION

A. Protect existing adjacent buildings, structures, and improvements from damage caused by dewatering operations.

3.03 DEWATERING SYSTEM

A. Locate system components to allow continuous dewatering operations without interfering with installation of permanent Work and existing public right-of-way, sidewalks and adjacent buildings, structures, and improvements.

B. Water shall not be allowed to rise over or come in contact with any masonry, concrete or mortar, until at least twenty-four (24) hours after placement, and no stream of water shall be allowed to flow over such work until such time as the Engineer may permit.

C. Unless otherwise specified, all excavations which extend down to below the ground water elevation at the sites of structures shall be dewatered by lowering and maintaining the ground water beneath such excavations at an elevation not less than that specified herein at all times when work thereon is in progress, during subgrade preparation and the placing of structures or pipe thereon.

D. Install wellpoints to stabilize the subgrade when an upward pressure or flow of water in combination with a fine-grained subsurface material may cause a quick condition.

E. Wellpoint headers, points and other pertinent equipment shall not be placed within the limits of the excavation in such a manner or location as to interfere with the laying of pipe or trenching operations or with the excavation for and construction of other structures.

F. In areas where ground water enters the excavation but does not cause a quick condition, the ground water may be removed by any practical method which does not damage the subgrade, cause the same to become unstable or interferes with the construction operations.

3.04 SURFACE WATER CONTROL SYSTEM

A. Provide ditches, berms, and other devices to divert and drain surface water from excavation area.

B. Divert surface water and seepage water within excavation areas into sumps and pump water into drainage channels, storm drains, and/or settling basins in accordance with requirements of agencies having jurisdiction.

C. Control and remove unanticipated water seepage into excavation.

3.05 SYSTEM OPERATION AND MAINTENANCE

A. The Contractor shall at all times during construction provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the prosecution of the work or the proper placing of pipe, masonry, concrete, structures or other work.

B. Where wellpoints are used, the groundwater table shall be continuously (day and night) maintained to an elevation of not less than twenty-four (24) inches below the excavation and when subgrade is reached the ground water shall be maintained not less than twenty-four (24) inches below the subgrade.

C. The ground water control requirements specified for well-pointing operations apply to other dewatering methods.

D. Operate dewatering system continuously until backfill is minimum 1 foot above normal ground water table elevation and structures will not float.

E. Suitable stand-by pumping equipment shall be provided to insure the maintenance of the specified lowering of the water table.

F. Provide supervision of dewatering system by personnel skilled in operation, maintenance, and replacement of system components.

G. Conduct daily observation of dewatering system and monitoring system.

H. Make required repairs and perform scheduled maintenance.

I. Fill fuel tanks before tanks reach 25 percent capacity.

J. Modify dewatering and surface water control systems when operation causes or threatens to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells.

K. Correct unanticipated pressure conditions affecting dewatering system performance.

L. Do not discontinue dewatering operations without Engineer's approval.

M. Repair all damage caused by improper management of water.

3.06 WATER DISPOSAL

A. Water pumped or drained from excavations, or any sewers, drains, or water courses encountered in the work, shall be disposed of in a suitable and environmental manner without injury to adjacent property, the work under construction, or to pavements, roads and drives.

B. No water shall be discharged into sanitary sewers.

C. Sanitary sewage shall be pumped to sanitary sewers or shall be disposed of by an approved method.

3.07 SYSTEM REMOVAL

A. Remove dewatering and surface water control systems after dewatering operations are discontinued.

3.08 FIELD QUALITY CONTROL

A. After dewatering system is installed, perform pumping test to determine when selected pumping rate lowers water level in well below pump intake.

B. Adjust pump speed, discharge volume, or both to ensure proper operation of each pump.

END OF SECTION

SECTION 32 31 13

CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes all performance and material requirements for temporary construction and permanent chain-link fences and gates as shown on the Drawings.

B. Scope of the work includes:
   1. Fence framework, fabric, and accessories.
   2. Excavation for post bases.
   3. Concrete foundation for posts.
   4. Manual gates and related hardware.

1.02 REFERENCE STANDARDS

A. The following is a list of standards which may be referenced in this section:
   1. ASTM International (ASTM):
      a. A121, Standard Specification for Metallic-Coated Carbon Steel Barbed Wire.
      b. A123. Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
      c. A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
      d. A392, Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.
      e. A491, Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric.
      f. A780, Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
      g. A817, Standard Specification for Metallic-Coated Steel Wire for Chain-Link Fence Fabric and Marcelled Tension Wire.
      h. A824, Specification for Metallic-Coated Steel Marcelled Tension Wire for use with Chain Link Fence.
      i. A1011, Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
      j. B429, Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.
      k. C94, Standard Specification for Ready-Mixed Concrete.
      l. F552, Standard Terminology relating to Chain Link Fencing.
      m. F567, Standard Practice for Installation of Chain-Link Fence.

n. F626, Standard Specification for Fence Fittings.
o. F668, Standard Specification for Polyvinyl Chloride (PVC) and Other Organic Polymer-Coated Steel Chain-Link Fence Fabric.
p. F900, Standard Specification for Industrial and Commercial Swing Gates.
q. F934, Standard Specification for Standard Colors for Polymer-Coated Chain Link Fence Materials.
r. F1043, Standard Specification for Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework.
s. F1083, Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.
t. F1183, Standard Specification for Aluminum Alloy Chain Link Fence Fabric.
u. F1184, Standard Specification for Industrial and Commercial Horizontal Slide Gates.
v. F1345, Standard Specification for Zinc - 5% Aluminum - Mischmetal Alloy-Coated Steel Chain-Link Fence Fabric.
w. F1664, Standard Specification for Poly(Vinyl Chloride)(PVC) and Other Conforming Organic Polymer-Coated Steel Tension Wire Used with Chain-Link Fence.
x. F1665, Standard Specification for Poly(Vinyl Chloride)(PVC) and Other Conforming Organic Polymer-Coated Steel Barbed Wire Used with Chain-Link Fence.
y. F1910, Standard Specification for Long Barbed Tape Obstacles.
z. F1911, Standard Practice for Installation of Barbed Tape.
aa. ASTM F2781, Standard Practice for Testing Forced Entry, Ballastic, and Low-Impact Resistance of Security Fence Systems.

2. Chain Link Fence Manufacturers Institute (CLFMI):
   a. SFR 2445. Security Fence Recommendations.
   b. CLF TPO211, Tested and Proven Performance of Security Grade Chain Link Fence Systems.
   c. WLG2445, Chain Link Fence Wind Load Guide for the Selection of Line Post and Line Post Spacing.
3. Institute of Electrical and Electronic Engineers, Inc. (IEEE):
   a. C2, National Electric Safety Code.
4. National Electrical Manufacturers Association (NEMA):
   a. 250, Enclosures for Electrical Equipment (1,000 volts maximum).
5. State of New York Department of Transportation (NYSDOT), Standard Specifications.
6. Underwriters' Laboratories, Inc. (UL):
   a. 325, Door, Drapery, Gate, Louver and Window Operators.
   b. 467, Standard for Safety Grounding and Bonding Equipment.

1.03 SUBMITTALS

A. Comply with Section 01 33 00, Submittal Procedures.

B. Action submittals:
   1. Shop drawings:
      a. Indicate site plan layout of fence locations with dimensions, locations of gates and opening sizes, cleared area, elevation of fence and gates, and details of attachments and footings.
      b. Product data: Submit data on fabric, posts, accessories, fittings and hardware to demonstrate material compliance with this section.
   2. Certifications:
      a. Manufacturer’s material certifications, certifying compliance with this specification and referenced ASTM specifications.

C. Informational submittals:
   1. Manufacturer's installation instructions:
      a. Submit installation requirements, post foundation and anchor bolt template.
      b. Manufacturer's Certificate of Conformance: Certify that materials and coatings furnished have been tested and conform to the referenced ASTM Specification.

D. Closeout submittals:
   1. Comply with Section 01 77 00, Closeout Procedures.
   2. Accurately record actual locations of property perimeter posts relative to property lines and easements.
   3. Operation and Maintenance Data: Comply with Section 01 78 23, Operation and Maintenance Data.

1.04 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum of five (5) years of experience.

B. Fence Contractor: Company with demonstrated successful experience installing similar projects and products in accordance with ASTM F567 and have at least five (5) years of experience.

C. Tolerances: Current published edition of ASTM specifications tolerances shall apply. ASTM specification tolerances supersede any conflicting tolerance.

1.05 DELIVERY, STORAGE AND HANDLING

A. Comply with Section 01 61 00, Common Product Requirements.

B. Deliver fence fabric and accessories in packed cartons or firmly tied rolls.

C. Identify each package with manufacturer's name.

D. Store fence fabric and accessories in secure and dry place. Store materials off the ground to provide protection against oxidation caused by ground contact.

PART 2 - PRODUCTS

2.01 GENERAL

A. Materials and components: Conform to CLFMI Product Manual.

B. All carbon steel materials, components, and accessories shall be hot-dip galvanized after fabrication.

2.02 CHAIN LINK FABRIC

Steel chain link fabric:

1. 1-inch mesh, 9- gauge galvanized steel wire weave. Specified gauge shall be the gauge thickness of the steel wire, exclusive of coatings.
2. Height: as shown on the Drawings.
3. Top selvage: knuckled.
4. Bottom selvage: knuckled.
5. Material:
   a. Fabric shall be a zinc-coated steel wire fabric, hot dip galvanized in accordance with ASTM A392.
   b. Minimum zinc coating: 2 oz / sq ft.

STEEL FENCE FRAMEWORK

A. Round steel pipe and rail:
1. Conform to ASTM F1043, Group IA Heavy Industrial Fence Framework, Schedule 40 galvanized pipe, per ASTM A1083.
2. Yield strength: 50 ksi.
3. Exterior hot-dip zinc coating minimum average: 2.0 oz / sq ft.
4. Line Posts: 2-3/8-inch Schedule 40 steel pipe, per ANSI B36.10.
5. End, corner, pull posts: 2-7/8-inch Schedule 80 steel pipe, per ANSI B36.10.
6. Top, brace, bottom and intermediate rails: 1-5/8-inch Schedule 40 steel pipe, per ANSI B36.10.

B. All posts shall be equipped with pressed steel combination tops with barbed wire supporting arms. Tops shall be provided with a hole to permit through passage of the top rail.

C. Gate Frame:
   1. 1-7/8 inch diameter for welded or fittings and truss rod fabrication.
   2. When fittings are used, 3/8-inch minimum diameter truss rods shall be provided to prevent sag or twist.

D. Tension wire:
   1. Metallic coated steel marcelled tension wire: 7 gauge marcelled wire, conforming to ASTM A824.
   2. Galvanizing: 2.0 oz / sq ft.

E. Tension bars:
   1. Tension bars shall be minimum 3/16-inch by 3/4-inch flat steel plates and no more than 2 inches shorter than the fabric height.
   2. Bars shall be hot-dip galvanized.

F. Tension bands: Tension bands shall be formed from No. 12 gauge flat or beveled steel and attached with 3/8-inch diameter carriage bolts hot-dip galvanized.

G. Tie wire: Aluminum alloy steel wire.

H. Barbed wire: Barbed wire shall consist of six (6) strands of twisted 12-1/2 gauge steel wire with 4 point 14 gauge barbs on 4-inch spacing; wire shall be zinc coated.

2.04 FITTINGS

A. Tension and brace bands:
   1. Galvanized pressed steel conforming to ASTM F626, minimum steel thickness of 12 gauge, minimum width 3/4-inch and minimum zinc coating of 0.2 oz / sq ft.
   2. Supply bands with 3/8-inch galvanized steel carriage bolts.

B. Terminal post caps, line post loop tops, rail and brace ends Boulevard clamps, and rail sleeves: Conforming to ASTM F626, pressed steel galvanized after fabrication having a minimum zinc coating of 1.2 oz / sq ft.

C. Truss rod assembly: Conforming to ASTM F626, 3/8-inch diameter steel truss rod with a pressed steel tightener, minimum zinc coating of 1.2 oz / sq ft, assembly capable of withstanding a tension of 2,000 lbs.

D. Tension bars:
   1. Conforming to ASTM F626.
   2. Galvanized steel one-piece length 2 inches less than the fabric height.
   3. Minimum zinc coating: 1.2 oz / sq ft.
   4. Bars for 2-inch mesh shall have a minimum cross-section of 3/16 inch by 3/4 inches.

E. Barbed wire arms:
   1. Conforming to ASTM F626, pressed steel, hot-dip galvanized after fabrication, minimum zinc coating 1.2 oz / sq ft., capable of supporting a vertical load of 250 lbs.
   2. Type III: Y-Shape, Six strand, double 45-degree arm

2.05 TIE WIRE AND HOG RINGS

A. General:
   1. Conforming to ASTM F626.
   2. Minimum wire thickness: 9 gauge galvanized steel.
   3. Minimum zinc coating: 1.2 oz/ sq. ft.

2.06 SWING GATES

A. Size and configuration: as shown on the Drawings.

B. General:
   1. Galvanized steel welded fabrication conforming to ASTM F900.
   2. Gate frame members shall be minimum 1/78-inch Schedule 40 steel pipe.
   3. Frame members shall be spaced no greater than 8 feet apart vertically and horizontally.
   4. Welded joints shall be protected by applying zinc-rich pain in accordance with ASTM A780.
   5. Positive locking gate latch shall be fabricated of 5/16-inch thick by 1-3/4 inch pressed steel, galvanized after fabrication.
   6. Provide lockable drop bar and gate holdbacks with double gates.
   7. Steel post and frame hinges shall be galvanized malleable iron or heavy gauge pressed steel.
   8. Match gate fabric to that of the fence system.
   9. Gate post size: 3-inch Schedule 80 galvanized steel pipe posts.

2.07 FENCE GROUNDING

A. Conductors:
   1. Bare, solid wire for No. 6 AWG and smaller, stranded wire for No 4 AWG and larger.
   2. Material, above and below ground: copper.
   3. Bonding jumpers: braided copper tape, 1-inch wide, woven No. 30 AWG bare copper wire, terminated with copper ferrules.

B. Connectors and Grounding Rods: Comply with UL 467.
   1. Connectors for below-grade use: exothermic welded type.
   2. Grounding rods: Copper-clad steel.

2.08 CONCRETE

A. Concrete for foundations shall conform to the following:
   1. Minimum 28-day compressive strength: 3,000 psi.
   2. Portland cement: Type I, in accordance with ASTM C150.
   3. Course and fine aggregates: Comply with ASTM C33.
   4. Air entrainment: 4% to 7%, by admixture only.
   5. Maximum slump: 4 inches.
   6. Maximum water-cement ratio: 0.46.
   7. Ready mix concrete from an established company may be acceptable if it conforms to ASTM C94 and this Specification.

PART 3 - EXECUTION

3.01 CLEARING FENCE LINE

A. Layout:
   1. Provide all surveying control for establishing fence lines.
   2. Clear and grub fence lines to sufficient width to install chain link fences, as shown on the Drawings.

B. Drainage crossings: Where the chain link fence must cross drainage ditches or swales, the main fence shall be carried across a ditch or swale with additional fence fabric added below.

3.02 FRAMEWORK ERECTION

A. Posts:
   1. Set posts plumb in concrete footings in accordance with ASTM F567.
   2. Minimum footing depth: 3’-0”, plus an additional 3 inches for each foot of fence height over 4 feet.
   3. Minimum footing diameter shall be at 12 inches.
   4. Top of post concrete footing shall be at grade, crowned to shed water away from the post.
   5. Install line posts at intervals not exceeding 10 feet on-center.

Top Rail:
   1. Install 21-foot lengths of rail continuous through the line post or barb arm loop top.
   2. Splice rail using top rail sleeves, minimum 6 inches long.
   3. Secure rail to terminal post with a brace band and rail end.
   4. Field-cut bottom rail or intermediate rail and secure to line posts using boulevard bands or ends and brace bands.

C. Terminal Posts:

1. End, corner, pull, and gate posts shall be braced and trussed for fence feet and taller, and for fences 5 feet in height not having a top rail.
2. The horizontal brace and diagonal truss rod shall be installed in accordance with ASTM F567.

D. Tension Wire:

1. Install 4 inches up from the bottom of the fabric.
2. Fences without a top rail shall have a tension wire installed 4 inches down from the top of the fabric.
3. Tension wire shall be stretched taut, independently and prior to the fabric, between the terminal posts and secured to the terminal post using a brace band.
4. Secure the tension wire to the chain link fabric with 9-gauge hog rings, 18 inches on-center and to each line post with a tie wire.

3.03 CHAIN LINK FABRIC INSTALLATION

A. Fabric Installation:

Install fabric to outside of the framework.

2. Attach fabric to the terminal post by threading the tension bar through the fabric.
3. Secure the tension bar to the terminal post with tension bands at 5/16-inch carriage bolts spaced no greater than 12 inches on-center.
4. Small-mesh fabric less than 1 inch: attach to terminal post by sandwiching the mesh between the post and a vertical 2-inch wide by 3/16-inch steel bar using carriage bolts, through-bolted through the bar, mesh and post spaced 15 inches on-center.
5. Stretch chain link fabric taut and free of sag.
6. Secure fabric to the line post with tie wires spaced no greater than 12 inches on center and to rails spaced no greater than 18 inches on center.
7. Secure the fabric to the tension wire with hog rings spaced no greater than 18 inches apart.
8. Pre-formed 9-gauge galvanized steel power-fastened tie wire shall be wrapped 360 degrees around the post or rail and fabric picket, twist the two wire ends together three full turns per ASTM F567.
9. Excess wire shall be cut off and bent over to prevent injury.
10. Installed fabric shall have a ground clearance of no more than 2 inches.

3.04 BARBED WIRE INSTALLATION

A. Barbed Wire:

1. Stretched taut between terminal posts and secured in the slots provided on the line post barb arms.
2. Attach each strand of barbed wire to the terminal post using a brace band.

3.05 GATE INSTALLATION

A. Swing Gates:
   1. Install swing gates and gate posts in accordance with ASTM F567.
   2. Direction of swing shall be as shown on the Drawings.
   3. Gates shall be plumb in the closed position have a bottom clearance of 3 inches.
   4. Hinge and latch offset opening space from the gate frame to the post shall be no greater than 3 inches in the closed position.
   5. Double-gate drop bar receivers shall be set in concrete footings a minimum of 6 inches in diameter and 2 feet deep.
   6. Install gate leaf holdbacks for all double-leaf gates.

3.06 BARBED TAPE INSTALLATION

A. Barbed Tape: Barbed tape when specified shall be installed in accordance with ASTM F1911.

3.07 NUTS AND BOLTS

A. Bolts:
   1. Carriage bolts for fittings shall be installed with the head on the secure side of the fence.
   2. Peen all bolts over after assembly to prevent removal of the nut.

3.08 ELECTRICAL GROUNDING

A. Ground fences at a maximum interval of 1,000 feet in accordance with the IEEE C2, National Electric Safety Code.

B. Protection at crossings of overhead electrical power lines: Ground fence at location of crossing and at a maximum distance of 150 feet on each side of the crossing.

C. Grounding method: At each grounding location, drive a 10-foot grounding rod vertically until top is 6 inches below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at the grounding location.

3.09 FIELD QUALITY CONTROL

A. Post and Fabric Testing: Test fabric tension and line post rigidity in accordance with ASTM F1916.

B. Gate Tests:

1. Prior to acceptance of installed gates, demonstrate proper operation of gates under each possible open and close condition specified.
2. Adjust gate to operate smoothly, easily, and quietly, free of binding, wear, excessive deflection, distortion, non-alignment, misplacement, disruption, or malfunction, throughout the entire operational range.
3. Confirm latches and locks engage accurately and securely without forcing and binding.

3.10 MANUFACTURER'S SERVICES

A. Provide manufacturer's representative at the Site to train Owner's personnel in proper adjustment, operation, and maintenance of gates.

3.11 CLEANING

A. The area of the fence line shall be left neat and free of any debris caused by the fence installation.

END OF SECTION

SECTION 32 92 00

TURF AND GRASSES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies material and performance requirements for turf and grasses, as shown on the Drawings and as otherwise called herein.

B. This Section includes the following:
   1. Site preparation.
   2. Imported topsoil.
   3. Seeding materials.
   4. Soil amendments.
   5. Erosion control blankets.

1.02 SUBMITTALS

A. Comply with Section 01 33 00, Submittals.

B. Seed:
   1. Grass seed:
      a. Certification of grass seed from seed vendor for the grass-seed mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed.
      b. Include the year of production and date of packaging.
   2. Naturalizing seed mix:
      a. Certification from seed vendor stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity.
      b. Include the year of production and date of packaging.

C. Hydro mulch material certification. Use phosphorus free fertilizer.

D. Topsoil: Topsoil test results.

E. Soil amendments:
   1. Product certification signed by manufacturers certifying that their products comply with specified requirements.
   2. Manufacturer’s certified analysis for standard products.

F. Planting schedule indicating anticipated dates and locations for each type of seeding.

G. Product data in the form of manufacturer's technical data, specifications, and installation instructions for erosion control blankets and accessories.

1.03 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has completed landscaping work similar in material, design, and extent to that indicated for this Project and with a record of successful grass establishment.

B. Topsoil Analysis: Furnish the topsoil analysis in accordance with Specification Section 32 93 00, Plants.

C. Soil Amendment: Prepare a soil amendment procedure that will adjust all of the topsoil to be used in construction lawns to a pH of 6.5 if the pH testing indicates a pH other than 6.5.

D. Grass Seed Analysis:
1. Employ at no cost to the Owner a qualified independent testing agency to provide analysis of a sample grass seed taken after delivery to the site.
2. The seed mixture shall be tested for seed species and proportions, purity, and germination percentages as indicated on the Schedules at the end of this Section.

E. Naturalizing Seed Mix, Steep Slope See Mix, and Wet Meadow Seed Mix Analysis:
1. Fresh, clean, dry, new-crop seed complying with the Association of Official Seed Analysts' "Rules for Testing Seeds" for purity and germination tolerances.
2. The seed mixture shall be tested for seed species and varieties, proportions by weight as indicated Seed Mixtures Schedule at the end of this Section.

F. Conform to American Society of Testing and Materials (ASTM), Standard Specifications and Methods of Testing.

G. Erosion Control Blankets: Product data.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Comply with Section 01 61 00, Common Product Requirements.

B. Packaged Materials:
1. Deliver packaged materials in containers showing weight, analysis, and name of manufacturer.
2. Protect materials from deterioration during delivery and while stored at site.

C. Seed: Deliver seed in original sealed, labeled, and undamaged containers.

D. Topsoil: Do not deliver to the site, stockpile or spread muddy or frozen topsoil.

1.05 COORDINATION AND SCHEDULING

A. Seeding Time: Sow grass seed between March 15th and May 15th or between August 15th and September 30th, except as otherwise accepted by the Engineer.

B. Weather limitations:
   1. Proceed with planting only when existing and forecast weather conditions are suitable for work.
   2. When drought, excessive moisture or other unsatisfactory conditions prevail, the work shall be stopped. When special conditions warrant a variance to the turf operations, proposed times shall be submitted to the Engineer for approval prior to implementation.
   3. Do not place topsoil on subgrade that is frozen, excessively wet, extremely dry or otherwise detrimental to seeding, planting or proper grading.

PART 2 - PRODUCTS

2.01 SEED

A. Seed: Fresh, clean, dry, new-crop seed complying with the Association of Official Seed Analysts' "Rules for Testing Seeds" for purity and germination tolerances.
   1. Seed Mixes:
      a. Provide seed of species and varieties, proportions by weight, and minimum percentages of purity, and germination as indicated on Schedules at the end of this Section.
      b. The maximum percentage of weed seed shall not exceed 0.1% by weight.

2.02 TOPSOIL

A. Topsoil: ASTM D5268, pH range of 5.5 to 7.5, organic content between 5% and 10%, free of stones 1 inch or larger in any dimension, roots, plants, sods, clay lumps and other extraneous materials harmful to plant growth.

2.03 SOIL AMENDMENTS

A. Lime:
   1. ASTM C602, Class T, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent, with a minimum 99 percent passing a No. 8 sieve and a minimum 75 percent passing a No. 60 sieve.
   2. Provide lime in the form of dolomitic limestone.

B. Water: Potable.

2.04 FERTILIZER

A. Commercial Fertilizer: Commercial-grade fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea-form and potassium in the following composition:
   1. Composition: 3 percent nitrogen, 1 percent phosphorous, and 2 percent potassium, by weight (3N-1P-2K) in amounts to achieve rate of 2-4 lb of nitrogen per 1000 sq. ft./year.
   2. Composition based on soil reports: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency to achieve rate of 2-4 lb of nitrogen per 1000 sq. ft./year.
   3. Use of fertilizers with more than 0% content of phosphorus is not allowed.

2.05 MULCHES

A. Organic Mulch: Organic mulch, free from deleterious materials, consisting of one of the following:
   1. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
   2. Fiber Mulch: Biodegradable dyed-wood cellulose-fiber mulch, nontoxic, free of plant growth- or germination-inhibitors, with maximum moisture content of 15% and a pH range of 4.5 to 6.5.

B. Asphalt Emulsion Tackifier: Asphalt emulsion, ASTM D977, Grade SS-1, nontoxic and free of plant growth- or germination-inhibitors.

C. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application, nontoxic and free of plant growth- or germination-inhibitors.

2.06 EROSION CONTROL BLANKETS

A. Blankets: Biodegradable twisted jute or coir-spun mesh, 0.92 lb per sq. yd minimum, with 50 to 65 percent of open area. Include manufacturer's recommended wire staples.

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. North American Green.
   2. East Coast Erosion Blankets.
   3. Propex Geosynthetics, BP Amoco Group.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas to receive grass seed for compliance with requirements and for conditions affecting performance of work of this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

B. Protect adjacent and adjoining areas from hydroseed overspraying.

C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.03 LAWN PLANTING PREPARATION

A. Limit subsoil preparation to areas that will be planted in the immediate future.

B. Loosen subsoil to a minimum depth of 2 inches. Remove stones larger than 1-1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter.

C. In areas of crushed stone backfill, excavate crushed stone to allow for spreading of topsoil. Provide topsoil layer of 12 inches minimum

D. Spread topsoil to minimum depth of 6 inches and as required to meet thickness, grades, and elevations shown, after light rolling and natural settlement. Do not spread if topsoil or subgrade is frozen.

E. Place approximately 1/2 the thickness of topsoil required. Work into top of loosened subgrade to create a transition layer and then place remainder of topsoil.

F. Preparation of Unchanged Grades: Where lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface soil stripping operations, prepare soil as follows:
   1. Remove and dispose of existing grass, vegetation, and turf. Do not turn over into soil being prepared for lawns.
   2. Till surface soil to a depth of at least 6 inches. Apply required soil amendments and initial fertilizers and mix thoroughly into top 4 inches of soil. Trim high areas and fill in depressions. Till soil to a homogenous mixture of fine texture.
   3. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

4. Remove waste material, including grass, vegetation, and turf, and legally dispose of it off the Owner's property.

G. Grade lawn areas to a smooth, even surface with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future. Remove trash, debris, stones larger than 1-1/2 inches in any dimension, and other objects that may interfere with planting or maintenance operations.

H. Moisten prepared lawn areas before planting when soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

I. Restore prepared areas if eroded or otherwise disturbed after fine grading and before planting.

3.04 EROSION CONTROL BLANKETS

A. Install erosion control blankets on slopes with gradient 3:1 or steeper.

B. For permanent installation prepare soil before installing blankets, including any necessary application of lime, fertilizer, and seed.

C. Spread erosion control blankets over prepared soil starting from the top of slope. Anchor each blanket in 6 inches deep and 6 inches wide trench, with 12 inches of blanket extended beyond trench up-slope to be folded over the filled trench. Anchor blanket in trench with a row of stakes spaced 12 inches apart. Backfill trench and compact fill material. Apply seed to compacted soil. Fold blanket over compacted soil and secure it with a row of stakes spaced 12 inches apart.

D. Roll blankets down or horizontally across the slope. Fasten blankets to soil surface by placing stakes at locations indicated or recommended by manufacturer. Overlap parallel blankets 2 inches to 5 inches as recommended by manufacturer. Overlap consecutive blankets spliced down the slope 3 inches “shingle style”, end over end. Stake through overlapped areas 12 inches apart across entire blanket width.

3.05 SEEDING NEW LAWNS

A. Sow seed with a spreader or a seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in 2 directions at right angles to each other.

B. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.

C. Sow seed at the following rates:
1. Lawn Seed Mix Seeding Rate: 5 lb per 1000 sq. ft.

2. Naturalizing Seed Mix Seeding Rate: 1/2 lb per 1,000 sq. ft. or 20 lb per acre.
3. Steep Slope Seed Mix Seeding Rate: 1 lb per 1,000 sq. ft. or 60 lb per acre.
4. Wet Meadow Seed Mix Seeding Rate: 1/2 lb per 1,000 sq. ft. or 20 lb per acre.

D. Rake seed lightly into top 1/8 inch of topsoil, roll lightly, and water with fine spray.

E. Protect seeded slopes exceeding 5:1 against erosion with erosion-control blankets, as specified in this section.

F. Protect seeded areas with slopes less than 1:6 against erosion by spreading straw mulch after completion of seeding operations. Spread uniformly at a minimum rate of 2 tons per acre to form a continuous blanket 1-1/2 inches loose depth over seeded areas. Spread by hand, blower, or other suitable equipment.

G. Anchor straw mulch by spraying with asphalt-emulsion tackifier at the rate of 10 to 13 gal. per 1,000 sq. ft. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

3.06 HYDROSEEDING NEW LAWNS (CONTRACTOR'S OPTION)

A. Hydroseeding:
1. Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application.
2. Continue mixing until uniformly blended into homogenous slurry suitable for hydraulic application.
3. Mix slurry with nonasphaltic tackifier.
4. Apply slurry uniformly to all areas to be seeded in a 1-step process.
5. Apply mulch at the minimum rate of 1,500 lb per acre dry weight but not less than the rate required to obtain specified seed-sowing rate.

3.07 RECONDITIONING LAWNS

A. Recondition existing lawn areas damaged by Contractor's operations, including storage of materials or equipment and movement of vehicles. Also recondition lawn areas where settlement or washouts occur or where minor regrading is required.

B. Remove sod and vegetation from diseased or unsatisfactory lawn areas; do not bury into soil. Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, stone, gravel, and other construction materials, and replace with new topsoil.

C. Where substantial lawn remains, mow, de-thatch, core aerate, and rake. Remove weeds before seeding. Do not use herbicides.

D. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of it off the Owner's property.

E. Till stripped, bare, and compacted areas thoroughly to a depth of 6 inches.

F. Apply required soil amendments and initial fertilizers and mix thoroughly into top 4 inches of soil. Provide new planting soil as required to fill low spots and meet new finish grades.

G. Apply seed and protect with straw mulch as required for new lawns.

H. Water newly planted areas and keep moist until new grass is established.

3.08 SATISFACTORY LAWN

A. Seeded lawns will be satisfactory provided requirements, including maintenance, have been met and a healthy, uniform, close stand of grass is established, free of weeds, bare spots exceeding 5 by 5 inches, and surface irregularities.

B. Replant lawns that do not meet requirements and continue maintenance until lawns are satisfactory.

C. Weed control in seed mix areas: spot spray with approved herbicides or hand pull. When there is a heavy infestation, trim plantings to a height of 8 inches. Do not trim later than mid-September.

3.09 MAINTENANCE

A. Begin maintenance of lawns immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:
   1. Seeded Lawns: 60 days after date of Substantial Completion.
   2. When full maintenance period has not elapsed before end of planting season, or if lawn is not fully established at that time, continue maintenance during next planting season.

B. Maintain and establish lawns by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and re-mulch to produce a uniformly smooth lawn.
   1. Replant bare areas with same materials specified for lawns.
   2. Add new mulch in areas where mulch has been disturbed by wind or maintenance operations sufficiently to nullify its purpose. Anchor as required to prevent displacement.

C. Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawns uniformly moist to a depth of 4 inches.
   1. Lay out temporary lawn-watering system and arrange watering schedule to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly seeded areas.
   2. Water lawn at the minimum rate of 1 inch per week.

D. Mowing:
   1. Mow lawns as soon as there is enough top growth to cut with mower set at specified height for principal species planted.
   2. Repeat mowing as required to maintain specified height without cutting more than 40 percent of the grass height.
   3. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings.
   4. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet.
   5. Schedule initial and subsequent mowings to maintain following grass height:
      a. Mow grass from 2-1/2 to 3 inches high.
      b. Mow seed mixes after plantings reach height of 18 inches.
      c. Use a mower or string trimmer to trim plants to a height of 8 inches.
      d. Do not mow later than mid-September.
   6. After seed mix areas are established, mow once per year in early spring.

E. Postfertilization: Apply fertilizer to lawn after first mowing and when grass is dry.
   1. Use fertilizer that will provide actual nitrogen of at least 1 lb per 1000 sq. ft. of lawn area.

3.10 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by lawn work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto surface of roads, walks, or other paved areas.

B. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period until lawn is established.

3.11 TOPSOIL AMENDMENTS SCHEDULE

A. Lawns: Provide topsoil amendments in not less than the following quantities:
   1. Weight of lime per 1000 sq. ft.: 50 lb.
   2. Weight of commercial fertilizer per 1000 sq. ft.: 20 lb

3.12 SEED MIXTURES SCHEDULE

A. Grass Seed Mix A: Provide low maintenance "No Mow" certified grass-seed blend or mix of four types of low growing fescues, proportioned by weight, as follows:

Proportion	Name	Min. Pct. Germ.	Min. Pct. Germ.
40 %	Creeping Red Fescue (Festuca rubra)	80	95
30 %	Hard Fescue (Festuca ovina)	85	98
25%	Red Fescue chewings type (Festuca rubra var commutata)	85	98
5 %	Perennial Ryegrass (Lolium perenne)	90	98

B. Grass Seed Mix B: Provide certified grass-seed blend or mix, proportioned by weight, as follows:

Proportion	Name	Min. Pct. Germ.	Min. Pct. Pure Seed
60 %	Kentucky Bluegrass (Poa pratensis) varieties: North Star, Jefferson, Midnight, Rugby II, NuGlade (in equal parts)	80	95
10 %	Red Creeping Fescue (Festuca rubra spp rubra) varieties: Jasper II, Salsa, Shademaster (in equal parts)	85	98
10 %	Chewings Fescue (Festuca rubra spp commutata) varieties: Longfellow II, Intrigue, Ambassador, Shadow II (in equal parts)	85	98
10 %	Hard Fescue (Festuca ovina) varieties: Rescue II, Stonehedge, Oxford (in equal parts)	85	98
10 %	Perennial Ryegrass (Lolium perenne) varieties: Ascend, Wizard, Panther, Brightstar II	90	98

C. Naturalizing Seed Mix: Provide certified seed mix, ERNMX-153, as provided by Ernst Conservation Seeds, LLP, or approved equivalent.

D. Steep Slope Seed Mix: Provide certified seed mix, ERNMX-181, as provided by Ernst Conservation Seeds, LLP, or approved equivalent.

E. Wet Meadow Seed Mix: Provide certified seed mix, ERNMX-122, as provided by Ernst Conservation Seeds, LLP, or approved equivalent.

END OF SECTION

SECTION 33 05 97

IDENTIFICATION AND SIGNAGE FOR BURIED UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the performance and material requirements for utility marking as called on the Drawings, including:
   1. Utility trench marking tape.

1.02 REFERENCE STANDARDS

A. The following is a list of standards that may be referenced in this section:
   1. American National Standards Institute (ANSI):
      a. A13.1, Scheme for the Identification of Piping Systems.
      b. Z535.1, Safety Colors.
   2. American Public Works Association (APWA): Uniform Color Code.
   3. ASTM International (ASTM):
      a. D882, Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
      b. G154, Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials.
   4. Occupational Safety and Health Administration (OSHA): 29 CFR 1910.144, Safety Color Code for Marking Physical Hazards.

1.03 SUBMITTALS

A. Comply with Section 01 33 00, Submittal Procedures.

B. Action submittals:
   1. Product data: Submit manufacturer's catalog information for each product required.
   2. Manufacturer’s recommended installation procedures.
   3. Samples:
      a. Submit one pipeline witness post.
      b. Submit 10 feet of utility trench marking tape.
      c. Submit one utility monument.
      d. For all custom legends and signage, submit proof prior to production.

1.04 QUALITY ASSURANCE

A. Identification and signage requirement colors shall be in accordance with the APWA Uniform Color Code and ANSI Z535.1.

B. Coordinate all identification and signage supplied under this contract with the corresponding color of the utility to be marked.

C. Colors:
1. Green: sewers and drain lines.
2. Blue: potable water.
3. Red: electric power lines, cables, conduit, and lighting cables.
4. Orange: communications, alarm cables, or signal lines and conduits.
5. Yellow: gas, oil, steam, petroleum, or gaseous materials.
6. Purple: reclaimed water, irrigation, or slurry lines.

PART 2 - PRODUCTS

2.01 UTILITY TRENCH MARKING TAPE

A. General:
1. Underground caution tape, detectable with a non-ferrous locator.
2. Minimum 5-mil nominal thickness with solid aluminum foil core.
3. Minimum width: 3 inches.

B. Printing:
1. Caution message shall be imprinted to prevent ink rub-off.
2. Tape shall be impervious to acids, alkalis, and other deleterious substances.
3. Imprint shall allow for total reflectivity for maximum visibility.

C. Physical properties:
1. Test material in accordance with ASTM D882, Method A.
2. Elongation: 90% at 73 degrees F.
3. Tensile strength, transverse: 5,530 psi.
4. Tensile strength, longitudinal: 4,544 psi.

D. Manufacturer:
1. Seton.
2. Rhino Marking and Protection Systems.
3. Or approved equal.

EXECUTION

3.01 INSTALLATION

A. Install pipeline witness posts ad utility monuments as recommended by the Manufacturer.

B. Install snow poles at each fire hydrant installed under this contract.

C. Utility trench marking tape:
   1. Install one continuous strip of utility trench marking tape for every 4 feet of trench width.
   2. Place utility trench marking tape no deeper than 18 inches below finished grade.

END OF SECTION