

**CONTRACT DOCUMENTS  
AND  
SPECIFICATIONS  
FOR  
CORTLAND COUNTY LANDFILL  
GAS COLLECTION AND CONTROL SYSTEM  
CONTRACT NO. 1 – GENERAL CONSTRUCTION**

**JANUARY 2023**



**PREPARED BY:**

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## SECTION 00 00 20

### ADVERTISEMENT FOR BIDS

Sealed bids for the furnishing of all labor and material necessary for the Cortland County Landfill Gas Collection and Control System in the towns of Cortlandville, Solon and Homer, Cortland County, New York will be received by the Cortland County Highway Department Offices located at 4267 Traction Drive, Cortland, New York 13045, until 2:00 P.M. local time March 2, 2023, at which time and place they will be publicly opened and read aloud.

Bids will be received for the following Contract:

#### Contract No. 1 – General Construction

- Supply and installation of HDPE Landfill Gas header and lateral piping.
- Drilling and installation of 14 landfill gas vertical extraction wells.
- Landfill gas wellheads.
- Supply and Installation of a landfill gas blower skid and separate flare stack.
- Supply and Installation of a condensate traps and drains.
- Supply and Installation of dual contained condensate conveyance piping.
- Miscellaneous site work.
- Furnish and install electrical wiring, duct banks, controls, and appurtenances.

Contract Documents, including Invitation to Bidders, Instructions to Bidders, Wage Rates, Bid Documents, Agreement, Special Notes, Specifications, Contract Drawings and any Addenda, are available by providing a valid email address to [jfelber@bartonandloguidice.com](mailto:jfelber@bartonandloguidice.com). Download instructions will be provided upon notification.

Questions regarding the Contract Documents should be submitted in writing and directed to Greg Defayette, Barton & Loguidice, D.P.C. either through email at: [gdefayette@bartonandloguidice.com](mailto:gdefayette@bartonandloguidice.com) or by mail to 443 Electronics Parkway, Liverpool, New York 13088. Bidders shall promptly notify Greg Defayette of any errors, omissions, conflicts or ambiguity within the Contract Documents. No questions or inquiries regarding this Bid will be accepted within seven (7) business days prior to the Bid opening.

A Pre-Bid Conference will be held at the Cortland County Landfill scale building, on February 16, 2023 at 10:00 A.M. This conference will commence with a review of any questions that potential Bidders may have. Upon completion of the question period, the conference will proceed with a site walkover. Any questions requiring clarification will be addressed in an Addendum.

Addenda will be emailed from Barton & Loguidice, D.P.C. to Bidders listed on the official Plan Holders List. An emailed response from the Bidder to the Addendum sent by Barton & Loguidice, D.P.C. will act as proof that the Bidder received the Addendum. In addition to an emailed response, Bidders must acknowledge receipt of all Addenda by signing and dating each Addendum on pages 00 03 70-1 of the Bid Form. Failure of any Bidder to receive any such Addendum or interpretation shall not relieve such Bidder from any obligation under this Bid submittal. All Addenda so issued shall become part of the Contract Documents.

All bids must include the completed Bid Form, Non-Collusive Bidding and Disbarment Certifications, and Lobbying Certifications. This is a lump sum bid as described in the Instructions to Bidders. No Bidder may withdraw his/her bid within forty-five (45) calendar days after the actual date of the opening thereof.

Each bid must be accompanied by security in an amount not less than five percent (5%) of the amount of the bid in the form and subject to the conditions provided in the Instructions to Bidders. No Bidder may withdraw his bid within forty-five (45) days after the actual date of opening thereof.

Cortland County reserves the right to consider the Bids for forty-five (45) days after receipt before awarding any Contract, and to waive any minor informalities in, and to reject, any and all Bids. All Bids are subject to final review and approval by the Cortland County Board of Legislature before any award of contract may be made. Receipt of Bids by the County shall not be construed as authority to bind the Municipality.

Bids to be considered must be received in a sealed envelope at the Cortland County Highway Department, 4267 Traction Drive, Cortland, New York 13045 by 2:00 P.M., local time, on March 2, 2023 at which time they will be publicly opened and read aloud. Bids received after the above noted time will not be accepted. All sealed envelopes should be clearly labeled "Cortland County Landfill Gas Collection and Control System".

This is an exempt capital improvement project, and Bidders shall not include in their Bid sales and compensating use taxes on the cost of materials which are to be incorporated into the work and which are to be separately sold by the Contractor to the County of Cortland prior to incorporation into the work of the Contract.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

The attention of Bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the Contract.

END OF SECTION



## SECTION 00 01 00

### INFORMATION FOR BIDDERS

#### 00 01 00.01 LOCATION OF THE WORK

- A. The work under Contract No. 1 for the Cortland County Landfill Gas Collection and Control System is located at the Cortland County Landfill, Town Line Road, McGraw, New York, approximately 5 miles east of the City of Cortland.

#### 00 01 00.02 DESCRIPTION OF THE WORK

- A. The items of work under Contract No. 1 – General Construction include, but are not necessarily limited to the following:
- Supply and installation of HDPE Landfill Gas header and lateral piping.
  - Drilling and installation of 14 landfill gas vertical extraction wells.
  - Landfill gas wellheads.
  - Supply and Installation of a landfill gas blower skid and separate flare stack.
  - Supply and Installation of a condensate traps and drains.
  - Supply and Installation of dual contained condensate conveyance piping.
  - Miscellaneous site work.
  - Furnish and install electrical wiring, duct banks, controls, and appurtenances

#### 00 01 00.03 COMMENCEMENT AND COMPLETION OF THE WORK

- A. Upon execution of the Contract including delivery of the Performance Bond, Labor & Materials Payment Bond and insurance policies and certificates by the Contractor to the Owner and the approval thereof by the Owner's attorney, the Contractor will be notified to proceed with the work. Such notification will be in the form of a letter to proceed from the Engineer.
- B. The Contractor shall give the Engineer at least five (5) days written notice of the date he intends to start work at the site.
- C. All work items of the Contracts shall be substantially completed by November 31, 2023 unless such period is extended by the Owner as provided herein.

00 01 00.04 COLLATERAL WORK AND CONDITIONS OF WORK

- A. Each Bidder shall inform himself fully of the conditions relating to the construction of the Project and the employment of labor thereon. Failure to do so will not relieve a successful Bidder, as Contractor, of his obligation to furnish all material and labor necessary to carry out the provisions of his Contract. Insofar as possible, the Contractor, in carrying out the work, shall employ such methods or means as will not cause any interruption of or interference with the work of any other Contractor. (See also Section 00 10 12.01.)
- B. Each Contractor will be required to coordinate his work with the work of other Contracts. Each Contractor will be required to adjust his schedule accordingly.

00 01 00.05 RECEIPT & OPENING OF BIDS

- A. The County of Cortland (herein called the Owner) invites Bids on the attached forms. Bids will be received by the Owner until the time and at the place stated in the attached Advertisement for Bids. The outside of the Bid envelope shall bear the name and address of the Bidder and shall be labeled to clearly show the Contract designation for which the Bid is submitted.

00 01 00.06 INFORMALITIES, WAIVERS AND WITHDRAWALS

- A. The Owner may consider informal any Bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities in or reject any or all Bids. Bids which do not contain a price for every numbered item contained in the Bid form will not be accepted.
- B. Any Bid may be withdrawn prior to the scheduled deadline for receipt of Bids or authorized postponement thereof, but no Bid may be withdrawn within forty-five (45) days after the actual date of the opening thereof. Any Bid received after the time and date specified will not be considered, and will be returned unopened.

00 01 00.07 BID PREPARATION

- A. Unless otherwise noted thereon, all blanks on the Bid forms must be appropriately filled in with ink and with both words and figures, and the Bid must be properly executed.
- B. All Contract Documents, except the Performance Bond, Labor & Materials Payment Bond, Certificate of Insurance and any Addenda, are contained in this binder. All Contract Documents, except the Contract Drawings, Performance Bond and Labor & Materials Payment Bond, and Certificate of Insurance must be submitted with the Bid. The Contract Documents are defined in the Agreement.

00 01 00.07 BID PREPARATION - CONTINUED

- C. Any Bidder may modify his Bid by facsimile communication at any time prior to the scheduled closing time for receipt of Bids, provided such facsimile communication is received by the Owner prior to the closing time, and, provided further, the Owner is satisfied that a written confirmation of the facsimile modification over the signature of the Bidder was mailed prior to the closing time. The facsimile communication should not reveal the Bid price but should provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed Bid is opened. If written confirmation is not received within three days from the closing time, no consideration will be given to the facsimile modification.

00 01 00.08 ADDENDA AND INTERPRETATIONS

- A. No verbal interpretation of the intent of any of the Contract Documents will be made before receipt of Bids. Requests for interpretations prior to receipt of Bids must be presented in writing to the Engineer, Barton & Loguidice, D.P.C., 443 Electronics Parkway, Liverpool, New York 13088, and to be given consideration must be received by the Engineer at least seven (7) days prior to the date set for the opening of Bids.
- B. Any interpretation, and any additional information or instruction will, if issued, be in the form of a written Addendum or Addenda distributed to all holders of Contract Documents by the same method that the original documents were distributed, at least five (5) days prior to the date of the opening of Bids.
- C. Failure of any Bidder to receive any such Addendum or interpretation shall not relieve such Bidder from any obligation under this Bid as submitted. All Addenda so issued shall become a part of the Contract Documents.

00 01 00.09 QUALIFICATIONS OF BIDDERS

- A. The Owner reserves the right to make such investigation as he may deem necessary or advisable to determine any Bidder's ability to do the work, and the Bidder shall furnish to the Owner on request all data and information pertinent thereto. The Owner reserves the right to reject any Bid if such investigation fails to satisfy the Owner that the Bidder is fully qualified to do the work.
- B. Conditional Bids will be considered informal and will be rejected.
- C. Immediately following the Canvass of Bids the Low Bidder, if so requested, shall furnish the Owner a sworn and notarized financial statement, and a statement of his qualifications and experience.

00 01 00.10 OBLIGATIONS OF BIDDERS

- A. At the time of the opening of Bids, each Bidder will be presumed to have inspected the Site, to have informed himself fully of the conditions relating to the work and labor required for the work, and to have read and acquainted himself with all the Contract Documents. Failure to do so will not relieve the Bidder who is awarded the Contract of his obligation to complete the work for the price or prices bid, or of any other obligation under the Contract. The failure or omission of any Bidder to receive or examine any Contract Documents shall in no way relieve him from any obligation in respect to his Bid.

00 01 00.11 BID SECURITY

- A. Each Bid must be accompanied by cash in United States currency or a certified check of the Bidder in an amount not less than five percent (5%) of the Bid. A Bid Bond, fully executed by the Bidder as principal, and having as surety thereon a surety company approved by the Owner and authorized to do business in New York State, will be accepted in lieu of cash or certified check. Checks should be made payable to the Owner.
- B. Such cash, checks or Bid Bonds will be returned to all except the three lowest Bidders within three working days after the opening of Bids. The remaining deposits will be returned to the three lowest Bidders within three working days after execution of the Contract, or, if no Contract is executed within 45 calendar days after opening of Bids, upon demand of the Bidder at any time thereafter so long as he has not been notified of the acceptance of his Bid.

00 01 00.12 LIQUIDATED DAMAGES FOR FAILURE TO EXECUTE CONTRACT

- A. Should the successful Bidder refuse or fail to execute the Contract and Bond within five (5) working days after receipt of notice of the acceptance of his Bid, the security deposited with his Bid shall be forfeited to the Owner as liquidated damages for such refusal or failure.

00 01 00.13 DISCREPANCY IN BIDS

- A. In the event a discrepancy exists in any Bid between the prices written in words and the prices written in figures, the prices written in words shall govern. If a discrepancy exists in any Bid between unit prices and the extended totals therefor, the unit prices shall govern. In either of the above cases, the extended totals, and the total of all extensions, shall be corrected, if necessary, and the Bid may not be considered informal.

00 01 00.14    LOWEST BIDDER

- A.    Bids will be compared on the basis of the totals for the Contract, corrected as necessary in conformance with Article 00 01 00.13, given at the bottom of the schedule of quantities, prices and extensions. Such total in each Bid shall be the sum of all lump sum prices, plus the sum of all the extensions produced by multiplying the unit price in each case by the corresponding listed quantity.

00 01 00.15    AWARD OF CONTRACT

- A.    The Contract will be awarded to that responsible Bidder whose Bid, after corrections and adjustments, totals the least number of dollars.
- B.    The Owner reserves the right to reject any and all Bids.

END OF SECTION

## SECTION 00 01 50

### LABOR AND EMPLOYMENT

#### 00 01 50.01 GENERAL

- A. The Contractor and every Subcontractor on public works contracts shall comply with Article 8 of the State Labor Law, as amended.

#### 00 01 50.02 POSTING MINIMUM WAGE RATES & KEEPING RECORDS

- A. The Contractor and every Subcontractor on public works contracts shall post in a prominent and accessible place on the Site a legible statement of all wage rates and supplements as specified in the Contract to be paid or provided, all redeterminations of such schedules as the case may be, for the various classes of mechanics, workmen and laborers employed on the work. Other notices to be posted are the Workers' Compensation Law Section 51 notice, the Department of Labor notice that this project is a public work project on which each worker is entitled to receive the prevailing rate of wages and supplements for the occupation at which he or she is working, and all other notices required by law to be posted at the site. The Contractor shall maintain such notices in a legible manner, written in plain English in lettering no smaller than two inches in height and two inches in width, weatherproof, and shall replace any notice or schedule which is damaged, defaced, illegible or removed for any reason.
- B. The Contractor and every Subcontractor shall keep original payrolls or verified transcripts thereof showing the hours and days worked by each workman, mechanic or laborer, the occupation at which he worked, the hourly wage rate paid and the supplements paid or provided, on the Site, when the Contractor or Subcontractor maintains no regular place of business in New York State and where the amount of the Contract is in excess of \$25,000. All other Contractors and Subcontractors shall produce within five days on the Site and upon formal order of the Commissioner of Labor or his designated representative such original payrolls or verified transcripts thereof, as may be deemed necessary to adequately enforce the provisions of this Section.
- C. Notwithstanding the aforementioned requirements, every Contractor and Subcontractor shall submit to the Owner within thirty days after issuance of its first payroll, and every thirty days thereafter, a transcript of the original payroll record, as provided by Article 8 of the Labor Law, subscribed and affirmed as true under penalties of perjury. The original payrolls or transcripts shall be preserved for three years from the completion of the work.

00 01 50.03 NON-DISCRIMINATION AND LABOR PRACTICES

A. In accordance with Section 220-e of Article 8 of the State Labor Law, the Contractor agrees:

1. That in the hiring of employees for the work of this Contract or any Subcontract, neither he nor any Subcontractor, nor any person acting on behalf of the Contractor, or any Subcontractor, shall by reasons of race, creed, color, 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 his employment relates; and
2. That neither the Contractor, nor any Subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of work under this Contract on account of race, creed, color, sex, disability or national origin; and
3. That there may be deducted from the amount payable to the Contractor by the Owner, a penalty of Fifty Dollars for each person for each calendar day during which such person was discriminated against or intimidated in violation of the provisions of this Contract; and
4. That this Contract may be cancelled or terminated by the Owner, and all monies due or to become due hereunder may be forfeited, for a second or any subsequent violation of the terms or conditions of this Section of the Contract; and
5. That the aforesaid provisions of this Section covering contracts for the manufacture, sale or distribution of materials, equipment or supplies shall be limited to operations performed within the territorial limits of the State of New York.
6. During the performance of this Contract, the Contractor agrees as follows:
  - a. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, sex, color, disability or national origin, and will take affirmative action to insure that they are afforded equal employment opportunities without discrimination because of race, creed, sex, color or national origin. Such action shall be taken with reference, but not be limited to: recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff or termination, rates of pay or other forms of compensation, and selection for training or retraining, including apprenticeship and on-the-job training.

- b. The Contractor will send to each labor union or representative of workers with which he has or is bound by a collective bargaining or other agreement or understanding, a notice to be provided by the State Division of Human Rights, advising such labor union or representative of the Contractor's agreement under subparagraphs (1) through (7) (hereinafter called "non-discrimination clauses"). If the Contractor was directed to do so by the contracting agency as part of the Bid or negotiation of this Contract, the Contractor shall request such labor union or representative to furnish him with a written statement that such labor union or representative either will affirmatively cooperate, within the limits of its legal and contractual authority, in the implementation of the policy and provisions of these non-discrimination clauses or that it consents and agrees that recruitment, employment and the terms and conditions of employment under this Contract shall be in accordance with the purposes and provisions of these non-discrimination clauses. If such labor union or representative fails or refuses to comply with such a request that it furnish such a statement, the Contractor shall promptly notify the State Division of Human Rights of such failure or refusal.
- c. The Contractor will post and keep posted in conspicuous places, available to employees and applicants for employment, notices to be provided by the State Division of Human Rights setting forth the substance of the provisions of subparagraphs (1) and (2) and such provisions of the State's laws against discrimination as the State Commissioner of Human Rights shall determine.
- d. The Contractor will state, in all solicitations, or advertisements for employees placed by or on behalf of the Contractor, that all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, sex, color, disability or national origin.
- e. The Contractor will comply with the provisions of Sections 291-299 of the Executive Law and the Civil Rights Law, will furnish all information and reports deemed necessary by the State Commissioner of Human Rights under these non-discrimination clauses and such sections of the Executive Law, and will permit access to his books, records and accounts by the State Commissioner of Human Rights, the Attorney General and the Commissioner of Labor for purposes of investigation to ascertain compliance with these non-discrimination clauses and such sections of the Executive Law and Civil Rights Law.



- f. This Contract may be forthwith cancelled, terminated or suspended, in whole or in part, by the contracting agency upon the basis of a finding made by the State Commissioner of Human Rights that the Contractor has not complied with these non-discrimination clauses, and the Contractor may be declared ineligible for future contracts made by or on behalf of the State or a public authority or agency of the State, until he satisfies the State Commissioner of Human Rights that he has established and is carrying out a program in conformity with the provisions of these non-discrimination clauses. Such finding shall be made by the State Commissioner of Human Rights after conciliation efforts by the State Division of Human Rights have failed to achieve compliance with these non-discrimination clauses and after verified complaint has been filed with the State Division of Human Rights, notice thereof has been given to the Contractor and an opportunity has been afforded him to be heard publicly before the State Commissioner of Human Rights or his designee. Such sanctions may be imposed and remedies otherwise provided by law.
  - g. The Contractor will include the provisions of sub-paragraph (1) through (7) of this paragraph A and in every Subcontract or purchase order in such a manner that such provisions will be binding upon each Subcontractor or vendor as to operations to be performed within the State of New York. The Contractor will take such action in enforcing such provisions of such Subcontract or purchase order as the contracting agency may direct, including sanctions or remedies for non-compliance. If the Contractor becomes involved in or is threatened with litigation with a Subcontractor or vendor as a result of such direction by the contracting agency, the Contractor shall promptly so notify the Attorney General, requesting him to intervene and protect the interest of the State of New York.
- 7. It is hereby agreed that all applicable provisions of the Labor Law of the State of New York shall be carried out in the performance of this Contract.
- 8. This agreement shall be void and of no effect unless the Contractor shall secure compensation insurance for the benefit of, and keep insured during the life of this agreement, such employees engaged therein as are required to be insured by the provisions of the Worker's Compensation Law of the State of New York.

00 01 50.04    LEGAL DAY'S WORK

- A.    In accordance with Section 220 (2) of Article 8 of the State Labor Law, no laborer, workman or mechanic employed by the Contractor, a Subcontractor or other person doing or contracting to do any part of the work shall be permitted or required to work more than eight hours in any one calendar day or more than five days in any week except in cases of extraordinary emergency including fire, flood or danger to life or property, or in case of national emergency when so proclaimed by the President of the United States.

00 01 50.05    WAGE RATES

- A.    In accordance with Section 220 of Article 8 of the State Labor Law, the wages to be paid for a legal day's work, as hereinbefore defined, to laborers, workmen or mechanics employed by the Contractor or Subcontractors, shall be not less than the prevailing rate of wages as hereinafter defined. Each laborer, workman or mechanic employed by the Contractor, Subcontractors, or other person upon or about the work, shall be paid not less than the wages and supplements herein provided.
- B.    Any person or corporation that willfully pays or provides less than the stipulated wage scale or supplements shall be guilty of a misdemeanor and upon conviction shall be punished as provided by law.
- C.    It shall be the duty of the Commissioner of Labor, or, if the Owner is a city, the comptroller or other analogous officer of such city, to make a determination of the schedule of wages to be paid all laborers, workmen and mechanics employed on the project (if it is a public works project) including supplements for welfare, pension, vacation and other benefits. These supplements include hospital, surgical or medical insurance or benefits, life insurance or death benefits, accidental death or dismemberment insurance, and pension or retirement benefits. If the amount of supplements provided by the employer is less than the total supplements shown on the wage schedule, the difference shall be paid in cash to employees.
- D.    The supplements to be provided shall be in accordance with prevailing practices in the locality. The amount for wages and for supplements listed in the schedule in these Contract Documents does not necessarily include all types of prevailing wages and supplements in the locality, and a future determination by the Commissioner of Labor may require the Contractor to pay increased wages or provide additional supplements.

00 01 50.06 VERIFICATION OF AMOUNTS DUE FOR WAGES AND SUPPLEMENTS

- A. In accordance with Section 220-a of Article 8 of the State Labor Law, the New York State schedule of prevailing wages and supplements, as included in this Contract or as subsequently redetermined by the New York State Department of Labor, shall be specifically included in each and every Subcontract, regardless of tier, awarded by the Contractor or his Subcontractors.
- B. Subcontractors, regardless of tier, shall provide to the Contractor a verified statement attesting that the Subcontractor has received and reviewed the prevailing wage rate and supplement schedule and agreeing that it will pay its employees the applicable wages and will pay or provide the supplements specified therein. The Contractor shall submit to the Owner copies of all such verified statements.
- C. The Owner will not make final payment to the Contractor unless and until the Contractor submits the following:
  - 1. verified statements as described in the preceding paragraph
  - 2. certification to the amounts then due from the Contractor to any and all laborers for wages or supplements on account of labor performed upon the work under the Contract
  - 3. certification to the amounts then due from any Subcontractor, regardless of tier, for wages and supplements, on account of labor performed upon the work under the Contract, or shall certify that the Contractor has no knowledge of such amounts owing to or on behalf of any laborers of its Subcontractors.
- D. In the event it is determined by the New York State Commissioner of Labor that the wages and/or supplements of any employees of the Contractor's Subcontractors, regardless of tier, 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.

00 01 50.07 MINIMUM RATES

- A. New York State Department of Labor wage rates will be in effect on this Project.
- B. The minimum wage rates designated by the Commissioner of Labor of the State of New York are attached. These minimum rates and supplements may be modified during the life of the Contract. If the prevailing wage rates should subsequently be legally modified or increased by any means other than by the action of the Owner, the Contractor shall assume full responsibility for the payment of said increases without recourse to the Owner.

END OF SECTION



Kathy Hochul, Governor

Roberta Reardon, Commissioner

Cortland County

Gregory Defayette, Project Engineer  
443 Electronics Parkway  
Liverpool NY 13088

Schedule Year 2022 through 2023  
Date Requested 12/07/2022  
PRC# 2022013466

Location Cortland County Landfill  
Project ID# Contract 1A & 1B  
Project Type Installation of a landfill gas conveyance header and laterals, vertical extraction wells, modification of existing passive flares and vents, a new LFG utility flare, and associated LFG condensate

### PREVAILING WAGE SCHEDULE FOR ARTICLE 8 PUBLIC WORK PROJECT

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

The schedule is effective from July 2022 through June 2023. 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](http://www.labor.ny.gov). Updated PDF copies of your schedule can be accessed by entering your assigned PRC# at the proper location on the website.

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

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

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

#### NOTICE OF COMPLETION / CANCELLATION OF PROJECT

Date Completed: \_\_\_\_\_ Date Cancelled: \_\_\_\_\_

Name & Title of Representative: \_\_\_\_\_

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

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

## **Introduction**

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

## **Responsibilities of the Department of Jurisdiction**

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

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

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

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

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

## **Hours**

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

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

## **Wages and Supplements**

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

## **Payrolls and Payroll Records**

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

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

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

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

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

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

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

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

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

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

### **Withholding of Payments**

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

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

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

### **Summary of Notice Posting Requirements**

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

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

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

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

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

## **Apprentices**

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

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

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

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

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

## **Interest and Penalties**

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

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

## **Debarment**

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

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

## **Criminal Sanctions**

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

## **Discrimination**

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

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

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

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

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

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

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

### **Workers' Compensation**

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

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

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

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

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

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

### **Unemployment Insurance**

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





Kathy Hochul, Governor

Roberta Reardon, Commissioner

Cortland County

Gregory Defayette, Project Engineer  
443 Electronics Parkway  
Liverpool NY 13088

Schedule Year 2022 through 2023  
Date Requested 12/07/2022  
PRC# 2022013466

Location Cortland County Landfill  
Project ID# Contract 1A & 1B  
Project Type Installation of a landfill gas conveyance header and laterals, vertical extraction wells, modification of existing passive flares and vents, a new LFG utility flare, and associated LFG condensate

### Notice of Contract Award

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

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

### Contractor Information

All information must be supplied

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

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

### **Social Security Numbers on Certified Payrolls:**

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

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

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

Construction industry employers must post the "Construction Industry Fair Play Act" notice in a prominent and accessible place on the job site. Failure to post the notice can result in penalties of up to \$1,500 for a first offense and up to \$5,000 for a second offense. The posting is included as part of this wage schedule. Additional copies may be obtained from the NYS DOL website, <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](mailto: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](http://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 12240

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

Required Notice under Article 25-B of the Labor Law

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

**The law says that you are an employee unless:**

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

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

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

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

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

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

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

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

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

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

**Employer Name:**  
IA 999 (09/16)

# Attention Employees

## THIS IS A: **PUBLIC WORK PROJECT**

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

Chapter 629 of the Labor Laws of 2007:

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

<https://dol.ny.gov/public-work-and-prevailing-wage>

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

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

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

Contractor Name: \_\_\_\_\_

Project Location: \_\_\_\_\_

## Requirements for OSHA 10 Compliance

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

### The Bureau will enforce the statute as follows:

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

Proof of completion may include but is not limited to:

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

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

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

## WICKS

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

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

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

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

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

Contractors must pay subcontractors within a 7 days period.

(07.19)

## Introduction to the Prevailing Rate Schedule

### Information About Prevailing Rate Schedule

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

#### Classification

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

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

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

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

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

#### Payrolls and Payroll Records

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

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

#### Paid Holidays

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

#### Overtime

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

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

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

#### Supplemental Benefits

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

#### Effective Dates

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

#### Apprentice Training Ratios

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

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

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



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

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

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

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

## Cortland County General Construction

<b>Boilermaker</b>	<b>12/01/2022</b>
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### JOB DESCRIPTION Boilermaker

**DISTRICT 6**

#### ENTIRE COUNTIES

Cayuga, Clinton, Cortland, Franklin, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Seneca, St. Lawrence, Tompkins

#### WAGES

Per hour:	07/01/2022	01/01/2023	01/01/2024
Boilermaker	\$ 36.23	\$ 37.23	\$ 38.23

#### SUPPLEMENTAL BENEFITS

Per hour:			
Journeyman	\$ 26.01* + 1.23	\$ 26.31* + 1.23	\$ 26.62* + 1.23

\*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 Christmas Day and New Year's fall on Saturday, Friday will be observed as the holiday.

#### REGISTERED APPRENTICES

WAGES per hour: Six month terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th	6th	7th	8th
65%	65%	70%	75%	80%	85%	90%	95%

SUPPLEMENTAL BENEFITS per hour:

\$ 19.38* + 1.23	\$ 19.38* + 1.23	\$ 20.33* + 1.23	\$ 21.26* + 1.23	\$ 22.20* + 1.23	\$ 23.16* + 1.23	\$ 24.13* + 1.23	\$ 25.06* + 1.23
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\*This portion of the benefits subject to the same premium rate as shown for overtime wages.

6-175

<b>Carpenter - Building</b>	<b>12/01/2022</b>
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### JOB DESCRIPTION Carpenter - Building

**DISTRICT 2**

#### ENTIRE COUNTIES

Chemung, Cortland, Schuyler, Steuben, Tompkins

#### PARTIAL COUNTIES

Allegany: Only the Township of Alfred.

#### WAGES

Per hour:	07/01/2022	07/01/2023 Additional	07/01/2024 Additional	07/01/2025 Additional
Carpenter	\$ 30.10	\$ 1.00	\$ 1.00	\$ 1.00
Floor Coverer	30.10	1.00	1.00	1.00
Carpet Layer	30.10	1.00	1.00	1.00
Dry-Wall	30.10	1.00	1.00	1.00
Diver-Wet Day	61.25	0.00	0.00	0.00
Diver -Dry Day	31.10	1.00	1.00	1.00
Diver Tender	31.10	1.00	1.00	1.00

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 journeyman's rate of pay when performing piledriving/dock building work.
- Certified welders shall receive \$1.00 per hour over the journeyman's rate of pay when the employee is required to be certified and performs DOT or ABS specified welding work
- 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.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.  
NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

#### SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 21.88

#### OVERTIME PAY

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

\* Note - Saturday is also payable at straight time if the employee misses work, except where a doctor's or hospital verification of illness is produced Monday through Friday when work was available to the employee.

#### HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

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

##### CARPENTER APPRENTICES

Wages per hour (1040 hour terms at the following percentage of journeyman's base wage):

1st	2nd	3rd	4th	5th
55%	60%	65%	70%	80%

Supplemental Benefits per hour:

\$ 12.40	\$ 12.40	\$ 15.05	\$ 15.05	\$ 15.05
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##### PILEDRIIVER/DOCK BUILDER APPRENTICES

Wages per hour (1300 hour terms at the following percentage of journeyman's base wage):

1st	2nd	3rd	4th
55%*	60%*	70%*	80%*

\*Pile Driver/Dock Builder apprentices shall receive an additional \$0.25 per hour worked when performing piledriving/dock building work.

Supplemental Benefits per hour:

\$ 12.40	\$ 12.40	\$ 15.05	\$ 15.05
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##### LINOLEUM, RESILIENT TILE, AND CARPET LAYER APPRENTICES

Wages per hour (1300 hour terms at the following percentage of journeyman's base wage):

1st	2nd	3rd	4th
55%	60%	70%	80%

Supplemental Benefits per hour:

\$ 12.40	\$ 12.40	\$ 15.05	\$ 15.05
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#### ADDITIONAL AMOUNTS PAID PER HOUR WORKED TO APPRENTICES FOR SPECIFIC TYPES OF WORK PERFORMED:

- 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
- 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

12/01/2022

**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:	07/01/2022	07/01/2023 Additional	07/01/2024 Additional
Carpenter - ONLY for Artificial Turf/Synthetic Sport Surface	\$ 33.08	\$ 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:

Journeyman \$ 25.45

## OVERTIME PAY

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

## HOLIDAY

Paid: See (5) on HOLIDAY PAGE

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

Notes:

When a holiday falls upon a Saturday, it shall be observed on the preceding Friday. When a holiday falls upon a Sunday, it shall be observed on the following Monday.

An employee taking an unexcused day off the regularly scheduled day before or after a paid Holiday shall not receive Holiday pay.

## REGISTERED APPRENTICES

Wages per hour (1300 hour terms at the following percentage of Journeyman's wage):

1st	2nd	3rd	4th
65%	70%	75%	80%

Supplemental Benefits per hour:

1st term	\$ 16.97
2nd term	17.41
3rd term	19.40
4th term	19.84

2-42AtSS

## Carpenter - Heavy&Highway

12/01/2022

**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	07/01/2022	05/01/2023 Additional	05/01/2024 Additional
Carpenter	\$ 34.13	\$ 2.50*	\$ 2.75*
Piledriver	34.13	2.50*	2.75*
Diver-Wet Day	59.13	2.50*	2.75*
Diver-Dry Day	35.13	2.50*	2.75*
Diver-Tender	35.13	2.50*	2.75*

\*To be allocated at a later date.

NOTE ADDITIONAL AMOUNTS PAID FOR THE FOLLOWING WORK LISTED BELOW (per hour worked):

- When project owner mandates a single irregular work shift, the employee will receive an additional \$3.00 per hour. A single irregular work shift can start any time from 5:00 p.m. to 1:00 a.m.
- 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 \$2.50 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 \$.50 per foot
  - 101'to 150' additional \$.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.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Friday, provided the project duration is more than forty (40) hours.

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

### SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 25.45

### 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. Employee must work scheduled work day before and after the Holiday.

- The employee must work their scheduled workday before and their scheduled workday after the holiday to receive holiday pay.

### REGISTERED APPRENTICES

#### CAPRENTER APPRENTICES

Wages per hour (1040 hour terms at the following percentage of journeyman's base wage):

1st	2nd	3rd	4th	5th
65%	70%	75%	80%	85%

Supplemental Benefits per hour:

\$ 16.97	\$ 17.41	\$ 19.40	\$ 19.84	\$ 20.28
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#### PILEDRIIVER/DOCKBUILDER APPRENTICES

Wages per hour (1300 hour terms at the following percentage of journeyman's base wage):

1st	2nd	3rd	4th
65%	70%	80%	85%

Supplemental Benefits per hour:

\$ 16.97	\$ 17.41	\$ 19.84	\$ 20.28
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NOTE ADDITIONAL AMOUNTS PAID PER HOUR WORKED TO APPRENTICES FOR SPECIFIC TYPES OF WORK PERFORMED:

- When project owner mandates a single irregular work shift, the employee will receive an additional \$3.00 per hour. A single irregular work shift can start any time from 5:00 p.m. to 1:00 a.m.
- 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 \$2.50 per hour.

2-277HH-Bro

### Electrician

12/01/2022

**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:	07/01/2022	06/01/2023 Additional
Electrician	\$ 42.00	\$ 3.00*
Teledata	42.00	
Cable Splicer	46.20	

\*To be allocated at a later date.

NOTE: Additional premiums for the following work listed:

- Additional \$2.00 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 \$2.50 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.

## NOTES:

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:	See rates posted above
2ND SHIFT	4:30 PM - 1:00 AM:	Add 15% to rates posted above
3RD SHIFT	12:30 AM - 9:00 AM:	Add 25% to rates posted above

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 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 (day-shift + 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.

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

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

## SUPPLEMENTAL BENEFITS

Per hour:	07/01/2022
Journeyman	\$ 29.17 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

\*\* Double Time after 10 hrs. on Saturday.

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

## HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (5, 6) 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 percentage of Journeyman's wage.

1st period 40% (0-1000 hrs.)	\$ 16.80
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2nd period 45% (1001-2000)	18.90
3rd period 50% (2001-3500)	21.00
4th period 60% (3501-5000)	25.20
5th period 70% (5001-6500)	29.40
6th Period 80% (6501-8000)	33.60

**SUPPLEMENTAL BENEFITS per hour:**

1st period	\$ 13.09 plus *3% of hourly wage paid
2nd period	\$ 13.09 plus *3% of hourly wage paid
3rd period	\$ 26.55 plus *3% of hourly wage paid
4th period	\$ 27.07 plus *3% of hourly wage paid
5th period	\$ 27.60 plus *3% of hourly wage paid
6th period	\$ 28.12 plus *3% of hourly wage paid

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

6-43

**Elevator Constructor**

**12/01/2022**

**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: 07/01/2022

Elevator Constructor	\$ 51.43
Helper	36.00

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

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

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

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyman	\$ 36.885*
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\*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 paid holiday falls on a Saturday, it shall be observed on Friday. When a paid holiday falls on Sunday, it shall be observed on Monday.

**REGISTERED APPRENTICES**

WAGES per hour: 1 year terms at the following percentage of the Elevator Constructor wage.

0-6	6-12	2nd	3rd	4th
months	months	year	year	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 Journeyman.

6-62.1

**Glazier**

12/01/2022

**JOB DESCRIPTION** Glazier

**DISTRICT** 5

**ENTIRE COUNTIES**

Cayuga, Cortland, Herkimer, Madison, Oneida, Onondaga, Oswego

**WAGES**

Per Hour: 07/01/2022

Glazier \$ 26.05

**\*\* IMPORTANT NOTICE \*\***

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

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

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyman \$ 23.64

**OVERTIME PAY**

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

\*Note - Or circumstances beyond the control of the employer.

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

**REGISTERED APPRENTICES**

1000 hour terms:

Appr. 1st term	\$17.00
Appr. 2nd term	18.00
Appr. 3rd term	19.00
Appr. 4th term	20.00
Appr. 5th term	21.00
Appr. 6th term	22.00
Appr. 7th term	23.00
Appr. 8th term	24.00

Supplemental Benefits per hour:

Appr. 1st term	\$ 12.29
Appr. 2nd term	12.29



Appr. 3rd term	18.29
Appr. 4th term	18.29
Appr. 5th term	19.29
Appr. 6th term	19.29
Appr. 7th term	20.29
Appr. 8th term	20.29

5-677.Z-2

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**Insulator - Heat & Frost****12/01/2022**

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**JOB DESCRIPTION** Insulator - Heat & Frost**DISTRICT** 6**ENTIRE COUNTIES**

Broome, Cayuga, Chemung, Chenango, Cortland, Herkimer, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Otsego, Schuyler, Seneca, St. Lawrence, Tioga, Tompkins

**WAGES**

Per hour: 07/01/2022

Asbestos Installer \$ 37.00

Insulation Installer

(On mechanical systems only)

NOTE: THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED SHIFTS WORKED.

1ST SHIFT	\$ 37.00
2ND SHIFT	42.55
3RD SHIFT	46.25

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day.  
NOTE - In order to use the '4 Day/10 Hour Work schedule', as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyman \$ 24.34

**OVERTIME PAY**

See (\*B1, Q) on OVERTIME PAGE

\*NOTE: First 10 hours on Saturday

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (4,6) on HOLIDAY PAGE.  
Triple time for Labor Day if worked.

NOTE: When a holiday falls on Sunday, the following Monday shall be observed as a holiday.

**REGISTERED APPRENTICES**

WAGES per hour: One year terms at the following percentage of Journeyman's wage

1st	2nd	3rd	4th
50%	60%	70%	80%
\$ 18.50	\$ 22.20	\$ 25.90	\$ 29.60

SUPPLEMENTAL BENEFITS per hour:

\$ 21.84	\$ 21.84	\$ 24.34	\$ 24.34
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6-30-Syracuse

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**Ironworker****12/01/2022**

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**JOB DESCRIPTION** Ironworker**DISTRICT** 6**ENTIRE COUNTIES**

Broome, Cayuga, Cortland, Onondaga, Oswego, Seneca, Tioga, Tompkins

**PARTIAL COUNTIES**

Chenango: Only the Townships of Lincklaen, Otsego, Pitcher, Pharsalia, German, McDonough, Preston, Norwich, Smithville, Oxford, Guilford, Greene, Coventry, Bainbridge and Afton.  
Jefferson: Only the Townships of Alexandria, Theresa, Clayton, Orleans, Cape Vincent, Lyme, Brownville, Pamela, LeRay, Hounsfield, Watertown, Rutland, Adams, Henderson, Rodman, Ellisburg, Lorraine and Worth.

Madison: Only the Townships of Sullivan, Lenox, Lincoln, Fenner, Smithfield, Cazenovia, Nelson, DeRuyter and Georgetown.

Schuyler: Only the Townships of Cayuta, Catharine, Hector and Montour.

Wayne: Only the Townships of Galen, Savannah, Rose, Butler, Huron 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:	07/01/2022	07/01/2023
	\$ 31.80	Additional \$ 1.50*

\*To be allocated at a later date.

NOTE: Shift work mandated by the project owner. All shifts will be (8) hours.

1st Shift	\$ 31.80
2nd Shift	34.98
3rd Shift	36.57

WHEN A SINGLE IRREGULAR SHIFT IS WORKED, WITH START TIMES BASED ON SECOND AND THIRD SHIFTS, ADD 10 % TO THE WAGE RATE POSTED ABOVE.

## SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 30.53
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## 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 Sunday shall be observed the following Monday.

## REGISTERED APPRENTICES

WAGES per hour: One year terms at the following rates.

1st	2nd	3rd	4th
\$ 19.50	\$ 21.50	\$ 23.50	\$ 25.50

SUPPLEMENTAL BENEFITS per hour:

1st year	\$ 11.53
2nd year	19.58
3rd year	20.73
4th year	21.88

6-60

## Laborer - Building

12/01/2022

**JOB DESCRIPTION** Laborer - Building

**DISTRICT** 2

## ENTIRE COUNTIES

Cortland, Tompkins

## PARTIAL COUNTIES

Schuyler: Only the Township of Catherine including the Village of Odessa.

Tioga: Townships of Candor & Spencer

## WAGES

Per hour:

GROUP #1: Basic Laborer - excavation, concrete vibrator, power-driven buggy, 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

	07/01/2022	07/01/2023 Additional	07/01/2024 Additional	07/01/2025 Additional
GROUP #1	\$ 25.75	\$ 1.00*	\$ 1.00*	\$ 1.00*
GROUP #2	26.75	1.00*	1.00*	1.00*
GROUP #3	27.75	1.00*	1.00*	1.00*
GROUP #4	27.75	1.00*	1.00*	1.00*

\*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".

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Friday, provided the project duration is more than forty (40) hours.

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

#### SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 21.45

#### OVERTIME PAY

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

\*If working four (4) ten (10) hour days the make up day will be on Friday.

#### 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 Journeyman's wage.

1st	2nd	3rd	4th
70%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

1st term	\$ 14.10
2nd term	15.35
3rd term	16.23
4th term	17.10

2-785b

#### Laborer - Heavy&Highway

12/01/2022

**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, Guniting, 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.

	07/01/2022	07/01/2023 Additional	07/01/2024 Additional
GROUP A	\$ 32.80	\$ 3.00*	\$ 2.50*
GROUP B	33.00	3.00*	2.50*
GROUP C	33.20	3.00*	2.50*
GROUP D	33.40	3.00*	2.50*
GROUP E	36.00	3.00*	2.50*

\*To be allocated at a later date.

**NOTE ADDITIONAL AMOUNTS FOR THE FOLLOWING CONDITIONS:**

- 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 \$3.00 per hour.
- 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 E rate for the shift.

**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:

Journeyman \$ 23.11

**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. However, an employee not able to report because of proven sickness, death in immediate family, or accident shall be entitled to holiday pay.

**REGISTERED APPRENTICES**

WAGES: 1000 hour terms at the following percentage of Journeyman's GROUP B wage:

1st	2nd	3rd	4th
70%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

1st term	\$ 20.86
2nd term	21.61
3rd term	21.99
4th term	22.36

2-785h

**Laborer - Tunnel**

**12/01/2022**

**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.

	07/01/2022	07/01/2023 Additional	07/01/2024 Additional
Group A	\$ 35.98	\$ 3.00*	\$ 2.00*
Group B	36.18	3.00*	2.00*
Group C	38.98	3.00*	2.00*
Group D	39.18	3.00*	2.00*

\*To be allocated at a later date.

**NOTE ADDITIONAL AMOUNTS FOR THE FOLLOWING CONDITIONS:**

- 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 \$3.00 per hour.
- 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 D rate for the shift.

IMPORTANT NOTE: Wage and supplement rates for the operation of forklift and skid steer may be found under the classification "Operating Engineer".

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyman \$ 23.11

**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 Saturday.
- An Employee must work the scheduled working day before and the scheduled working day after a holiday to receive holiday pay. However, an employee not able to report because of proven sickness, death in immediate family, or accident shall be entitled to holiday pay.

**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%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

1st Term	\$ 7.75
2nd Term	7.75
3rd Term	15.51
4th Term	23.11

2-785T

**Lineman Electrician**

**12/01/2022**

**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.

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. (Ref #14.01.01)

Per hour:	07/01/2022	05/01/2023	05/06/2024
Lineman, Technician	\$ 56.00	\$ 57.40	\$ 58.90
Crane, Crawler Backhoe	56.00	57.40	58.90
Welder, Cable Splicer	56.00	57.40	58.90
Digging Mach. Operator	50.40	51.66	53.01
Tractor Trailer Driver	47.60	48.79	50.07
Groundman, Truck Driver	44.80	45.92	47.12
Equipment Mechanic	44.80	45.92	47.12
Flagman	33.60	34.44	35.34

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

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

Lineman, Technician	\$ 56.00	\$ 57.40	\$ 58.90
Crane, Crawler Backhoe	56.00	57.40	58.90
Cable Splicer	61.60	63.14	64.79
Certified Welder -			
Pipe Type Cable	58.80	60.27	61.85
Digging Mach. Operator	50.40	51.66	53.01
Tractor Trailer Driver	47.60	48.79	50.07
Groundman, Truck Driver	44.80	45.92	47.12
Equipment Mechanic	44.80	45.92	47.12
Flagman	33.60	34.44	35.34

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

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

Lineman, Tech, Welder	\$ 57.32	\$ 58.72	\$ 60.22
Crane, Crawler Backhoe	57.32	58.72	60.22
Cable Splicer	63.05	64.59	66.24
Certified Welder -			
Pipe Type Cable	60.19	61.66	63.23
Digging Mach. Operator	51.59	52.85	54.20
Tractor Trailer Driver	48.72	49.91	51.19
Groundman, Truck Driver	45.86	46.98	48.18
Equipment Mechanic	45.86	46.98	48.18
Flagman	34.39	35.23	36.13

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

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

Lineman, Tech, Welder	\$ 58.51	\$ 59.91	\$ 61.41
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Crane, Crawler Backhoe	58.51	59.91	61.41
Cable Splicer	58.51	59.91	61.41
Digging Mach. Operator	52.66	53.92	55.27
Tractor Trailer Driver	49.73	50.92	52.20
Groundman, Truck Driver	46.81	47.93	49.13
Equipment Mechanic	46.81	47.93	49.13
Flagman	35.11	35.95	36.85

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

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

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

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

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

### SUPPLEMENTAL BENEFITS

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

	07/01/2022	05/01/2023	05/06/2024
Journeyman	\$ 25.90 *plus 7% of the hourly wage paid	\$ 26.40 *plus 7% of the hourly wage paid	\$ 26.90 *plus 7% of the hourly wage paid
Journeyman Lineman or Equipment Operators with Crane License	\$ 27.90 *plus 7% of the hourly wage paid	\$ 29.40 *plus 7% of the hourly wage paid	\$ 30.90 *plus 7% of the hourly wage paid

\*The 7% is based on the hourly wage paid, straight time or premium time.

### OVERTIME PAY

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

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

### HOLIDAY

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

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

### REGISTERED APPRENTICES

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

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

SUPPLEMENTAL BENEFITS per hour:

	07/01/2022	05/01/2023	05/06/2024
	\$ 25.90 *plus 7% of the hourly wage paid	\$ 26.40 *plus 7% of the hourly wage paid	\$ 26.90 *plus 7% of the hourly wage paid

\*The 7% is based on the hourly wage paid, straight time or premium time.

**Lineman Electrician - Teledata****12/01/2022****JOB DESCRIPTION** Lineman Electrician - Teledata**DISTRICT 6****ENTIRE COUNTIES**

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

**WAGES**

Per hour:

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

	07/01/2022	01/01/2023	01/01/2024	01/01/2025
Cable Splicer	\$ 36.28	\$ 37.73	\$ 39.24	\$ 40.81
Installer, Repairman	\$ 34.43	\$ 35.81	\$ 37.24	\$ 38.73
Teledata Lineman	\$ 34.43	\$ 35.81	\$ 37.24	\$ 38.73
Tech., Equip. Operator	\$ 34.43	\$ 35.81	\$ 37.24	\$ 38.73
Groundman	\$ 18.25	\$ 18.98	\$ 19.74	\$ 20.53

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

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

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

**SUPPLEMENTAL BENEFITS**

Per hour:	07/01/2022	01/01/2023	01/01/2024	01/01/2025
Journeyman	\$ 5.14	\$ 5.14	\$ 5.14	\$ 5.14
	*plus 3% of the hourly wage paid	*plus 3% of the hourly wage paid	*plus 3% of the hourly wage paid	*plus 3% of the hourly wage paid

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

**OVERTIME PAY**

See (B, E, Q) on OVERTIME PAGE

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

**HOLIDAY**

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

6-1249LT - Teledata

**Lineman Electrician - Traffic Signal, Lighting****12/01/2022****JOB DESCRIPTION** Lineman Electrician - Traffic Signal, Lighting**DISTRICT 6****ENTIRE COUNTIES**

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

**WAGES**

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



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

A flagger's duties shall consist of traffic control only.  
(Ref #14.01.01)

Per hour:	07/01/2022	05/01/2023	05/06/2024
Lineman, Technician	\$ 48.19	\$ 49.32	\$ 50.54
Crane, Crawler Backhoe	48.19	49.32	50.54
Certified Welder	50.60	51.79	53.07
Digging Machine	43.37	44.39	45.49
Tractor Trailer Driver	40.96	41.92	42.96
Groundman, Truck Driver	38.55	39.46	40.43
Equipment Mechanic	38.55	39.46	40.43
Flagman	28.91	29.59	30.32

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

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

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

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

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

#### SUPPLEMENTAL BENEFITS

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

	07/01/2022	05/01/2023	05/06/2024
Journeyman	\$ 25.90	\$ 26.40	\$ 26.90
	*plus 7% of the hourly wage paid	*plus 7% of the hourly wage paid	*plus 7% of the hourly wage paid
Journeyman Lineman or Equipment Operators with Crane License	\$ 27.90	\$ 29.40	\$ 30.90
	*plus 7% of the hourly wage paid	*plus 7% of the hourly wage paid	*plus 7% of the hourly wage paid

\*The 7% is based on the hourly wage paid, straight time or premium time.

#### OVERTIME PAY

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

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

#### HOLIDAY

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

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

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

#### REGISTERED APPRENTICES

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

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

SUPPLEMENTAL BENEFITS per hour:

07/01/2022	05/01/2023	05/06/2024
\$ 25.90	\$ 26.40	\$ 26.90
*plus 7% of the hourly wage paid	*plus 7% of the hourly wage paid	*plus 7% of the hourly wage paid

\*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249a-LT

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**Lineman Electrician - Tree Trimmer****12/01/2022**

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**JOB DESCRIPTION** Lineman Electrician - Tree Trimmer

**DISTRICT 6**

**ENTIRE COUNTIES**

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

**WAGES**

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

Per hour:	07/01/2022	01/01/2023
Tree Trimmer	\$ 28.25	\$ 29.80
Equipment Operator	24.98	26.35
Equipment Mechanic	24.98	26.35
Truck Driver	20.80	21.94
Groundman	17.13	18.07
Flag person	13.20*	13.20*

\*NOTE: Subject to change due to any minimum wage increases.

**SUPPLEMENTAL BENEFITS**

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

	07/01/2022	01/01/2023
Journeyman	\$ 10.23	\$ 10.48
	*plus 3% of the hourly wage paid	*plus 3% of the hourly wage paid

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

**OVERTIME PAY**

See (B, E, Q) on OVERTIME PAGE

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

**HOLIDAY**

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

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

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

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

6-1249TT

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**Mason - Building****12/01/2022**

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**JOB DESCRIPTION** Mason - Building

**DISTRICT 5**

**ENTIRE COUNTIES**

Cortland, Tompkins

## WAGES

Per hour: 07/01/2022  
Building:  
Brick/Blocklayer, Cement Mason \$ 33.63  
Plasterer/EFIS, Stone Mason, Tuck Pointer

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

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

## SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 24.74

## 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 percentage of Journeyman's wage:

1st	2nd	3rd	4th
\$ 21.50	\$ 26.54	\$ 27.65	\$ 30.27

Supplemental Benefits per hour:

1st	2nd	3rd	4th
\$ 21.56	\$ 21.62	\$ 23.91	\$ 24.70

5-3B lth - Z2

## Mason - Heavy&Highway

12/01/2022

**JOB DESCRIPTION** Mason - Heavy&Highway

**DISTRICT** 5

## ENTIRE COUNTIES

Allegany, Broome, Chautauqua, Chemung, Chenango, Cortland, Delaware, Genesee, Livingston, Monroe, Ontario, Orleans, Otsego, Schuyler, Seneca, Steuben, Tioga, Tompkins, Wayne, Wyoming, Yates

## PARTIAL COUNTIES

Cattaraugus: Entire county except in the Township of Perrysburg and the Village of Gowanda only the Bricklayer classification applies.

Erie: Only the Bricklayer classification applies.

Niagara: Only the Bricklayer classification applies.

## WAGES

Per hour: 07/01/2022  
Heavy & Highway:  
Cement Mason \$ 34.88  
Bricklayer 34.88

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

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

## SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 23.53

## OVERTIME PAY

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

## HOLIDAY

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

## REGISTERED APPRENTICES

Wages per hour:

1500 hour terms at the following percentage of Journeyman's wage:

1st	2nd	3rd	4th
50%	60%	70%	80%

Supplemental benefits per hour:

1st term	\$ 14.03
2nd term	\$ 22.97
3rd term	\$ 23.11
4th term	\$ 23.25

5-3h

### Mason - Tile Finisher

12/01/2022

**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.

#### WAGES

Wages

Per hour: 07/01/2022

Building:

Marble, Slate, Terrazzo \$ 30.86

and Tile Finisher

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

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

#### SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 18.61

#### 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 percentage of Journeyman's wage:

1st	2nd	3rd
\$ 18.52	\$ 21.60	\$ 24.69

Supplemental benefits per hour:

1st	2nd	3rd
\$ 12.17	\$ 12.28	\$ 16.44

5-3TF - Z4

### Mason - Tile Setter

12/01/2022

**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: 07/01/2022

Building:

Marble, Slate, Terrazzo and Tile Setter \$ 33.69

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

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

## SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 21.56

## 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 percentage of Joureyman's wage:

1st	2nd	3rd	4th
\$ 20.21	\$ 23.58	\$ 26.95	\$ 30.32

Supplemental benefits per hour:

1st	2nd	3rd	4th
\$ 12.29	\$ 12.42	\$ 21.30	\$ 21.43

5-3TS - Z4

## Millwright

12/01/2022

## 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: 07/01/2022

Millwright - Power Generation \$ 41.23

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 he/she is 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) are 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:

Journeyman \$ 26.72\*

\*NOTE: Subject to OT premium

**OVERTIME PAY**

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

\*NOTE - Saturday may be used as a make-up day and worked at the straight time rate of pay during a work week when conditions such as weather, power failure, fire, or natural disaster prevent the performance of work on a regular scheduled work day.

**HOLIDAY**

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

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 Journeyman'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	1.00
(500' and below)	

SUPPLEMENTAL BENEFITS per hour:

Appr. 1st year	\$ 11.83
Appr. 2nd year	22.26
Appr. 3rd year	23.74
Appr. 4th year	25.24

6-1163Power

**Millwright**

**12/01/2022**

**JOB DESCRIPTION** Millwright

**DISTRICT** 6

**ENTIRE COUNTIES**

Chemung, Cortland, Livingston, Monroe, Ontario, Orleans, Schuyler, Steuben, Tompkins, Wayne, Wyoming

**WAGES**

Per hour: 07/01/2022

Building	\$ 33.11
Heavy & Highway*	35.11

\* Effective 5/01/2019, all Heavy & Highway (H/H) Millwright construction will be paid at the rate indicated above.

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 he/she is 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) are 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:

Journeyman \$ 25.32

**OVERTIME PAY**

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

\*NOTE - Saturday may be used as a make-up day and worked at the straight time rate of pay during a work week when conditions such as weather, power failure, fire, or natural disaster prevent the performance of work on a regular scheduled work day.

#### HOLIDAY

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

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 Journeyman'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 (bldg)	1.50
Hazardous Waste Work (H/H)	2.00
Machinist	2.00
Underground	1.00
(500' and below)	

SUPPLEMENTAL BENEFITS per hour:

Appr. 1st year	\$ 11.58
Appr. 2nd year	21.20
Appr. 3rd year	22.57
Appr. 4th year	23.95

6-1163

#### Operating Engineer - Building

12/01/2022

**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.

CLASSIFICATION A1: Cranes, all types\* (Includes Boom Truck, Cherry Picker, Dragline, Overhead Crane, Pile Driver, Truck Crane)

CLASSIFICATION 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), Burning Plant Operator, Cableway, Caisson Auger, Central Mix Plant (automated), Concrete Pump, Crusher (Rock), Derrick, 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, Fork Lift (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.

**CLASSIFICATION 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), Fork Lift (over 10 ton with or without attachments), Front End Loader (under 4 c.y.), Grout Pump, Gunit 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

**CLASSIFICATION 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, Fork Lift ("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: Building 07/01/2022

Master Mechanic	\$ 43.42
Asst. Master Mechanic	42.42
Class A1*	42.92
Class A1-Tower Crane*	45.42
Class A	41.42
Class B	39.30
Class C	35.08

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 65 ton to 199 ton capacity - A1 rate plus \$ 1.50  
All cranes 200 ton to 399 ton capacity - A1 rate plus \$ 2.50  
All cranes 400 ton capacity and over - A1 rate plus \$ 3.50

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyman \$ 29.10

**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 year terms at the following percentage of Journeyman's CLASS A wage:

1st year	60%
2nd year	65%
3rd year	70%
4th year	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: Same as Journeyman

6-158-545b.s

**Operating Engineer - Heavy&Highway**

**12/01/2022**

**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 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); Boom Truck; Cableway; Bull Dozer being operated with active GPS; Caisson Auger; Central Mix Concrete Plant (automated); Cherry Picker\*; Concrete Curb Machine (self-propelled, slipform); Concrete Pump; Crane\*; Derricks\*; Directional Boring/Drilling Machine; Dragline\*; 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; Overhead Crane\* (gantry or straddle type); Pavement Breaker (SP Wertgen; PB-4 and similar type); Profiler (over 105 h.p.); Pile Driver\*; Power Grader; Quad 9; Quarry Master (or equivalent); Scraper; Shovel; Side Boom; Slip Form Paver; Tractor Drawn Belt-Type Loader; Truck Crane\*; 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 (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); 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; Fork Lift; Form Tamper; Generators\*\*; Grout Pump; Guniting 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 Heatterman; Power Sweeper; Pumps\*\*; Revinus Widener; Roller (subgrade & fill); Scarifier (ride-on); Shell Winder; Skid Steer Loader (Bobcat or similar); 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: H/H 07/01/2022

Master Mechanic	\$ 49.50
CLASS A*	48.15
CLASS B	47.27
CLASS C	43.99

(\*) Premiums for CRANES are based upon Class A rates with the following premiums:

—Additional \$4.00 per hr for Tower Cranes, including self erecting.

—Additional \$3.00 per hr for Lattice Boom Cranes and all other cranes with a manufacturer's rating of fifty tons and over.

—Additional \$2.00 per hr for all Hydraulic Cranes and Derricks with a manufacturer's rating of 49 ton and below, including boom trucks.

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.

**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.

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

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

**SUPPLEMENTAL BENEFITS**

Per hour: 07/01/2022

Journeyman	\$ 30.60
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## 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: (1000) hour terms at the following percentage of Journeyman's CLASS B wage.

1st term	60%
2nd term	70%
3rd term	80%
4th Term	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 Journeyman

6-158-545h

## Operating Engineer - Survey Crew

12/01/2022

**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.

07/01/2022

Party Chief	\$ 47.37
Instrument Person	43.51
Rod Person	32.26

Additional \$3.00/hr. for Tunnel Work

Additional \$2.50/hr. for Hazardous Work Site

## SUPPLEMENTAL BENEFITS

Per hour worked:

Journeyman \$ 28.05

## OVERTIME PAY

See (B, E, P, \*X) on OVERTIME PAGE

\*Note: \$24.10/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:

07/01/2022

0-1000	60%
1001-2000	70%
2001-3000	80%

SUPPLEMENTAL BENEFIT per hour worked:

0-1000	\$ 19.83 / PHP \$17.03
1001-2000	22.85 / " 19.45
2001-3000	25.88 / " 21.93

NOTE: PHP is premium hours paid when worked.

12-158-545 D.H.H.

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**Operating Engineer - Survey Crew - Consulting Engineer****12/01/2022**

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**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.

07/01/2022

Party Chief	\$ 47.37
Instrument Person	43.51
Rod Person	32.26

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	\$ 28.05
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**OVERTIME PAY**

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

\*Note: \$24.10/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 percentage of Rod Persons Wage:

07/01/2022

0-1000	60%
1001-2000	70%
2001-3000	80%

SUPPLEMENTAL BENEFIT per hour worked:

0-1000	\$ 19.83 / PHP \$17.03
1001-2000	\$ 22.85 / " 19.45
2001-3000	\$ 25.88 / " 21.93

NOTE: PHP is premium hours paid when worked.

12-158-545 DCE

## Operating Engineer - Tunnel

12/01/2022

### 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, Schoenectady, 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 Poughkeepsie, 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 Insertor (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: 07/01/2022

Master Mechanic	\$ 52.60
CLASS A	50.19
CLASS B	48.97
CLASS C	46.18
CLASS D	43.17

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. Fringe benefits will be paid at the hourly wage premium.

#### CRANES:

Crane 1: All cranes, including self-erecting to be paid \$4.00 per hour over the Class A rate.

Crane 2: All Lattice Boom Cranes and all cranes with a manufacturer's rating of fifty (50) ton and over to be paid \$3.00 per hour over Class A rate.

Crane 3: All hydraulic cranes and derricks with a manufacturer's rating of forty nine (49) ton and below, including boom trucks, to be paid \$2.00 per hour over Class A rate.

Crane 1	\$ 54.19
Crane 2	53.19
Crane 3	52.19

#### SUPPLEMENTAL BENEFITS

Per hour:	\$ 23.70
	+ 9.35*

\* This portion of benefits subject to same premium rate 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

If a holiday falls on Sunday, it shall be observed on Monday.

#### REGISTERED APPRENTICES

WAGES:(1000) hours terms at the following percentage of Journeyman's Class B wage.

1st term	60%
2nd term	65%
3rd term	70%
4th term	75%

SUPPLEMENTAL BENEFITS per hour: Same as Journeyman

7-158-832TL.

#### Painter

12/01/2022

#### JOB DESCRIPTION Painter

#### DISTRICT 2

#### ENTIRE COUNTIES

Cortland, Tompkins

#### WAGES

Per hour:	07/01/2022	05/01/2023	05/01/2024
		Additional	Additional
Painter	\$ 26.64	\$ 1.35*	\$ 1.35*
Taper, Paperhangers, and Vinyl hangers	27.97	1.42*	1.42*

\*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 \$ 1.00 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

NOTE - SEE BRIDGE PAINTER RATES FOR BRIDGES & TANKS

\*\* IMPORTANT NOTICE - EFFECTIVE 04/01/2009 \*\*

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

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

### SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 22.24

### OVERTIME PAY

See (B, \*E2, F, R) on OVERTIME PAGE

\*Saturday is also payable at the straight time rate if the employee misses work, except where a doctor or hospital's verification of illness is produced Monday through Friday when work was available to the employee. Saturday is not a make-up day when work is missed as a result of a Holiday.

If working 4 (four) 10 (ten) hour day schedule, Friday will be the makeup day.

### 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 Journeyman 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

12/01/2022

**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: 07/01/2022

Bridge	\$ 41.06
Tunnel	41.06
Tank*	39.06

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

Tank rate applies to indoor and outdoor tanks, tank towers, standpipes, digesters, waste water treatment tanks, chlorinator tanks, etc.  
Covers all types of tanks including but not limited to steel tanks, concrete tanks, fiberglass tanks, etc.

Note an additional \$1.50 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:

\$ 29.89

#### OVERTIME PAY

Exterior work only See ( B, E4, F\*, R ) on OVERTIME PAGE.

All other work See ( B, F\*, R ) on OVERTIME PAGE.

\*Note - Saturday is payable at straight time if the employee misses work, except where a doctor's or hospital verification of illness is produced Monday through Friday when work was available to the employee.

#### HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

#### REGISTERED APPRENTICES

Wages per hour:

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

1st	2nd	3rd	4th	5th	6th
\$ 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

12/01/2022

**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

	07/01/2022
Metal Polisher	\$ 37.78
Metal Polisher*	38.80
Metal Polisher**	41.78

\*Note: Applies on New Construction & complete renovation

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

#### SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2022

Journeyworker:

All classification \$ 11.24

#### OVERTIME PAY

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

#### HOLIDAY

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

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

#### REGISTERED APPRENTICES

Wages per hour:

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

07/01/2022

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

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

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

\*Note: Applies on New Construction & complete renovation

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

Supplemental benefits:

Per hour:

1st year	\$ 7.99
2nd year	7.99
3rd year	7.99

8-8A/28A-MP

## Plumber

12/01/2022

**JOB DESCRIPTION** Plumber

**DISTRICT** 2

### ENTIRE COUNTIES

Broome, Chenango

### PARTIAL COUNTIES

Cortland: Only the Township of Marathon.

Delaware: Only the Townships of Andes, Bovina, Colchester, Davenport, Delhi, Deposit, Franklin, Hamden, Hancock, Harpersfield, Kortright, Masonville, Meredith, Sidney, Stamford, Tompkins and Walton.

Madison: Only the Township of Georgetown.

Otsego: Only the Townships of Burlington, Butternuts, Decatur, Edmeston, Hartwick, Laurens, Maryland, Milford, Morris, New Lisbon, Oneonta, Otego, Pittsfield, Unadilla, Westford and Worchester.

Tioga: Only the Townships of Newark Valley and Owego.

### WAGES

Per hour:	07/01/2022	05/01/2023
Plumber	\$ 38.23	Additional \$ 2.50
Steamfitter	38.23	2.50

Agency-mandated shift operations:

1. Shift work shall start no earlier than 6AM Monday and will conclude no later than 9AM Saturday (overtime premiums applicable after 8 hours in a shift).

2. Single irregular shiftwork, less than 3 consecutive days will be paid at the rate of time and one-half of the regular hourly rate.

3. 3 consecutive work days or more:

First Shift - No Premium (Starting 6AM-9AM)

Second Shift - Regular hourly rate plus 12%

Third Shift - Regular hourly rate plus 18%

### SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$14.45
	+16.49*

\*This portion of the benefit is subject to the SAME PREMIUM as shown for overtime on projects over \$100 million in total construction costs (including engineering & architecture).

### OVERTIME PAY

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

\*portion of supplemental benefits subject to V code when project cost is over one hundred million (including engineering & architecture).

### HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

When a Holiday falls on Sunday, it will be celebrated the following day. If the holiday falls on a Saturday, it will be observed that day unless so determined by the Federal Government to be celebrated on a different day.

### REGISTERED APPRENTICES



WAGES: One year terms at the following percentage of Journeyman's wage.

1st.	2nd.	3rd.	4th.	5th.
50%	55%	60%	70%	85%

SUPPLEMENTAL BENEFITS per hour:

1st term	\$ 14.45 +8.10*
All other terms	\$ 14.45 +12.49*

\*This portion of the benefit is subject to the SAME PREMIUM as shown for overtime on projects over \$100 million in total construction costs (including engineering & architecture).

2-112s-SF

<b>Plumber</b>	<b>12/01/2022</b>
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**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, Richford, Spencer, Nichols and Tioga.

**WAGES**

Per hour:	07/01/2022	05/01/2023 Additional
Plumber/Steamfitter	\$ 39.51	\$ 3.00*
Pipefitter/Welder/HVAC	39.51	
Refrigeration	39.51	

\*To be allocated at a later date.

SINGLE IRREGULAR WORK SHIFT: Additional 15% premium added to the wages above for a single irregular work shift outside of normal working hours.

Four (4), ten (10) hour days may be worked at straight time during a week, Monday thru Thursday. Friday may be used as a make-up day. NOTE - In order to use the '4 Day/10 Hour Work Schedule,' as your normal schedule, you must submit an 'Employer Registration for Use of 4 Day/10 Hour Work Schedule,' form PW30.1; and there must be a dispensation of hours in place on the project. If the PW30.1 is not submitted you may be liable for overtime payments for work over 8 hours per day.

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyman	\$ 26.40
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\*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 prior 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 journeyman's wage:

1st	2nd	3rd	4th	5th
50%	55%	60%	70%	85%

SUPPLEMENTAL BENEFITS per hour\*:

1st	\$ 12.53
2nd	23.09
3rd	23.46
4th	24.19
5th	25.30

\*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

6-81-SF

<b>Roofer</b>	<b>12/01/2022</b>
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**JOB DESCRIPTION** Roofer

**DISTRICT** 6

**ENTIRE COUNTIES**

Cayuga, Cortland, Franklin, Herkimer, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, Seneca, St. Lawrence

**WAGES**

Per hour:	07/01/2022	06/01/2023	06/01/2024
		Additional	Additional
Roofer, Waterproofer	\$ 31.25	\$ 2.00*	\$ 2.00*
Additional per hour:			
Green Roofing*	\$ 0.25		
Pitch Removal & Appl.	1.50		
Asbestos Abatement	1.50		
Irregular Shift(s)**	4.00		

\*To be allocated at a later date.

**NOTES:**

Does not include metal flashing, gravel stop and metal roofing; see Sheetmetal Worker wage schedule.

\* Green Roofing is any component of green technology or living roof above the roof membrane. Including but not limited to the fabric, dirt and plantings.

\*\* WHEN MANDATED BY THE OWNER OR CONTRACTING AGENCY, THERE IS AN ADDITIONAL PREMIUM FOR HOURS WORKED BEFORE 5:30AM AND AFTER 5:30PM.

**SUPPLEMENTAL BENEFITS**

Per hour:	
Journeyman	\$ 24.85
Additional contribution on any Asbestos Abatement work.	0.75

**OVERTIME PAY**

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

\*NOTE - If a holiday falls in that week and 32 hours were worked, Saturday will be paid at 1 1/2 times the rate.

**HOLIDAY**

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

NOTE: When any of these holidays falls on Sunday, the following day shall be observed as a holiday.

**REGISTERED APPRENTICES**

WAGES per hour: 1000 hour terms at the following percentage of the Journeyman's wage:

1st term (0 to 999)	65%
2nd term (1000 to 1999)	70%
3rd term (2000 to 2999)	75%
4th term (3000 to 3999)	85%

Additional per hour:	
Green Roofing**	\$ 0.25

Pitch Removal & Appl.	1.50
Asbestos Abatement	1.50

SUPPLEMENTAL BENEFITS per hour:

1st term	\$ 18.73
2nd term	20.40
3rd term	23.85
4th term	24.85

Additional contribution on any Asbestos Abatement work	\$ 0.75
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6-195

<b>Sheetmetal Worker</b>	<b>12/01/2022</b>
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**JOB DESCRIPTION** Sheetmetal Worker **DISTRICT 6**

**ENTIRE COUNTIES**

Cayuga, Chenango, Cortland, Herkimer, Jefferson, Lewis, Madison, Oneida, Onondaga, Oswego, St. Lawrence

**WAGES**

Per hour:	07/01/2022	05/01/2023 Additional \$ 1.51*	05/01/2024 Additional \$ 1.26*
Sheetmetal Worker:			
** (under \$10 million)	\$ 32.89		
** (over \$10 million)	33.89		

\*\*For total cost of Sheetmetal contract only.

\*To be allocated at a later date.

TO INCLUDE METAL STANDING SEAM ROOFING, METAL ROOF FLASHINGS, AND GRAVEL STOP.

**SUPPLEMENTAL BENEFITS**

Per hour:

Journeyman	\$ 21.47 plus 3% of hourly wage paid
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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

**HOLIDAY**

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

When any holiday falls on a Saturday, the Friday before such holiday shall be recognized as the legal holiday. Any holiday falling on Sunday, the following Monday shall be recognized as the legal holiday.

**REGISTERED APPRENTICES**

WAGES per hour: One year terms at the following percentage of Journeyman's wage.

1st	2nd	3rd	4th	5th
45%	55%	65%	75%	85%
\$ 14.80*	\$ 18.09	\$ 21.38	\$ 24.67	\$ 27.96

\*Note: subject to change due to any minimum wage increase.

SUPPLEMENTAL BENEFITS per hour:

\$ 12.80*	\$ 13.77*	\$ 14.72*	\$ 16.72*	\$ 17.69*
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\*Plus 3% of hourly wage paid. The 3% is based on the hourly wage paid, straight time or premium rate.

6-58

<b>Sprinkler Fitter</b>	<b>12/01/2022</b>
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**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 07/01/2022

Sprinkler \$ 38.15  
Fitter

## SUPPLEMENTAL BENEFITS

Per hour

Journeyperson \$ 27.68

## 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
\$ 18.30	\$ 20.34	\$ 22.12	\$ 24.15	\$ 26.19	\$ 28.22	\$ 30.25	\$ 32.29	\$ 34.32	\$ 36.35

Supplemental Benefits per hour

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 8.37	\$ 8.37	\$ 19.76	\$ 19.76	\$ 20.01	\$ 20.01	\$ 20.01	\$ 20.01	\$ 20.01	\$ 20.01

1-669

## Teamster - Building

12/01/2022

**JOB DESCRIPTION** Teamster - Building

**DISTRICT** 6

## ENTIRE COUNTIES

Broome, Cayuga, Cortland, Delaware, Onondaga, Seneca, Tompkins, Yates

## PARTIAL COUNTIES

Allegany: Only the Townships of Almond, Burns, and Alfred.

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 Redfield, Boylston and Sandy Creek.

Otsego: Only the Townships of Butternuts, Laurens, Maryland, Millford, Morris, Oneonta, Otego, Unadilla, and Worcester.

Steuben: Only the Townships of Prattsburg, Canisteo, Fremont, Cohoctan, Dansville, Hornell, Hartsville, Greenwood, West Union, Troupsburg, and Jasper.

Tioga: Only the Townships of Berkshire, Candor, Newark Valley, Nichols, Owego, Richford, and Tioga. All territory east of Nichols/Smithboro to Broome County, within 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: 07/01/2022

Building: (under \$ 5 million\*)

GROUP A	\$ 24.43
GROUP B	24.43
GROUP C	24.43
GROUP D	24.43

Building: (over \$ 5 million\*)

GROUP A	\$ 25.48
GROUP B	25.58

GROUP C	25.83
GROUP D	25.63

\* Total project cost including General Construction, Plumbing, HVAC and Electrical

#### SUPPLEMENTAL BENEFITS

Per hour:

(under \$5 million\*) \$ 28.63

(over \$5 million\*) 29.37

\* 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

12/01/2022

**JOB DESCRIPTION** Teamster - Heavy&Highway

**DISTRICT** 6

#### ENTIRE COUNTIES

Cayuga, Cortland, Seneca, Tompkins, Yates

#### PARTIAL COUNTIES

Allegany: Only the Townships of Almond, Alfred, Burns and West Almond.

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, Mechanics 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.

Per hour:	07/01/2022	07/01/2023	07/01/2024
GROUP 1	\$ 30.41	\$ 32.24	\$ 34.21
GROUP 2	30.61	32.44	34.41

NOTE: For all work bid, there shall be a twelve month carryover of the rates in effect at the time of the bid.

Four (4), ten (10) hour days may be worked at straight time during a week.

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

#### SUPPLEMENTAL BENEFITS

Per hour:	07/01/2022	07/01/2023	07/01/2024
Journeyman	\$ 27.65	\$ 28.32	\$ 28.85

#### OVERTIME PAY

See (B, B2, E2, J) on OVERTIME PAGE

#### HOLIDAY

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

6-317(Syr)

### Welder

12/01/2022

**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 07/01/2022

Welder: To be paid the same rate of the mechanic performing the work.\*

\*EXCEPTION: If a specific welder certification is required, then the 'Certified Welder' rate in that trade tag will be paid.

**OVERTIME PAY**

**HOLIDAY**

1-As Per Trade

## Overtime Codes

Following is an explanation of the code(s) listed in the OVERTIME section of each classification contained in the attached schedule. Additional requirements may also be listed in the HOLIDAY section.

NOTE: Supplemental Benefits are 'Per hour worked' (for each hour worked) unless otherwise noted

- ( AA ) Time and one half of the hourly rate after 7 and one half hours per day
- ( A ) Time and one half of the hourly rate after 7 hours per day
- ( B ) Time and one half of the hourly rate after 8 hours per day
- ( B1 ) Time and one half of the hourly rate for the 9th & 10th hours week days and the 1st 8 hours on Saturday.  
Double the hourly rate for all additional hours
- ( B2 ) Time and one half of the hourly rate after 40 hours per week
- ( C ) Double the hourly rate after 7 hours per day
- ( C1 ) Double the hourly rate after 7 and one half hours per day
- ( D ) Double the hourly rate after 8 hours per day
- ( D1 ) Double the hourly rate after 9 hours per day
- ( E ) Time and one half of the hourly rate on Saturday
- ( E1 ) Time and one half 1st 4 hours on Saturday; Double the hourly rate all additional Saturday hours
- ( E2 ) Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
- ( E3 ) Between November 1st and March 3rd Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather, provided a given employee has worked between 16 and 32 hours that week
- ( E4 ) Saturday and Sunday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
- ( E5 ) Double time after 8 hours on Saturdays
- ( F ) Time and one half of the hourly rate on Saturday and Sunday
- ( G ) Time and one half of the hourly rate on Saturday and Holidays
- ( H ) Time and one half of the hourly rate on Saturday, Sunday, and Holidays
- ( I ) Time and one half of the hourly rate on Sunday
- ( J ) Time and one half of the hourly rate on Sunday and Holidays
- ( K ) Time and one half of the hourly rate on Holidays
- ( L ) Double the hourly rate on Saturday
- ( M ) Double the hourly rate on Saturday and Sunday
- ( N ) Double the hourly rate on Saturday and Holidays
- ( O ) Double the hourly rate on Saturday, Sunday, and Holidays
- ( P ) Double the hourly rate on Sunday
- ( Q ) Double the hourly rate on Sunday and Holidays
- ( R ) Double the hourly rate on Holidays
- ( S ) Two and one half times the hourly rate for Holidays

- ( S1 ) Two and one half times the hourly rate the first 8 hours on Sunday or Holidays One and one half times the hourly rate all additional hours.
- ( T ) Triple the hourly rate for Holidays
- ( U ) Four times the hourly rate for Holidays
- ( V ) Including benefits at SAME PREMIUM as shown for overtime
- ( W ) Time and one half for benefits on all overtime hours.
- ( X ) Benefits payable on Paid Holiday at straight time. If worked, additional benefit amount will be required for worked hours. (Refer to other codes listed.)



## Holiday Codes

### PAID Holidays:

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

### OVERTIME Holiday Pay:

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays. The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Following is an explanation of the code(s) listed in the HOLIDAY section of each classification contained in the attached schedule. The Holidays as listed below are to be paid at the wage rates at which the employee is normally classified.

- ( 1 ) None
- ( 2 ) Labor Day
- ( 3 ) Memorial Day and Labor Day
- ( 4 ) Memorial Day and July 4th
- ( 5 ) Memorial Day, July 4th, and Labor Day
- ( 6 ) New Year's, Thanksgiving, and Christmas
- ( 7 ) Lincoln's Birthday, Washington's Birthday, and Veterans Day
- ( 8 ) Good Friday
- ( 9 ) Lincoln's Birthday
- ( 10 ) Washington's Birthday
- ( 11 ) Columbus Day
- ( 12 ) Election Day
- ( 13 ) Presidential Election Day
- ( 14 ) 1/2 Day on Presidential Election Day
- ( 15 ) Veterans Day
- ( 16 ) Day after Thanksgiving
- ( 17 ) July 4th
- ( 18 ) 1/2 Day before Christmas
- ( 19 ) 1/2 Day before New Years
- ( 20 ) Thanksgiving
- ( 21 ) New Year's Day
- ( 22 ) Christmas
- ( 23 ) Day before Christmas
- ( 24 ) Day before New Year's
- ( 25 ) Presidents' Day
- ( 26 ) Martin Luther King, Jr. Day
- ( 27 ) Memorial Day
- ( 28 ) Easter Sunday

( 29 )      Juneteenth



New York State Department of Labor - Bureau of Public Work  
State Office Building Campus  
Building 12 - Room 130  
Albany, New York 12240

**REQUEST FOR WAGE AND SUPPLEMENT INFORMATION**

As Required by Articles 8 and 9 of the NYS Labor Law

Fax (518) 485-1870 or mail this form for new schedules or for determination for additional occupations.

**This Form Must Be Typed**

Submitted By:

(Check Only One)

☐

Contracting Agency

☐

Architect or Engineering Firm

☐

Public Work District Office

Date:

**A. Public Work Contract to be let by:** (Enter Data Pertaining to Contracting/Public Agency)

1. Name and complete address ☐ (Check if new or change)

Telephone: ( )

Fax: ( )

E-Mail:

2. NY State Units (see Item 5)

☐ 01 DOT

☐ 02 OGS

☐ 03 Dormitory Authority

☐ 04 State University  
Construction Fund

☐ 05 Mental Hygiene  
Facilities Corp.

☐ 06 OTHER N.Y. STATE UNIT

☐ 07 City

☐ 08 Local School District

☐ 09 Special Local District, i.e.,  
Fire, Sewer, Water District

☐ 10 Village

☐ 11 Town

☐ 12 County

☐ 13 Other Non-N.Y. State  
(Describe)

3. SEND REPLY TO ☐ check if new or change)  
Name and complete address:

Telephone:( )

Fax: ( )

E-Mail:

4. SERVICE REQUIRED. Check appropriate box and provide project information.

☐ New Schedule of Wages and Supplements.

APPROXIMATE BID DATE :

☐ Additional Occupation and/or Redetermination

PRC NUMBER ISSUED PREVIOUSLY FOR  
THIS PROJECT :

OFFICE USE ONLY

**B. PROJECT PARTICULARS**

5. Project Title \_\_\_\_\_

Description of Work \_\_\_\_\_

Contract Identification Number \_\_\_\_\_

Note: For NYS units, the OSC Contract No. \_\_\_\_\_

6. Location of Project:  
Location on Site \_\_\_\_\_

Route No/Street Address \_\_\_\_\_

Village or City \_\_\_\_\_

Town \_\_\_\_\_

County \_\_\_\_\_

7. Nature of Project - Check One:

☐ 1. New Building

☐ 2. Addition to Existing Structure

☐ 3. Heavy and Highway Construction (New and Repair)

☐ 4. New Sewer or Waterline

☐ 5. Other New Construction (Explain)

☐ 6. Other Reconstruction, Maintenance, Repair or Alteration

☐ 7. Demolition

☐ 8. Building Service Contract

8. OCCUPATION FOR PROJECT :

☐ Construction (Building, Heavy  
Highway/Sewer/Water)

☐ Tunnel

☐ Residential

☐ Landscape Maintenance

☐ Elevator maintenance

☐ Exterminators, Fumigators

☐ Fire Safety Director, NYC Only

☐ Guards, Watchmen

☐ Janitors, Porters, Cleaners,  
Elevator Operators

☐ Moving furniture and  
equipment

☐ Trash and refuse removal

☐ Window cleaners

☐ Other (Describe)

9. Has this project been reviewed for compliance with the Wicks Law involving separate bidding?

YES ☐

NO ☐

10. Name and Title of Requester

Signature

**NYSDOL Bureau of Public Work Debarment List    11/29/2022**

**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	*****4018	ADIRONDACK BUILDING RESTORATION INC.		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	AG	*****1812	ADVANCED BUILDERS & LAND DEVELOPMENT, INC.		400 OSER AVE #2300HAUPPAUGE NY 11788	09/11/2019	09/11/2024
DOL	DOL	*****1687	ADVANCED SAFETY SPRINKLER INC		261 MILL ROAD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	NYC	*****6775	ADVENTURE MASONRY CORP.		1535 RICHMOND AVENUE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	NYC		AGOSTINHO TOME		405 BARRETTO ST BRONX NY 10474	05/31/2018	05/31/2023
DOL	NYC		AMJED PARVEZ		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL		ANGELO GARCIA		515 WEST AVE UNIT PH 13NORWALK CT 06850	05/12/2021	05/12/2026
DOL	DOL		ANGELO TONDO		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL		ANITA SALERNO		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	DOL	*****4231	ANKER'S ELECTRIC SERVICE, INC.		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027
DOL	DOL		ANTONIO ESTIVEZ		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	NYC		ARADCO CONSTRUCTION CORP		115-46 132RD ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	DOL		ARNOLD A. PAOLINI		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	NYC		ARSHAD MEHMOOD		168-42 88TH AVENUE JAMAICA NY 11432	11/20/2019	11/20/2024
DOL	NYC	*****2591	AVI 212 INC.		260 CROPSEY AVENUE APT 11GBROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	NYC		AVM CONSTRUCTION CORP		117-72 123RD ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	NYC		AZIDABEGUM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DOL	*****8421	B & B DRYWALL, INC		206 WARREN AVE APT 1WHITE PLAINS NY 10603	12/14/2021	12/14/2026
DOL	NYC		BALWINDER SINGH		421 HUDSON ST SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	NYC	*****8416	BEAM CONSTRUCTION, INC.		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	DOL		BERNARD BEGLEY		38 LONG RIDGE ROAD BEDFORD NY 10506	12/18/2019	12/18/2024
DOL	NYC	*****2113	BHW CONTRACTING, INC.		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		BIAGIO CANTISANI			06/12/2018	06/12/2023
DOL	DOL	*****3627	BJB CONSTRUCTION CORP.		38 LONG RIDGE ROAD BEDFORD NY 10506	12/18/2019	12/18/2024
DOL	DOL	*****4512	BOB BRUNO EXCAVATING, INC		5 MORNINGSIDE DR AUBURN NY 13021	05/28/2019	05/28/2024
DOL	DOL		BOGDAN MARKOVSKI		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL		BRADLEY J SCHUKA		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	DOL		BRUCE P. NASH JR.		5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	DOL	*****0225	C&D LAFACE CONSTRUCTION, INC.		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	12/04/2018	12/04/2023

**NYSDOL Bureau of Public Work Debarment List 11/29/2022**

**Article 8**

DOL	DOL	*****4083	C.P.D. ENTERPRISES, INC		P.O BOX 281 WALDEN NY 12586	03/03/2020	03/03/2025
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	NYC		CALVIN WALTERS		465 EAST THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL		CANTISANI & ASSOCIATES LTD		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CANTISANI HOLDING LLC			06/12/2018	06/12/2023
DOL	DOL		CARMEN RACHETTA		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	02/03/2025
DOL	DOL		CARMENA RACHETTA		8531 OSWEGO ROAD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	DOL	*****3812	CARMODY "2" INC			06/12/2018	06/12/2023
DOL	DOL	*****1143	CARMODY BUILDING CORP	CARMODY CONTRACTIN G AND CARMODY CONTRACTIN G CORP.	442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY CONCRETE CORPORATION			06/12/2018	06/12/2023
DOL	DOL		CARMODY ENTERPRISES, LTD.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY INC		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****3812	CARMODY INDUSTRIES INC			06/12/2018	06/12/2023
DOL	DOL		CARMODY MAINTENANCE CORPORATION		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		CARMODY MASONRY CORP		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	AG	*****7247	CENTURY CONCRETE CORP		2375 RAYNOR ST RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	AG		CESAR J. AGUDELO		81-06 34TH AVENUE APT. 6EJACKSON HEIGHTS NY 11372	02/07/2018	02/07/2023
DOL	DOL	*****0026	CHANTICLEER CONSTRUCTION LLC		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	NYC		CHARLES ZAHRADKA		863 WASHINGTON STREET FRANKLIN SQUARE NY 11010	03/10/2020	03/10/2025
DOL	DOL		CHRISTOPHER GRECO		26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL		CHRISTOPHER J MAINI		19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL		CHRISTOPHER PAPASTEFANO A/K/A CHRIS PAPASTEFANO		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	*****1927	CONSTRUCTION PARTS WAREHOUSE, INC.	CPW	5841 BUTTERNUT ROAD EAST SYRACUSE NY 13057	09/12/2018	09/12/2023
DOL	DOL		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	*****2524	CSI ELECTRICAL & MECHANICAL INC		42-32 235TH ST DOUGLSTON NY 11363	01/14/2019	01/14/2024
DOL	DOL	*****7619	DANCO CONSTRUCTION UNLIMITED INC.		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	NYC		DAVID WEINER		14 NEW DROP LANE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	AG		DEBRA MARTINEZ		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL		DELPHI PAINTING & DECORATING CO INC		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL		DOMENICO LAFACE		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	01/09/2023

**NYS DOL Bureau of Public Work Debarment List 11/29/2022**

**Article 8**

DOL	DOL	*****5175	EAGLE MECHANICAL AND GENERAL CONSTRUCTION LLC		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL		EAST COAST PAVING		2238 BAKER RD GILLET PA 16923	03/12/2018	03/12/2023
DOL	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	*****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002
DOL	NYC	*****5917	EPOCH ELECTRICAL, INC		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2024
DOL	DOL		FAIGY LOWINGER		11 MOUNTAIN RD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL		FRANK BENEDETTO		19 CATLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	DOL	*****4722	FRANK BENEDETTO AND CHRISTOPHER J MAINI	B & M CONCRETE	19 CAITLIN AVE JAMESTOWN NY 14701	09/17/2018	09/17/2023
DOL	NYC		FRANK MAINI		1766 FRONT ST YORKTOWN HEIGHTS NY 10598	01/17/2018	01/17/2023
DOL	DA		FREDERICK HUTZLER		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	NYC	*****6616	G & G MECHANICAL ENTERPRISES, LLC.		1936 HEMPSTEAD TURNPIKE EAST MEDOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		GABRIEL FRASSETTI			04/10/2019	04/10/2024
DOL	NYC		GAYATRI MANGRU		21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025
DOL	DOL		GEOFF CORLETT		415 FLAGGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	DOL		GIGI SCHNECKENBURGER		261 MILL RD EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		GIOVANNI LAFACE		8531 OSWEGO RD BALDWINVILLE NY 13027	02/03/2020	01/09/2023
DOL	NYC	*****3164	GLOBE GATES INC	GLOBAL OVERHEAD DOORS	405 BARRETTO ST BRONX NY 10474	05/31/2018	05/31/2023
DOL	DOL		GREGORY S. OLSON		P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		HANS RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC	*****3228	HEIGHTS ELEVATOR CORP.		1766 FRONT ST YORKTOWN HEIGHTS NY 10598	01/17/2018	01/17/2023
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL	*****5131	INTEGRITY MASONRY, INC.	M&R CONCRETE	722 8TH AVE WATERVLIET NY 12189	06/05/2018	06/05/2023
DOL	DOL		IRENE KASSELIS		32 PENNINGTON AVE WALDWICK NJ 07463	05/30/2019	05/30/2024
DOL	DOL	*****9211	J. WASE CONSTRUCTION CORP.		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		J.A. HIRES CADWALLADER		P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JAMES C. DELGIACCO		722 8TH AVE WATERVLIET NY 12189	06/05/2018	06/05/2023
DOL	DOL		JAMES J. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL		JAMES LIACONE		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		JAMES RACHEL		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		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

**NYSDOL Bureau of Public Work Debarment List 11/29/2022**

**Article 8**

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	*****5368	JCH MASONRY & LANDSCAPING INC.		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	NYC		JENNIFER GUERRERO		1936 HEMPSTEAD TURNPIKE EAST MEADOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		JIM PLAUGHER		17613 SANTE FE LINE ROAD WAYNEFIELD OH 45896	07/16/2021	07/16/2026
DOL	AG		JOHN ANTHONY MASSINO		36-49 204TH STREET BAYSIDE NY 11372	02/07/2018	02/07/2023
DOL	DOL		JOHN F. CADWALLADER		200 LATTA BROOK PARK HORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	*****4612	JOHN F. CADWALLADER, INC.	THE GLASS COMPANY	P.O BOX 100 200 LATTA BROOK PARKHORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL		JOHN GOCEK		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		JOHN LUCIANO			05/14/2018	05/14/2023
DOL	DOL		JOHN MARKOVIC		47 MANDON TERRACE HAWTHORN NJ 07506	03/29/2021	03/29/2026
DOL	DOL		JOHN WASE		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	AG	*****0600	JOHNCO CONTRACTING, INC.		36-49 204TH STREET BAYSIDE NY 11372	02/07/2018	02/07/2023
DOL	DOL		JON E DEYOUNG		261 MILL RD P.O BOX 296EAST AURORA NY 14052	05/29/2019	05/29/2024
DOL	DOL		JORGE RAMOS		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	DOL		JORI PEDERSEN		415 FLAGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DOL		JOSE CHUCHUCA		35 CLINTON AVE OSSINING NY 10562	09/12/2018	09/12/2023
DOL	NYC		JOSEPH MARTINO		1535 RICHMOND AVENUE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	DOL		JOY MARTIN		2404 DELAWARE AVE NIGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL	*****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	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		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/3002
DOL	DOL		KARIN MANGIN		796 PHELPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	DOL		KATE E. CONNOR		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KATIE BURDICK		2238 BAKER RD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL	*****2959	KELC DEVELOPMENT, INC		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KIMBERLY F. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****3490	L & M CONSTRUCTION/DRYWALL INC.		1079 YONKERS AVE YONKERS NY 10704	08/07/2018	08/07/2023
DOL	DA	*****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL		LAVERN GLAVE		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	AG	*****3291	LINTECH ELECTRIC, INC.		3006 TILDEN AVE BROOKLYN NY 11226	02/16/2022	02/16/2027
DOL	DA	*****4460	LONG ISLAND GLASS & STOREFRONTS, LLC		4 MANHASSET TRL RIDGE NY 11961	09/06/2018	09/06/2023

**NYSDOL Bureau of Public Work Debarment List 11/29/2022**

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DOL	AG	*****4216	LOTUS-C CORP.		81-06 34TH AVENUE APT. 6EJACKSON HEIGHTS NY 11372	02/07/2018	02/07/2023
DOL	DOL		LOUIS A. CALICCHIA		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	NYC		LUBOMIR PETER SVOBODA		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	NYC		M & L STEEL & ORNAMENTAL IRON CORP.		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	DOL	*****2196	MAINSTREAM SPECIALTIES, INC.		11 OLD TOWN RD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DA		MANUEL P TOBIO		150 KINGS STREET BROOKLYN NY 14444	08/19/1998	08/19/2998
DOL	DA		MANUEL TOBIO		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	NYC		MAREK FABIJANOWSKI		50 MAIN ST WHITE PLAINS NY 10606	01/04/2019	01/04/2024
DOL	NYC		MARIA NUBILE		84-22 GRAND AVENUE ELMHURST NY 11373	03/10/2020	03/10/2025
DOL	DOL		MASONRY CONSTRUCTION, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL	*****3333	MASONRY INDUSTRIES, INC.		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	NYC		MATINA KARAGIANNIS		97-18 50TH AVE CORONA NY 11368	04/19/2018	04/19/2023
DOL	DOL		MATTHEW P. KILGORE		4156 WILSON ROAD EAST TABERG NY 13471	03/26/2019	03/26/2024
DOL	DOL		MAURICE GAWENO		442 ARMONK RD MOUNT KISCO NY 10549	06/12/2018	06/12/2023
DOL	DOL		MICHAEL LENIHAN		1079 YONKERS AVE UNIT 4YONKERS NY 10704	08/07/2018	08/07/2023
DOL	AG		MICHAEL RIGLIETTI		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	DOL	*****4829	MILESTONE ENVIRONMENTAL CORPORATION		704 GINESI DRIVE SUITE 29MORGANVILLE NJ 07751	04/10/2019	04/10/2024
DOL	NYC	*****9926	MILLENNIUM FIRE PROTECTION, LLC		325 W. 38TH STREET SUITE 204NEW YORK NY 10018	11/14/2019	11/14/2024
DOL	NYC	*****0627	MILLENNIUM FIRE SERVICES, LLC		14 NEW DROP LNE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	AG		MSR ELECTRICAL CONSTRUCTION CORP.		31 BAY ST BROOKLYN NY 11231	03/28/2018	03/28/2023
DOL	NYC		MUHAMMED A. HASHEM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	NYC		NAMOW, INC.		84-22 GRAND AVENUE ELMHURST NY 11373	03/10/2020	03/10/2025
DOL	DA	*****9786	NATIONAL INSULATION & GC CORP		180 MILLER PLACE HICKSVILLE NY 11801	12/12/2018	12/12/2023
DOL	DOL	*****3684	NATIONAL LAWN SPRINKLERS, INC.		645 N BROADWAY WHITE PLAINS NY 10603	05/14/2018	05/14/2023
DOL	NYC		NAVIT SINGH		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
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	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	*****7429	NICOLAE I. BARBIR	BESTUCCO CONSTRUCTI ON, INC.	444 SCHANTZ ROAD ALLEN TOWN PA 18104	09/17/2020	09/17/2025
DOL	NYC	*****5643	NYC LINE CONTRACTORS, INC.		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
DOL	DOL	*****1845	OC ERECTERS, LLC A/K/A OC ERECTERS OF NY INC.		1207 SW 48TH TERRACE DEERFIELD BEACH FL 33442	01/16/2018	01/16/2023
DOL	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	*****0466	PRECISION BUILT FENCES, INC.		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025



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DOL	NYC		RASHEL CONSTRUCTION CORP		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DOL	*****1068	RATH MECHANICAL CONTRACTORS, INC.		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL	*****2633	RAW POWER ELECTRIC CORP.		3 PARK CIRCLE MIDDLETOWN NY 10940	01/30/2018	01/30/2023
DOL	DOL	*****2633	RAW POWER ELECTRIC CORP.		3 PARK CIRCLE MIDDLETOWN NY 10940	07/11/2022	07/11/2027
DOL	AG	*****7015	RCM PAINTING INC.		69-06 GRAND AVENUE 2ND FLOORMASPETH NY 11378	02/07/2018	02/07/2023
DOL	DA	*****7559	REGAL CONTRACTING INC.		24 WOODBINE AVE NORTHPORT NY 11768	10/01/2020	10/01/2025
DOL	DOL		REGINALD WARREN		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL	*****9148	RICH T CONSTRUCTION		107 WILLOW WOOD LANE CAMILLUS NY 13031	11/13/2018	11/13/2023
DOL	DOL		RICHARD MACONE		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023
DOL	DOL		RICHARD REGGIO		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	DOL	*****9148	RICHARD TIMIAN	RICH T CONSTRUCTI ON	108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	10/16/2018	10/16/2023
DOL	DOL		RICHARD TIMIAN JR.		108 LAMONT AVE SYRACUSE NY 13209	11/13/2018	11/13/2023
DOL	DOL		ROBBYE BISSESEAR		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003
DOL	DOL		ROBERT A. VALERINO		3841 LANYARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		ROBERT BRUNO		5 MORNINGSIDE DRIVE AUBURN NY 13021	05/28/2019	05/28/2024
DOL	DOL		RODERICK PUGH		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	DOL	*****4880	RODERICK PUGH CONSTRUCTION INC.		404 OAK ST SUITE 101SYRACUSE NY 13203	07/23/2018	07/23/2023
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	01/30/2018	01/30/2023
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	07/11/2022	07/11/2027
DOL	DOL		RONALD MESSEN		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		ROSEANNE CANTISANI			06/12/2018	06/12/2023
DOL	DOL	*****7172	RZ & AL INC.		198 RIDGE AVENUE VALLEY STREAM NY 11581	06/06/2022	06/06/2027
DOL	DOL	*****1365	S & L PAINTING, INC.		11 MOUNTAIN ROAD P.O BOX 408MONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	*****7730	S C MARTIN GROUP INC.		2404 DELAWARE AVE NIAGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL		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
DOL	NYC	*****0349	SAM WATERPROOFING INC		168-42 88TH AVENUE APT.1 AJAMAICA NY 11432	11/20/2019	11/20/2024
DOL	NYC	*****1130	SCANA CONSTRUCTION CORP.		863 WASHINGTON STREET FRANKLIN SQUARE NY 11010	03/10/2020	03/10/2025
DOL	DOL	*****2045	SCOTT DUFFIE	DUFFIE'S ELECTRIC, INC.	P.O BOX 111 CORNWALL NY 12518	03/03/2020	03/03/2025

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DOL	DOL		SCOTT DUFFIE		P.O BOX 111 CORNWALL NY 12518	03/03/2020	03/03/2025
DOL	NYC	*****6597	SHAIRA CONSTRUCTION CORP.		421 HUDSON STREET SUITE C5NEW YORK NY 10014	02/20/2019	02/20/2024
DOL	DOL	*****1961	SHANE BURDICK	CENTRAL TRAFFIC CONTROL, LLC.	2238 BAKER ROAD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL		SHANE BURDICK		2238 BAKER ROAD GILLET PA 16923	03/12/2018	03/12/2023
DOL	DOL		SHANE NOLAN		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL		SHULEM LOWINGER		11 MOUNTAIN ROAD 28 VAN BUREN DRMONROE NY 10950	03/20/2019	03/20/2024
DOL	DOL	*****0816	SOLAR ARRAY SOLUTIONS, LLC		9365 WASHINGTON ST LOCKPORT IL 60441	07/23/2018	07/23/2023
DOL	DOL	*****0440	SOLAR GUYS INC.		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	NYC		SOMATIE RAMSUNAHAI		115-46 132ND ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	DOL	*****2221	SOUTH BUFFALO ELECTRIC, INC.		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
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	*****6844	STEAM PLANT AND CHX SYSTEMS INC.		14B COMMERCIAL AVENUE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL	*****9933	STEED GENERAL CONTRACTORS, INC.		1445 COMMERCE AVE BRONX NY 10461	05/30/2019	05/30/2024
DOL	DOL	*****9528	STEEL-IT, LLC.		17613 SANTE FE LINE ROAD WAYNESFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL		STEFANOS PAPASTEFANO, JR. A/K/A STEVE PAPASTEFANO, JR.		256 WEST SADDLE RIVER RD UPPER SADDLE RIVER NJ 07458	05/30/2019	05/30/2024
DOL	DOL		STEVE TATE		415 FLAGER AVE #302STUART FL 34994	10/31/2018	10/31/2023
DOL	DOL		STEVEN MARTIN		2404 DELWARE AVE NIAGARA FALLS NY 14305	09/12/2018	09/12/2023
DOL	DOL	*****3800	SUBURBAN RESTORATION CO. INC.		5-10 BANTA PLACE FAIR LAWN PLACE NJ 07410	03/29/2021	03/29/2026
DOL	DOL	*****1060	SUNN ENTERPRISES GROUP, LLC		370 W. PLEASANTVIEW AVE SUITE 2.329HACKENSACK NJ 07601	02/11/2019	02/11/2024
DOL	DOL		SYED RAZA		198 RIDGE AVENUE NY 11581	06/06/2022	06/06/2027
DOL	DOL	*****8209	SYRACUSE SCALES, INC.		158 SOLAR ST SYRACUSE NY 13204	01/07/2019	01/07/2024
DOL	DOL		TALAILA OCAMPA		1207 SW 48TH TERRACE DEERFIELD BEACH FL 33442	01/16/2018	01/16/2023
DOL	DOL		TERRY THOMPSON		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL	*****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		TEST		P.O BOX 123 ALBANY NY 12204	05/20/2020	05/20/2025
DOL	DOL	*****6789	TEST1000		P.O BOX 123 ALBANY NY 12044	03/01/2021	03/01/2026
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATIO N	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	12/04/2018	12/04/2023
DOL	DOL	*****5766	THE COKER CORPORATION	COKER CORPORATIO N	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DA	*****4106	TRIPLE H CONCRETE CORP		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026

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DOL	DOL	*****8210	UPSTATE CONCRETE & MASONRY CONTRACTING CO INC		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL	*****6392	V.M.K CORP.		8617 THIRD AVE BROOKLYN NY 11209	09/17/2018	09/17/2023
DOL	DOL	*****6418	VALHALLA CONSTRUCTION, LLC.		796 PHLEPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	NYC	*****2426	VICKRAM MANGRU	VICK CONSTRUCTI ON	21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025
DOL	NYC		VICKRAM MANGRU		21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025
DOL	DOL		VICTOR ALICANTI		42-32 235TH ST DOUGLASTON NY 11363	01/14/2019	01/14/2024
DOL	NYC		VIKTAR PATONICH		2630 CROPSEY AVE BROOKLYN NY 11214	10/30/2018	10/30/2023
DOL	DOL		VIKTORIA RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC		VITO GARGANO		1535 RICHMOND AVE STATEN ISLAND NY 10314	12/13/2017	12/13/2022
DOL	NYC	*****3673	WALTERS AND WALTERS, INC.		465 EAST AND THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL	*****3296	WESTERN NEW YORK CONTRACTORS, INC.		3841 LAYNARD COURT NEW PORT RICHEY FL 34652	07/09/2019	07/09/2024
DOL	DOL		WHITE PLAINS CARPENTRY CORP		442 ARMONK RD	06/12/2018	06/12/2023
DOL	DOL		WILLIAM 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	*****4043	WINDSHIELD INSTALLATION NETWORK, INC.		200 LATTA BROOK PARK HORSEHEADS NY 14845	03/08/2018	03/08/2023
DOL	DOL	*****4730	XGD SYSTEMS, LLC	TDI GOLF	415 GLAGE AVE #302STUART FL 34994	10/31/2018	10/31/2023

## SECTION 00 01 60

### ADDITIONAL INSTRUCTIONS

#### 00 01 60.01 BORINGS AND SUBSURFACE DATA

- A. No soil borings were taken at the site in support of this project, however, subsurface data from prior site investigations and characterization is available. The data may be reviewed at the offices of Barton & Loguidice, D.P.C. on weekdays between 8:00 a.m. and 4:00 p.m.

#### 00 01 60.02 PRECONSTRUCTION CONFERENCE

- A. A preconstruction conference will be held after award of the Contract, but prior to commencement of construction, at the office of the Engineer, and the Contractor shall have an authorized representative of his firm present at this meeting.

#### 00 01 60.03 POWER OF ATTORNEY

- A. Attorneys-in-fact who sign Bid Bonds or Contract Bonds must file with each bond a certified and effectively dated copy of their power of attorney.

#### 00 01 60.04 LAWS AND REGULATIONS

- A. The Bidder's attention is directed to the fact that all applicable Federal and State laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

#### 00 01 60.05 NON-COLLUSIVE BIDDING CERTIFICATION

- A. A Non-Collusive Bidding Certification form as bound in these Documents must be executed and accompany the Bid.

00 01 60.06 IRANIAN ENERGY SECTOR DIVESTMENT CERTIFICATION

- A. The Bidder hereby represents that said Bidder is in compliance with New York State General Municipal Law Section 103-g entitled “Iranian Energy Sector Divestment”.
- B. 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, that each Bidder is not on the list created pursuant to NYS Finance Law Section 165-a(3)(b).
- C. The Bidder shall submit a signed, notarized and dated Iranian Energy Sector Divestment Certification with its Bid.
- D. Said certification is mandated by Section 103-g of the General Municipal Law. Reference the Iranian Energy Sector Divestment Certification form included in Section 00 03 73 of this Bid Document.

00 01 60.07 PREVENTION OF SEXUAL HARASSMENT COMPLIANCE

- A. The Bidder hereby represents that said Bidder is in compliance with New York State General Municipal Law Section 201-g entitled “Prevention of Sexual Harassment”.
- B. 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 sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of Section 201-g of the Labor Law.
- C. The Bidder shall submit a signed, notarized, and dated Bidder’s Statement on Sexual Harassment Certification provided in Section 00 03 76, “Bidder’s Statement on Sexual Harassment”.

00 01 60.08 SECTION 00 05 70 - AGREEMENT

- A. In amplification of this Section, in the event a discrepancy exists between Section 00 05 70 - Agreement and any other Sections of the Contract Documents, the more stringent shall govern.

00 01 60.09 CHANGES AND AMPLIFICATIONS TO GENERAL CONDITIONS

00 07 52.03 CONTRACTORS INSURANCE

The additional named assureds pursuant to Section 00 07 52.03 Paragraph C are as follows:

The People of the State of New York

00 07 53.01 REPRESENTATIONS OF CONTRACTOR

In Paragraph B ADD "Further, he has notified Engineer in writing of any discrepancies, errors or omissions in the Contract Documents or Specifications."

00 07 53.05 LIABILITY FOR INJURIES OR DAMAGE

Any accident shall be reported to the Owner as soon as possible and not later than twenty-four (24) hours from the time of such accident. A detailed written report must be submitted to the Owner as soon thereafter as possible, and not later than three (3) days after the date of such accident.

00 07 55.01 LAWS, REGULATIONS AND PERMITS

In amendment to this article, the Contractor shall be responsible for payment of all fines associated with construction of the project that may be levied for non-compliance with the laws, regulations, permits, and plans.

00 07 55.04 TAXES

Purchases by the Cortland County are not subject to any Federal, State or County Sales Tax. Exemption certificates will be executed upon request.

00 07 56.04 APPROVED WORK SCHEDULE

The Contractor shall submit a bar graph type work schedule to the Engineer within three weeks after award of the Contract. The work schedule shall be updated monthly, and the Contractor shall furnish updated copies to the Engineer.

00 07 59.05 MONTHLY ESTIMATES AND PAYMENTS

In amendment to this Article, the Contractor shall submit his estimate of the work performed during the previous month to the Engineer for review. The Engineer will then submit this monthly estimate to the Owner for payment.

00 01 60.10 CHANGES AND AMPLIFICATIONS TO GENERAL REQUIREMENTS

00 10 15.01 AREA AVAILABLE FOR CONTRACTOR'S USE

The Contractor will not be allowed to use the existing buildings for any use.

00 10 15.02 TRAVEL NOT OBSTRUCTED

In amplification of this Article, the work site is located within the boundaries of an operating landfill. The Contractor shall not impair or interfere with any aspect of the operation of the landfill or other Contractors currently working at the landfill.

The main entrance gate shall be guarded or kept closed and locked when the landfill is closed.

00 10 15.03 CLEANING UP

The Contractor shall be permitted to dispose of all rubbish, and construction and demolition debris from this project only at the working face of the active landfill at a location designated by the Owner and/or Engineer at no cost. All material disposed of pursuant to this Article shall be weighed over the landfill scale prior to disposal, unless approved by the Owner otherwise.

The Contractor shall provide all labor, materials and equipment to load, transport and dump refuse. Disposal of materials shall be during normal operating hours at the disposal facility.

00 10 19.01 PRE-BID INSPECTION & EXAMINATION

A Pre-Bid Conference will be held at the Cortland County Landfill, on February 16, 2023 at 10:00 A.M. This conference will commence with a review of any questions that potential Bidders may have. Upon completion of the question period, the conference will proceed with a site walkover. Any questions requiring clarification will be addressed in an Addendum.

00 10 19.11 PROTECTION AND OPERATION OF THE EXISTING  
LANDFILL

The Contractor shall be responsible for ensuring that the continued operation at the landfill facility is not jeopardized or adversely affected by the work of this project. The Contractor agrees that the Owner has a permit from the NYSDEC applicable to the facility and that he will observe its terms as to both operation of the existing facility and construction of this project. A copy of the facility permit is available upon request by emailing Greg Defayette at [gdefayette@bartonandloguidice.com](mailto:gdefayette@bartonandloguidice.com).

00 01 60.10 CHANGES AND AMPLIFICATIONS TO GENERAL REQUIREMENTS  
(Continued)

The Contractor shall repair any damage to the existing geomembrane cap or landfill base liner system at no additional cost to the Owner. Disturbance shall be minimized on the capped landfill area, all areas of disturbance shall be returned to original or better condition.

00 10 51.02 SERVICES PROVIDED BY THE CONTRACTOR

In addition to this Article, the Contractor shall secure the services of a New York State Licensed Land Surveyor to: perform initial layout of work, locate project work items, verify subgrades prior to LFG pipe installation, and survey top of pipe elevation at all pipe installation locations at a minimum frequency of every 50 feet. The Contractor shall supply to the Owner two copies of “as-built” drawings of the completed landfill gas collection and control system as part of the completion of work. The as-built drawings shall be signed and stamped by a New York State Licensed Surveyor. The term “items” shall mean each separate piece of the landfill gas collection and control system. Survey data shall be supplied for the following items as outlined below:

- Top pipe for all LFG header and lateral piping, including but not limited to: locations of all fittings, cleanouts, valves, risers and culvert crossings;
- Top pipe for all condensate conveyance piping, including but not limited to: locations of all fittings, cleanouts, traps and culvert crossings;
- Top pipe for all underground electrical conduit;
- Vertical extraction wells, modified gas vents and modified passive flares;
- Thickness verification of reconstructed barrier protection layer on disturbed capping areas; and
- Corners of the blower skid and flare stack.

All items listed above shall be compiled into one file and submitted to the Engineer for review in hard copy and digital format. A point table listing point number, northing, easting, elevation, and description shall be provided to the Engineer along with digital data submitted in AutoCAD 2020 (DWG) format and PDF files.



00 01 60.10 CHANGES AND AMPLIFICATIONS TO GENERAL REQUIREMENTS  
(Continued)

In addition to the items above, the Contractor shall supply the Owner surveyed locations and elevations of all underground utilities encountered during trenching, locations and elevations of any repairs to the geomembrane capping and/or baseliner systems.

00 13 40.01 SUBMITTALS

Email submissions to the Engineer are acceptable for shop drawing review. No direct emails from subcontractors or material vendors will be accepted.

00 13 40.06 DRAWING TO BE CHECKED BY THE CONTRACTOR

The Contractor is responsible to verify all dimensions, quantities and representations in the Contract Documents. Should the Contractor identify any discrepancies, the Owner and Engineer shall be notified immediately.

00 15 10.02 WATER

In amendment to this Article, the Contractor may use the water from the onsite ponds. The Owner does not guarantee the quality or quantity available. The Contractor is responsible for all connections, pumping and hauling of water. The Contractor will be required to supply off-site water if the Contractor determines that the on-site water quantity available is inadequate.

00 15 80 PROJECT SIGN

A project sign is not required.

00 15 90 ENGINEER'S FIELD OFFICE TRAILER

The Contractor is responsible for providing a field office trailer for the Engineer.

In amendment to Article 00 15 90.02, the trailer office shall not be less than 12 feet by 30 feet, and shall have temporary sanitary facilities. The Contractor shall provide a photocopying machine capable of copying 8-1/2" x 11", 8-1/2" x 14", and 11" x 17" sheets. An adequate supply of copy paper in the three (3) sizes shall be provided. The supply of copy paper shall be replenished by the Contractor as required by the Engineer. All other facilities, office furniture, and equipment shall be provided as specified.

00 01 60.11 MATERIAL STORAGE

- A. The location of materials and equipment stored on-site must be coordinated with the Owner. The Contractor is responsible for storage, protection and security of the materials and equipment stored on-site.

00 01 60.12 CONTRACTOR'S HOURS OF OPERATION

- A. The landfill is open Monday through Friday, 8:00 A.M. to 3:30 P.M. and select Saturdays, 9:00 A.M. to 1:00 P.M. The Contractor will be permitted to work other hours and days with prior approval from the Owner. To work other than a normal 8-hour work day 5 days per week requires approval from the County and dispensation from the New York State Department of Labor.
- B. The main entrance gate shall be guarded or kept closed and locked when the landfill is closed and when the Contractor is working.

00 01 60.13 STORMWATER POLLUTION AND PREVENTION PLAN

- A. The Contractor shall review, sign and implement the site Stormwater Pollution Prevention Plan for construction activities prior to the start of construction. This plan may be reviewed at Barton & Loguidice, D.P.C. during normal working hours, and a copy will be provided to the Contractor after award of the Contract, if requested.

00 01 60.14 STORMWATER MANAGEMENT

- A. The Contractor is responsible for stormwater management within the project area(s). The Contractor shall provide, operate and maintain any necessary stormwater equipment to effectively manage the stormwater entering the project site. Any additional stormwater controls necessary on the project site shall be the responsibility of the Contractor.

00 01 60.15 WORK ON THE EXISTING LANDFILL

- A. The Contractor is responsible for maintaining the stability of any landfilled waste and slopes affected by his work.
- B. Any waste encountered during construction shall be incorporated into the landfill and covered by 12" of intermediate cover at a location designated by the Engineer. Any leachate encountered shall be pumped into existing leachate collection and conveyance system, including connections to the proposed piping system at a location approved by the Engineer. This work shall be performed at no additional cost to the Owner.

00 01 60.15 WORK ON THE EXISTING LANDFILL - CONTINUED

- A. The Contractor shall be responsible for directing clean stormwater by means of building temporary berms, or ditches and pumping from the project areas. Any stormwater which has come into contact with refuse shall be treated as leachate and disposed of as specified above.

00 01 60.16 SITE RESTORATION AND RECLAMATION

- A. The Contractor shall restore or reclaim all disturbed areas of the project site. Restoration and reclamation shall include the necessary clearing, grubbing, grading, topsoil, and seeding so all areas at project completion are vegetated.

00 01 60.17 EXISTING LINER SYSTEM PERFORMANCE

- A. The liner systems of existing landfill have been operating with acceptable secondary flow rates in accordance with NYCRR Part 360. Any damage by the Contractor to the existing liner systems shall be repaired at no additional cost to the Owner. The secondary flow rates after construction completion shall be equal or better than recent historical data. If there is evidence that the liner system performance of the existing cells has significantly diminished as a result of the Contractor's work, the Contractor shall investigate and remediate any damage affecting the liner system at no additional cost to the Owner until the liner system performance returns to historical trends.

00 01 60.18 LANDFILL CAPPING SYSTEM

- A. Portions of the Phase 1A and Phase 1B landfill areas have been capped with a geomembrane as shown on the Contract Drawings. Other capped landfills also exist on the property outside of the active landfill area. The Contractor shall not disturb capped areas for any purpose except for work shown and described in the Contract Documents and Drawings, unless otherwise approved by the Engineer. Any damage to the existing capping system shall be repaired by the Contractor at no cost to the Owner.

00 01 60.19 LEACHATE MANAGEMENT

- A. The Contractor shall make himself aware of the leachate collection, storage, and transfer systems onsite. Leachate outbreaks may be encountered while trenching within the landfill limits. No leachate is allowed to leave the limits of waste. The Contractor is responsible to control any leachate encountered to complete the work. If necessary, a temporary sump(s) shall be excavated into the waste mass, and the leachate shall be pumped from the sumps and into the leachate collection system. Any migration of leachate from the limits of waste as a result of construction activities shall be remediated immediately by the Contractor, at no additional cost to the Owner.

00 01 60.19 LEACHATE MANAGEMENT - CONTINUED

- B. Prior to commencement of construction, the Contractor shall submit to the Engineer for approval a construction sequence plan designed to effectively contain, collect and dispose of leachate that is encountered during construction. The plan shall provide detailed methods for containment, collection and disposal of leachate throughout the project. The Contractor shall also submit estimated durations for the tie-in of the new condensate drain pipes to the existing leachate conveyance system adjacent to the Phase 2B sideriser building. The Contractor shall minimize leachate generation as much as possible throughout the duration of the project. Open ends of piping shall be kept to a minimum to prevent the unnecessary collection of clean stormwater. The Engineer reserves the right to require the Contractor to change the leachate management plan during construction, if deemed necessary for proper leachate management at the site.

00 01 60.20 STOCKPILE MATERIAL AVAILABLE

- A. An existing cobble stockpile is available for the Contractor's use, if desired. Cobbles shall be crushed to meet the requirements of riprap. Shale shall not be utilized in riprap applications.

00 01 60.21 CRUSHED GLASS

- A. Crushed glass for use in backfill of the LFG header and lateral trenches as outlined in the Contract Drawings is available on-site at no cost to the Contractor. Contractor shall make themselves aware of the quantity and quality of the stockpiled crush glass material prior to bid. Any material that falls outside of project specifications shall be processed to meet the specified grain size at no additional cost to the Owner. Use of the material available is not required and can be omitted entirely at the discretion of the Contractor.

00 01 60.22 AS-BUILT DRAWINGS

- A. The Contractor shall submit two (2) sets of as-built drawings to the Engineer indicating all necessary locations and elevations and indicating all changes made during the course of construction. Ten (10) percent of the value of relative items will be withheld from monies due the Contractor and Substantial Completion will not be granted until As-Built Drawings have been reviewed and accepted by the Engineer.

00 01 60.23 DIGITAL FILES

- A. Digital computer files are available with the location and alignment of proposed vertical extraction wells and LFG piping. Files must be requested via email from Barton & Loguidice, D.P.C.

00 01 60.24 FILL PLACEMENT AT BLOWER SKID AND FLARE STACK

- A. The Contractor shall account for additional 200 cy of fill placement at the blower skid and flare location to bring both up to an elevation of 1794.0'. LFG pipe extending from the blower skid to the flare stack shall run level across entire run. Fill shall be placed such that a service truck can drive up to flare stack from north and to the blower skid from south (maximum slope of 10% each side).

00 01 60.25 LANDFILL GAS ANALYZER

- A. The Contractor shall provide to the Owner a new Landfill Gas Monitoring Instrument for use in the landfill gas collection system operation and maintenance. The instrument shall be designed for use with landfill gas and be intrinsically safe. The instrument shall be capable of and be equipped with the following:
1. Automatic sampling and analysis of gas composition by percent volume CH<sub>4</sub>, CO<sub>2</sub>, O<sub>2</sub> and balance gas, CH<sub>4</sub> %LEL, temperature, static pressure, differential pressure, barometric pressure and relative pressure.
  2. Calculation and recording of gas flow rates (SCFM) as well as BTU rate;
  3. Handheld LCD lit PC or tablet for data logging with user programmed intervals. Provide Elkins Gas Analyzer Software with RS 232 interface for PC Data Downloading;
  4. On-site calibration capability. Provide appropriate calibration equipment for a minimum of 10 calibrations;
  5. Galvanic cell principle Oxygen Sensor and Infrared Gas Analyzer;
  6. Automatic purge capability;
  7. 900 point total data storage and retrieval using point ID codes;
  8. Allow the use of Imperial or SI Units;
  9. All Weather use designed for use in temperature range of 32°F to 104°F;
  10. Rechargeable nickel metal hydride batteries and charger allowing up to 8 hours of normal use per charge;
  11. Compatible and programmed for use with the wellheads provided for the project;
  12. Allowable ranges:

	<u>Sensor Range</u>	<u>Resolution</u>
CH <sub>4</sub> :	0-100%	0.1%
CO <sub>2</sub> :	0-60%	0.1%
O <sub>2</sub> :	0-25%	0.1%
Differential Pressure:	0-10" W.C.	0.1" W.C.
Static Pressure:	0-100" W.C.	0.1" W.C.

Pump Flow Rate: 500 cc/min nominal flow  
Flow Accuracy: +/- 3% 50-150 SCFM  
Vacuum: up to 80" W.C.  
UL listed Class 1 Zone 1

00 01 60.25 LANDFILL GAS ANALYZER - CONTINUED

13. The Instrument shall be Elkins Earthworks Envision Gas Analyzer (Dan Duncan, 330-725-7766), or approved equal. The Contractor shall submit the instrument specifications to the Engineer for approval prior to purchasing the instrument.

00 01 60.26 LOW PERMEABILITY SOIL

- A. The existing leachate storage tank containment area was constructed with a 24" low permeability soil layer, which may be crossed by the proposed condensate trap drain line. If this layer is encountered during construction, the Contractor shall excavate the existing low permeability soil, keeping it separate from other soil materials, so that it can be reinstalled around the pipe penetration. Low permeability soil shall be replaced where excavated by placing in 6-inch compacted lifts. If sufficient quantities of material cannot be separated during excavation, the low permeability soil shall be replaced with granular bentonite per the bentonite manufacturer's specifications.

END OF SECTION

SECTION 00 03 01

BIDDER'S CHECKLIST

(All pages of this Section to be completed by  
Bidder PRIOR to Bid Submission)

Bid Prices, Page 00 03 70-1 to 00 03 70-3: All blanks appropriately filled in ink  
with both words and figures, and signed where applicable.

☐

State and Federal Requirements: Each of the following forms must be executed and submitted  
with Bid:

IRANIAN ENERGY SECTOR DIVESTMENT CERTIFICATION, Page 00 03 73-1  
to 00 03 73-2: Requires Bidder's signature.

☐

BIDDER'S STATEMENT ON SEXUAL HARASSMENT, Page 00 03 76-1:  
Requires completion and Bidder's signature.

☐

NON-COLLUSIVE BIDDING CERTIFICATION, Page 00 04 80-1: Requires  
Bidder's signature.

☐

STATEMENT OF SURETY'S INTENT, Page 00 04 81-1: Requires completion and  
signature by Surety's Representative.

☐

PROHIBITION ON PURCHASE OF TROPICAL HARDWOODS  
CERTIFICATION, Page 00 04 84-1 to 00 04 84-2: Requires completion and  
signature by Bidder.

☐

BID SECURITY, Page 00 04 99-1: Attach Bid Security to page labeled "BID  
SECURITY" (ATTACH HERE - CERTIFIED CHECK, CASH OR BID BOND).

☐

NOTE: To Bid multiple Contracts, the Bidder must fill in all associated pages for each  
specific Contract being Bid.

END OF SECTION

SECTION 00 03 70  
BID FOR CONSTRUCTION OF  
CONTRACT NO. 1 – GENERAL CONSTRUCTION  
CORTLAND COUNTY LANDFILL  
GAS COLLECTION AND CONTROL SYSTEM

TO THE COUNTY OF CORTLAND:

Pursuant to and in compliance with your Advertisement for Bids and the Information for Bidders relating thereto, the undersigned hereby offers to furnish all plant, labor, materials, supplies, equipment and other facilities and things necessary or proper for or incidental to the construction and completion of Contract No. 1 – General Construction – Cortland County Landfill Gas Collection and Control System, required by and in strict accordance with the applicable provisions of all Contract Documents for the following unit and lump sum prices:

Item:

1. Lump Sum Contract No. 1 – General Construction

_____ (Price Written in Words)	_____ Dollars (Price Written in Figures)	_____ Cents
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Acknowledgement of Addenda

Addendum No.

Date Received

_____	_____
_____	_____
_____	_____



SECTION 00 03 70

BID

The signer of this Proposal as Bidder declares that the only person, persons, company or parties interested in the proposal are named in this Proposal; that the Bid is made without any connection with any person making another Bid for the same Contract; that the Bid is in all respects fair and without collusion or fraud; that no officer, agent or employee of the Owner is directly or indirectly interested in the Bid; and that he has carefully examined the annexed form of Contract and Contract Documents.

In accordance with Section 139-d of the State Finance Law, Section 103-d of the General Municipal Law, or Section 2878 of the Public Authorities Law, the Bidder further certifies that: (a) the Bid has been arrived at by the Bidder independently and has been submitted without collusion with any other vendor of materials, supplies or equipment of the type described in the invitation for Bids; and (b) the contents of the Bid have not been communicated by the Bidder nor, to its best knowledge and belief, by any of its employees or agents, to any person not an employee or agent of the Bidder or its surety on any bond furnished herewith prior to the official opening of the Bid. Section 620 of the Penal Law makes violation of this statute a crime punishable as perjury.

If written notice of the acceptance of this Bid is mailed or delivered to the undersigned within forty-five (45) days after the date of opening of the Bids, or any time thereafter before this Bid is withdrawn, the undersigned will, within five (5) days after the date of such mailing, or delivering of such notice, execute and deliver a contract in the form of Contract attached hereto.

The undersigned hereby designates as his office to which such notice of acceptance may be mailed, or delivered:

Company Name: \_\_\_\_\_  
Contact Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_  
Telephone/Fax: \_\_\_\_\_  
Email: \_\_\_\_\_  
FEIN: \_\_\_\_\_  
(Federal Employee  
Identification Number) \_\_\_\_\_

The undersigned further agrees to comply with the requirements as to conditions of employment, wage rates and hours of labor set forth in the Contract Documents.

SECTION 00 03 70

BID

This bid may be withdrawn at any time prior to the scheduled time for the opening of bids or any authorized postponement thereof.

Accompanying this Bid, is a Bid security in the form of a certified check\*, cash\*, or a bid bond\* for the sum of \_\_\_\_\_ (\$\_\_\_\_\_) Dollars. In case this Bid is accepted by the Owner, and the undersigned shall fail to execute a contract with and give the required bonds to the Owner within five (5) days after the date of a written notice by the Owner to the undersigned so to do, this Bid security shall be forfeited and will be retained by the Owner as liquidated damages.

Dated \_\_\_\_\_, 20\_\_ \*\* \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Signature of Bidder

Print Name of Signer of Bid \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\* Cross out designations not applicable.

\*\* Insert bidder's name; if a corporation, give the state of incorporation using the phrase "a corporation organized under the law of"; if a partnership, give the name of the partners, using also the phrase "co-partners trading and doing business under the firm name and style of"; if an individual using a trade name, give individual name, using also the phrase "an individual doing business under the firm name and style of".

END OF SECTION

## SECTION 00 03 73

### IRANIAN ENERGY SECTOR DIVESTMENT CERTIFICATION

1. Contractor/proposer hereby represents that said contractor/proposer is in compliance with New York State General Municipal Law Section 103-g entitled “Iranian Energy Sector Divestment”, in that said contractor/proposer 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 contractor/proposer 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 contractor/ proposer submitting a bid/proposal in response to this request for bids/request for proposals must certify and affirm the following under penalties of perjury:
  - 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 its knowledge and belief, that each 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 bid/proposal that is submitted without having complied with subdivision (a) above, shall not be considered for award. In any case where the bidder/proposer cannot make the certification as set forth in subdivision (a) above, the bidder/proposer 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/proposal to any bidder/proposer 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/proposer 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 bid/proposal 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 \_\_\_\_\_ )  
County of \_\_\_\_\_ ) SS:

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 03 76

BIDDER'S STATEMENT ON SEXUAL HARASSMENT

**IN ACCORDANCE WITH NEW YORK STATE FINANCE LAW §139-I**

In accordance with State Finance Law §139-L, which generally prohibits the Owner from entering into contracts pursuant to the Bid process with persons who fail to submit a certification affirming compliance with New York Labor Law §201-g, the Bidder submits the following certification under the penalty of perjury:

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 sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of Section 201-g of the Labor Law.

Dated: \_\_\_\_\_, 20\_\_\_\_  
\_\_\_\_\_, New York

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Signature of Authorized Official

\_\_\_\_\_  
Printed or Typed Name of Official and Title

Sworn to before me this  
\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_

SECTION 00 04 80

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 04 81

STATEMENT OF SURETY'S INTENT

To: \_\_\_\_\_

We have reviewed the Bid of \_\_\_\_\_  
(Contractor)

of \_\_\_\_\_  
(Address)

for \_\_\_\_\_  
(Project)

Bids for which will be received on \_\_\_\_\_  
(Bid Opening Date)

and wish to advise that should this Bid of the Contractor be accepted and the Contract awarded to him, it is our present intention to become surety on the Performance Bond and Labor and Materials Payment Bond required by the Contract.

Any arrangement for the bonds required by the Contract is a matter between the Contractor and ourselves, and we assume no liability to you or third parties if for any reason we do not execute the requisite bonds.

We are duly authorized to transact business in the State of New York, and we appear on the U.S. Treasury Department's most current list (Circular 570 as amended).

Attest:

\_\_\_\_\_

\_\_\_\_\_  
Surety's Authorized Signature(s)

Attach Power of Attorney

(Corporate seal if any. If no seal, write  
"No Seal" across this place and sign.)

END OF SECTION

SECTION 00 04 84

PROHIBITION ON PURCHASE OF TROPICAL HARDWOODS CERTIFICATION

1. Contractor 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).
  - a) 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.
  - b) 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.
2. Qualifications for an exemption under this law will be the responsibility of the Contractor 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 responsibility of the Contractor to meet with the approval of the state.
3. Except as otherwise specifically provided herein, every contractor/ proposer submitting a bid/proposal in response to this request for bids/request for proposals must certify and affirm the following under penalties of perjury:
  - 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 its knowledge and belief, wood to be used under this contract award complies with NYS 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 04 99

BID SECURITY

(ATTACHED HERE - CERTIFIED CHECK, CASH OR BID BOND)

END OF SECTION

SECTION 00 05 70

AGREEMENT

This CONTRACT, in six (6) copies, made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 2023, by and between the COUNTY OF CORTLAND, New York, a municipal corporation, organized and existing under the laws of the State of New York, with its principal office and place of business located at 60 Central Avenue, Cortland, New York 13045, hereinafter designated as "Owner", Party of the First Part,

and \_\_\_\_\_

\_\_\_\_\_ of \_\_\_\_\_

County of \_\_\_\_\_ State of \_\_\_\_\_

hereinafter designated as the Contractor, Party of the Second Part.

WITNESSETH: That the parties hereto, each in consideration of the Agreements on the part of the other herein contained, have mutually agreed, and hereby mutually agree, the Party of the First Part for itself and its successors, and the Party of the Second Part for itself, himself or themselves and its successors, his or their executors, administrators and assigns as follows:

Article 1. DESCRIPTION. Under this Agreement and Contract, the Contractor shall furnish all materials and perform all work required to furnish and install complete Contract No. 1 – General Construction for the Cortland County Landfill Gas Collection and Control System (GCCS).

Article 2. In consideration of the payments to be made as hereinafter provided, and of the performance by the Owner of all matters and things to be performed by the Owner as hereinafter provided, the Contractor agrees, at his own sole cost and expense to perform all the labor and services, and to furnish all the labor and materials, plant and equipment necessary to complete, and to complete in good, substantial, workmanlike and approved manner, the work described under Article 1 hereof, within the time hereinafter specified and in accordance with the terms, conditions and provisions of this Contract and with the instructions, order and directions of the Engineer made in accordance with this Contract.

Article 3. The Owner agrees to pay and the Contractor agrees to accept, as full compensation for all work done and materials furnished, and also for all costs and expense incurred, and loss or damages sustained by reason of the action of the elements or growing out of the nature of the work, or from any unforeseen obstruction or difficulty encountered in the prosecution of the work, and for all risks of every description connected with the work, and for all expenses incurred by, or in consequence of, the suspension or discontinuance of the work as herein specified, and for well and faithfully completing the work, and the whole thereof, as herein provided, and for maintaining the work in good condition until the final payment is made, the prices stipulated in the proposal hereto attached.

Article 4. CONTRACT DOCUMENTS. The following Documents shall constitute integral parts of the Agreement, the whole to be collectively known and referred to as the Contract: Advertisement For Bids, Information for Bidders, Wage Rates, Additional Instructions, Bid Documents, Agreement, Performance Bond, Labor & Materials Payment Bond, Insurance Certificates, General Conditions, General Requirements, Specifications, Contract Drawings, and all interpretations of, or addenda to the CONTRACT DOCUMENTS issued by the Owner or the Engineer with the approval of the Owner.

The Table of Contents, Indices, Headings, Titles contained herein and in said documents are solely to facilitate reference to various provisions of the Contract Documents and in no way affect, limit or cast light on the interpretations of the provisions to which they refer.

Article 5. Contractor agrees to comply with all requirements of the Contract Documents and with all provisions of law and implementing regulations. If the Contractor shall fail to comply with any of the terms, conditions, provisions, or stipulations of this Contract, then the Owner may make use of any or all remedies at law or in equity, or as provided in the Contract and shall have the right and power to proceed in accordance with the provisions thereof.

Article 6. The following alterations and addenda have been made and included in this Contract before it was signed by the parties hereto:

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Article 7. This agreement shall be construed and enforced in accordance with the laws of the State of New York.

Article 8. The Contractor agrees:

- (a) He hereby voluntarily and irrevocably submits himself to the jurisdiction and venue of any court of competent jurisdiction over the subject matter of this Contract located within the State of New York in which any litigation is brought based on or arising out of this Contract.
- (b) Any litigation brought by the Contractor based on or arising out of this Contract shall be brought only in the Supreme Court of the State of New York within the County in which the Owner is located.
- (c) Any legal process or notice connected with any litigation may be served on the Contractor by United States registered mail, postage pre-paid, addressed to the Contractor at his address stated in this Contract or at the Address stated in this Contract for the furnishing of notices to the Contractor or at the Contractor's last known address, and that service in such manner shall constitute good and valid service of process upon the Contractor.
- (d) The Contractor hereby waives any defense which might be available to it in any such litigation based on or alleging lack of jurisdiction or venue, or, if process is served in the manner provided in Subparagraph (c) immediately above, invalid service of process, and that he will duly enter his appearance in any such action.
- (e) This Contract may be presented in court as conclusive evidence of the foregoing agreement.

IN WITNESS WHEREOF, the parties to this Agreement have hereunto set their hands and seals and have executed this Agreement in six (6) copies the day and year first above written.

COUNTY OF CORTLAND (OWNER)

By: \_\_\_\_\_

(Seal)

CONTRACTOR

\_\_\_\_\_

(Seal)

By: \_\_\_\_\_

(ACKNOWLEDGMENT OF OFFICER OF THE COUNTY ATTESTING CONTRACT)

State of New York)

) SS:

County of Cortland)

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally came and appeared

\_\_\_\_\_ to me known, who, being by me duly sworn, did depose and say that he is the \_\_\_\_\_ of the \_\_\_\_\_ described in and which executed the foregoing instrument; that he knows the seal of said Owner; that one of the impressions appearing on said instrument is a true and correct impression of such seal; and that he affixed it thereto and attested the same over his signature by virtue of the authority in him vested.

\_\_\_\_\_

(ACKNOWLEDGMENT OF CONTRACTOR, IF A CORPORATION)

State of New York)

) SS:

County of \_\_\_\_\_)

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally came and appeared

\_\_\_\_\_ to me known, who, being by me duly sworn, did depose and say that he resides at \_\_\_\_\_; that he is the \_\_\_\_\_ of \_\_\_\_\_, the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

\_\_\_\_\_

(ACKNOWLEDGMENT OF CONTRACTOR, IF A PARTNERSHIP)

State of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) SS:

On this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally came and appeared \_\_\_\_\_ to me known and known to me to be one of the members of the firm of \_\_\_\_\_ described in and who executed the foregoing instrument, and he acknowledged to me that he executed the same as and for the act and deed of said firm.

\_\_\_\_\_

(ACKNOWLEDGMENT OF CONTRACTOR, IF AN INDIVIDUAL)

State of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) SS:

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.

\_\_\_\_\_



(ACKNOWLEDGMENT OF CONTRACTOR, IF A LIMITED LIABILITY COMPANY)

State of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) SS:

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally came and appeared \_\_\_\_\_, to me known, who being by me duly sworn, did depose and say that he resides at \_\_\_\_\_; that he is the \_\_\_\_\_ of \_\_\_\_\_, the limited liability company described in and which executed the foregoing instrument; that he knows the seal of said limited liability company; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the managing members of said limited liability company, and that he signed his name thereto by like order.

\_\_\_\_\_

(Certification of 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 manner 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 named 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 06 10  
PERFORMANCE BOND

(ATTACH PERFORMANCE BOND HERE)

END OF SECTION

SECTION 00 06 20

LABOR & MATERIALS PAYMENT BOND

(ATTACH LABOR & MATERIALS PAYMENT BOND HERE)

SECTION 00 06 50

CERTIFICATE OF INSURANCE

(ATTACH INSURANCE CERTIFICATES HERE)

# **GENERAL CONDITIONS**

## **SECTION 00 07 50**

### **DEFINITIONS OF WORDS & TERMINOLOGY**

#### **00 07 50.01 DEFINITIONS OF WORDS AND TERMS**

Wherever the following words or corresponding pronouns are used in this Contract, they shall have the meaning given herein:

- A. **CONTRACT, OR CONTRACT DOCUMENTS:** each of the various documents referred to in the Agreement, both severally and as a whole, including all additions, deletions, modifications and interpretations incorporated therein or appended thereto by or with approval of the Owner prior to the execution of the Contract.
- B. **OWNER:** the party of the first part to this Contract, or any duly authorized agents or officers empowered to act therefor.
- C. **CONTRACTOR:** the party of the second part to this Contract, or the legal representatives or agents appointed by said party for the performance of the work.
- D. **ENGINEER:** the firm of Barton & Loguidice, engaged by the Owner to provide Engineering services in connection with the work of this Contract, or its representatives duly authorized in writing to act therefor.
- E. **SURETY:** the person, persons, firm or corporation who executes the Contractor's Performance Bond and Labor & Materials Payment Bond.
- F. **SUBCONTRACTOR:** any person, other than employee of the Contractor, or any firm or corporation who contracts to act for or in behalf of the Contractor in performing any part of the work in connection with the Contract, exclusive of one who furnishes only materials or equipment.
- G. **PROJECT:** the entire facility or improvement to which the Contract relates.
- H. **SITE:** the area or areas bounded by the property lines shown on the Plans, and other areas that may be similarly designated.
- I. **THE WORK:** all labor, equipment and materials required, either expressly or by implication, to be furnished by the Contractor under this Contract or in connection with Change Orders or Supplemental Agreements thereto.
- J. **SUPPLEMENTAL AGREEMENT:** an alteration or modification of the Contract Documents, made after execution of the Contract and agreed to in writing by the Contractor and the Owner.

- K. CHANGE ORDER: a written order from the Owner to the Contractor directing an alteration or modification of the nature, scope or type of the work.
- L. BOND OR PERFORMANCE BOND: the guarantee signed by the Surety, that the Contractor will complete all the work as required by the Contract.
- M. LABOR & MATERIALS PAYMENT BOND: the guarantee, signed by the Surety, that the Contractor will pay for all Labor and Material required by the Contract.
- N. SPECIFICATIONS: also referred to as DETAIL SPECIFICATIONS or TECHNICAL SPECIFICATIONS. The written directions, requirements, descriptions of materials, equipment, construction systems, standards and workmanship as applied to the work and specifically including Division 2 - Division 48 of the Contract Documents.
- O. PLANS, DRAWINGS OR CONTRACT DRAWINGS: only those drawings listed as such in the Contract Documents with all Addenda thereto.
- P. SHOP DRAWINGS, SETTING DRAWINGS, WORKING DRAWINGS, CONSTRUCTION DRAWINGS: drawings prepared, or caused to be prepared, by the Contractor, Subcontractors, or by their equipment or material suppliers in their behalf, including standard or stock equipment drawings, necessary to the performance of the work in addition to the Contract Drawings, or as may be required by the Engineer to be submitted for review.
- Q. ADDITIONAL DRAWINGS, SUPPLEMENTARY DRAWINGS: drawings, in addition to the Contract Drawings, which may be prepared and issued by the Engineer as part of the instructions to or requests of the Contractor in connection with the work of the Contract or appertaining to changes in the work.
- R. ADDENDUM, ADDENDA: additional Contract provisions, deletions or changes issued by the Owner prior to the receipt of bids.
- S. WRITTEN NOTICE: all written and authoritatively signed communications required in the normal conduct of the work or required to obtain compliance with the Contract provisions or preserve the rights of any party to the Contract. Written notice shall be considered as served when either delivered in person or deposited in a post-paid wrapper in a regularly maintained U.S. Mailbox and addressed to the person, firm or corporation intended to receive such notice, or to their appropriate agent, to the last business address of such known to the server. If mailed, the period of notice shall run from the time of the postal cancellation. It shall be incumbent upon each party to the Contract, and the Engineer, to advise the other parties to the Contract, and the Engineer, of any change in their business address until completion of the Contract and the expiration of all guarantee periods connected therewith.

- T. DIRECTED, ORDERED, REQUIRED, DESIGNATED, PERMITTED, GRANTED, INSTRUCTED, CONSIDERED NECESSARY, APPROVED, SATISFACTORY, ACCEPTABLE: words referring to action or satisfaction of the Engineer, unless another meaning is specifically stated. The same shall apply to words of like import.
- U. AS SHOWN, AS SHOWN ON THE PLANS: words referring to lines, numbers, or statements, or combinations thereof, on the Contract Drawings, unless another meaning is specifically stated.
- V. ELEVATION: or any abbreviation of the word "elevation", followed by figures, shall refer to the distance in feet above the datum established by the Engineer for the Project.
- W. ACT OF GOD: an earthquake, flood, excessive wind or other unusual natural occurrence. Rain, snow, wind, flood, lightning or other natural phenomenon of normal intensity for the locality shall not be included in the meaning of the term.
- X. APPROVED EQUAL, EQUAL: in the Contract Documents or Contract Drawings wherever brand names are specified and followed by the phrase "or approved equal", this phrase shall be modified to read "or equal".

#### 00 07 50.02 REFERENCES TO OTHER SPECIFICATIONS AND CODES

References in these Specifications to published specifications and codes of private and governmental technical societies and agencies shall mean the latest specification for the item or operation involved. Abbreviations of these organizations used in these Specifications may include the following:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
AGA	American Gas Association
AGCA	Associated General Contractors of America
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
AMCA	American Mechanical Contractors Association
ANSI	American National Standards Institute
APWA	American Public Works Association
ARI	American Refrigeration Institute
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration & Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWS	American Welding Society



AWWA	American Water Works Association
CEMA	Conveyor Equipment Manufacturers Association
CIPRA	Cast-Iron Pipe Research Association
FM	Factory Mutual System
HEI	Heat Exchange Institute
HI	Hydraulics Institute
IEEE	Institute of Electrical and Electronics Engineer
IPCEA	Insulated Powers Cable Electric Association
NAFM	National Association of Fan Manufacturers
NBC	National Building Code
NBFPU	National Board of Fire Protection Underwriters
NBCA	National Bituminous Concrete Association
NCPI	National Clay Pipe Institute
NEC	National Electrical Code
NELA	National Electrical Lamp Association
NEMA	National Electrical Manufacturers Association
NETA	National Electrical Testing Association
NFPA	National Fire Protection Association
NSWMA	National Solid Wastes Management Association
NYSDOT	New York State Department of Transportation, Standard Specifications (Construction and Materials)
NYSECC	New York State Energy Conservation Code
OSHA	Occupational, Safety and Health Act
PCA	Portland Cement Association
SAE	Society of Automotive Engineers
SMACNA	Sheet Metal & Air Conditioning Contractors National Association
SSPC	Steel Structures Painting Council
UL	Underwriter Laboratories', Inc.
USEPA	United States Environmental Protection Agency

END OF SECTION

# **GENERAL CONDITIONS**

## **SECTION 00 07 51**

### **POWERS AND DUTIES OF ENGINEER**

#### **00 07 51.01 RESPONSIBILITY OF THE ENGINEER**

- A. The Engineer shall decide questions which may arise as to the quality and acceptability of materials furnished, work performed, rate of progress of work, interpretation of Drawings and Specifications and all questions as to the acceptable fulfillment of the Agreement on the part of the Contractor. The duties and responsibilities of the Engineer as set forth herein shall not be extended except through written consent of the Engineer and the Owner.
1. Observation of the Work: The Engineer will make periodic visits to the site to observe the progress and the quality of the executed work. All materials and each part or detail of the work shall be subject at all times to observation by the Engineer and the Owner, and the Contractor will be held strictly to the intent of the Contract Documents in regard to quality of materials, workmanship, and the diligent execution of the Contract. Observations may be made at the site or at the source of material supply, whether mill, plant or shop. The Engineer shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make their observations and construction review.
  2. Acceptability of Work: The Engineer's decision as to the acceptability or adequacy of the work shall be final and binding upon the Contractor. The Contractor agrees to abide by the Engineer's decision relative to the acceptability of the work.
  3. Engineer's Decisions: All claims of the Owner or the Contractor shall be presented to the Engineer for decision which shall be final except in cases where time and/or financial considerations are involved.
  4. The Engineer shall not be responsible for the Contractors or any Subcontractor's construction means, methods, controls, techniques, sequences, procedures or construction safety or their failure to complete the work in accordance with the Contract Documents.
  5. Oral Agreements: No oral order, objection, claim or notice by any party to the others shall affect or modify any of the terms or obligations contained in any of the Contract Documents, and none of the provisions of the Contract Documents shall be held to be waived or modified by reason of any act whatsoever, other than by a definitely agreed waiver or

modification thereof in writing, and no evidence shall be introduced in any proceedings of any other waiver or modification.

00 07 51.02 INSPECTION OF WORK

- A. Inspection services, performed by the Engineer pursuant to this Contract, whether of material or work, and whether performed prior to, during or after completion of construction, are performed solely for the purpose of determining general conformity of the work with the Contract Plans and Specifications.

Nothing contained herein shall create, or be deemed to create:

1. any duty upon the Engineer to supervise the construction procedures and safety procedures followed by any Contractor or Subcontractor or their respective employees or by any other persons at the job site, or
2. any liability whatsoever by the Engineer to any employees or any Contractor or Subcontractor or to any other person.

00 07 51.03 NO WAIVER OF RIGHTS

- A. No inspection or approval by the Owner, the Engineer, or any of their employees, nor any order, measurement or certification by the Engineer, nor payment for, nor acceptance of the whole or any part of the work by the Owner or the Engineer, nor any order of the Owner for payment of money, nor any possession taken by the Owner, nor any extension of time shall operate as a waiver of any provision of the Contract, or of any right to damage herein provided or of any power herein reserved. Neither shall a waiver of any breach of the Contract be construed to be a waiver of any other or subsequent breach. All remedies in the Contract shall be construed as being cumulative, in addition to each and every other remedy herein contained. The Owner shall have any and all legal and equitable remedies and recourse which they would in any case have.

END OF SECTION

# GENERAL CONDITIONS

## SECTION 00 07 52

### INSURANCE, SECURITIES AND GUARANTEES

#### 00 07 52.01 GUARANTEES, PERFORMANCE BONDS, LABOR AND MATERIALS PAYMENT BONDS AND GUARANTEES

- A. The Contractor shall furnish Performance and Labor and Materials Payment Bonds each in an amount not less than the full amount of the accepted bid. The Performance Bond shall guarantee faithful performance of the work in compliance with all Contract Documents. The Labor and Materials Payment Bonds shall guarantee the payment of all persons performing labor or furnishing materials in connection therewith. The Bonds shall be in a form approved by the Owner and dated the same as the executed Agreement. The Surety company or companies shall be designated by the Contractor and shall be authorized to transact business in New York State, and if this is a Federally aided project, shall appear on the U.S. Treasury Department's most current list (Circular 570 as amended). The premium for these Bonds shall be paid by the Contractor and shall be included as a part of their Bid. An Attorney-in-fact who signs Performance or Labor and Materials Payment Bonds shall file with each Bond or copy thereof a certified copy of their Power-Of-Attorney to sign such Bonds.
- B. Cash in the form of United States currency or a certified check payable to the Owner in the full amount of the accepted Bid, deposited with the Owner, will be accepted in lieu of both Bonds. Such deposit shall serve as the Performance, and Labor and Materials Payment Bonds for all purposes specified, and the Contractor agrees that such deposit, or such portion thereof as may be required to satisfactorily complete the work, shall be forfeited to the Owner.
- C. The Owner reserves the right to order or approve additions to, omissions from, or changes in the work without notice to the Surety.
- D. The Contractor guarantees all the work, materials and equipment called for in the Contract against defects in materials or workmanship for a period of twelve months following the date of the Notice of Substantial Completion. Under this guarantee, the Contractor shall make good, at their own expense and without delay, any failure of any part due to poor or faulty materials, construction or installation, or to the failure of any equipment to satisfactorily perform the work required of it by the Specifications. The Contractor shall also make good any damage to any part of the Project, the environment or other property of the Owner caused by such failure. Any work replaced or rebuilt during the above-mentioned guarantee period shall be similarly guaranteed for a 12-month period starting from the date of acceptance of the repair, reconstruction or replacement.

- E. The Contractor's Performance and Labor and Materials Payment Bonds specified in the above paragraph shall fully cover all guarantees specified.

00 07 52.02 ADDITIONAL SECURITY

- A. At any time the Owner may become dissatisfied with the Surety or Sureties who furnished the Performance Bond and the Labor and Materials Payment Bonds, or if for other reasons the Bond(s) shall, in the opinion of the Owner, cease to be adequate security to the Owner, the Contractor shall, within five days after notice from the Owner, substitute a new Bond(s) acceptable to the Owner in form, amount and Surety. The premium on such Bond(s) shall be paid by the Contractor. No payments on any Monthly Estimate shall become due and none shall be made until the new Surety shall have been approved and the Bond(s) executed and accepted.

00 07 52.03 CONTRACTOR'S INSURANCE

- A. The Contractor, at their own expense, shall procure and maintain until one year after the date of the Notice of Certificate of Substantial Completion or one year after the Contractor or any Subcontractor last performs any work under the Contract, even if the Project is abandoned or deferred, insurance for liability for damages required by law of the kinds and in the amounts stated herein and as may be modified by provisions in the Additional Instructions, through insurance companies authorized to operate in New York State. The insurance shall cover all operations necessary to complete the work, whether performed by the Contractor or Subcontractors. Before starting work, the Contractor shall furnish the Owner one duplicate original policy and five certificates of insurance for each and every type of insurance required.
- B. All liability insurance required by this Contract shall be maintained in force during the term of this Contract and until one year after the date of the Notice of Substantial Completion or one year after the Contractor or any Subcontractor last performs any work under the Contract, even if the Project is abandoned or deferred.

- |    |  |                                   |
|----|--|-----------------------------------|
| 1. | Commercial General Liability Insurance     | \$1,000,000 Occurrence            |
|    | Bodily Injury & Property Damage            | \$2,000,000 Aggregate             |
| 2. | Automobile Liability                       |                                   |
|    | Bodily Injury & Property Damage            | \$1,000,000 Combined Single Limit |
| 3. | Umbrella Liability                         | \$4,000,000 Occurrence            |
|    |  | \$4,000,000 Aggregate             |
| 4. | Workers Compensation & Employers Liability | Statutory                         |

C. Additional Insured – Contractor shall name Contractor, Owner, the Engineers and any other entity required by contract as additional insured on all liability policies except Workers Compensation and Owners, Contractors Protective Liability with respect to all operations under the Contract by the Contractor, Subcontractor, including suspension and omissions of the Owner. The additional insured status shall be on a primary and non contributing basis over all other valid and collectible insurance, with respect to this Contract.

D. Additional Conditions

1. Waiver of Subrogation: The Contractor and Subcontractors waive all rights against (1) each other and any of their subcontractors, agents and employees, each of the other, and (2) the Owner, the Engineer, the Engineer's consultants, separate contractors, and any of their subcontractors, sub-subcontractors, agents and employees for damages caused by bodily injury, property damage, fire or other causes of loss to the extent covered by insurance provided under the Contract or other insurance applicable to the work, except such rights as they may have to proceeds of such insurance held by the Owner as a fiduciary. The Subcontractor shall require of the Subcontractor's sub-subcontractors, agents and employees, by appropriate agreements, written where legally required for validity, similar waivers in favor of the parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.
2. Commercial General Liability (CGL):
  - a. Coverage with limits of Insurance of not less than \$1,000,000 each occurrence and \$2,000,000 Annual Aggregate.
  - b. If the CGL coverage contains a General Aggregate Limit, such General Aggregate shall apply separately to each project/location.
  - c. 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 and contractual liability.
  - d. Contractor, Owner and all other parties required of the Contractor, shall be included as additional insureds on the CGL. Coverage for the additional insureds shall apply as Primary and noncontributing Insurance before any other insurance or self-insurance, including any deductible, maintained by, or provided to, the additional insureds.

- e. Contractor and Subcontractor 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 one year after Contractor or Subcontractor last performs any work under the Contract.
- 3. Auto Liability:
  - a. Business Auto Liability with a combined single limit of at least \$1,000,000 each accident.
  - b. Business Auto coverage must include coverage for liability arising out of all owned, leased, hired and non-owned automobiles.
  - c. General Contractor, Owner, Engineers and all other parties required of the General Contractor, shall be included as additional insureds on the auto policy.
- 4. Umbrella Insurance:
  - a. Umbrella limits must be at \$4,000,000 each occurrence and \$4,000,000 aggregate.
  - b. 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 Contractor.
- 5. Workers Compensation and Employers Liability:
  - a. Statutory for New York State. All other states Employers Liability/Insurance limits of at least \$500,000 each accident for bodily injury by accident and \$500,000 each employee for injury by disease.
- 6. Property Insurance (Builders Risk):
  - a. The Contractor shall provide and maintain, at their own expense, such property insurance as required by Contract. Policy(s) shall provide cover for fire, extended cover including open (special) perils and theft to insure all work and materials of the Contract against loss or damage. The value of the insurance shall at all times be equal to or greater than the full value of the Contract. Insurance policies shall be in the name of the Owner and payable to the Owner. Any proceeds there to shall be retained by the Owner as security for the performance by the Contractor in making good any loss, damage or injury. Upon such satisfactory performance by the Contractor, the proceeds shall be paid by the Owner to the Contractor.

E. Owners, Contractors Protective Liability Insurance

1. Owners Protective Liability Insurance at the limits stated in the Additional Instructions issued in the name of the Owner to and covering the liability for damages imposed by law upon the Owner with respect to all operations under the Contract by the Contractor or their Subcontractor, including supervisory acts and omissions of the Owner. Unless otherwise stated in the Additional Instructions, a minimum of \$1,000,000 per occurrence / \$2,000,000 aggregate is required.

F. Insurance Certificates

1. Attached to each certificate of insurance shall be a copy of the Additional Insured Endorsement that is part of the Commercial General Liability Policy. These certificates and the insurance policies required 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/Owner.

END OF SECTION



# **GENERAL CONDITIONS**

## **SECTION 00 07 53**

### **STATUS OF CONTRACTOR**

#### **00 07 53.01 REPRESENTATIONS OF CONTRACTOR**

The Contractor warrants and represents that:

- A. They are familiar with all Federal, State, County and Municipal laws, ordinances, regulations and codes pertinent to the work and those employed in connection therewith, including any special acts relating to the work or the Project.
- B. They have carefully examined all the Contract Documents and the Site and has, thereby satisfied themselves as to: the location and nature of the work; the quantity, quality and nature of both surface and subsurface structures and materials apt to be encountered; the quantity, quality and types of plant, equipment and other facilities necessary for the performance of the work; the general and local conditions; and all other matters which may in any way affect the work or their performance under the Contract.
- C. Such work, both temporary and permanent, required under the Contract can be satisfactorily constructed and used for its intended purpose, without injury to any person or damage to any property.
- D. They are financially solvent and experienced in and competent to perform the work of the Contract.
- E. If a corporation foreign to the State of New York, they are aware of the provisions of Article 13 of the Business Corporation Law, with specific reference to the requirements in Section 1301 that certain corporations may not do business in this State without first obtaining a certificate of authority from the Secretary of State.
- F. If a corporation, they are aware of the provisions of Article 145 of the Education Law, with specific reference to the requirements and prohibitions of Section 7209 relating to the practice of professional engineering, or the use of the word "engineer" or "engineering" in a corporate name.

#### **00 07 53.02 ADDRESS OF CONTRACTOR**

- A. Both the address given in the bid and the Contractor's office at or near the Site, if such is established, are designated as places to either of which letter, notices, or other communications to the Contractor may be mailed or delivered. The delivery at either place, or the depositing, in a post-paid wrapper addressed to either place, in any regularly maintained U.S. Post Office Box, of any letter, notice, or other

communication shall be deemed sufficient service thereof upon the Contract. If at any time during the life of the Contract, it is necessary to change either address, the Contractor shall give written notice to the Owner, the Surety and the Engineer.

- B. Nothing herein shall act to prevent or invalidate the personal delivery in hand of any letter, notice or other communication to the Contractor.

#### 00 07 53.03 PATENTS

- A. The Contractor shall pay, as part of this Contract, all costs and fees required to obtain the legal right to use patented equipment, designs, or procedures to be used, as part of the work on this Contract.
- B. The Contractor shall defend, indemnify, keep and save harmless the Owner from all costs, damages, liabilities, judgments and expenses, including reasonable attorney fees which may in any way arise against the Owner because of the use of any patented material, equipment or process furnished or used in the performance of the work or because of the use of patented designs supplied by the Contractor and accepted by the Owner.
- C. If any claim, suit or action at law or inequity of any kind involving any such patent is brought against the Owner, the Owner may retain from any moneys due or to become due to the Contractor an amount considered sufficient by the Owner to protect itself against loss until such action is settled and satisfactory evidence to that effect has been supplied to the Owner.

#### 00 07 53.04 CONTRACTOR'S OBLIGATIONS

- A. The Contractor shall furnish all the plant, machinery, labor, equipment, material, tools, appliances, shoring, bracing and scaffolding necessary to the proper and safe completion of the work in the manner specified, shown and directed within the time specified. They shall suitably cover the work whenever necessary, and otherwise protect it from damage from any cause whatsoever.
- B. If in the opinion of the Engineer the Contractor's procedures or appliances appear at any time, either before or during progress of the work, to be inadequate or insufficient to provide the quality of the work, or the rate of progress specified, they may order the Contractor to improve their character and increase their sufficiency, and the Contractor shall comply therewith. However, failure of the Engineer to issue such an order shall not relieve the Contractor of their obligations to secure the safety, quality or progress of the work, and the Contractor alone shall be responsible for the safety, adequacy and efficiency of their methods, plant and appliances.

00 07 53.05 LIABILITY FOR INJURIES OR DAMAGE

- A. The Contractor shall be solely responsible and liable for the safety and protection of all persons, including but not limited to the Owner, Engineer, Contractor and Subcontractor and their employees, suppliers and visitors, and shall be solely responsible and liable for the safety and protection of property, including but not limited to the Site and its appurtenances and equipment, and they shall be solely responsible for all physical injuries, including death, to any such persons and for all damage to any such property and its appurtenances, which occurs on account of the work, or because of any negligence, fault or default of the Contractor, a Subcontractor or any of their officers, employees or agents.
- B. The Contractor shall have on the project site at all times, while work is in progress, at least one person skilled in safety and health procedures and familiar with State and Federal safety and health regulations whose responsibility shall be to observe methods and procedures. They shall have the duty and authority to stop and/or correct all unsafe and unhealthy conditions.

00 07 53.06 GENERAL INDEMNIFICATION

- A. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Engineer, Engineer's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from performance of the Contractor's Work under this Contract, provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, the Contractor's Subcontractors, 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 a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph.

00 07 53.07 CONTRACTOR'S CLAIM FOR DISPUTED WORK

- A. If the Contractor believes they or their Subcontractor or anyone directly or indirectly employed by any of them has sustained damage for disputed work, for which they claim they should be compensated, they shall give written notice to the Engineer, describing the nature and circumstances of the disputed work, within seven days after sustaining such damage. The Contractor shall also file with the Engineer, within 30 days of the date on which the alleged damage occurred, an itemized statement of the character and amounts of such damage. Unless both statements shall be filed as so required, the claim for compensation shall be considered invalid and the Contractor shall not be entitled to any payment therefor.

- B. The Contractor shall proceed diligently with performance of the disputed work pending final resolution of their claim for damages.
- C. During the progress of such disputed work, the Contractor shall provide to the Engineer daily records and make reports of all labor, material and equipment used in connection with such work and the cost thereof as specified in Section 00 07 57.03.
- D. If the Owner determines that the work in question is Contract work and not a Changed condition, they shall direct the Contractor to continue the disputed work, and the Contractor must promptly comply.
- E. If the Owner determines that the work in question is not Contract work and is a Changed condition, they shall direct the Contractor to continue the work and shall have prepared a Change Order in accordance with Section 00 07 57.03.

00 07 53.08 NO CLAIMS AGAINST INDIVIDUALS

- A. No claim shall be made by the Contractor or their Subcontractor or anyone directly or indirectly employed by any of them against any officer, employee or agent of the Owner and the Engineer for, or because of, anything done or failure to be done in connection with the work.

00 07 53.09 CONTRACTOR'S TITLE TO MATERIALS

- A. Neither the Contractor nor any Subcontractor shall purchase any materials, equipment or supplies for work subject to any chattel mortgage or under a conditional sale agreement or other agreement by which an interest is retained by the seller. The Contractor shall obtain and maintain good and clear title to all materials and supplies used by them in the work until attachment to or incorporation in the work.
- B. Nothing in the Contract shall be construed as vesting in the Contractor any property right in materials or equipment specified after they shall have been attached to or incorporated in the work or the ground, nor in materials and equipment for which partial payments have been made. All such materials and equipment shall become the property of the Owner upon such attachment or incorporation.

00 07 53.10 TITLE TO OLD MATERIALS

- A. All materials removed from existing structures or construction, and all materials or articles of intrinsic or historic value found in excavations or on the Site shall be brought to the attention of the Engineer, and if they shall so order, shall become or remain the property of the Owner, and shall be carefully preserved for future use. If not claimed by the Owner, such materials or articles shall be removed from the Site and disposed of by the Contractor at their own expense.

END OF SECTION

# **GENERAL CONDITIONS**

## **SECTION 00 07 54**

### **CONTRACTOR'S ORGANIZATION & STAFF**

#### **00 07 54.01 SUPERINTENDENTS, FOREMEN & AGENTS**

- A. The Contractor shall at all times, except during periods of shut-down or work suspension that have been approved or directed, have a competent superintendent, foreman or other representative on the Site, who shall see that the work is performed in accordance with the Contract Documents and directions of the Engineer given thereunder, and who shall have authority to act for the Contractor and to receive and carry out orders from the Engineer, and who shall receive materials and equipment shipped to the Contractor. The Contractor shall be responsible for the acts of their superintendents, foremen, agents and employees during the life of the Contract.

#### **00 07 54.02 COMPETENCY & CHARACTER OF EMPLOYEES**

- A. The Contractor shall employ only competent and skillful persons to perform the work. This provision shall apply equally to common laborers and skilled craftsmen or tradesmen.
- B. Whenever the Engineer informs the Contractor that any person on the work is, in the Engineer's opinion, incompetent, intemperate, unfaithful, insufficiently skillful, or disorderly, or refuses to carry out the provisions of the Contract, or to stop doing unsatisfactory work when so ordered, or who uses threatening or abusive language to, or engages in offensive, hostile, or harassing conduct toward the Owner, Engineer, or any authorized representative(s) thereof, such person shall be discharged from the work by the Contractor and shall not again be employed without written consent of the Engineer.

#### **00 07 54.03 CONTRACTOR'S FIELD OFFICE**

- A. Unless waived by provisions within Additional Instructions, the Contractor shall provide, furnish and maintain for their own use a field office, with telephone, on the Site during the entire period of construction. The Contractor shall obtain approval of the Engineer of the type, size and location of such office, shanties or other temporary structures on the Site, prior to their erection.

- B. The Contractor will receive no direct payment for providing, maintaining or removing the Contractor's Field Office specified above, and compensation for same shall be included, as part of their overhead, in the prices to be paid for the various items in this Contract.

END OF SECTION

# **GENERAL CONDITIONS**

## **SECTION 00 07 55**

### **PERMITS, TAXES, ACCESS, OTHER CONTRACTS**

#### **00 07 55.01 LAWS, REGULATIONS & PERMITS**

- A. The Contractor shall procure at their own expense all necessary permits from the Federal, State, County, Town, municipal or other public agencies that may be involved in the work or the Project or have jurisdiction thereover, and shall serve all notices required by law or ordinance and pay all fees and charges incidental thereto. They shall at all times keep themselves fully informed of all laws, ordinances and regulations which in any way affect the work, the materials, methods and equipment used in the work, the conduct of the work, and persons engaged or employed on the work, and of all orders, instructions and decrees of bodies, agencies or tribunals having any authority or jurisdiction over the work or the Project.
- B. If the Contractor should discover any discrepancy or inconsistency in any Contract Documents relating to any permit, law, ordinance, regulation, code, order, decree or instruction, they shall immediately report the same in writing to the Engineer.
- C. The Contractor shall at all times observe and comply with all such existing and all laws which come into existence during the execution of the Contract, as well as permits, codes, decrees, ordinances, regulations, orders and instructions, and shall cause their superintendents, foremen, employees and agents to do likewise.

#### **00 07 55.02 REQUIRED LEGAL PROVISIONS DEEMED INCLUDED**

- A. All clauses and provisions of law required by law to be included in the Contract shall be deemed to be included herein, and the Contract shall be interpreted, administered and enforced as though they were included. If, through oversight or otherwise, any such clause or provision is not included, or is not correctly included, the Contract shall immediately be physically amended or corrected, at the request of either party, to provide the necessary compliance.
- B. The inclusion in the Contract Documents of any portion of any law or ordinance or code, regulation, decree, order, permit, instruction or interpretation emanating from a public body or agency, shall not be construed to mean that all such laws or legal requirements deemed necessary, in effect, or applicable to all or any portion of the work or the Contract have been included.



00 07 55.03 UNLAWFUL REQUIREMENTS DEEMED EXCLUDED

- A. If the Contract Documents contain any unlawful provision not an essential part of the Contract and which shall not appear to have been a controlling or material inducement to the making of the Contract by the parties thereto, such provision shall be construed to be of no effect and shall, upon written notice by either party, be deemed stricken from the Contract without affecting the binding force of the remainder on both parties.

00 07 55.04 TAXES

- A. The Contractor shall pay all sales, use, excise, transportation and other taxes and fees for which they are liable under the Contract. The cost of such taxes and fees shall be included in the price, or total of several prices, given in the Bid on which the Agreement is based, and no separate payment will be made therefor.

00 07 55.05 ACCESS TO WORK AND CONTRACTOR'S RECORDS

- A. The Owner and the Engineer, and their employees, agents and representatives, shall have access to the work, the Site, and the premises used by the Contractor, and the Contractor shall provide and maintain safe and suitable facilities therefor. Subcontractors, and any other parties who may contract with the Owner to do work on the Site shall, for all purposes which may be required by their contracts, have the same privileges and facilities.
- B. Whenever requested, the Contractor shall give the Engineer access to invoices, bills of lading, trip tickets, lists of employees, survey notes and other such data connected with the work.

END OF SECTION

# **GENERAL CONDITIONS**

## **SECTION 00 07 56**

### **TIME ELEMENTS**

#### **00 07 56.01 COMMENCEMENT & COMPLETION**

- A. The Contractor shall begin performance of the work within the time specified in the Information for Bidders, and shall substantially complete the work within the time specified in the Information for Bidders.

#### **00 07 56.02 TIME OF ESSENCE**

- A. Since the provisions of this Contract relating to the commencement and completion of the work are to enable the Owner to construct and place in use an improvement or facility in accordance with a pre-determined program, such provisions are of the essence of this Contract. It is agreed that the Owner will suffer damages if the work is not completed in the time specified.

#### **00 07 56.03 PROGRESS**

- A. The rate of progress shall be as uniform as practicable and such that all the work will be completed within the time specified, or within any time extensions that may be granted by the Owner.
- B. The Engineer will notify the Contractor in writing if, at any time, they are of the opinion the work is unnecessarily delayed and will not be completed on time. The Contractor shall, within 10 days after receipt of such notice, take such action as will, in the opinion of the Engineer, improve the rate of progress to an extent that will insure completion of the work within the time specified. If the Contractor shall fail or refuse to take such steps within 10 days, the Owner may notify the Contractor to stop work or terminate the Contract in accordance with the provisions of Article 00 07 60.01, OWNER'S RIGHT TO STOP WORK OR TERMINATE CONTRACT.

#### **00 07 56.04 APPROVED WORK SCHEDULES**

- A. Unless waived by provision in the Information for Bidders, within three weeks after award of the Contract, the Contractor shall submit to the Engineer for approval three copies of their proposed work schedule. The schedule shall show the Contractor's proposed relative order and sequence of commencement and completion of all salient portions of the work, including the delivery and installation of equipment, and shall give the estimated dates of commencement and completion of the various portions of the work.

- B. If more than one Contract is to be awarded on the same phase of the project, the General Contractor shall provide the Engineer with additional copies of their work schedule after the schedule shall have been approved. The Engineer will transmit these to the other Contractors for reference in the preparation of their proposed work schedules and submittal of same for approval. In such case each Contractor other than the General Contractor shall submit their proposed schedule for approval within three weeks after receipt of a copy of the General Contractor's approved schedule.
- C. Each Contractor shall adhere to the approved schedule for their Contract. If a Contractor causes one or more other Contractors to be damaged by failing to adhere to their schedule, they shall save harmless the Owner and the Engineer from any and all actions and charges of the other Contractors against the Owner or the Engineer as the result of such failure.
- D. If the Contractor is behind schedule any month, the Contractor shall indicate what measures it will take in the next thirty (30) days to put the work back on schedule. If the Engineer finds the revised schedule not acceptable they may require the Contractor to submit a new revised schedule.
- E. If the Contractor fails to submit a work schedule within the time period described or any revision or update when required, the Owner may withhold payment pursuant to Section 00 07 59.07 of the Contract until such time as the Contractor submits the required work schedule.
- F. See also Article 00 10 12.01, COLLATERAL WORK.

#### 00 07 56.05 WORK SUSPENSION

- A. When, in the opinion of the Engineer, good cause of suspension of the work exists, the Contractor shall suspend the work or any portion thereof, upon written order of the Engineer, for such period of time as the Engineer may direct. If the reason for suspension is beyond the control of the Contractor, the time within which the work is required to be completed shall be extended by the number of calendar days the work is suspended.

#### 00 07 56.06 TIME EXTENSIONS

- A. Should the work be obstructed or delayed through the neglect, delay or default of any other Contractor on the Project, or by an Act of God, or by a general strike, or by delays caused by governmental authorities having jurisdiction over the work, or by delay on the part of the Owner in performing any work or furnishing any material or equipment stated in the Contract to be furnished by the Owner, or by any Supplementary Agreement or Change Order issued by the Owner, the Contractor shall have no claim for damages against the Owner or the Engineer, other than the price or prices agreed upon under Supplemental Agreement, or Change Order, but shall be entitled to such an extension of time for completion of

the work as the Engineer certifies is equitable because of such obstruction, delay, Supplemental Agreement, or Change Order, provided that claim for a time extension is made by the Contractor, in writing within seven days from the end of the time when the alleged cause therefore shall have occurred. Time necessary for Shop Drawing review, for changes to meet actual conditions, and delays incurred by seasonal and weather limitations for the locality should be normally anticipated and are neither compensatory nor eligible for extensions of time. See also ARTICLE 00 10 12.01, COLLATERAL WORK, and 00 07 57.03, CHANGE ORDERS AND PAYMENT OR CREDIT THEREFOR.

00 07 56.07 ENGINEERING AND INSPECTION CHARGES

- A. When the work embraced in the Contract is not substantially completed on or before the date specified therein, or within any time extensions granted by the Owner, engineering and inspection expenses incurred by the Owner in connection with the work from the specified or extended date of substantial completion until the date of actual Substantial Completion shall be charged to the Contractor. The date of actual substantial completion shall be determined as the date of issuance of the Notice of Substantial Completion.
- B. Supplementary Agreements or Change Orders added to the original Contract, as well as extenuating circumstances beyond the control of the Contractor, will be given due consideration by the Owner prior to assessing engineering and inspection charges against the Contractor.
- C. In addition, should the Contractor apply for and receive dispensation to work more than eight hours per day or forty hours per week by the Industrial Commissioner, the Contractor will be charged the associated overtime premium rate for the Engineer's on-site inspection representative(s).
- D. Should the remaining minor punch list items not be completed within sixty (60) days of the Notice of Substantial Completion or within any time extensions granted by the Owner, the Contractor shall pay the Owner for any engineering and inspection expenses incurred by the Owner from the specified or extended date of minor punch list completion until when such punch list items are fully complete.
- E. These additional engineering and inspection charges shall be in the form of agreed-upon damages to the Owner and shall be deducted from moneys due or to become due the Contractor.

00 07 56.08 PER DIEM CHARGES FOR DELAY

- A. For each calendar day or fraction thereof that any work except minor punch list items as listed on the Notice of Substantial Completion shall remain uncompleted after the Contract time specified for the substantial completion of the work in the Information For Bidders or extensions thereof granted by the Owner, the Contractor shall pay the Owner agreed-upon damages as follows, unless modified in the Additional Instructions:

Original Contract Amount		Agreed-Upon Damages Per Calendar Day
From More Than	To and Including	
\$ 0	\$ 25,000	\$ 50
\$ 25,000	\$ 50,000	\$ 100
\$ 50,000	\$ 100,000	\$ 200
\$ 100,000	\$ 500,000	\$ 300
\$ 500,000	\$ 2,000,000	\$ 500
\$ 2,000,000	\$ 5,000,000	\$ 600
\$ 5,000,000	\$10,000,000	\$ 800
\$10,000,000		\$1,000

- B. The date of actual Substantial Completion shall be determined as the date of issuance of the Notice of Substantial Completion.
- C. Such sums shall be in addition to engineering and inspection charges as provided for in ARTICLE 00 07 56.07 and shall not be in the nature of a penalty, but agreed-upon damages to the Owner in such case and shall be a part of the consideration of the Contract.
- D. The sums and charges specified above shall be deducted from moneys due or to become due the Contractor and the amount still owing, if any, shall be paid on demand by the Contractor or the Surety. Such payments shall not relieve the Contractor or the Surety from any other obligation under the Contract.
- E. Before assessing engineering and inspection charges, or per diem charges for damages, the Owner will give due consideration to any and all Supplementary Agreements and Change Orders as well as extenuating circumstances beyond control of the Contractor including any delays due to any preference, priority or allocation order duly issued by the Government. Such charges will be assessed, however, in cases in which the Owner considers the Contractor liable as the result of slow work, inefficient operation, insufficient labor, equipment or material, the removal and replacement of poor work, or other unwarranted reasons.

END OF SECTION

# **GENERAL CONDITIONS**

## **SECTION 00 07 57**

### **CHANGES IN THE WORK**

#### **00 07 57.01 RIGHT TO ALTER CONTRACT**

- A. The Owner may at any time alter or modify the Contract Documents, and the Contractor shall conform to such alterations or modifications after the Owner and the Contractor shall have entered into a Supplementary Agreement in writing therefor. The Contractor shall perform no work and furnish no material in connection with the alterations or modifications, nor shall they receive any additional payment therefor, unless and until such a Supplementary Agreement has been executed, as required by law. The Owner and the Contractor agree that alterations and modifications thus made shall in no way compromise the validity or coverage of the original Contract or Bond, or the liability of the signers thereof. All work performed under any such Supplementary Agreement shall be subject to all the provisions of the original Contract not expressly altered or modified.

#### **00 07 57.02 MINOR CHANGES**

- A. When ordered by the Engineer, the Contractor shall make minor changes in the location of the work, installation of equipment, and other things called for in the Contract, at no additional cost to the Owner. Such minor changes shall be limited to matters that do not alter the character, quantity or cost of the work as a whole. The Engineer shall be the sole judge of what constitutes a minor change.

#### **00 07 57.03 CHANGE ORDERS & PAYMENT OR CREDIT THEREFOR**

- A. The Owner, without invalidating the Contract, may make changes by altering, adding to or deducting from the work the contract sum being adjusted accordingly. All such work shall be executed in conformity with the terms and conditions of the original Contract, unless otherwise provided in the order for same. Any claim for extension of time caused thereby shall be adjusted at the time of ordering such change.
- B. No instructions, either written or verbal, shall be construed as an order for changes unless it be in the form of a Change Order, bearing the signed approval of the Owner and the signed acceptance of the Contractor, except in the case of disagreement as to value of changes, when the Contractor's signature to the order will not be mandatory. Change Order shall describe or enumerate the work to be performed and state the price, if any, to be added to or deducted from the Contract sum. If the nature of the work is such that a Change Order, as above, cannot be issued until the work has been advanced sufficiently to obtain exact quantities, said work will be authorized in writing by the Owner, with the accompanying

statement that a Change Order will be issued when the necessary information is at hand.

- C. Except as provided in the above paragraph, no change shall be made, unless in pursuance of a Change Order, and no claim for an addition to the Contract sum shall be valid unless so ordered. If the Contractor believes that any instructions, by drawing or otherwise, involves extra cost under their Contract, they shall give the Owner and the Engineer written notice and then proceed as indicated in Article 00 07 53.07, Contractor's Claim for Disputed Work.
- D. The value of any Change Order shall be determined by one or more of the following methods and in the following order:
  - 1. By prices specifically named in the specifications or proposals.
  - 2. By acceptance of agreed unit prices based on estimated cost plus overhead and profit as applicable.
  - 3. By estimate of the actual cost of labor and materials plus overhead and profit, cost to be determined as the work progresses.
  - 4. By actual cost of labor and materials plus overhead and profit, cost to be determined as the work progresses.
  - 5. By estimate of the value as deducible from the approved detailed estimate.
- E. Overhead shall be defined as an allowance to compensate for all costs, charges and expenses, direct or indirect, except for the actual cost of labor and material as defined by the following paragraph. Overhead shall be considered to include, but not be limited to insurance (other than as mentioned in the following paragraph) bond or bonds, field and office supervisors and assistants above the level of foreman, use of small tools and minor equipment, incidental job burdens, general office expense, etc.
- F. Actual cost of labor and material shall be defined as the amount paid for the following items, to the extent determined reasonable and necessary.
  - 1. Cost of materials delivered to the job site for incorporation into the Contract work.
  - 2. Wage paid to workmen and foremen and wage supplements paid to labor organizations in accordance with current labor agreements.
  - 3. Premiums or taxes paid by the Contractor for Worker's Compensation Insurance, unemployment insurance, FICA tax and other payroll taxes as required by law, net of actual and anticipated refunds and rebates.
  - 4. Sales tax paid as required by law.

5. Allowance for use of construction equipment (exclusive of hand tools and minor equipment), as approved for use by the Engineer. The rate on self-owned equipment used for periods of under one week will be the Associated Equipment Distributor's published monthly rate divided by 22 days to establish a daily rate and divided again by eight hours to establish an hourly rate. Equipment used for periods of 5 days or more will be billed at a rate equal to 45% of the published monthly rate. In the alternative, the Engineer may approve for reimbursement a rate representing the allocable costs of ownership. Self-owned equipment is defined to include equipment rented from controlled or affiliated companies. Rented equipment will be paid for at the actual rental cost.
  6. Gasoline, oil and grease required for operation and maintenance will be paid for at the actual cost. When, in the opinion of the Contractor, and as approved by the Engineer, suitable equipment is not available on the Site, the moving of said equipment to and from the Site will be paid for at actual cost.
  7. When the material furnished under item (1) is used material, its value shall be pro-rated to the value of new material, but should be no more than its cost. When, in the opinion of the Engineer, the salvage value of salvageable material furnished under item (1) exceeds the cost of salvage, a suitable credit shall be given the Owner.
- G. Regardless of the method used to determine the value of any change, the Contractor will be required to submit evidence satisfactory to the Engineer to substantiate each and every item that constitutes their proposal of the value of the change. The amounts allowed for overhead and profit shall not exceed the applicable percentages as established in the two following paragraphs.
- H. If the work is done directly by the Contractor, overhead in an amount of 10% may be added if method B, C or D is used, and to the cost of the labor and materials plus overhead there may be added 10% for profit. The percentages for overhead and profit may vary according to the nature, extent and complexity of the work involved, but in no case shall exceed the percentages set forth in this paragraph and in the following paragraph. No percentages for overhead and profit will be allowed on payroll taxes or on the premium portion of overtime pay.
- I. If the work is done by a Subcontractor, Subcontractor's overhead in the amount of 5% may be added to cost of labor and materials if method B, C or D is used and to the cost of labor and materials plus overhead there may be added 10% for the Subcontractor's profit. To this amount there may be added 10% for the Contractor's combined overhead and profit. No percentage for overhead and profit will be allowed on payroll taxes or on the premium portion of overtime pay. However, to the extent that the aggregate dollar value of changes under a contract exceeds \$75,000, the 10% overhead applied to total costs of labor and materials incurred by the prime Contractor shall be reduced to 5%, and the combined



overhead and profit of 10% applied to sub-contract billings shall be reduced to 5%. In addition, on all individual Change Orders in excess of \$75,000, the overhead shall be no more than 5% of the total actual cost of labor and materials incurred by the prime Contractor, and the combined prime Contractor's overhead and profit allowance applied to Sub-contract billings shall be no more than 5%.

- J. The Owner shall determine by which of the foregoing methods the value of any changes shall be computed.

#### 00 07 57.04 CORRECTION OF WORK

- A. Any materials, plant or equipment delivered to the Site for use in the work which may be disapproved by the Engineer as unsuitable or not in keeping with the Specifications shall be immediately removed by the Contractor from the Site.
- B. If any portion of the work is damaged in any way, or if defects or faults develop before the Inspection at Substantial Completion and issuance of a Certificate of Substantial Completion, or before the expiration of the 12-month guarantee period, the Contractor shall repair, replace or otherwise make good the damage or defects to the satisfaction of the Engineer, regardless of whether the work may have previously passed the specified inspections and tests. No additional payment will be made for such remedial work.
- C. Failure on the part of the Engineer to condemn defective work shall not imply acceptance of the work, nor act to release the Contractor from their obligations to repair, replace or otherwise make good the work at their own expense, notwithstanding that such work may have been estimated for payment or that partial or full payments may have been made therefor.

#### 00 07 57.05 EMERGENCY POWERS UNIMPAIRED

- A. The provisions of this shall not detract from the authority of the Contractor or the Engineer to act in case of emergency, as provided elsewhere in the Contract Documents.

END OF SECTION

# **GENERAL CONDITIONS**

## **SECTION 00 07 58**

### **ASSIGNMENT & SUBCONTRACTS**

#### **00 07 58.01 SUBCONTRACTS**

- A. Should the Contractor desire to subcontract any portion of the work, they shall first submit to the Engineer a statement outlining the nature and amount of the work proposed to be subcontracted and the name of the person, firm or corporation they proposes as Subcontractor. If requested by the Engineer, the Contractor shall also provide a statement as to the proposed Subcontractor's experience, financial ability, insurance certificates, or other qualifications for the nature and scope of the work proposed to be undertaken.
- B. The proposed Subcontractor shall not enter upon the Site nor perform any work, either on or off the Site, until written approval of the Subcontractor has been granted by the Engineer and the Surety.
- C. Subcontracts shall in no way, directly or indirectly, release, compromise or modify the responsibility of the Contractor or the Surety for the satisfactory and full completion of the work. The Owner shall not be liable to any Subcontractor for any lien on structures to be constructed as part of the work or claim on moneys due the Contractor or any other lien, claim or damages whatsoever. The approval of the Engineer and the Surety of a Subcontractor shall in no way create a contractual obligation between the Owner and the Subcontractor.
- D. In the event a Subcontractor shall disregard the directions of the Engineer, or fail in any other way to abide by all conditions of the Contract, the Contractor shall, upon written order of the Engineer, require the Subcontractor to discontinue work under the Contract.
- E. The Contractor shall be responsible for the coordination of all of their Subcontractors engaged upon the work, both in connection with their own work and the work of other contractors, if any, working collaterally on the Project.
- F. The divisions or sections of the various Contract Documents and Bid Items are not intended to define portions of the work to be divided among Subcontractors, nor to influence the Contractor to award Subcontracts, nor to limit or enlarge the work performed by any trade, unless a Subcontractor experienced in providing a certain specialized type of work is specifically required in the Contract.

00 07 58.02 LIMIT OF SUBCONTRACTS VALUE

- A. The Owner reserves the right to limit the total value of all Subcontracts to fifty (50) percent of the total Contract price.

00 07 58.03 ASSIGNMENT

- A. In accordance with the provisions of Section 109 of the General Municipal Law of the State of New York, the Contractor shall not assign, convey, transfer, sublet or otherwise dispose of this Contract, or of their right, title or interest therein, or their power to execute such Contract, to any other person or corporation without the prior written consent of the Owner.
- B. If the Contractor shall, without such consent of the Owner, assign, convey, transfer, sublet or otherwise dispose of this Contract to any other person or corporation, the Owner may revoke and annul the Contract, in which instance the Owner shall be relieved and discharged from any and all liability and obligations to the Contractor arising from the Contract, and to the persons or corporation to which the Contract shall have been assigned, conveyed, transferred, sublet or otherwise disposed of, and the Contractor and their assignees, conveyees, transferees or sublessees shall forfeit and lose all moneys theretofore earned under such Contract, except so much as they may be required to pay their employees.
- C. Nothing herein shall prevent an assignment by the Contractor for the benefit of their creditors made pursuant to the laws of the State of New York.

00 07 58.04 PAYMENT

- A. Payment to Subcontractors and/or material suppliers shall be in accordance with Section 106b of the General Municipal Law of the State of New York.

END OF SECTION

# **GENERAL CONDITIONS**

## **SECTION 00 07 59**

### **PAYMENTS**

#### **00 07 59.01 ESTIMATED QUANTITIES**

- A. The Contractor agrees that the estimated quantities given in the Bid are only for the purpose of comparing bids and that they are satisfied with and will at no time dispute the said estimates as a means of comparing the aforesaid bids, that they will make no claim for loss of profits or anticipated profits because of any difference between the said estimated quantities and the quantities of the various classes of work actually furnished or performed, that the Owner shall not be held responsible if any of the said estimated quantities should be found to not even approximate those actually measured during performance of the work, and that the Engineer may direct an increase, decrease or omission of the quantities of any class or part of the work as may be deemed necessary or desirable.

#### **00 07 59.02 PRICES ALL-INCLUSIVE**

- A. The price or prices herein agreed to shall be for the work complete, and shall include the furnishings of all labor, tools, plant, equipment and materials therefor, whether required directly or indirectly, unless otherwise specified.

#### **00 07 59.03 LUMP SUM PRICES**

- A. A lump sum price stated in the Bid for an item shall be for the work complete as shown on the Plans and described in the Specifications for the corresponding item and shall include the cost of all labor, tools, plant, equipment and materials, specified or implied, incidental to the work of the item complete and ready for the service intended.
- B. Within three weeks after execution of the Contract, the Contractor shall submit to the Engineer for approval three copies of a detailed schedule showing the breakdown of all lump sum bid prices in the Contract. The schedule shall indicate the quantities and amount estimated for each part of the work. The schedule shall be apportioned by the Contractor for labor and for materials, if so requested by the Engineer. The Contractor shall revise the schedule until it is satisfactory to the Engineer. The approved breakdown will be used in the preparation of monthly estimates and payments to the Contractor.

00 07 59.04 UNIT PRICES

- A. A unit price stated in the Bid for an item of the work specified to be measured for payment by units of volume, weight, area, length or number shall be paid for each unit of the net amount of the work of the item actually performed or furnished and incorporated in the finished work in accordance with the Specifications, Plans and as directed, as measured along the payment lines specified or shown, local custom to the contrary notwithstanding. It is agreed that the planimeter shall be considered an instrument of precision for the measurement on drawings and plans of areas in connection with the estimation of quantities in cases where geometric methods would be comparatively laborious.

00 07 59.05 MONTHLY ESTIMATES AND PAYMENTS

- A. Unless otherwise noted in the Additional Instructions or the Specifications once each month, on a day of the month selected by the Engineer, they will make an estimate of the value of the work done during the previous month, provided such value exceeds one thousand dollars. The Engineer shall submit this Monthly Estimate to the Owner for payment. The Owner will pay the Contractor each month, within 30 days of the date of the Monthly Estimate, a sum equal to ninety-five (95) percent of the Monthly Estimate, retaining five (5) percent of each estimate until the work or major portions thereof is substantially completed.
- B. The work will be considered Substantially Complete when the work of the Contract including all alterations or modifications (see Section 00 07 57 - CHANGES IN THE WORK) is at least ninety-nine (99) percent complete and the estimated value of minor items to be completed is equal to or less than one (1) percent.
- C. The Engineer will include in the Monthly Estimates the delivered cost of equipment and non-perishable materials on site and off site which have been tested or inspected by the Engineer and approved by them for incorporation in the work. Only equipment and materials for which the Contractor furnishes the Engineer receipted invoices as evidence that they have unconditional title thereto will be included. Such invoices shall be furnished the Engineer at least ten days in advance of the established date of preparation of Monthly Estimates.
- D. The Contractor shall provide and maintain insurance for the said equipment and materials (on site and off site) as specified in 00 07 52.03.
- E. Payments made for materials and equipment delivered will in no way affect the Contractor's responsibilities regarding the same.

00 07 59.06 WITHDRAWAL OF RETAINED PERCENTAGE

- A. Pursuant to Section 106 of New York State General Municipal Law and notwithstanding any inconsistent provisions of any general, special or local law under any contract made or awarded by any political subdivision, or any officer, board or agency thereof, or of any district therein, the Contractor may, from time to time, withdraw the whole or any portion of the amount retained from payments to the Contractor pursuant to the terms of the Contract, upon depositing with the Fiscal Officer of the Political Subdivision or district therein (1) bonds or notes of the United States of America, or obligations, the payment of which is guaranteed by the United States of America, or (2) bonds or notes of the State of New York, or (3) bonds of any political subdivision of the State of New York, of a market value equal to the amount withdrawn. The Fiscal Officer of the Political Subdivision or of a district therein, from time to time shall pay the same, when and as collected, to the Contractor who deposited such obligations. When the deposit is in the form of coupon bonds, the coupons shall be delivered to the Contractor as they respectively come due. The Contractor shall not be entitled to interest or income on, or the coupons of, any obligations so deposited by them, the proceeds of which shall have been used or applied by the Political Subdivision or district therein pursuant to the terms of the Contract. The Fiscal Officer shall be entitled to charge a reasonable fee for such service.

00 07 59.07 OWNER'S RIGHT TO WITHHOLD PAYMENTS

- A. The Owner may withhold from the Contractor such portions of any approved payments due them as the Owner may judge necessary to:
1. Protect the Owner from loss due to defective work not remedied;
  2. Failure to provide work schedule or revisions thereto;
  3. Assure the payment of just claims then due and unpaid for labor or materials;
  4. Protect the Owner from loss due to injury to persons or damage to the work or property of other Contractors, Subcontractors, or others caused by acts of neglect of the Contractor or their Subcontractors. The Owner shall have the right as agent for the Contractor to apply moneys so withheld as the Owner may deem proper to secure such protection or satisfy such claims, and such payments shall be deemed made for the account of the Contractor.

00 07 59.08 INSPECTION AT SUBSTANTIAL COMPLETION

- A. The Engineer will make an Inspection of the work as soon as possible after the Contractor gives written notice that the work is substantially complete. The Contractor shall assist the Engineer, as may be required, in making the Inspection. Cost to the Contractor, if any, to assist the Engineer in making the Inspection shall be included in the appropriate bid item as selected by the Contractor and no additional payment will be made to the Contractor for their work. After making the Inspection, the Engineer will notify the Contractor in writing of the results, including particulars regarding any part of the work which, in their opinion, is incomplete or requires correction or additional cleaning. The Contractor shall make good any incomplete or defective work before again asking for another Inspection. If in the opinion of the Engineer the work is substantially complete, the Engineer shall issue in writing a Notice of Substantial Completion. Said Notice will list those minor items requiring completion before Final Payment.
- B. See also ARTICLE 00 07 57.04, CORRECTION OF WORK.

00 07 59.09 CERTIFICATE OF SUBSTANTIAL COMPLETION

- A. Upon issuance of the Notice of Substantial Completion by the Engineer, and the submission by the Contractor of a written statement from Surety that the Performance Bond (Labor & Materials Payment Bonds included) in the amount of one hundred (100) percent of the value of the Contract is in force for a period of one year following the date of Notice of Substantial Completion, the Engineer will file a Certificate of Substantial Completion with the Owner and the Contractor, certifying that the work is substantially complete and setting forth the amount of work performed and compensation earned by the Contractor. All prior estimates of the amount and value of work performed shall be subject to correction in this certification.

00 07 59.10 PAYMENT AT SUBSTANTIAL COMPLETION

- A. Within 30 days after the filing of the Certificate of Substantial Completion the Owner will pay the Contractor one hundred (100) percent of the full value of the work certified therein, less twice the value of any minor work remaining to be completed and all prior payments and advances to or for the account of the Contractor, and the amount necessary to satisfy any claims, liens or judgements against the Contractor which have not been discharged.

00 07 59.11 FINAL PAYMENT

- A. The Contractor shall fully complete the remaining minor items within sixty (60) days of the issuance of the Notice of Substantial Completion.
- B. Upon certification by the Engineer that the remaining items of the Contract including all corrections, alterations and/or modifications have been completed and that no repairs, renewals or replacements are required of the Contractor, or that, if required, such remedies have been effected, the Engineer shall prepare a Final Payment request recommending to the Owner payment to the Contractor of the amount retained at the time of substantial completion less any amount necessary to satisfy any claims, liens or judgements against the Contractor which have not been discharged.
- C. Within 30 days after the receipt from the Contractor of acceptable affidavits, certificates or waivers as evidence that no right to any claim or lien exists, the Owner will pay the remainder of the Contract as indicated in the Final Payment.
- D. See also Article 00 01 50.06, VERIFICATION OF AMOUNTS DUE FOR WAGES AND SUPPLEMENTS.

00 07 59.12 ACCEPTANCE OF FINAL PAYMENT

- A. Acceptance by the Contractor of the Final Payment shall serve as a release to the Owner of all claims and of all liability to the Contractor for all things done or furnished in connection with the work, and for any and all acts of neglect of the Owner or others relating to or because of the work, except the Contractor's claim for interest upon the Final Payment, if this payment is unduly delayed. No payment whatsoever shall operate to release the Contractor or the Surety from their obligations under the Contract or Bond.

00 07 59.13 GUARANTEE INSPECTION

- A. On or about one year from and after the date of the Notice of Substantial Completion, the Engineer will again inspect the work. The Contractor shall assist the Engineer, as may be required, to make the one year inspection. Cost to the Contractor, if any, to assist the Engineer in making the one year inspection shall be included in the appropriate bid item as selected by the Contractor and no additional payment will be made to the Contractor for this work. The Contractor shall provide any and all repairs, renewals or replacements which may be revealed as necessary in this Guarantee Inspection and which, in the opinion of the Engineer, are the responsibility of the Contractor. Should the Contractor fail to comply with written instructions of the Engineer regarding these remedies, the Owner will cause the remedies to be made by others and will pay the cost which will be reimbursed by the Contractor and/or their Surety.



- B. The Contractor and their Surety agree that the Contractor's Performance Bond (Labor & Materials Payment Bonds included) shall cover fully all guarantees as specified herein and in ARTICLE 00 07 52.01.

00 07 59.14 ACCEPTANCE OF PORTIONS OF THE WORK

- A. The Owner reserves the right to accept for their service and use any portion of the work at any time during the life of the Contract without prejudice to the Owner in enforcing any provisions of the Contract.
- B. The Owner may accept the portion or portions of the work which is substantially complete under the following agreed procedures:
  - 1. The Contractor will be notified by the Engineer in advance as to what portion or portions of the work the Owner intends to accept for their use and service.
  - 2. The retained percentage for the Substantially Completed portion or portions of work shall be released in accordance with ARTICLE 00 07 59.09.
  - 3. The guarantee period applicable to that portion or portions of the work shall start from the date of acceptance.
  - 4. The remaining minor items of the portion or portions of substantially completed work shall be finished or corrected to the satisfaction of the Engineer.
  - 5. The Owner will assume responsibility for maintenance, heat, utilities and insurance on accepted portion or portions of the work.
  - 6. All applicable provisions specified in this Section for work deemed substantially complete shall apply.

00 07 59.15 REPAIR OR REPLACEMENT OF DAMAGED, DEFECTIVE OR FAULTY WORK

- A. If any portion of the work is damaged in any way, or if defects or faults develop before the inspection at Substantial Completion, or before the expiration of the 12-month guarantee period, the Contractor shall repair, replace or otherwise make good the damage or defect to the satisfaction of the Engineer, regardless of whether the work may have previously passed the specified inspections and tests. No additional payment will be made for such remedial work.
- B. Failure on the part of the Engineer to condemn defective work shall not imply acceptance of the work, nor act to release the Contractor from their obligations to repair, replace or otherwise make good the work at their own expense,

notwithstanding that such work may have been estimated for payment or that partial or full payments may have been made therefor.

00 07 59.16 PAYMENT TO SUBCONTRACTORS BY CONTRACTOR

- A. Within fifteen calendar days of the receipt of the payment from the Owner, the Contractor shall pay the Subcontractors, and/or material suppliers a sum equal to the value of the work performed less any amount necessary to satisfy claims, liens or judgements that have been discharged less any amount retained as hereafter described.
  - 1. The retained amount shall not exceed more than 5% on each payment except that 10% of each payment may be retained, if the Subcontractor(s) and/or material suppliers failed to provide a Performance Bond (Labor & Materials Payment Bonds included) in the full amount of the Sub-contract.
  - 2. The Contractor shall not retain any money from Subcontractor(s) and/or material suppliers, after receipt of the Certificate of Substantial Completion payment.
- B. Within fifteen calendar days of the receipt of the payment from the Contractor, the Subcontractor(s) and/or material suppliers shall pay each of their Subcontractors and/or material suppliers in same manner as the Contractor has paid the Subcontractor(s) and/or material suppliers.
- C. The Owner shall not be under any obligation to see that the Contractor makes any payment to a Subcontractor and/or material suppliers.

END OF SECTION

# GENERAL CONDITIONS

## SECTION 00 07 60

### CONTRACT TERMINATION

#### 00 07 60.01 OWNER'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

- A. The Owner, by seven days written notice to the Contractor and without prejudice to any other rights or remedies it may have, may terminate the employment of the Contractor and their right to proceed, either as to the entire work or any portion thereof on which delay shall have occurred, and may take possession of and complete the work by contract or otherwise, as the Owner may deem expedient, in the event of any of the following:
1. If the Contractor shall refuse or fail, after being warned by the Engineer, to supply enough competent workmen, equipment or proper materials, or
  2. If the Contractor shall refuse or fail to perform the work or any part thereof with sufficient diligence to insure its completion within the time specified, or shall fail to complete the work within said period, or
  3. If the Contractor shall fail to promptly pay persons supplying labor or materials for the work, or
  4. If the Contractor shall fail or refuse to regard laws, ordinances, permits or orders from the Engineer or otherwise substantially violate any provision of this Contract, or
  5. If the Contractor shall be adjudged bankrupt or make an assignment for the benefit of creditors, or
  6. If a receiver or liquidator shall be appointed for the Contractor or for any of their property and shall not be dismissed within 20 days after such appointment, or the proceedings in connection therewith shall not be stayed on appeal within the said 20 days.
- B. If the Owner so terminates or stops the Contractor, the Contractor shall not be entitled to receive any further payment until the work is completed. If the unpaid balance of moneys to be paid the Contractor hereunder shall exceed the cost of completing the work, including the cost of additional administrative, managerial, engineering, and inspection services and or delay, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor and the Surety shall be liable to the Owner for the excess.
- C. If the right of the Contractor to proceed is terminated as provided herein, the Owner may take possession of and use in completing the work such materials,

plant, equipment, supplies and appliances as may be on the Site and necessary to the work, provided that the termination was not made pursuant to paragraphs "E" or "F" above.

00 07 60.02     CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

- A.     In the event the work shall be halted by order of a Court or any other public authority having jurisdiction for a period of 90 days or more without act or fault of the Contractor or any Subcontractor, the Contractor, upon 10 days written notice to the Owner, may terminate the Contract or discontinue performance of the work. In either case the liability of the Owner to the Contractor shall be determined as provided in ARTICLE 00 07 60.01, except that the Contractor shall not be obligated to pay to the Owner any excess of the cost of completing the work over the unpaid balance of the payments to be made to the Contractor hereunder.

00 07 60.03     OTHER TERMINATION PROVISIONS

- A.     In addition to the provisions set forth in this Section 00 07 60, specific references relating to termination or cancellation of the Contract are contained elsewhere herein. These include but are not limited to:

00 01 50.03	NON-DISCRIMINATION AND LABOR PRACTICES
00 07 52.03.A	WORKER'S COMPENSATION INSURANCE
00 07 56.03	PROGRESS
00 07 58.03	ASSIGNMENT

END OF SECTION

# GENERAL CONDITIONS

## SECTION 00 07 61

### DESCRIPTION & DELINEATION OF THE WORK

#### 00 07 61.01 INTENT OF PLANS AND SPECIFICATIONS

- A. The intent of the Plans, Specifications and other Contract Documents is to provide for the work outlined and delineated therein, complete in every detail for the purpose designated. The Contractor agrees to furnish everything necessary for the work as intended, any omission in the Plans or Specifications notwithstanding.
- B. The Contractor shall furnish all materials, tools, plant equipment and labor, except those specifically set forth herein as to be furnished by the Owner, required to construct and place in complete and satisfactory working order the work contemplated by the Contract Documents. The mention in any part of the Specifications of any specific liability, duty or responsibility of the Contractor will not be construed as a restriction, limitation or waiver of any general liability, duty or responsibility of the Contractor, such mention being merely for explanatory purposes. The Contractor shall be solely responsible for the adequacy of their plant, tools and equipment, approval of the Engineer notwithstanding.
- C. The Contractor shall do the work in a manner judged to best promote rapid construction consistent with due regard for the safety of life and the preservation of property, the satisfaction of the Engineer, and the intent of the Contract Documents.
- D. The Contractor shall:
  - 1. make all necessary excavations or embankments.
  - 2. do all clearing and grubbing.
  - 3. place all sheeting, shoring, bracing and supports.
  - 4. furnish all underdrains.
  - 5. provide draining, pumping bailing, ditching and diking for surface or below ground water.
  - 6. provide all things necessary to protect, support and maintain structures, utilities, drains, conduits, culverts, trees, fences, poles, walls, earth banks, shrubbery, sidewalks, railways, roadways and drives.
  - 7. repair all damage done to items in (6) above.
  - 8. do all fencing, lighting and watching.
  - 9. drive all piles and construct all foundations.
  - 10. construct all concrete, brick, stone, tile and timber work.
  - 11. place all iron and steel work and reinforcement.

12. lay all water pipes, sewers, drains and conduits and make all connections to or between such.
13. resurface and repave all streets, sidewalks, roads or drives open cut or damaged.
14. refill all trenches and excavations.
15. provide all fences, bridges, fills, detours and signs for maintenance of travel in public ways.
16. make all connections to or between existing structures and utilities.
17. construct all buildings and structures.
18. furnish and install equipment.
19. clean up and dispose of all rubbish and surplus materials.

00 07 61.02 INTERPRETATION OF PLANS & SPECIFICATIONS

- A. The Engineer shall interpret the Plans and Specifications, and any Change Orders or Supplemental Agreements. Anything shown on the Plans but not included in the Specifications, or mentioned in the Specifications but not shown on the Plans, shall have the same effect as if set forth in both. In the event of a conflict between the Plans and Specifications, the Specifications shall govern. The attention of the Engineer shall be called to any discrepancies, as required by ARTICLE 00 13 40.06.

00 07 61.03 CONTRACT DRAWINGS

- A. The location, nature and many details of the work are shown on the Contract Drawings. The work shall be constructed as shown on these Plans and such other drawings as may be issued during the life of the Contract by the Engineer, or furnished by the Contractor and approved by the Engineer.
- B. The purpose of the Contract Drawings together with other Contract Documents, is to provide Bidders with sufficient information to prepare adequate and equitable Bids and to provide an adequate and equitable basis for the Agreement. The Contract Drawings may or may not provide sufficient detail for the actual construction of all segments of the work as shown and specified. The Contractor shall furnish Construction Drawings or other drawings, as specified or requested, or, as may be required to adequately delineate for their workers all details necessary for the work.
- C. The Contract Drawings were prepared on full-size prints. Reduced-size prints may have been prepared for the convenience of Bidders and others. During construction, the Contractor shall obtain data and information from full-size prints in preference to reduced-size prints.
- D. Unless otherwise stated in the Information For Bidders, the Contractor will be furnished, free of charge, three copies of the Contract Documents, including three sets of Contract Drawings. Any other copies of the Contract Documents which

the Contractor may desire can be obtained by their from the Engineer at the cost of duplication thereof.

- E. The Contractor shall keep at least one set of Specifications and one full-size set of Plans on the Site, and shall at all times give the Engineer and the Owner access thereto.

00 07 61.04 ADDITIONAL OR SUPPLEMENTAL DRAWINGS

- A. The Engineer may prepare Additional Drawings or Supplemental Drawings during the course of the work, in connection with minor changes, Change Orders, Supplemental Agreements, or to augment or amplify the Contract Drawings or other drawings, or as part of orders or instructions, and the Contractor shall abide by such drawings in the same manner as specified for the Contract Drawings.
- B. Drawings required by the Contractor are discussed in Article 00 13 40.01.

END OF SECTION

# **GENERAL REQUIREMENTS**

## **SECTION 00 10 12**

### **COLLATERAL WORK**

#### **00 10 12.01 COLLATERAL WORK**

- A. The Owner may award other contracts in connection with the Project, the work under which may proceed concurrently with the work of this Contract. In this event the Contractor shall coordinate their operations with those of the other contractors, and shall cooperate with them in the arrangement for the storage of materials and performance of the work.
- B. The Contractor and their Subcontractors shall keep themselves informed of the progress of the work of other contractors and subcontractors and shall notify the Engineer immediately of defective workmanship or insufficient progress on the part of others, where such will interfere with their own operations. Either failure of the Contractor to keep themselves informed of the progress of work under other contracts on the Site, or failure of the Contractor to give proper notice of same, shall be deemed as acceptance by them of the status of the work under other contracts as it may affect their own work.
- C. See also ARTICLE 00 07 56.04, APPROVED WORK SCHEDULES, and ARTICLE 00 07 56.06, TIME EXTENSIONS.

**END OF SECTION**



# **GENERAL REQUIREMENTS**

## **SECTION 00 10 15**

### **CONTRACTOR USE OF PREMISES**

#### **00 10 15.01 AREA AVAILABLE FOR CONTRACTOR'S USE**

- A. The Contractor shall confine their operations to those portions of the Owner's property, and to the right-of-ways or easements, temporary or permanent, acquired or designated for the work of the Contract as shown on the Drawings. Private property adjacent the Site shall not be entered upon or used by the Contractor for any purpose without the written consent of the Owner thereof. A copy of such consent shall be filed with the Engineer.
- B. When required, the Contractor shall provide and maintain fences at their own expense, along the roadways and around the grounds occupied by them for the protection of adjoining property and all persons lawfully using same. Fences shall be of materials and construction suitable in the opinion of the Engineer for their intended purpose.
- C. All work within or abutting private property shall be performed in such ways as to create the minimum of inconvenience and disturbance to the private property and its users. Excavated materials or supplies of any kind shall not be stored on off-site public or private property without written consent of the Owner thereof, and all walks and drives shall be kept open to uninterrupted passage. A copy of each such written consent shall be filed with the Engineer.
- D. Materials delivered upon public streets shall be neatly stored between the sidewalk and the curb or ditch line, and at least 10 feet from any fire hydrant. A passageway of at least three feet shall be preserved on the sidewalk line.

#### **00 10 15.02 TRAVEL NOT OBSTRUCTED**

- A. The Contractor shall not needlessly hinder or inconvenience travel on any public or private way, nor shall they wholly obstruct same without written permission of the Owner. If they are permitted to obstruct a traveled way, the Contractor shall provide plain and appropriately worded signs and adequate barricades and lighting at the nearest cross streets, and at each end of the obstructed portion, announcing such obstruction and directing traffic to and along an approved detour.
- B. Unless otherwise specified or permitted, all entrances and exits of fire houses, industrial plants, commercial buildings and public buildings shall be kept open and maintained in passable condition at all times. The Contractor shall give notice to the owner of each traveled way before interfering therewith.

00 10 15.03    CLEANING UP

- A.    The Contractor shall remove from the Site and dispose of, at their own expense, all rubbish, refuse and unused materials, as the work progresses. If such work is neglected, the Engineer will give written notice thereof to the Contractor. If the work is not performed within five days thereafter, the Owner will employ other persons to do such work, and the expense thereof shall be deducted from any monies due or to become due the Contractor.
  
- B.    The Contractor shall clean and leave free from obstruction all pipes, buildings, manholes and other structures. This work shall be coordinated with the Engineer's Inspection at Substantial Completion, or as directed. All rubbish, refuse, unused materials, plant and equipment shall be removed from the Site, and the entire Site shall be left in a neat condition. All equipment installed in the work by the Contractor shall be cleaned and left in a bright and new-appearing condition.

END OF SECTION

# **GENERAL REQUIREMENTS**

## **SECTION 00 10 19**

### **SITE CONDITIONS**

#### **00 10 19.01 PRE-BID INSPECTION & EXAMINATION**

- A. The Contractor warrants and represents that they visited the Site prior to submitting their Bid, and that they have satisfied themselves as to the location and nature of the work and the quantity, quality, type and nature of both surface and subsurface structures and materials apt to be encountered.
- B. See also 00 07 53.01.B.

#### **00 10 19.02 BORINGS**

- A. Any data on subsurface conditions that may have been obtained by the Owner prior to the advertisement for bids, through test borings, test pits, seismic explorations, or other means, was obtained by the Owner for their sole use and only for their own purposes. Any such data, known or recalled as of the date of advertisement for bids, are shown on separate drawings or in separate schedules and reports which are not any part of the Contract Documents. All such data are made available to Bidders, the Contractor and other interested parties only as a convenience and without express or implied representation, assurance or guarantee that any of the information is complete, correct, or adequate or representative of a true or typical picture of subsurface conditions on the Site.
- B. The Contractor, both during their status as Bidder and after execution of the Contract, shall satisfy themselves as to the nature, character, quality and quantity of above ground and below ground conditions apt to be encountered. Any reliance on data made available by the Owner shall be at the Contractor's sole risk.
- C. No claim whatsoever shall be made by the Contractor against the Owner or Engineer for or on account of such data available, or neglected to be made available, by the Owner or Engineer.
- D. The Contractor at any time, and any holder of Contract Documents during the period between advertisement for and receipt of bids, will be permitted to make test borings, test pits, soundings or similar subsurface investigations on the Site. Prior to making these investigations the Contractor and/or any holder of Contract Documents must notify the Engineer when and where they propose to make such investigations.

- E. The locations where test boring samples, if any, may be examined are given in the Additional Instructions.
- F. See also ARTICLES 00 07 53.01.B, 00 07 53.07, 00 07 59.01, 00 10 19.04 and 00 10 19.06.

#### 00 10 19.03 PROTECTION OF EXISTING STRUCTURES

- A. The Contractor shall at all times have on the Site suitable and sufficient plant and materials to adequately protect, support and sustain any and all existing structures and facilities, whether above or below ground, and shall use same as may be necessary or required to protect, support and sustain any and all such structures as may become weakened, endangered, undermined or uncovered.
- B. They shall, at their own expense, support and sustain in their places and protect from direct or indirect damage all water, gas, steam, air or other mains or pipes, sanitary and storm water sewers and drains, conduits, subways, service connections, buildings, poles, wires, fences, pavements, sidewalks, curbs, railways, trees and other structures and property and appurtenances thereto on or in the vicinity of the Site, and shall assume all liability for damage thereto, including damage arising out of settlement or lateral movement of walls of excavations, whether occurring during performance of the work or the 12-month period of guarantee.
- C. In the event of damage or danger to any such structure or facility the Contractor shall immediately notify the Engineer, and shall promptly repair or protect the structure as the Engineer may direct.

#### 00 10 19.04 EXISTING STRUCTURES BELOW GROUND

- A. The Contract Drawings show the location and character of certain existing subsurface structures and facilities apt to be encountered in excavations or located in such proximity to the work as to require precautions for their protection. The sizes, materials, locations and depths shown are only approximate, and the Contractor shall satisfy themselves as to the accuracy and completeness of such information. The Contractor shall not be relieved from any of their obligations, nor be entitled to claim for damages or additional compensation, sustained or arising out of inadequacy or inaccuracy of the information given.

#### 00 10 19.05 ABANDONED STRUCTURES

- A. Any structures, facilities or appurtenances therefor which are abandoned or become so by reason of the work, shall, at the Contractor's expense, be broken up and filled with approved material, if directed by the Engineer.

00 10 19.06 LATENT SUB-SURFACE CONDITIONS

- A. In the event that latent sub-surface conditions are found to materially differ from those on which the Plans and Specifications are based, the Contractor shall immediately notify the Engineer before they are disturbed. After prompt investigation, the Engineer will determine what changes, if any, should be made in the Plans and Specifications because of the revealed conditions, and shall instruct the Contractor accordingly. Any change in the cost of the work resulting therefrom shall be adjusted as provided in Section 00 07 57.

00 10 19.07 ADJUSTMENT OR CHANGES OF EXISTING STRUCTURES

- A. If, in the opinion of the Engineer, an underground pipe or other structure requires realignment or relocation, and such realignment or relocation was not included in the Plans or Specifications, the Engineer will issue a Change Order for such work, and the Contractor shall be compensated therefor as provided in Section 00 07 57. The Contractor shall strip or uncover and support or sustain the structure at their own expense prior to such Change Order, as part of their work under the original Contract, and they shall not be entitled to claim for damage or delay due to its presence or discovery.
- B. Wherever existing utilities come within limits of the work, the Contractor shall notify both the Engineer and the Utility before in any way disturbing same. Any work of realignment, relocation, removal or extension of the utilities shall be done as mutually agreed by the Utility, the Contractor and the Engineer. The Contractor shall maintain satisfactory drainage of the excavation at all times from revelation of the structure until completion of its realignment or readjustment. Interruption of service by utilities shall be kept to a minimum.
- C. The Contractor shall not cause nor permit interference with or hindrance to any municipal department, individual, public service corporation, or other company in protecting its structures and facilities, nor in removing, replacing or relocating same.

00 10 19.08 MAINTENANCE AND RESTORATION OF SERVICE

- A. The Contractor shall, at their own expense, provide for the maintenance of flow in all water courses and all sanitary and storm sewers, drains, connections and appurtenances thereto. The contents of sewers, drains or service connections shall not be permitted to flow into excavations, sewers or other parts of the work without written permission of the Engineer, and the Contractor shall, at their own expense, immediately remove from the Site and adequately dispose of all offensive matter, in an approved manner.
- B. The flow of water, and normal water pressure, in all water mains, conduits and service connections encountered on the Site, shall be provided for and maintained by the Contractor at their own expense. When water mains or service connections

must be disturbed to the extent that service must be shut off, the Contractor shall give at least 24 hours notice to the Utility and all customers served by the lines involved. Such notice shall give the estimated times of shut-off, and restoration of service. If fire hydrants are involved, the fire department serving the area shall be similarly notified.

- C. In the event of accidental disruption of water service, it shall be deemed an emergency, and the Contractor shall proceed with the necessary repairs immediately and continuously, giving this work priority over all other operations, until service has been satisfactorily restored. The Contractor shall give immediate notice of such break or service interruption to the Engineer, the Utility, and all customers affected, and shall supply, at their own expense, assistance in supplying an emergency source of water when necessary by means of temporary lines, tank trucks, or other means. All lines and connections shall be restored to the satisfaction of the Engineer and the Utility.
- D. All portions of the foregoing provisions regarding water service which are applicable to sewer, gas, telephone or other services shall apply also to maintenance and emergency repair of such services.

#### 00 10 19.09 POLES & POSTS ON-SITE

- A. Poles or posts of any Utility located within the lines of the work which, in the opinion of the Engineer, will impede progress of the work, shall be supported or removed and replaced by the Contractor at their own expense and in accordance with the requirements of the Utility involved. The Contractor shall remove, relocate, replace or support all other poles and posts at their own expense and to the satisfaction of the Engineer.
- B. The Contractor shall employ no equipment which will unduly interfere with wires or other overhead facilities.

#### 00 10 19.10 NOTIFICATION OF OTHER PARTIES

- A. In addition to notices to Utilities and others required elsewhere herein, the Contractor shall give written notice of their proposed construction operations to the owners of all public and private utilities at least seven days in advance of breaking ground in any area in which a utility is located. Copies of each such notice shall be simultaneously sent to the Engineer.

END OF SECTION

# **GENERAL REQUIREMENTS**

## **SECTION 00 10 51**

### **LAYOUT OF WORK**

#### **00 10 51.01 INFORMATION PROVIDED BY ENGINEER**

- A. The Engineer will provide, on the Contract Drawings, sufficient information for the Contractor to establish baselines, offsets and other survey control points. Unless otherwise noted, no additional survey work will be provided by the Engineer.

#### **00 10 51.02 SERVICES PROVIDED BY CONTRACTOR**

- A. Unless otherwise noted in the Additional Instructions or Specification, the Contractor will establish such additional lines, grades and elevations as they deem necessary and will include the following:
  - 1. Structures & Buildings: Corner stakes at all principal corners of exterior walls or foundations. Two bench marks in the vicinity of the structure or building.
  - 2. Sewers: Offset grade line stakes, on one side, with stations approximately forty linear feet on centers.
  - 3. Water Mains & Force Mains: When laid to grade, the same as for sewers. When not laid to grade, none.
  - 4. Roads & Runways: Offset center line grade stakes, on one side, with stations approximately fifty linear feet on centers.
  - 5. Embankments: Slope stakes on both sides at approximately one hundred linear feet on centers, with additional stakes at principal breaks in grade.
  - 6. Tunnels & Borings: Center line and offset baseline on the surface, on starting end. Also, one progress check every fifty linear feet of long tunnels.
  - 7. Other Types of Construction: The Contractor will provide control stakes as they deem necessary to properly layout their work.
  - 8. On Traverse or Cross-country type of construction, such as pipelines and roads, a temporary center line may be required for clearing purposes.

9. The Contractor will issue a grade letter for pipeline and road construction which is to be laid or installed to a predetermined grade. All other stakes will have the information marked on a witness stake beside the hub.
- B. The Contractor shall provide all the necessary materials for control points, including all: stakes, hubs, lath, grade boards, cleats, nails and such other materials as may be required.
- C. The Contractor shall also provide such non-technical assistance as may be required in the establishment of marks, other than primary or basic controls, such as clearing sight lines and driving stakes.
- D. The Contractor shall erect and establish all grade boards, batter boards and construction control lines from the information provided by the Engineer.
- E. The Contractor shall layout the work to best suit their methods of operations, using the Engineer's information provided to assure the construction will be in the position the design anticipated.

#### 00 10 51.03 OBLIGATIONS OF THE CONTRACTOR

- A. The Contractor shall carefully preserve and protect all stakes, marks, monuments and points provided or described by the Engineer, and shall reimburse the Owner for any and all additional engineering costs incurred because of the replacement or reestablishment of any such items which may be moved, removed, obliterated or destroyed due to their construction operations. When directed, the Contractor shall provide suitable barricades for the protection of points.
- B. The Contractor shall bear the entire cost of rectifying work improperly done due to their own negligence in preserving and protecting marks, or to moving or removing same without approval of the Engineer.
- C. They shall inform the Engineer a reasonable time in advance of their operations of the times and places they propose to work, so that lines, grades and elevations may be established and necessary measurements for record and payment may be made with the minimum of inconvenience or delay to either themselves or the Engineer. No additional compensation will be paid the Contractor for any delay caused by insufficient notice.

#### 00 10 51.04 LINES, GRADES AND ELEVATIONS

- A. The terms "invert" or "grade" used in the Contract Documents in connection with pipes, sewers, channels, flumes and similar structures shall mean the inside bottom of the pipe or other surface on which the liquid flows along the center line of the completed work. "Subgrade" refers to the bottom line or surface to which excavations are necessarily made to construct the work as shown or specified,



exclusive of any additional depth of excavation required for any special foundation.

- B. The term "Grade Letter" shall mean a data sheet giving the amount of cut or fill from offset stakes to the invert or grade.
- C. All work shall be constructed in accordance with the lines and grades shown, specified or directed. The Contractor shall be responsible for maintaining alignment and grade between points provided or described on the Contract Drawings.

#### 00 10 51.05 MASONRY CHASES, OPENINGS AND INSERTS

- A. If the Owner awards other contracts for collateral work on the Site, it shall be the obligation and responsibility of the General Contractor to provide all openings and chases in their work to fit both their own work and that of the other contractors. The General Contractor shall provide all openings shown on the Contract Drawings, or reasonably implied thereby, as confirmed or modified by Additional Drawings or drawings submitted by Contractors and approved by the Engineer.
- B. Where pipes or conduits pass through slabs or walls, the sleeves or opening forms shall be provided by the installer of the pipes or conduits but shall be placed by the General Contractor.
- C. If hanger inserts or similar items are required, they shall be furnished by the installer of the pipe or other equipment for which the hangers are intended, but shall be placed by the General Contractor.
- D. Any expense resulting from mislocated, defective, or ill-timed work shall be borne by the Contractor responsible therefor. No Contractor shall alter the work of another Contractor without the consent of the Engineer and knowledge of the Contractor involved, and no Contractor shall endanger any work by cutting, excavating or other operations.

#### 00 10 51.06 PAYMENT FOR LAYOUT OF WORK

- A. The cost to the Contractor of providing the services and materials specified in this Section 00 10 51 shall be included in the price, or total of prices, given in the Bid on which the Agreement is based, and no separate payment will be made therefor. Any cost to the Owner for additional engineering layout work, as set forth in ARTICLE 00 10 51.03, will be deducted from monies due or to become due the Contractor.

END OF SECTION

# **GENERAL REQUIREMENTS**

## **SECTION 00 10 64**

### **SAFETY AND HEALTH**

#### **00 10 64.01 SAFETY AND HEALTH REGULATIONS**

- A. The Contractor shall comply with the U.S. Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standard Act (PL 91-54), latest revisions.
- B. In order to protect the general public and the lives and health of their employees under the Contract, the Contractor shall comply with all pertinent provisions of the latest issues of the Federal Register, Bureau of Labor Standards, Safety and Health Regulations; New York State Industrial Code Rule 30 pertaining to Tunneling Operations; New York State Industrial Code Rule 23 pertaining to Trenching Operations; and the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc., and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under this Contract. In case of a conflict between the above noted authorities, the most stringent shall prevail.
- C. The Contractor shall have on the project site at all times, while work is in progress, at least one person skilled in safety and health procedures and familiar with State and Federal safety and health regulations whose responsibility shall be to observe methods and procedures. They shall have the duty and authority to stop and/or correct all unsafe and unhealthy conditions.

#### **00 10 64.02 SAFETY AND FIRST AID**

- A. The Contractor shall at all times exercise caution in their operations and shall be responsible for the safety and protection of all persons on or about the Site. All hazards shall be avoided or guarded in accordance with the provisions of the Manual of Accident Prevention in Construction of the AGCA, unless such provisions contravene local law. The safety provisions of all applicable laws, codes and ordinances shall be observed.
- B. The Contractor shall provide and maintain at the Site, at each location where work is in progress, as part of their plant, an approved first aid kit. Ready access thereto shall be provided at all times when workers are employed on the work.

- C. The Contractor shall take due precautions against infectious diseases, and shall arrange for the immediate isolation and removal from the Site of any employee who becomes ill or is injured while engaged on the work.

00 10 64.03 DUST HAZARDS

- A. If, in the construction of the work covered by the Contract, a harmful dust hazard is created for which appliances or methods for the elimination of dust have been approved by the Board of Standards and Appeals, such appliances or methods shall be installed and maintained and effectively operated by the Contractor at their expense.
- B. The Contract shall be void and of no effect unless the Contractor complies with the provisions of this subdivision of the Contract and Labor Law Section 222-a.

END OF SECTION

## **GENERAL REQUIREMENTS**

### **SECTION 00 13 40**

#### **SUBMITTALS**

##### **00 13 40.01 DRAWINGS FURNISHED BY THE CONTRACTOR**

- A. The Contractor shall prepare, or cause to be prepared by their suppliers or Subcontractors, and submit to the Engineer for review, Shop Drawings, Setting Drawings, Working Drawings and Construction Drawings as may be specified or directed or necessary to the performance of the work. Deviations from the drawings and specifications shall be called to the attention of the Engineer at the time of the first submission of Shop Drawings, or other drawings, for consideration. Corrections or comments made on the Shop Drawings or other drawings during review do not relieve the Contractor from compliance with the requirements of the Contract Drawings and Specifications. Approval is only for general conformance with the design concept of the Project and with information set forth in the Contract Drawings and Specifications. Contractor is responsible for dimensions to be confirmed and correlated at the job site, information that pertains solely to the fabrication process or to the means and methods of construction, coordination with the work of all trades, and performing all work in a safe and satisfactory manner. Approval does not modify Contractor's duty to comply with the Contract Documents.
- B. Within thirty days of the execution of the Agreement, the Contractor shall submit a schedule of submittals which includes a complete list of products proposed for the work tabulated by Specification Section, including manufacturer or fabricator, model number or other identifying designation.
- C. Shop, Setting or Working Drawings shall be submitted for each type and model of fabricated materials and equipment. They shall provide complete and accurate working dimensions, weights, assembly and sectional views, details necessary to coordinating the work, anchor bolt and installation plans and instructions, parts lists and descriptions, materials and finishes lists, lists of any tools and spare parts required, diagrams of control wiring and piping, the location, sizes and types of connections to other work or other items, and any other data required to comply with the Contract or provide the workmen and the Engineer with information necessary to complete and inspect the work.
- D. Electrical equipment drawings and data shall show physical dimensions, installation details, elementary and connection diagrams for each motor controller, interconnection diagrams for all equipment, identification of components external to electrical equipment, the coordination of control circuits, and definition of the contract arrangement and control action of the primary and final control elements.

- E. If the Contractor proposes to furnish and install equipment requiring a layout or arrangement materially changed from that shown on the Contract Drawings as illustrative of one acceptable arrangement, they shall submit, for review, drawings showing the proposed arrangement and the appertaining changes to wiring, piping, structures and other equipment.
- F. Submittals such as pre-printed manufacturers' installation instructions, maintenance data, parts lists, test results, or similar informational material are not considered Shop Drawings and will not be reviewed. Any submittal not required or otherwise requested will be returned to the Contractor.
- G. See also ARTICLE 00 13 40.08, ADDITIONAL ENGINEERING COSTS.

00 13 40.02 TRANSMITTAL, IDENTIFICATION AND RESUBMITTAL

- A. Unless otherwise approved, all Shop Drawings shall be submitted electronically. The Contractor shall accompany all drawings and other data submitted to the Engineer with a letter of transmittal to the attention of the designated Shop Drawing coordinator for the project.
- B. All drawings shall be suitably identified with the name of the Project, Contract Number, Contractor name, name of the equipment or materials manufacturer, specification section designation and item number (if applicable) date, and initials indicating approval of such submittal by the Contractor under the applicable specification.
- C. If the Engineer makes comments or corrections, they will be noted on the drawings, or explained in a letter of transmittal, or both. The Contractor shall make any requested revisions or additions and resubmit the drawings in the same manner as for the initial submittal.
- D. 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
- E. Submittals marked "Approved": Submittals that conform to the Contract Documents without comment will be issued a disposition of "Approved". The Contractor may order, fabricate, or ship the materials included in the submittal.
- F. Submittals marked "Approved As Noted": Submittals that conform to the Contract Documents with correction of minor clarifications or omissions will be issued a disposition of "Approved As Noted". The Contractor may order,

fabricate, or ship the materials included in the submittal that incorporates the Engineer's comments.

- G. 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.
- H. Submittals marked "Revise and Resubmit": 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". The Contractor shall make corrections to satisfy the deficiencies indicated and repeat the submittal procedure. The resubmittal shall conform to the submittal numbering procedure specified herein.
- I. Submittals marked "Not Approved": Submittals that do not conform to the Contract Documents will be issued a disposition of "Not Approved". The Contractor shall revise the submittal to incorporated equipment or products that comply with the requirements of the Contract Documents.
- J. Upon return of a submittal marked "Approved" or "Approved as Noted", the Contractor may order, ship or fabricate the materials so noted. A submittal marked "Approved as Noted" should not be resubmitted for further review. Submittals marked "Revise as Noted - Resubmit" include extensive corrections or corrections of major importance affecting other items and require the submittal to be amended and resubmitted for a final review. Submittals marked "Rejected - Resubmit as Specified" are reserved for materials or equipment which are unacceptable. The Contractor shall resubmit for materials or equipment which are acceptable and in accordance with the Specifications.
- K. More than one resubmittal per material or equipment will be considered an additional cost to the Engineer which shall be reimbursed by the Contractor. Refer to Article 00 13 40.08 for method of reimbursement.

#### 00 13 40.03 DELAY THROUGH TARDY SUBMITTAL

- A. All submittals shall be made on such a schedule and at such time as to permit adequate review. The Contractor shall make due allowance for possible revisions and resubmittals. Delays caused by tardy submittal of drawings or data for review shall be the responsibility of the Contractor. No work covered by submitted drawings, or drawings specified to be submitted, shall be performed until such drawings and data have been reviewed.
- B. See also ARTICLE 00 07 56.04, APPROVED WORK SCHEDULES.

00 13 40.04 CONTRACTOR RESPONSIBLE FOR ACCURACY

- A. The Contractor shall be responsible for the accuracy and completeness of the drawings and other data they submit, for their conformity to the Plans and Specifications, and for the proper fit and clearance of all construction work.
- B. The Owner retains for the Engineer the option to refuse to review submitted data that are improperly identified or incomplete or which have not been checked by the Contractor for compliance with the Contract Documents.

00 13 40.05 ADDITIONAL INSTRUCTIONS

- A. The Engineer may from time-to-time issue additional instructions to the Contractor as may be necessary to amplify, augment, modify or clarify the Contract Documents. These may be in the form of drawings, specifications, interpretations, orders and instructions, and may be in connection with or made a part of a Supplemental Agreement, Change Order, or Minor Change.
- B. See also SECTION 00 07 57, CHANGES IN THE WORK.

00 13 40.06 DRAWINGS TO BE CHECKED BY CONTRACTOR

- A. The Contractor shall check all dimensions, quantities and representations in the Specifications, Contract Drawings, Additional Drawings and all Supplemental Agreements, Change Orders and Instructions, and shall immediately notify the Engineer of any and all errors, omissions, or discrepancies therein which they may find. The Contractor will not be permitted to take advantage of any such error, omission or discrepancy in any Contract Document or subsequent document, as full instructions will be provided by the Engineer in such case.

00 13 40.07 SUBSTITUTES AND "OR-EQUAL" ITEMS

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item, the Specification or description is intended to establish the type, function and quality required. Unless the Specification or description contains or is followed by words reading that no like, equivalent or "or-equal" item or no substitution is permitted, other items of material or equipment may be accepted by the Engineer under the following circumstances:
  - 1. "Or-Equal": If in Engineer's sole discretion an item of material or equipment proposed by Contractor is of similar quality and functionally equal to that named and sufficiently similar so that no change in related work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed equal items.

2. **Substitute Items:** If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, it will be considered a proposed substitute item. Contractor shall submit sufficient information as provided below in advance to provide adequate time to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. The procedure for review by the Engineer will include the following or as the Engineer may decide is appropriate under the circumstances. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor. If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall first make written application to Engineer for review thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation of the proposed substitute will prejudice Contractor's achievement of Substantial Completion on time, whether or not the substitute for use in the work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for work on the project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by Engineer in evaluating the proposed substitute. Engineer may require Contractor to furnish additional data about the proposed substitute.

00 13 40.08    **ADDITIONAL ENGINEERING COSTS**

- A. In the event that the Contractor fails to submit acceptable Shop Drawings (i.e., Shop Drawings which are returned marked "Approved" or "Approved as Noted") within two submittals, further review of the Shop Drawings will be considered an Additional cost. Similarly, all Engineering Costs associated with the review of a substitution will be considered an Additional cost.
- B. Additional Engineering Costs include redesign, additional Shop Drawing reviews, investigations, consultant fees and revisions to the Contract Documents required because of the proposed substitution. Additional Engineering Costs will be the total of:



1. Billing Rates Schedule
  2. Direct Expenses Plus 10%
  3. Consultant Fees Plus 10%
- C. Additional Engineering Costs shall be deducted from Contractor Payments by the Owner, in accordance with the Agreement for Engineering Services between the Owner and the Engineer.

END OF SECTION

## **GENERAL REQUIREMENTS**

### **SECTION 00 15 06**

#### **WORK UNDER UNUSUAL CONDITIONS**

##### **00 15 06.01 WORK AFTER DARK**

- A. Unless specifically required elsewhere herein, the Contractor shall perform no work after dark except in emergencies. When time permits, they shall inform the Engineer in advance of such work and shall obtain the Engineer's approval. When time does not permit advance notice to the Engineer, they shall inform the Engineer at the earliest possible moment.
- B. The placing of concrete shall be so scheduled as to be started early enough in daylight hours to allow sufficient time for the completion of the section under construction before dark, including the work of finishers.
- C. When, in order to minimize interference with existing structures or utilities, or maintain traffic, it may, in the opinion of the Engineer, be expedient or necessary to do work after dark, such work shall be performed by the Contractor at no additional cost to the Owner, and the Contractor shall provide adequate lighting therefor.

##### **00 15 06.02 WORK ON SUNDAYS OR HOLIDAYS**

- A. Unless specifically required elsewhere herein, the Contractor shall do no work on Sundays or locally recognized legal Holidays except in an emergency, and then shall confine their operations to only the work considered necessary to be performed at such time.

##### **00 15 06.03 WORK IN STORMS**

- A. If required by the Engineer, masonry work and the mixing and placing of concrete shall be halted during rain storms, and all fresh work shall be immediately protected with suitable coverings. The Contractor shall keep a sufficient quantity of such coverings at the Site as part of their plant and equipment.
- B. No paving, exterior painting, fine grading, seeding or roofing shall be done during rain or snow storms.

00 15 06.04      WORK IN COLD WEATHER

- A.      Certain Specifications contain provisions prohibiting the performance of certain work in cold weather, or outlining the conditions under which such work may be so performed. In the absence of specific mention elsewhere in the Contract Documents, the judgement of the Engineer shall govern in any case where temperature may adversely affect or prevent the performance of good work.

END OF SECTION

## **GENERAL REQUIREMENTS**

### **SECTION 00 15 10**

#### **SERVICES DURING CONSTRUCTION**

##### **00 15 10.01 SANITARY FACILITIES**

- A. The Contractor shall provide on the Site, at their own expense, one or more toilets, suitably screened from public observation for the use of all persons employed on the work. They shall be provided, maintained and removed, when directed, by the Contractor, in such quantity, locations and manner as approved by the Engineer. Contents shall be removed and disposed of in a manner and at such times as shall be approved. Chemical toilets are to be preferred.
- B. The Contractor shall not permit or condone the committance of nuisances on or about the Site. Any employee found violating these provisions shall be discharged in accordance with the provisions of ARTICLE 00 07 54.02.
- C. The Contractor shall comply with any and all sanitary regulations as may have been established for the locality.
- D. If the Owner awards other contracts for collateral work on the Project, the provision of sanitary convenience shall be the responsibility of the General Contractor, and all such facilities shall be made available to other Contractors and all Subcontractors until the date of the Certificate of Substantial Completion of the General Contract. Each Contractor, however, shall be individually responsible for the acts of their employees and Subcontractors, and for all provisions of this Section after completion of the General Contract.

##### **00 15 10.02 WATER**

- A. The Contractor shall provide at all times sufficient drinking water from an approved source and by approved means, for all persons having reason to be on the Site in connection with the work.
- B. If an ample supply is owned or controlled by the Owner, and is available at or near the Site, such supply will be made available to the Contractor, subject at all times to the requirements of the Owner established therefor, and at a cost to the Contractor as determined by the current schedule of charges filed by the Utility for all customers. Permission to use the water must be obtained in writing.
- C. If water is obtained from a public or private supply not owned or controlled by the Owner, the Contractor shall make such arrangement for service with the owners thereof as they may require.

- D. Non-potable water for other than drinking purposes may be obtained at the Site from the ground or surface sources, at the Contractor's own expense. The water must, however, be suitable for the purpose intended and shall be approved by the Engineer. The Specifications, for instance, contain requirements for water for making concrete and mortar.
- E. If the Owner awards other contracts for collateral work on the Project, it shall be the responsibility of the General Contractor to obtain potable water for drinking purposes, and such water shall be made available to all Contractors, until the date of the Certificate of Substantial Completion for the General Contract. Each Contractor, however, shall be individually responsible for providing potable water for their own employees and their Subcontractors after completion of the General Contract.
- F. If the General Contractor provides water, whether potable or non-potable, for their own purposes during construction of the work, besides drinking water, such water shall be made available to other Contractors and their Subcontractors during the life of the General Contract. Removal of temporary facilities shall be by the General Contractor, but such installation and meters shall remain until need therefor by each Contractor has ceased, or until the date of the Certificate of Substantial Completion of the General Contract. Each Contractor shall provide their own services after completion of the General Contract.

00 15 10.03 TEMPORARY HEAT

- A. If the Owner awards other contracts for collateral work on the Project, it shall be the obligation and responsibility of the General Contractor to provide and maintain temporary heat in all above ground structures, and in all below ground structures other than manholes and similar pipeline appurtenances, by means of portable electric, oil or gas-fired appliances. The General Contractor shall provide and pay for all fuel and electric power used by such appliances, and any wiring or connections required, and shall provide suitable smoke pipes or other devices to prevent the deposit of smoke or smudge on building components or equipment.
- B. After their installation by the Heating & Ventilating Contractor, the permanent heating system facilities may be used for temporary heating purposes, the operation thereof, and any temporary wiring or piping required and all power consumed shall be the obligation and responsibility of the General Contractor, who shall also be responsible to the Heating & Ventilating Contractor for the repair of any damage of work of the Heating & Ventilating Contract suffered as the result of use by the General Contractor.
- C. After enclosure of all spaces to be heated, except for doors, windows and similar apertures, temporary enclosures for all apertures shall be provided. Temperatures in the entirety of such spaces shall be continuously maintained at not less than 50oF between October 15 and May 15, unless written permission is granted otherwise by the Engineer. The General Contractor shall securely install on each

floor of each building near the center of the building, a suitable thermometer. Either the temporary or the permanent heating system shall be available for around-the-clock use during the season specified above.

- D. The Owner will supply all heat after the date of the Certificate of Substantial Completion of the General Contract.
- E. No portion of the Temporary Heat provisions herein contained shall be construed to waive or modify any provisions regarding maintenance of air or materials temperatures for the protection of the work contained elsewhere in the Contract Documents.

#### 00 15 10.04 TEMPORARY ELECTRIC LIGHT AND POWER

- A. If the Owner awards other contracts for collateral work on the Project, it shall be the obligation and responsibility of the General Contractor to provide and maintain temporary facilities for furnishing light and power necessary for operations under the General Contract, and to make all necessary arrangements therefor, including all required conductors, outlets and connections, ordering the meter, paying all fees and inspection charges and pay for all power bills until the date of the Certificate of Substantial Completion of the General Contract.
- B. The facilities shall be available to other Contractors and their Subcontractors for their use in connection with their work. The installation and meters shall remain until need for same by each Contractor has ceased, or until the date of the Certificate of Substantial Completion of the General Contract. Each Contractor shall provide their own services after completion of the General Contract.
- C. It shall be the responsibility of the General Contractor to provide, prior to the completion of their Contract, temporary power of proper voltage and capacity necessary to test and operate all equipment installed under this Contract.

#### 00 15 10.05 PAYMENT FOR SERVICES DURING CONSTRUCTION

- A. The General Contractor will receive no direct payment for providing, maintaining or removing any of the temporary facilities or services specified in this Section 00 15 10, and compensation for same shall be included, in the price, or total of prices, given in the Bid on which this Agreement is based, and no separate payment will be made therefor.

END OF SECTION

# **GENERAL REQUIREMENTS**

## **SECTION 00 15 68**

### **EROSION AND SEDIMENT CONTROL**

#### **00 15 68.01 GENERAL**

- A. The Contractor shall control erosion and sediment caused by construction activities through the use of scheduling, phased construction and restoration, berms, dikes, dams, sediment basins, fiber mats, netting, gravel, mulches, grasses, slope drains and other erosion control devices or methods.
- B. In the event of conflict between these specification requirements and pollution control laws, rules or regulations of other Federal, State or local agencies, the more restrictive laws, rules or regulations shall apply.

#### **00 15 68.02 CONTROL SCHEDULE**

- A. At the preconstruction conference, or prior to the start of the applicable construction, the Contractor shall be required to submit, for acceptance, their schedules for the accomplishment of erosion and sediment control. They shall also submit, for acceptance, their proposed method of erosion and sediment control on haul roads and borrow pits and their plan for disposal of waste materials or control details for other potential sources of pollution.
- B. The Contractor shall schedule and conduct their operations to minimize erosion of soils and to prevent silting and muddying of streams, rivers, irrigation systems, impoundments (lakes, reservoirs, etc.) and lands adjacent to or affected by the work. Construction of drainage facilities and performance of other contract work which will contribute to the control of erosion and sedimentation shall be carried out prior to earthwork operations and maintained in conjunction with earthwork operations. The area of bare soil exposed at any one time by construction operations shall not exceed the maximum acreage allowable under applicable State and Federal laws.

#### **00 15 68.03 CONTROL MEASURES**

- A. In carrying out erosion control measures, the Contractor will be guided by, but not limited to, the following controls:
  - 1. When borrow material is obtained from other than commercially operated sources, erosion of the borrow site shall be so controlled both during and after completion of the work that erosion will be minimized and sediment will be prevented from entering streams or other bodies of water. Waste

or disposal areas and construction roads shall be located and constructed in a manner that will prevent sediment entering streams.

2. Frequent fording of live streams will not be permitted; therefore, temporary bridges or other structures shall be used wherever an appreciable number of stream crossings are necessary. Unless otherwise approved in writing by the Engineer, mechanized equipment shall not be operated in live streams.
3. When work areas or gravel pits are located in or adjacent to live streams or other bodies of water, such areas shall be separated from the main stream by a dike or other barrier to prevent entry of sediment into a flowing stream. Care shall be taken during the construction and removal of such barriers to prevent the muddying of a stream or body of water.
4. All waterways shall be cleared as soon as practicable of falsework, piling, debris or other obstructions placed during construction operations and not a part of the finished work.
5. Ditches which are filled, or partly inoperative shall be cleaned, stabilized, and made operative before the Contractor stops work for any day, and shall be maintained in a condition satisfactory to the Engineer for the duration of the Contract.
6. Water from aggregate washing, dewatering or other operations containing sediment shall be treated by filtration, settling basin or other means sufficient to reduce the turbidity so as not to cause a substantial visible contrast to natural conditions in the receiving waters.
7. Pollutants such as fuels, lubricants, bitumens, raw sewage and other harmful materials shall not be discharged into or near rivers, streams, and impoundments or into natural or man-made channels leading thereto. Wash water or waste from concrete mixing operations shall not be allowed to enter live streams or other bodies of water.
8. All applicable regulations of environmental protection agencies, conservation agencies, and fish and wildlife agencies and statutes relating to the prevention and abatement of pollution shall be complied within the performance of the Contract.
9. Slopes exceeding 15 percent require special treatment such as water diversion berms, straw bale sediment barriers, sodding, fabric blankets or mesh, or the use of an approved mulch tacking agent over straw or hay mulch applied over seeded areas.



- B. The erosion and sediment control features installed by the Contractor shall be acceptably maintained by the Contractor throughout the Contract period. When it becomes necessary, the Engineer will inform the Contractor of unsatisfactory construction procedures and operations insofar as erosion control, water and air pollution are concerned. If the unsatisfactory construction procedures and operations are not corrected promptly, the Engineer may suspend the performance of any or all of other construction until the unsatisfactory condition has been corrected.

00 15 68.04 PAYMENT

- A. Unless a specific payment item is included in the Bid, payment for Erosion and Sediment Control shall be included in the price, or total of prices, given in the Bid on which this Agreement is based, and no separate payment will be made therefor.

END OF SECTION

# **GENERAL REQUIREMENTS**

## **SECTION 00 15 77**

### **BASIC MAINTENANCE OF TRAFFIC**

#### **00 15 77.01 GENERAL**

- A. This work shall consist of basic maintenance and protection of traffic within the limits of and for the duration of the Contract.

#### **00 15 77.02 TRAVEL NOT OBSTRUCTED DURING EXCAVATION**

- A. The Contractor shall not needlessly hinder or inconvenience travel on any public or private way, nor shall they wholly obstruct same without written permission of the Owner. If they are permitted to obstruct a traveled way, the Contractor shall provide plain and appropriately worded signs and adequate barricades and lighting at the nearest cross streets and at each end of the obstructed portion, announcing such obstruction and directing traffic to and along an approved detour.
- B. Unless otherwise specified or permitted, all entrances and exits of fire houses, industrial plants, commercial buildings and public buildings shall be kept open and maintained in passable condition at all times. The Contractor shall give notice to the Owner of each traveled way before interfering therewith. A minimum of 24 hours notice shall also be given to local police and fire control agencies.

#### **00 15 77.03 BASIC MAINTENANCE AND PROTECTION OF TRAFFIC**

- A. Traffic shall be maintained over a reasonably smooth traveled way which shall be so marked by signs, delineators, guiding devices and other methods that a person who has no knowledge of conditions may safely and with a minimum of discomfort and inconvenience ride, drive or walk, day or night, over all or any portion of the highway and/or structure under construction where traffic is to be maintained.
  - 1. Surface. Maintain the surface condition of the traveled way so it is consistent with the appropriate speed limit.
  - 2. Drainage. Maintain the drainage facilities and other highway elements, old or new, including detours.
  - 3. Bus Stops. Maintain existing bus stops, if any, so bus passengers are reasonably accommodated.

- |     |                               |   |
|-----|-------------------------------|---|
| 4.  | Pedestrian Traffic.           | Provide adequate protection for pedestrian traffic during all phases of construction.   |
| 5.  | Intersecting Highways.        | Provide ingress and egress to and from intersecting highways, homes, businesses and commercial establishments.  |
| 6.  | Dust Control and Spillage.    | Control dust and keep the traveled way free from materials spilled from hauling equipment. This shall also apply to dust control and spilled material resulting from the Contractor's operations in the areas outside the Contract limits. The Contractor shall provide for the control of dust, as necessary, during the construction period. Dust shall be controlled by water spray, or as approved by Engineer. Exposed soils shall be graded, seeded and mulched as soon as practicable. |
| 7.  | Flaggers.                     | Provide the necessary traffic control equipment and flaggers for adequate traffic control on the traveled way.  |
| 8.  | Repairs.                      | Make the necessary repairs to existing pavement and structure wearing surfaces as required to provide a reasonably smooth traveled way where vehicle operation is maintained.   |
| 9.  | Responsibility to the Public. | Protect the public from damage to person and property which may result directly or indirectly from any construction operation.  |
| 10. | Snow and Ice Control.         | Maintain the traveled way in such a condition and conduct operations in such a manner that snow and ice may be readily controlled by others as and when necessary, and in such a manner that proper drainage is provided for the melting of snow in the banks resulting from normal plowing. The Contractor shall not, however, be responsible for snow and ice control on the pavement or traveled way.  |

00 15 77.04 PAYMENT

- A. Unless a specific payment item is included in the Bid, payment for Basic Maintenance of Traffic shall be included in the price, or total of prices, given in the Bid on which this Agreement is based, and no separate payment will be made therefor.

END OF SECTION

# **GENERAL REQUIREMENTS**

## **SECTION 00 15 80**

### **PROJECT SIGN**

#### **00 15 80.01 GENERAL**

- A. If directed in the Additional Instructions, the Contractor shall provide and erect a project sign or signs at the project site identifying the project and the applicable funding agencies participating in the project. The project sign(s) shall also indicate the title and description of the project, Owner, Engineer and Contractor. The sign(s) shall be erected within twenty-one (21) days after the construction contract is awarded, and shall be in accordance with the specifications and detailed drawing included in the Additional Instructions.

#### **00 15 80.02 SIGN PANEL**

- A. Each sign panel shall be constructed of 3/4" minimum thickness marine plywood rabbetted into a 2" x 4" lumber frame. All fasteners used in the construction of each sign shall be of a rustproof nature.

#### **00 15 80.03 PAINTING**

- A. Each sign face shall be painted with the proper paint colors for the background, lettering and emblem as specified in the Additional Instructions. All supports, trim and the back of the sign panel, shall be painted with at least two coats of the same color paint as used for each sign face. All paint used shall be exterior grade paint, suitable for use on wood signs.

#### **00 15 80.04 MISCELLANEOUS**

- A. Sign(s) shall be located in a prominent position and aligned as determined by the Engineer. Adequate support for the project sign(s) shall be provided by the Contractor. The bottom edge of each sign shall be a minimum of 3 feet above grade. The project sign(s) shall be maintained in good condition by the Contractor for the duration of construction. The removal of the project sign(s) from the construction site by the Contractor shall be at the completion of construction, when ordered by the Engineer.

00 15 80.05 PAYMENT

- A. Unless a specific payment item is included in the Bid, payment for Project Sign, including fabrication, erection, maintenance and removal of each sign, shall be included in the price, or total prices, given in the Bid on which this Agreement is based, and no separate payment will be made therefor.

END OF SECTION

# **GENERAL REQUIREMENTS**

## **SECTION 00 15 90**

### **ENGINEER'S FIELD OFFICE TRAILER**

#### **00 15 90.01 DESCRIPTION**

- A. Unless waived by provisions within the Additional Instructions, the Contractor shall provide a field office trailer for the exclusive use of the Engineer and their assistants. The trailer shall be separate from that of the Contractor, and shall be ready for occupancy within ten days following execution of the Contract.

#### **00 15 90.02 FACILITIES TO BE PROVIDED**

- A. The name of the supplier and proposed layout shall be submitted to the Engineer and approved prior to delivery of the trailer.
- B. The trailer office shall be new or in first class condition and shall be not less than 12 feet by 56 feet, excluding the tongue.
- C. Washroom with hot water supply and toilet facilities within the trailer shall be supplied with potable water and connected to a sanitary sewage disposal system. The trailer shall be fully air conditioned. A gas or oil heat system shall be provided within the field office. A minimum of one month's fuel storage shall be provided, together with the necessary appurtenances to control heat and check fuel storage. Heating and air conditioning equipment shall be capable of maintaining an air temperature of 70°F.
- D. An individual, unlisted, direct line telephone service shall be provided for the exclusive use of the Engineer. Telephone service, local and toll charge calls, shall be paid by the Contractor.
- E. It shall be the responsibility of the Contractor to maintain the field office trailer and all facilities furnished with it. Maintenance shall include removal of snow, janitorial services, and adequate protection of pipes.
- F. It shall be the Contractor's responsibility to furnish adequate heat, electric power and light to the field office trailer at their expense. Adequate lighting shall consist of a minimum, of four, two lamp, 4' fluorescent lights.

G. The following office furniture and equipment shall be furnished with the trailer:

Two 8' flat top double desks with 2 sets of two drawer metal file cabinets in each desk.

1 built-in drafting table 36" x 72" with double storage cabinets underneath.

4 swivel chairs.

2 drafting stools.

1 four drawer, fireproof legal size filing cabinet with lock.

2 plan racks with space for 5 plan hangers each.

4 wall coat hooks.

2 large metal waste baskets.

1 refrigerator, minimum 2 cubic feet.

00 15 90.03 LOCATION

A. The trailer shall be erected on an approved location convenient for inspection of the work, as directed by the Engineer. The field office trailer shall be moved once if directed by the Engineer.

00 15 90.04 PAYMENT

A. Payment for the Engineer's Field Office Trailer, and all services to be provided with it, not included under other unit or lump sum price items shall be made at the price stated in the Bid.

END OF SECTION



# **GENERAL REQUIREMENTS**

## **SECTION 00 16 40**

### **MATERIALS, EQUIPMENT AND WORKMANSHIP**

#### **00 16 40.01 MATERIALS AND WORKMANSHIP - GENERAL REQUIREMENTS**

- A. All workmanship, materials, equipment and appliances shall comply in all respects with the applicable Specifications, unless specific exception is made.
- B. All materials furnished or incorporated in the work shall be new, unused and of the quality and characteristics specified. Used materials may be furnished or incorporated in the work only under special circumstances and only with the Engineer's prior written approval. If the quality or characteristics of any material are not specifically set forth in the Contract Documents, the material used shall be that customarily used in first class work of a similar nature and character.
- C. All workmanship in manufacture and construction not specifically covered in the Specifications shall be of the first class order and equal to that customarily used in first class work of a similar nature and character. The Contractor shall exercise special care during construction to make all structures watertight.
- D. See also ARTICLE 00 07 54.02 and 00 07 53.08.

#### **00 16 40.02 SAMPLES, TESTS AND INSPECTIONS**

- A. All materials, equipment and workmanship shall be subject to inspection, examination and tests by the Engineer, or persons or corporations designated by them, at any and all times during manufacture or construction and at any place or places where manufacture or construction are performed.
- B. If required by the Specifications, or if requested by the Engineer, the Contractor shall submit to the Engineer for examination, testing and approval, typical samples of materials and appliances. Samples shall be submitted sufficiently in advance of the time they are proposed to be used in the work so that neither rejections and re-submittals nor the time reasonably required for testing shall cause delay. Each unit, lot or batch of materials submitted shall be properly tagged or labeled and identified with the portion of the work for which they are intended. Transmittals shall be covered by a letter of transmittal in the manner specified for the submittal of drawings ARTICLE 00 13 40.02.
- C. All laboratory tests called for in the Specifications or requested by the Engineer shall be performed at the Contractor's expense. Documentary evidence that materials pass the required inspection and tests shall be furnished to the Engineer prior to the use of the materials in the work. Bureaus, laboratories and agencies

used for the inspection and testing of materials, equipment and appliances will be selected by the Contractor, who will submit their names to the Engineer for approval prior to the performance by them of any tests.

#### 00 16 40.03 REMOVAL OF FINISHED WORK FOR INSPECTION

- A. If, at any time prior to the date of the Certificate of Substantial Completion, the Engineer considers it necessary or advisable to examine any portion of the work already completed by removing or tearing out materials or coverings, or by excavating or otherwise exposing the portion of the work to be examined, the Contractor, upon receipt of a written request from the Engineer, shall promptly perform such work as is necessary so to do.
- B. If the work in question is found to be defective, or not in conformance with the Specifications, due to the fault of or omission of the Contractor, or if any work shall be covered over without the consent or approval of the Engineer, whether or not defective, the Contractor shall bear all the expense of such removal, tearing out, excavating or exposing and of satisfactory reconstruction.
- C. If, however, such consent or approval shall have been given, and the work exposed is found to be satisfactory and in conformance with the Specifications, the Contractor shall be compensated for the expenses of such removal, examination and reconstruction as provided in ARTICLE 00 07 57.03.

#### 00 16 40.04 FIELD TESTS

- A. The Contractor, at their own expense, shall conduct all tests specified or required by law or permit of installed equipment and materials, when ordered by and under the supervision of the Engineer. The Engineer at their own discretion may make additional field tests of materials and equipment on the Site. The Contractor shall furnish, at their own expense, the materials required for all field tests and reasonable labor and plant to assist the Engineer in conducting the tests.

#### 00 16 40.05 MANUFACTURERS AND SUPPLIERS

- A. Within 30 days following the execution of the Contract, the Contractor shall submit to the Engineer the name or names of the manufacturers or vendors from whom they propose to purchase the equipment and materials specified for the work. Following approval of the manufacturer or supplier by the Engineer, the Contractor shall submit complete and detailed drawings, bulletins, specifications and other data in connection with the equipment and materials and arrangement thereof they propose. See also ARTICLES 00 13 40.01 through 00 13 40.04 and 00 13 40.06.
- B. No award shall be made by the Contractor, and no work in connection with the equipment or materials shall proceed prior to review of the submitted data. All

items of equipment of like type shall be the product of one manufacturer, unless specified otherwise or specifically permitted by the Engineer.

#### 00 16 40.06 EXPERIENCE AND EQUIVALENT CLAUSES

- A. Unless otherwise specified, shown or permitted, all equipment and materials shall be the product of manufacturers who have built equipment or produced materials of a like or similar type, character, size and capacity for at least three years prior to submittal for approval and who, if requested by the Engineer, shall submit evidence thereof.
- B. Wherever reference is made in the Contract Documents to any specific material, equipment, appliance or model, it is understood that any product considered to be equivalent by the Engineer may be used, and such reference is for the purpose of illustration and establishment of a standard. This provision is understood to hold true in all instances, use or omission of the term "or equal" notwithstanding.

#### 00 16 40.07 INSTALLATION OF EQUIPMENT

- A. All equipment shall be installed in a neat and workmanlike manner as shown on the Plans or as directed, and shall be accurately leveled, aligned and adjusted for satisfactory operation and so installed that all necessary connections can be readily made.
- B. The Contractor shall furnish, install and protect all necessary bearing plates, guides, rails, anchor and attachment bolts and fastenings and all other appliances and appurtenances required for the installation of all components of the equipment specified. Adequate templates and installation drawings and instructions shall be provided. Anchor bolts shall be of the size, type and material recommended by the manufacturer or directed by the Engineer.
- C. The Contractor shall furnish all oils and greases for initial operation, and shall provide the Engineer with a list of the lubricants used on each item of equipment. Insofar as possible, all lubricants shall be obtained from one manufacturer, approved by the Engineer and by the equipment manufacturers. Each piece of equipment shall bear a substantial metal or plastic nameplate, securely fastened in a convenient place inscribed with the name of the manufacturer, the year of manufacture, model number, serial number and basic rating data.

#### 00 16 40.08 TOOLS, ACCESSORIES AND MANUALS

- A. Unless otherwise specified, the Contractor shall furnish for each type, model or size of equipment a complete set of any special tools and accessories, suitably identified, which may be required to adjust, operate, repair or maintain the equipment.

- B. The Contractor shall also furnish and deliver to the Engineer five complete sets of bulletins, diagrams, parts lists, instructions, manuals and other data required for operation, maintenance and repair of the equipment.

00 16 40.09 CARE AND PROTECTION OF THE WORK

- A. During the life of the Contract, the Contractor shall be solely responsible for the care and protection of the work and for all materials, appliances, supplies and equipment to be used in the work, both during storage and after installation or incorporation in the work. They shall protect all materials to be used in the work, all work in progress, and all completed work from damage by flood, fire, freezing or other undesirable results of weather, accident, theft and vandalism. Any damage or loss shall be made good by the Contractor at their own expense before a Certificate of Substantial Completion will be issued.
- B. See also ARTICLES 00 07 59.07, 00 07 59.08 and 00 07 57.04.

00 16 40.10 ABSENCE OF ENGINEER

- A. The Contractor shall perform no backfilling or covering operations of any underground portions of the work until after the Engineer or their inspector shall have inspected or tested and approved the work. If such work is covered in absence of an inspector, it shall be exposed by the Contractor for inspection as specified in ARTICLE 00 16 40.03.

END OF SECTION

## SECTION 22 05 10

### PIPING SYSTEMS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Piping Systems, 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. B1 - Unified Inch Screw Threads (UN and UNR Thread Form)
    - b. B2.1 - Pipe Threads (Except Dryseal)
    - c. B2.4 - Hose Coupling Screw Threads
    - d. B16.5 - Pipe Flanges and Flanged Fittings
    - e. B16.10 - Face-to-Face and End-to-End Dimensions of Ferrous Valves
    - f. B16.21 - Nonmetallic Flat Gaskets for Pipe Flanges
    - g. B16.34 - Valves-Flanged and Buttwelding End
    - h. B18.2.1 - Square And Hex Bolts and Screws Inch Series Including Hex Cap Screws and Lag Screws
    - i. B18.2.2 - Square and Hex Nuts
    - j. B31.9 - Building Services Piping
    - k. B40.1 - Gauges-Pressure Indicating Dial Type-Elastic Element
    - l. Z49.1 - Safety In Welding and Cutting
  - 2. American Society for Testing and Materials (ASTM) Publications:
    - a. A194 - Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service
    - b. A276 - Stainless and Heat-Resisting Steel Bars and Shapes
    - c. A307 - Carbon Steel Externally Threaded Standard Fasteners
    - d. A386 - Zinc-Coating (Hot-Dip) on Assembled Steel Products
    - e. A525 - Sheet Steel, Zinc-Coated (Galvanized) by the Hot-Dip Process
    - f. A774 - As-Welded Wrought Austenitic Stainless Steel Fittings for General Corrosive Service at Low and Moderate Temperatures
    - g. D1654 - Painted or Coated Specimens Subjected to Corrosive Environments

3. Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) Publications:
  - a. SP 58 - Pipe Hangers and Supports - Materials, Design and Manufacture
4. SP 69 - Pipe Hangers and Supports - Selection and Application

#### 1.03 SUBMITTALS

- A. The Contractor shall submit an electronic copy of the Manufacturer's material Specifications for each item to be supplied under this Section.

#### 1.04 SAFETY PRECAUTIONS

- A. Rotating Equipment Safety: Fully guard couplings, motor shafts, gears and other exposed rotating or rapidly moving parts in accordance with ASME B15.1. The guards shall be cast iron or expanded metal. Guard parts shall be rigid, secured, and readily removable without disassembling the guarded unit.
- B. Welding and Cutting Safety: ANSI Z49.1.

### PART 2 - PRODUCTS

#### 2.01 PIPING SCHEDULE

- A. Piping shall be provided in accordance with the following schedule unless specified or indicated otherwise.

Service	Sizes	Pipe	Joint
Condensate Traps and Conveyance from Condensate Traps to Existing Leachate Conveyance Piping and Leachate Storage Tanks	3"/6" 6"/10"	SDR-17 Dual Contained HDPE	Butt-Fusion
Landfill Gas Conveyance Pipe	4", 6", 12"	SDR-17 HDPE	Butt-Fusion
Vertical Landfill Gas Extraction Wells	8"	Solid and Perforated SDR-17	Butt-Fusion
Flexible Landfill Gas Pipe	2"	QED Solarguard™ Flex hose	Clamped
Underground Electric Conduit	All	SCH 80 PVC	Cemented

#### 2.02 PIPING, FITTINGS AND ACCESSORIES

- A. PVC Fittings: PVC fittings shall be as specified in Section 31 05 31.14, "Polyvinyl Chloride (PVC) Fittings".
- B. HDPE Piping: HDPE piping and fittings shall be as specified in Section 33 05 33.40, "High Density Polyethylene (HDPE) Pipe and Fittings".

- C. Flexible Landfill Gas Piping: Piping and fittings shall be as specified in Section 33 05 31.40, "Flexible Landfill Gas Pipe".
- D. Stainless Steel Piping
  - 1. Piping and fittings shall be ASTM A778 or ASTM A312, Type 304L stainless steel, Schedule 40, welded or flanged as shown, with Class 150, ASTM A774, Type 304L stainless steel fittings.
- E. Flanged Joints
  - 1. Flanges
    - a. Provide ANSI B16.1, Class 150 flanges for all flange connections. Backup rings shall be lightweight stainless steel.
  - 2. Bolting of Flanges
    - a. Material used for bolts, studs and nuts shall be stainless steel conforming to ASTM A276, Type 304, and material for nuts shall be stainless steel conforming to ASTM A276, Type 304, for all valves and fittings. Dimensions of bolts, studs, and nuts shall conform to ANSI B18.2.1 and ANSI B18.2.2 with threads conforming to ANSI B1.1 coarse type with Class 2A fit for bolts and studs, and Class 2B fit for nuts. Bolts or studs shall extend through the nuts and may have reduced shanks of a diameter not less than the diameter at root of threads. Bolts shall have American Standard regular square or heavy hexagon heads and shall have American Standard heavy, semi-finished hexagonal nuts.
  - 3. Gaskets
    - a. All flange gaskets shall be Viton, suitable for the pressure and temperature ranges encountered, and compatible with the flange faces. Dimensions for nonmetallic gaskets shall conform to ANSI B16.21.
- F. Valves
  - 1. PVC Ball Valves 3 Inches and Smaller
    - a. Valves shall be PVC Type 1, Grade 1, Cell classification conforming to ASTM D1784, suitable for use with landfill leachate. Ball valves shall be Safe Block True Union full port valves with Viton O-ring seals as manufactured by Hayward, or equal. Valves shall have self-lubricating TFE seats.
  - 2. Stainless Steel Ball Valve
    - a. Valve shall be stainless steel (A316) body, threaded, full port with blowout proof stem, and PTFE seats. Valves shall be manufactured by Valtorc, or approved equal.
  - 3. Check Valves 2 Inches and Smaller
    - a. Check valves shall be ball type, operate in either the horizontal or vertical position, and shall have a full flow design to reduce pressure drop. The valve shall have a true union design

constructed of PVC, and shall be suitable for use with landfill leachate. Check valves shall be "True Check" ball check valves as manufactured by Hayward, or equal.

4. Butterfly Valves
  - a. Provide butterfly valves constructed of PVC body, polypropylene disc, and Viton resilient type seat. Valves shall be wafer type with ANSI Class 150 flange bolt pattern. Provide valves with extension stem riser incorporating epoxy coated carbon steel housing and stainless steel shaft with hand-wheel beveled gear operator and position indicator. Valves shall be manufactured by Asahi (Type 75 or Type 56), or approved equal.
5. Stainless Steel/HDPE Threaded Transition Fitting
  - a. Fitting shall allow the transition from HDPE to 316 stainless steel. Stainless steel fitting end shall be provided in a female and male transition depending on the application.
6. 2" Camlock Fitting
  - a. The camlock fitting shall be constructed of stainless steel 316 body, have an Viton gasket, and connect to a threaded 316 stainless steel fitting.

G. Compressible Seals

1. Provide seals which completely seal the space between pipe and cored hole by a system of interlocking synthetic rubber links shaped to continuously fill the space when tightened. Seals shall be manufactured by Thunderline Corporation (Link-Seal), or approved equal.

H. Expansion Joints

1. Expansion joints shall consist of an inner tube, body, and outer cover and shall have flanged ends. The body shall be rubber reinforced with steel wire for strength with an inner Viton-lined tube. Flanges shall be constructed integrally with the body to resist stresses and shall be full-pattern so gaskets are not necessary. Flanges shall be drilled ANSI B16.5, Class 150#. The expansion joints shall be open single arch construction allowing for a minimum of 1-3/4" axial compression, 3/4" axial elongation, and 1" lateral deflection with a working pressure of 140 psi. Provide 304 SS retaining rings. All expansion joints shall be Redflex J-1W Wide Arch as manufactured by Red Valve Co., Inc., or approved equal. Provide reducing expansion joints where noted.

I. LANDFILL GAS Well Heads: Provide well heads as indicated and specified on the drawings.



## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Install piping and piping components to ensure proper and efficient operation of the equipment and controls and in accordance with manufacturer's printed instructions. All pipe and fittings shall be carefully handled by means of suitable equipment, in such a manner as to prevent damage to materials and protective coatings or linings. Under no circumstances shall materials be dropped or damaged during installation. Pipe or fittings which are damaged during construction shall be repaired or replaced at no expense to the Owner.
- B. Cut to the measurements established at the site and work into place without springing or forcing. Install piping with line flexibility included to absorb the expansion and contraction due to temperature changes of the piping systems. Piping line flexibility shall be achieved by the use of pipe bends or loops.
- C. Flanged Joints
  - 1. Faced true, square, tight and used as indicated and where necessary for normal maintenance. Mate with valves and the various equipment connections. Remove the raised faces from fittings or equipment having raised faces. Flanged joints shall be firmly bolted with through, stud or tap bolts.
- D. Reducing Fittings
  - 1. Use to connect changes of sizes in piping lines. Make branch connections with tees except that factory-made saddles having integral gasketing and clamps be used if the nominal diameter of the piping system header is greater than two nominal pipe diameters of the branch. All saddles shall be installed in accordance with the manufacturer's specifications. No saddles shall be extrusion welded.
- E. Pipe Hangers and Supports
  - 1. Design and fabrication of pipe hangers, supports, and welding attachments shall conform to MSS SP 58. Hanger types and supports for bare and covered pipes shall conform to MSS SP 69 for the system temperature range. Unless otherwise indicated, horizontal and vertical piping attachments shall conform to MSS SP 58. Where required, structural members, pipe columns and concrete, where shown or indicated, shall also be used as means of pipe support.
- F. Valves
  - 1. Install at all equipment items to allow maintenance or isolation, and to establish proper and sequential operation of the complete system.

### 3.02 LEACHATE AND CONDENSATE PIPING

#### A. Fabrication and Assembly of Piping and Components

1. Assembly and connection of plastic piping (PVC or HDPE) shall be in accordance with the appropriate specification section and as specified herein.
2. Provide sufficient pitch to assure adequate drainage and venting.
3. All piping shall follow the general arrangement shown, cut accurately to measurements established for the work by the Contractor, and worked into place without springing or forcing.
4. Make changes in size of pipelines with reducing fittings.
5. Do not bury, conceal, or insulate piping until inspected, tested, and approved.
6. Protect materials and equipment from the weather.
7. Run all pipe to be insulated as shown and as required with sufficient clearance to permit application of insulation.
8. Do not miter pipe to form elbows, or notch straight runs to form full-sized tees, or utilize any similar construction.
9. Except where shown otherwise, run vertical piping plumb and straight and parallel to walls.
10. Thoroughly clean each section of pipe, fittings, and valves to be free of all foreign matter before erection. Prior to erection, hold each piece of pipe in an inclined position and thoroughly tap to loosen sand, mill scale, and foreign matter. Before all final connections are made to apparatus, wash the interior of all piping thoroughly with water. Blow out piping with compressed air or flush with water to remove rust scale, oil, and debris. Plug or cap open ends of mains during all shutdown periods. Do not leave lines open at any place where foreign matter might accidentally enter.
11. Cutting of pipe shall be done with pipe cutters, motor drive saws using abrasive disks, or with handsaws as required. Where machining is necessary for cut ends or for extending factory machining, it shall be done in accordance with the manufacturer's recommendations for the type of pipe and joint used. Fittings and pipe within structures shall be placed to line and grade and properly supported before joints are made. The Contractor shall furnish all the necessary pipe supports, including stirrups, rods, clamps, hangers, pipe columns and piers, necessary to sustain the pipe and fittings in a firm and substantial manner to the lines and grades given.
12. All leachate and condensate conveyance/forcemain piping shall be internally de-beaded after each joint is constructed.

### 3.03 LANDFILL GAS PIPING

#### A. Fabrication and Assembly of Piping and Components

1. Assembly and connection of plastic piping (PVC or HDPE) shall be in accordance with the appropriate specification section and as specified herein.
2. Provide sufficient pitch to assure adequate drainage.
3. All piping shall follow the general arrangement shown, cut accurately to measurements established for the work by the Contractor, and worked into place without springing or forcing. Provide for expansion and contraction of pipelines.
4. Make changes in size of pipelines with reducing fittings.
5. Protect materials and equipment from the weather.
6. Do not miter pipe to form elbows, or notch straight runs to form full-sized tees, or utilize any similar construction.
7. Thoroughly clean each section of pipe, fittings, and valves to be free of all foreign matter before erection. Contractor shall take care during fabrication to avoid unnecessary debris (especially pipe shavings) from entering the pipe. Flushing of the pipe with water or compressed air shall be done at the discretion of the field engineer to remove rust scale, oil, pipe shavings, or any other debris. Plug or cap open ends of mains during all shutdown periods. Do not leave lines open at any place where foreign matter might accidentally enter.
8. Cutting of pipe shall be done with pipe cutters, motor drive saws using abrasive disks, or with handsaws as required. Where machining is necessary for cut ends or for extending factory machining, it shall be done in accordance with the manufacturer's recommendations for the type of pipe and joint used. The flame cutting of pipe by means of an oxyacetylene torch will not be allowed.
9. Fittings and pipe within structures shall be placed to line and grade and properly supported before joints are made. The Contractor shall furnish all the necessary pipe supports, including stirrups, rods, clamps, hangers, pipe columns and piers, necessary to sustain the pipe and fittings in a firm and substantial manner to the lines and grades given.

### 3.04 FIELD TESTING AND QUALITY CONTROL

- #### A.
- After completion of the piping installation and prior to initial operation, conduct tests on the piping system. Furnish materials and equipment required for tests. Correct defects disclosed by the test. The test shall be performed once a minimum of 2 feet of backfill has been placed and compacted around the pipe and in the presence of the Engineer. No leakage is permitted although appropriate allowances for expansion of pipe shall be taken into consideration during the hydrostatic testing according to the manufacturer's recommendations. If the pressure loss exceeds the maximum allowable loss under the manufacturer's

recommendation, the pipe section shall be repaired and retested until acceptable results are achieved. No expansion allowances shall be permitted for pneumatic tests.

B. Primary Containment Leachate Piping

1. Hydrostatically test piping system at one and one-half times system pressure but at least 50 psig with water not exceeding 100 degrees F. Before tests, remove or isolate gauges and other apparatus in the new system which may be damaged by the high pressure. Install a calibrated, test pressure gauge in the system to observe loss in pressure. Fill pipe in manner which allows bleeding of air from local high point(s) in system and bring system up to test pressure. Maintain the required test pressure for a sufficient amount of time (min. 1 hr) to enable an inspection of joints and connections. Correct defects disclosed by the test.

C. Secondary Containment Leachate Piping

1. Pneumatically test all secondary containment piping in accordance with the manufacturer's recommendations. Piping incorporating compressible seal type containment terminations shall be tested at a minimum pressure of 5 psig for a period of not less than one hour.

D. Landfill Gas Piping

1. Pneumatically test all piping in accordance with the manufacturer's recommendations at a minimum pressure of 5 psig for a period of not less than one hour. Correct any defects and retest the pipe until acceptable results are achieved.

### 3.05 POST-CONSTRUCTION

- A. When installations of the various components of the piping systems are completed, clean by flushing with water before final closing. Clean all piping and components of scale and thoroughly flush out all foreign matter. Clean all strainers and valves thoroughly. Wipe equipment clean, removing all traces of oil, dust, dirt, or paint spots. Maintain the system in this clean condition until final approval. Clean and paint piping and equipment as specified herein.

### 3.06 STARTUP AND OPERATIONAL TESTS

- A. Start up and initially operate the system. During this time, observe the operation of the system and correct any defects or abnormalities which may occur in the overall system.

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 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.

#### 1.06 OPERATION AND MAINTENANCE MANUAL

- A. Submit as required for systems and equipment indicated in the technical sections. 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.

#### 1.07 SPARE PARTS

- A. Provide spare parts for all equipment installed under this Contract, as indicated in individual specification sections.

#### 1.08 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.

#### 1.09 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.

#### 1.10 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. Visit the premises and become familiar with the dimensions in the field, and 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. 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.

#### 1.11 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.

#### 1.12 SPECIAL CONDITIONS

- A. When performing work within active landfill 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 landfill 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 landfill. 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.

#### 1.13 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.

#### 1.14 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.

## 1.15 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.

## 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 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.
- B. For type MC cable, refer to Contract Drawings for areas where MC cable is allowed. MC cable shall be allowed only for branch circuit wiring (lighting and receptacles).

##### 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.
    - b. Metal-Clad Cable, NFPA 70 Article 334 Type MC:
    - c. Interlocked flexible galvanized steel armor sheath, conforming to UL requirements for type MC metal clad cable.
    - d. Insulated copper conductors, suitable for 600 volts, rated 90°C, one of the types listed in NFPA 70 Table 310-13 or of a type identified for use in Type MC cable.
    - e. Internal full size copper ground conductor with green insulation.
    - f. Acceptable Companies: AFC Cable Systems Inc., Coleman Cable Co.

- g. Connectors for MC cable: AFC Fitting Inc.'s AFC Series, Arlington Industries Inc.'s Saddle grip, or Thomas & Betts Co.'s Tite-Bite with anti-short bushings.
  - 1) MI: AFC Cable Systems' Type MI Cable, or BICC/Pyrotenax Mineral Insulated System 1850 Pyrotenax Cable:
    - a) Copper conductors.
    - b) Sheathing containing asbestos fibers shall not be used.

In corrosive areas where indicated on drawings, utilize the following:

    - c) PVC or HDPE jacketing (where shown on drawings).
    - d) 600 volt rating.
    - e) Fittings and accessories as required for a complete system to suit listing and installation conditions.
- 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. 600V 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-Crimpfit 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, Aqua-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 TC, MI, or other type specifically indicated on the drawings not to 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 SPECIAL GROUNDING CONDUCTORS

- A. Technical Power System Grounding (Equipment grounding conductor isolated from the premises grounded conductor except at a single grounded termination point): Install an insulated grounding conductor running with the circuit conductors for isolated receptacles or utilization equipment requiring an isolated ground.
  - 1. Color Code: Green.
  - 2. "Green" For Isolated Grounding Conductor:

- a. Continuous green outer finish, or:
  - b. Continuous green outer finish with one or more yellow stripes, and:
  - c. Different than the “green” used for the equipment grounding conductor run with the circuit (where required).
3. Install label at every point where the conductor is accessible, identifying it as an “Isolated Grounding Conductor”.

### 3.09 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).
- 8. MC: Where allowed for 120V, 20A max circuits per the Contract Drawings or part as specified herein:
  - a. Branch circuit wiring in wood framed construction (wood joists and wood stud partitions):
    - 1) Install conductors parallel with joists or studs and attach to the side of these timbers by galvanized straps spaced not more than 6 feet apart.
    - 2) Install conductors through holes bored in the center of the timbers when running at right angles to joists or studs.
    - 3) Do not attach the conductors to the edge of joists or studs.
  - b. Branch circuit wiring in movable metal partitions and movable gypsum partitions.
    - 1) Install conductors in accordance with partition manufacturer’s recommendations.

- c. Branch circuit wiring in metal stud partitions:
      - 1) Install conductors parallel with studs and attach to the side by galvanized straps spaced not more than 6 feet apart.
      - 2) Install conductors through holes bored in the center of the metal member when running at right angles to studs.
    - d. Conductors shall be protected by listed bushings or listed grommets covering all metal edges.
      - 1) Do not attach the conductors to the edge of studs.
  - 9. MI:
  - 10. Wiring for underplaster extensions.
  - 11. Wiring in areas where indicated on the Contract Drawings.
  - 12. Where MI cable is installed in areas subjecting cable to corrosion, use PVC or HDPE jacketed MI cable (nonmetallic jacketed cable is not suitable for use in ducts, plenums or other spaces used for environmental air).
- 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).

### 3.10 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.

### 3.11 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 26

### GROUNDING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Grounding and bonding of electrical installations as shown on the Plans, as specified and/or directed.
- B. Existing site conditions may necessitate use of alternative grounding systems to achieve required ohm values. Existing site conditions are to include minimum soil cover over bedrock and exposed bedrock.

##### 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), Electronic Industries Alliance (EIA), Telecommunications Industry Association (TIA)  
Publication: (ANSI/EIA/TIA)
    - a. 607 - Commercial Building Grounding and Bonding Requirements for Telecommunications
  - 2. Institute of Electrical and Electronics Engineers (IEEE) Publications:
    - a. 81 - Guide for Measuring Earth Receptivity, Ground Impedance and Earth Surface Potential of a Ground System
    - b. 142 - Recommended Practice for Grounding of Industrial and Commercial Power Systems
    - c. 1100 - Recommended Practice for Powering and Grounding Sensitive Electronic Equipment
  - 3. National Fire Protection Association (NFPA) Publication:
    - a. 70 - National Electrical Code (NEC)
  - 4. Underwriters Laboratories, Inc. (UL) Publications:
    - a. 83 - Thermoplastic-Insulated Wires and Cables
    - b. 44 - Rubber-Insulated Wires and Cables
    - c. 467 - Grounding and Bonding Equipment

##### 1.03 SUBMITTALS

- A. Product Data. Provide data for grounding electrodes and connectors.
- B. Test Reports: Indicate overall resistance to ground.

- C. Manufacturer's Instructions: Include instructions for preparation, installation and examination of exothermic connectors, as applicable.
- D. Certifications: Two weeks prior to final inspection, deliver to the Owner's designated representative four copies of the certification that the material and installation is in accordance with the drawings and specifications and has been properly installed.

## PART 2 - PRODUCTS

### 2.01 GROUNDING WIRES

- A. General Purpose: UL and NEC approved types, copper, with TW, THW, XHHW or dual rated THHN-THWN insulation color identified green.
- B. Isolated Power System: Type XHHW insulation with a dielectric constant of 3.5 or less.
- C. Size wire not less than what is shown and not less than required by the NEC.
- D. Stranded bare copper ground conductor where indicated on drawings.

### 2.02 GROUND RODS

- A. Copper clad steel, 3/4-inch diameter by 10 feet long.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Ground as shown and as hereinafter specified in accordance with the NEC.
- B. System Grounding:
  - 1. Ground the electrical service system neutral at service entrance equipment to grounding electrodes. Concrete encased electrodes shall be connected as the most effective grounding electrodes. Provide a completely grounded system in accordance with Article 250 of the NEC.
  - 2. Ground each separately-derived system neutral to separate grounding electrode system. Transformer, UPS systems, power conditioners, inverters, or other power supplies are separately derived systems. Standby or emergency generators are separately derived systems if the neutral is bonded to the generator frame and if there is no direct connection of the generator neutral conductor to the service neutral conductor.

3. Provide communications system grounding conductor connected to separate electrode (ground bus) that is shall be installed in each IT room. Bond together system neutrals, service equipment enclosures, exposed non-current carrying metal parts of electrical equipment, metal raceway systems, cable trays, auxiliary gutters, meter fittings, boxes, cable armor, cable sheath, ground bus in electrical rooms and IT rooms, metal frame of the building or structure, ground ring, lightning down lead conductor, grounding conductor in raceways and cables, receptacle ground connectors, and metal underground water pipe. Bonding jumpers shall be installed around non-metal fittings or insulating joints to ensure electrical continuity. Bonding shall be provided where necessary to ensure electrical continuity and the capacity to conduct safely any fault current likely to be imposed.
  4. Secondary service neutrals ground at the supply side of the secondary disconnecting means and at the related transformers.
  5. Separately derived systems (transformers downstream from the service entrance) ground the secondary neutral.
  6. Isolation transformers and isolated power systems shall not be system grounded.
- C. Equipment Grounding:
1. Metallic structures, enclosures, raceways, junction boxes, outlet boxes, cabinets, machine frames, and other conductive items in close proximity with electrical circuits shall be grounded for personnel safety and to provide a low impedance path for possible ground fault currents.

### 3.02 PRIMARY EQUIPMENT AND CIRCUITS

- A. Switchgear: Provide a bare grounding electrode conductor from the switchgear ground bus to a grounding electrode system, metal underground water pipe and driven ground rods for the grounding electrode. Where a new foundation/footer is constructed for a building/structure the grounding electrode system shall also be bonded to the concrete-encased electrode (reinforcing steel in foundation/footer). Coordinate with General Contractor.
- B. Duct Banks and Manholes:
1. Provide a bare equipment grounding conductor in each duct bank containing medium or high voltage cables. Connect the grounding conductors to the switchgear ground bus, to all manhole hardware, to the cable shielding of medium or high voltage cable splices and terminations, and equipment enclosures.
  2. Provide a grounding conductor having at least 50 percent ampacity of the largest phase conductor in the duct bank.
  3. Connect the equipment grounding conductor to the ground rod.
- C. Outdoor Fences: Connect outdoor fences around electrical equipment to the grounding electrode system.

- D. Metallic Conduit: Metallic conduits which terminate without mechanical connection to a housing of electrical equipment by means of locknut and bushings or adapters, provided with grounding bushings. Connect bushings with a bare grounding conductor to the equipment ground bus.
- E. Lightning Arresters: Connect lightning arrester grounds to the equipment ground bus, or ground rods as applicable.

### 3.03 SECONDARY EQUIPMENT AND CIRCUITS

- A. Main Bonding Jumper: Connect the secondary service neutral to the ground bus in the service equipment.
- B. Water Pipe and Supplemental Electrode:
  - 1. Provide a ground conductor connection between the service equipment ground bus and the metallic water pipe system. Jumper insulating joints/meter in the water pipe.
  - 2. Provide a supplemental ground electrode and bond to the water pipe ground, or connect to the service equipment ground bus.
  - 3. Where a new foundation/footer is constructed for a building/structure, the grounding electrode system shall also be bonded to the concrete-encased electrode (reinforcing steel in foundation/ footer). Coordinate with General Contractor.
- C. Service Disconnect (Separate Individual Enclosure): Provide a ground bar bolted to the enclosure with lugs for connecting the various grounding conductors.
- D. Switchgear and Switchboards:
  - 1. Connect the various feeder green grounding conductors to the ground bus in the enclosure with suitable pressure connectors.
  - 2. Connect the grounding electrode conductor to the ground bus.
  - 3. Connect the neutral to the ground bus (main bonding jumper).
  - 4. Connect metallic conduits, which terminate without mechanical connection to the housing, by grounding bushings and ground wire to the ground bus.
- E. Conduit Systems:
  - 1. Ground all metallic conduit systems.
  - 2. Non-metallic conduit systems shall contain a grounding conductor.
  - 3. Conduit provided for mechanical protection containing only a grounding conductor, bond to that conductor at the entrance and exit from the conduit.
- F. Feeders and Branch Circuits: Install green grounding conductors with feeders and branch circuits as follows:
  - 1. Feeders.
  - 2. Branch Circuits.
  - 3. Receptacle Outlets.

4. Directly Connected Equipment, Appliances and Devices.
  5. Motors and Motor Controllers.
  6. Fixed Equipment and Appurtenances.
  7. Items of equipment where the final connection is made with flexible metal conduit shall have a grounding wire.
  8. Additional locations and systems as shown.
- G. Boxes, Cabinets, Enclosures and Panelboards:
1. Bond the grounding wires to each pull box, junction box, outlet box, cabinets, and other enclosures through which the ground wires pass.
  2. Provide lugs in each box and enclosure for ground wire termination.
  3. Provide ground bars in panelboards, bolted to the housing, with sufficient lugs for terminating the ground wires.
- H. Motors and Starters:
1. Provide lugs in motor terminal box and starter housing for ground wire termination.
  2. Make ground wire connections to ground bus in motor control centers.
- I. Receptacles are not approved for grounding through their mounting screws. Ground with a ground wire from green ground terminal on the receptacle to the outlet box ground screw.
- J. Ground lighting fixtures to the green grounding conductor of the wiring system. During renovation, provide the green ground if it is not part of the system, or ground the fixtures through the conduit systems per means acceptable under the NEC. Fixtures connected with flexible conduit shall have a green ground wire included with the power wires from the fixture through the flexible conduit to the first outlet box.
- K. Fixed electrical appliances and equipment shall have a ground lug installed for termination of the green ground conductor.

### 3.04 CONDUCTIVE PIPING

- A. Bond all conductive piping systems in the building to the electrical system ground. Bonding connections shall be made as close as practical to the water pipe ground or service equipment ground bus.

### 3.05 GROUND RESISTANCE

- A. Grounding system ground resistance must comply with NEC. Provide additional ground rods as required until resistance reading is compliant with NEC.
- B. Services at power company interface points shall comply with the power company ground resistance requirements.

- C. Make necessary modifications to the ground electrodes for compliance that is needed without additional cost to the Owner, including the provisions of a multi-rod system.

### 3.06 GROUND ROD INSTALLATION

- A. Drive each rod vertically in the earth for not less than ten feet in depth.
- B. Where permanently concealed ground connections are required, make the connections by the exothermic process to form solid metal joints. Make accessible ground connections with mechanical pressure type ground connectors.
- C. Where rock prevents the driving of vertical ground rods, install grounding electrodes in horizontal trenches to achieve the specified resistance.
- D. In manhole, install ground rods with 4 to 6 inches above the floor with connections of grounding conductors fully visible and accessible.

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. Electrical metallic tubing.
- F. Nonmetallic conduit.
- G. Flexible nonmetallic conduit.



- H. Electrical nonmetallic tubing.
- I. 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 Aluminum Conduit: ANSI C80.5, UL 6.
- C. Rigid Nonmetallic Conduit: UL 651, UL 1684
  - 1. PVC Type EPC-40 and EPC-80, in accordance with NEMA TC2.
  - 2. Fiberglass conduit in accordance with NEMA TC14.
- D. Intermediate Metal Conduit (IMC): UL 1242, zinc-coated steel only.
- E. Electrical Metallic Tubing (EMT): UL 797, ANSI C80.3.
- F. Electrical Nonmetallic Tubing (ENT): NEMA TC13.
- G. Plastic-coated Rigid Steel and IMC Conduit: NEMA RN1, Type 40 (40 mils thick).
- H. Flexible Metal Conduit: UL 1.
  - 1. Liquid-tight Flexible Metal Conduit, Steel: UL 360.
- I. Fittings for Metal Conduit, EMT, 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.
  2. Fittings for EMT: set screw type.
  3. Fittings for Use in Hazardous Locations: UL 886.
- J. Fittings for Rigid Nonmetallic Conduit: NEMA TC3. Fittings shall match conduit type and material.

## 2.03 FIBER OPTIC SYSTEMS

- A. For conduit systems that are intended for the installation of fiber optic cables, all conduit bends radii shall meet or exceed minimum radius in accordance with installed fiber optic bending limitation specifications.
- B. Where conduit bodies are used in 90 degree sections of conduit runs, only "Optical LB", or equivalent shall be used.

## 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. Hazardous Locations: Work in hazardous locations, as defined by NFPA 70, shall be performed in strict accordance with NFPA 70 for particular "Class", "Division", and "Group" of hazardous locations involved. Provide conduit and cable seals where required by NFPA 70. Conduit shall have tapered threads.
- D. 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.

- E. 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. Aluminum Conduit: Do not install underground or encase in concrete. Do not use brass or bronze fittings.
  2. Restrictions Applicable to EMT:
    - a. Do not install underground.
    - b. Do not encase in concrete.
    - c. Do not use in areas subject to severe physical damage.
    - d. Do not use in hazardous areas.
    - e. Do not use outdoors.
  3. Nonmetallic Conduit: Conduit shall not penetrate fire walls, fire partitions, or floors.
  4. ENT: ENT may be provided in walls, floors, and ceilings only when protected by thermal barriers identified as having minimum 15-minute finish rating. If ENT is used, provide required thermal barriers, whether indicated or not.
    - a. Following restrictions apply to ENT:
    - b. Do not route exposed.
    - c. Do not route above suspended ceilings (i.e., between suspended ceilings and permanent ceilings).
    - d. Do not use in feeder circuits.
    - e. Do not install underground.
    - f. Do not encase in concrete.
    - g. 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.
    - h. Do not use in hazardous areas.
    - i. Do not use outdoors.
    - j. Do not use in sizes larger than 2 inches.
    - k. Do not use in penetrating fire rated walls, partitions, etc.
  5. Restrictions applicable to PVC Schedule 40 and PVC Schedule 80.
    - a. Do not use in feeder circuits unless otherwise indicated.
    - b. 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.

- c. Do not use in hazardous areas.
  - d. Do not use in penetrating fire-rated walls or partitions, fire rated floors, etc.
- 6. Service Entrance Conduit, Overhead: Rigid steel or IMC from service entrance to service entrance fitting or weatherhead outside building.
  - 7. Service Entrance Conduit, Underground: Galvanized rigid steel or steel IMC. Underground portion shall be encased in minimum of 3 inches of concrete and shall be installed minimum 18 inches below slab or grade.
  - 8. Underground Conduit Other Than Service Entrance: Plastic-coated rigid steel; plastic-coated steel IMC; PVC, Type EPC-40; or fiberglass. Convert nonmetallic conduit, other than PVC Schedule 40 or 80, to plastic-coated rigid, or IMC, steel conduit before rising through floor slab; plastic coating shall extend minimum 6 inches above floor.
  - 9. Conduit in Floor Slabs: Rigid steel; steel IMC; fiberglass, or PVC, Type EPC-40.
  - 10. Conduit Interior to Buildings for 400 Hz Circuits: Aluminum or nonmetallic. Where 400-Hz circuit runs underground or through concrete, conduit shall be PVC Schedule 80.
  - 11. Conduit for Circuits Rated Greater Than 600 Volts: Rigid metal conduit or IMC only.

F. 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.
- G. 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. 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.
6. 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.
7. 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.
8. 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.
9. Arrange conduit to maintain headroom and present neat appearance.
10. 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.
11. Use conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.
12. Install no more than equivalent of three 90 degree bends between boxes.
13. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.

14. Provide suitable fittings to accommodate expansion and deflection where conduit crosses expansion joints.
15. Use Suitable caps to protect installed conduit against entrance of dirt and moisture.
16. 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 35

### OUTLET, JUNCTION AND PULL BOXES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Outlet, Junction and Pull Boxes, as shown on the Plans, as specified, and/or directed.
- B. 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 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.

##### 1.02 REFERENCES

- A. NEMA
- B. UL. (Specifically UL 514A)
- C. NFPA 70

##### 1.03 SUBMITTALS

- A. Product Data: Catalog sheets, specifications and installation instructions.
  - 1. For fire rated construction, prove that materials and installation methods proposed for use are in accordance with the listing requirements of the classified construction.
- B. Shop Drawings: Plans, elevations, sections, and details for all custom enclosures and cabinets

##### 1.04 GENERAL REQUIREMENTS

- A. Section 26 05 01, "Electrical General Requirements", applies to this Section, with the additions and modifications specified herein.

## PART 2 - PRODUCTS

### 2.01 GALVANIZED STEEL OUTLET BOXES

- A. Standard galvanized steel boxes and device covers by Appleton Electric Co., Cooper/Crouse-Hinds, Hubbell, or approved equal.

### 2.02 GALVANIZED STEEL JUNCTION AND PULL BOXES

- A. Code gage, galvanized steel screw cover boxes by Hoffman Enclosures Inc., Hubbell Wiegmann, or approved equal

### 2.03 THREADED TYPE BOXES

- A. Outlet Boxes: For Dry, Damp Locations: Zinc electroplate malleable iron or cast iron alloy boxes by Appleton Electric Co., Cooper/Crouse-Hinds Co., or approved equal with zinc electroplate steel covers to suit application. For classified spaces, provide outlet boxes rated for Class I, Div. 1, group D hazardous areas as manufactured by Crouse-Hinds, Appleton or approved equal.
- B. For Wet Locations: Malleable iron or cast iron alloy boxes with hot dipped galvanized or other specified corrosion resistant finish as produced by Cooper/Crouse-Hinds (hot dipped galvanized or Corro-free epoxy powder coat), or OZ/Gedney Co. (hot dipped galvanized), with stainless steel cover screws, and malleable iron covers gasketed to suit application.
- C. Junction and Pull Boxes:
  - 1. For Dry, Damp Locations: Zinc electroplate cast iron boxes by Appleton Electric Co., Cooper/Crouse-Hinds, or approved equal with zinc electroplate steel or cast iron cover.
  - 2. For Wet Locations: Cast iron boxes by Cooper/Crouse-Hinds' (hot dipped galvanized or Corro-free epoxy powder coat), or OZ/Gedney Co. (hot dipped galvanized), or approved equal, with stainless steel cover screws and cast iron cover gasketed to suit application.
  - 3. For classified spaces, provide junction and pull boxes rated for Class I, Div. 1, group D hazardous areas as manufactured by Crouse-Hinds, Appleton or approved equal.
- D. Conduit Bodies, Threaded (Provided with a Volume Marking):
  - 1. For Dry, Damp Location: Zinc electroplate malleable iron or cast iron alloy bodies with zinc electroplate steel covers; Appleton Electric Co.'s Unilets, Cooper/Crouse-Hinds' Condulets, or approved equal.
  - 2. For Wet Locations: Malleable iron or cast iron alloy bodies with hot dipped galvanized or other specified corrosion resistant finish; Cooper/Crouse-Hinds' Condulets (hot dipped galvanized or Corro-free epoxy power coat), or OZ/Gedney Co.'s Conduit Bodies (hot dipped galvanized) or approved equal, with stainless steel cover screws and malleable iron covers gasketed to suit application.

3. For classified spaces, provide outlet conduit bodies rated for Class I, Div. 1, group D hazardous areas as manufactured by Crouse-Hinds, Appleton, or approved equal.

## 2.04 SPECIFIC PURPOSE OUTLET BOXES

- A. As fabricated by manufacturers for mounting their equipment.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. Before proceeding with the installation of junction and pull boxes, check the locations with the Director's Representative and have same approved.

### 3.02 INSTALLATION

- A. Mounting Position of Wall Outlets For Wiring Devices: Unless otherwise indicated, install boxes so that the long axis of each wiring device will be vertical.
- B. Height of Wall Outlets: Unless otherwise indicated, locate outlet boxes with their center lines at the following elevations above finished floor:

Switches	4'-0"
Single & Duplex Receptacles	1'-6"
Special Purpose Receptacles	4'-0"
Telephone/Data Outlets	1'-6"
Telephone Outlets (Wall Phones)	4'-0"
Above-Counter Devices	8" Above Counter
Fire Alarm Manual Station	4'-0"
Fire Alarm Notification Device	7'-0"

- C. Wall Outlet Location: Locations shown on drawings are approximate only. Locate wall outlet boxes as near to position indicated as possible, but so as to avoid conflicts with other trades (architectural, mechanical, plumbing, structural, etc.).
- D. Where devices of different mounting heights are shown on drawings at same location, align outlet boxes along a common vertical line.
- E. Outlet boxes in a common wall serving separate rooms shall not be installed back-to-back.
- F. Outlet boxes shall be sized to accommodate the device that is to be installed.
- G. Provide box extensions and/or trim rings as required to accommodate construction of wall/ceiling in which boxes are recessed.

- H. Supplementary Junction and Pull Boxes: In addition to junction and pull boxes indicated on the drawings and required by NFPA 70, provide supplementary junction and pull boxes as follows:
  - 1. When required to facilitate installation of wiring.
  - 2. At every third 90 degree turn in conjunction with raceway sizes over 1 inch.
  - 3. At intervals not exceeding 100 feet in conjunction with raceway sizes over 1 inch.
- I. All Junction and Pull Boxes shall have a screw-on cover plate. Cover plate shall match box material and construction.
- J. Junction and Pull Boxes shall be installed in locations that are readily accessible, and shall not be blocked by equipment, piping, ducts, structural supports, etc.

### 3.03 OUTLET, JUNCTION, AND PULL BOX SCHEDULE

- A. Boxes For Concealed Conduit System:
  - 1. Non-Fire Rated Construction:
    - a. Depth: To suit job conditions and comply with NFPA 70 Article 370.
    - b. For Lighting Fixtures: Use galvanized steel outlet boxes designed for the purpose.
      - 1) For Fixtures Weighing 50 lbs. or Less: Box marked "FOR FIXTURE SUPPORT".
      - 2) For Fixtures More Than 50 lbs: Box listed and marked with the weight of the fixture to be supported (or support fixture independent of the box).
    - c. For Ceiling Suspended Fans:
      - 1) For Fans Weighing 35 lbs or Less: Marked "Acceptable for Fan Support."
      - 2) For Fans Weighing More Than 35 lbs, up to 70 lbs: Marked "Acceptable for Fan Support up to 70 lbs (or support fan independent of the box)."
    - d. For Junction and Pull Boxes: Use galvanized steel boxes with flush covers.
    - e. For Switches, Receptacles, Etc:
      - 1) Plaster or Cast-In-Place Concrete Walls: Use 4 inch or 4-11/16 inch galvanized steel boxes with device covers.
      - 2) Walls Other Than Plaster or Cast-In-Place Concrete: Use type of galvanized steel box which will allow wall plate to cover the opening made for the installation of the box.
- B. Boxes For Exposed Conduit System:
  - 1. Dry and Damp Locations: Use zinc electroplate or hot dipped galvanized threaded type malleable iron or cast iron alloy outlet, junction, and pull boxes or conduit bodies provided with a volume marking in conjunction

with ferrous raceways unless otherwise specified or indicated on the drawings.

- a. Galvanized steel boxes may be used in conjunction with conduit sizes over 1 inch in non-hazardous dry and damp locations.
  - b. Galvanized steel boxes may be used in conjunction with electrical metallic tubing where it is allowed (specified) to be installed exposed as branch circuit conduits at elevations over 10'-0" above finished floor.
2. Wet Locations: Use threaded type malleable iron or cast iron alloy outlet junction, and pull boxes or conduit bodies (provided with a volume marking) with hot dipped galvanized or other specified corrosion resistant coating in conjunction with ferrous raceways unless otherwise specified or indicated on the drawings.
- a. Use corrosion resistant boxes in conjunction with plastic coated rigid ferrous metal conduit.
- C. Specific Purpose Outlet Boxes: Use to mount equipment when available and suitable for job conditions. Unless otherwise specified, use threaded type boxes with finish as specified for exposed conduit system, steel (painted) for surface metal raceway system and galvanized steel for recessed installations.

### 3.04 LABELING

- A. Identify junction and pull boxes for system served (i.e. power, lighting, fire alarm, telephone, data, public address, nurse call, etc.), using stencil lettering on box cover.
- B. Identify panelboard and circuit number of all conductors contained within junction and pull boxes, using stencil lettering on box cover.

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".

B. Laboratory Tests:

1. 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
8. Manhole frame and cover handhole frame and cover
9. Sealing material for precast manhole and handhole joints
10. Telephone pedestals
11. Precast manholes and handholes: Calculations and shop drawings for precast manholes and handholes shall bear the seal of a registered professional engineer.
  - a. Material description (i.e.,  $f_c$  and  $f_y$ )
  - b. Manufacturer's printed assembly and installation instructions
  - c. Design calculations
  - d. Reinforcing shop drawings prepared in accordance with ACI 315
  - e. Plans and elevations showing opening and pulling-in iron locations and details
  - f. Pulling-in iron

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:

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. Direct Burial System: Bury cables directly in earth, except under railroad tracks, paved areas, and roadways; install cables in conduit encased in concrete. Slope ducts to allow drainage. Trenches in which the cables are placed shall be excavated by hand or with mechanical trenching equipment. Provide a minimum cable cover of 24 inches below finished grade for power conductors operated at less than 600 volts. Trenches shall be not less than 6 inches wide, and shall be in straight lines between cable markers. Bends in trenches shall have a radius of not less than 36 inches. Where two or more cables are laid parallel in the same trench, space cables laterally at least 3 inches apart. If rock is encountered, remove rock to a minimum depth of 3 inches below the cable and fill the space with sand or clean earth free from particles larger than 1/4 inch. Cables shall not be unreeled and pulled into the trench from one end. However, the cable may be unreeled on grade and lifted into position. Provide a plastic warning tape as specified herein.

1. Cables crossing other cables or metal piping shall be separated from the other cables or pipe by not less than 3 inches of well-tamped earth.
  2. Cables shall be in one piece without splices between connections except where the distance exceeds the lengths in which the cable is furnished.
  3. Bends in cables shall be not less than those specified in NFPA 70 for the type of cable specified.
- D. Horizontal slack of approximately 3 feet shall be left in the ground on each end of cable runs, on each side of connection boxes, and at all points where connections are brought above ground. Where cable is brought aboveground, leave additional slack to make necessary connections. 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. Hydraulic jet method shall not be used.

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.
- E. 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. 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.
  2. 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.
  3. 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.
4. 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.
  5. 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.
  6. 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.
  7. 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.
  8. Concrete for Electrical Requirements: Shall be composed of fine and coarse aggregate, Portland cement, and water proportioned and mixed to produce a plastic, workable mixture. Fine aggregate shall be of hard,

dense, durable, clean, and uncoated sand. The coarse aggregate shall be 3/16 inch to 1 inch size. The fine and coarse aggregates shall not contain dirt, vegetable matter, soft fragments, or other deleterious substances. Water shall be fresh, clean, and free from salts, alkali, organic matter, and other impurities. Concrete shall be 4,000 psi minimum ultimate 28-day compressive strength. Slump shall not exceed 4 inches. Retempering of concrete will not be permitted. Exposed, unformed concrete surfaces shall be given a smooth, wood float finish. Concrete shall be cured for a period of not less than 7 days, and concrete made with high early strength Portland cement shall be repaired by patching honeycombed or otherwise defective areas with cement mortar as directed. Air entrain concrete exposed to weather using an air-entraining admixture conforming to ASTM C260. Air content shall be between 4 and 6 percent.

- 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 BURIED [ELECTRIC] [TELEPHONE] CABLE 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.

- I. Excavating, Backfilling, and Compacting: Provide under this Section as specified in Section 31 23 18, "Excavation".
- J. 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.
- K. Grounding: Shall be per Section 26 05 26, "Grounding".
- L. 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.

### 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 5 working days prior to each test. 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 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.

## 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: 150 Degree C. Rise Transformers: Reduced average winding temperature rise of 150 degrees C. over 40 degrees C maximum ambient temperature with transformer utilizing a Class 220 insulation system.

## 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, bolt-on 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, 3R.

## 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.

### 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 20 percent 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 31 05 11

### GRANULAR FILL

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. Section includes material requirements and gradations for all aggregates, as called on the Plans.
- B. Aggregate mixes including in this specification include:
  - 1. Granular Fill.
  - 2. Pipe Bedding.
- C. Related work specified elsewhere:
  - 1. Section 31 05 17, Select Fill Materials.
  - 2. Section 31 23 18, Excavation.
  - 3. Section 33 42 13, Pipe Culverts.

##### 1.02 REFERENCES

- 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. C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
    - c. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup>).

##### 1.03 SUBMITTALS

- A. Materials Source: Name of imported materials suppliers.
- B. The Contractor shall submit to the Engineer for approval a certified sieve analysis, modified proctor and the minimum and maximum relative densities as determined by an independent testing laboratory for each granular fill material, at no cost to the Owner.

## 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 uniform and free from any organic or other deleterious materials
- B. Only crushed stone will be acceptable as granular fill. No crushed gravels or blended products will be acceptable.

### 2.02 MATERIALS

- A. Granular Fill: Crusher Run Stone Conforming to New York State Department of Transportation Standard Specifications.
- B. Pipe Bedding:
  - 1. Pipe bedding shall consist of granular fill material compacted to a minimum 95% of the modified proctor dry density.

## PART 3 – EXECUTION

### 3.01 PLACEMENT

- A. The material shall be spread in horizontal layers so that the maximum thickness of any layer after compaction shall not exceed twelve (12) inches. Compaction shall be by traveling vibrators or other approved method and shall be to a minimum dry density of ninety percent (90%) of the maximum dry density or ninety-five percent (95%) around structures and for all pipe bedding, as determined by the Modified Proctor Test, ASTM D1557 unless otherwise specified. Each layer shall be thoroughly compacted before placement of overlying layers. If adequate compaction is not achieved, the Contractor shall reduce the lift thickness, moisture condition and/or modify their compaction methods until acceptable results are achieved.

### 3.02 FIELD TESTING AND QUALITY CONTROL

- A. The Contractor shall employ an approved commercial testing laboratory at the Contractor's own expense to conduct the compaction tests (ASTM D6938).

- B. Each layer shall be tested, and approved by the Engineer before succeeding layers are placed. A minimum of one field density test shall be made each day and/or for each fifty (50) cubic yards of material placed and/or as shown or specified in the drawings.
- C. The following reports in quadruplicate shall be submitted directly to the Engineer:
  - 1. Report and Certification of Gradation.
  - 2. Field Density Reports.
- D. Based on the reports of the testing laboratory and inspection, if the subgrade or fills which have been placed and compacted are below the specified density, the Engineer will ask for additional compaction and testing at the expense of the Contractor.

END OF SECTION

## SECTION 31 05 12

### COMMON FILL

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Common Fill Material, as shown on the Plans, as specified, and/or directed.
- B. Work under this Section shall include, but not necessarily be limited to excavating, processing, moisture conditioning, transporting, dumping, spreading, compacting, and testing common fill material in the locations and to the depths and grades shown on the Contract Drawings or as directed by the Engineer.
- C. Common Fill will be used for pipe backfill, general grading, and in other locations as indicated in the Contract Drawing or as directed by the Engineer.

##### 1.02 SUBMITTALS

- A. The Contractor shall submit to the Engineer a pre-qualification certified sieve analysis, Atterberg limits, moisture content and Modified Proctor Compaction Test as determined by an independent testing laboratory. All tests shall be performed in accordance with the methods outlined in this Section unless otherwise approved by the Engineer.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Common Fill Material shall be uniform natural soil, free from excessive moisture, frost, stumps, trees, roots, sod, muck, marl, vegetable matter or other unsuitable deleterious materials.
- B. Common Fill used in construction shall be on-site soil taken from the on-site soil borrow area. Stones, if any, shall not exceed six (6) inches in greatest dimension. All materials shall be suitable for compaction in layers not exceeding twelve (12) inches in loose thickness and shall remain stable when wet. Soil amendments or mixing of various soil types will not be acceptable.
- C. Barrier Protection Layer: Where pipe trenching extends into capped landfill areas, the Contractor shall re-use barrier protection soils excavated during trenching. Soils must be separated during excavation and be free of topsoil, stones exceeding two (2) inches, and any deleterious materials during placement. Stones, if any,



shall not exceed two (2) inches in the greatest dimension. All materials shall be suitable for compaction in a maximum loose lift thickness of 12 inches and shall remain stable when wet. If necessary, the barrier protection layer can be replaced with screened common fill. Common fill for use in replacement and repair of the barrier protection layer shall possess a maximum permeability of  $1.0 \times 10^{-5}$  cm/sec at a minimum of 90 percent Modified Proctor compaction and optimum moisture content. All soils intended for re-use in the barrier protection layer must be visually inspected and approved by the Engineer.

## PART 3 - EXECUTION

### 3.01 PLACEMENT

- A. The entire surface to be covered with common fill shall be stripped of all grass, vegetation, top soil, rubbish, or other unsuitable materials before backfilling. All areas shall be proof rolled prior to the placement of any embankment materials to the satisfaction of the Engineer.
- B. In general, common fill shall be placed in horizontal layers not exceeding twelve (12) inches in loose thickness and shall be compacted according to the criteria and tolerances of Article 3.03. Stones, if any, shall not exceed six (6) inches in greatest dimension and shall be well distributed throughout the mass.
- C. Where common fill is to be constructed across ground which will not support the weight of the construction equipment, the unsuitable soils shall be excavated and replaced with suitable backfill as approved by the Engineer, at no additional cost to the Owner.
- D. Where trenching extends into un-capped landfill limits, the Contractor shall grade all working areas to a smooth, uniform surface upon completion of work. All working areas shall have a minimum thickness of 12 inches of intermediate cover over the waste surface and atop newly installed pipe.
- E. For barrier protection layer construction, the material shall be placed in two nine (9) inch lifts of final compacted thickness. Barrier protection soil placement within pipe trenches shall be compacted with an approved compaction device. Refer to Sections 31 05 19.26 and 31 05 19.31.
- F. Specific equipment requirements and procedures will be strictly enforced for placement of common fill above geosynthetic materials. The technical specifications 31 05 19.26, "Geocomposites" and 31 05 19.31 LLDPE, "Geomembrane Liner" shall be completely followed by the Contractor prior to any soil placement or excavation on sloping sections of the landfill. Failure to conform to the soil placement procedures by the Contractor may result in slope

in-stability and potential for significant damage to the underlying geosynthetic materials. Any damage to the underlying geosynthetic materials shall be repaired/replaced at the Contractor's sole expense.

- G. Each layer of common fill material shall be thoroughly rolled to the required degree of compaction by an approved compaction device. Successive layers shall not be placed until the layer under construction has been thoroughly compacted and visually inspected.
- H. Trucks or other heavy equipment shall not be operated over pipelines until a minimum of twenty-four (24) inches of backfill above the crown of the trenched pipe has been placed and properly compacted.
- I. Where required, the Contractor shall, at his own expense, moisture condition the fill to meet the compaction requirements of the specification. If, due to rain or other causes, the material is too wet for satisfactory compaction, it shall be allowed to dry, reworked or be removed as required, before compaction, at no additional cost to the Owner.

### 3.02 FIELD TESTING AND QUALITY CONTROL

- A. Common fill placed within active and future roadways shall be compacted to a minimum of (90) percent of the maximum Modified Proctor Compaction Test, ASTM D1557. Modified Proctor and Grain Size Analyses (ASTM D6913) shall be performed for each source of material intended for fill placement by an independent testing laboratory at the Contractor's expense.
- B. In-place density will be visually approved by the Engineer for the common fill and barrier protection materials located outside of roadway areas with field density tests performed as requested by the Engineer at the Contractor's expense.
- C. Common fill shall be constructed to such heights as to make allowance for after-construction settlement and any settlements which occur before final acceptance of the Contract shall be corrected to make the backfill conform with the established lines and grades.

### 3.03 CRITERIA AND TOLERANCES

- A. Criteria and tolerances of common fill are as follows:
  - 1. Compaction – a minimum of 90 percent of the maximum Modified Proctor.
  - Permeability – A maximum of  $1.0 \times 10^{-5}$  cm/sec as determined by ASTM D5084 for the barrier protection layer

END OF SECTION

## SECTION 31 05 17

### SELECT FILL MATERIALS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Select Fill Materials as shown on the Plans, as specified, and/or directed.
- B. Work under this Section shall include furnishing, transport, dumping, placement, and testing of Select Fill Materials in the areas and to the depths and grades shown on the engineering drawings and/or directed by the Engineer.

##### 1.02 USAGE

- A. Type (E) – Select fill material will be used to construct and repair the capping system toe drain, diversion swale outlets, or as directed by the Engineer.
- B. Type (F) – Select fill material will be used to construct vertical gas wells, or as directed by the Engineer.

##### 1.03 SUBMITTALS

- A. The Contractor shall submit to the Engineer for approval a certified sieve analysis, the minimum permeability, calcium carbonate content (where applicable), and the minimum and maximum relative densities as determined by an independent testing laboratory for each type of Select Fill Material, at no cost to the Owner. All tests will be performed in accordance with the methods outlined in Article 2.01.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Select fill materials shall be of the types listed below:
  - Type (E) – Select Fill
  - Type (F) – Select Fill
- 1. Type (E) – Select fill shall consist of clean, screened, durable, sharp-angled fragments of gravel of uniform quality, conforming to the gradation shown below:

<u>% Passing By Weight</u>	<u>Sieve</u>
100	2"-1/2"
70 – 100	2"
10 – 40	1"
0 – 5	3/8"
0 – 3	#200

In addition, this material must be free of organic material and coatings, and possess a minimum permeability of  $1.0 \times 10^{-1}$  cm/sec at a relative density of 90 percent. Modifications to the intermediate sieve gradations may be submitted for review and approval by the Engineer.

2. Type (F) – Select fill shall consist of clean, sound, rounded stone, conforming to the gradation shown below:

<u>% Passing By Weight</u>	<u>Sieve</u>
80 - 100	3-1/2"
50 – 100	2-1/2"
0 – 5	1/2"
0 – 3	#200

In addition, this material must be free of organic material and coatings, and possess a minimum permeability of  $5.0 \times 10^{-1}$  cm/sec at a relative density of 90 percent. Modifications to the intermediate sieve gradations may be submitted for review and approval by the Engineer.

- B. Special Considerations:
  1. Material to be utilized for Type F Select Fill shall have a calcium carbonate content of less than 15% as determined by the methodology outlined in ASTM D3042. The test shall be tested to the procedures outlined in ASTM D3042 utilizing distilled vinegar in place of the specified 6M hydrochloric acid.

## PART 3 - EXECUTION

### 3.01 PLACEMENT

- A. Select fill materials shall be installed in accordance with Specification Section 31 23 18, "Excavation", except as modified herein.

- B. For all Select Fill Materials, the following preparation and inspection shall be conducted prior to placement:
  - 1. Ensure all placement procedures do not damage any underlying soil, geosynthetic layers or related piping. Equipment must access on approved temporary haul roads.
  - 2. Verify stockpiled material to be used is approved for the particular layer.
  - 3. Verify areas to be filled are properly compacted and all geosynthetics are in place.
  - 4. Verify areas to be backfilled are free of debris, snow, ice or water and ground surfaces are not frozen.
  - 5. Re-use of Type E Select Fill where capping system toe drain disturbance is require will be allowed. Stone must be kept separate from other materials and be kept clean. Any materials that become contaminated with fines or any deleterious materials shall be replaced by the Contractor at no additional cost to the Owner.
- C. For Types (E) and (F), select fill material, the following specific placement procedures shall be followed:
  - 1. Place select fill to contours, elevations and depths shown on Contract Drawings. Use unfrozen materials.
  - 2. Refer to Section 31 05 19.31 for placement of select fill over LLDPE Lining Materials.

### 3.02 FIELD TESTING AND QUALITY CONTROL

- A. In-place density will be visually approved by the Engineer for the select fill materials with field density tests performed as requested by the Engineer at the Contractor's expense.
- B. The Contractor shall perform one grain size analysis (ASTM C136/ASTM C117) and one laboratory permeability test (ASTM D2434) for every 1,000 cubic yards of stockpiled material as it is being delivered to the site.

### 3.03 CRITERIA AND TOLERANCES

- A. Acceptance criteria of the select fill material are as listed in Article 2.01.

END OF SECTION

## SECTION 31 05 19.23

### GEOSYNTHETIC CLAY LINERS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials, and equipment for the supply and installation of a reinforced, needle-punched, Geosynthetic Clay Lining Material (GCL), as shown on the Plans, as specified, and/or directed.
- B. The Contractor shall supply all GCL for the project.

##### 1.02 USAGE

- A. The GCL layer has been used in the landfill capping system on areas where the slope is less than 25%. The GCL is bound by 12 inches of intermediate cover material below and a textured 40 mil Linear Low Density Polyethylene (LLDPE) geomembrane above. All existing GCL damaged or disturbed during construction shall be repaired or replaced by the Contractor.

##### 1.03 REFERENCES

- A. Geosynthetic Research Institute (GRI), GCL3 “Test Methods, Required Properties, and Testing Frequencies of Geosynthetic Clay Liners (GCLs),” Revision 5, November 21, 2019.

##### 1.04 SUBMITTALS

- A. Prior to the installation or delivery of GCL, the Contractor shall submit to the Engineer, from the geosynthetic manufacturer, a list of guaranteed “minimum average roll values” (MARV) for the GCL in accordance with Article 2.01. The Contractor shall provide, from the manufacturer, a written certification stating that the geosynthetic material meets or exceeds the guaranteed properties submitted.
- B. All manufacturer’s quality control data as stated in Article 2.02 shall be provided by the Contractor.

##### 1.05 DELIVERY, HANDLING AND STORAGE

- A. The finished GCL product shall be wrapped and adequately secured with a black or blue polyethylene protective cover in order to provide protection from ultra violet degradation.

- B. All delivered GCL rolls shall be visually inspected and approved by the Engineer prior to installation. If damage or defects are present, the GCL roll shall be unwrapped until sheet quality is identified to be satisfactory by the Engineer.
- C. The rolls of GCL shall be stored in their original unopened wrapped cover or temporary wrapping, in a clean, dry area. The material shall be stored off the ground on pallets or other suitable materials and shall be covered with a heavy protective tarpaulin or stored beneath a roof. Care shall be used to keep the GCL rolls clean, dry and free from debris prior to installation.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. The GCL shall be prefabricated in a manufacturing facility with a uniform layer of natural sodium bentonite (bentonite). The layer of bentonite shall be encapsulated between one woven and one nonwoven geotextile. The GCL shall be a reinforced GCL, with the upper and lower geotextiles needle-punched together. Acceptable reinforced GCL products include Bentomat ST, as manufactured by Colloid Environmental Technologies Company (CETCO), or an approved equal.
- B. Required GCL Material Specifications:
  - 1. The primary component of the GCL is high quality sodium bentonite (montmorillonite). The bentonite used to manufacture the GCL must demonstrate the following criteria:
    - a. Natural Sodium Bentonite - at least 90% montmorillonite content by weight when tested with x-ray defraction
    - b. Mass Per Unit Area at 0% Moisture - 0.75 lb/ft<sup>2</sup> (ASTM D5993)
    - c. Swell Index – 24 ml/2 g minimum (ASTM D5890)
    - d. Fluid Loss – 18 ml maximum (ASTM D5891)
  - 2. The upper and lower geotextile materials shall protect the bentonite but shall be sufficiently porous to allow bentonite flow-through the geotextile upon hydration with a minimum loading of 5 psi.
- C. Finished GCL Product:
  - 1. The GCL material shall meet the minimum Specification values listed below:

PROPERTY	TEST METHOD	REQUIRED VALUES
Grab Strength	ASTM D6768	23 lbs/in (MD)
Peel Strength	ASTM D6496	2.1 lbs/in (MD)
Permeability <sup>(1)</sup>	ASTM D5887	5 x 10 <sup>-9</sup> cm/sec (max.)
Hydrated Internal Shear Strength <sup>(2)</sup>	ASTM D6243	500 psf (Typ.)
<sup>(1)</sup> Measure with a minimum confining stress of 80 psi, 77 psi head pressure, and 75 psi tail pressure.		
<sup>(2)</sup> Peak value measured at 200 psf normal stress.		

2. The bentonite content of any random sample from each roll shall have a MARV value of 0.75 lb/sq ft calculated at a 0% moisture content, exclusive of weight of adhesives.
3. Documentation must be provided by the manufacturer ensuring that each roll of GCL has been inspected for the presence of broken needles using an in-line metal detector.

D. Labeling GCL Rolls:

1. Labels on each roll will identify:
  - a. The manufacturer
  - b. The length and width of the roll panel
  - c. The weight of the roll
  - d. Product identification
  - e. Lot number
  - f. Roll panel number
  - g. Label shall be attached to the roll.

## 2.02 MANUFACTURER'S QUALITY CONTROL DATA

A. Raw Materials:

1. The bentonite used to fabricate the GCL shall be sampled and tested upon arrival at the manufacturing plant. A minimum of 1 sample shall be taken from each 50 tons of bentonite delivered. Raw material having test results outside the allowable criteria (Article 2.01), shall be rejected and not used in the production of GCL for this project. The following tests shall be performed on each sample:
  - a. Fluid Loss (ASTM D5891)
  - b. Swell Index (ASTM D5890)
2. All test results shall be reported and submitted to the Engineer for review and approval. Any sample not conforming to the specified criteria is cause for the material to be rejected. Additional samples will be taken from the same production run to determine the limit of the defective run.



- B. Finished Product:
1. Each roll shall be weighed upon production. The roll weight, length, width and lot number shall be recorded on the label attached to the roll.
  2. The following tests shall be performed by the Manufacturer at the minimum frequency shown with the results reported to the Engineer for approval:
    - a. Bentonite Content (ASTM D5993) (the mass per unit area at a 0% moisture content) - every 40,000 square feet
    - b. Grab Strength (ASTM D6768) - every 200,000 square feet
    - c. Peel Strength (ASTM D6496) - every 40,000 square feet
    - d. Permeability - verified by weekly Index Flux Test (ASTM D5887)
    - e. Hydrated Internal Shear Strength (ASTM D5321 and D6243)
      - 1) verify using Peel Strength as an indicator of internal shear strength
  3. At a maximum of every 750,000 square feet of material produced, a triaxial permeability test shall be performed using the falling head method with a 4 inch flexible wall permeameter (ASTM D5084). The material shall be fully hydrated prior to permeation and permeated at 80 psi confining pressure, 77 psi head pressure, and 75 psi tail pressure.
  4. If any test results on the finished product do not fall within the acceptable criteria, additional samples shall be cut and tested from the two adjacent rolls before and after the defective roll. If both rolls are found to be acceptable, the defective roll will be scrapped. If either one of the adjacent rolls fail the quality control testing, additional samples will be taken to isolate the sub-standard region of the production run, and the defective rolls will be scrapped.
- C. All required quality control documentation of the specific GCL lots dedicated for this project will be certified and signed by the Quality Control Manager at the manufacturing plant. This information will be submitted to the Engineer for approval at no additional expense to the Owner. This documentation will include results from the quality control testing of the raw bentonite and the finished GCL product as outlined in this Section.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Earthwork
1. Installation of the GCL shall not begin until a proper subbase has been prepared and accepted by the Engineer and the Installer that the final soil surface on which the GCLs are to be installed are acceptable.
  2. The exposed subgrade material shall be free from loose earth, protruding rocks larger than 3/8 inches, debris and other foreign matter. The surface upon which the GCL is to be placed shall be maintained in a firm, clean, dry and smooth condition during GCL installation.

B. Placement

1. The GCL will be installed with the nonwoven geotextile side up.
2. Installation of the GCL panel will be according to the Contract Drawings.
3. The method of placement must ensure that:
  - a. No equipment used will damage the GCL by handling, trafficking, or other means. Equipment, including ATVs, will not be allowed to travel directly on the material during the installation of overlying soils or geosynthetic layers unless otherwise determined by the Engineer.
  - b. No personnel working on the GCL will smoke, wear damaging shoes, or engage in other activities which could damage the GCL.
  - c. The prepared surface underlying the GCL must not be allowed to deteriorate after acceptance and must remain acceptable up to the time of GCL placement and until completion of the project.
  - d. The GCL shall not be installed in standing water or during rain. The GCL must be dry when installed and must be dry when covered with the overlying geomembrane and cover soils/aggregate. Any GCL that becomes wet and/or hydrated during or following placement as determined by the Engineer shall be removed and replaced at the Contractor's expense. The damaged GCL shall not be reused for this project and shall be removed from the site. Overlaying hydrated GCL with additional panels will not be acceptable.
  - e. The GCL shall be installed in a relaxed condition and shall be free of tension or stress upon completion of the installation. Stretching of the GCL to fit will not be allowed. The GCL shall be straightened to smooth out creases or irregularities.
  - f. The Engineer shall verify all seam overlaps and bentonite beads prior to the placement of overlying materials.
4. The Contractor will be liable for all damages to the materials during handling and storage of the material at the site until final acceptance of the project by the Owner.

C. Installation:

1. Existing GCL damaged or disturbed during construction shall be replaced or repaired by covering with sufficient additional liner to provide a twelve inch overlap on all adjoining liner. Dry granular bentonite shall be applied around the damaged area prior to placement of the patch. The bentonite shall be applied at a minimum application rate of one quarter pound per lineal foot.

3.02 POST-CONSTRUCTION

1. The GCL will be covered with a 40 mil textured LLDPE geomembrane 31 05 19.31.

2. Once the GCL is covered by a geomembrane, it will be the Contractors responsibility to ensure that no water can travel underneath the geomembrane and prematurely hydrate any existing GCL. Should existing GCL becomes wet or hydrated as determined by the Engineer, the Contractor, at their own expense, shall remove the geomembrane, remove the damaged GCL, replace the damaged GCL, and cover the replaced GCL. The damaged GCL shall not be reused for this project and shall be removed from the site.
3. Any leading edge of panels of GCL left unprotected must be covered with a heavy, waterproofing tarp which is adequately secured and protected with sand bags or other ballast.

END OF SECTION

## SECTION 31 05 19.24

### GEOTEXTILES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials, and equipment for the installation of Geotextile as shown on the Plans, as specified, and/or directed.

##### 1.02 REFERENCES

- A. Geosynthetic Research Institute, GT12(a) "Test Methods and Properties for Nonwoven Geotextiles Used as Protection (or Cushioning) Materials (ASTM)," Revision 2, March 3, 2016.
- B. Geosynthetic Research Institute, GT13(a) "Test Methods and Properties for Geotextiles Used as Separation Between Subgrade Soil and Aggregate (ASTM)," Revision 4, June 20, 2017.

##### 1.03 SUBMITTALS

- A. Prior to the installation or delivery of a geotextile, the Contractor shall submit to the Engineer, from the geosynthetic manufacturer, a list of guaranteed "minimum average roll values" (MARV) for the geotextile. The Contractor shall provide, from the manufacturer, a written certification stating that the geosynthetic material meets or exceeds the guaranteed properties submitted.

##### 1.04 DELIVERY, STORAGE, AND HANDLING

- A. All geotextiles will be inspected on delivery, and materials that do not comply with the Specification will be rejected. The Contractor shall furnish all labor required to handle the geotextiles during inspection and shall remove the rejected material from the site. Stockpiling of geosynthetics, specifically allowable height and surfaces, shall be in accordance with the manufacturer's recommendations.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

#### A. Geotextile:

1. Type 1 and Type 2 geotextile shall be nonwoven, needle-punched, polymeric geotextile. Type 3 geotextile shall be woven geotextile. The fibrous structure of the geotextile must be able to withstand handling, placement and long-term loads associated with the installation.
2. All geotextile shall be protected from ultraviolet light, precipitation, mud, dirt, excessive dust, puncture, cutting and/or other damaging condition prior to and during delivery. All geotextile shall be capable of withstanding 30 days of sunlight without measurable deterioration.
3. Two types of nonwoven geotextiles may be used in or adjacent to landfill liner or capping system construction and shall be supplied by the Contractor. Fabrics shall be similar materials except for the weight and the associated physical properties. Type 1 will be nominal eight oz./square yard or heavier and Type 2 will be a nominal sixteen oz./square yard or heavier fabric. An equivalent substitution may be made subject to the approval of the Engineer. Geotextile Specifications are given in Article 2.02.
4. One type of woven geotextile will be supplied by the Contractor for use in roadway construction. Type 3 geotextile shall be Mirafi 600X, or an approved equal.
5. All geotextiles shall be delivered on site shall be tagged and display the following information.
  - a. Manufacturer's name
  - b. Product identification
  - c. Lot number
  - d. Roll number and dimensions

### 2.02 MANUFACTURER'S QUALITY CONTROL DATA

#### A. Geotextile Specifications:

1. The table below lists the MARV specification values for the geotextiles to be used for the project. In addition, the typical average specification values, as indicated, have been listed. Final approval of the geotextile properties shall be made by the Engineer based upon Contractor's submittals.

## Geotextiles

### Specification Limits:

Property	Type 1	Type 2	Type 3	Test Method
*Mass per Unit Area (oz/yd <sup>2</sup> )	8.0	16.0	N/A	ASTM D5261
**Apparent Opening Size (US Sieve)	70-100	80-100	40	CW-02215 or ASTM D4751
*Grab Strength (lbs)	205	370	315	ASTM D4632
*Grab Elongation (%)	50	50	15	ASTM D4632
*CBR Puncture Resistance (lbs)	535	900	900	ASTM D6241
*Trapezoidal Tear Strength (lbs)	85	145	110	ASTM D4533
*Permittivity (sec <sup>-1</sup> )	1.35	0.6	0.05	ASTM D4491
***Ultraviolet Stability (% Str. Ret. @ 500 hrs)	70	70	70	ASTM D7238
*MARV Values Taken Along Weakest Principal Direction. **Typical Average Values ***Evaluation to be on 2.0 inch strip tensile specimens after 500 hours exposure N/A = Not Applicable				

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. The following procedures and requirements will be followed during the installation of geotextile.
- B. Placement
  1. The placement of the geotextile shall not be conducted during weather conditions that would compromise the installation of the material or underlying materials. The geotextile will be kept dry during storage and up to the time of deployment. During windy conditions, all geotextiles will be secured with sandbags or an equivalent approved anchoring system. Removal of the sandbags or equal will only occur upon placement of an overlying soil layer.
  2. Tools appropriate for cutting geotextile as approved by the Engineer shall be used to cut and size the geotextile materials. Extreme care will be taken while cutting in-place geotextiles.
  3. During the placement of geotextiles, all dirt, dust, sand or mud shall be kept off to prevent clogging. If excessive contaminant materials are present on the geotextile, it shall be cleaned or replaced as directed by the Engineer.

4. No equipment used will damage the geotextiles by handling, trafficking or other means. Equipment, including ATVs, will not be allowed to travel directly on the geotextiles during the installation of overlying soils or geosynthetic layers, unless otherwise approved by the Engineer. Any damage to the material from the equipment shall be repaired by the Contractor at no additional cost to the Owner.

C. Seaming or Joining

1. Geotextiles shall be seamed using either an eighteen inch overlap, by sewing or by fusion welding. The specific conditions requiring a sewn/welded seam or simply an overlap are as follows:
  - a. Type 1, Type 2, and Type 3 geotextile shall be sewn or overlapped according to the criteria below
  - b. In all cases, seams on side slopes will be parallel to the line of slope. No horizontal seams will be allowed on side slopes, except for patching.
  - c. Geotextiles placed on the subgrade, or between two soil layers at less than 10 percent slope may utilize an 18-inch overlap seam.
  - d. Where the slope is greater than 10 percent, and/or directly above a geomembrane, these seams shall be sewn or fusion welded.
2. Sewing will be done using a polymeric thread with chemical compatibility resistance equal to or exceeding the geotextile being sewn. Thread and the sewing device shall be approved by the Engineer prior to its use in the field.
3. Repair of tears or holes in the geotextile will require the following procedures:
  - a. On slopes: A patch made from the same geotextile will 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. Should any tear exceed 10% of the width of the roll, that roll will be removed from the slope and replaced.
  - b. Flat slopes: A patch made from the same geotextile will be spot-seamed in place with a minimum of 24-inch overlap in all directions or sewn in-place as allowed on sloping areas.

END OF SECTION

## SECTION 31 05 19.26

### GEOCOMPOSITES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials, and equipment to supply and install a factory welded/heat laminated Geocomposites consisting of geonet between 6 oz/sq yd nonwoven geotextile (both sides), as shown on the Plans, as specified, and/or directed.

##### 1.02 USAGE

- A. Composite geonet will be used to repair the existing capping system lateral drainage layer.

##### 1.03 REFERENCES

- A. Geosynthetic Research Institute, GN4 "Test Methods, Required Properties and Testing Frequency for Biplanar Geonets and Biplanar Geonet Composites," Revision 4, July 9, 2020.

##### 1.04 SUBMITTALS

- A. Prior to the installation or delivery of composite geonet, the Contractor shall submit to the Engineer, guaranteed properties of the geonet, geotextile, and composite geonet to be used in construction, as outlined in Article 2.02 of this Section. The Contractor shall provide the Engineer, from the manufacturer, a written certification stating that the materials meet or exceed the guaranteed properties submitted.
- B. In addition to submitting guaranteed physical properties, the Contractor shall submit to the Engineer the following documentation:
  - 1. Copies of quality control certificates issued by the raw material supplier.
  - 2. Results of tests conducted to verify the quality of the resin used to manufacture the composite geonet rolls assigned to the project.
  - 3. Certification that no post-consumer reclaimed polymer is added to the resin during manufacturing. Rework material of the same or similar resin type is allowed up to 10%.
  - 4. Manufacturing quality control (QC) certificates for the geotextile material used in composite geonet manufacturing, signed by a responsible party of the manufacturer. QC certificates shall include role numbers and identification and results of QC tests including test methods.



## 1.05 DELIVERY, STORAGE, AND HANDLING

- A. All composite geonet will be inspected on delivery, and materials that do not comply with the Specification will be rejected. The Contractor shall furnish all labor required to handle the composite geonet during inspection and.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Composite Geonet:
  - 1. The composite geonet to be used in the capping system repair shall consist of a profiled mesh made by extruding a minimum of two sets of high density polyethylene strands together to form a bi-planar or tri-planar drainage net, sandwiched between and factory welded/heat-laminated to 6 oz./sq. yd. non-woven geotextile fabric layers (both sides). The resultant structure shall provide a high flow along the plane of the net. Composite geonet shall be produced and/or distributed by Tenax Corporation, SKAPS, or approved equal.
  - 2. The composite geonet shall be protected from mud, dirt, dust, tearing, puncture, or any other damaging condition during shipment and storage. The composite geonet shall be capable of withstanding direct outdoor exposure for at least six months.
  - 3. The composite geonet must be capable of retaining its structure during handling, placement, and long-term loading.
  - 4. The composite geonet shall be delivered tagged with the following information:
    - a. manufacturer's name
    - b. product identification
    - c. lot number
    - d. roll number and dimensions

### 2.02 MANUFACTURER'S QUALITY CONTROL DATA

- A. Geonet Core Typical Specifications:
  - 1. The table below lists the typical specification values for HDPE high compression load geonet. Final approval of geonet properties shall be made by the Engineer based upon Contractor's submittals.

**TABLE 2A**  
**TYPICAL DRAINAGE NET CORE PROPERTIES**

PROPERTY	TEST METHOD	VALUE	UNITS
Thickness	ASTM D5199	270(min.)	Mil
Tensile Strength (MD)	ASTM D7179	60 (min.)	lb/in
Density	ASTM D1505	0.950(min.)	g/cm <sup>3</sup>
Melt Flow Index	ASTM D1238	1.1 (max.)	g/10 min
Carbon Black Content	ASTM D4218	1.5 to 3.0	%

MD = Machine Direction

Geotextile Typical Specifications:

**TABLE 2B**  
**TYPICAL GEOTEXTILE PROPERTIES**

PROPERTY	TEST METHOD	VALUE	UNITS
Mass Per Unit Area	ASTM D5261	6 (MARV)	oz/sy
AOS	ASTM D4751	70 (MaxARV)	US Sieve
Permittivity	ASTM D4491	0.2 (MARV)	sec-1
Grab Tensile Strength	ASTM D4632	157 (MARV)	Lbs
Grab Elongation	ASTM D4632	50 (MARV)	%
Trapezoid Tear	ASTM D4533	55 (MARV)	Lbs
CBR Puncture Strength	ASTM D6241	310 (min.)	Lbs
UV Resistance @ 500 hrs	ASTM D4355	50 (min)	%

MARV = Minimum Average Roll Value

MaxARV = Maximum Average Roll Value

B. Composite Geonet Typical Specifications:

PROPERTY	TEST METHOD	VALUE	UNITS
Ply Adhesion	ASTM D7005	1.0 (min.)	lb/in
Performance Transmissivity	ASTM D4716	See Article 1.06	m <sup>2</sup> /sec

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. The following procedures and requirements will be followed during the installation of composite geonets.
- B. Installation:
  - 1. Tools appropriate for cutting geotextile as approved by the Engineer shall be used to cut and size the composite geonet material. Extreme care will be taken while cutting in-place geosynthetics, to obviate concerns of damaging existing underlying geomembrane liners or geosynthetic materials.
  - 2. During the installation of composite geonets, all dirt, dust, sand or mud shall be kept off to prevent clogging. If contaminant materials are present on the composite geonet, then the net shall be cleaned with water until the contaminants are flushed free. Prior to placement of an overlying barrier protection layer, the Engineer will verify that the geonet is free of potential clogging materials. If excessive contaminant materials are present on the geonet, it shall be cleaned or replaced as directed by the Engineer.
  - 3. The Contractor shall supply the necessary Type 1 geotextile for repairs and covering edges of repaired areas.
- C. Composite Geonet Installation:
  - 1. All composite damaged during construction shall be repaired or replaced. Composite will be repaired/replaced by placing geonet material over the damaged/replacement area with an overlap of 2 feet onto the remaining composite and then tying the patch every 6 inches using an approved tying method. Where damage to a geonet is greater than 50 percent of the roll width, the damaged portion will be removed and a new length of geonet spliced into the open area using the tying procedures above.

END OF SECTION

## SECTION 31 05 19.31

### LLDPE GEOMEMBRANE LINER

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for LLDPE Geomembrane Liner repairs and boots as shown on the Plans, as specified and/or directed. The material shall be a 40 mil LLDPE geomembrane.
- B. The LLDPE geomembrane lining material will be used to repair the existing barrier layer of the Stage 1 and 2 capping systems of the Phase I landfill, and as shown on the Contract Drawings.
- C. The LLDPE geomembrane lining material shall be textured on both sides and shall have smooth edges to accommodate field seaming.
- D. The Contractor shall supply the required LLDPE geomembrane for the project and perform the conformance testing.

##### 1.02 REFERENCES

- A. Geosynthetic Research Institute, GM17 "Test Methods, Test Properties and Testing Frequency for Linear Low Density Polyethylene (LLDPE) Smooth and Textured Geomembranes," Revision 14, March 17, 2021.
- B. Geosynthetic Research Institute, GM19a "Seam Strength and Related Properties of Thermally Bonded Homogeneous Polyolefin Geomembranes/Barriers," Revision 10, March 18, 2021.

##### 1.03 SUBMITTALS

- A. Prior to the installation or delivery of the LLDPE geomembrane lining material, the Contractor shall submit to the Engineer, from the geosynthetic manufacturer, a list of guaranteed "minimum average roll values" (MARV) for the lining material in accordance with Article 2.01. The Contractor shall provide, from the manufacturer, a written certification stating that the material meets or exceeds the guaranteed properties submitted.
- B. The Contractor shall submit detailed shop drawings. Shop drawings shall contain all necessary details, dimensions, penetration fabrications, etc., sufficient to assure that fabrication shall meet the intended use and will conform to the geometry of its intended application.

- C. All manufacturer's quality control data as stated in Article 2.02 shall be provided by the Contractor.
- D. Prior to delivery of material, the Contractor shall submit a sample of the installation warranty to be provided as described in Article 3.03.

#### 1.04 PRE-QUALIFICATIONS

- A. Geomembrane Manufacturer:
  - 1. The Contractor shall submit to the Owner and the Engineer for approval the following qualification information regarding the geomembrane manufacturer:
    - a. Corporate background and information.
    - b. Origin (resin supplier's name) and identification (brand name, number) of the resin.
- B. Installer:
  - 1. The installer must be trained and qualified to install geomembrane and must be approved and/or licensed by the geomembrane manufacturer.
  - 2. The Contractor shall submit to the Engineer for approval the following written information, relative to the installer.
    - a. Corporate background and information.
    - b. Description of installation capabilities, including:
      - 1) information on equipment and personnel
      - 2) quality control procedures
    - c. A list of at least ten completed facilities, totaling a minimum of 3,000,000 square feet for which the installer has installed geomembrane of the type for this project. For each installation, the following information will be provided:
      - 1) name and purpose of facility, its location and date of installation
      - 2) name of contact at the facility who can discuss the project
      - 3) name and qualifications of the supervisor(s) of the installer's crew(s)
      - 4) thickness of geomembrane and surface area of the installed liner
      - 5) type of seaming and type of seaming apparatus used
      - 6) duration of installation
  - 3. All personnel performing seaming operations will be qualified by experience or by successfully passing seaming tests. At least one seamer will have experience seaming a minimum of 3,000,000 square feet of geomembrane of the type for this project, using the same type of seaming apparatus in use at the site.

- C. Sheet Quality:
1. The Contractor shall submit to the Engineer the following information regarding sheet quality and properties.
    - a. A material properties sheet including, at a minimum, all specified properties, measured using test methods indicated in the specifications, or equivalent.
    - b. A list and description of materials other than the base polymer which comprise the geomembrane.
    - c. A written certification that property values given in the properties sheet are guaranteed by the geomembrane manufacturer.
- D. Roll Quality:
1. Prior to shipment, the Contractor will provide the Engineer with a quality control certificate for each roll of geomembrane provided. The quality control certificate will be signed by a responsible party employed by the geomembrane manufacturer, such as the production manager. The Quality Control Certificate will include:
    - a. Roll numbers and identification.
    - b. Documentation certifying the geomembrane was continuously inspected for uniformity, damage, imperfections, holes, cracks, thin spots, foreign materials, tears, punctures and blisters.
    - c. Sampling results of quality control tests; as a minimum, results will be given for thickness, tensile strength, tear resistance and seam strength evaluated in accordance with the methods indicated in the specifications or equivalent methods approved by the Engineer.

#### 1.05 DELIVERY, HANDLING AND STORAGE

- A. The Contractor will be liable for all damages to the materials incurred prior to and during transportation to the site and be responsible for unloading the geomembrane once it arrives on-site.
- B. Handling, storage and care of the geosynthetic materials prior to and following installation at the site, is the responsibility of the Contractor. The Contractor will be liable for all damages to the materials incurred prior to final acceptance of the lining system by the Owner and Engineer.
- C. The Contractor shall notify the Engineer of the anticipated delivery time.
- D. Labeling Geomembrane Rolls:
1. Labels on each roll or factory panel will identify:
    - a. thickness
    - b. length and width
    - c. the Manufacturer
    - d. product identification

- e. lot number
- f. roll number

## 1.06 CONFORMANCE TESTING

- A. Conformance samples shall be taken at the manufacturing facility unless otherwise approved by the Engineer. All conformance test results shall be submitted a minimum of seven days prior to installation. No materials shall be installed until acceptable test results are approved by the Engineer.
- B. At a minimum, tests to determine the following characteristics will be performed on geomembranes:
  - 1. density, ASTM D792/D1505
  - 2. carbon black content, ASTM D1603
  - 3. asperity height, ASTM D7466
  - 4. thickness, ASTM D5994
  - 5. tensile properties, ASTM D6693
- C. Unless otherwise specified, geomembrane samples will be taken at a rate of one per 100,000 square feet.
- D. For each lot number of geomembrane material that arrives at the site, a sample shall be taken by the Contractor and provided to the Owner for archiving. This sample shall be 3.0 feet long by the width of the roll.
- E. Any samples which fail the conformance testing will require the failed material to be removed from site and replaced with new material at the Contractor's expense.

## PART 2 - PRODUCTS

### 2.01 MATERIALS:

- A. Raw Materials
  - 1. Prior to installation of any geomembrane material, the Contractor shall submit to the Engineer the following information regarding resin quality.
    - a. A copy of the Quality Control Certificates issued by the resin supplier.
    - b. Reports on the tests conducted by the Manufacturer to verify the quality of the resin used to manufacture the geomembrane rolls assigned to the considered facility. These tests should include for resins, specific gravity (ASTM D792 Method A), melt flow index (ASTM D1238 Condition E), percent carbon black (ASTM D1603) and percent carbon dispersion (ASTM D3015).
    - c. A statement of origin and identification of raw materials used.

B. LLDPE Geomembrane Minimum Specifications

1. LLDPE liner material shall meet the minimum specification values listed below.

<b>TEXTURED LLDPE GEOMEMBRANE PROPERTIES AND MANUFACTURER'S MINIMUM TESTING FREQUENCIES</b>				
<b>PROPERTY</b>	<b>TEST METHOD</b>	<b>VALUE</b>	<b>UNITS</b>	<b>TESTING FREQUENCY</b>
<b>Thickness (min average nom – 5%)<sup>(1)</sup></b> <b>Lowest Individual for 8 out of 10 values</b> <b>Lowest Individual for any of 10 values</b>	ASTM D5994	40 -10% -15%	mils	per roll
<b>Asperity Height (min average)</b>	ASTM D7466	16	mils	every 2nd roll <sup>(2)</sup>
<b>Density (min average)</b>	ASTM D1505 / D792	0.939	g/cc	200,000 lbs
<b>Tensile Properties (min. average)<sup>(3)</sup></b> Break Strength: Break Elongation:	ASTM D6693, Type IV	60 250	lb/in %	20,000 lbs
<b>2% Modulus (max.)</b>	ASTM D5323	2400	lbs/in.	per each formulation
<b>Tear Resistance (min. average)</b>	ASTM D1004	22	lbs	45,000 lbs
<b>Puncture Resistance (min. average)</b>	ASTM D4833	44	lbs	45,000 lbs
<b>Axi-Symmetric Break Strain (min.)</b>	ASTM D5617	30	%	per each formulation
<b>Carbon Black Content (range)</b>	ASTM D4218 <sup>(4)</sup>	2.0 - 3.0	%	45,000 lbs
<b>Carbon Black Dispersion</b>	ASTM D5596	Note 5	-	45,000 lbs
<b>Oxidative Induction Time (OIT) <sup>(6)</sup></b> Standard OIT (min average) High Pressure OIT (min average)	ASTM D8117 ASTM D5885	100 400	min min	200,000 lbs
<b>Oven Aging at 85°C <sup>(7)</sup></b> Standard OIT (min avg) - % retained after 90 days High Pressure OIT (min avg) - % retained after 90 days	ASTM D5721 ASTM D8117 ASTM D5885	35 60	% %	per each formulation
<b>UV Resistance <sup>(8)</sup></b> Standard OIT (min average) High Pressure OIT (min avg) - % retained after 1600 hrs <sup>(10)</sup>	ASTM D7238 ASTM D8117 ASTM D5885	NR <sup>(9)</sup> 35	%	per each formulation

(1) The manufacturer shall supply 10 values used to calculate the average roll thickness.

(2) Alternate the measurement side for double sided textured sheet.

(3) Machine direction (MD) and cross machine direction (XMD) average values should be on the basis of 5 test specimens each direction.

Break Elongation is calculated using a gage length of 2.0 inches at 2.0 in./min.

(4) Other methods such as D1603 (tube furnace) or D6370 (TGA) are acceptable if an appropriate correlation to D4218 (muffle furnace) can be established.

(5) Carbon black dispersion (only near spherical agglomerates) for 10 different views: 9 in Categories 1 or 2 and 1 in Category 3.



- (6) The manufacturer has the option to select either one of the OIT methods listed to evaluate the antioxidant content in the geomembrane.
- (7) It is also recommended to evaluate samples at 30 and 60 days to compare the 90 day response.
- (8) The condition of the test should be 20 hrs UV cycle at 75°C followed by 4 hrs condensation at 60°C.
- (9) Not recommended since the high temperature of the Std-OIT test produces an unrealistic result for some of the antioxidants in the UV exposed samples.
- (10) UV resistance is based on percent retained value regardless of the original HP-OIT value.

2. LLDPE liner resin material shall meet the following inherent properties listed below:

#### **INHERENT LLDPE RESIN PROPERTIES<sup>(1, 2)</sup>**

<b>PROPERTY</b>	<b>TEST METHOD</b>	<b>VALUE</b>	<b>UNITS</b>
<b>Specific Gravity (max.)</b>	ASTM D1505/D792	0.926	g/mL
<b>Melt Index (max.)</b>	ASTM D1238	1.0	g/10 min

- (1) These properties are primarily inherent in the resin type used to produce polyethylene geomembranes and are not typically included as part of routine quality control testing.
- (2) Resin shall be virgin material with no more than 10% rework.

### **PART 3 - EXECUTION**

#### **3.01 GEOMEMBRANE INSTALLATION**

##### **A. Earthwork**

1. The Contractor shall ensure that all related earthwork requirements under this Section are complied with:
  - a. Geomembrane liners will be installed as shown on the construction drawings. The geomembrane installations will be performed on a firm, smooth, soil or geosynthetic constructed according with the Specifications. The final surface will be free from protruding stones, clumps, sticks or any other material that may puncture the membrane. Installation of the geomembrane on loose or gravelly soils is prohibited.
  - b. No geomembrane will be placed onto an area which has become softened by precipitation or which has cracked due to desiccation. Appropriate methods of subsurface soil moisture control are the responsibility of the Contractor.

B. Installation

1. LLDPE geomembrane will be installed according to the following procedures:
  - a. The method of installation must ensure that:
    - 1) No personnel working on the geomembrane will smoke, wear damaging shoes, or engage in other activities which could damage the geomembrane.
    - 2) The prepared surface underlying the geomembrane must not be allowed to deteriorate after acceptance and must remain acceptable up to the time of geomembrane placement and until completion of the project.
    - 3) Direct contact with the geomembrane will be minimized; i.e., the geomembrane in excessively high traffic areas will be protected by sacrificial geotextiles, extra geomembrane, or other suitable materials.
  - b. The Engineer will assign an "identification number" to each geomembrane repair installed. This number will be consistent with the number used by the installer. The number system used will be simple, logical and identify the relative location in the field.
  - c. To prevent premature hydration, only the amount of GCL that can be inspected, repaired, and covered with geomembrane in the same day shall be installed. Any GCL left uncovered overnight will be removed and replaced at the Contractor's expense.

C. Seaming

1. The seaming procedures below shall be implemented, where applicable, during installation of the geomembrane. The seaming procedures are as follows:
  - a. The area of the geomembrane to be seamed shall be cleaned and prepared according to the procedures specified by the material manufacturer. Any abrading of the geomembrane will not extend more than one-half inch on either side of the weld. Care will be taken to eliminate or minimize the number of wrinkles and repairs resulting from seam orientation.
  - b. Field seaming is prohibited when either the air or sheet temperature is below 32°F or when the sheet temperature exceeds 158°F or when the air temperature is above 104°F. At air or sheet temperatures between 32°F and 40°F seaming shall be conducted directly behind a preheating device. In addition, seaming shall not be conducted when geomembrane material is wet from precipitation, dew, fog, etc., or when winds are sustained in excess of 20 miles per hour.
  - c. Seaming shall not be performed on frozen or excessively wet underlying soil surfaces.

- d. The Contractor shall perform trial seams on excess geomembrane material. A 1 foot by 3 foot seamed liner sample will be fabricated with the seam running down the 3 foot length in the center of the sample. Such trial seaming will be conducted prior to the start of each seaming session for each seaming machine, every 4 hours, or after any significant change in weather conditions or geomembrane temperature. Trial seams shall be performed on each type of weld for each technician and at least once per day of seaming. From each trial seam, two field test specimens will be taken. The test specimens will be 1-inch by 12-inch strips cut perpendicular to the trial seam. These specimens will be peel tested using a field tensiometer, and recorded as pass (failure of liner material) or fail (failure of seam). All trial seaming shall be witnessed by the Engineer. All trial seams shall be passing prior to the start of work on the installation. Test specimens will be considered passing if the minimum values below are met or exceeded for all five test specimens tested.

<u>Field Seam Properties</u>	<u>Specification Limit LLDPE</u>	<u>Test Method</u>
Shear Strength at Yield (lb/in width)	60	ASTM D6392
Peel Strength (lb/in)	50 and Film Tear Bond for Hot Wedge Seams	ASTM D6392
	44 and Film Tear Bond for Extension Filled Seam	ASTM D6392

Unacceptable Focus of Break Patterns

Hot wedges: AD and AD-Brk > 25%

Extrusion Fillet: AD1, AD2, and AD-WLD

- e. Seams will be continuous through the anchor trench, where applicable. Where necessary, patching using the same liner material will be welded to the geomembrane sheet.
- f. Acceptable seaming methods for LLDPE geomembrane are:
- 1) extrusion welding using extrudate with identical physical, chemical and environment properties
  - 2) hot wedge welding using a proven fusion welder and master seamer
- g. Seaming device shall not have any sharp edges which might damage the geomembrane liner. Where self-propelled seaming devices are used, it will be necessary to prevent "bulldozing" of the device into the underlying soil or geosynthetic material.

- h. All “T” seams, including “T” seams to existing materials, shall be patched.

D. Seam Testing

- 1. The Contractor shall perform nondestructive seam testing on 100 percent of all field seams. The following test method and procedures may be used:
  - a. Air pressure testing shall be completed if double track hot wedge welding has been used to seam the geomembrane. Using approved pressure testing equipment, the following procedures will be followed:
    - 1) seal each end of the air channel separating the double hot wedge welds
    - 2) insert pressure needle into air channel at one end
    - 3) pressurize the air channel to 25 psi
    - 4) monitor pressure gauge for 3 minutes and determine whether pressure is maintained without a loss of more than 3 psi
    - 5) once specified time has passed, technician shall cut seam end opposite of the pressure gauge. The Engineer shall observe the gauge for an immediate pressure loss. If the loss is not observed the seam shall be inspected and retested
    - 6) if the pressure test fails, then localize the leak and mark the area for repair
    - 7) air pressure testing will be conducted under the direct observation of the Engineer
  - b. Vacuum testing will be used on all seams not tested using air pressure testing. Using an approved vacuum box, the following procedures will be followed:
    - 1) apply a soapy water mixture over the seam
    - 2) place vacuum box over soapy seam and form a tight seal
    - 3) create a vacuum by reducing the vacuum box pressure to 3 to 5 psi (35 KPa)
    - 4) observe through the vacuum box window any bubbles
    - 5) where bubbles are observed, mark seam for repair
    - 6) move vacuum box further down seam overlapping tested seam by 3 inches
    - 7) where hot wedge seaming has been performed, the overlap must be cut back to allow visual inspection of the weld
    - 8) all vacuum testing will be conducted under the direct observation of the Engineer

E. Liner Repair

1. All imperfections, flaws, construction damage, destructive and nondestructive seam failures will be repaired by the installer. The decision to replace or repair any panel or portions of panels will be made by the Engineer. The appropriate methods of repair are listed below:
  - a. patching, used to repair holes and tears
  - b. grinding and rewelding, used to repair small sections of extruded seams
  - c. spot welding or beading, used to repair minor, localized flaws
  - d. capping, used to repair large lengths of failed seams
  - e. all T-seams shall be patched
2. The actual method used will be agreed upon by the Engineer, installer and Contractor. All repairs requiring grinding will be patched within one hour of the grinding procedure. All defects that are patched will have the patch overlap the edge of the defect by a minimum of 6 inches. The patch will be cut with rounded edges (no corners). In the case of a large patch, the underlying geomembrane will be cut appropriately to avoid trapping gases and moisture between the two sheets.
3. During repair, the Engineer must be present and observe the procedures as well as all nondestructive testing of the repair seams. If the repair is very large, destructive testing may be required at the discretion of the Engineer. Any failure of repaired seams will require that the patch be removed, replaced and retested until passing results are achieved.

F. Construction Material Placement and Penetrations

1. The following placement techniques shall be followed for placement of soil materials above all geosynthetics including geotextiles, GCLs, geomembranes and geocomposite drainage layers:
  - a. All soil materials placed above geomembrane shall be spread with a minimum initial lift thickness of 12 inches using tracked equipment with ground pressures not exceeding 5 pounds per square inch. The Contractor shall submit equipment specifications to the Engineer for review prior to material placement. No construction equipment will be driven directly on the geomembrane. All rubber-tired vehicles will access construction above geomembranes from temporary access roads built a minimum of 3 feet above the liner. Any placement operation which results in damage to the underlying geomembrane, or in the opinion of the Engineer, has the potential of damaging the underlying geomembrane, shall immediately cease and be modified to prevent such damage.
  - b. Placement of overlying common fill shall be performed in a systematic manner in accordance with this Section and Section 31 05 12.

- c. The Contractor shall operate the equipment in a controlled manner to minimize damage to the geosynthetics. Acceleration and deceleration of equipment shall be gradual to prevent unnecessary tension on the geosynthetics. Sudden acceleration, deceleration and turning of the equipment are prohibited.
- d. The Contractor shall limit the type and quantity of equipment accessing the slope(s) at any one time. Equipment operating adjacent to each other shall maintain a minimum separation distance of 50 feet. Equipment shall not be operated directly upslope or downslope from each other.
- e. Cover system penetrations will be constructed for the installation of vertical gas wells within the landfill cap area. The configuration of these penetrations is detailed in the Contract Drawings. A prefabricated LLDPE boot shall be installed around each cover system penetration as shown. The penetration assembly shall be attached to each respective geomembrane liner by the extrusion weld process. Seams and materials used at these locations will be carefully constructed and inspected to insure proper construction has been achieved. Nondestructive testing will be performed on all seams.

### 3.02 POST-CONSTRUCTION

- A. The installer of the geomembrane materials will prepare and the Contractor shall submit, to the Engineer, record drawings and QA/QC documents illustrating the following information:
  - 1. location of all patches, repairs, and boots
  - 2. all as-built information described above shall be surveyed
  - 3. trial seam logs, non-destructive testing logs, and repair logs

END OF SECTION

## SECTION 31 05 31.14

### PVC PIPE AND FITTINGS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all referenced materials for PVC Pipe and Fittings, as shown on the Plans, as specified, and/or directed.

##### 1.02 SUBMITTALS

- A. The Contractor shall submit an electronic copy of the Manufacturer's material Specifications for each item to be supplied under this Section.

##### 1.03 QUALITY ASSURANCE

- A. All pipe, fittings, and specials will be inspected on delivery, and materials that do not comply with the Specification will be rejected. The Contractor shall furnish all labor required to handle the pipe and related materials during inspection and shall remove the rejected materials from the site of work.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. PVC Plastic Solvent Weld Pipe and Fittings
  1. PVC material for the pipe and fittings shall meet the requirements of ASTM D1784 for Rigid Poly (Vinyl Chloride) Compounds and Chlorinated Poly (Vinyl Chloride) Compounds, Class 12454-B, or Class 12454-C.
  2. The PVC pipe and fittings shall be extruded or molded in such a manner that all cross sections shall be dense, homogeneous, and free from porosity or other imperfections. The molded or extruded pipe and fittings shall conform to ASTM D1785 for Polyvinyl Chloride (PVC) Plastic Pipe, and ASTM D2466 and ASTM D2467 for Polyvinyl Chloride (PVC) Plastic Pipe Fittings.
  3. All PVC pipe and fittings shall be Schedule 80 (unless otherwise noted).
    - a. Interior flange fittings shall be 150 pound, Schedule 80 PVC conforming to ASTM D178, unless otherwise specified or indicated.
    - b. All fasteners, bolts, nuts and washers shall be ASTM A276 (Condition B, Cold-Worked) 304 Stainless Steel with a minimum 100,000 psi yield strength.

4. Standard length of all pipe shall be 10 or 20 feet. Provide couplings as necessary. All pipe and fittings shall be of the solvent weld type unless otherwise indicated. Provide adequate solvent cement for the number of couplings and fittings provided.
- B. Solvent Cement
  1. The solvent cement shall be a solution of unplasticized PVC, tetrahydrofuran and cyclohexanone. The solvent cement shall meet the requirements of ASTM D2564 for Solvent Cements for Poly (Vinyl Chloride) (PVC) Schedule 80 Plastic Pipe and Fittings. The solvent cement shall be heavy-bodied, grey cement specifically designated for use with Schedule 80 PVC pipe and humid weather. Primer shall be purple primer meeting the requirements of ASTM F656 for Primers/Cleaners for PVC piping systems.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Installation of all pipe, fittings, specials, adapters and appurtenances shall conform to the manufacturer's recommendations and the following summary of installation recommendations. Where Specifications and recommendations conflict, the strictest shall apply.
- B. Proper implements, tools and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient execution of the work.
- C. The interior surface of all pipe shall be clean when installed, and shall be kept clean until final acceptance. Removable end caps shall be placed on all open ends of pipe lines when pipe installation is not actively in progress. The bulkheads shall be designed to prevent the entrance of dirt, debris or small animals, and shall not be removed until pipe laying is resumed.

### 3.02 FIELD TESTING AND QUALITY CONTROL

- A. All solid pipes and fittings shall be tested after joining for leakage by the Contractor at no cost to the Owner in accordance with the manufacturer's recommendation and Section 22 05 10, "Piping Systems". No leakage is permitted.

END OF SECTION



## SECTION 31 23 18

### EXCAVATION

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Excavation, as shown on the Plans, specified, and/or directed.
- 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, specified or directed.
- C. Where rock is encountered, the excavations shall be done in accordance with the applicable provisions hereof.

##### 1.02 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, sheetpiling, bracing and shoring, and the placing, driving, cutting off and removing of the same;
  - 3. All diking, ditching, fluming, cofferdamming, pumping, well-pointing, 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. The supporting and protecting of all tracks, rails, buildings, curbs, sidewalks, pavements, overhead wires, poles, trees, vines, shrubbery, pipes, sewers, conduits or other structures or property and its appurtenances, in the vicinity of the work, whether over or underground or which appear within the excavations, and the restoration of the same in case of settlement or other injury;

9. All temporary bridging and fencing and the removing of same, the temporary paving of highways, roads, driveways, and the permanent repairing or replacing and relaying of pavements, curbs, gutters and sidewalks removed, disturbed, or injured, 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 blasting, 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. "Spoil" includes surplus excavated materials not required or not suitable for backfills or embankments.
  - E. "Embankments" include fills constructed of selected materials above the original surface of the ground.
  - F. "Rock" includes ledge or bedrock requiring blasting, barring or wedging from their original beds and individual boulders or masonry larger than one-half cubic yard in volume.

### 1.03 REFERENCES

- A. [FOR MUNICIPAL PROJECTS ONLY] 16 NYCRR Part 753
  1. The Contractor shall obtain certification from the Dig Safely New York Certified Excavator Program in Safe Digging Best Practices.

## PART 2 - PRODUCTS

### 2.01 SOIL MATERIALS

- A. Where used for general site fill, 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. Provide where indicated and also within building lines and under concrete slabs and aprons. Fill to be granular fill as specified in Section 31 05 11.

## PART 3 - EXECUTION

### 3.01 ROCK EXCAVATION

- A. Rock excavation shall include the loosening, removing, transporting, storing and disposal of all materials requiring blasting, barring, or wedging for removal from their original beds. All pieces of ledge or bed rock and boulders or masonry larger than seven (7) cubic yard in volume are included under rock excavation. Rock excavations shall be made to the widths and depths shown on the Plans or as directed by the Engineer. For concrete structures, rock shall be excavated only to the bottom of the structure unless otherwise shown or noted on drawings. All excavated rock which cannot be handled and compacted as earth shall not be mixed with other backfill or embankment materials except as specified herein or as directed.
- B. Blasting:
  - 1. Blasting shall be done with extreme care. All blasts in open cut shall be properly covered and protected with heavy timber chained together or approved blasting mats.
  - 2. Charges shall be of such size that the excavation will not be unduly large and shall be so arranged and timed that adjacent rock upon or against which structures are to be built will not be shattered. Blasting shall be conducted in accordance with all applicable rules and regulations. Where blasting occurs in highways under jurisdiction of NYSDOT or under jurisdiction of agencies adhering to the NYSDOT Standard Specification. Where existing pipelines, conduits or structures have been exposed during excavation, such pipelines, conduits or structures shall be adequately protected from damage before proceeding with the blasting.
  - 3. Any injury or damage to the work or to the existing pipelines, conduits, or structures shall be repaired or rebuilt by the Contractor at his own expense. Whenever the Engineer determines that further blasting may damage adjacent rock, pipelines or structures, blasting shall be discontinued and the rock removed by drilling, barring, wedging or other methods.
  - 4. Danger signals shall be given before firing each blast. Blasting shall be done only by a person experienced in the handling and detonation of explosives, and shall be in conformity with all laws and regulations, imposed by public authorities.

5. Blasting shall not be carried on within three hundred (300) feet of any radio transmitter or radio frequency emission equipment such as high frequency welders, and blasting caps shall be kept in tightly-closed metal cans when in the vicinity of such equipment.
- C. Explosives:
1. At no time shall an excessive amount of explosives be kept at the site of the work. Such explosives shall be stored, handled and used in conformity with all applicable laws and regulations.
  2. Accurate daily records shall be kept showing the amounts of explosives on hand, both at the site and at any storage magazine, the quantities received and issued, and the purpose for which issued. Copies of all records shall be furnished to the Engineer.
  3. The Contractor shall be responsible for any damage or injury to any persons, property or structures as a result of his blasting operations.

### 3.02 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 for extended footings be permitted. Not less than twelve (12) inches clearance shall be provided between excavation faces and brick or block masonry exterior wall surfaces which are to be plastered.
- D. Subgrade for all concrete structures shall be undisturbed original earth, thoroughly compacted where noted on drawings. Keep all excavations free from water.
- E. Where necessary, a layer of Class "D" concrete of sufficient strength and thickness to withstand subsequent construction operations shall be installed below the specified subgrade elevation and the structural concrete deposited thereon. Subject to the approval of the Engineer, lining or special lining may be used for subsoil reinforcement if satisfactory results can be obtained thereby. Such material shall be applied in thin layers, each layer being entirely embedded in the subsoil by thorough tamping. All excess soil shall be removed to compensate for the displacement of the gravel or crushed stone and the finished elevation of any subsoil reinforced in this manner shall not be above the specified subgrade.

### 3.03 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 twelve (12) 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).
- 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, construction and clearing debris or other deleterious matter not conducive to proper compaction. Backfill within building lines, under concrete slabs and aprons shall be granular fill as specified in Section 31 05 11.
- D. Backfilling against free standing walls shall be made against both sides at the same time. If backfill is required on one side only, the wall shall be adequately braced on the opposite side until properly cured to full strength.
- E. 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.

### 3.04 TRENCHING

- A. The alignment, depth and pipe subgrades of all pipe trenches shall be determined by overhead grade lines parallel to the pipe invert, or other grade control devices, installed and maintained by the Contractor.
- B. Under ordinary conditions, excavation shall be by open cut from the ground surface. Where the depth of trench and soil conditions permit, tunneling may be required beneath crosswalks, curbs, gutters, pavements, concrete driveways, railroad tracks and other surface structures. No additional compensation will be allowed for such tunneling over the price bid for open cut excavation of equivalent depths below the ground surface unless such tunnel excavation is specifically provided for in unit or lump sum price items.

C. Trenches shall not be opened for more than three hundred (300) feet in advance of the completed pipe or sewer nor left unfilled for more than one hundred (100) feet in the rear thereof without consent of the Engineer. Excavation of the trench shall be fully completed at least twenty (20) feet in advance of the pipe laying or construction of the invert unless specifically permitted otherwise.

D. Width and Depth of Trenches:

1. 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 sheeting, pumping, dewatering, well-pointing and draining of water, and for removing the material not suitable for pipe subgrade.
2. Trenches for pipes shall be not less than six (6) inches wider than the hubs of the pipe in the clear on each side, measured over the hubs of the pipe. Width of trenches, measured at a point twelve (12) inches above the top of the pipe shall not exceed twelve (12) inches on each side. Width of trenches greater than specified above will be permitted in the vicinity of joints for welded steel pipe where access for the welding of joints is required.
3. Where, as required by loading conditions, the width of the lower portion of the trench, measured at twelve (12) inches above top of pipe, exceeds the maximum for the size of pipe, additional concrete cradle or concrete encasement shall be installed by the Contractor at his own expense.
4. Ledge rock, shale, boulders and large stones shall be removed to provide minimum bottom and side clearances, for the size of pipe being laid in each case, as follows:

Size of Pipe (Inches)	Minimum Clearance Below Pipe (Inches)	Minimum Clearance At Sides (Inches)
12 or smaller	4	6
15, 18, and 21	5	6
24 to 36	7	6
Over 36	9	7

5. Where concrete embedment or cradle is to be placed, it shall be placed directly on the rock, and the bottom clearance shall be adjusted as directed by the Engineer.

### 3.05 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. Except where concrete cradle or encasement is required below the specified pipe subgrade, mechanical excavation of trenches for pipe shall not extend lower than one (1) inch above the finished pipe subgrade elevation at any point. The remainder of the trench excavation shall be made with hand tools.
- C. 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 or between bell holes.
- D. All trenches shall be so graded that the spigot end of the pipe will be accurately centered in the adjacent pipe bell 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 lining over the entire width of the trench and regrading.
- E. The trench bottom shall be accurately graded and ready for the installation of the pipe thereon prior to excavating bell holes if and where required.
- F. Each bell hole shall be excavated immediately prior to laying the pipe therefor. Bell holes shall have a length, measured at the elevation of the pipe subgrade, not in excess of nine (9) inches and shall be of sufficient size so that no part of the pipe bell will be in contact with the trench bottom or granular fill thereon.

### 3.06 EXCAVATION FOR CONCRETE CRADLE OR ENCASEMENT

- A. Where concrete cradle or encasement is required, the trench subgrade elevation will be determined by the required concrete section in each case. Unless otherwise authorized by the Engineer, concrete cradle or encasement shall extend across the full width of the trench as excavated, and the concrete therein shall be poured directly against vertical trench banks. In the case of concrete cradle or encasement of pipe in a sheeted trench, the concrete may be poured directly against sheeting which is to be left in place in the trench, as specified.

### 3.07 PIPE EMBEDMENT

- 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 suitable pipe embedment material. Except where loading or subsoil conditions require the use of concrete cradle or encasement, all pipe embedment shall be placed so as to insure adequate

lateral and vertical stability of the installed pipe during pipe jointing and embedment operations. A sufficient amount of the specified pipe embedment material to hold the pipe in rigid alignment shall be uniformly deposited and thoroughly compacted on each side, and back of the bell, of each pipe laid.

- B. Pipe embedment materials placed at any point below an elevation six (6) inches above the top of pipe or sewer, shall be deposited and compacted in layers not to exceed four (4) inches in uncompacted depth, and such deposition and compactations 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.
- C. Concrete cradle and encasement of the class specified shall be installed where and as shown on the Plans or ordered by the Engineer. Before concrete cradle or encasement is placed, the pipe shall be braced in all directions to prevent movement or flotation.

### 3.08 BACKFILL ABOVE PIPE EMBEDMENT

- A. The portion of pipe trenches between the top of the pipe embedment (see Article 3.07) and the upper limit of backfill shall be refilled with suitable materials.
- B. Where trenches are within the ditch-to-ditch or curb-to-curb limits of any street, 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 eight (8) 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).
- C. Where trenches are outside the ditch-to-ditch or curb-to-curb limits of any street, road, driveway or other recognized traveled vehicular way, and outside of other limits that may be specifically shown or specified as areas in which mechanical compaction in layers is to be performed, the backfill material may be deposited in the trench by mechanical means for the full depth of the trench between the top of pipe embedment and ground surface with no special compaction. In such case the backfill materials shall be mounded over the trench to an elevation slightly above desired finished grade to allow for settlement and compaction by natural means, and the Contractor shall return to the area during his clean-up operations to remove any excess materials remaining above finished grade or add sufficient additional backfill to bring the completed work to grade. If a hazard should be created by such excess materials, or by settlement below finished grade, prior to



the performance of clean-up operations, the Contractor shall remove such excess, or add additional backfill, at the time the hazard is created or when directed.

- D. Any additional material added during clean-up operations, or at any other time to prevent or remove a hazard, shall be placed in horizontal layers not more than eight (8) inches in thickness, with each layer adequately compacted by mechanical means, by the Contractor at his own expense.

### 3.09 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 cofferdams, 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, wellpoints, 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 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 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 ground water 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. Unless otherwise permitted by the Engineer, the ground water 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 ground water 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 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 construction operations.
- G. The ground water 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 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. No water shall be discharged to sanitary sewers. Sanitary sewage shall be pumped to sanitary sewers or shall be disposed of by an approved method.
- J. Any damage caused by improper handling of water shall be repaired by the Contractor at his own expense.

### 3.10 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 sewer shall be withdrawn, unless directed, before more than six (6) inches of earth is placed above the top of the pipe or sewer 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 judgement the installed work has not attained the necessary strength to permit placing of backfill.
- E. Sheeting & Bracing Left In Place:
1. If, to serve any purpose of his own, the Contractor files a written request for permission to leave sheeting or bracing in the trench or excavation, the Engineer may grant such permission, in writing, on condition that the cost of such sheeting and bracing be assumed and paid by the Contractor.
  2. The Contractor shall leave in place all sheeting, shoring and bracing which are shown on the Drawings or specified to be left in place or which the Engineer may order, in writing, to be left in place. All shoring, sheeting, and bracing shown or ordered to be left in place will be paid for under the appropriate item of the Contract. No payment allowance will be made for wasted ends or for portions above the proposed cut-off level which are driven down instead of cut-off.
  3. In case sheeting is left in place, it shall be cut off or driven down as directed so that no portion of the same shall remain within twelve (12) inches of the finished street or ground surface.
  4. All timber sheeting and bracing to be left in place and paid for under an item of the Contract shall be new, sound and straight, free from cracks, shakes and large or loose knots, and shall otherwise conform with National Design Specifications for Stress Grade Lumber for lumber of a minimum fiber stress of 1,200 pounds per square inch.
  5. Steel sheeting and bracing left in place and paid for under an item of the Contract shall be new and shall conform with ASTM Des: A7, with a minimum thickness of 3/8-inch.
  6. Sheeting and bracing left in place and paid for under an item of the Contract shall be driven as the excavation progresses and in such manner as to maintain pressure against the original ground at all times. The sheeting shall be driven vertical with the edges tight together, and all bracing shall be of such design and strength as to maintain the sheeting in its proper position.

### 3.11 STORAGE OF MATERIAL

- A. Any sod cut during excavation shall be removed and stored during construction so as to preserve the grass growth, and shall be replaced in position upon completion of the work.
- B. Topsoil suitable for final grading shall be removed and stored on the Site separately from other excavated material, and shall be replaced in position upon completion of the work.

- C. 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, so as to cause as little inconvenience as possible to public travel or to adjoining property holders. All stockpiled fill material shall be stored only in those fill areas as approved by the Engineer.
- D. All excavated materials shall be kept clear of all sidewalks, driveway entrances, street crossings, and any other points that may inconvenience the public. 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.
- E. Where traffic is to be maintained, at least one-half (1/2) of the street width must be kept open at all times. Approved types of bridging across trenches shall be constructed and maintained where necessary. Where conditions do not permit storage of materials, the material excavated from the first one hundred (100) feet of any opening, or from such additional length as may be required, shall be removed from the street by the Contractor, at his own cost and expense, as soon as excavated. The material subsequently excavated shall be used to refill the trench where the facility has been built, provided it be of suitable character.
- F. 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 the Contractor. A copy of the signed agreement between the property owner and Contractor granting permission to deposit spoil shall be given to the Engineer prior to placement. When the facility is complete, the Contractor shall, at his own cost and expense, bring back adequate amounts of satisfactory excavated materials as may be required to properly refill the trenches, excavations, or pits. If directed by the Engineer, the Contractor shall refill such trenches, excavations, or pits with special backfill or other suitable materials, and excess excavated materials shall be disposed of as spoil.

### 3.12 DRAINAGE

- A. All material deposited in roadway ditches or other water courses crossed by the line of trench or near a structure shall be removed immediately after backfilling is completed and the section grades and contours of such ditches or water course restored to their original condition, in order that surface drainage will be obstructed no longer than necessary.

- B. Backfilling of trenches for pipes installed beneath or across roadways, driveways, walks and other traffic ways adjacent to drainage ditches and water courses shall not be done prior to the completion of backfilling to the original ground surface of the trench on the upstream side of such traffic-way in order to prevent the impounding of water at any point after the pipe has been laid, and all necessary bridges and other temporary structures required to maintain traffic across such unfilled trenches shall be constructed and maintained. All backfilling shall be done in such a manner that water will not accumulate in unfilled or partially filled trenches.
- C. Where trenches are constructed in or across roadway ditches or other water courses, the backfill shall be protected from surface erosion by adequate and environmentally sound means. Where trenches cross such waterways; the backfill surface exposed on the bottom and slopes thereof shall be protected by means of stone or concrete riprap, at no additional cost to the Owner.

### 3.13 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 lining, special lining, Class "D" or "E" concrete or other material, as the Engineer may direct. Additional excavation, lining, special backfill, concrete or other materials so ordered, will be paid for under the appropriate items of the Contract.

### 3.14 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 lining, special backfill, concrete or other materials as the Engineer may direct. Beneath structures, all such excavated space shall be refilled with Class "D" concrete. 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.

### 3.15 DISPOSAL OF MATERIALS

- A. All spoil shall be transported and placed on the Site of the work at the locations and to the elevations and grades shown on the Plans, or if spoil areas are not shown, all spoil materials shall be disposed off the Site at appropriate locations selected and obtained by the Contractor and approved by the Engineer. A copy of the signed agreement between the property owner and the Contractor granting permission to deposit spoil shall be given to the Engineer prior to placement.
- 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.

### 3.16 UNFINISHED WORK

- A. When for any reason the work is left unfinished, all trenches and excavations shall be filled and all roadways and sidewalks left unobstructed with their surfaces in a safe and satisfactory condition.

### 3.17 HAULING MATERIAL ON STREETS

- A. When it is necessary to haul material over the streets or pavements, the Contractor shall provide suitable tight vehicles so as to prevent deposits on the streets or pavements. In all cases where any materials are dropped from the vehicles, the 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.

### 3.18 TEST PITS

- A. For the purpose of locating underground obstructions, the Contractor shall make such excavations in advance of the work as directed. Payment for the excavations of test pits will be made under an appropriate item of the Contract.

### 3.19 RESTORATION OF SURFACES

- A. The various types of street surface, gutters and culverts, disturbed, damaged or destroyed during the performance of the work under the Contractor, shall be restored and maintained as specified herein and as shown and directed.
- B. Restoration of Property:
  - 1. The Contractor shall restore all pavement, driveways, sidewalks, gutters, culverts, trees, shrubs, lawns, landscaped areas and any other public or private property damaged as a result of work under this Contract. The quality of materials and workmanship used in the restoration shall produce a condition equal to or better than the condition before the work began. If conditions are inferior before restoration, they shall be superior after restoration.

2. Payment for restoration of property shall be included in the applicable excavation items unless specifically provided for in other unit or lump sum price items.
- C. Time of Replacement:
1. In general, permanent restoration of street surfaces will not be permitted until one month's time has elapsed after trenches have been completely backfilled as specified. A greater length of time, but not more than nine (9) months, may be allowed to elapse before permanent restoration of street surfaces is undertaken, if, in the opinion of the Engineer such additional time is required for complete shrinkage and settlement of the backfill.
  2. If the Contractor is permitted to replace pavement at any time by the Engineer, it shall not relieve the Contractor of responsibility to make repairs to damage caused by settlement for a period of one year or as elsewhere specified.
- D. Schedule of Operations:
1. A schedule of replacement operations shall be worked out by the Contractor, and approval of the Engineer shall be obtained. The program shall be adhered to unless otherwise approved by the Engineer.
- E. Temporary Resurfacing & Repaving:
1. Immediately upon completion of refilling of the trench or excavation, the Contractor shall place a temporary pavement over all disturbed areas of the streets, driveways, alleys and other traveled places where the original surface has been disturbed by his operations. The temporary repavement shall be of a character satisfactory in all respects and safe for public travel.
  2. The temporary resurfacing shall consist of a minimum of six inches (6") of well-graded broken stone with such additional depth as is necessary to withstand the traffic to which it is subjected. Where concrete pavements are removed, the broken stone shall be surfaced with "cold patch". The surface of the temporary repaving shall conform to the street grades. Mounding up of the material over the trench and covering the same with loose broken stone will not be considered as compliance with the above requirements.
  3. For dust prevention, the Contractor shall treat all surfaces, not covered with cold patch, as approved by the Engineer. Use of calcium chloride and/or petroleum products for dust control is prohibited.
  4. The temporary repavement shall be placed and maintained by the Contractor in a safe and satisfactory condition until such time as the permanent repaving is completed. The Contractor shall immediately remove and restore to a satisfactory condition any and all such resurfacing and repavements as shall become unsatisfactory and not in accordance with the terms and intent of the Specifications.

F. Preparation for Permanent Replacement:

1. After due notice and within the time specified, the temporary broken stone or gravel pavement shall be prepared as the base to receive the permanent pavement. It shall be brought to the required grade and cross section and thoroughly compacted before placing the permanent pavement. Service boxes, manhole frames and covers, and similar structures, within the area of pavement to be replaced and not conforming to the new work, shall be set to established grade by the Contractor at his expense, unless a specific item is included in the Contract.

G. Permanent Repaving:

1. The permanent and final repaving of all streets, driveways and similar surfaces where pavement has been removed, disturbed, settled or damaged by or on account of the work of the Contract shall be repaired and replaced by the Contractor, by a new and similar pavement at such time as directed. The top surface shall conform with the grade of existing adjacent pavement, and the entire replacement shall meet the current specifications of the local community for the particular types of pavement.
2. Concrete pavement and concrete base beneath asphalt, brick and other pavement surfacings supported by a concrete base, shall be replaced with Class "B" concrete.
3. Undamaged brick removed from brick pavement laid with sand or a bituminous filler may be reused in the pavement replacement. All broken and otherwise damaged brick, even though such brick were broken prior to removal, and all brick from grout filled pavement, shall be replaced with new brick of equal or better quality by and at the expense of the Contractor.
4. Where specified or approved by the Engineer, in writing, brick or block surfacing may be replaced by placing Class "B" concrete even with the adjacent wearing surface.
5. All pavement other than brick and concrete, and all gravel, crushed stone, and other types of roadway surfacings shall be replaced with new materials except where, in the opinion of the Engineer, materials salvaged from stone or gravel roadways have been removed, handled, and stored in such a manner that their original quality has been maintained, in which case such salvaged materials may be used to the extent available in the lower portion of the roadway surfacing after proper screening to remove dust and other excess fine material.
6. All such roadway surfacings shall be replaced to their original thickness at all points and such replacement shall in all cases conform in type, kind, and quality to the original when built. Where specifications covering the original construction are available, such specifications will apply to the replacement work. If not, the work shall be done in conformity with the State Department of Transportation Standard which conforms the closest to the type of surfacing being replaced, as determined by the Engineer.



H. Concrete Walks:

1. Concrete walks removed in connection with, or damaged as a result of, construction operations under the Contract shall be replaced with new construction; such walks shall be constructed of Class "B" concrete on a thoroughly compacted subgrade, shall have a vertical thickness of not less than four (4) inches (or thickness of the replaced walk where greater than four (4) inches), shall be constructed with vertical construction joints spaced not more than twenty-five (25) feet apart, shall be provided with expansion joints spaced not to exceed fifty (50) feet apart, and shall be sloped for drainage at right angles to the longitudinal center line in the amount of approximately 1/8-inch per foot of walk width.
2. Walks shall be float finished, edged with an edging tool, and grooved at construction joints and at intermediate intervals not in excess of the width of the walk. The length of blocks formed by grooving tool and distances between construction and expansion joints shall be uniform throughout the length of the walk in any one location. All walks shall be cured as specified for concrete slabs.

I. Curbs, Gutters & Culverts:

1. The Contractor shall, at his own cost and expense, permanently repair and relay all curbs, gutters, roadway and driveway culverts, where the same have been broken, injured or disturbed by the Contractor, his agents or employees, in executing any of the work covered by the Contract or by or on account of said work. He shall restore the same in a manner, to a condition and with material, either new or old as required, similar and equal to that existing before such excavations were made.

J. Maintenance & Surfaces:

1. The pavements, sidewalks, curbs, driveways, gutters, culverts, restored lawns, shrubs, trees, landscaped areas and any other public or private property shall be maintained in satisfactory condition during a period of one year from and after completion and acceptance of the Contract.

END OF SECTION

## SECTION 31 25 14.16

### ROLLED EROSION CONTROL MATS AND BLANKETS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Rolled Erosion Control Mats and Blankets as shown on the Plans, as specified, and/or directed.

##### 1.02 REFERENCES

- A. Geosynthetic Research Institute, GC14 "Test Methods, Required Properties and Testing Frequency for Polymeric Turf Reinforcement Mats," Revision 1, March 11, 2016.

##### 1.03 SUBMITTALS

- A. The Contractor shall submit an electronic shop drawing providing the manufacturer's material specifications for each item to be supplied under this Section.

##### 1.04 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor will be liable for all damages to the materials incurred prior to and during transportation to the site.
- B. Handling, storage and care of materials prior to and following installation at the site is the responsibility of the Contractor. Rolled erosion control mats and blankets shall be properly stored by the Contractor at the site according to the manufacturer's recommendations. Any products damaged during storage shall be replaced at the Contractor's expense.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Seed and Fertilizer: Seed and fertilizer shall be provided and installed as outlined in Section 32 92 19.

B. Erosion Control Blankets:

1. The erosion control blanket shall be a machine-produced mat of 70% agricultural straw and 30% coconut fiber matrix. The blanket shall be of consistent thickness with the straw and coconut fiber evenly distributed over the entire area of the mat. 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. 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.
2. The erosion control blankets shall be SC150 as manufactured by North American Green, or equivalent. The erosion control blanket shall have the following material content:
  - a. Matrix - 70% Straw Fiber (0.35 lbs/sy)  
30% Coconut Fiber (0.15 lb/sy)
  - b. Netting - Top: Heavyweight photodegradable with UV additives (3.0 lbs/1,000 sf)  
Bottom: Lightweight photodegradable (1.50 lbs/1,000 sf)
  - c. Thread - Degradable
3. The functional longevity of the erosion control blanket shall be approximately 24 months.
4. 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.
5. All erosion control blankets shall be properly stored by the Contractor at the site per manufacturer's recommendations. Any blankets damaged during storage shall be replaced at the Contractor's expense.

C. Turf Reinforcement Mat:

1. TRM is a permanent erosion control/turf reinforcement mat that is constructed of 100% coconut fiber stitch bonded between a heavy duty UV stabilized bottom net, and a heavy duty UV stabilized cusped middle netting overlaid with a heavy duty UV stabilized top net.
2. The mat shall be sewn together on 1.5-inch centers with UV stabilized polypropylene thread to form a permanent three dimensional structure.
3. The TRM shall be C350 as manufactured by North American Green, or equivalent. The TRM shall have the following physical properties:

<u>Property</u>	<u>Test Method</u>	<u>Value</u>
Thickness	ASTM D6525/ECTC	130 mil
Resiliency	ASTM D6524	>70%
Density	ASTM D792	0.52 oz/in <sup>3</sup>
Mass Per Unit Area	ASTM D6566	10 oz/sy
Porosity	ECTC Guidelines	97.05%
Open Volume Per Unit Area	ECTC Guidelines	840 in <sup>3</sup> /sy
Stiffness	ASTM D7748	0.39 lb.-in
Light Penetration	ASTM D6567	60%
UV Stability*	ASTM D7238	80%
MD Tensile Strength	ASTM D6818	125 lbs/ft
MD Elongation	ASTM D6818	10%

\*% retention at 3,000 hours.

D. Staples

1. Rolled erosion control mats and blankets shall be anchored with “u” shaped 11 gauge wire staples with a minimum top width of 1 inch and a length of 6 inches, or approved equal.
2. For loose soils, 8-inch staples shall be used. Heavier gauge staples (i.e., 9 gauge) may be necessary in hard or rocky soils.
3. All excess staples shall be removed from the areas following installation. Care shall be taken with loose and or excess waste staples near geosynthetics to prevent possible damage.

E. Compost Wattles/Filter Socks

1. Compost wattles or filter socks shall be 12” minimum in diameter and shall consist of well decomposed, weed-free organic matter. The compost blend shall pass a 1” sieve with 10-50% passing on the 3/8 inch sieve. The netting shall be a 3/8” photo- or biodegradable mesh.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. The rolled erosion control mats and blankets shall be installed as indicated on the Contract Drawings and/or directed. Conventional straw mulch shall not be installed where rolled erosion control mats and blankets are to be placed. Rolled erosion control mats and blankets can be installed directly over hydroseeded areas.
- B. At the top of the slope, the mat or blanket shall be anchored in a 6-inch deep x 6-inch wide trench. Backfilling and compaction of the trench shall be performed shortly after stapling the blanket in the trench.

- C. Erosion Control Blankets:
  - 1. Erosion Control Blankets shall be installed either down or horizontally across the slope. Edges of parallel blankets must be stapled with a minimum 3-inch overlap. When blankets are spliced down the slope, shingle the blankets with a minimum 6-inch overlap.
  - 2. Staples shall be applied at a minimum of 1 staple per square yard on the blankets and a maximum of 12-inches apart on all overlap areas and in anchor trenches.
- D. Turf Reinforcement Mats:
  - 1. TRM shall be installed in direction of water flow on bottom of channel. Place TRM end over end (shingle style) with a 6-inch overlap. Use double row of staggered staples 4 inches apart to secure mats.
  - 2. Full length of TRM must be anchored by a 6-inch by 6-inch trench on the top of the channel side slopes. Backfill and compact after stapling. Blankets on side slopes must be overlapped 4 inches over the center blanket and stapled.
  - 3. The terminal end of the TRM must be anchored in a 6-inch by 6-inch trench. Backfill and compact after stapling.
  - 4. For high flow applications as indicated on the Construction Drawings, a staple check slot is recommended at 30 to 40-foot intervals. Use a row of staples 4 inches apart over the entire width of the channel. Place a second row 4 inches below the first row in a staggered pattern.
  - 5. Staples shall be installed along the channel lining at a minimum of 4 staples per square yard.
- E. Compost Wattles/Filter Socks:
  - 1. Compost wattles shall be installed parallel to ground contours with both terminal ends extended 8 feet upslope at a 45 degree angle to prevent bypass flow.
  - 2. Wattles are to be installed in a 2" trench.
  - 3. The wattles shall be secured with 2" by 2" wooden stakes driven 12" into the soil on 10 foot centers along the centerline of the filter sock.

### 3.02 POST-CONSTRUCTION

- A. The Contractor shall maintain and protect all rolled erosion control mats and blankets until final acceptance of the Contract.
- B. If any staples become loosened or raised, or if any mats or blankets become loose, torn or undermined, the Contractor shall make repairs immediately to the satisfaction of the Engineer.
- C. Level and grade to the extent required to present a sightly appearance and to prevent any obstruction of the flow of water or any other interference with operation of or access to the permanent works.

- D. Biodegradable filter socks shall be replaced after 6 months; photodegradable filter socks shall be replaced after one year.

END OF SECTION

## SECTION 31 37 00

### RIPRAP

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Riprap, as shown on the Plans, as specified, and/or directed.
- B. The Contractor shall furnish all plant, labor, equipment and materials and perform all work necessary to place a protective covering of erosion-resistant Riprap at locations shown on the Plans and as directed by the Engineer. The work shall be done in accordance with these specifications and in conformity with the lines and grades shown on the Plans or established by the Engineer. The type of Riprap to be used shall be as indicated on the Contract Drawings.

#### PART 2 - PRODUCTS

##### 2.01 RIPRAP

- A. Stone used for Riprap shall be hard, durable, angular in shape, resistant to weathering and to water action, free from overburden, spoil, shale and organic material, and shall meet the gradation requirements for the type specified. Neither breadth nor thickness of a single stone should be less than one-third its length. Rounded stone or boulders will not be accepted unless authorized by the Engineer. Broken concrete may be substituted for stone when authorized by the Engineer. Shale and stone with shale seams are not acceptable. The minimum unit weight of the stone shall be 155 pounds per cubic foot as computed by multiplying the specific gravity (bulk-saturated-surface-dry basis, AASHTO Test T85) times 62.4 pounds per cubic foot.
- B. The sources from which the stone will be obtained shall be selected for approval by the Engineer well in advance of the time when the stone will be required in the work. The acceptability of the stone will be determined by service records and/or by suitable tests, as required by the Engineer. If testing is required, suitable samples of stone shall be taken in the presence of the Engineer at least 25 days in advance of the time when the placing of Riprap is expected to begin. The approval of some rock fragments from a particular quarry site shall not be construed as constituting the approval of all rock fragments taken from that quarry.

- C. The quality of all material used for Riprap shall be determined by the Magnesium Sulfate Soundness Test, if so elected by the Engineer. A maximum 10 percent loss at ten (10) cycles, by weight, shall be acceptable.
- D. The types of Riprap to be provided shall conform to the following gradation requirements:

<u>Type</u>	<u>% Passing</u>	<u>Stone Size</u>
I	90-100	Smaller than 8 inches
	50-100	Larger than 3 inches
	0-10	No. 10
II	90-100	Lighter than 100 lbs
	50-100	Larger than 6 inches
	0-10	Smaller than 1/2 inch
III	50-100	Heavier than 100 lbs
	0-10	Smaller than 4 inches
IV	50-100	Heavier than 600 lbs
	0-10	Smaller than 6 inches

- E. Each load of Riprap shall be reasonably well graded from the smallest to the maximum size specified. Stones smaller than the specified 10 percent size and spalls will not be permitted in an amount exceeding 10 percent by weight of each load.
- F. Control of gradation will be by visual inspection. If requested by the Engineer, the Contractor shall provide two samples of rock of at least 5 tons each, meeting the gradation for the type specified. The sample at the construction site may be a part of the finished Riprap covering. The other sample shall be provided at the quarry. These samples shall be used as a frequent reference for judging the gradation of the Riprap supplied. Any difference of opinion between the Engineer and the Contractor shall be resolved by dumping and checking the gradation of two random truck loads of stone. Mechanical equipment, a sorting site, and labor needed to assist in checking gradation shall be provided by the Contractor at no additional cost to the Owner.
- G. In addition to meeting the gradation requirements set forth in this section for the type of Riprap indicated, Riprap shall consist of stones shaped as nearly as practicable in the form of right rectangular prisms. One dimension of the majority of the stones furnished shall be at least equal to the thickness as shown on the Plans.



## 2.02 BEDDING

- A. Bedding material shall be provided below the Riprap if indicated on the Plans or directed by the Engineer. Bedding material shall be composed of crushed stone, crushed air cooled blast furnace slag, or gravel, free of soft nondurable particles, organic material, and thin or elongated particles.
- B. Bedding material shall meet the following gradation requirements:

<u>Sieve Designation</u>	<u>% Passing</u>
4 inches	100
1 inch	15-60
1/4 inch	0-25
No. 40	0-10

## PART 3 - EXECUTION

### 3.01 PLACEMENT

- A. Slopes to be protected by Riprap shall be free of brush, topsoil, trees, stumps, and other objectionable material and shall be dressed to a smooth surface. All soft or spongy material shall be removed to the depth shown on the Plans or as directed by the Engineer and replaced with approved material. Filled areas will be compacted as specified. If shown on the Plans, a toe trench shall be dug and maintained until the Riprap is placed.
- B. Protection for structure foundations shall be provided as early as the foundation construction permits. The area to be protected shall be cleaned of waste materials and the surfaces to be protected prepared as shown on the Plans. The type of Riprap specified will be placed in accordance with these Specifications.
- C. When shown on the Plans, a bedding material blanket shall be placed on the prepared slope or area to be provided with Riprap as specified in Paragraph 3.02 A before the stone is placed.
- D. Stone for Riprap shall be placed on the prepared slope or area in a manner which will produce a reasonably well-graded mass of stone with the minimum practicable percentage of voids. The entire mass of stone shall be placed so as to be in conformance with the lines, grades, and thicknesses shown on the Plans. Riprap shall be placed to its full course thickness in one operation and in such a manner as to avoid displacing the underlying material. Placing of Riprap in

layers, or by dumping into chutes, or by similar methods likely to cause segregation will not be permitted.

- E. The larger stones shall be well distributed, and the entire mass of stone shall conform to the gradation specified in Paragraph 2.01 D. All material going into Riprap protection shall be so placed and distributed that there will be no large accumulations of either the larger or smaller sizes of stone.
- F. It is the intent of these Specifications to produce a fairly compact Riprap protection in which all sizes of material are placed in their proper proportions. Hand placing or rearranging of individual stones by mechanical equipment may be required to the extent necessary to secure the results specified.
- G. Unless otherwise authorized by the Engineer, the Riprap protection shall be placed in continuous progression with the construction of the embankment. The Contractor shall maintain the Riprap protection until accepted, and any material displaced by any cause shall be replaced to the lines and grades shown on the Plans at no additional cost to the Owner.
- H. When Riprap and bedding material are placed under water, thickness of the layers shall be increased as shown on the Plans; and methods shall be used that will minimize segregation.
- I. Riprap shall be placed so that the dimension approximately equal to the layer thickness is perpendicular to the slope surface and that the weight of the stone is carried by the underlying material and not by the adjacent stones. On slopes, the largest stones shall be placed at the bottom of the slope. The Riprap shall be properly aligned and placed so as to minimize void spaces between adjacent stones. The spaces between the stones shall be filled with spalls of suitable size.

### 3.02 BEDDING MATERIAL

- A. Bedding material shall be placed where shown on the Plans or as directed by the Engineer. The bedding material shall be placed on the prepared area to the full specified thickness of each layer in one operation, using methods which will not cause segregation of particle sizes. Contamination of bedding material by natural soils or other materials shall be prevented at all times. Bedding material that becomes contaminated shall be removed and replaced with uncontaminated bedding material at the Contractor's own expense. Filter fabric shall be placed below the bedding material, if shown on the Plans.

END OF SECTION

## SECTION 32 91 19.13

### TOPSOIL

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Topsoil as shown on the Plans, as specified, and/or directed.

##### 1.02 SUBMITTALS

- A. The Contractor shall provide a pH test and organic content test for the Engineer's review for each source of topsoil to be used.

##### 1.03 QUALITY ASSURANCE

- A. Topsoil will be visually inspected and material that does not comply with the Specification will be rejected.

#### PART 2 - PRODUCTS

##### 2.01 MATERIAL

- A. Topsoil
  1. Average existing topsoil thickness for the project area is 6 inches. Topsoil shall be removed from areas of the site where excavations are to be made or embankments placed. The soil so removed shall be transported and stored in piles at convenient locations designated or approved and shall be kept separate from all other classes of excavated material. Should the Contractor fail to keep separate from other material any soil removed, they shall procure and furnish at their own expense an equivalent quantity of satisfactory topsoil.
  2. The Contractor is required to process the topsoil if necessary to achieve project specifications. The material shall contain no admixture of refuse or any material toxic to plant growth and shall be free from subsoil, stones, clay lumps or similar objects larger than two inches in greatest dimension. Sod and herbaceous growth such as grass and weeds need not be removed, if well distributed throughout the material. Topsoil shall not be delivered or placed in a frozen or muddy condition.
  3. Contractor to condition topsoil as necessary. Topsoil from shall have an acidity range of pH 5.5 to 7.6 and shall contain 4 to 20% organic matter as determined by loss of ignition of moisture-free samples dried at 100 degrees C.

- a. Where topsoil pH is below 5.5, lime shall be added at a rate of 2-1/2 lbs. per cubic yard of topsoil until the pH is above 5.5.
  - b. Where topsoil pH is above 7.6, aluminum sulfate shall be added at a rate of 2-1/2 lbs. per cubic yard of topsoil until the pH drops below 7.6.
- B. Soil Amendments
  - 1. Lime: Natural dolomitic limestone containing not less than 85 percent of total carbonates with a minimum of 30 percent magnesium carbonates, ground so that not less than 90 percent passes a 10-mesh sieve and not less than 50 percent passes a 100-mesh sieve.
  - 2. Aluminum Sulfate: Commercial grade, in dry powder form.

### PART 3 - EXECUTION

#### 3.01 PLACEMENT

- A. Topsoil shall include fine grading the surface of the ground upon which topsoil is to be placed and the furnishing and placing of topsoil in the areas to be seeded or planted.
- B. Depth of topsoil shall be a minimum of 6 inches in cap restoration areas and 4 inches everywhere else, unless otherwise shown or directed.
- C. After approval by the Engineer of the fine grading of the subgrade, the topsoil shall be spread and compacted with a light roller to the lines, grades and elevations shown on the drawings, or directed by the Engineer, without unsightly variations, ridges or other depressions which will hold water or prohibit future mowing activities. Any surface stones, litter or objectionable material shall be removed from the topsoil and the surface raked to true lines. Any uneven spots shall be leveled. The work shall not be performed during unsuitable weather.
- D. All topsoil shall be uniformly tracked or raked perpendicular to the contours prior to seeding.

END OF SECTION

## SECTION 32 92 19

### SEEDING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Seeding as shown on the Plans, as specified, and/or directed.
- B. The Contractor shall seed new areas and disturbed areas where shown on the drawings, specified or directed by the Engineer. Contractor shall prepare the seed bed by scarifying or otherwise loosening topsoil to a depth of 2 inches, applying fertilizer, lime or aluminum sulfate, seed and mulch or rolled erosion control products at the rates specified.
- C. Topsoil shall be applied to the locations identified in the Contract Drawings and prepared as outlined in Section 32 91 19.13.

##### 1.02 SUBMITTALS

- A. The Contractor shall submit to the Engineer for approval the method of seeding and the information outlined in Article 2.01.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Fertilizer:
  - 1. Commercial starter fertilizer (30-0-4) shall contain not less than thirty percent nitrogen, zero percent available phosphoric acid and four percent water soluble potash. The fertilizer shall be inorganic or a combination of inorganic and organic substances.
  - 2. If, as an alternative, the Contractor wishes to substitute another starter fertilizer, he may do so with the approval of the Engineer.
  - 3. Commercial fertilizer shall be delivered in original bags of the manufacturer, showing weight, analysis and the name of the manufacturer.
  - 4. If the commercial fertilizer is not used immediately after delivery, the Contractor shall store it in such a manner that its effectiveness will not be impaired.
- B. Seed:
  - 1. Grass seed shall be a mixture of the species and/or varieties specified, mixed in the proportions specified.

2. The seed shall be fresh, recleaned and of the latest crop year. It shall conform to Federal and State Standards. Each type of grass in the mixture shall meet or exceed the minimum percentage purity and germination listed for that type of grass.
3. The following seed mixture shall be used for ditches, slopes and all areas disturbed by construction.

<u>Percentage by Weight</u>	<u>Species or Variety</u>	<u>Percent Germination</u>
30	Kentucky 31 Tall Fescue	90%
30	Perennial Ryegrass	90%
20	New Zealand White Clover	90%
20	Creeping Red Fescue	90%

4. The balance of material in an acceptable seed mixture, other than specified pure live seed shall, for the most part consist of nonviable seed, chaff, hulls, live seeds of crop plants and harmless inert matter. The percentage of weed shall not exceed one percent by weight for the mixture.
5. All seed mixtures furnished under this Item shall be mixed by the vendor and shall be delivered in standard sized bags of the vendor, showing the weight, analysis and vendor's name.
6. All seed shall be properly stored by the Contractor at the site of the work and any seed damaged during storage shall be replaced.

C. Mulch:

1. Straw or hay mulch shall consist of oats, wheat, rye or other approved crops which are free of noxious weeds. Weight shall be calculated on the basis of the straw having not more than 15% of moisture content.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

A. Time For Seeding

1. Grass seed shall be sown from March 15<sup>th</sup> to June 1<sup>st</sup> or from August 15<sup>th</sup> to October 1<sup>st</sup>, unless otherwise approved by the Engineer. All seeding shall be done in a dry or moderately dry soil and at times when the wind does not exceed a velocity of five miles per hour. The Contractor is required to water seeded areas as necessary to provide favorable growing conditions as necessary.

- B. Preparation of Seed Bed
1. After the finished grading is completed and just before seeding, the areas to be seeded shall be loosened to a depth of two inches and free from depressions which will hold water. All sticks, stones, clods, roots or other objectionable material which might interfere with the formation of a fine seed bed shall be removed from the soil.
  2. Commercial fertilizer shall be evenly applied at the rate of 300 pounds per acre.
- C. Seeding
1. Grass seed mixture shall be sown at the rate of 200 pounds per acre.
  2. The seed shall be sown by hand or by an approved machine, in such a manner that a uniform stand will result.
  3. After sowing, seeded areas shall be rolled with a light lawn roller weighing not more than one hundred pounds per foot of width.
- D. Mulching
1. Within three days after the seed is sown, the seeded areas shall be covered with a uniform blanket of straw mulch at the rate of 1,000 pounds per acre of seeded area or as required to provide 90% coverage (i.e., lightly cover 90% of the surface).
- E. Hydroseeding
1. The Contractor may substitute a hydroseeding process for hand seeding and mulching as specified above.
  2. Where hydroseeding is used, the Contractor shall mix water, seed fertilizer, mulch and mulch anchorage at the following rates and apply to the prepared seed bed by means of a hand-held hose. No truck mounted spraying equipment shall be driven over the areas to be seeded. Discharge shall be in an uphill direction only unless otherwise approved by the Engineer.
    - a. Fertilizer - 300 lbs. per acre
    - b. Seed - 250 lbs. per acre
    - c. Mulch - Sufficient to equal 90% straw mulch coverage
    - d. Mulch Anchorage - Per Manufacturer's instructions  
Chemical 750 lbs. wood fiber/acre  
Wood Cellulose
  3. Where the mulch anchorage is provided ready mixed with the mulch, no additional mulch anchorage will be required.
  4. Mulch shall be a commercial cellulose hydromulch such as "Conwed 2000", "Turf Fiber", or equal. Soil seal or mulch anchorage used shall be approved by the Engineer. An asphalt emulsion shall not be used as mulch anchorage.

F. Maintenance and Protection

1. The Contractor shall maintain and protect all seeded areas until final acceptance of the Seeding portion of the Contract.
2. Final acceptance will not be made until an acceptable uniform stand of grass is obtained in all newly seeded areas except that the Engineer at his discretion may accept a portion or portions of the work at various times.
3. Upon final acceptance of a seeded area by the Engineer, the Owner will assume responsibility for maintenance and protection of that area.
4. Any portions of seeded areas which are unacceptable, and which fail to show a uniform stand of grass from any cause, shall be reseeded as before except the fertilizer shall be applied at one-half the original rate. The seeding shall be repeated until the seeded areas are satisfactorily covered with grass.

END OF SECTION



## SECTION 33 05 31.40

### FLEXIBLE LANDFILL GAS PIPE

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Flexible Landfill Gas Pipe as shown on the Plans, as specified, and/or directed.
- B. Flexible landfill gas pipe shall be used for the connection of the landfill gas wellhead to the landfill gas header system riser.

##### 1.02 SUBMITTALS

- A. The Contractor shall submit an electronic copy of the manufacturer's material specifications for each item to be supplied under this Section.

##### 1.03 DELIVERY, STORAGE, AND HANDLING

- A. All pipe, fittings, and specials will be inspected on delivery, and materials that do not comply with the Specification will be rejected. The Contractor shall furnish all labor required to handle the pipe and related materials during inspection and shall remove the rejected materials from the site of work.

#### PART 2 - PRODUCTS

##### 2.01 MATERIAL

- A. Piping
  - 1. All pipes shall be of flexible polyvinyl chloride (PVC).
  - 2. Length of pipe shall be 48 inches maximum, unless otherwise approved by the Engineer.
  - 3. Flexible landfill gas pipe shall meet the minimum specification values listed below:
    - a. Characteristics: Ultraviolet light and ozone resistant
    - b. Temperature Range: Remains flexible from -60°F to +200°F
    - c. Vacuum Range: Able to withstand 135 in. w.c.
  - 4. Flexible landfill gas pipe shall be Kanalite PS UVOR by Kanaflex as distributed by CES Landtec, Solarguard Flex Hose distributed by QED Environmental Systems, or approved equal.

- B. Fittings
  - 1. Joining of flexible pipe shall be by the use of stainless steel band clamps, Kanaflex Power Lock as distributed by CES Landtec, banding coil kit as distributed by QED Environmental Systems, or approved equal.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Installation of all pipe, fittings, specials, adapters and appurtenances shall conform to the Manufacturer's recommendations and the following summary of installation recommendations. Where specifications and recommendations conflict, the strictest shall apply.
- B. Proper implements, tools and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient execution of the work.
- C. Pipe shall be installed in a final constructed condition such that the pooling of condensate in the line cannot occur with allowances for future differential settlement.
- D. The interior surface of all pipe shall be clean when installed, and shall be kept clean until final acceptance. Removable end caps shall be placed on all open ends of pipelines when pipe laying is not actively in progress.

END OF SECTION

## SECTION 33 05 33.40

### HDPE PIPE AND FITTINGS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for HDPE Pipe and Fittings as shown on the Plans, as specified, and/or directed.

##### 1.02 SUBMITTALS

- A. The Contractor shall submit to the Engineer for approval, data for all pipe and fittings which he proposes to use. The data shall demonstrate complete compliance with the provisions of the plans and specifications.
- B. The Contractor shall submit to the Engineer for approval, manufacturer's certifications for all personnel that will fusion weld the pipe and fittings along with dates and duration of employment.

##### 1.03 DELIVERY, STORAGE, AND HANDLING

- A. All pipe will be inspected on delivery, and materials that do not comply with the Specification will be rejected. The Contractor shall furnish all labor required to handle the pipe during inspection and shall remove the rejected materials from the site of the work.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Piping
  - 1. All pipes shall be of high density high molecular weight material using PE 4710 grade resin and having a cell classification number of 445574C. All HDPE pipe shall conform to ASTM D3350.
  - 2. All HDPE condensate conveyance piping shall have an SDR 17 or lower and shall be dual-contained outside the lined landfill limits, unless otherwise specified.
  - 3. All HDPE landfill gas collection piping and headers shall have an SDR of 17 or lower unless otherwise specified.
  - 4. Standard length of pipe shall be a minimum of 40 feet.

- B. Centralizers
  - 1. Dual contained piping shall be factory fabricated for simultaneous fusion with internal centralizers spaced no greater than 4-feet on center. Centralizers shall be furnished so the annular space between the HDPE pipes is evenly distributed within the conveyance line. The centralizers shall be configured to allow for liquid to flow freely along the invert of the pipe.
- C. End Seals
  - 1. End seals shall be factory pre-fabricated fixed end seals which anchor the carrier and containment pipes together. End seals shall accommodate simultaneous fusion.
- D. Couplings
  - 1. Joining of HDPE pipe shall be by butt fusion or where circumstances warrant couplings shall be by the electro-fusion socket type connection that provides a welded connection. All joints on condensate conveyance/forcemain pipe shall be internally de-beaded after the joining of the pipe for a smooth interior finish.
  - 2. Transitions from PVC to HDPE shall be a factory fabricated transition fitting with a stainless steel end as manufactured by ISCO Industries, unless otherwise approved by the Engineer.
  - 3. The socket type couplings shall be manufactured by GF ELGEF, or equal.
- E. Flanges
  - 1. Provide ANSI B16.1, Class 150 flanges for all flange connections. Backup rings shall be lightweight stainless steel.
  - 2. Bolting of Flanges: Material used for bolts and studs shall be stainless steel conforming to ASTM A276, Type 304, and material for nuts shall be stainless steel conforming to ASTM A276, Type 304. Dimensions of bolts, studs, and nuts shall conform to ANSI B18.2.1 and ANSI B18.2.2 with threads conforming to ANSI B1.1 coarse type with Class 2A fit for bolts and studs, and Class 2B fit for nuts. Bolts or studs shall extend through the nuts and may have reduced shanks of a diameter not less than the diameter at root of threads. Stainless steel bolts shall have American Standard regular square or heavy hexagon heads and shall have American Standard heavy, semi-finished hexagonal nuts.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Installation of all pipe, fittings, specials, adapters and appurtenances shall conform to the Manufacturer's recommendations and the following summary of installation recommendations. Where specifications and recommendations conflict, the strictest shall apply.

- B. Proper implements, tools and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient execution of the work.
- C. Cutting of pipe shall be done with pipe cutters, motor drive saws using abrasive disks, or with handsaws as required. Where machining is necessary for cut ends or for extending factory machining, it shall be done in accordance with the manufacturer's recommendations for the type of pipe and joint used. The flame cutting of pipe by means of an oxyacetylene torch will not be allowed.
- D. Pipe shall be laid to the lines and grades on a prepared earth subgrade or special embedment as shown, specified or directed.
- E. The interior surface of all pipe shall be clean when installed, and shall be kept clean until final acceptance. Removable end caps shall be placed on all open ends of pipelines when pipe installation is not actively in progress. The bulkheads shall be designed to prevent the entrance of dirt, debris or small animals, and shall not be removed until pipe installation is resumed.

### 3.02 FIELD TESTING & QUALITY CONTROL

- A. All solid HDPE Pipes and Fittings shall be tested after joining for leakage by the Contractor at no cost to the Owner in accordance with the manufacturer's recommendation for the intended use. No leakage is permitted, although appropriate allowances for expansion of pipe shall be taken into consideration for the test pressure. See Section 22 05 10 for appropriate test methods.

END OF SECTION

## SECTION 33 42 13

### PIPE CULVERTS

#### PART 1 – GENERAL

##### 1.01 GENERAL

- A. Furnish all labor, materials, equipment, and incidental work necessary to install pipe culverts, as shown on the Plans and as specified herein.
- B. Section includes:
  - 1. Corrugated metal pipe culverts.
  - 2. Polyethylene pipe culverts.
- B. Related Work specified elsewhere:
  - 1. Section 31 05 11, Granular Fill.
  - 2. Section 31 23 18, Excavation.

##### 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 and Transportation Officials (AASHTO):
    - a. M36, Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains.
    - g. M252, Standard Specification for Corrugated Polyethylene Drainage Pipe.
    - h. M288, Standard Specification for Geotextile Specification for Highway Applications.
    - i. M294, Standard Specification for Corrugated Polyethylene Pipe, 12- to 60-in. Diameter.
    - j. T180, Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
  - 2. ASTM International (ASTM):
    - a. A123, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
    - c. B745, Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains.
    - r. D6938, Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
    - s. F405, Standard Specification for Corrugated Polyethylene (PE) Pipe and Fittings.

- t. F477, Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- u. F667, Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings.

### 1.03 SUBMITTALS

- A. The Contractor shall submit shop drawings of Corrugated Metal Pipe and Corrugated Polyethylene Pipe, fittings and end sections intended for use on this project.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. Corrugated Polyethylene Pipe (CPP):
  - 1. Smooth interior corrugated polyethylene pipe conforming to the requirements of Section 706-12 of the New York State Standard Specifications latest edition. The units shall conform to the shape, dimensions and thickness shown on the Contract Drawings or as listed in the Additional Instructions.
- B. Corrugated Metal Pipe (CMP):
  - 1. Corrugated Metal Pipe conforming to the requirements of Section 707-02 of the New York State Standard Specifications latest edition. The units shall conform to the shape, dimensions and thickness shown on the Contract Drawings or as listed in the additional instructions.
- C. Polyethylene end sections shall conform to the requirements of Section 706-12 of the New York State Standard Specifications, latest edition.
- D. All smooth interior corrugated polyethylene pipe and end sections shall be of the same manufacturer and shall be designed to be joined by couplings or other positive mechanical means approved by the Engineer.

## PART 3 – EXECUTION

### 3.01 INSTALLATION

- A. Smooth interior CPP and CMP shall be installed in the locations shown on the Contract Drawings. Connections and embedment shall be performed in strict accordance with all manufacturer's recommendations and as indicated on the drawings.

- B. All pipe shall be laid in reasonably close conformity to line and grade and shall have a full firm and even bearing at each joint and along the entire length of pipe. Pipe laying shall begin at the downstream end and progress upstream. Any single run of pipe, including end sections, shall consist wholly of the same material unless otherwise directed by the Engineer.
- C. All pipe shall be handled and assembled in accordance with the Manufacturer's instructions except as modified on the Plans or by the Engineer's written order.
- D. Special care shall be exercised in placing and compacting material immediately adjacent to pipes in order to avoid damage to the pipe and to prevent pipe misalignment.
- E. Movement of construction equipment, vehicles and loads over and adjacent to any pipe shall be done at the Contractor's risk.
- F. Corrugated polyethylene pipe and corrugated metal pipe connections for making field joints shall consist of corrugated bands or like material, so constructed as to lap on equal portions of each culvert section to be connected. All connections shall be an approved type, fabricated and installed so that a secure and firm pipe connection may be readily made in the field.

END OF SECTION



## SECTION 40 41 13

### ELECTRICAL - HEATING CABLES AND INSULATION

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION:

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Electrical - Heating Cables and Insulation as shown on the Plans, as specified and/or directed.
- B. Contractor to confirm all voltages prior to purchasing of equipment.

##### 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. National Fire Protection Association (NFPA) Publication:
    - a. 70 - National Electrical Code
  - 2. Underwriters Laboratories, Inc. (UL) Publication:
    - a. Approval List

##### 1.03 GENERAL REQUIREMENTS

- A. Section 26 05 01, "Electrical General Requirements", with the additions and modifications specified herein, applies to this Specification. Verify temperature rating, pipe material, pipe size, insulation type and thickness for systems requiring heat trace.

##### 1.04 SUBMITTALS

- A. Manufacturer's Data: Submit manufacturer's descriptive literature for the following:
  - 1. Heat Trace Cable
  - 2. Tee Splices
  - 3. End Seals with indicating lights
  - 4. Power Connection Assembly
  - 5. Thermostat Controller and or thermostat assembly
  - 6. Caution Label
  - 7. Fiberglass Tape
  - 8. Insulation
  - 9. Jacketing Materials

- B. Standards Compliance and Manuals: Submit standards compliance information as well as Operation and Maintenance manuals for the equipment furnished.
- C. Shop Drawings: Furnish shop drawings showing location and details of construction for any openings in slabs and walls for raceway runs. Show circuit lengths, piping systems, and circuit in rush current for lowest expected start-up temperature.
- D. Field Test Results: Submit the results of resistance tests for each circuit prior to the insulation of piping systems and after insulation is installed.

## PART 2 - PRODUCTS

### 2.01 NEW HEAT TRACE CABLE:

- A. Heat trace cable shall be self-regulating consisting of a pair of copper bus wires, a self-regulating semi-conductive core and a fluoropolymer jacket. Supply voltage shall be 120 V.A.C. Manufacture shall be as by Tyco Thermal, Chromalox HSRL, or equal.
- B. Heat Trace Cable Schedule: Furnish new heat trace cables in accordance with the following schedule. Install one complete heat trace circuit for each piping system.

<u>System</u>	<u>Ins. Thickness</u>	<u>Output Rate at 120 VAC (w/ft.)</u>
LFG Conveyance Piping & Blowers	Up to 8"	12 w/ft.
Condensate Drain Piping	3"/6" Dual Contained	10 w/ft.

- C. Thermostat Controller: Ambient sensing thermostat shall be industrial grade indicating type suitable for 120 V service. Temperature range shall be 15-140°F. Enclosure shall be NEMA 4X epoxy coated cast aluminum. Provide with CPT pilot light, lamp to be illuminated with thermostat is "on", requiring Heat Trace system to be energized.
- D. Accessories: Furnish with all accessories required for a complete system including pipe strap and glass tape, tee splice kits, end termination kits, power connection kits with junction box and clamps for securing to pipe and conduit.

## 2.02 INSULATION

- A. Furnish with all components required for a complete system.
- B. Material: Furnish and install 2-inch thick polyisocyanurate foam insulation by Johns-Manville, or approved equal.
- C. Jacket: White kraft outer surface bonded to aluminum foil and reinforced with fiberglass yarn permanently treated for fire and smoke safety, as well as prevent corrosion of the foil. Tape all joints with tape matching jacket construction. Provide molded PVC covers at fittings to be by Johns-Manville, or approved equal.
- D. Covering Over Jacket, Exposed Outdoor and Wet Locations: Furnish and install 0.016 aluminum jacket complying with ASTM B2009 with ¾-inch wide bands 0.007-inch thick. Seal all exposed seams with GE silicone clear sealant to provide a watertight seal.

## PART 3 - EXECUTION

### 3.01 GENERAL INSTALLATION

- A. Heat trace cables shall be installed in strict accordance with manufacturer's instructions. Heat trace cables shall extend the entire length of the exterior exposed piping as shown on the Contract Drawings. Attach to pipe every 12 inches using banding as recommended by the manufacturer. Install on outside radius of piping elbow. Install/wrap additional heat trace at valves per heat trace manufacturer's recommendations. Install along the length of piping at an angle 45° from the piping invert. Install on all fittings in those areas designated to be heat traced. Install end seals at ends of circuits. All heat trace cables shall be continuous length below grade. All splice boxes, fittings and terminations shall be mounted above finished grade. Where heat trace cables are installed on piping runs below grade, loop heat trace cable on each piping run, and terminate each cable at least three (3) feet above finished grade. Provide power connection fitting and conduit junction box at each power connection point. Install ambient sensing thermostats as recommended by manufacturer. Provide one power connection and thermostat assembly for each piping run. All splice boxes or fittings shall be mounted above piping insulation and jacketing. Install thermostats out of direct sunlight.

### 3.02 INSULATION

- A. Insulate piping as soon as possible after heat tracing is installed. When piping is insulated and jacketed, install "Electric Traced" labels on outside of jacket where visible from normal operations or every ten feet. Mark jacketing where connection points are located below insulation.

### 3.03 HEAT TRACE CIRCUITS

- A. All heat trace circuits shall be powered by a Class B (30 mA) GFI.

### 3.04 CONDUIT SYSTEMS

- A. Install conduit systems in accordance with the NEC. All Wall penetrations shall be watertight.

### 3.05 TESTS

- A. Perform testing of the electrical resistance of each circuit when completed but before insulation is installed, and once again after pipe is insulated and jacketed.

END OF SECTION

## SECTION 43 16 00

### ROTARY-DRILLED LANDFILL GAS EXTRACTION WELLS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Rotary-Drilled Landfill Gas Extraction Wells, as shown on the Plans, as specified, and/or directed. The installation of extraction wells will be approved in the field by the Engineer.
- B. Provide each extraction well complete and ready for operation. Each extraction well, including equipment, materials, installation, and workmanship shall be to the satisfaction of the Engineer.

##### 1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM) Publications:
  - 1. C136 - Standard Method for Sieve Analysis of Fine and Course Aggregates
  - 2. C702 - Standard Practice for Reducing Field Samples of Aggregate to Testing Size
  - 3. D1557 - Standard Test Method of Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 10 lb (4.54 kg) Rammer and 18-Inch (457 mm) Drop
  - 4. D2487 - Standard Test Method for Classification of Soils for Engineering Purposes
  - 5. D2488 - Standard Practice for Description of Soils (Visual-Manual Procedure)
  - 6. D2922 - Standard Test Methods for Density of Soil and Soil-Aggregate In-Place By Nuclear Methods (Shallow Depth)
  - 7. 4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

##### 1.03 SUBMITTALS

- A. The Contractor shall submit an electronic copy of the manufacturer's material Specifications for each item to be supplied under this Section.
- B. The Contractor shall submit to the Engineer samples of all well backfill materials furnished.
- C. The Contractor shall maintain detailed well logs and construction diagrams for all wells drilled, including the total depth of the well, the static water level (if present), depth, thickness, temperature at 10 foot increments and description of

soil or waste strata (including dates from any readable material) and the occurrence of any water bearing zones. Well logs shall be submitted to the Engineer.

#### 1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in an undamaged condition. Store materials off the ground to provide protection against oxidation caused by ground contact. Replace defective or damaged materials with new materials.
- B. All materials will be inspected on delivery, and materials that do not comply with the Specification will be rejected. The Contractor shall furnish all labor and equipment required to handle the materials and inspection, and shall remove the rejected materials from the site of work.

#### 1.05 SITE CONDITIONS

- A. Obstructions and saturated conditions such as sludges and foundry sands are sometimes encountered when drilling in a landfill, many of which can be drilled through. The Contractor shall make reasonable efforts to drill through obstructions or saturated conditions. No standby or abandonment charges will be paid by the Owner.

### PART 2 - PRODUCTS

#### 2.01 EQUIPMENT

- A. The Contractor shall utilize dry drilling equipment mounted on a crawler chassis or an all-terrain vehicle chassis approved by the Engineer during construction of all phases of well construction. Wet rotary drilling equipment or truck mounted rigs may not be used.

#### 2.02 MATERIALS

- A. Shall conform to the respective Specifications as referenced herein and as shown on the Plans.
- B. Aggregate
  - 1. Backfill shall be Type F Select Fill, as specified in Section 31 05 17, Select Fill.
- C. Bentonite Slurry Mix
  - 1. Coarse-ground, granulized bentonite from an approved source is to be mixed thoroughly with water at a ratio of 5 gallons of water to every 50 lbs. of bentonite.

- D. Pipe
  - 1. HDPE as specified in Section 33 05 33.14, HDPE Pipe and Fittings.
  - 2. Perforations in the HDPE extraction well piping shall be 5/8" diameter spaced on 5" centers vertically in 4 rows, at 90 degrees apart.
- E. Linear Low Density Polyethylene (LLDPE) Lining Material
  - 1. 40-mil LLDPE lining material as specified in Section 31 05 19.31, LLDPE Geomembrane Liner, shall be used to construct boots as indicated on the Contract Drawings.

## PART 3 - EXECUTION

### 3.01 DRILLING

- A. All drilling locations shall be surveyed prior to commencing drilling to verify well coordinates and existing waste elevation.
- B. The Contractor shall obtain the signature of the on-site field representative verifying that the location of each well has been verified prior to commencing drilling operations.
- C. Extraction wells shall be 36 inch diameter, drilled to the depth shown on the drawings.
- D. The boring depths shown on the drawings are estimated and may be adjusted in the field by the Engineer. Two reasons limiting depth might be as follows:
  - 1. If water is encountered in a boring, the Contractor shall drill beyond the point at which it was encountered. If wet conditions remain, the boring may be terminated and the length of perforated pipe adjusted by the Engineer, or the well may be relocated. If wet conditions cease (e.g., due to trapped water layer), then drilling will continue to the design depth.
- E. As soon as drilling is completed, a safety screen shall be placed over the top of the bore. Safety screen size shall be large enough to accommodate all backfill and materials and any tools used during backfill yet not large enough for any person to accidentally fall through.

### 3.02 PLACEMENT OF THE EXTRACTION WELL RISER

- A. The Contractor shall supply and install the perforated and solid HDPE landfill gas riser, as illustrated on the Plans.
- B. The bore for the well shall be straight and the HDPE well pipe shall be installed in the center of the borehole. The Contractor will take all tension off of the pipe by mechanical means and center the pipe in the middle of the borehole before starting to backfill.

- C. HDPE joints shall be butt fusion welded and constructed as detailed in 22 05 10, “Piping Systems” and 33 05 33.40, “HDPE Pipe and Fittings”.

### 3.03 PLACEMENT OF BACKFILL MATERIALS

- A. The Contractor shall place Type F Select Fill in the annular space between the borehole wall and the outside of the riser pipe, to the elevations specified on the Plans. The surface of the Select Fill shall be covered with a piece of Type 1 Geotextile or approved equal material.
- B. Backfilling of the well shall commence immediately after well drilling is completed and the well piping has been installed in the borehole. Backfill materials shall be installed as indicated on the drawings and as approved by the Engineer.
- C. Gravel pack shall be poured or scooped through the safety screen at a rate that will not endanger the integrity of the well casing.

### 3.04 PLACEMENT OF COMMON FILL OR WELL SEAL MATERIALS

- A. The Contractor shall place common fill to the elevations indicated on the Plans and as specified below, or as directed by the Engineer.
- B. The well seal will be formed by evenly distributing two 50 lb. bags of bentonite materials around the annulus of the well and then adding 10 gallons of fresh water in a manner that will allow for a thorough saturation of the bentonite material. This process will be continued until a minimum plug thickness of 3 feet has been achieved (approximately 20 bags per well).
- C. Soil/bentonite plug shall be backfilled as per the material Specifications. The Contractor shall soak each lift prior to filling the next one.
- D. Soil backfill shall be rodded in the boring to provide even distribution and compaction.

### 3.05 DISPOSITION OF EXCAVATED MATERIALS

- A. The Contractor shall dispose of all waste excavated during construction of these wells at active work area, or as directed by the Engineer. Equipment to transport excavated materials above the capping system shall be mounted on a crawler chassis, an all-terrain vehicle, or other low-ground pressure equipment approved by the Engineer.

### 3.06 AVAILABILITY OF WATER FOR DRILLER’S USE

- A. Reasonable quantities of water are available at no cost to the Contractor at the location specified by the Owner. The Contractor is responsible for all connections to the existing system and transportation of the water.



### 3.07 DAMAGE TO THE LANDFILL CAP SYSTEM

- A. Any damage to the landfill cap system inflicted during operations at the site shall be repaired by the Contractor at no cost to the Owner.

END OF SECTION

## SECTION 44 13 50

### LANDFILL GAS FLARE STATION

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Owner shall furnish all labor, equipment, materials and freight for the complete and operational packaged Landfill Gas Flare Station, as specified and/or directed.
  - 1. Mechanical Equipment Shall Include:
    - a. Landfill Gas Flare Blower Skid
    - b. Open Candlestick Flare Stack
    - c. Control Panels
- B. The work also includes all accessories, control stations, appurtenances or other work required for a complete operating installation of the specified equipment, except those items specifically included under other items of this project.

##### 1.02 SUBMITTALS

- A. Manufacturer's Data: Submit six (6) copies of shop drawings and schematics for each item to be supplied under this Section.
- B. Provide certification that all controls and VFDs are fully operational in ambient temperatures of -30°F to 120°F.

##### 1.03 GENERAL REQUIREMENTS

- A. Section 23 05 00, "Mechanical General Requirements", with the additions and modifications specified herein, applies to this Specification.
- B. The Blower Skid shall be a complete pre-assembled unit.

##### 1.04 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. A36 Structural Steel
    - b. A53 Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless

## 1.05 DEFINITION OF SYSTEM SUPPLIER

- A. A system supplier is defined as a manufacturer, fabricator, installer, corporation or firm that regularly is employed in the design, fabrication, installer (or installation supervision), testing and start-up of systems comparable in size and type to those specified and indicated. The system supplier shall arrange the equipment selected, design the equipment interconnections, produce the related shop drawings, supervise the installation, and start up and test the equipment. The combined system shall be an integrated design of a single system supplier experienced in the manufacture and installation of such systems. The system supplier shall have a minimum of 25 landfill gas candlestick flares in successful operation in the United States for a period of one (1) year or more.

## PART 2 - PRODUCTS

### 2.01 LANDFILL GAS FLARE STATION

- A. Provide a complete and operational skid-mounted blower system including: a condensate knock-out tank; two (2) motor driven blowers (with space for a third); and all interconnecting piping, valves, peripheral equipment, control panels and controls. Piping shall extend from the blower skid to a separate candlestick utility flare stack located a minimum of 50 feet from the blower skid location. The skid-mounted blower and candlestick utility flare system shall be designed for exterior unprotected installation and to operate at ambient temperatures between -30 degrees F and 120 degrees F. The flare package shall accommodate the following nominal conditions:
1. Landfill Gas Quantity  
Composition: 30% to 60% methane (CH<sub>4</sub>)  
Balance of carbon dioxide (CO<sub>2</sub>), air, inerts  
Maximum 750 scfm  
Minimum 50 scfm  
Methane Content 30-60%  
Supply Temperature 40°F-130°F  
LFG Moisture Content Saturated
  2. Mechanical  
Design Wind Speed: 110 mph  
Ambient Temperature: -30°F to 120°F  
Seismic Zone: 4  
Electrical Area: Non-Hazardous  
Site Elevation: 1,750 ft. above sea level

3. Performance Requirements
  - a. Required System Vacuum Pressure: -50 inches w.c.
  - b. Required Blower Outlet Pressure: Matched to required flare pressure.
  - c. The flare must be capable of sustaining stable combustion with 30% - 60% CH<sub>4</sub> at the maximum required flow rate.
  - d. The flare must be capable of a minimum 10:1 turndown.
  - e. The flare exit velocity must be designed strictly in accordance with EPA 40 CFR Ch. 1 Section 60.18, but shall not exceed 100 feet per second at any time.
  - f. The radiation on any point at grade shall not exceed 500 Btu/Hr-ft<sup>2</sup> when the flare is firing at the maximum design heat release and with a 20 mph wind. This radiation is to be determined via the 3-point method utilizing the radiant heat fractions at each point.
  - g. Flame shape shall be determined and be based on the momentum flux differences between the landfill gas exiting the flare tip and the cross wind. The landfill gas should take into account the hydrocarbon concentration.
  - h. Flame length shall be determined and be based on the maximum design heat release with allowances for the molecular weight.
  - i. The pressure loss through the flare must be less than 5" w.c. from the inlet flange through the outlet of the flare.
  - j. Emissions from the flare shall not exceed the following:
    - 1) Nitrogen Oxide (NO<sub>x</sub>) - 0.068 lbs per MMBtu Fired
    - 2) Carbon Monoxide (CO) - 0.37 lbs per MMBtu Fired
  - k. The flare shall be capable of achieving a minimum destruction efficiency of >98% of total non-methane organic compounds (NMOCs).

B. Skid: Provide a skid fabricated from ASTM A36, structural steel shapes with skid-resistant galvanized floor grating. The skid shall be designed to withstand all loading and rigging forces. All required mounting hardware, bracing, mounting pads, and piping supports shall be furnished to maintain proper equipment installation and alignment. The skid shall be completely hot-dipped galvanized or painted after fabrication. The system supplier shall include the skid dimensions and fastening requirements in the Shop Drawing submittals for coordination of embedded items installed by others.

C. Condensate Knock-Out Tank: Provide a single wall HDPE condensate knock-out tank with 150 pound flanged inlet and outlet connections. The landfill gas collection header inlet to the skid will be 8-inch diameter SDR 17 HDPE. The knock-out tank shall be capable of separating 99% of all liquid droplets 10 microns and larger, complete with the following:

1. Stainless steel mesh pad for moisture collection;
2. Removable top for accessibility & maintenance;
3. Heavy-duty sight level gauge;

4. A differential pressure gauge mounted on the vessel and connected to taps on the upstream and downstream side of the mesh pad; and
5. Two (2) 1/2" FNPT connections with plugs for optional addition of level switches.
6. One (1) 2" FNPT drain connection for condensate disposal.

D. Blowers: The blowers shall be direct drive multistage centrifugal-type blowers with premium efficiency totally enclosed fan cooled motors (TEFC). A total of two (2) 500 scfm blowers shall be supplied. The system shall be capable of handling the anticipated maximum landfill gas flow rate (500 scfm) under one blower operation at 50 inches of water column (in-w.c.) total pressure head and 100% speed operation. Impellers shall be non-sparking constructed of aluminum for use with hazardous gas streams, mounted on one shaft and supported on each end by bearings mounted in outboard bearing housings. Fiberglass housings will not be permitted. Blowers and impellers shall be constructed of materials or supplied with coatings resistant to landfill gas constituents. Blowers shall be of a proven design in similar applications. Prototype blower designs shall not be acceptable. Blowers shall be manufactured by Gardner-Denver, Continental Blower or National Turbine.

1. Nameplate: The blower and motor housings shall each be provided with a nameplate which states the manufacturer, model number, serial number, and the pertinent information regarding electrical requirements, size, and capacity.
2. Blower Motor: Each blower motor shall be 460 volt, 3 phase and 60 hertz, high efficiency, totally enclosed, fan cooled (TEFC) motor.
3. Variable Frequency Drives (VFDs): Furnish each blower motor with a variable frequency drive, matched to the motors for the variable speed operation of the blowers. Drives shall have the following functions:
  - a. variable and constant torque applications
  - b. minimum power factor of .95; minimum 97% efficient at full load
  - c. maximum allowable voltage fluctuation of "10%
  - d. Sine wave PWM output
  - e. field adjustable, maximum 15,000 Hz carrier frequency
  - f. insulated gate bipolar transistors (IGBT's)
  - g. 100% rated torque at 1.5 Hz and 150% rated torque at 3 Hz
  - h. local display and digital keypad (remote mount on MPS-CP exterior face of control panel)
  - i. hand-off-auto (H-O-A) selector switch (mount H-O-A on face of main control panel) with additional dry contacts for connection by others
  - j. 4-20 mA and 0-10 VDC speed control input
  - k. fault indications for under voltage, over voltage, over temperature, instantaneous overcurrent, ground fault, overload threshold exceeded, overload shutdown, processor fault
  - l. drive to be capable of running without load connected
  - m. start/stop by remote contact closure/opening

- n. any drive fault to actuate a common output contact for actuating a drive fault pilot light and auxiliary contact and indication of “drive fault” condition.
  - o. drive shall provide electronic overload protection for the motor
  - p. drive shall be able to operate a motor “on the fly”
  - q. have capability for auto restart after power outage
  - r. drive shall have fusible disconnect with fuse size/type per manufacturer’s recommendations.
- 4. Drive manufacturer shall be ABB, ACS 400 Series, or equal.
- 5. Install VFD’s within a NEMA 3 panel. Panel shall have the following provisions:
  - a. Main 200A, 3-pole disconnect
  - b. Thermostatically controlled panel enclosure heater
  - c. Interior panel/door with cover mounted digital keypad
  - d. Provide main, 480V, 3-pole breaker on line side of each drive
  - e. Panel shall be vented or cooled to prevent over heating.
- E. Pressure and Vacuum Gauges: Provide a pressure gauge on the outlet and a vacuum gauge on the inlet side of each blower. Pressure and vacuum gauges shall be capable to measuring 0 to 20 and 0 to 80 in-w.c., respectively. Gauges shall have a 4.5-inch diameter dial as supplied by the blower manufacturer. Gauges shall be Capsuhelic, or equal.
- F. Expansion Joints: Flanged reinforced expansion joints between the skid inlet piping and the condensate knockout, between the blower inlet and outlet and connected piping, and between the blower skid and flare assembly. Additional expansion joints shall be provided by the system supplier as necessary. Back up rings shall be stainless steel. Expansion joints shall be constructed of Viton.
- G. Valves:
  - 1. Manual Butterfly Valves: Manual ductile iron wafer type valves shall be supplied at the inlet and outlet of each blower complete with 316 stainless steel disks and Viton sleeve seats for complete isolation of ductile iron from the landfill gas. For 8-inch diameter and above, provide gear operator. For 6-inch diameter and less, provide lever handles.
  - 2. Check Valves: Flanged aluminum check valves to be provided at the outlet of each blower.
  - 3. Automatic Block Valve: One (1) high performance butterfly valve with carbon steel body, 316 stainless steel disk and Teflon seat shall be provided between condensate knockout tank and the blowers. The valve shall be equipped with a pneumatic fail-closed actuator, three-way solenoid valve, speed control valve and auxiliary switches. Valve shall close upon loss of power. Valve actuation shall be by compressed nitrogen contained within pressure bottles secured in a mounting rack on the blower skid assembly. Compressed nitrogen system shall include both active and back-up pressure bottles in the mounting rack. All necessary

gauges and regulators shall be supplied. Bottle sizes shall be specified by the system supplier and will be provided by others.

- H. Flow Meter: Provide flow meter with integral temperature sensor and 3-valve manifold to be installed on the piping between the blower skid and flare assembly. Location designation and installation shall be by the system supplier. The meter shall be constructed of stainless steel (316 SS). The meter shall be mounted using a 1-inch NPT packing gland tapped into the HDPE piping. The meter shall provide pulsed output for connection to a remote electronic digital flow transmitter with display of instant flow rate and totalized flow at the control panel touch screen display. Flow meter shall also accommodate multi-variable DP pressure transmitter with temperature input with integral digital LCD display. Meter shall be factory calibrated for anticipated temperatures. Calibration data shall be provided with the system manual. Provide factory calibration certificate and manufacturer's calibration and service schedule. Flow meter shall be manufactured by Veris, Inc., Model No. V100 with ABB Pressure Transmitter With Temperature Output.
- I. Piping: The manufacturer is responsible for all piping on the blower skid. The piping between the blower skid and the flare assembly will be by the Contractor. Required piping specialties shall be provided by the system supplier. The system supplier shall provide a drawing indicating the pipe connection points.
1. Skid Piping: All landfill gas piping on the skid shall be high density polyethylene (HDPE). Gaskets shall be Viton. Flanges shall be 150 pound. All the piping shall be fully assembled, mounted and supported from the outlet of the condensate knock-out to the skid edge.
  2. The system supplier shall provide expansion joints to be installed by others in the piping between the blower skid and flare.
- J. Open Candlestick Flare:
1. General: As a minimum all equipment shall perform in accordance with the performance requirements specified herein. The system supplier shall coordinate the height and location of the flare from blower skid with the Engineer based on the flame shape, flame length, and the required separation distances. The flare shall be capable of burning low BTU gas typical of landfill gas and shall include, as a minimum, a self supporting base ring, flame arrester, carbon steel stack, spark ignited pilot assembly, pilot propane (LPG) tank and piping, flare tip, and ignition and control assembly. The equipment provided shall be designed specifically for use in landfill gas service. All components directly supporting combustion, such as the flare tip and pilot, must be manufactured by the flare supplier. Only ancillary equipment, such as gas blowers, flame arrestors, and instrumentation shall be manufactured by others. The control system shall be completely assembled and tested prior to shipment by the flare supplier at the supplier's own fabrication facility.

2. Self-Supporting Base Ring: The self supporting base ring shall be a minimum  $\frac{3}{4}$ " A-36 plate with reinforcing gussets. The plate shall contain a minimum  $\frac{3}{4}$ " diameter bolt holes for anchoring the base to a concrete flare support pad.
3. Flame Arrester: The flame arrester shall be compatible with the required landfill gas flow rates. The flame arrester shall be sized to match the flare stack entrance with a 150 pound flange connection. The flame arrester shall have an aluminum body and removable, internal aluminum element.
4. Carbon Steel Stack: The flare stack shall be fabricated from A106-B standard weight carbon steel pipe up through 10" and A53-B carbon steel pipe from 12" to 16". The inlet shall be a 90° entrance into the stack. The inlet shall project a minimum of 10" from the stack and terminate with a 150# ANSI FFSO flange. The inlet nozzle shall contain one (1)  $\frac{1}{2}$ " FNPT connection on the top of the nozzle for a temperature switch to be mounted. A carbon steel inclined floor plate at least 4" below the lowest part of the inlet connection shall be seal welded to the interior of the stack with one (1) 1" 3000# FNPT connection located as a low point drain connection above the inclined plate, on the down slope side.
5. Spark Ignited Pilot Assembly: The pilot shall be spark ignited. The spark plug shall be located no closer than 5'-0" from the end of the flare tip and shall be located in a position that is not considered a "low point" that can collect water. The pilot shall consist of an ignition rod internal to the pilot assembly and shall be weatherproof such that rain or condensation will not cause the ignition rod to "arc out" in a location other than the pilot tip. The arc (spark) that ignites the flare pilot shall be located at the pilot tip, such that the base of the pilot flame is directly adjacent to the arc (spark). The pilot shall be capable of achieving the air/gas mixture required for proper pilot flame stability. This assembly shall have a windshield around the inlet air opening such that a cross-wind will not affect the operation of the pilot. The gas inlet connection to the pilot eductor shall be  $\frac{1}{2}$ " FNPT. The pilot tip shall be made from stainless steel and shall be positioned such that the main flare tip is ignited easily.
6. Pilot Propane (LPG) Tanks and Piping: Pilot propane system piping and equipment shall be in strict accordance with NFPA 54 and NFPA 58. Provide two (2) pilot propane tanks. The tanks shall be standard 20 pound (5 gallon) size and equipped with fuel gauges. The pressure of the gas shall meet the requirements of the pilot assembly. The two tanks shall be secured on a tank rack located on the blower skid outside of high traffic areas to prevent interference with skid access or maintenance. Provide all necessary piping, regulators and valves for an operational pilot system. Piping shall be  $\frac{1}{2}$ ". Piping shall not be installed directly on blower skid grating. Pipe runs from the blower skid to the flare shall be by others.
7. Flare Tip: The flare tip shall be a minimum length of 5-feet. The flare tip shall be 304 stainless steel Schedule 10S pipe of the same diameter as that of the carbon steel stack. The flare tip shall be continuously welded to the carbon steel flare stack with a 309 SS weld and shall incorporate integral



flame retention for increased flame stability. The windshield for the flare tip shall be fabricated from 309/310 stainless steel. The windshield shall be designed to deduct the proper amount of air into the flame zone for stable combustion throughout the flow range. The flare tip shall have one (1) Type K thermocouple assembly with 310 stainless steel sheathing mounted to the stack for sizes 4" through 8" and two (2) Type K thermocouple assemblies with 310 stainless steel sheathing for sizes 10" through 16". Each thermocouple shall be located such that it detects the main flame throughout the entire design operating range. A suitable amount of thermocouple and ignition wire shall be supplied.

8. Ancillary Equipment: Automatic shutoff valve to be a high performance butterfly valve with carbon steel body, 316 SS disc, PTFE seat, pneumatic fail-closed actuator, three-way solenoid valve, speed control valve, and auxiliary switches, to be mounted between the moisture separator and the blower. An eccentric Flame Arrester shall be mounted at the exit of the landfill gas piping. The Flame Arrester shall be all aluminum construction and properly supported for removal of element. A thermal mass flow meter shall be mounted in a straight run of pipe for accurate flow measurement. This flow meter to be connected to the chart recorder for the flow indication and recording. A suitable amount of thermocouple and ignition wire shall be supplied.

## 2.02 LANDFILL GAS FLARE STATION CONTROL SYSTEM

- A. General: Provide a complete and operational control system designed for 480V/3ph/60Hz incoming power and step-down as required to successfully operate the blowers and flare system.
- B. The control system shall be supplied with the following items completely pre-assembled on a structural steel rack mounted to the blower skid:
  1. A NEMA 3R main power disconnect switch sized for the proper amperage.
  2. A weatherproof VFD panel that includes all VFDs, VFD line side circuit breakers, circuit breaker handle lockouts and overload protection as required.
  3. One (1) weatherproof single phase power transformer to convert electrical power service from 480V to 120V.

4. Control Panel shall be Type NEMA 3 door within a door enclosure constructed of 14 gauge cold rolled steel, baked enamel finish, tamperproof cover, padlock hasp. Control panel shall contain controls for the blower systems and flare control system. Control panel shall include thermostatically controlled condensation protection heater. Instrumentation within the control panel shall include as a minimum:
- a. Remote electronic digital flow transmitter unit with display of instant flow rate and totalized flow at the control panel touch screen display. Transmitter shall also accommodate DP pressure with temperature. Transmitter shall contain an auxiliary 4-20 mA output for future SCADA connection.
  - b. Allen Bradley Programmable Logic Controller, or equal.
  - c. Automation Direct 8" touch screen display, or equal.
    - 1) The following switch and lights are required on the front of the control panel, as a minimum:
      - a) Panel Power (On/Off) switch
      - b) Power ON light (white)
      - c) Flare operating light (green)
      - d) Flare shutdown light (red)
    - 2) The following flare system status is required on the touch screen display, as a minimum:
      - a) Flare start up status
      - b) Thermocouple status (normal or cooling)
      - c) Pilot gas ON/OFF status
      - d) Igniter ON/OFF status
      - e) Pilot proved status
      - f) Auto valve status
      - g) Blower status
      - h) Flame proved status
      - i) Blower hour meter
      - j) Flare thermocouple temperatures
      - k) Flame arrester thermocouple temperature
    - 3) The following switches/settings are required on the touch screen display, as a minimum.
      - a) System control (Local – Off – Remote)
      - b) Blower control (Hand – Off – Auto)
      - c) Main thermocouple setpoint
      - d) Pilot thermocouple setpoints
      - e) Reset switch
      - f) Alarm acknowledgement switch
    - 4) The following alarms are required on the touch screen display, as a minimum.
      - a) Manual stop
      - b) Pilot flame failure
      - c) Flame arrester high temperature
      - d) Auto valve failure

- e) Blower failure
    - f) Thermocouple failure
    - g) Main flame failure
  - 5) Each alarm shall be linked to a wireless real-time alarm system, or alarm communications dialer, manufactured by Mission Communications, or approved equal. Dialer system shall transmit alarm data to an Owner designated site staff member via cellular transmission. The dialer shall be capable of transmitting data via phone, text message, and email.
- d. Pilot gas control system: Provide one (1) pilot gas control system including pressure regulator, fail-closed shutdown valve, manual block valve, and pressure indicator.
- e. The following components shall be installed on or mounted to the flare stack.
  - 1) One (1) weatherproof Ignition Panel with 6000V transformer mounted to the stack for intermittent pilot ignition.
  - 2) One (1) temperature switch/thermocouple mounted downstream of Flame Arrester for detecting flashback.
  - 3) Completely assembled and pre-wired pilot gas train including pressure regulator, fail-closed shutdown valve, manual block valve, and pressure indicator.
- C. The control station and instrumentation shall be assembled and wired completely in a facility approved by Underwriters Laboratories and shall be functionally tested prior to shipment simulating actual operation.
- D. The flow meter and all monitoring contacts shall be wired to a labeled terminal strip within the control enclosure for field terminations.
- E. Blower Skid Factory Installed Conduit: Use rigid galvanized steel conduit sized per NEC for wire runs involved. Use waterproof hubs on connections to enclosures. Provide ground conductors in each conduit run. Main conduit runs shall be installed overhead outside of high traffic areas. Conduit installed directly on skid grating is not permitted. Use a minimum of 3 feet of waterproof flexible conduit to permanently fasten to any motors or to any equipment which may move or vibrate.

## 2.03 SAFETY SIGNAGE

- A. Signage shall be both written and pictorial, and of sufficient size and appearance to warn operator of any potential danger or hazard.
- B. Caution Signs: Signs shall warn of the presence of potential danger or hazard, of a hazard capable of resulting in severe but not irreversible injury or damage.

- C. Danger Signs: Signs shall indicate areas of immediate and grave danger or peril, a hazard capable of producing irreversible damage or injury. The signs also indicate prohibitions against harmful activity.

## PART 3 - EXECUTION

### 3.01 INSTALLATION, GENERAL

- A. The work shall be designed, arranged and installed in a neat and orderly manner. The equipment and material shall be installed in accordance with manufacturer's printed recommendation and instructions. All parts shall be readily accessible for inspection, repair and renewal. The equipment and material shall be inspected upon delivery and shall be tested after installation. Correct defects or errors in the fabrication of components in an approved manner. If defects or errors in fabrication of components cannot be corrected in an approved manner, remove and provide non-defective components.

### 3.02 ELECTRICAL INSTALLATION

- A. All pre-manufactured and field installed electrical equipment shall be in strict accordance with NFPA 70. Prior to start-up and operational testing, a factory authorized manufacturer's representative shall inspect all electrical connections and terminations in the field for conformance with manufacturer's requirements.

### 3.03 INSULATION AND HEAT TRACE

- A. Insulation and heat trace of all exposed aboveground piping, blowers, condensate drain lines and condensate knock-out tank shall be installed by the Contractor.

### 3.04 MARKING

- A. Equipment, switches, motor controllers, and controls or indicating elements not located on the main control panel shall be identified by printed, stamped or manufactured identification plates or tags of rigid plastic or nonferrous material. Lettering for identification plates or tags shall be not less than 3/16 inch high. The nomenclature and identification symbols used on the identification plates or tags shall correspond to those used in the maintenance manuals, operating instructions, and schematic diagrams. The identification plates or tags shall be rigidly affixed to the equipment or devices without impairing functions or, if this is not possible, shall be attached using a non-ferrous wire or chain. In addition to the identification plate or tag, each major component of equipment shall have a nameplate listing the manufacturer's name, model number, and when applicable, electrical rating and other information required by pertinent standards or codes. All field wiring shall be identified at all termination locations with permanent heat shrink-tube type wire labels (no tape).

### 3.05 CLEANING, PRIMING AND PAINTING

- A. All ferrous metal surfaces shall be (1) cleaned of dirt, rust, scale, loose particles, grease, oil, and other deleterious substances, (2) given one coat of an approved rust-inhibiting primer paint, and (3) then be given two coats of an industrial enamel. Minimum dry-film thickness of each coat shall be 2.0 mils. Color shall be the manufacturer's standard color. Paint all other equipment to match.
- B. Workmanship: Conduct field touch-up work as to avoid damaging other surfaces in the area. Do not apply field applied paint during foggy, damp, rainy weather, or the ambient temperatures below 45 degrees F and above 95 degrees F.

### 3.06 GENERAL STARTUP REQUIREMENTS

- A. Prior to initial operation of the complete system, check each component as follows:
  - 1. Inspect bearings for cleanliness and alignment, and remove any foreign materials found. Lubricate as necessary and in accordance with the manufacturer's recommendations. Replace bearings that run rough or noisily.
  - 2. Check the speeds of each motor and blower to assure that they are operating at the desired point.
  - 3. Check all motors for amperage comparison to nameplate value. Correct any conditions that produce excessive current flow and that exist due to equipment malfunction.
  - 4. Check operation of all controls.

### 3.07 LUBRICATION

- A. Properly lubricate all equipment prior to its being placed in service with the appropriate lubricant.

### 3.08 IGNITION PROCEDURE AND CONTROL SEQUENCE

- A. General: The system shall be controlled by a programmable logic controller (PLC) which receives and transmits signals with respect to operating conditions. If an unacceptable operating condition occurs, the system shall discontinue operation. System operation shall include an initial timed ignition sequence, and fail-safe controls. System shutdown shall result pilot flame failure, main flame failure, automatic block valve failure, and flame arrester high temperature. Individual thermocouples shall monitor both pilot flame and main flame. PLC program shall not contain any lockouts or timers to disable the system at any time for any reason.
- B. System Control Selection: System operation begins automatically by selecting either local or remote system control. Local control requires interaction at the

control panel to start and stop operation. Remote control allows starting and stopping operation without interaction at the control panel.

- C. Operating Permissives: System operation is permitted only after confirming two safety conditions exist. The closed limit switch for the automatic gas inlet valve must be satisfied, proving a closed valve position. Additionally, the pilot and main thermocouples must not detect the presence of flame.
- D. Ignition Sequence: When the flare "Start" switch is selected, the pilot gas solenoid valve opens automatically, supplying gas to the pilot, the "Pilot Gas ON" status is indicated, and the ignition transformer energizes. The ignition transformer continues for ten seconds and then the pilot thermocouple verifies flame is present. The "Pilot Proved" status indicates and the pilot gas solenoid valve remains open.
- E. Gas Supply: Once pilot flame is detected, the automatic gas inlet valve opens, operation of the selected gas blower begins, supplying gas to the flare, and the "Blower On" status is indicated. After the open limit switch for the automatic gas inlet valve is achieved, the pilot gas solenoid valve closes and the "Igniter OFF" status is indicated. While the main thermocouple verifies flame is present, system operation continues. If the open limit switch for the automatic block valve is not achieved within twenty seconds, the "Automatic Block Valve Failure" light flashes and system operation discontinues.

### 3.09 SYSTEM FAILURE

- A. Automatic Block Valve Failure: If the open or closed limit switch on the automatic block valve indicates improper valve position at any time during start up or operation, the Automatic Block Valve Failure alarm will be indicated on the display and the unit will shut down.
- B. Pilot Flame Failure and Shutdown: Pilot Flame Failure occurs, during the ignition sequence, when the pilot thermocouple is unable to detect the presence of pilot flame. When Pilot Flame Failure occurs, system operation is interrupted momentarily. Then the entire ignition sequence is repeated automatically. A shutdown occurs only after three consecutive failures, or unsuccessful attempts. Once Pilot Flame Shutdown occurs, the "Pilot Flame Failure" alarm is indicated and system operation discontinues.

- C. Main Flame Failure and Shutdown: Main Flame Failure occurs, once the ignition sequence is complete, when the main thermocouple is unable to detect the presence of main flame. When Main Flame Failure occurs, system operation is interrupted momentarily. Then the entire ignition sequence is repeated automatically. A Shutdown occurs only after three consecutive Failures, or unsuccessful attempts. Once Main Flame Shutdown occurs, the "Main Flame Failure" alarm is indicated and system operation discontinues.
- D. Flame Arrester High Temperature: Flame Arrester High Temperature occurs when the temperature switch on the face of the flame arrester detects the presence of a flame, indicating a flash back. This will immediately cause a shutdown and the "Flame Arrester High Temp" alarm will be indicated and the system operation discontinues.

### 3.10 INSTRUCTION TO OWNER PERSONNEL

- A. Upon completion of the work and after field testing and final operational acceptance of the systems, and at a time designated by the Owner, the services of a competent factory authorized technician regularly employed or authorized by the manufacturer shall be provided for instructing personnel in the proper operation, maintenance, safety and emergency procedures of the landfill gas flare station system. The period of instruction shall be two (2) eight-hour working days. The training shall be conducted at the job site. Provide Owner with a written description of the proposed training a minimum of two (2) weeks prior to the training date.

### 3.11 SPARE PARTS

- A. Provide sufficient quantity of spare parts including (2) thermocouples, lamps, bulbs, filters, seals and other consumable parts recommended by the system supplier to cover two years of service at full-scale operation.

### 3.12 WARRANTY

- A. The system supplier shall guarantee all the materials and equipment called for in this Specification against defects in materials or workmanship. Under this warranty, the system supplier shall make good, at his own expense and without delay, the failure of any equipment or material to satisfactorily perform the work intended for a period of twelve months following the date of successful system startup. A manufacturer's authorized representative shall inspect the completed landfill gas flare station for conformance with the manufacturer's installation requirements and shall warrant installation of the system for one year period from initial system startup. The system supplier shall not be responsible to warranty work outside of the scope of this Specification. The system supplier shall also make good any damage to the Project, the environment or other property of the Owner caused by such failure. On or about one year from the date of successful

system startup, the system supplier shall assist the Engineer in making a one year inspection of the system. The supplier shall provide any and all repairs, renewals or replacements that may be revealed as necessary at the one year inspection. No additional payment will be made to the supplier for performing the one year inspection or any required remedies.

END OF SECTION



## SECTION 44 56 00

### WASTE HANDLING AND DISPOSAL

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Under this Section, the Contractor shall furnish all labor, materials and equipment for Waste Handling and Disposal, as shown on the Plans, specified, and/or directed.
- B. Waste to be handled and disposed of includes excess waste from rotary drilled landfill gas wells and other construction activities.

##### 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. The publications are identified for information only and do not represent all regulations, codes, or standards which may apply to this work.
  - 1. Occupational Safety and Health Administration (OHSA) Regulations
    - a. 29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response
    - b. 29 CFR Part 1910.146 - Permit-Required Confined Spaces
    - c. 29 CFR Part 1910 - Occupational Safety and Health Standards
    - d. 29 CFR Part 1926 - Occupational Safety and Health Standards for Construction
  - 2. United States Environmental Protection Agency (EPA) Regulations
    - a. 40 CFR Parts 260-269 - Resource Conservation and Recovery Act (RCRA) Hazardous Waste Management and Regulations
  - 3. New York State Department of Environmental Conservation (DEC) Regulations
    - a. 6 NYCRR Parts 370-374 - Hazardous Waste Management Regulations
    - b. 6 NYCRR Part 360-363 - Solid Waste Management Regulations
    - c. 6 NYCRR Part 364 - Waste Transporter Regulations
    - d. 6 NYCRR Parts 612-614 - Petroleum Bulk Storage
    - e. TAGM 4046 - Determination of Soil Cleanup Objectives and Cleanup Levels

### 1.03 HEALTH AND SAFETY

- A. Additionally, all site activities shall be conducted in accordance with all pertinent general industry (29 CFR Part 1910) and construction (29 CFR Part 1926) Occupational Safety and Health Administration (OSHA) standards, and other applicable New York State and municipal codes and ordinances.
- B. The Contractor shall also develop and implement a site specific Health and Safety Plan that addresses possible hazards associated with the waste excavation. The landfill has traditionally accepted commercial, industrial and residential wastes including friable asbestos.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Waste shall be covered at the end of each work day with a minimum 1 foot of common fill or alternative cover material. All alternative cover materials must be approved by the Engineer.

## PART 3 - EXECUTION

### 3.01 WASTE HANDLING AND DISPOSAL

- A. Waste removed from the work area shall be disposed of in the active landfill working face at no additional cost to the Contractor. The Contractor shall coordinate the disposal of the waste with the Owner. The Contractor may be required to weigh all waste to be disposed of.

END OF SECTION