

## SECTION 01 11 00

### SUMMARY OF WORK

#### PART 1 GENERAL

##### 1.01 SCOPE OF WORK

- A. The Contractor shall perform all activities and furnish all labor, materials, equipment, Subcontractor services, and incidentals to implement the Remedial Action (RA) in accordance with the Contract between National Grid and the Contractor. The Canastota Non-Owned Former Manufactured Gas Plant (MGP) site (Site) RA consists of the excavation, removal, off-Site disposal, and solidification of MGP-related material. This may include but is not limited to demolition of existing site features and subsurface utilities, and the restoration of the Site.
- B. National Grid has retained GEI Consultants, Inc., dba GEI Consultants Engineering, Geology, Architecture & Landscape Architecture. (GEI) to serve as the Construction Administrator (CA) for the Project. The CA will serve as the single point of contact for the Contractor who is awarded the Work and will disseminate Contractor submittals for review to the appropriate parties and interface with other GEI technical staff, as needed.
- C. All tasks, requirements, deliverables, etc. contained in the Contract Documents are the sole responsibility of the Contractor unless specifically assigned to Others. Project Work to be performed by the Contractor includes, but is not limited to, the following.
  - 1. Prepare and implement a Site-Specific Contractor Health and Safety Plan.
  - 2. Prepare and implement a Site Operations Plan.
    - a. As a component of the Site Operations Plan, prepare and implement a Green Remediation Plan consistent with NYSDEC Program Policy DER-31/Green Remediation requirements. Additionally, complete and submit Form A – Summary of Green Remediation Metrics as part of this plan.
  - 3. Perform a Preconstruction Survey to document the current conditions of the DPW Garage, Salt Storage Unit, general site conditions, and any areas that may be impacted by the proposed work. Submit a report documenting the existing conditions to the CA for review.
  - 4. Install, operate, and maintain temporary facilities and controls, including:
    - a. Stormwater and erosion controls.
    - b. Worker health and safety measures.
    - c. Equipment and personnel decontamination facilities.
    - d. Field office trailers and parking.
    - e. Sanitary facilities.
    - f. Dust, odor, and vapor control.

- g. Excavated material (soil and debris) management/loading areas.
  - h. Water collection/treatment/management.
  - i. Temporary security fence.
  - j. Traffic controls (as necessary).
5. Establish additional survey control points as necessary.
6. Obtain all necessary construction-related permits as required for completion of the Work.
7. Abide by the provisions of all permits and provide coordination and adequate notice as may be required of any construction activity that will require an inspection.
8. Perform the remediation and associated work.
- a. Perform utility location tasks.
  - b. Establish and maintain real time communication with the Greater Lenox Ambulance Service of Canastota via radio or other means during the Work. Vehicle egress from the Lenox Ambulance facility shall not be hindered by the Work and egress from the facility shall remain unobstructed at all times.
  - c. Coordinate the Work with the Village of Canastota.
  - d. Work shall be performed such that the duration of bypass pumping of the Sanitary Sewer effluent is minimized.
  - e. Flush and then abandon in place the section of Sanitary Sewer Force Main taken out of service from the newly installed manhole (MH-1) adjacent to the lift pump station to the existing manhole adjacent to the DPW Garage (MH-3) by filling with self-leveling flowable fill having a minimum unconfined compressive strength of 75 psi at 56 days
  - f. Identify, temporarily relocate, or protect existing utilities and Site features to remain after the Project is complete.
  - g. Excavate and remove MGP-related impacted material, the overlying soil, and/or concrete and miscellaneous debris.
  - h. Dewater the excavation as necessary to perform excavation under dry conditions and treat the water generated from dewatering operations.
  - i. Perform in-situ solidification in accordance with the methods and sequences described in the Contract Documents, or in a manner mutually agreed upon by the Contractor and CA.
  - j. Transport excavated MGP impacted material to a National Grid approved off-Site disposal facility as a direct-load operation, when practicable.
  - k. Furnish, place and compact approved, clean soil backfill.

- l. Reinstall all features and appurtenances that are damaged or relocated during the performance of the Work.
  - m. Restore the Site as per the Contract Documents.
9. Clean up the Site and storage areas to preconstruction conditions, including grading and surface restoration, as directed by the CA. Demobilize and promptly remove all Contractor supplies, equipment, and tools from the Site. Restore, repair, or replace utilities, and other features removed, damaged, destroyed, or disrupted during construction.
  10. Provide and perform any other equipment, Work, or submittals required to facilitate the Work shown in the Contract Documents.

## 1.02 PROJECT CONDITIONS

- A. The Site is owned by the Village of Canastota and is operated by the Village of Canastota Department of Public Works (DPW). The site is not owned by National Grid.
- B. For available information concerning Site conditions, refer to the Contract Documents, the Remedial Investigation (RI) Report (GEI-2015), and the Pre-Design Investigation (PDI) Report (GEI-2023).
- C. Information regarding Site conditions is intended to assist the Contractor in preparing his Bid. National Grid and the CA guarantee neither the accuracy of this information nor that this information is necessarily indicative of all conditions that may be encountered, therefore the Contractor agrees that it shall neither have nor assert against National Grid or CA any claim for damages by reasons of inaccuracy, inadequacy, incompleteness, or other deficiency of the information provided. The Contractor shall satisfy/verify for himself all existing conditions, including understanding the Site data presented in the RI and PDI, affecting his Work by personal investigation. Failure by the Contractor to understand and verify all existing Site conditions shall not result in additional charges to National Grid. Also, neither the information provided the CA, National Grid, or their agents or employees, shall act to relieve Contractor of any responsibility hereunder from fulfilling all terms and requirements of the Contract Documents.

## 1.03 CONTRACTORS USE OF SITE

- A. The Contractor's use of the Site shall be in accordance with the terms of the access agreements entered into between National Grid and the property owners. The access agreements are provided as Attachment A.
- B. The Contractor shall limit its activities to the Project limits shown in the Contract Drawings. Only stage equipment and materials in designated areas, as approved by the CA.

## 1.04 CONTRACT DOCUMENTS

- A. The Contract Documents include all Specifications, Contract Drawings, figures, and conditions included or referenced in the Request for Proposal package and any subsequent approved Change Orders.

- B. It is not the intent of the Contract Documents to show every pipe, wire, conduit, utility connection, detail, and appurtenance necessary to complete the Work for this Project. However, such connections and details that may be necessary to complete the Work in accordance with Contract Documents, code requirements, and to the Owner's satisfaction will be included in the Work.
- C. The organization and division of Work contained within the Contract does not make the CA or National Grid an arbitrator to establish contract limits between the Contractor and any Subcontractor.
- D. Perform the Work in accordance with the concepts and intent of the Decision Document and Pre-Design Investigation (PDI) Report. A copy of the Decision Document and PDI Report are included as Appendix A to the Bid Documents.

## 1.05 CONTRACTOR REQUIREMENTS

- A. Perform the scope of Work contained in the Contract Documents.
- B. The Work will be performed on a known contaminated MGP Site. Comply with the requirements of the Contractor Health and Safety Plan. Take precautions as necessary to protect the public and work force personnel from potential hazards.
- C. A list of National Grid-approved disposal facilities has been provided with the Contract Documents. The Contractor is responsible for providing any additional analytical testing required for acceptance of the material at the Contractor selected, National Grid-approved, disposal facilities.
- D. Take precautions as necessary to protect the public and work force personnel from potential hazards in accordance with the CA prepared CAMP.
- E. The Contractor is responsible for furnishing, installing, maintaining, and removing all soil erosion and stormwater control measures during the performance of the Work. Inspect and maintain temporary facilities and controls until the Work is complete. Installation, maintenance, and removal is to comply with the Contract Documents. Maintain a representative on Site that has successfully completed the New York State Stormwater Pollution Prevention Plan (SWPPP) training program.
- F. For any Work performed in close proximity to residential or commercial properties, utilities, or any other third-party property, take any and all necessary precautions to protect the property, utility lines, trees, walls, and other structures and/or related appurtenances from damage.
- G. Repair any damage caused directly or indirectly outside the Project limits, as directed by the CA, at no additional cost to National Grid.
- H. Comply with all applicable OSHA safety regulations during the performance of the Work.

## 1.06 CONTRACT DRAWINGS AND SPECIFICATIONS

- A. Maintain at the Site, two copies of all Contract Drawings, Specifications, addenda, approved shop drawings, Change Orders, schedules, and instructions, in good order.

Mark one set to record all changes made during construction and keep one set clean of all markings. Make both sets readily available for review by National Grid and/or the CA.

- B. The Contract Drawings include notes. Refer to the Contract Drawings in conjunction with the Specifications.

## **PART 2 PRODUCTS**

(Not Applicable)

## **PART 3 EXECUTION**

(Not Applicable)

END OF SECTION 01 11 00

## SECTION 01 14 00

### WORK RESTRICTIONS

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. This section contains general restrictions to be followed during the performance of the Work. Other sections of the specifications may contain additional requirements/restrictions for performance of their specific subject matter.

##### 1.02 CONTRACT PERIOD

- A. National Grid will coordinate with the selected Contractor to establish a mutually acceptable contract end date. Liquidated damages in the amount of \$2,500/calendar day will be enforced for every day the Work is not at Substantial Completion past this mutually agreed upon contract end date.
- B. Substantial Completion is defined as all remedial excavation and solidification work completed and backfilled.

##### 1.03 WORK HOURS

- A. Work activities can be conducted between the hours of 7:00 AM to 7:00 PM, on non-Holidays, Mondays through Fridays except in cases of emergency, as allowed by the Village of Canastota noise ordinances. If the Contractor desires to work outside of normal work hours, advanced approval from the Construction Administrator (CA), National Grid, and the Village of Canastota is required.

##### 1.04 COMMUNICATION WITH THIRD PARTIES

- A. Representatives of regulatory agencies from the New York State Department of Environmental Conservation (NYSDEC), Village of Canastota, and other local civic organizations may be on Site to observe and inspect the Work.
- B. Direct communications with regulatory agency personnel to the CA or their designee.
- C. Do not communicate with the media/press, project stakeholders, elected officials, public, etc. regarding the Work. Refer all external questions and comments to the CA and National Grid.

##### 1.05 LAY DOWN AND STAGING AREAS

- A. On-Site laydown and staging areas are available for use at the Site.
- B. Contractors may directly negotiate for additional off-Site space at no additional cost to National Grid, as needed.

##### 1.06 VEHICLE ACCESS AND PARKING

- A. The Contractor will access the Site from E North Canal Street.

- B. Parking is available in the laydown and staging areas shown on the Contract Drawings.

## 1.07 SANITARY FACILITIES

- A. Provide sanitary facilities for use by the Contractor personnel, Subcontractors, CA, and visiting agency representatives during the performance of the Work.

## 1.08 NOISE CONTROL

- A. Comply with the Village of Canastota codes regarding acceptable noise levels at all times.
- B. Equip vehicles and motorized equipment with appropriate noise control devices to maintain noise levels that conform to current OSHA standards and State and local regulations. Take immediate steps to correct any deficiencies noticed, or as directed by the CA.
- C. Requirements for specialty construction equipment is provided in the associated technical specification section.
- D. Properly maintain all mufflers and noise control devices, and replace when necessary. Operate all construction equipment in the manner that it was intended. Excessive amount of noise and vibration due to improper use of equipment is prohibited.
- E. All equipment that is required to operate beyond standard work hours will, to the maximum extent possible, be electrically driven or otherwise configured for quiet operation (e.g., using propane as a fuel source).

## 1.09 EQUIPMENT LEFT ON SITE

- A. Secure all equipment left on Site outside of standard work hours.
- B. Ensure that all equipment, where feasible, is de-energized when left on Site and not in use to prevent electrical/fire/explosive hazards. The Contractor is responsible for the security, operation, and maintenance of any systems that require such services outside standard work hours. If systems are operational outside the standard work hours, provide oversight at all times when equipment is in operation, or provide an electronic monitoring system with a remote communication feature to alert the appropriate personnel of a system failure. Repair system failures in a timely manner such that the Project schedule is not affected.

## **PART 2 PRODUCTS**

(Not Applicable)

## **PART 3 EXECUTION**

### 3.01 ENVIRONMENTAL PROTECTION

- A. For the purposes of this specification, environmental protection is defined as the retention of the environment in its natural state to the greatest extent possible during construction, and to enhance its natural appearance at the conclusion of the Work. Comply with all

applicable or relevant and appropriate Federal, State, local laws, permit conditions, and reports to provide for the abatement and control of any potential environmental impacts arising from the performance of the Work.

- B. The CA will notify the Contractor of any instances of non-compliance with Federal, State, local laws, permit conditions, or the approved reports and identify corrective actions to be taken. State or local agencies may also provide notification of non-compliance with State or local requirements. After receipt of the notice, immediately prepare to take corrective action, inform the CA of the proposed corrective action, and take such actions once they are approved by the CA. Failure or refusal to promptly comply may result in the CA issuing an order suspending or halting all or parts of the Work until satisfactory corrective action has been taken. Claims for extensions of time or for excess costs or damages due to the stop Work order described above, will be denied.
- C. Do not pollute any stream, river, waterway, roadway, or soil with fuel, oil, grease, lubricant, hydraulic fluid, bitumen, calcium chloride, acid, base, or other harmful materials. Comply with the appropriate Federal, State, and local regulations and guidelines for the handling and disposal of all materials.
- D. Properly dispose of any debris resulting from the performance of the Work. Disposing of any debris, soil, water, effluent, by product, waste, trash, chemical, fuel, oil, grease, lubricant, bitumen, calcium chloride, acid, base, or other harmful material etc., in or adjacent to the Project area is not acceptable. Remove any unauthorized dumped materials and restore the area as directed by the CA. If necessary, areas contaminated as a result of unauthorized activity, failure of environmental controls, or dumping by the Contractor will be remediated at no additional cost to the Owner.
- E. Dispose of all contaminated materials (debris, soil, water, effluent, by-product, waste, trash, chemical, fuel, oil, grease, lubricant, bitumen, calcium chloride, acid, base, used erosion controls, or other harmful material, etc.) resulting from the Work in accordance with all applicable, or relevant and appropriate, Federal and State laws prior to completion of the Work.

END OF SECTION 01 14 00

## SECTION 01 18 00

### UTILITY PROTECTION

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. This specification contains the requirements for the location and protection of utilities affected by the performance of the Work.

##### 1.02 UTILITY COORDINATION

- A. The Contractor is solely responsible for any and all required notifications to utility companies prior to commencing the Work, and for response to any emergencies that may arise during the Work. Certain active and inactive utilities may currently be present at the Site. The exact location and type of utility is to be determined by the Contractor without reliance on information provided by National Grid or the Construction Administrator (CA).

##### 1.03 PROTECTION OF EXISTING UTILITIES

- A. Comply with the requirements of all applicable utility protection laws or regulations.
- B. Contact and cooperate with utility companies to locate all utilities (including pipelines, cables, power poles, guy wires, and other structures) on the Site prior to beginning the Work.
- C. Protect all utilities from damage during construction, unless otherwise indicated to be removed or abandoned. If damaged, repair the utilities as required by the utility's owner at the Contractor's expense.
- D. If a utility is encountered that is not shown in the Contract Documents, or otherwise not made known to the Contractor prior to beginning the Work, promptly take the necessary steps to assure that the utility is not damaged and notify the CA in writing of the presence of the utility. The CA will review the conditions and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence of the utility.
- E. Immediately notify the CA of any incident involving a utility.
- F. All utilities on Site must be located and positively identified prior to the start of intrusive activities.

##### 1.04 SUBMITTALS

- A. Submit a utility survey as required in the Contract Documents.
- B. Submit a utility incident report to National Grid and CA within 4 hours of any incident causing direct or indirect damage to a utility. At a minimum, document the following items in a utility incident report
  - 1. Description of the incident.

2. Damage assessment.
3. Corrective actions taken.
4. Initial estimate on the need for permanent repairs.

## **PART 2 PRODUCTS**

(Not Applicable)

## **PART 3 EXECUTION**

### **3.01 UTILITY IDENTIFICATION**

- A. Use "soft-dig" excavation techniques (e.g., air knife, vacuum excavation, or hand tools) to positively identify the location and type of all underground activities prior to the start of intrusive activities.

END OF SECTION 01 18 00

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## SECTION 01 20 00

### PRICE AND PAYMENT PROCEDURES

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. The items listed in Project Price Schedule constitute all of the pay items for completion of the Work.

##### 1.02 SUBMITTALS

- A. Submit a Project Price Schedule and Bid Form signed and sealed with a company seal by a company officer.
- B. Submit monthly invoices in accordance with terms of the Agreement.

##### 1.03 QUANTITY ESTIMATES

- A. Verify estimated quantities for unit prices in the field.
- B. National Grid and the Construction Administrator (CA) reserve the right to reject the Contractor's measurement of Work-in-place that involves the use of established unit prices and have Work measured by a second independent surveyor that is acceptable to National Grid and the Contractor.
- C. For all unit price Work, the contract price will include an amount equal to the sum of the unit price for each pay item times the estimated quantity of each item as indicated in the Bid Form. The estimated quantities shown on the Project Price Schedule are not guaranteed and are solely for the purpose of comparison of bids and determining an initial contract price. Quantities and measurements supplied or placed in the Work in accordance with the Contract Documents, and verified by the CA, will determine payment.
- D. The CA will verify the quantities and classifications of unit price Work invoiced by the Contractor. The CA will review their preliminary determination with the Contractor before rendering a written decision on an application for payment.
- E. If the actual Work requires more or fewer units than the estimated units indicated on the Project Price Schedule, provide the required units at the contracted unit price. Under no circumstances may the Contractor exceed estimated quantities without prior written approval from the CA.
- F. The CA reserves the right to increase or decrease any pay item quantity, or to eliminate any pay item, as a result of the actual conditions encountered during the performance of the Work.

##### 1.04 MEASUREMENT OF QUANTITIES

- A. Measurement by Weight

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1. Weigh Scales: Certified in accordance with applicable laws and regulations for the state in which the scales are located. Certification must be within a period of not more than one year prior to the date of use.
  2. The term “ton” will mean the short ton consisting of 2,000 pounds.
  3. For shipments to off-Site disposal facilities, trucks will be weighed at the receiving facility for the purpose of measuring the quantity of Work for payment.
- B. Measurement by Volume
1. Volumes measured as in-place volumes will be determined by survey. Retain the services of an independent professional land surveyor, licensed in the State of New York, whose calculations of in-place volumes will be used for the purpose of measurement for payment. To compute in-place volumes, use the surface comparison function in the surveying software program, or other methods acceptable to the CA.
  2. Unless stated otherwise, all pay items referring to measurement by volume as the basis for payment will be taken to mean in-place volume.
- C. Measurement by Area
1. Measured by square dimension using length and width, or radius, and verified by the CA.
- D. Linear Measurement
1. Measured by linear dimension, at the item centerline or mean chord, and verified by the CA.
- E. Measurement by Time
1. Measure by the actual time, rounded to the nearest time unit, and verified by the CA.
- 1.05 ASSESSMENT OF NON-CONFORMING WORK
- A. Replace Work, or portions of the Work, that do not conform to the requirements of the Contract Documents, as assessed by the CA.
  - B. If, in the opinion of the CA, it is not practical to remove and replace the non-conforming Work, the CA will direct one of the following remedies
    1. The non-conforming Work may remain, but the unit price will be adjusted to a new price at the discretion of the CA.
    2. Partially repair non-conforming Work to the instructions of the CA, and the unit price will be adjusted to a new price at the discretion of the CA.
  - C. The individual Specification sections, specific to the Work in question, may modify these options or may identify a specific formula or percentage price reduction.
  - D. The authority of the CA to assess non-conforming Work, and identify payment adjustment, is final.

## 1.06 ELIMINATED ITEMS

- A. If any items contained in the Contract Documents are found unnecessary for the proper completion of the Work, the CA may, upon written order to the Contractor, eliminate such items from the Work, and such action will in no way invalidate the Agreement.
- B. The Contractor will be paid for all Work performed and all documented costs incurred, including the mobilization of materials, prior to the elimination of such items.

## 1.07 MEASUREMENT AND PAYMENT OF BID ITEMS

- A. The Project Price Schedule lists the pay items for the Work.
- B. All pricing provided with the Contractor’s Bid are to remain in force during the entire duration of the Project (i.e., no rate increases will be due to the Contractor at any point during the Work).
- C. At the direction of the National Grid and/or the CA, the Contractor may be asked to perform change order Work on a time and materials basis. The unit rate schedule included in the Contractor’s proposal will be the basis for measurement and payment of equipment and labor for time and materials Work. Include overhead and profit on the Contractor unit rate schedule for all time and materials Work.
- D. The following paragraphs specify measurement and payment of the pay items listed on the Project Price Schedule

### **Item 1 Submittals**

- 1. Work required to complete Submittals includes, but is not limited to:
  - a. Preparation, submittal, and revision of all required pre-construction submittals including, but not limited to the Site Operations Plan, and Contractor Health and Safety Plan.
  - b. Preparation, submittal, and revision of all required regular periodic submittals, as-needed submittals, and closeout submittals.
  - c. Preparation, submittal, and revision of all other submittals referenced in the Contract Documents.
- 2. Payment will be based on the Contract Unit Price per “Lump Sum” provided in the Project Price Schedule.
- 3. Payment for Submittals will be made on a percent complete basis of the lump sum price for the Bid item “Submittals” listed on the Project Price Schedule. Payment of the lump sum price for “Submittals” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete the Submittals Work.

### **Item 2 Mobilization**

- 1. Work required to complete Mobilization includes, but is not limited to:
  - a. Mobilizing personnel, equipment, and materials to the Site, if such movement is not included in any other bid item.

- b. Obtaining all permits and insurance necessary to successfully complete the Project.
    - c. Cleaning/decontaminating all construction-related equipment brought to the Site.
  2. Payment will be based on the Contract Unit Price per “Lump Sum” provided in the Project Price Schedule.
  3. Payment for Mobilization will be made on a percent complete basis of the lump sum price for the Bid item “Mobilization” listed on the Project Price Schedule. Payment of the lump sum price for “Mobilization” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete Mobilization Work. Payment shall also include pre-construction costs, exclusive of bidding costs, which are necessary direct costs to the project and are of a general nature rather than directly attributable to other pay items under the Contract. The amount for Mobilization shall not exceed 10 percent of the Total Base Bid. The total sum of all payments for this item shall not exceed the original Contract amount bid for Mobilization, regardless of the fact that the Contractor may have, for any reason, shut down their Work on the project, moved equipment away from the project and then back again, or for any additional quantities or items of Work added to the contract.

### **Item 3 Demobilization**

1. Work required to complete Demobilization includes, but is not limited to:
  - a. Removing temporary facilities and controls. Dispose of non-reusable temporary facilities and controls related materials at a National Grid-approved Subtitle D landfill facility as non-hazardous waste debris.
  - b. Removing temporary security fencing.
  - c. Removing all project-related signage (e.g., project sign, site security signs, traffic control/warning signs, etc.).
  - d. Restoring any remaining disturbed areas to pre-construction condition (or as directed by National Grid and/or the CA).
  - e. Removing any remaining temporary erosion and sediment control measures (i.e., silt fences, staked straw bales) once instructed to do so by the CA.
  - f. Cleaning/decontaminating all construction-related equipment at the Site (as necessary and/or as directed by the CA).
  - g. Demobilizing all temporary Site facilities (e.g., office equipment, portable toilets, hand wash stations, etc.). Demobilizing all remaining personnel, equipment, and materials.
  - h. Closing out all permits and insurance obtained during the Work.
2. Payment will be based on the Contract Unit Price per “Lump Sum” provided in the Project Price Schedule.

3. Payment for Demobilization will be made on a percent complete basis of the lump sum price for the Bid item “Demobilization” listed on the Project Price Schedule. Payment of the lump sum price for “Demobilization” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete Demobilization Work.

#### **Item 4 Project Support**

1. Work required to complete Project Support includes, but is not limited to:
  - a. Provide all required Project management and oversight by Contractor personnel.
  - b. Developing all schedules, plans, specifications, calculations, data, certifications, etc., related to the materials, products, and procedures necessary to carry out the Work, and revising/re-submitting such items as required until accepted by National Grid and the CA.
  - c. Maintaining and updating construction-phase field records in anticipation of closeout documentation.
  - d. Attending a pre-construction meeting, weekly on-Site construction progress meetings, and a project close-out meeting/walk through.
2. Payment will be based on the Contract Unit Price per “Lump Sum” provided in the Project Price Schedule.
3. Payment for Project Support will be made on a percent complete basis of the lump sum price for the Bid item “Project Support” listed on the Project Price Schedule. Payment of the lump sum price for “Project Support” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete the Project Support Work.

#### **Item 5 Survey Control and Documentation**

1. Work required to complete Survey Control and Documentation includes, but is not limited to:
  - a. Providing and using a Professional Land Surveyor licensed in the State of New York for all survey activities necessary for the proper construction and documentation of the Work.
  - b. Installing and monitoring all survey points installed as part of the instrumentation program for the existing structures, and regularly reporting those values in a format that is acceptable to the CA.
  - c. Performing topographic surveys of the Site before excavation and solidification begins to record pre-Work conditions, and at completion of excavation/solidification to record the extents of excavation/solidification and after filling to record thicknesses of fill types and the restored topography.
  - d. Performing all surveying work needed to control and document the Work.

- e. Replacing/reinstalling hubs, benchmarks, base stations and all other control points for the work if they are damaged/destroyed during the work.
  - f. Providing a full, as-built survey acceptable to National Grid and the CA prior to completion of the Work.
2. Payment will be based on the Contract Unit Price per “Lump Sum” provided in the Project Price Schedule.
  3. Payment for Survey Control and Documentation will be made on a percent complete basis of the Project for the lump sum price for the Bid item “Survey Control and Documentation” listed on the Project Price Schedule. Payment of the lump sum price for “Survey Control and Documentation” will constitute full compensation for all labor, supervision, materials, reporting, equipment, incidentals and all other costs necessary to complete Survey Control and Documentation Work, as specified in the Contract Documents.

**Item 6 Site Specific Health and Safety Plan Implementation**

1. Work required to complete Site Specific Health and Safety Plan Implementation includes, but is not limited to:
  - a. Implementing the health and safety requirements specified in the Contractor Health and Safety Plan detailed in the Contract Documents.
2. Payment will be based on the Contract Unit Price per “Lump Sum” provided in the Project Price Schedule.
3. Payment for Site Specific Health and Safety Plan Implementation will be made on a percent complete basis of the Project for the lump sum price for the Bid item “Site Specific Health and Safety Plan Implementation Is” listed on the Project Price Schedule. Payment of the lump sum price for “Site Specific Health and Safety Plan Implementation” will constitute full compensation for all labor, supervision, materials, equipment, incidentals and all other costs necessary to complete the Site-Specific Health and Safety Plan Implementation Work, as specified in the Contract Documents.

**Item 7 Site Preparation**

1. Work required to complete Site Preparation includes, but is not limited to:
  - a. Furnishing and erecting MGP Remediation Program signs consistent with NYSDEC requirements (see Contract Drawings).
  - b. Performing any clearing or grubbing of the Site and laydown area required to complete the Work, including the clearing of areas where air monitoring equipment is to be setup.
  - c. Carefully remove and properly salvage/dispose the fence components that require temporary removal for completion of the Work.
  - d. Furnishing and erecting a temporary security fence and privacy screen to create a secure site perimeter.

- e. Furnishing and installing temporary concrete barriers with attached security fence and privacy screen along East North Canal Street.
  - f. Protecting and decommissioning existing monitoring wells.
  - g. Removing the existing stone cover (at the locations shown on the Contract Drawings) and stockpiling for reuse.
  - h. Removing, loading, and off-Site disposal of any existing debris on the Project Site.
  - i. Removal of the existing utility pole east of the DPW Garage that is no longer in use in accordance with the National Grid Environmental Guidance Document (EG-1102) for wood product retirement, recycling and disposal.
  - j. Removing/relocating the water tanks adjacent the DPW Garage, if not already performed by others.
  - k. Coordinating with the Village of Canastota and the Department of Public Works (DPW) such that vehicles, equipment, materials, and other items typically parked or stored onsite are relocated out of the way, as necessary
  - l. Closing off the main entrance to the DPW Garage via concrete jersey barriers, orange construction fence, or other means acceptable to the CA during the Sanitary Sewer Relocation work.
  - m. Installing anti-tracking pad(s).
- 2. Payment will be based on the Contract Unit Price per “Lump Sum” provided in the Project Price Schedule.
  - 3. Payment for Site Preparation will be made on a percent complete basis of the lump sum price for the Bid item “Site Preparation” listed on the Project Price Schedule. Payment of the lump sum price for “Site Preparation” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete the Site Preparation Work, as specified in the Contract Documents.

**Item 8 Temporary Facilities and Controls**

- 1. Work required to complete Temporary Facilities and Controls includes, but is not limited to
  - a. Providing temporary facilities and services for the duration of the project, including, but not limited to, field office trailers, office equipment, utilities (i.e., electrical, heating/cooling, telephone, and internet), potable water service, refrigerators/microwaves, portable toilets and hand wash stations, refuse disposal services, and regular sanitary disposal service.
  - b. Constructing the excavation stockpile pad(s).

- c. Constructing, operating, maintaining, and ultimately disposing of an equipment cleaning/decontamination pad.
  - d. Installing erosion controls as shown on the Contract Drawings; perform weekly inspections of all features, as well as inspections immediately after each precipitation event; repair or replace controls as needed; remove and dispose used erosion controls in accordance with all applicable or relevant and appropriate Federal and State laws, regulations and/or permit requirements prior to demobilization.
  - e. Installing and maintaining all temporary facilities and controls as specified in the Contract Documents, unless specifically identified as being provided by Others.
  - f. Maintaining and repairing all temporary facilities and controls, including those provided by Others, when Work is taking place at the Site.
  - g. All other recurring activities not included in another pay item, or specifically identified as being the responsibility of Others, required to complete the Work.
  - h. Providing snow removal for the duration of the project.
2. Payment will be based on the Contract Unit Price per “Lump Sum” provided in the Project Price Schedule.
  3. Payment for Temporary Facilities and Controls will be made on a percent complete basis of the Project for the lump sum price for the Bid item “Temporary Facilities and Controls” listed on the Project Price Schedule. Payment of the lump sum price for “Temporary Facilities and Controls” will constitute full compensation for all labor, supervision, materials, equipment, incidentals and all other costs necessary to complete the Temporary Facilities and Controls Work, as specified in the Contract Documents.

**Item 9 Well Abandonment**

1. Work required to complete well abandonment includes but is not limited to:
  - a. Proper abandonment of monitoring wells indicated for abandonment on the Drawings in accordance with New York regulations.
2. Payment will be based on the Contract Unit Price per “Each” provided in the Project Price Schedule.
3. Payment for Well Abandonment Work will be made in accordance with the unit price for the Bid item “Well Abandonment” listed on the Project Price Schedule. Payment of the unit price for “Well Abandonment” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to provide Well Abandonment Work, as specified in the Contract Documents and/or as directed by the Owner.

**Item 10 Surface Asphalt Removal**

1. Work required to complete Surface Asphalt Removal includes, but is not limited to

- a. Demolish, remove, and stage/stockpile surface asphalt as shown on the Design Drawings.
2. Payment will be based on the Contract Unit Price per “Lump Sum” provided in the Project Price Schedule.
3. Payment for Surface Asphalt Removal will be made on a percent complete basis of the lump sum price for the Bid item “Surface Asphalt Removal” listed on the Project Price Schedule. Payment of the lump sum price for “Surface Asphalt Removal” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete the Surface Asphalt Removal Work.

**Item 11 Tar Wells Removal**

1. Work required to complete Tar Wells Removal includes, but is not limited to:
  - a. Demolish, remove, and stage/stockpile the tar well and hot well as shown on the Design Drawings.
  - b. Provide temporary shoring as necessary to complete the tar well and hot well removal.
  - c. Segregate and containerize any NAPL or NAPL coated/impacted material observed during removal.
  - d. Survey observed extents of tar well and hot well.
2. Payment will be based on the Contract Unit Price per “Lump Sum” provided in the Project Price Schedule.
3. Payment for Tar Wells Removal will be made on a percent complete basis of the lump sum price for the Bid item “Tar Wells Removal” listed on the Project Price Schedule. Payment of the lump sum price for “Tar Wells Removal” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete the Tar Wells Removal Work.

**Item 12 Soft Dig Excavation**

1. Work required for soft-dig excavation includes but is not limited to:
  - a. Furnish a hydro-excavation truck (7 cubic yard capacity or greater) and minimum two-person crew (operator and laborer) that specializes in soft-dig hydro-excavation around subsurface utilities.
  - b. Perform hydro-excavation to expose subsurface utilities within the excavation and solidification areas as specified in Section 31 23 16.
  - c. Use hydro-excavation to verify the location and extents of the out limits of the gas holder adjacent to the DPW Garage.
  - d. Settle hydro-excavated soil to decant water from solids. Manage the hydro-excavation spoils within a lined container within the excavation footprint. Send contact water to WTS and perform drying, loading, transport, and disposal of solids as treatment soil. Water treatment,

solids drying, and soil transport and disposal are covered under different pay items.

- e. Perform soft-dig excavation to expose subsurface utilities within 36-inches horizontally of the proposed sanitary sewer alignment and at the tie-in location at MH-1. With written approval from the CA, soft-dig exploration may be stopped at a depth of 24 inches below the planned trench excavation for the sanitary sewer provided the existing utility has not been located and the Contractor is confident that the utility will not be encountered during trench excavation for the new sanitary sewer alignment. Upon visual verification of the utility, notify CA prior to backfilling.
2. Payment will be based on the Contract Unit Price per “Truck-Day” provided in the Project Price Schedule.
3. Payment for Soft Dig Excavation Work will be made in accordance with the unit price for the Bid item “Soft Dig Excavation” listed on the Project Price Schedule. Payment of the unit price for “Soft Dig Excavation” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to provide Soft Dig Excavation Work, as specified in the Contract Documents and/or as directed by the Owner.

#### **Item 13 Odor/Vapor Suppression Equipment**

1. Work required for the odor suppression foam system includes but is not limited to:
  - a. Providing a minimum of two odor/vapor suppressant foam generators and associated labor. Foam generators should be mobilized during the initial equipment mobilization and remain on Site for the full duration of all intrusive activities. One generator will be the primary and the other will be a backup/standby. Foam expendables will be paid under a separate item.
  - b. Furnishing sufficient hose length to apply foam to each active excavation area, ISS area, and stockpile.
2. Payment will be based on the Contract Unit Price per “Month” provided in the Project Price Schedule.
3. Payment for Odor/Vapor Suppression Equipment Work will be made in accordance with the unit price for the Bid item “Odor/Vapor Suppression Equipment” listed on the Project Price Schedule. Payment of the unit price for “Odor/Vapor Suppression Equipment” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to provide Odor/Vapor Suppression Equipment Work, as specified in the Contract Documents and/or as directed by the Owner.

#### **Item 14 Odor/Vapor Suppression Consumables – Short Term Duration**

1. Work required to complete Odor/Vapor Suppression Consumables – Short Term Duration includes, but is not limited to:

- a. Furnishing CA-approved short term vapor-suppressant foam for the control of dust, vapor, and odor emissions during intrusive and/or potential dust generating activities.
- b. Applying odor control foam as directed by the CA.
- 2. Payment will be based on the Contract Unit Price per “Drum” of foam concentrate expended during the work. A drum is defined as a standard 55-gallon drum. Unused drums at the completion of the work will not be measured for payment, and re-stocking fees will not be paid by National Grid.
- 3. Payment for Odor/Vapor Suppression Consumables – Short Term Duration Work will be made in accordance with the unit price for the Bid item “Odor/Vapor Suppression Consumables – Short Term Duration” listed on the Project Price Schedule. Payment of the unit price for “Odor/Vapor Suppression Consumables – Short Term Duration” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to provide Odor/Vapor Suppression Consumables – Short Term Duration Work, as specified in the Contract Documents and/or as directed by the Owner.

**Item 15 Odor/Vapor Suppression Consumables – Medium Term Duration**

- 1. Work required to complete Odor/Vapor Suppression Consumables – Medium Term Duration includes, but is not limited to:
  - a. Furnishing CA approved medium term vapor-suppressant foam for the control of dust, vapor, and odor emissions during intrusive and/or potential dust generating activities.
  - b. Applying odor control foam as directed by the CA.
- 2. Payment will be based on the Contract Unit Price per “Drum” of foam concentrate expended during the work. A drum is defined as a standard 55-gallon drum. Unused drums at the completion of the work will not be measured for payment, and re-stocking fees will not be paid by National Grid.
- 3. Payment for Odor/Vapor Suppression Consumables – Medium Term Duration Work will be made in accordance with the unit price for the Bid item “Odor/Vapor Suppression Consumables – Medium Term Duration” listed on the Project Price Schedule. Payment of the unit price for “Odor/Vapor Suppression Consumables – Medium Term Duration” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to provide Odor/Vapor Suppression Consumables – Medium Term Duration Work, as specified in the Contract Documents and/or as directed by the Owner.

**Item 16 Odor/Vapor Suppression Consumables – Long Term Duration**

- 1. Work required to complete Odor/Vapor Suppression Consumables – Long Term Duration includes, but is not limited to:
  - a. Furnishing CA approved long term vapor-suppressant foam for the control of dust, vapor, and odor emissions during intrusive and/or potential dust generating activities.

- b. Applying odor control foam as directed by the CA.
2. Payment will be based on the Contract Unit Price per “Drum” of foam concentrate expended during the work. A drum is defined as a standard 55-gallon drum. Unused drums at the completion of the work will not be measured for payment, and re-stocking fees will not be paid by National Grid.
3. Payment for Odor/Vapor Suppression Consumables – Long Term Duration Work will be made in accordance with the unit price for the Bid item “Odor/Vapor Suppression Consumables – Long Term Duration” listed on the Project Price Schedule. Payment of the unit price for “Odor/Vapor Suppression Consumables – Long Term Duration” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to provide Odor/Vapor Suppression Consumables – Long Term Duration Work, as specified in the Contract Documents and/or as directed by the Owner.

**Item 17 Dewatering (Operation, Handling, and On-Site Storage)**

1. Work required to complete Excavation Dewatering (Operation, Handling, and On-Site Storage) includes, but is not limited to:
  - a. Furnishing a design of a dewatering and water control system that meets the requirements of the applicable permits for the Site, and that has been developed and approved by a professional engineer who is licensed to practice in the State of New York.
  - b. Installing all necessary components of the systems to monitor groundwater levels, and to dewater the excavation/solidification areas during the Work to maintain groundwater levels as required in the Contract Documents.
  - c. Adding, modifying, moving, augmenting, and maintaining the system components for the duration of the excavation, solidification, and backfill Work, until backfill has reached a minimum of 2 feet above the static groundwater level.
  - d. Operating and maintaining the dewatering system and conveying all effluent to the on-Site wastewater treatment system.
  - e. Removing all dewatering and water control components system from the Site.
2. Payment will be based on the Contract Unit Price per “Day” provided in the Project Price Schedule.
3. Payment for Dewatering (Operation, Handling, and On-Site Storage) Work will be made in accordance with the unit price for the Bid item “Dewatering (Operation, Handling, and On-Site Storage)” listed on the Project Price Schedule. Payment of the unit price for “Dewatering (Operation, Handling, and On-Site Storage)” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to provide Dewatering (Operation, Handling, and On-Site Storage) Work, as specified in the Contract Documents and/or as directed by the Owner.

**Item 18 Water Treatment System**

1. Work required for the water treatment system includes but is not limited to:
  - a. Submit a design for a water treatment system suitable for handling contact storm water and ground water at the Site. This design requires an engineer's stamp. This design must include:
    - 1) Process and instrumentation diagram (P&ID) indicating control sensors and interlocks
    - 2) Control panel layout showing HOA switches, run status indicators, and read-outs (e.g. hour meters and totalizer readings)
    - 3) Electrical one-line diagram for all panels and sub-panels with electrical loads for all motors
    - 4) Head loss calculations to justify pump/hose/vessel sizing
    - 5) Cut sheets showing equipment model, size, and capacity
    - 6) Equipment operation and maintenance (O&M) plan indicating inspection schedules, maintenance thresholds for equipment or media change-out (backpressure tolerances or media saturation).
  - b. Furnish, install, assemble, operate, decontaminate, disassemble, and remove a water treatment system that satisfies the operation and performance criteria described in the discharge permit as well as the unit process requirements described in the Contract Documents, and to meet disposal facility requirements for acceptance of the treated water if utilized.
  - c. Procure, install, replace, and properly dispose bag filters and any other water treatment system consumables other than those covered under the pay item "Water Treatment Filter Media" as required.
  - d. Perform and pay for all analytical testing, field testing, and reporting described in these technical Specifications and as necessary to maintain compliance with all applicable discharge permits and disposal facilities, unless the costs of sampling or analysis are specifically identified as being borne by Others.
  - e. Provide the initial fill, removal, and disposal of water treatment filter media for each vessel.
2. Payment will be based on the Contract Unit Price per "Day" provided in the Project Price Schedule.
3. Payment for Water Treatment System Work will be made in accordance with the unit price for the Bid item "Water Treatment System" listed on the Project Price Schedule. Payment of the unit price for "Water Treatment System" will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to provide Water Treatment System Work, as specified in the Contract Documents and/or as directed by the Owner.

**Item 19 Water Treatment Filter Media**

1. Work required for the water treatment filter media includes but is not limited to:
  - a. Furnish replacement water treatment filter media for each vessel, when the results of breakthrough sampling indicate that the media are spent, or when otherwise directed by the CA.
  - b. Liquid Phase Granular Activated Carbon (LGAC)
    - 1) Filter media may be re-activated LGAC.
  - c. Vapor Phase Granular Activated Carbon (VGAC)
    - 1) Filter media may be re-activated VGAC.
  - d. Organoclay
    - 1) Filter media must be virgin organoclay.
2. Remove, analyze, and properly dispose the filter media whenever the media are spent or at the completion of the Work.
3. Water treatment filter media work will be measured for payment on a dry weight basis of media installed in the vessels, measured in pounds, as verified by scaled delivery tickets provided by media vendor.
4. Payment for Water Treatment Filter Media will be made in accordance with the unit price for the Bid item “Water Treatment Filter Media” listed on the Project Price Schedule. Payment of the unit price for “Water Treatment Filter Media” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to provide Water Treatment Filter Media Work, as specified in the Contract Documents and/or as directed by the Owner.

**Item 20 Sanitary Sewer Force Main Installation**

1. Work required to complete Sanitary Sewer Force Main Installation includes, but is not limited to:
  - a. Excavating soils and other materials to construct a trench along the proposed Sanitary Sewer alignments. Care shall be taken to keep trench width to the minimum required for proper installation and to prevent over excavation. Use properly sized bucket to minimize spoils volume.
  - b. Stockpiling of spoils directly on native ground is not permitted. Directly load truck(s) for offsite disposal when feasible, or transfer to poly-lined roll-off container(s) for temporary on-site storage.
    - 1) Separate debris from soils for C&D disposal.
    - 2) Separate MGP impacted material from non-MGP impacted material.
    - 3) Keep spoils piles covered.
  - c. Prevent cross contamination of materials that have been designated for off-Site disposal, on-Site reuse, or potential on-Site reuse.

- d. Notify and provide access to CA for collection of documentation samples, as required, upon reaching bottom of excavation depth and prior to placement of geotextile and pipe bedding material.
- e. Loading of unused spoils from temporary stockpiles for off-site disposal.
- f. Saw cutting pavement.
- g. Providing, designing, installing, and removing all required temporary shoring components for safe excavation and installation.
- h. Excavation for structures and piping along the proposed alignment and stockpiling soils not covered by other Pay Items.
- i. Furnishing and installing up to 300 LF of sanitary sewer force main piping, pipe bends, pipe fittings, two water tight manhole structures, all associated connections and all other components required to complete the work in accordance with the Contract Documents.
- j. Abandoning up to 200 LF of the existing 6-inch diameter Sanitary Sewer Force Main from the new MH adjacent to the Pump Station to the Existing MH adjacent to the DPW Garage by flushing and then filling with flowable fill in accordance with the Specifications and Contract Drawings.
- k. Post installation televising of the installed Force Main and submitting recorded video and report to CA.
- l. Acquiring and submitting to CA written acceptance of the relocated alignment by the Village of Canastota.
- m. Providing all equipment, labor and materials to perform pressure testing of the Sanitary Sewer Force Main.
- n. Repairing any leaks located or caused as a result of pressure testing including but not limited to excavation, pipe replacement, and backfilling in accordance with the Contract Documents to complete repairs of previously completed work, if required.
- o. Repeating pressure testing until results meet the requirements of the Contract Documents.
- p. Submitting written description of testing procedure and supporting documentation of pressure testing, including but not limited to failed tests, measures taken to correct issues encountered and remedies provided, as applicable.
- q. Analytical testing, procuring, transporting, placing, compacting, and compaction testing of DEC-approved Imported Granular Fill and Pipe Bedding.
  - 1) Emerging Contaminant analytical samples will be collected and analyzed by the CA from the Contractor's chosen source.

- 2) Contractor to provide adequate notice to CA so as not to cause a delay in the project due to waiting on test results or acceptance from DEC. Note that it can take up to 6-weeks, or more, from submitting samples for testing to receiving acceptance for import from DEC.
- 3) Completion of a NYSDEC “Request to Import Fill” Form will be completed by CA.
- r. Furnishing and installing geotextile fabric to separate Pipe Bedding and Pipe Zone Backfill from native material and trench backfill to prevent migration of fines and mitigate potential for settlement. The geotextile will also serve as a demarcation barrier.
- 2. Payment will be based on the Contract Unit Price per “Lump Sum” provided in the Project Price Schedule.
- 3. Payment for Sanitary Sewer Force Main Installation Work will be made on a percent complete basis of the Project for the lump sum price for the Bid item “Sanitary Sewer Force Main Installation” listed on the Project Price Schedule. Payment of the lump sum price for “Sanitary Sewer Force Main Installation” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete Sanitary Sewer Force Main Installation Work, as specified in the Contract Documents.

**Item 21 Sanitary Sewer Bypass Pumping**

- 4. Work required to complete Sanitary Sewer Bypass Pumping includes, but is not limited to
  - a. Furnishing, designing, installing, operating, maintaining, and removing all required temporary bypass pumps, sound attenuation enclosures, power, fuel, piping, switches/sensors, connections, and all other appurtenant structures and components for the execution of the work.
  - b. Maintaining all necessary additional system components to provide full system redundancy on-site for the duration of the Work.
  - c. Coordinating the sizes of the temporary bypass infrastructure with the selected pump intake, float switches, and other bypass pump components as necessary.
  - d. Continuous operation (24/7) of the bypass system for the entire duration when the existing or proposed Sanitary Sewer alignment is not in service.
  - e. Operating, maintaining and monitoring an automated warning and notification system to alert Contractor staff if a system error is discovered. System to be operated and monitored 24 hours per day for the entire duration that the system is in use.
  - f. Providing appropriately trained staff to respond to all notifications within 30 minutes of receipt.

5. Payment will be based on the Contract Unit Price per “Day” provided in the Project Price Schedule. A Day is defined as 24 hours, and fractional days will be computed based on the number of actual hours in operation.
6. Payment for this Item will be made in accordance with the unit price for the Bid item “Sanitary Sewer Bypass Pumping” listed on the Project Price Schedule. Payment of the unit price for “Sanitary Sewer Bypass Pumping” will constitute full compensation for all labor, supervision, fees, materials, incidentals and all other costs necessary to complete the Sanitary Sewer Bypass Pumping Work, as specified in the Contract Documents.

**Item 22 Excavation, Stockpiling, and Loading**

7. Work required to complete Excavation, Stockpiling, and Loading includes, but is not limited to:
  - a. Excavating soils and other materials from within the remedial boundary using methods that will prevent cross contamination of materials that have been designated for off-Site disposal, on-Site reuse, or potential on-Site reuse.
  - b. Either direct loading of impacted soil to over-the-road haul trucks or temporary stockpiling of soil.
  - c. Loading of impacted soil from temporary stockpiles to over-the-road haul trucks.
8. Payment will be based on the Contract Unit Price per “Cubic Yard” provided in the Project Price Schedule. Payment quantity will be calculated based on survey measurements of the plan area of excavation and the bottom elevation of the excavation approved by National Grid. All area measurements and volume calculations to be certified by a Professional Land Surveyor registered in the State of New York.
9. Payment for Excavation, Stockpiling, and Loading Work will be made in accordance with the unit price for the Bid item “Excavation, Stockpiling, and Loading” listed on the Project Price Schedule. Payment of the unit price for “Excavation, Stockpiling, and Loading” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete Excavation, Stockpiling, and Loading Work, as specified in the Contract Documents.

**Item 23 Pre-Mobilization ISS Start-Up Phase and Curing/Evaluation Period**

1. Work required to complete Pre-Mobilization ISS Start-Up Phase and Curing/Evaluation Period includes, but is not limited to
  - a. Performance of a field scale ISS pilot test to confirm performance of the mix design prior to full scale ISS.
  - b. Perform, pay for, and report the quality control samples described in Section 02 55 00.

2. Payment will be based on the Contract Unit Price per “Lump Sum” provided in the Project Price Schedule.
3. Payment for Pre-Mobilization ISS Start-Up Phase and Curing/Evaluation Period will be made on a percent complete basis of the lump sum price for the Bid item “Pre-Mobilization ISS Start-Up Phase and Curing/Evaluation Period” listed on the Project Price Schedule. Payment of the lump sum price for “Pre-Mobilization ISS Start-Up Phase and Curing/Evaluation Period” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete the Pre-Mobilization ISS Start-Up Phase and Curing/Evaluation Period Work.

**Item 24 ISS Swell Excavation and Management**

1. Work required to complete ISS Swell Excavation and Management includes, but is not limited to
  - a. Excavation, handling, and management of swell following ISS to achieve an ISS subgrade elevation that allows for the installation of the required granular cover over the solidified materials.
  - b. Post-ISS excavation following specified requirements for working near sensitive features/structures.
  - c. Supplemental re-sizing of swell materials and their preparation as necessary to meet off-site disposal facility requirements.
2. ISS Swell Excavation and Management work will be measured for payment on an in-place cubic yard (CYIP) basis as documented by survey.
3. Payment for ISS Swell Excavation and Management Work will be made in accordance with the unit price for the Bid item “ISS Swell Excavation and Management” listed on the Project Price Schedule. Payment of the unit price for “ISS Swell Excavation and Management” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to provide ISS Swell Excavation and Management Work, as specified in the Contract Documents and/or as directed by the Owner.

**Item 25 In-Situ Solidification**

1. Work required to complete In-Situ Solidification includes, but is not limited to:
  - a. Construct and maintain a stable ISS working platform.
  - b. Perform In-Situ Solidification at the locations shown on the Drawings, and to the specifications described in Section 02 55 00.
  - c. Install each ISS cell to the depths shown on the Drawings and overlap the cells to create a continuous ISS monolithic mass for each ISS target volume.
  - d. Place, handle, and contour ISS swell volume to shed water and provide a minimum 4 vertical feet of freeboard to the final grades shown on the Drawings.

- e. Perform, pay for, and report the quality control samples described in Section 02 55 00.
2. In-situ solidification work will be measured for payment on an in-place cubic yard (CYIP) basis of the ISS target soil volume for treatment. The pay quantity will be calculated on a per-cell basis as the product of the area of the cell multiplied by the average depth to the bottom of waste in each cell. The actual top of ISS elevation is the elevation of the undisturbed native soil after all pre-ISS excavation to balance expected swell volume has been removed. Swell volume and ISS pre-excavation volume are not included in this pay quantity.
3. Payment for In-Situ Solidification Work will be made in accordance with the unit price for the Bid item “In-Situ Solidification” listed on the Project Price Schedule. Payment of the unit price for “In-Situ Solidification” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to provide In-Situ Solidification Work, as specified in the Contract Documents and/or as directed by the Owner and CA?..

**Item 26 ISS Reagent – Portland Cement**

1. Work required for ISS Reagent – Portland Cement includes but is not limited to:
  - a. Import, transfer, store, handle, dispense, and incorporate Portland Cement (Type I/II per ASTM C150) on a metered weight basis into the solidification grout mixture. Perform these actions in a manner that minimizes fugitive dust emissions and protects the reagents from wastage.
  - b. Water for grout mixing is not a pay item. Contractor may use Village hydrant water, or treated effluent from the Water Treatment System, if approved by the CA based on effluent test results. Contractor is responsible for paying connection fees and account setup fees for hydrant connection, including metering and backflow prevention, as applicable. Contractor is responsible for paying all water and sewer charges associated with water use for grout make-up.
2. Payment will be based on the Contract Unit Price per “Ton” provided in the Project Price Schedule, as verified by per-batch weight records of the quantity of each reagent added to each batch of grout. The cumulative reagent quantities will be cross-checked with scaled delivery tickets provided by the reagent vendors.
3. Payment for ISS Reagent – Portland Cement Work will be made in accordance with the unit price for the Bid item “ISS Reagent – Portland Cement” listed on the Project Price Schedule. Payment of the unit price for “ISS Reagent – Portland Cement” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to provide ISS Reagent – Portland Cement Work, as specified in the Contract Documents and/or as directed by the Owner.

**Item 27 ISS Reagent – Ground Granulated Blast Furnace Slag**

1. Work required for ISS Reagent – Ground Granulated Blast Furnace Slag includes but is not limited to:
  - a. Import, transfer, store, handle, dispense, and incorporate ground granulated blast furnace slag (Grade 100 or Grade 120 per ASTM C989) on a metered weight basis into the solidification grout mixture. Perform these actions in a manner that minimizes fugitive dust emissions and protects the reagents from wastage.
  - b. Water for grout mixing is not a pay item. Contractor may use Village hydrant water, if approved by CA, or treated effluent from the Water Treatment System for grout make-up. Contractor is responsible for paying connection fees and account setup fees for hydrant connection, including metering and backflow prevention, as applicable. Contractor is responsible for paying all water and sewer charges associated with water use for grout make-up.
2. Payment will be based on the Contract Unit Price per “Ton” provided in the Project Price Schedule, as verified by per-batch weight records of the quantity of each reagent added to each batch of grout. The cumulative reagent quantities will be cross-checked with scaled delivery tickets provided by the reagent vendors.
3. Payment for ISS Reagent – Ground Granulated Blast Furnace Slag Work will be made in accordance with the unit price for the Bid item “ISS Reagent – Ground Granulated Blast Furnace Slag” listed on the Project Price Schedule. Payment of the unit price for “ISS Reagent – Ground Granulated Blast Furnace Slag” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to provide ISS Reagent – Ground Granulated Blast Furnace Slag Work, as specified in the Contract Documents and/or as directed by the Owner.

**Item 28 Resizing and Management of Subsurface Structures and Oversized Materials**

1. Work required to complete the Resizing and Management of Subsurface Structures and Oversized Materials pay item includes, but is not limited to:
  - a. Reducing the size of concrete, other masonry debris, glacial till materials, or other materials removed during excavation or ISS activities to facilitate reintroduction to the ISS mix or off-site treatment/disposal, as determined by the CA.
2. Payment will be based on the Contract Unit Price per “Cubic Yard” provided in the Project Price Schedule.
3. Payment for Resizing and Management of Subsurface Structures and Oversized Materials Work will be made in accordance with the unit price for the Bid item “Resizing and Management of Subsurface Structures and Oversized Materials” listed on the Project Price Schedule. Payment of the unit price for “Resizing and Management of Subsurface Structures and Oversized Materials” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, disposal fees, and all other costs necessary to complete Resizing and

Management of Subsurface Structures and Oversized Materials Work, as specified in the Contract Documents.

**Item 29 Waste Characterization Sampling and Analysis – Soil**

1. Work required to complete the Waste Characterization Sampling and Analysis – Soil pay item includes, but is not limited to:
  - a. Providing all laboratory coordination, sampling, sample shipment, laboratory analyses, and reporting required to meet all applicable acceptance criteria for the National Grid-approved and Contractor-selected soil disposal facility(ies).
2. Payment will be based on the Contract Unit Price per “Each” provided in the Project Price Schedule.
3. Payment for Waste Characterization Sampling and Analysis – Soil Work will be made in accordance with the unit price for the Bid item “Waste Characterization Sampling and Analysis – Soil” listed on the Project Price Schedule. Payment of the unit price for “Waste Characterization Sampling and Analysis – Soil” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, disposal fees, and all other costs necessary to complete Waste Characterization Sampling and Analysis – Soil Work, as specified in the Contract Documents.

**Item 30 Waste Characterization Sampling and Analysis – Debris**

1. Work required to complete the Waste Characterization Sampling and Analysis – Debris pay item includes, but is not limited to:
  - a. Providing all laboratory coordination, sampling, sample shipment, laboratory analyses, and reporting required to meet all applicable acceptance criteria for the National Grid-approved and Contractor-selected debris disposal facility(ies).
2. Payment will be based on the Contract Unit Price per “Each” provided in the Project Price Schedule.
3. Payment for Waste Characterization Sampling and Analysis – Debris Work will be made in accordance with the unit price for the Bid item “Waste Characterization Sampling and Analysis – Debris” listed on the Project Price Schedule. Payment of the unit price for “Waste Characterization Sampling and Analysis – Debris” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, disposal fees, and all other costs necessary to complete Waste Characterization Sampling and Analysis – Debris Work, as specified in the Contract Documents.

**Item 31 Waste Characterization Sampling and Analysis – Water**

1. Work required to complete the Waste Characterization Sampling and Analysis - Water pay item includes, but is not limited to:
  - a. Providing all laboratory coordination, sampling, sample shipment, laboratory analyses, and reporting required to meet all applicable

acceptance criteria for the National Grid-approved and Contractor-selected water disposal facility(ies).

2. Payment will be based on the Contract Unit Price per “Each” provided in the Project Price Schedule.
3. Payment for Waste Characterization Sampling and Analysis – Water Work will be made in accordance with the unit price for the Bid item “Waste Characterization Sampling and Analysis – Water” listed on the Project Price Schedule. Payment of the unit price for “Waste Characterization Sampling and Analysis – Water” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, disposal fees, and all other costs necessary to complete Waste Characterization Sampling and Analysis – Water Work, as specified in the Contract Documents.

**Item 32 Select Demolition and Subsurface Demolition Debris – Transportation and Disposal at a National Grid Approved Non-Hazardous Solid Waste Landfill**

1. Work required to complete the Select Demolition and Subsurface Demolition Debris – Transportation and Disposal at a National Grid Approved Non-Hazardous Solid Waste Landfill pay item includes, but is not limited to:
  - a. Coordinating, transporting, and disposing of any and all non-hazardous debris generated from the Project Site that is designated for off-Site disposal by the CA to the National Grid-approved non-hazardous solid waste landfill identified in the Contractor’s approved Site Operations Plan.
  - b. Lining, tarping, and cleaning/decontaminating transport vehicles prior to leaving the Site (as necessary and/or as directed by the CA).
  - c. Planning and executing the Project sequencing so as not to exceed the capacity of the disposal facility to accept non-hazardous debris generated during the performance of the Work.
2. Payment will be based on the Contract Unit Price per ton (2,000 lbs.) basis and will be measured using weight tickets from validated scales.
3. Payment for Select Demolition and Subsurface Demolition Debris – Transportation and Disposal at a National Grid Approved Non-Hazardous Solid Waste Landfill Work will be made in accordance with the unit price for the Bid item “Select Demolition and Subsurface Demolition Debris – Transportation and Disposal at a National Grid Approved Non-Hazardous Solid Waste Landfill” listed on the Project Price Schedule. Payment of the unit price for “Select Demolition and Subsurface Demolition Debris – Transportation and Disposal at a National Grid Approved Non-Hazardous Solid Waste Landfill” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, disposal fees, and all other costs necessary to complete Select Demolition and Subsurface Demolition Debris – Transportation and Disposal at a National Grid Approved Non-Hazardous Solid Waste Landfill Work, as specified in the Contract Documents.

**Item 33 Asphalt Debris – Transportation and Recycling at a National Grid Approved**

**Facility**

1. Work required to complete the Asphalt Debris – Transportation and Recycling at a National Grid Approved Facility pay item includes, but is not limited to:
  - a. Coordinating, transporting, and disposing of any and all asphalt debris generated from the Project Site that is designated for off-Site disposal/recycling by the CA to the National Grid-approved facility identified in the Contractor’s approved Site Operations Plan.
  - b. Lining, tarping, and cleaning/decontaminating transport vehicles prior to leaving the Site (as necessary and/or as directed by the CA).
  - c. Planning and executing the Project sequencing so as not to exceed the capacity of the disposal facility to accept non-hazardous debris generated during the performance of the Work.
2. Payment will be based on the Contract Unit Price per ton (2,000 lbs.) basis and will be measured using weight tickets from validated scales.
3. Payment for Asphalt Debris – Transportation and Recycling at a National Grid Approved Facility Work will be made in accordance with the unit price for the Bid item “Asphalt Debris – Transportation and Recycling at a National Grid Approved Facility” listed on the Project Price Schedule. Payment of the unit price for “Asphalt Debris – Transportation and Recycling at a National Grid Approved Facility” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, disposal fees, and all other costs necessary to complete Asphalt Debris – Transportation and Disposal at a National Grid Approved Facility Work, as specified in the Contract Documents.

**Item 34 Excavated Materials – Transportation and Disposal at a National Grid Approved Non-Hazardous Solid Waste Landfill**

1. Work required to complete the Excavated Materials – Transportation and Disposal at a National Grid Approved Non-Hazardous Solid Waste Landfill includes, but is not limited to:
  - a. Coordination, transportation, and disposal of non-hazardous excavated material from the Project Site to the National Grid-approved non-hazardous solid waste landfill identified in the Contractor’s approved Site Operations Plan.
  - b. Lining, tarping, and cleaning/decontaminating transport vehicles prior to leaving the Site (as necessary and/or as directed by the Owner).
  - c. Phasing and executing the Project sequencing so as not to exceed the capacity of the disposal facility to accept soil generated during the performance of the Work.
2. Payment will be based on the Contract Unit Price per ton (2,000 lbs.) basis and will be measured using weight tickets from validated scales.
3. Payment for Excavated Materials – Transportation and Disposal at a National Grid Approved Non-Hazardous Solid Waste Landfill Work will be made in

accordance with the unit price for the Bid item “Excavated Materials – Transportation and Disposal at a National Grid Approved Non-Hazardous Solid Waste Landfill” listed on the Project Price Schedule. Payment of the unit price for “Excavated Materials – Transportation and Disposal at a National Grid Approved Non-Hazardous Solid Waste Landfill” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, disposal fees, and all other costs necessary to complete Excavated Materials – Transportation and Disposal at a National Grid Approved Non-Hazardous Solid Waste Landfill, as specified in the Contract Documents.

**Item 35 Excavated Materials – Transportation and Treatment/Disposal at a National Grid Approved Low Temperature Thermal Desorption Facility**

1. Work required to complete Excavated Materials – Transportation and Treatment/Disposal at a National Grid Approved Low Temperature Thermal Desorption Facility includes but is not limited to
  - a. Coordinating, transporting, and disposing of excavated soil from the Project Site to the National Grid-approved off-Site Low Temperature Thermal Desorption (LTTD) facility permitted to accept soil that exhibits a toxicity characteristic for benzene due to the presence of coal tar NAPL in the soil.
  - b. Lining, tarping, and cleaning/decontaminating transport vehicles prior to leaving the Site (as necessary and/or as directed by the CA).
  - c. Planning and executing the Project sequencing so as not to exceed the capacity of the LTTD facility to accept soil generated during the performance of the Work.
2. Payment will be based on the Contract Unit Price per ton (2,000 lbs.) basis and will be measured using weight tickets from validated scales.
3. Payment for Excavated Materials – Transportation and Treatment/Disposal at a National Grid Approved Low Temperature Thermal Desorption Facility will be made in accordance with the unit price for the Bid item “Excavated Materials - Transportation and Treatment/Disposal at a National Grid Approved Low Temperature Thermal Desorption Facility” listed on the Project Price Schedule. Payment of the unit price for “Excavated Material - Transportation and Treatment/Disposal at a National Grid Approved Low Temperature Thermal Desorption Facility” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete Excavated Materials – Transportation and Treatment/Disposal at a National Grid Approved Low Temperature Thermal Desorption Facility Work, as specified in the Contract Documents.

**Item 36 Construction Water – Transportation and Treatment at a National Grid Approved Non-Hazardous Facility**

1. Work required to complete the Construction Water – Transportation and Treatment at a National Grid Approved Non-Hazardous Facility includes, but is not limited to:

- a. Coordination, transportation, and disposal of non-hazardous construction water from the Project Site to the National Grid-approved non-hazardous facility identified in the Contractor’s approved Site Operations Plan.
  - b. Phasing and executing the Project sequencing so as not to exceed the capacity of the disposal facility to accept water generated during the performance of the Work.
- 2. Payment will be based on the Contract Unit Price “Gallon” basis and will be measured using volume tickets from the receiving facility.
  - 3. Payment for Construction Water – Transportation and Treatment at a National Grid Approved Non-Hazardous Facility Work will be made in accordance with the unit price for the Bid item “Construction Water – Transportation and Treatment at a National Grid Approved Non-Hazardous Facility” listed on the Project Price Schedule. Payment of the unit price for “Construction Water - Transportation and Treatment at a National Grid Approved Non-Hazardous Facility” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, disposal fees, and all other costs necessary to complete Construction Water – Transportation and Treatment at a National Grid Approved Non-Hazardous Facility, as specified in the Contract Documents.

**Item 37 Construction Water – Transportation and Treatment at a National Grid Approved Hazardous Facility**

- 1. Work required to complete the Construction Water – Transportation and Treatment at a National Grid Approved Hazardous Facility includes, but is not limited to:
  - a. Coordination, transportation, and disposal of hazardous construction water from the Project Site to the National Grid-approved hazardous facility identified in the Contractor’s approved Site Operations Plan.
  - b. Phasing and executing the Project sequencing so as not to exceed the capacity of the disposal facility to accept water generated during the performance of the Work.
- 2. Payment will be based on the Contract Unit Price “Gallon” basis and will be measured using volume tickets from the receiving facility.
- 3. Payment for Construction Water – Transportation and Treatment at a National Grid Approved Hazardous Facility Work will be made in accordance with the unit price for the Bid item “Construction Water – Transportation and Treatment at a National Grid Approved Hazardous Facility” listed on the Project Price Schedule. Payment of the unit price for “Construction Water – Transportation and Treatment at a National Grid Approved Hazardous Facility” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, disposal fees, and all other costs necessary to complete Construction Water - Transportation and Treatment at a National Grid Approved Hazardous Facility, as specified in the Contract Documents.

**Item 38 Hazardous Debris – Transportation and Treatment/Disposal at a National Grid**

## Approved Hazardous Facility

1. Work required to complete the Hazardous Debris – Transportation and Treatment/Disposal at a National Grid Approved Hazardous Facility pay item includes, but is not limited to:
  - a. Coordinating, transporting, and disposing of any and all hazardous debris (D018) generated from the Project Site that is designated for off-Site disposal by the CA to the National Grid-approved hazardous facility identified in the Contractor’s approved Site Operations Plan.
  - b. Lining, tarping, and cleaning/decontaminating transport vehicles prior to leaving the Site (as necessary and/or as directed by the CA).
  - c. Planning and executing the Project sequencing so as not to exceed the capacity of the disposal facility to accept non-hazardous debris generated during the performance of the Work.
2. Payment will be based on the Contract Unit Price per ton (2,000 lbs.) basis and will be measured using weight tickets from validated scales.
3. Payment for Hazardous Debris – Transportation and Treatment/Disposal at a National Grid Approved Hazardous Facility Work will be made in accordance with the unit price for the Bid item “Hazardous Debris – Transportation and Treatment/Disposal at a National Grid Approved Hazardous Facility” listed on the Project Price Schedule. Payment of the unit price for “Hazardous Debris - Transportation and Treatment/Disposal at a National Grid Approved Hazardous Facility” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, disposal fees, and all other costs necessary to complete Hazardous Debris – Transportation and Treatment/Disposal at a National Grid Approved Hazardous Facility Work, as specified in the Contract Documents.

## **Item 39 Coal Tar NAPL – Transportation and Treatment/Disposal at a National Grid Approved Hazardous Facility**

1. Work required to complete the Coal Tar NAPL – Transportation and Treatment/Disposal at a National Grid Approved Hazardous Facility pay item includes, but is not limited to:
  - a. Coordinating, transporting, and disposing of any and all coal tar NAPL generated from the Project Site that is designated for off-Site disposal by the CA to the National Grid-approved hazardous facility identified in the Contractor’s approved Site Operations Plan.
  - b. Lining, tarping, and cleaning/decontaminating transport vehicles prior to leaving the Site (as necessary and/or as directed by the CA).
  - c. Planning and executing the Project sequencing so as not to exceed the capacity of the disposal facility to accept non-hazardous debris generated during the performance of the Work.
2. Payment will be based on the Contract Unit Price per “Gallon” basis and will be measured using volume tickets from the receiving facility.

3. Payment for Coal Tar NAPL – Transportation and Treatment/Disposal at a National Grid Approved Hazardous Facility Work will be made in accordance with the unit price for the Bid item “Coal Tar NAPL – Transportation and Treatment/Disposal at a National Grid Approved Hazardous Facility” listed on the Project Price Schedule. Payment of the unit price for “Coal Tar NAPL - Transportation and Treatment/Disposal at a National Grid Approved Hazardous Facility” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, disposal fees, and all other costs necessary to complete Coal Tar NAPL – Transportation and Treatment/Disposal at a National Grid Approved Hazardous Facility Work, as specified in the Contract Documents.

**Item 40 Place and Compact On-Site Reuse Material**

1. Work required to complete Place On-Site Reuse Material includes, but is not limited to
  - a. Furnishing and installing the demarcation barrier at the excavation subgrade as detailed in Section 31 23 23.
  - b. Installing geotextile separation layers above and below stone cover backfill and as shown on the drawings.
  - c. Placing and compacting approved on-Site reuse backfill material.
2. Payment will be based on the Contract Unit Price per in-place cubic yard as determined by survey measurements of the plan area of excavation as observed by the CA and certified by a Professional Land Surveyor registered in the State of New York.
3. Payment for Place On-Site Reuse Material Work will be made in accordance with the unit price for the Bid item “Place On-Site Reuse Material” listed on the Project Price Schedule. Payment of the unit price for “Place On-Site Reuse Material” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete Place On-Site Reuse Material Work, as specified in the Contract Documents.

**Item 41 Importing and Backfilling with Clean Granular Fill and Clean Sand Bedding**

1. Work required to complete Importing and Backfilling with Clean Granular Fill and Clean Sand Bedding includes, but is not limited to
  - a. Analytical testing, procuring, transporting, placing, compacting, and compaction testing of DEC-approved Imported Granular Fill and Imported Clean Sand Bedding.
    - 1) Emerging Contaminant analytical samples will be collected and analyzed by the Contractor.
  - b. The CA will submit a NYSDEC “Request to Import Fill” forms for NYSDEC written approval (where appropriate) and will include the Contractor provided analytical test results.

- c. Installing a demarcation barrier at the bottom of the Imported Granular Fill as detailed in Section 31 23 23.
- 2. Payment will be based on the Contract Unit Price per cubic yard basis as determined by survey measurements of the plan area of excavation/solidification and the in-place thickness of fill layer as observed by the CA and certified by a Professional Land Surveyor registered in the State of New York.
- 3. Payment for Importing and Backfilling with Clean Granular Fill and Clean Sand Bedding Work will be made in accordance with the unit price for the Bid item “Importing and Backfilling with Clean Granular Fill and Clean Sand Bedding” listed on the Project Price Schedule. Payment of the unit price for “Importing and Backfilling with Clean Granular Fill and Clean Sand Bedding” will constitute full compensation for all labor, supervision, materials, equipment, incidentals and all other costs necessary to complete Importing and Backfilling with Clean Granular Fill and Clean Sand Bedding Work, as specified in the Contract Documents.

**Item 42 Pavement Subgrade**

- 1. Work required to complete Furnish and Place Gravel Base includes, but is not limited to:
  - a. Procuring, transporting, placing, and compacting approved Gravel Base subgrade as shown in the Contract Drawings.
- 2. Payment will be based on the Contract Unit Price per cubic yard basis as determined by survey measurements of the plan area of excavation/solidification and the in-place thickness of fill layer as observed by the CA and certified by a Professional Land Surveyor registered in the State of New York.
- 3. Payment for Furnish and Place Gravel Base Work will be made in accordance with the unit price for the Bid item “Furnish and Place Gravel Base” listed on the Project Price Schedule. Payment of the unit price for “Furnish and Place Gravel Base” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete Furnish and Place Gravel Base Work, as specified in the Contract Documents.

**Item 43 One Foot Vegetated Soil Cover**

- 1. Work required to complete One Foot Vegetated Soil Cover includes, but is not limited to:
  - a. Provide the required gradation, soil tests, and chemical analytical laboratory testing for imported soil as required by NYSDEC. Provide documentation and test results to CA. CA will submit a Request to Import for NYSDEC approval.
  - b. Procure and deliver topsoil to the Site, with temporary stockpiling at the Site as necessary. Do not bring material to the site prior to receiving written approval for import from NYSDEC.
  - c. Place and grade topsoil in accordance with these Technical Specifications.

- d. Stabilize the Site with permanent seeding and mulch.
  - e. Establish and maintain, for at least 120 calendar days after seeding, a permanent stand of vegetation to stabilize the Site.
  - f. Return to the Site 120 days after seeding and remove erosion and sediment controls after a permanent stand of vegetation is established.
- 2. Payment will be based on the Contract Unit Price per square yard basis as determined by survey measurements of the plan area as observed by the CA and certified by a Professional Land Surveyor registered in the State of New York.
  - 3. Payment for One Foot Vegetated Soil Cover will be made in accordance with the unit price for the Bid item “One Foot Vegetated Soil Cover” listed on the Project Price Schedule. Payment of the unit price for “One Foot Vegetated Soil Cover” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete the One Foot Vegetated Soil Cover Work as specified in the Contract Documents.

**Item 44 Asphalt Replacement**

- 1. Work required to complete Asphalt Replacement includes, but is not limited to
  - a. Furnishing and installing all the materials required to complete a full depth pavement restoration of the removed pavement areas sections as shown on the Contract Drawings.
  - b. Restoring and/or replacing any asphalt pavement related Site features or appurtenances (e.g., parking bumpers, pavement striping) removed or demolished during the performance of the excavation.
- 2. Payment will be based on the Contract Unit Price per square yard basis as determined by survey measurements of the plan area as observed by the CA and certified by a Professional Land Surveyor registered in the State of New York.
- 3. Payment for Asphalt Replacement will be made in accordance with the unit price for the Bid item “Asphalt Replacement” listed on the Project Price Schedule. Payment of the unit price for “Asphalt Replacement” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete the Asphalt Replacement Work as specified in the Contract Documents.

**Item 45 Management of Piping with Asbestos Containing Material**

- 1. Work required to complete Management of Piping with Asbestos Containing Material (ACM) includes, but is not limited to:
  - a. Removing, handling, and staging/stockpiling of piping with ACM in accordance with the Contractor’s HASP, CAMP, and all applicable local, state, and federal regulations.
- 2. Payment will be based on the Contract Unit Price per foot as determined by survey measurements of the plan area as observed by the CA and certified by a Professional Land Surveyor registered in the State of New York.

3. Payment for Management of Piping with Asbestos Containing Material will be made in accordance with the unit price for the Bid item “Management of Piping with Asbestos Containing Material” listed on the Project Price Schedule. Payment of the unit price for “Management of Piping with Asbestos Containing Material” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete the Management of Piping with Asbestos Containing Material Work as specified in the Contract Documents.

**Item 46 Demolition of DPW Wooden Storage Shed**

1. Work required to complete Demolition of DPW Wooden Storage Shed includes, but is not limited to
  - a. Demolition and disposal of existing wooden storage shed and components including but not limited to labor, materials, equipment, and material handling.
  - b. Transportation and disposal of material at a National Grid approved disposal facility falls under a separate pay item herein.
2. Payment will be based on the Contract Unit Price per “Lump Sum” provided in the Project Price Schedule.
3. Payment for Demolition of DPW Wooden Storage Shed will be made on a percent complete basis of the lump sum price for the Bid item “Demolition of DPW Wooden Storage Shed” listed on the Project Price Schedule. Payment of the lump sum price for “Demolition of DPW Wooden Storage Shed” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete the Demolition of DPW Wooden Storage Shed Work.

**Item 47 Removal of Overhead Electric Service and Installation of Permanent Underground Electric Service to DPW Garage**

1. Work required to complete Removal of Overhead Electric Service and Installation of Permanent Underground Electric Service to DPW Garage includes, but is not limited to provision of materials, labor, equipment, and tools to perform the Work including
  - a. Coordinating and de-energizing National Grid overhead electrical service to DPW Garage.
  - b. Removal of existing riser shaft and associated components from the DPW Garage Structure.
  - c. Repair of roof and wall deficiencies required to provide a weatherproof structure that are a result of the removal of the overhead electric service and components.
  - d. Removal of existing meter cabinet located on the exterior wall of the DPW Garage.

- e. Excavating trench installing conduit to carry the conductor and backfilling the trench using sand bedding and compacted granular backfill as shown in the Project Drawings.
  - f. Furnishing and installing a new underground service compatible exterior meter cabinet rated for 320A 120/208V 3PH or better, 3” or greater conduit, 90 degree sweeps, 400MCM copper conductor for the 320A 120/208V 3PH service, fasteners, flashing, u-bolts, CMU anchors, grounding electrode system and additional labor, oversight, tools, and hardware required to complete the Work.
  - g. Procuring required permits and inspections.
  - h. Coordinating reenergizing the electrical service with National Grid, CA and the Village of Canastota.
- 2. Payment will be based on the Contract Unit Price per “Lump Sum” provided in the Project Price Schedule.
  - 3. Payment for Removal of Overhead Electric Service and Installation of Permanent Underground Electric Service to DPW Garage will be made on a percent complete basis of the lump sum price for the Bid item “Removal of Overhead Electric Service and Installation of Permanent Underground Electric Service to DPW Garage” listed on the Project Price Schedule. Payment of the lump sum price for “Removal of Overhead Electric Service and Installation of Permanent Underground Electric Service to DPW Garage” will constitute full compensation for all labor, supervision, materials, equipment, incidentals, and all other costs necessary to complete the Removal of Overhead Electric Service and Installation of Permanent Underground Electric Service to DPW Garage Work.

## **PART 2 PRODUCTS**

(Not Applicable)

## **PART 3 EXECUTION**

(Not Applicable)

END OF SECTION 01 20 00

## SECTION 01 31 00

### PROJECT MANAGEMENT AND COORDINATION

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. This Section describes project management and administrative requirements, and the minimum level of coordination and meetings required to execute the Work.

##### 1.02 SUBMITTALS

- A. Submit weekly updates of the Progress Schedule and a detailed two-week look-ahead to the Construction Administrator (CA) during weekly construction meetings.

##### 1.03 ON-SITE CONSTRUCTION PERSONNEL

- A. The CA will be responsible for observing the Work, on behalf of the Owner, to monitor Contractor compliance with the Contract Documents. The CA will be responsible for construction quality assurance and documenting that the Contractor completes the Work in accordance with the Contract Documents. The CA will not direct the Contractor on the specific means and methods of construction. However, the CA will advise the Contractor of non-compliance with the Contract Documents and identify required corrective action.
- B. Contractor must provide a full-time on-site Superintendent who will be responsible for overall construction quality control, Contractor health and safety, and serve as the Competent Person for excavation safety for the duration of the Work. The Superintendent will be responsible for the supervision and coordination of all Contractor employees, subcontractors, manufacturers, fabricators, suppliers, distributors, installers, and testing agencies whose services, materials or equipment are required to ensure the completion of the Work. The Superintendent must have qualifications, experience, and authority to act as a single point of contact for the on-site personnel, and to adjust the means and methods as needed and as requested by the CA.
- C. Contractor must provide at least one full-time on-site Field Engineer for the duration of the Remedy. During periods of high activity, the CA may require the Contractor to provide more than one Field Engineer. Field Engineer duties include but are not limited to maintaining coordination and survey information on excavated and filled quantities, quality control on backfill compaction, quality control for water treatment system sampling, quality control for ISS sample collection and forming, quality control for ISS column locations and elevations, etc. Quantities and data must be summarized by the Field Engineer for the CA on at least a weekly basis, or more frequently as deemed necessary by the CA. The Field Engineer may not also operate equipment. There are no specific academic requirements for this position.
- D. Contractor must provide a full-time Site Safety and Health Officer (SSHO) for the duration of the Work. The SSHO will have no other on-Site responsibilities or duties outside of health and safety.

- E. Contractor must request changes to the key personnel identified in the Site Operations Plan (SOP) in writing, no sooner than 30 days prior to the anticipated change. Changes must be approved by the CA and Owner.

#### 1.04 PROJECT MEETINGS

- A. Contractor shall attend all Project meetings as deemed necessary by the CA during the term of the Work.
- B. A post-award meeting or teleconference will be held at a location to be determined to discuss Project submittals, schedule, etc. The Contractor's Project Manager, Field Engineer, and Superintendent for the Project must attend the meeting. The Owner may, at its sole discretion, elect to hold the post-award meeting via teleconference.
- C. A pre-construction meeting will be held at the Site prior to the start of Work. At a minimum, the Contractor's Project Manager, Field Engineer, Superintendent, and representatives from each of the Contractor's primary subcontractors must attend the meeting.
  - 1. This meeting is intended to make certain that the Work is properly scheduled, responsibilities are coordinated among subcontractors and suppliers, and that those responsibilities are reflected on the Contractor submittals. Questions concerning the administrative requirements outlined during the pre-construction meeting or any other aspect of the Project may also be addressed at this time.
- D. Beginning with the mobilization to the Site, the CA will facilitate weekly construction meetings for the duration of the Work. Prior to mobilization, if necessary, weekly meetings may be held via teleconference. After mobilization, weekly meetings will be held at the Site, with others joining by teleconference.
- E. The standard meeting day and time for the weekly construction meeting will be established based on mutual agreement with the CA and the other participants. Prior to each weekly meeting the CA will prepare a meeting agenda. The CA will preside at all construction meetings.
  - 1. Contractor's required attendees at weekly meetings are the Contractor's Project Manager, Superintendent, Field Engineer, and SSHO at a minimum. The Contractor's Project Manager may attend via teleconference. Subcontractor and supplier representatives may attend as appropriate.
  - 2. Contractor must present a status update at each weekly construction meeting. This status update will include a hardcopy written summary of the progress of the Work, including updates on the status of submittals, delivery schedule, contract modifications, health and safety, and other matters. Contractor must also provide a hardcopy of the updated Progress Schedule. Status update documents must be distributed by PDF at least 30 minutes prior to the meeting time to those attending by teleconference.
  - 3. The CA will record minutes to include significant proceedings and decisions and will reproduce and distribute copies of the meeting minutes.
- F. Special construction meetings will be held at the Site or other designated location to discuss urgent Project issues. The Contractor, CA, or Owner may call special

construction meetings. Coordination (agenda, meeting minutes, location, time, and attendance) of special construction meetings is the responsibility of the entity calling the meeting. Special construction meetings will be called judiciously.

- G. Contractor must make available at all weekly construction meetings and special construction meetings all Contractor staff required to discuss and make decisions on behalf of the Contractor, relative to the meeting agenda.
- H. Contractor must make physical arrangements for all meetings held on the Site.
- I. All expenses associated with attending the meetings, except those that are incurred by the Owner, the CA, and the CA's representatives or consultants, are to be borne by the Contractor.

## 1.05 COORDINATION – GENERAL

- A. Contractor to coordinate scheduling, submittals, and Work required by the Contract Documents to assure an efficient and orderly sequence of interdependent construction elements.
- B. Contractor to coordinate and schedule Work in cooperation with the CA, the Owner, the City, utility companies, soil transporters, soil disposal facilities, and other construction firms that may be conducting Work at or near the Site.
- C. Contractor to direct all communications regarding the Work directly to the CA. Do not discuss the Work nor take direction from any other contractor, consultant, public official, media representative, or any other person without prior written approval by the CA.
- D. The Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
  - 1. Observation by the CA, or any of the CA's representatives.
  - 2. Recommendation of any progress payment or final payment by the CA.
  - 3. Use or occupancy of the Work or any part thereof by the CA or others.
  - 4. Any acceptance by the CA, or failure to do so.
  - 5. Any review or approval of a submittal by the CA.
  - 6. Any inspection, test, or approval by others.
  - 7. Any correction of Non-Conforming Work performed by the CA or others.

## 1.06 COORDINATION OF CONTRACTOR'S WORK WITH WORK BY OTHERS

- A. Contractor to obtain a schedule from each Subcontractor and incorporate into the Progress Schedule, maintaining the schedules and making any required modifications, as needed.
- B. The CA, Owner and those contracted to them, will be working on the Site while the Work is in progress. Contractor shall coordinate and schedule the Work in cooperation with the CA's and Owner's other contractors, adjacent property owners and Village of Canastota.

- C. Contractor to abide by all applicable traffic regulations. Coordinate with the Village regarding haul routes on City streets, any necessary limitations of public use of streets or sidewalks, proper signage, flagmen as required, and obtain any necessary permits or approvals for temporary closure of lanes, streets, or sidewalks, as necessary. Coordinate with the CA prior to contacting the Village to discuss traffic routes. Additional details regarding Contractor compliance with regulatory requirements are listed in Submittal Section 01 41 00.
- D. Coordinate waste shipments to off-site disposal facilities per Section 02 60 00.

## 1.07 COMMUNITY RELATIONS

- A. The Owner and CA will provide all external communication with the regulatory agencies, media/press, project stakeholders, elected officials, public, etc. Do not communicate with the media/press, project stakeholders, elected officials, public, etc. regarding the Work. Refer all external questions and comments to the CA.

## **PART 2 PRODUCTS**

(Not Applicable)

## **PART 3 EXECUTION**

(Not Applicable)

END OF SECTION 01 31 00

## SECTION 01 32 00

### CONSTRUCTION PROGRESS DOCUMENTATION

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. This Section describes periodic progress scheduling and reporting requirements required to execute the Work.

##### 1.02 SUBMITTALS

- A. Prior to mobilization, submit a baseline Progress Schedule as described in this Section as part of the Site Operations Plan. Weekly updates to the Progress Schedule are required as described in this Section and in Section 01 31 00.
- B. Submit a Daily Construction Report (DCR) summarizing the Work performed every day the Contractor is on the Site, as described in this Section (subsection 1.6).
- C. Prior to weekly meetings, submit two-week look ahead for all anticipated schedule items and update any items that require schedule modifications from prior look ahead schedules.
- D. Submit a Health and Safety Summary Report for each month the Contractor is on the Site, as described in Submittals Section 00 73 19.
- E. Submit Record Documents at the conclusion of the Work.

##### 1.03 CONSTRUCTION MILESTONES

- A. Construction Milestones are set forth in Schedule F.

##### 1.04 PROGRESS SCHEDULE

- A. Work cannot begin, and progress payments will not be made, until a baseline Progress Schedule has been submitted by the Contractor and approved by the CA and Owner. Submit a baseline Progress Schedule for approval prior to mobilization and submit weekly updates of the Progress Schedule to the CA during the weekly construction meetings as described in this Section.
- B. The Progress Schedule must consist of a bar graph (Gantt chart) showing the proposed order of Work, the expected beginning and completion times for the salient Work features, predecessor(s) for each item, and the duration of each item. The Progress Schedule must show each activity and, at a minimum, contain the following information for each activity:
  - 1. Activity name and identifying number.
  - 2. Predecessor(s)
  - 3. Successor(s)
  - 4. Activity duration (in calendar days)

- 
5. Percent complete (on updated Progress Schedules).
  6. Float for each activity (where float is the amount of time that an activity can be delayed without delaying the start of the next activity).
- C. Develop the Progress Schedule using the Critical Path Method (CPM) and Microsoft Project, or equivalent software.
- D. The Progress Schedule must identify, at a minimum, the following items as distinct events:
1. All major construction activities.
  2. Significant design, testing, submittals, manufacturing, shipping, construction, installation, commissioning, and training activities.
  3. Construction Milestones identified in Schedule F.
  4. Any utility service interruptions necessary to perform the Work.
  5. Separate activities where Work is to be performed by others.
  6. Lead times for permits and approvals that are the responsibility of the Contractor.
  7. All subcontractors Work.
  8. All outstanding permits, submittals, submittal responses and condition changes.
  9. Owner-furnished and CA-furnished items, and any Work to be performed by the Owner or CA; and,
  10. Draft application for payment and final application for payment submittal dates, in accordance with monthly closing dates established by the Owner.
- E. The Progress Schedule must explain any additional information or coding used.
- F. Consider holidays, weather delays, long-lead items, review times, Project phasing, Site conditions, and space availability when preparing the Progress Schedule.
- G. Consider and account for off-site materials management facilities and trucking restrictions in preparing the Progress Schedule.
- H. Include rain and snow days as part of the anticipated float for the Project Schedule. Rain and snow events will not be considered grounds for extensions to the Contract Time until the assumed number of Contractor weather days have been used.
- I. Clearly indicate the critical path.
- 1.05 PROGRESS SCHEDULE REVIEWS, ACCEPTANCE, UPDATES, AND REVISIONS
- A. CA will review with the Contractor the initial Progress Schedule and all subsequent updates. Contractor will revise and resubmit the Progress Schedules as directed by the CA. The schedule will be reviewed for:
1. Proper application of critical path methodology and logic.
  2. A sequence of Work that satisfies the requirements of the Contract Documents and is reasonable and logical.

3. Activity durations that are within an expected range, or that can be justified by the Contractor to the satisfaction of the CA.
- B. Make all necessary revisions to the initial Progress Schedule based on the CA's review and resubmit within 2 days of receipt of comments from the CA.
1. After the CA's review, use the Progress Schedule for planning, organizing, and directing the Work and reporting progress.
  2. The Contractor is solely responsible for completing the Work within the Contract Time.
  3. The CA's acceptance of any Progress Schedule does not transfer any of the Contractor's responsibilities to the CA. The Contractor alone remains responsible for adjusting forces, equipment, and schedules to complete the Work within the time(s) specified in the Contract Documents.
- C. Updates
1. Keep the Progress Schedule current during the Project so that it is an accurate indication of Project progress. Updates the Progress Schedule to include any Field Orders, Change Orders, and delays.
  2. All updates should show progress compared to the baseline Progress Schedule and include actual start dates.
  3. Update the Progress Schedule weekly to document the construction progress. Submit the weekly update on the day of the weekly Project meeting. Failure to submit a weekly updated Progress Schedule is sufficient cause for withholding of progress payments until the update is received and reviewed. All updates must include a detailed 4-week look ahead, providing day-by-day planned activities for the upcoming 4-week period.
  4. Do not change activity descriptions after they have been reviewed and approved.
  5. Any changes in the Construction Milestone dates must be approved in writing by the CA and Owner. Changes in Construction Milestone dates will not cause an extension of the Contract Time without the execution of a Change Order.
- D. Revisions
1. In addition to weekly Progress Schedule submittals, revise the Progress Schedule when additional Work, delays, or accumulations of causes indicate the Contract Time will be exceeded. Submit a written statement describing the cause of the delay.
  2. The CA reserves the right to require a revised Progress Schedule when it is apparent that the Contractor's schedule does not substantially match the actual progress and order of the Work as measured by:
    - a. Accumulated delays greater than 5 calendar days.
    - b. Critical path activities (or activities restrained by critical path activities), which have or have not been accomplished.

## 1.06 DAILY CONSTRUCTION REPORT (DCR)

- A. Prepare a written DCR in a format acceptable to the CA for each day the Contractor is on the Site, and submit to the CA, electronically no later than 10:00 A.M. the next working day.
- B. At a minimum, DCRs must include:
  - 1. Number of workers for each trade and the names of the workers.
  - 2. Names of subcontractors and their on-site employees.
  - 3. Hours of work for each trade or type of equipment.
  - 4. Equipment on the Site and materials furnished.
  - 5. Summary of daily health and safety meetings, conferences, issues, incidents, near misses, and actions taken to address and resolve health and safety issues.
  - 6. Major work activities performed, and progress thereof, including estimated amounts of specialty work, excavation, and stockpiling completed.
  - 7. Water treatment system hours operated, volume treated, and volume discharged or hauled offsite for disposal.
  - 8. Weather conditions and temperature, including daily and project-cumulative rainfall totals.
  - 9. Unforeseen conditions.
  - 10. A list of submittals transmitted to or received from the CA.
  - 11. Meetings attended.
  - 12. Accidents, safety, and security issues.
  - 13. Tests and inspections performed and the results of tests and inspections.
  - 14. Reasons for construction delays.
  - 15. Units of T&M Work, subject to approval daily by the CA.
  - 16. Daily trucking logs.
  - 17. Weigh tickets and waste manifests executed from accepting facility, as applicable.
  - 18. Any public nuisance issues (odor, traffic, vibration, etc.) and what activity caused the issue(s); and
  - 19. Any emissions exceedances and mitigation or corrective action implemented.
- C. Provide, in an addendum to the DCR for the last day of Work in a week, a weekly Dewatering and Water Treatment Log summarizing the following information at a minimum:
  - 1. Weekly and project-cumulative rainfall totals measured at the Site.
  - 2. Weekly record of water levels within the excavation area.
  - 3. Condition of the dewatering system.

4. Volume of untreated contact water in storage at the wastewater treatment system (in tanks and sumps).
  5. Volume of contact water treated by the wastewater treatment system during the week, calculated as in gallons as read from the influent totalizing flow meter; and, testing in conformance with the permit and any additional testing as requested by the Owner/CA.
  6. Volume of treated contact water hauled off-site for disposal or discharged to the permitted discharge point, calculated in gallons as read from the discharge totalizing flow meter.
- D. Summarize the daily ISS Work in the DCR as described in Section 02 55 00. Contractor may elect to make the daily summary of the ISS Work a separate document from the DCR.
- E. If multiple daily shifts are used, submit a DCR for each shift.
- F. The DCRs may be used to substantiate any claim for delay, impact, or change, and therefore must contain enough information to document each potential impact.

## **PART 2 PRODUCTS**

(Not Applicable)

## **PART 3 EXECUTION**

(Not Applicable)

END OF SECTION 01 32 00

## SECTION 01 33 00

### SUBMITTAL PROCEDURES

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. This section summarizes the protocol and procedures for the preparation and delivery of required submittals to the Construction Administrator (CA).

##### 1.02 GENERAL REQUIREMENTS

- A. Provide all submittals in .pdf format via email directly to the CA. The CA reserves the right to request that any submittal be requested via paper copy.
- B. Include calculations, shop drawings, plans, reports, records, photographs, diagrams, and details with submittals, as needed, to facilitate the review and/or approval process.
- C. For all submittals requested via paper copy, provide five (5) copies to the CA unless otherwise directed.
- D. If directed by the CA, provide submittals electronically in the format requested (i.e. document file, drawing file, image file, etc.). For electronic drawings, submit AutoCAD 2018 (or later) file format using the e-transmit feature (i.e. include external references, image files, color table file, font file, line file, etc.). Convert all AutoCAD add on data to AutoCAD format. Use descriptive layer titles (i.e. not numbers or internal use acronyms). Use extensive layer control and use line color by layer and line type by layer management. AutoCAD files of the Contract Drawings will be made available to the Contractor selected to perform the Work, upon request.
- E. Certifications must be signed by an officer or other individual authorized to sign on behalf of the entity. Submittals requiring preparation by an engineer or surveyor must be signed and sealed by a Professional Engineer/Surveyor licensed to practice engineering in the State of New York.
- F. Schedule submittals to expedite Work. Provide the CA a minimum of 15 working Days, excluding transmittal time, for review. The CA will coordinate with the NYSDEC and incorporate any comments received from the Department into the CA submittal review.

##### 1.03 SUBMITTAL PROCEDURES

- A. Develop a unique submittal number by combining the associated technical specification section number with a sequential numeric value. For example, the first submittal provided relative to Section 31 23 00 would be submittal number 312300-001. For revised submittals, use original number and a sequential alphabetic suffix.
- B. Use a cover sheet for each submittal. The submittal cover form must be signed by an individual authorized to sign documents on behalf of the Contractor. Include the Project name, Project number, date, submittal number, submittal status (i.e. new or revised), submittal description/title, reference technical specification section and paragraph(s), submittal exclusions and/or deviations from the Contract Documents, special issues,

subcontractor names, remarks, and a certification stating that the Contractor has carefully examined the enclosed documents, verified all field measurements, construction criteria, materials, etc., coordinated the submittal(s) with other submittals and the work of other trades and subcontractors, and that to the best of my knowledge and belief, the enclosed documents are in full compliance with the Contract Documents.

- C. Include drawings and details as appropriate.
- D. Use the same units of weights and measures on submittals that are used in the Contract Documents.
- E. Submit all supplier and Subcontractor submittals.
- F. Identify variations from the Contract Documents and product or system limitations that may be detrimental to successful performance of the completed Work.
- G. Prepare submittals that are complete and contain sufficient detail for review by the CA.
- H. Resubmit submittals if requested by the CA. When performing a submittal revision, identify all changes made since previous submission. For each resubmittal allow the same number of workdays required for review as the original submittal.
- I. Submittals not requested will not be recognized or processed.

#### 1.04 SUBMITTAL REGISTER

- A. Maintain a technical submittal register at the Site. Including the submittal number, description, date submitted, status, and date of approval/rejection.

#### 1.05 SUBMITTAL REVIEW

- A. Submittals will be reviewed solely for the purpose of evaluating whether the information contained in the submittal conforms to the design concept of the Contract Documents. Submittals will be returned with the following classifications
  1. No Exceptions Taken: Work may proceed.
  2. Furnish as Corrected: Work may proceed subject to comments, resubmittal not required.
  3. Revise and Resubmit: Work may not proceed, resubmittal required for indicated items. Proceed with Work on other items subject to comments.
  4. Rejected: Work may not proceed, resubmittal required, submittal unresponsive and/or not in conformance with Contract Documents.
  5. For Information Only: Submittals that are not requested by the CA or required by the Contract Documents.
- B. CA's review is for the limited purpose of checking for conformance with the information given and the design concept expressed in the Contract Documents. Review is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions or quantities. Approval of a specific item does not constitute approval of an assembly of which the item is a component. The CA's review and approval of the Contractor's submittals does not relieve the Contractor from complying with the requirements of the Contract Documents. The Contractor is responsible for:

dimensions to be confirmed and correlated at the jobsite; fabrication processes and construction means, methods, techniques, sequences or procedures; coordination of the Work of all trades; and performing all work in a safe and satisfactory manner.

## 1.06 PRODUCTS AND MATERIALS

- A. Refer to the requirements of the NYSDOT Standard Specifications (latest edition) if no specific requirements are provided in the Contract Documents.

## 1.07 CERTIFICATES OF COMPLIANCE

- A. Submit any certificates required for demonstrating proof of compliance with the Contract Documents to the CA as part of the submittal package.
- B. Certificates must be signed by an official authorized to sign on behalf of the manufacturing, analytical testing company, or organization providing the material and/or service.
- C. For each certification, include the name and address of the Subcontractor, name of the requestor, the Project name and location, relevant test data (if required), and the dates of shipment and delivery.
- D. Certifications do not relieve the Contractor from furnishing satisfactory materials.

## 1.08 INVOICES

- A. Submit monthly invoices in accordance with the provisions of the Terms and Conditions and Supplemental Conditions.
  - 1. Submit invoices on an approved form with an updated schedule showing contract values, approved Change Orders, Work completed to date, current invoice and quantity amounts, and balance to complete for each bid item.
  - 2. Invoices must be reviewed and approved by the CA prior to formal submission for payment.
  - 3. No payment will be made unless all the proper supporting documentation has been submitted and approved by the CA.

## **PART 2 PRODUCTS**

(Not Applicable)

## **PART 3 EXECUTION**

(Not Applicable)

END OF SECTION 01 33 00

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## SECTION 01 35 00

### HEALTH AND SAFETY REQUIREMENTS

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. The Work required under this section includes furnishing all labor, materials and equipment, and performing all operations required to conform to all health and safety requirements during the performance of the Work.

##### 1.02 SUBMITTALS

- A. Prior to mobilization, submit the Contractor's Health and Safety Plan (HASP), and documentation of OSHA training and enrollment in medical monitoring for Site personnel.
- B. The Contractor's Monthly Safety Report, at a minimum, will consist of the following components:
  - 1. The names of all Contractor and Subcontractor personnel employed at the Site at any time during the month and the names and duties of key personnel including Contractor's project manager, Superintendent, safety officer, and competent person(s).
  - 2. A summary of all Health and Safety incidents that describes any medical treatment that was provided during the month, the status of any individuals affected, the names of individuals who may have observed the incident, and actions taken by Contractor to address the unsafe act or unsafe condition.
  - 3. A summary of all Health and Safety near-misses or observations providing an opportunity for shared learning and future hazard avoidance. For any Health or Safety incident or near-miss, list the date, the nature of the incident or near-miss, and the names of individuals involved.
  - 4. The total number of labor hours worked at the Site during that month.
  - 5. Internal Health and Safety audits performed by the Contractor as part of the Contractor's HASP.
- C. Submit a hot work permit for any welding, torch cutting, or activities that generate sparks. If the Contractor does not have a permit readily available, they may request a permit from the Construction Administrator (CA). In some instances, the Owner may require the use of their specific permit and permitting process.
- D. Contractor shall conduct a job safety analysis (JSA) for significant activities and submit the documentation to the CA for review prior to the start of the activities. Submit the JSA on a form acceptable to the CA.
- E. Submit copies of all periodic equipment inspections completed.

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### 1.03 REFERENCES

- A. Applicable regulations and publications include, but are not limited to, the following:
1. ACGIH, Threshold Limit Values and Biological Exposure Indices (most recent version).
  2. ANSI, Emergency Eyewash and Shower Equipment, Z358.1, 1981.
  3. ANSI, Practice for Occupational and Educational Eye and Face Protection, Z87.1, 1979.
  4. ANSI, Practices for Respiratory Protection, Z88.2, most recent version.
  5. ANSI, Protective Footwear, Z41.1, 1983.
  6. ANSI, Respirator Use Physical Qualification for Personnel, Z88.6, 1984.
  7. DHHS, "Manual of Analytical Methods," 3rd edition Volumes I and II, DHHS (NIOSH) Publication 84-100.
  8. DOT Standards and Regulations, 49 CFR 171, 49 CFR 172 and 49 CFR 214.
  9. NESHAP (40 CFR 61 Subpart M), National Emission Standards for Hazardous Air Pollutants: Asbestos.
  10. NFPA, Flammable and Combustible Liquids Code, NFPA 30, most recent revision.
  11. NIOSH Pocket Guide to Chemical Hazards, DHHS/PHS/CDC/NIOSH, August 2006 or most recent.
  12. NIOSH/OSHA/USCG/USEPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, DHHS/PHS/CDC/NIOSH, October 1985.
  13. OSHA, Title 29 CFR Part 1910, Occupational Safety and Health Standards, in particular 1910.134, Respiratory Protection; Title 29 CFR Part 1926, Safety and Health Regulations for Construction Sites, in particular 1926.1101, Asbestos, and 1926.62, Lead.
  14. OSHA, Title 49 CFR Part 214, Roadway Workplace Safety.
  15. USEPA, Health and Safety Requirements for Personnel Engaged in Field Activities, USEPA Order No. 14402.
  16. USEPA, Standard Operating Safety Guidelines, November 1984.
- B. Except to the extent that more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect and are made a part of the contract documents by reference as if copied directly into the contract documents, or as if published copies are bound herewith.
- C. Where two or more regulations/documents conflict, the one(s) offering the greatest degree of protection shall apply.

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#### 1.04 CONTRACTOR'S RESPONSIBILITY FOR HEALTH AND SAFETY

- A. Comply with any and all applicable state, federal, and local ordinances, laws and regulations.
- B. The Contractor is responsible for the Health and Safety of its employees, its Subcontractors, suppliers, agents, inspectors, visitors, the general public, and any Others associated with, or interacting with Contractor who provides labor, goods, or other services on the Site.
- C. The Contractor is responsible for emergency response planning and notification and for actual response to any and all emergencies that may occur during the course of the Work, including emergencies that may occur when Contractor is not present at the Site.
- D. The Contractor is responsible for communicating daily with the CA regarding Health and Safety issues for the safe conduct of the CA's duties, but such communication shall not imply any duty or responsibility on the part of the CA with regard to Health and Safety of Contractor's employees, its Subcontractors, suppliers, the general public, or Others. The CA's responsibility and duty with regard to Health and Safety shall be limited to their employees. Communicate Health and Safety issues accurately and in a timely manner to allow the CA and take appropriate actions to protect the CA's employees and the Owner's employees.
- E. Designate a third-party Site Safety and Health Officer (SSHO) who, at a minimum, has at least 5 years of experience as an SSHO on an uncontrolled hazardous waste site, is 40-hour OSHA Hazardous Waste Operations trained, and 8-hour OSHA Supervisor trained.
- F. The SSHO shall enforce the health and safety requirements for all Contractor personnel on Site at all times. The SSHO shall ensure that all Contractor personnel, Subcontractor personnel, and Contractor visitors follow the Contractor's site Health and Safety Plan (HASP), including wearing the designated level of Personal Protective Equipment (PPE). If the SSHO elects to require a higher level of protection than that specified in the CA's HASP, the extra costs associated with such higher level shall be borne by Contractor, unless such extra costs are approved in advance in writing by the CA.
- G. Prior to mobilization and continually through the duration of the Work, the SSHO shall inspect the Site and document area-specific and worker-specific protection requirements.
- H. After mobilization, the SSHO shall monitor Work activities and document the need for additional worker protection, as required, based on the Work being performed and action levels specified in the Contractor HASP.
- I. The SSHO shall verify that all activities are performed in accordance with the HASP and all federal, state, local, and Health and Safety standards, Laws and Regulations, and guidelines.
- J. In the event of a health or safety risk, as determined by the SSHO, other Contractor personnel, or by the CA, stop Work until a method for handling the risk has been determined and implemented in consultation with the CA. Report any health or safety risk resulting in a Work stoppage to the CA.

- K. The Contractor is responsible for implementing a behavior-based safety process and providing site training, observation, and feedback for Contractor personnel employed at the Site.
- L. The Contractor is responsible for the stability of excavations and embankments created as part of the Contractor's Work. Designate one competent person as defined in 29 CFR Part 1926, Subpart P, Excavations, to inspect and document excavation safety conditions daily and to ensure excavation safety prior to any personnel entering an excavation.
- M. The CA will provide the Contractor with a copy of the CA's HASP as a reference. The Contractor is responsible for preparing their own HASP under which their employees will perform the Work.

#### 1.05 CONTRACTOR'S HEALTH AND SAFETY PLAN

- A. Prepare and submit a Site-specific Health and Safety Plan (HASP) to the CA prior to the start of the Work. Follow all applicable local, state, and federal Health and Safety standards, Laws and Regulations, and guidelines implemented through, but not limited to, the OSHA, NIOSH, ACGIH, and USEPA. Where these references are in conflict, follow the more stringent requirement. Third party SSHO will enforce the HASP. At a minimum, address the following topics in the Contractor HASP
  1. Names of key personnel and alternates responsible for Health and Safety, including a Contractor Health and Safety Representative and SSHO.
  2. A Health and Safety risk or JSA associated with each portion of the Work (i.e., list potential chemical and physical hazards), including JSAs for excavation, solidification, material handling, separation, sizing, stockpiling, loading, transportation, and disposal.
  3. Documentation of employee and Subcontractor training and medical certifications required by 29 CFR 1910.120, as described in Part 3 of this Section.
  4. A requirement that Contractor locate Underground Facilities by using "Safe Dig" procedures prior to the start of the Work.
  5. PPE to be used for each of the tasks and operations being conducted, as required by the PPE program in 29 CFR 1910.120, 29 CFR Subpart I, and 29 CFR 1926.
  6. Medical surveillance requirements in accordance with the program in 29 CFR 1910.120.
  7. Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used by the Contractor, including methods of maintenance and calibration of monitoring and sampling equipment.
  8. Corrective actions and upgrading of PPE based on monitoring of air, personnel, and environmental sampling, with specific Action Levels identified.
  9. Site control measures in accordance with the control program required in 29 CFR 1910.120 and 29 CFR 1926.

10. Decontamination procedures in accordance with 29 CFR 1910.120 and the Contract Documents.
11. If confined space entry is required, include confined space entry procedures in accordance with 29 CFR 1910.146, and a list of all anticipated confined space entries required by Contractor in the course of the Work.
12. A list of Health and Safety and emergency equipment available on the Site.
13. A description of engineering controls used to reduce the hazards of equipment operation and exposure to site hazardous chemicals.
14. An air monitoring plan describing the method, type, frequency, locations of air monitoring, laboratories, and type of analysis to be performed at the Work area for the purpose of employee safety.
15. Open trench excavation procedures in accordance with applicable OSHA Regulations, if required.
16. Documentation of training and experience for the designated excavation-competent person.
17. Procedures for earthwork near buried utilities, where hand digging should be performed within 24 inches of known utility lines unless more stringent requirements are specified by laws or regulations, or the affected utility.
18. Training for emergency response procedures HASP.
19. Heat stress program consistent with the references provided in the CA's HASP.
20. Cold stress program consistent with the references provided in the CA's HASP.
21. Lockout/Tagout procedures where the sudden start up or release of stored energy could cause injury to personnel.

#### 1.06 NOTIFICATIONS

- A. Immediately verbally report to the CA and the National Grid Project Manager the occurrence of any and all Health and Safety incidents. Assist the CA in the preparation of an Accident/Incident Report form, which must be completed within 3-hours of the incident.
- B. Immediately stop work and fully investigate any such incident or near-miss and conduct a root cause analysis. Submit to the CA the Contractor's written corrective action plan within 1 day of the incident occurring.
- C. No elements of the Work will be allowed to continue until after an investigation has been performed and it is determined that it is safe to proceed. If the incident is caused by the negligence of the Contractor, neither National Grid nor the CA will be responsible for any costs associated with project delays.
- D. Notify the CA in writing at least 5 days prior to bringing any hazardous material, equipment, or process to the Site. Provide the CA with an Safety Data Sheet (SDS) for all chemicals brought on to the Site.

- E. Immediately notify the CA in writing of any hazard the Contractor discovers or observes on the Site, and immediately stop Work until corrective measures are taken to eliminate or minimize the hazard. Hazard reporting will be completed as a near miss report.

## PART 2 PRODUCTS

### 2.01 EQUIPMENT AND FACILITIES

- A. Provide all equipment, temporary facilities, and personnel required to perform activities on Site safely in accordance with all applicable laws and regulations and the Contractor's HASP.

### 2.02 PERSONAL PROTECTIVE EQUIPMENT

- A. The appropriate level of PPE is to be determined by the Contractor for the specific tasks as described in the Contractor's HASP. If hazards are identified that require a level of protection greater than Level C (defined in paragraph D below), Work shall be suspended and the CA notified. The Contractor's SSHO, in consultation with the CA, will determine what corrective actions are required prior to restarting Work. Determine and document the appropriateness of the suggested minimum PPE requirements for Contractor's personnel and Others at the Site.
- B. Furnish and maintain materials and equipment for the Health and Safety of Contractor employees, its Subcontractors, Suppliers, and visitor personnel. Provide all required Health and Safety equipment, first aid equipment, tools, monitoring equipment, PPE, and ancillary equipment and methods required to ensure workers' Health and Safety and to comply with the Contractor's HASP.
- C. Level D protection will be required at all times for all personnel and visitors on the Site, except in Support Zone areas. Level D PPE consists of
  1. Hard hat.
  2. Steel-toed boots.
  3. Safety glasses with permanent side shields.
  4. Work clothes (long pants, shirts with sleeves).
  5. Work gloves.
  6. High visibility reflective safety vests.
  7. Hearing protection (as needed to prevent exposure exceeding 85 dB level).
- D. If additional protection consisting of Level C PPE is required during the Work, Level C PPE shall include protection from dust particulates and entrained heavy metals and consist of Level D protection with the following additions
  1. Air purifying respirator, half-face or full-face (depending on required protection factor) with high efficiency particulate air cartridges meeting NIOSH Specifications. The presence of chemical vapors during certain activities (e.g., painting) could trigger the need for additional respiratory protection.
  2. Disposable poly-coated chemically protective coveralls.

3. Disposable chemically resistant outer gloves (nitrile).
  4. Disposable chemically resistant inner gloves (nitrile).
  5. Chemically resistant, steel-toed, and steel-shanked boots (polyvinyl chloride, neoprene, or nitrile), or outer booties.
- E. In most cases, Level C will be the maximum allowable level of PPE. Level B may be allowed provided that personnel are properly trained and certified, and exposure levels are below immediately dangerous to life and health (IDLH) conditions.
- F. In cases where the Owner requires additional PPE, the CA will notify the Contractor of these additional requirements in advance of mobilization so that Contractor may obtain the necessary equipment.

### 2.03 OTHER HEALTH AND SAFETY EQUIPMENT

- A. Maintain the following equipment available on the Site for the health and safety of Contractor, Subcontractors, suppliers, and visitors
1. First aid kits.
  2. Fire suppression equipment (appropriate to location and type of flammable materials present). Equipment will be certified ready for use within the previous 12 months and will also have been inspected each month; maintain documentation supporting certification and inspections available for review.
  3. Emergency eyewash facilities meeting OSHA specifications.
  4. Personnel decontamination facilities and equipment.
  5. Flammable liquids storage cabinet(s), if necessary.
  6. Personnel air monitoring equipment.
  7. Confined space entry equipment, if necessary.
  8. Fall protection equipment appropriate for the hazards on the project.
  9. Heavy blankets.
  10. Other equipment or supplies as determined to be necessary or prudent by Contractor or the CA.

## PART 3 EXECUTION

### 3.01 WORKER QUALIFICATION

- A. Provide the following training to workers, except those who will be restricted to the Support Zone
1. Initial 40-hour OSHA hazardous waste Health and Safety training and current annual 8-hour refresher training.
  2. Eight-hour OSHA hazardous waste supervisory training (required for the Contractor's Superintendent and SSHO).

3. Enrollment in a medical monitoring program, with clearance within the previous 12 months from a licensed physician allowing the worker to participate in field activities and use respiratory protective equipment.
  4. Current respiratory fit testing certification for workers who may be required to work in Level C PPE.
  5. Current cardiopulmonary resuscitation (CPR) and first aid certification for at least two workers assigned to Work on the Site.
  6. Confined Space Entry Training for workers entering confined spaces.
  7. For any worker who is assigned the role of a “competent person,” provide documentation of sufficient and relevant training and experience to perform the assigned duties and responsibilities of that role. As defined in 29 CFR 1926.31, the competent person shall be “one who is capable of identifying existing and predictable hazards, and who has authority to take prompt corrective measures to eliminate them.” Relevant training and experience shall be in the same type of Project activities included in the Work under this Contract.
- B. Designate one “competent person” as defined in 29 CFR Part 1926, Subpart P, Excavations, to inspect and document excavation safety conditions daily and to ensure excavation safety prior to any personnel entering an excavation, if required.

### 3.02 WORK PLANNING AND MEETINGS

- A. Conduct a daily health and safety meeting, prior to beginning Work for that day, to address health and safety issues, changing site conditions, activities, and personnel. All Contractor and Subcontractor employees working on the Site on that day must attend the meeting. Document all meetings and have attendees sign a form acknowledging their presence at the meeting. Include as part of the daily meeting, an evaluation of the Work to be conducted, the hazards associated with the work, and the control measures being used to reduce exposure.
- B. Contractor personnel who are not in attendance for the daily Health and Safety must be briefed on the meeting notes prior to commencing any Work-related activities.
- C. Hold and document additional safety meetings at the start of each major task, and whenever site conditions change such that it could potentially affect worker safety. Any major task undertaken requires the completion of a JSA as described in this Section.

### 3.03 ENGINEERING CONTROLS

- A. Provide the following engineering controls, as required, to complete the Work, to reduce the hazards of equipment operation and exposure to impacted materials
  1. Roll-over cages for bulldozers, back hoes, loaders, and tractors.
  2. Back-up alarms for all trucks and moving equipment.
  3. Water source with sufficient volume and pressure to reach all areas of the Work. Use the water source for wetting debris, soil and other media to control dust during the Work.

4. Decontamination of personnel and equipment in accordance with the requirements provided in the Contract Documents.
  5. Barricades for open trenches and excavations.
  6. Bars or cages for cabs of equipment as deemed necessary to resist damage and eliminate risk of injury during material and debris handling.
  7. Sloping, benching, shoring, drainage systems, or other controls as necessary to ensure stability of excavations and embankments.
  8. Others controls as determined to be necessary or prudent by Contractor or as directed by the CA.
- B. Post ground-level warning signs every 50 feet below all overhead utilities on Site, or more frequently as needed or otherwise required.

### 3.04 MONITORING

- A. Perform heat exposure and cold exposure monitoring activities as required by weather conditions.
- B. Perform all air monitoring activities described in the Contractor's HASP required to provide health and safety protection to the Contractor and Subcontractor personnel.
- C. If working with asbestos-containing materials, the following monitoring may be required by the CA
  1. Perform exposure assessment air monitoring as required by OSHA 29 CFR Part 1926.1101 to determine the airborne concentrations of asbestos to which workers may be exposed. Use air samples that are representative of an 8-hour time-weighted average (TWA) and a 30-minute excursion limit (EL) to determine exposure levels.
  2. Representative TWA worker exposures shall be determined on the basis of one or more samples representing full-shift exposure for workers in each regulated work area. Representative short-term worker exposures shall be determined on the basis of one or more samples representing 30-minute exposures associated with operations that are most likely to produce exposures above the EL for workers in each regulated work area.
  3. Conduct daily air monitoring that is representative of the exposure of each worker who is assigned within a regulated work area, unless the Contractor has made a negative exposure assessment for the entire operation.
  4. Institute exposure monitoring whenever there is a significant change in process, control equipment, personnel, or work practices that may result in new or additional exposures above the PELs, or when there is any reason to suspect that a change may result in new or additional exposure above the PELs.
  5. Conduct, or otherwise provide for personnel air sampling of abatement personnel employed on the project, including daily 8-hour TWA and 30-minute Short Term Excursion Limit (STEL) air sampling, as required by OSHA 29 CFR Part 1926.1101. Personnel 8-hour TWA and 30-minute STEL samples shall be

analyzed for asbestos fibers by Phase Contrast Microscopy (PCM) and the results shall be conspicuously posted at the project site within 72 hours of collection.

6. Perform all asbestos sampling for the Project Site and provide all necessary documentation to comply with state and federal asbestos regulations.
- D. The Contractor is responsible for both work zone air monitoring and community air monitoring.
- E. Pay all costs associated with sampling and analysis to comply with OSHA regulations.

### 3.05 EVALUATION OF PERFORMANCE

- A. Conduct internal safety audits on Subcontract and sub-subcontract Work zones in accordance with the Contractor's HASP. The focus of these routine audits will focus on compliance with OSHA, and local, safety regulations.
- B. Conduct routine behavioral observations and provide immediate feedback during Work activities to promote safe behavior of Contractor and Subcontractor employees.

END OF SECTION 01 35 00

## SECTION 01 40 00

### QUALITY REQUIREMENTS

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. This section defines the expectations for Quality Control (QC) and Quality Assurance (QA) to ensure the Work is constructed to the quality requirements described in the Contract Documents.

##### 1.02 QUALITY CONTROL

- A. Quality Control (QC) refers to monitoring or testing performed by the Contractor to ensure that the Work complies with the requirements of the Contract Documents.
- B. Contractor is responsible for implementing QC practices for suppliers, manufacturers, products, services, Site conditions, and workmanship to produce Work of specified quality.
- C. Provide all material property tests necessary to show that materials from proposed sources meet the requirements of the Contract Documents.
- D. A report of the results of any QC testing performed by the Contractor may be requested by the CA at any time. Contractor must make the results available to the CA within 24 hours of request. Verbal results may be presented earlier.
- E. QC reports must indicate the results of tests and compliance or non-compliance with the specified requirements.
- F. The Contract Documents specify the minimum quality standards and tolerances to complete the Work. Notify the CA of any code, condition, regulation, or standard of workmanship where more stringent requirements should apply.
- G. For products or workmanship specified by association, trade, or other consensus standards comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- H. When specified reference standards, codes, or regulations conflict with Contract Documents, request clarification from CA before proceeding.
- I. Neither the contractual relationship, duties, responsibilities of the parties in the Contract Documents, nor those of the CA, may be altered by mention or inference otherwise in any reference document.
- J. Comply fully with manufacturers' instructions, including each step in the sequence.
- K. Should manufacturers' instructions conflict with the Contract Documents, request clarification from CA before proceeding with the Work.

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### 1.03 QUALITY ASSURANCE

- A. Quality Assurance (QA) refers to monitoring or testing performed by the CA, Owner, or a third-party firm for the purpose of evaluating whether the Work complies with the requirements of the Contract Documents.
- B. QA inspection and testing may occur on or off the Site as required by the Owner and depending on the nature of inspection or test being performed.
- C. The Contractor must subcontract with a third-party laboratory to provide testing of ISS samples as described in Section 02 55 00.
- D. The Contractor must subcontract with a third-party firm to provide compaction and moisture testing of backfilled soils as described in Section 31 23 23.
- E. Reports must be submitted by the third-party firm to the CA and the Contractor by the end of the next working day following test completion. Verbal results may be presented earlier to the Contractor.
- F. Reports must indicate the results of tests and compliance or non-compliance with the specified requirements.
- G. Final acceptance of all materials and placement will be based on a review of the tests, as well as on visual observation of the installation procedures by the CA.
- H. Cooperate with third-party firm and CA; furnish samples of materials, equipment, tools, storage, safe access, and assistance by incidental labor as requested. Notify CA and third-party firm at least 72 hours prior to expected time for operations requiring third-party services.
- I. QA testing or inspection by parties engaged by the Owner, or representative of the Owner, does not relieve Contractor from responsibility to perform Work in accordance with the requirements of the Contract Documents or from monitoring or maintaining QC.
- J. Compensate Owner for QA retesting required because of non-conformance with specified requirements. Payment for retesting will be charged to the Contractor by deducting inspecting or testing charges from the Contractor's next invoice or retainage.

### 1.04 PERSONNEL REQUIREMENTS

- A. Perform the Work using persons qualified to achieve the minimum required standards and tolerances as established in these Technical Specifications.
- B. The CA may require the Contractor to submit documentation of personnel qualifications for any activity required to complete the Work and may reject personnel deemed unqualified by the CA or Owner.

### 1.05 TOLERANCES

- A. Wherever tolerances are specified either in the Contract Documents or in product manufacturer's instructions, the Contractor must monitor tolerances of installed products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with the Contract Documents, request clarification from CA before proceeding with the Work.

- C. Adjust products to appropriate dimensions and positions before securing products in place.

## **PART 2 PRODUCTS**

(Not Applicable)

## **PART 3 EXECUTION**

### **3.01 PERFORMANCE**

- A. Verify existing Site conditions are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that all Work meets requirements of Contract Documents, and complies with all permits, laws and regulations.
- C. Approvals given by the CA and Owner, or by third-party testing agencies do not relieve the Contractor of the responsibility for performing the Work in accordance with the Contract Documents.

END OF SECTION 01 40 00

## SECTION 01 41 00

### REGULATORY REQUIREMENTS – PERMITS

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. This Section establishes responsibility for obtaining Project permits between the Construction Administrator (CA) and the Contractor.

##### 1.02 CA PERMITS

- A. The CA will obtain the following Project permits
  1. Approvals from the NYSDEC.

##### 1.03 CONTRACTOR PERMITS

- A. Obtain the following Project permits
  1. NYSDEC permit/approval for temporary dewatering discharge of treated water.
  2. Local construction permits.
  3. Permits required for any off-Site parking that is negotiated between the Contractor and the Village of Canastota, and/or private parking facilities, as needed.
  4. Permits/notifications required by the Village of Canastota.
  5. Temporary road closure permits.
  6. Hydrant/public water supply permit
  7. Any other permits required to complete the Work.
- B. This Section does not describe all permits required for performance of the Work. Any permits not identified in this Section, or elsewhere in the Contract Documents, are the responsibility of Contractor.
- C. Regardless of who is responsible for obtaining a permit, the Contractor is responsible for performing in accordance with the terms and conditions of all permits.
- D. Provide any technical and equipment related data required by the CA.

##### 1.04 COORDINATION/ASSISTANCE

- A. The CA will coordinate delivery of Contractor submittals to regulatory agencies, as may be required.
- B. Provide all data requested by the CA to support permit applications. When necessary, the CA may provide data summaries or other Project information in support of Contractor permit submittals.

- C. Any coordination and/or assistance between the Contractor and the CA are provided in the interest of expediting the Project. Provision of coordination and/or assistance does not relieve the Contractor of any obligations in obtaining the required permits.

## **PART 2 PRODUCTS**

(Not Applicable)

## **PART 3 EXECUTION**

(Not Applicable)

END OF SECTION 01 41 00

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## SECTION 01 50 00

### TEMPORARY FACILITIES AND CONTROLS

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. The Work required under this section includes furnishing all labor, equipment, supplies, laboratory testing, materials, and performing all operations required to establish, maintain, and remove temporary facilities and controls at the Site during the performance of the Work.

##### 1.02 SUBMITTALS

- A. Prior to mobilization, submit a Site Operations Plan (SOP) as described in Section 01 33 00. The SOP must address elements of the temporary facilities and controls listed in this Section.
- B. Prior to the start of any ground disturbing activities, submit copy of the Dig Safe (811) ticket and confirmation of utility mark out of all public and private utilities located at the Site.

##### 1.03 ELECTRIC SERVICE

- A. A licensed electrician must perform all electrical Work.
- B. Contractor must provide electrical connections to all facilities and equipment that require electrical power for the performance of the Remedy, including all field offices and sheds.
- C. A diesel-powered electrical generator may be used to power facilities/equipment for short term purposes in the event of problems with the regular electric service. In that case, use a licensed electrician to perform all service connections and disconnections from the facilities/equipment and implement noise controls to muffle engine noise.
- D. All electrical connections must meet appropriate National Electric Manufacturers Association (NEMA) ratings consistent with the intended service.
- E. Coordinate with local electric utility and obtain and pay for any necessary inspections and permits.
- F. Temporary electric service connections must be in the Contractor's name. Contractor will receive all power bills and pay the utility service provider directly for power used during the Work.

##### 1.04 TELECOMMUNICATION SERVICE

- A. Contractor must provide and pay for a broadband (cable) internet connection, hardwired to the CA's job trailer. Include the longest-range wireless router provided by the broadband vendor as part of the internet service.
- B. The broadband internet service provided by the Contractor must be the maximum transfer capacity available for the service connection to the Site.

- C. The Contractor must maintain separate telecommunication services for the Contractor's use.

#### 1.05 POTABLE WATER SERVICE

- A. Contractor must provide, maintain, and pay for a suitable quantity of bottled potable drinking water for all on-site personnel. Furnish water coolers for all field office trailers. Furnish individual bottled water containers in the Support Zone adjacent to personnel decontamination areas and at other locations near the Work being conducted, as necessary and prudent to keep workers supplied with drinking water. During summer months, provide the option of bottled water on ice at these locations.

#### 1.06 SANITARY FACILITIES

- A. Provide flush toilets and sinks in the Construction Administrator (CA) trailers.
- B. Provide a sufficient number of portable toilets and hand washing stations for Contractor and Subcontractor crews, CA, Owner, and visitors in accordance with usage ratings, or as otherwise directed by the CA.
- C. Portable toilets and hand-washing stations must be serviced per capacity requirements, and at minimum twice per week.
- D. At a minimum, provide one portable toilet in the support zone designated as "Women Only."
- E. The portable toilets and hand washing stations must be installed during mobilization and maintained in clean and sanitary condition until Substantial Completion.
- F. Furnish toilets in the support zone and in the decontamination zone that are self-contained, single occupancy, properly vented, and fully enclosed with fiberglass or other nonabsorbent material.
- G. Provide and maintain in clean, good working order, a minimum of two (2) self-contained water hand-washing facilities. One of these water hand-washing facilities must be located in the support zone adjacent to the portable toilets, and another will be located in the personnel decontamination area of the contamination reduction zone. Provide a hand washing station immediately adjacent to any location at the Site where a portable toilet is placed.
- H. Either provide freeze protection for hand washing stations or provide an alternate method for water hand washing during winter months. Hand sanitizer is not an acceptable substitute to water hand washing.
- I. Provide and maintain in clean, good working order, emergency eye wash stations and showers at each personnel decontamination area and in the water treatment system enclosure.
- J. Provide and maintain in clean, good working order, other personnel decontamination facilities required by the Contract Documents or the Contractor's HASP.

## 1.07 VEHICLE ACCESS AND PARKING

- A. Limited lay down, storage, and parking is available at the Site as designated on the Drawings.
- B. All vehicles must enter and exit the Site only at the locations designated on the Drawings, or as otherwise approved by the CA.
- C. Provide unimpeded access for emergency vehicles to the Site and nearby properties at all times.
- D. Designate an on-site parking area within the Support Zone to accommodate personal vehicles of Contractor's employees, the CA, Owner, and visitors.
- E. Designate an area of the Secured Zone to be used for the parking and maintenance of construction vehicles and equipment. Do not allow construction vehicles to enter areas designated for parking personal vehicles.
- F. Do not park vehicles where they will impede traffic or access to areas where Work is being conducted.
- G. Contractor may negotiate and arrange for additional parking and storage space with nearby property owners, if desired. Such use must be consistent with City zoning and permit requirements. If any additional space is required, prior to contacting any tenants, the Contractor will request information from the CA and Owner. If offsite employee parking is arranged, provide shuttle service to and from the Site.

## 1.08 TRAFFIC CONTROL

- A. Contractor must furnish, install, and maintain traffic control signs in accordance with requirements of the Village of Canastota or as otherwise deemed necessary by the CA for the safety of workers at the Site and the public.
- B. Provide a dedicated flagger during trucking activities on East North Canal Street if deemed necessary either by the CA or by the Village of Canastota.

## 1.09 SITE ACCESS CONTROL

- A. Contractor must develop written Site security procedures as part of the SOP.
- B. The security procedures must include a site entry and exit protocol. All persons entering or exiting the site must sign in/out at the designated area.
- C. Contractor must designate a full-time employee to sign in and sign out workers, visitors, and truck drivers, and to operate and observe the site access gate. These duties may not be assigned to the SSHO.
- D. The site access gate must be normally closed and must be closed after a vehicle enters or exits the site, including haul trucks.

## 1.10 BARRICADES AND ENCLOSURES

- A. Install the perimeter fence as shown on the Drawings or as otherwise directed by the CA.

- B. To avoid damage to subsurface utilities, all fence post holes must be excavated using hydro-excavation soft-dig techniques. Do not direct-drive fence posts or mechanically auger fence post holes.
- C. Repair or replace any Site fencing damaged by Contractor's activities.
- D. Furnish and post a professionally lettered sign, minimum size 4 feet by 4 feet, at each entrance or gate to the site with the following text or other similar text approved by the CA.

“All Visitors Must Sign In At Office”

and

“All Personnel and Visitors Beyond This Point  
Must Wear Hard Hat, Safety Glasses, High-  
Visibility Vest, and Steel Toe Boots.”

#### 1.11 FUEL STORAGE AND DISPENSING

- A. Fuel storage and dispensing facilities must be resilient to potential catastrophic events, particularly flooding. This must be addressed in the Contingency and Flood Preparedness Plan, as described in Section 01 33 00.
- B. Store fuel at the Site only in approved containers that meet all relevant fire codes.
- C. Provide secondary containment and spill protection devices at all fueling facilities.
- D. Take extreme care to prevent fuel spills. Immediately notify the CA, the local fire department, and other authorities, as required, in the event of a spill. Provide personal protective equipment and materials to immediately respond to fuel spills. The Contractor is responsible for all costs of containing, removing, and disposing of materials contaminated by fuel spills to the satisfaction of the CA.
- E. Provide and maintain absorbent materials, shovels, containers, and other appropriate consumables for spill response and cleanup. Cleanup materials must be appropriate for the type of fuels, oils, and other materials being used.
- F. The Contractor is responsible for all mandatory regulatory notifications and reports of any releases. Immediately notify the CA of any spills.
- G. Do not commingle waste materials caused by fueling or vehicle maintenance activities with impacted material handled or generated by the Work.
- H. Dispose of waste materials generated by fueling and/or spills at no expense to the Owner.
- I. Equip fuel dispensing nozzles with automatic shutoff devices to prevent spills due to overfilling or inattentiveness. “Farm nozzles” or other types of dispensers without automatic shutoff are not allowed.

#### 1.12 PROTECTION OF THE WORK

- A. Protect installed Work to prevent the spread of impacted material to areas outside the Exclusion Zone.

- B. Protect the existing utilities, wells, and other site features and facilities by such means as determined by the Contractor and approved by the CA, unless the features and facilities are designated on the Drawings for removal.
- C. Repair or replace all features and facilities that are damaged directly or indirectly by the Contractor (other than those identified for removal by the CA), to its original condition or better, in accordance with city and state requirements, and to the satisfaction of the CA.

#### 1.13 CLEANING AND WASTE REMOVAL

- A. Maintain all Work areas free of waste materials, debris, and rubbish. Remove waste materials, debris, and rubbish from the Site weekly and properly dispose at an Owner-approved landfill facility.
- B. Provide weekly cleaning service for all field office trailers. Cleaning must include sweeping and mopping the floors, wiping down the counters, tables, and workspaces, and removal of office waste and recycling.

#### 1.14 FIELD OFFICES AND SHEDS

- A. Coordinate the locations of field offices with the CA prior to delivery and setup.
- B. In addition to whatever field office and other trailers the Contractor might require supporting his site operations, Contractor must furnish and maintain in the Support Zone the following field office trailers for the duration of the project, from mobilization through demobilization.
- C. The Contractor must provide one field office for use of the CA. This office must be a Williams Scotsman 50-foot by 12-foot mobile office or CA-approved equivalent. A built-in plan table must be included in the model provided. Furnish this office with:
  - 1. Common area of sufficient size to accommodate the weekly progress meetings.
  - 2. Restroom with temporary wastewater storage tank and non-potable water tank with on-demand pump for hand washing and toilet flushing.
  - 3. One hardwired high-speed internet connection as described elsewhere in this Section.
  - 4. A conference call speakerphone (Polycom Soundstation2 or CA-approved equivalent)
  - 5. Four office chairs as described elsewhere in this section.
  - 6. Two work desks.
  - 7. One designated private work area for use by the CA and one designated private work area for use by DEC or NYSDOH personnel that visit the site.
  - 8. 12 folding chairs with vinyl-covered built-in seat cushions
  - 9. Four folding tables, each 30" W x 72" L
  - 10. One refrigerator as specified elsewhere in this section.
  - 11. One microwave as specified elsewhere in this section.

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- 12. Two fire extinguishers as specified elsewhere in this section.
  - 13. One printer/copier/scanner as specified elsewhere in this section.
- D. Fire extinguishers must be 10-pound (minimum) hand carried, portable, UL rated, Class ABC, all-metal valve construction, dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures. Provide Amerex B441 extinguishers or CA-approved equivalent. Provide fire extinguishers at all temporary facilities, workstations, trailers, and offices. Keep detailed records of maintenance and expiration dates.
  - E. Office chairs must be ergonomic. The minimum requirements for ergonomic chairs are: 5-caster base, adjustable armrests, 0–15-degree seat back tilt, 16” seat back width, 16” seat back height, padded seat pan, 0-10 degree seat pan angle, 20” seat pan width, 17” seat pan depth with sloping front edge, and 16”-22” adjustable seat pan height. Contractor will retain ownership of chairs at completion of Work.
  - F. The minimum requirements for refrigerators are: 4.5 cubic foot capacity. Contractor will retain ownership of refrigerators at completion of Work.
  - G. The minimum requirements for microwaves are: 1.2 cubic foot capacity, 1200 Watt. Contractor will retain ownership of microwaves at completion of Work.
  - H. The office printer/copier/scanner must be a Ricoh MP 2003 or CA-approved equivalent. Must be capable of color print and scan of documents up to 11”x17”. Unit may be leased, or Contractor will retain ownership at completion of Work.
  - I. Provide a locking, fire-rated file cabinet for storage of Record Documents and electronic media backups. Cabinet must be FireKing 1-Hour 2-Drawer Vertical File Cabinet or CA-approved equivalent.
- 1.15 RADIO COMMUNICATIONS
- A. Provide radios for the duration of the Work for CA, and two spares for visitors. These radios must be programmed to all the frequencies to be used by the Contractor.
- 1.16 ROADS AND CONSTRUCTION EXITS
- A. Install and maintain the temporary construction exit(s) in the locations shown in the Drawings and in accordance with City requirements.
  - B. Construct onsite haul routes as proposed by the Contractor and approved by the CA.
  - C. For the purposes of decontamination, all haul routes established within the Exclusion Zone are considered impacted. All vehicles that enter the Exclusion Zone, even if constrained only to haul roads, require decontamination per Specification Section 02 51 00.
  - D. Remove haul routes at the completion of hauling.
- 1.17 REMOVAL OF TEMPORARY FACILITIES AND CONTROLS
- A. Remove temporary utilities, equipment, facilities, and controls, prior to submitting final application for payment.

- B. Remove all materials, vehicles, rubbish, debris, and wastes from the Site prior to submitting final application for payment.

## **PART 2 PRODUCTS**

(Not Applicable)

## **PART 3 EXECUTION**

### **3.01 EQUIPMENT LEFT ON SITE**

- A. Secure all vehicles and equipment left on the Site.
- B. De-energize and lock all equipment left on the Site when not in use to prevent electrical/fire/explosive hazards.
- C. Winterize any systems requiring freeze protection to avoid damage or failure.
- D. Contractor is responsible for the security, operation, and maintenance of all equipment and systems at the Site.
- E. If systems are operational outside of normal work hours (for example, the dewatering system or the water treatment system), either provide oversight at all times when equipment is in operation or provide an electronic monitoring system with a remote communication feature to alert the appropriate personnel of system failure. Remote monitoring and operation of system requires advance approval in writing by the CA.
- F. Repair system failures in a timely manner such that the Progress schedule is not affected.

### **3.02 EQUIPMENT LOCATION**

- A. Temporary equipment on the Site may need to be relocated periodically depending on the advancement of Work.

### **3.03 SITE SECURITY/FIRE**

- A. Take security precautions as necessary to prevent any unauthorized access to the work area, and to control construction traffic to and from the Site.
- B. If instructed by the CA, provide manned overnight security/fire watch services during all non-working hours, including weekends and holidays. Contractor may elect to provide a security guard even if not required by CA, but in that case, it will be at Contractor's expense.
- C. Security personnel employed during non-working hours must, at a minimum, meet the following requirements:
  - 1. Be literate in the English language.
  - 2. Be briefed on Site hazards.
  - 3. Have access to a telephone.
  - 4. At no time have access to, or the capacity to use, firearms, restraint tools, or any weaponry or gear associated with criminal investigation.

- D. Personnel assigned to perform Site security are not required to adhere to the training, certification, and medical monitoring program defined in Contractor HASP. However, security personnel must be briefed on all hazards present and instructed not to enter any exclusion zones and to avoid any potential exposure to impacted materials.
- E. Establish written Site security procedures as part of the Site Operations Plan. At a minimum the procedures will include:
  - 1. Roles and responsibilities of personnel involved with Site security.
  - 2. Description of proposed daily security operations.
  - 3. Method and frequency for conducting security checks.
  - 4. Sign in/sign out procedures.
  - 5. Location of security station.
  - 6. Description of how a breach of security will be handled. A breach of security includes but is not limited to such scenarios as: unauthorized personnel entering the Site, unauthorized personnel attempting to gain entry to the Site, broken fences, and unlocked gates.
  - 7. An emergency contact list of personnel to be contacted in case of emergency, and the order in which to notify them.

END OF SECTION 01 50 00

## SECTION 01 57 13

### TEMPORARY EROSION AND SEDIMENT CONTROLS

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. The Work required under this section includes furnishing all labor, equipment, supplies, materials, and performing all operations required to establish, maintain, and remove temporary erosion and sediment controls at the Site during the performance of the Work.

##### 1.02 PERFORMANCE REQUIREMENTS

- A. Implement the sediment and erosion control aspects of the Work in accordance with Contractor's prepared Soil Erosion and Sediment Control Plan.
- B. Follow the guidance of the latest version of the "New York State Standards and Specifications for Erosion and Sediment Control" as well as the latest version of the "New York State Stormwater Management Design Manual".
- C. Furnish and install all required sediment and erosion controls prior to the start of excavation and solidification Work and maintain the controls for the duration of the Work.
- D. Implement best management practices to prevent sediment from leaving the work area. Prevent sediment from entering roadways, the excavation, surface water, etc.
- E. In the event of federal, state, or local water pollution or wetlands law violations requiring mitigating action, CORRECT any violations or penalties incurred by the Contractor's personnel, and pay for equipment or construction activities to remedy the violation. If corrections are not performed promptly or to the responsible agencies' satisfaction, the Owner reserves the right to perform the corrective Work and to deduct the costs of the corrective Work from the Contractor's invoice or retainage.

#### PART 2 PRODUCTS

##### 2.01 SILT FENCE

- A. Silt fence, unless otherwise specified, must be "Type C" wire-backed silt fence with steel tee-post supports.

#### PART 3 EXECUTION

##### 3.01 SITE GRADING FOR STORM WATER CONTROLS

- A. Grade the ground surface as necessary to install the storm water controls and achieve flow patterns for effective storm water control.
- B. Grade the Support Zone(s) and Contamination Reduction Zone(s) as needed to facilitate the installation and leveling of temporary facilities such as job trailers, parking areas,

personnel and equipment decontamination structures, and portable toilets and hand washing stations.

- C. Grade the Support Zone to shed non-impacted storm water such that runoff does not flow from the Support Zone into the Exclusion Zone and does not enter the excavation area.
- D. Stabilize all soils disturbed during the Site preparation.

### 3.02 EROSION CONTROL STRUCTURES

- A. Construct and maintain the erosion control structures as described on the Drawings and in the SESC. Relevant structures include but are not limited to silt fences, hay bales, perimeter soil berms, and catch basin / curb inlet protection.

### 3.03 SURFACE WATER RUN-ON/RUNOFF CONTROL

- A. Intercept and divert storm water down or cross gradient away from Work areas through use of berms, swales, pipes, sumps, or other CA-approved means.
- B. Install temporary control measures as required to protect adjoining properties from surface drainage caused by construction operations.
- C. Prevent storm water from the Support Zone and adjacent areas from entering the work areas and contacting impacted materials, so as to minimize the generation of contact water that requires treatment.
- D. Prevent surface water run-on/runoff from transporting sediment or impacted material off the Site.
- E. All control measures necessary for storm water management are the Contractor's responsibility. Should the Contractor, in the opinion of the CA, fail to provide adequate storm water controls, the CA will not approve applications for payment of costs related to the collection, storage, treatment and disposal of the resulting impacted storm water.
- F. Where construction vehicle access routes intersect public roads, install, and maintain wheel washes and construction entrances to minimize the transport of mud, soil and dust onto the public road. If soil, mud, or dust is transported onto a road surface, clean the road thoroughly immediately to the satisfaction of the CA. Remove soil from the roads by shoveling, sweeping or mechanical cleaning equipment. Transport sweepings to an on-site soil stockpile area. Do not street wash with water until the soil has been removed to the extent practical by sweeping.
- G. Handle and dispose of all pollutants that are generated on the Site during construction in a manner that does not negatively affect storm water runoff quality.

### 3.04 INSPECTION AND MAINTENANCE

- A. Inspect and provide a report on all erosion and sediment controls at least once every seven days, regardless of rainfall, or as directed by the permit requirements. Indicate deficiencies and corrective action.
- B. Remove sediment deposits and place them in a location designated by the CA. Do not allow sediments to migrate off site.

- C. Maintain erosion control structures between work seasons as necessary and replace damaged erosion control structures before the start of the second work season.
- D. Immediately repair damage to erosion and sediment control systems.

### 3.05 MONITORING OF PRECIPITATION

- A. Procure, install, and maintain a rain gauge at the Site and record rainfall received.
- B. Maintain a daily rainfall record with a measurement for every workday at the Site, and report daily and cumulative rainfall on the daily construction report.
- C. For snow, record depth of new snowfall for every workday and include daily and cumulative snowfall on the daily construction report.
- D. Perform inspection of sediment and erosion control following each precipitation event, record, and correct deficiencies.

### 3.06 REMOVAL AND DISPOSAL

- A. At the conclusion of the Work, remove all installed elements of erosion control structures including impermeable liners, filter fabric, silt fence and wire reinforcement, hay bales, and support posts unless otherwise directed by the CA. Properly dispose of erosion control debris at CA and Owner-approved landfill.
- B. Remove erosion and sediment control materials in such a way as to minimize ground disturbance and the potential for future erosion and/or sediment transport. Fill, compact, and stabilize all disturbed ground, including trenches associated with the removal of erosion and sediment controls, as directed by the CA.

END OF SECTION 01 57 13

## SECTION 01 57 19

### TEMPORARY ENVIRONMENTAL CONTROLS

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. The Work required under this section includes furnishing all labor, equipment, supplies, materials, and performing all operations required to establish, maintain, and remove temporary environmental controls at the Site during the performance of the Work.

##### 1.02 PERFORMANCE REQUIREMENTS

- A. Perform the Work such that noise, dust, odor, and concentrations of airborne constituents at the perimeter of the Project Limits do not exceed the action levels set forth in the Community Air Monitoring Plan (CAMP).
- B. Perform the Work such that noise, dust, odor, and concentrations of airborne constituents within the Project Limits do not exceed the allowable levels described in either the Construction Administrator's (CA) Health and Safety Plan (HASP) or the Contractor's HASP.
- C. The CA has authority to direct the Contractor to stop Work or modify Work methods or activities as necessary to enforce compliance with the CAMP, the CA's HASP, or if the CA deems noise, odor, dust, or concentrations of airborne constituents are exceeded.
- D. The SSHO has the authority to direct the Contractor to stop Work or modify Work methods or activities as necessary to enforce compliance with the Contractor's HASP.
- E. Exceedances of alert levels or of action levels caused by the Contractor's own negligence or failure to follow the CAMP will not be considered as grounds for an extension to the Contract Time or an increase in the Contract Price.
- F. Work may not be started until the temporary environmental controls are installed.

##### 1.03 ENVIRONMENTAL PROTECTION

- A. For the purposes of this section of the Technical Specifications, environmental protection is defined as the retention of the environment in its natural state to the greatest extent possible during construction and to enhance the natural appearance in its final condition. Environmental protection requires consideration of air, water, and land resources and involves noise, solid waste management, and management of other pollutants. Comply with all applicable or relevant and appropriate federal, state, and local laws to provide for abatement and control of any environmental pollution arising from the construction activities in performance of the Work.
- B. The CA may notify the Contractor verbally and/or in writing of any non-compliance with federal, state, and/or local laws. After receipt of the notice, immediately inform the CA of the proposed corrective action and take such actions if they are approved by the CA. If the Contractor fails or refuses to comply promptly, the CA may issue an order suspending or halting all or parts of the Work until satisfactory corrective action has been taken.

Claims for extensions of the Contract Time or for increases in the Contract Price by the Contractor due to the stop orders described above will be denied.

- C. Do not pollute any stream, river, waterway, roadway, or soil with contaminants (e.g., fuel, oil, grease, lubricant, hydraulic fluid, bitumen, calcium chloride, acid, base, or other harmful materials). Comply with the appropriate Federal, State, and local regulations and guidelines for the handling and disposal of all materials.
- D. Properly dispose of all debris and contaminated material resulting from the performance of the Work in accordance with all applicable or relevant and appropriate federal, state and local laws and regulations.
- E. Disposing of debris or contaminated materials in or adjacent to the Project area is not permitted. Remove any unauthorized dumped materials and restore the area as directed by the CA. Contamination that results from unauthorized activity or dumping by the Contractor must be promptly remediated at no additional cost. All material generated from Site disturbance with the exception of specific material (e.g., above grade clearing and grubbing material) should be considered contaminated.

#### 1.04 AIRBORNE DUST, AIRBORNE CONSTITUENTS, AND ODOR

- A. Conduct all Work in accordance with all applicable Laws and Regulations concerning emissions of airborne dust, airborne constituents (NESHAPs), and odor.
- B. Control the Work such that concentrations of airborne constituents measured at the Site fence line are below the action levels set forth in the CAMP at all times.
- C. The CA has the authority to direct the Contractor to stop Work or modify Work methods or activities as necessary to enforce compliance with the action levels.
- D. Control dust particles, aerosols, and gaseous byproducts from construction activities and processing and preparation of materials at all times including weekends, holidays, and outside of normal work hours when Work is not in progress. Maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, and borrow areas within or outside the Work area free from particulates that could cause the action levels in the CAMP to be exceeded or could result in a hazard or nuisance.
- E. Install and maintain a perimeter fence with fabric covering as shown on the Drawings as a control against emissions of dust and odor. All temporary fences must be of equal or better construction than the existing perimeter fence. Fences that are temporarily removed and then replaced must be of equal or better construction than the original fence.
- F. Provide all labor, materials, and equipment, including water trucks, dust suppressants and irrigation systems needed to limit visible dust, and comply with the CAMP during excavation, ISS, material handling, transportation, and other Work activities.
- G. The Contractor may voluntarily apply water, seed or mulch to control dust or odor at the Site. Odor control foam may only be applied at the CA's discretion.
- H. Perform the Work such that sound levels measured at the Site property boundary comply with local ordinances and project-specific action levels at all times.
- I. Treated contact water may be used for dust control with CA approval.

- J. Provide adequate treated contact water and/or non-potable water storage capacity at the Site to provide a reliable high-volume source of water for dust control.

#### 1.05 WORK ZONES

- A. Establish a Secured Zone, Support Zone, Exclusion Zone, and Contamination Reduction Zone, as defined herein.
  - 1. Establish boundaries, barriers, facilities, and controls to ensure that all personnel and equipment exiting the Exclusion Zone pass through the Contamination Reduction Zone before entering the Support Zone and before exiting the Site.
  - 2. Furnish, install, and maintain in good condition, orange plastic mesh fencing secured to metal posts to delineate the boundaries between the Exclusion Zone, Contamination Reduction Zone, and Support Zone. Install orange plastic mesh fencing at the entrance of the Exclusion Zone for a clear demarcation for Site workers.
  - 3. Make every effort to avoid driving trucks through areas with Impacted Materials exposed at the surface, so that truck tires will require only minimal decontamination effort prior to exiting the Site.
- B. Establish a general Secured Zone that excludes unauthorized personnel from entering the Site.
  - 1. Control access to the Secured Zone via chain-link fence and locking gates as shown on the Drawings.
  - 2. Furnish locks for Secured Zone gates and provide duplicate keys to CA, and Owner.
  - 3. The Contractor controls access to the Secured Zone. The CA and Owner must be allowed free access to the Secured Zone 24 hours per day, subject to appropriate safety precautions. Providing the CA and Owner with access to the Secured Zone does not in any way relieve that Contractor of the responsibility for maintaining Site security during the performance of the Work.
  - 4. Maintain a log sheet on which all persons must sign in and out upon entering or leaving the Secured Zone. Additional Site access control requirements are described in Section 01 50 00.
  - 5. The Contractor is solely responsible for the security and safety of equipment, facilities, personnel, and materials within the Secured Zone.
- C. Establish a Support Zone for field offices, storage, sanitary facilities, hand-washing facilities, and non-construction vehicle parking.
  - 1. The Support Zone must be an area that is free of physical and chemical hazards.
  - 2. Maintain the Support Zone in a safe, clean, orderly, and sanitary manner at all times.
- D. Establish the limits of the Exclusion Zone using the following criteria in addition to any other criteria that may be deemed necessary by the CA.

1. Open excavation / ISS mixing / soil blending areas.
  2. All stockpile areas.
  3. All areas where Impacted Materials are present at the ground surface.
- E. Establish temporary activity zones within the Exclusion Zone using high-visibility warning tape fastened to metal posts or weighted barrels to delineate areas where specific Work tasks will take place. Revise the temporary activity zones as necessary and as the Work progresses. Temporary activity zones must be established to include the following tasks:
1. Stockpiles are temporary activity zones. Install signs to indicate the type of material stockpiled in each area.
  2. Storage areas for materials or equipment must be established and maintained as temporary activity zones.
  3. Mark any temporary decontamination areas as temporary activity zones.
- F. Establish a Contamination Reduction Zone between the Support Zone and the Exclusion Zone.
1. Provide suitable facilities for personnel decontamination in the Contamination Reduction Zone, including portable toilets, emergency eyewash and water hand washing station as described in Sections 01 50 00 and 02 51 00. Equip the personnel decontamination facility with seating and shelter from the elements.
  2. Construct a vehicle and equipment decontamination facility as described in Section 02 51 00 that allows for the capture of solid and liquid residuals generated during decontamination of construction vehicles and trucks bound for offsite disposal facilities.
  3. Provide a method for the transport of wastewater generated during decontamination to the WTS in accordance with Section 02 51 00.

#### 1.06 STOCKPILE AREAS

- A. Manage stockpiles in accordance with these Technical Specifications and as shown on the Drawings.
- B. Stockpile and laydown area(s) will be constructed by the Contractor. These areas must be maintained during the course of the Work and may be modified as required to implement the Work.
- C. All stockpile locations must be approved by CA prior to construction.
- D. Location of stockpiles is the Contractor's responsibility and placement in areas that require movement and relocation due to scheduled or unscheduled work shown in the drawings will not be grounds for delay claim or change order.

## **PART 2 PRODUCTS**

### 2.01 PRODUCTS

- A. Provide and maintain a sufficient supply of materials/equipment required to implement personnel decontamination procedures, including, but not limited to, the following items:
  - 1. Plastic trash barrels.
  - 2. Liners for trash barrels.
  - 3. Water hand washing stations.
  - 4. Alconox™ or approved equivalent detergent concentrate.
  - 5. Hand pump sprayers.
  - 6. Long handled soft bristle brushes.
  - 7. Large sponges.
  - 8. Cleaning wipes for respirators.
  - 9. Benches or stools.
  - 10. Boot scrapers.
  - 11. Liquid hand detergent and paper towels.
  - 12. Other supplies and equipment as necessary to construct the personnel and equipment decontamination facilities.

## **PART 3 EXECUTION**

### 3.01 DUST, AIRBORNE TOXIC CHEMICALS, NOISE, AND ODOR CONTROL

- A. Provide dust control using water trucks, hoses, sprinklers, or engineered dust suppression materials.
- B. Aggressively apply water and other wetting agents (approved by CA) on an as-needed basis and as directed by CA.
- C. Cover all trucks carrying debris or other materials off the Site.
- D. Outside of work hours, all impacted soil stockpiles must be covered with a polyethylene tarp secured by sandbags.
- E. Perform periodic street cleaning along East North Canal Street and Roberts Street as required or as directed by the CA.
- F. All engines must be properly tuned to minimize particulate emissions. The CA has authority to reject any haul truck or other piece of equipment that emits an unacceptable level of engine exhaust particulates. What constitutes an unacceptable level of engine exhaust particulates is the sole judgment of the CA.
- G. Equip vehicles and motorized equipment with appropriate noise control devices to maintain noise levels that conform to the levels indicated in the Contract Documents as

well as current OSHA standards and current state and local regulations. Immediately take steps to correct any deficiencies noticed or as directed by the CA.

- H. Properly maintain all mufflers and noise control devices and replace when necessary. Operate all construction equipment in the manner that it was intended. Excessive amount of noise and vibration due to improper use of vehicles and equipment is prohibited.
- I. All equipment that is required to operate outside normal work hours must, to the maximum extent possible, be electrically powered.

END OF SECTION 01 57 19

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## SECTION 01 77 00

### CLOSEOUT PROCEDURES

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. Closeout procedures covers the administrative and technical requirements for final cleaning, inspection, Project as-built documents, system demonstrations and adjustments, warranties, bonds, final payment, and other procedures for Project closeout in accordance with the Contract Documents.

##### 1.02 CLOSEOUT PROCEDURES AND REQUIRED SUBMITTALS

- A. Substantial Completion
  1. When the Contractor considers the Work, or designated portion thereof, to be at Substantial Completion, provide written notice, with a list of items to be completed or corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  2. The Construction Administrator (CA) will inspect the Work to determine the status of completion.
  3. If the CA determines that the Work is not at Substantial Completion, the Contractor will be notified of the deficiencies in writing.
  4. The Contractor will, within two (2) days of the written notice, provide a schedule for when all defects will be corrected and/or the Work completed for the CA to review.
  5. Upon approval from the CA, correct any deficient and/or incomplete Work and notify the CA upon completion. The CA will then re-inspect the Work for the purpose of Final Acceptance.
- B. Project Closeout Report
  1. Submit a Project closeout report that includes the following information
  2. Total quantities for unit price pay items.
  3. Variations from the Contract Documents.
  4. Discussion of major issues encountered during the performance of the Work and the resolution.
  5. A complete list of all Contractor personnel who performed Work on Site.
  6. As-Built drawings. The specific requirements for record drawings that are to be submitted as part of this report are contained in subparagraph 1.2, C of this section.

7. Supporting documentation. The specific requirements for the required supporting documentation that is to be submitted as part of this report are contained in subparagraph 1.2, D, E, and F of this section.
- C. As-Built Drawings
1. Provide as-built drawings that have been collected, developed, signed, and sealed by a surveyor licensed to practice in the State of New York as part of the Project closeout report. Submit as-built surveys in AutoCAD 2018 file format and include all relevant points, TINs, surfaces and all other Civil3D data. Submit a PDF of the final deliverable, stamped by the PE or PLS responsible for developing the as-built drawings, and provide five stamped hard copies to the CA. At a minimum, as-built drawings are to include
    - a. Encountered structures left in place.
    - b. Encountered pipes or other subsurface features that were removed, encountered pipes or other subsurface features that were not removed, and the terminal ends of cut/capped pipes.
    - c. Utility locations, elevations, and inverts.
    - d. Horizontal and vertical extents and elevations of excavations as well as solidification and backfill layers.
    - e. Final conditions, site features and topography.
    - f. Pipe diameter, type, slope and inverts at manholes
    - g. Manhole rim elevation and diameters
    - h. Benchmark coordinates and elevation.
    - i. List the datums used on the as-built drawings
  2. Final quantities that were designated to be calculated by survey are to be included on the as-built drawings. The applicable record drawing must clearly indicate the pay item and final total quantity of measured units.
- D. Provide copies of all Project records including, but not limited to, the following
1. Manifests and bills of lading.
  2. Weight tickets.
  3. Testing results.
  4. Health and Safety reports.
  5. Copies of permits.
- E. Utility Relocation
1. Submit written confirmation from the utility provider(s) that relocated utilities have met all inspection requirements and are found to be satisfactory, and that all utility connections have been restored to a suitable condition.
- F. Permit Closeout

1. Submit written confirmation that all permits have been closed with their governing authority and that any and all remaining fees have been paid in full.
- G. Final Acceptance
1. Submit written certification that confirms the following: Contract Documents have been reviewed, Work has been inspected, Work is complete in accordance with the Contract Documents (including satisfactory compliance with performance guarantees), any previously noted deficiencies have been corrected or remediated, equipment has been tested in the presence of the CA, and that the Work is complete and ready for final inspection.
  2. Submit evidence of final continuing insurance coverage, complying with insurance requirements, with the application for final payment. The Contractor is required to name National Grid as additional insured.
  3. The CA will inspect the Work to verify status of completion.
  4. Should the CA find the Work to be satisfactory, the Contractor will be allowed to make application for final payment in accordance with the Contract. Should the CA find deficiencies and incomplete Work, the Contractor will be notified in writing of deficient and/or incomplete Work and requests for final payment will not be approved until such time that the Contractor has satisfactorily completed the required Work.
  5. Take immediate action to remedy incomplete/deficient Work and send written notice to the CA upon completion. The CA will then re-inspect Work to verify the status of completion.
- H. Final Payment
1. Submit an application for final payment after the final acceptance of the Work.
  2. Submit evidence of final continuing insurance coverage, complying with insurance requirements, with the application for final payment.
  3. Identify total Contract amount, previous payments and the amount due.
  4. Submit an application for payment of retainage accompanied by signed affidavits verifying the release of liens and payment of all debts and claims.

## **PART 2 MATERIALS**

(Not Applicable)

## **PART 3 EXECUTION**

(Not Applicable)

END OF SECTION 01 77 00

## SECTION 02 21 00

### SURVEYING

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. The Work required under this section includes furnishing all labor, materials, and equipment, and performing all operations required for performing surveying Work.
- B. This section details the surveying requirements for the performance of the Work.

##### 1.02 QUALIFICATIONS

- A. Subcontract with a Professional Land Surveyor licensed in the State of New York to serve as the independent surveyor for the Project.
- B. The selected surveyor may not be replaced unless the Contractor submits a written request to the Construction Administrator (CA) for review and approval that details the reason(s) for the requested change and lists any noted deficiencies. The CA may reject the Contractor's request to replace the Project Surveyor if, in the sole judgement of the CA, the reasoning provided is not substantial enough to warrant a change.

##### 1.03 REFERENCE POINTS

- A. Established horizontal control points and benchmarks, as needed. Protect the reference points from disturbance during performance of the Work.
- B. When laying out and controlling the Work, use horizontal and vertical datum's that are consistent with those used in the Contract Documents.

##### 1.04 TERRESTRIAL SURVEY

- A. Provide topographic survey, as needed, to control the Work and collect the information required to create the As-Built Drawings and Project Record Documents as detailed in the Contract Documents.
- B. Perform interim survey work to provide documentation of pay items that are to be determined via survey. Documentation to support progress payments must be provided in writing from the Project Surveyor with the application for payment.

#### PART 2 PRODUCTS

(Not Used)

#### PART 3 EXECUTION

##### 3.01 TERRESTRIAL SURVEY PERFORMANCE

- A. Promptly report the loss or destruction of a reference point, control point, benchmark or other survey control feature to the CA and replace it within one business day.

- B. Perform the terrestrial survey Work using a total station with the following minimum accuracy.
  - 1. Horizontal: +/- 0.01 feet.
  - 2. Vertical: +/- 0.01 feet.
- C. Keep a complete and accurate log of all survey and control work. Maintain a copy of the log on site at all times.
- D. Survey crews must comply with the requirements of the Contractor Health and Safety Plan.

END OF SECTION 02 21 00

## SECTION 02 41 00

### SELECTIVE DEMOLITION

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. The Work required under this section includes furnishing all labor, materials, and equipment, and performing all operations required for the partial or complete removal of structures, at grade, above grade, and below grade during the performance of the Work.

##### 1.02 GENERAL

- A. The use of implosions or explosives to demolish below grade structures or portions of below grade structures as part of this Project is not permitted.
- B. The Contractor may propose to demolish the structures in any logical order if the methodology and phasing submitted with the Site Operations Plan are acceptable to the Construction Administrator (CA).
- C. Develop a comprehensive Demolition Plan, with written procedures describing the selective demolition which shall be subject to review by the CA.
  - 1. Items to be specifically addressed in the plan include but are not limited to:
    - a. Sequence of demolition of each item indicated in the Contract Drawings.
    - b. Sequential relationship between selective demolition and remediation in near proximity.
    - c. Security and safety measures.
    - d. Handling of debris prior to hauling from site.
    - e. Disposal location name, address, and contact information.
  - 2. The Contractor shall be solely responsible for safety, execution, and effectiveness of selective demolition.
- D. Consult the Contract Documents for the extent of all demolition Work required and remove all indicated materials, finishes, and other items indicated thereon to be removed.

##### 1.03 SUBMITTALS

- A. Submit a Demolition Plan as part of the Site Operations Plan for review and approval indicating the proposed methods and sequence of operations for the selective removals and demolition Work, prior to commencement of operations. The sequence of operations shall be planned, in detail, to ensure safety of the workers during demolition.
- B. Submit details and procedures for dust and noise control.

## PART 2 MATERIALS

(Not Used)

## PART 3 EXECUTION

### 3.01 PREPARATION

- A. Provide safeguards including warning signs, barricades, temporary fences, warning lights and other items as needed for the protection of the public and all personnel during demolition and removal Work.
- B. Protect the existing structures and utilities that are to remain in place.
- C. Use complete depth saw cuts to prepare paved areas prior to demolition.

### 3.02 GENERAL

- A. Remove only the above grade features indicated for demolition in the Contract Documents, or structures that may obstruct ISS as approved by the CA in writing. Take precautions to protect existing structures and utilities designated to remain during demolition.
- B. Remnant foundations to be demolished must be cut in neat lines at the excavation extents. The Contractor may not chase remnant foundation elements outside of the excavation extents unless approved in writing by the CA. Cut and cap all pipes encountered at the excavation limits to the satisfaction of the CA.
- C. Remnant foundations encountered during the pre-ISS excavation must be sized and sent for off-site disposal in conformance with Section 02 60 00.
- D. Do not pull-on remnant foundation elements extending outside of the excavation extents, and do not use impact tools to break up remnant foundation elements until they have been sectioned off at the excavation extents.
- E. Abandoned pipes associated with historic MGP operations may be present within the remediation area. Encountering abandoned pipes shall be anticipated by the Contractor during the course of the Work. Piping encountered within the remediation limits shall be removed, sized, and subject to off-site disposal as debris in conformance with Section 02 60 00. Abandoned piping/utilities shall be cut and plugged at or just beyond the excavation boundary. Any flowable fluid found in abandoned pipes should be assumed to be impacted and must be containerized according to Section 02 60 00. Fluid should not be allowed to spread from any encountered piping. Cut pipes at the excavation boundary shall be capped with a watertight sealant, pipe cap or mechanical plug that is acceptable to the CA.
- F. Do not comingle waste streams unless they are intended for disposal at the same facility, and the comingling is acceptable to the facility without altering the disposal cost of the constituent components.
- G. Do not use cutting torches until the work area is clear of flammable materials. Verify the condition and content of hidden spaces before starting flame-cutting operations.

Maintain fire watch and portable fire-suppression devices during flame-cutting operations.

- H. Maintain adequate ventilation when using cutting torches.
- I. Demolition shall be performed using methods and sequences according to the Demolition Plan. Operation shall be so conducted as to cause minimum of disturbance.

### 3.03 MATERIAL HANDLING

- A. Store demolished materials on a debris pad, or in a container designed for the purpose.
- B. Avoid contact between contaminated demolition debris and soil.
- C. Dispose of any debris in accordance with the Contract Documents.
- D. The on-site burning of materials is not permitted.

### 3.04 CLEANUP

- A. Remove all debris, residuals, and materials at the conclusion of demolition activities.

END OF SECTION 02 41 00

## SECTION 02 51 00

### DECONTAMINATION

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. This section covers the decontamination of personnel and equipment as they move from the Exclusion or Work Zones into the support Zones of the site.
- B. Submit a description of procedures to be followed to prevent contamination of trucks during loading. If those procedures are approved by the Construction Administrator (CA) and are implemented successfully, trucks transporting impacted material off-site for transportation or disposal may leave the site without further decontamination. Inspection and documentation of shipments will still be required as specified elsewhere.

##### 1.02 SUBMITTALS

- A. Submit personnel and equipment decontamination procedures as part of the Contractor's Site Operations Plan (SOP) and Health and Safety Plan (HASP), including, but not limited to
  - 1. Number and location of decontamination and wheel wash stations.
  - 2. Decontamination methods and equipment that will be used in accordance with NYSDEC requirements.
  - 3. Procedures to prevent contamination of clean areas including decontamination of all trucks and equipment.
  - 4. Procedures for inspection and decontamination of vehicles leaving the Site.
  - 5. Procedures for disposal of personal PPE.
  - 6. Procedures for the collection, and off-site treatment and disposal of all decontamination water and residuals.
  - 7. Procedures for minimizing generation of wastewater.

#### PART 2 PRODUCTS

##### 2.01 GENERAL

- A. Contractor shall list all products for decontamination and provide the material's Safety Data Sheets (SDS) in the SOP.

## PART 3 EXECUTION

### 3.01 DECONTAMINATION FACILITIES:

- A. Construct and maintain decontamination facilities, anti-tracking pad, and wheel wash stations in accordance with the Contract Documents or as otherwise proposed by Contractor and approved by the CA.

### 3.02 DECONTAMINATION OF VEHICLES AND EQUIPMENT:

- A. Inspect and decontaminate all vehicles and equipment upon exiting the Exclusion Zone. All decontamination shall take place in the Decontamination Zone as specified in the Contract Documents.
- B. Decontaminate vehicles and equipment in the Equipment Decontamination Pad in accordance with the requirements in the Contract Documents.
- C. Document decontamination and inspection of vehicles and equipment on the Daily Trucking Log as described in the Contract Documents.
- D. Decontamination includes the removal of soil and residues from the vehicle/equipment chassis (which includes undercarriage, suspension, and tire tracks) and other parts of the vehicle or equipment known to have been contaminated or visually appearing to be contaminated.
- E. Avoid contaminating personnel, other parts of the vehicle or equipment, or the surroundings during vehicle decontamination. Personnel involved in vehicle and equipment decontamination shall don PPE as required by the HASP and follow all applicable safety procedures described in HASP and the Contract Documents.
- F. Physical removal techniques used to decontaminate materials and wastes include, but are not limited to, brushing, and spraying until visible contamination and debris is removed.
- G. Brushing consists of removal of loose materials with the use of a broom and/or brushes.
- H. Use a hot water/steam pressure washer to apply water of sufficient temperature, pressure, residence time, and agitation to remove soil and contaminated residuals from surfaces.
- I. Surfactants and detergents must be approved by the CA prior to use in decontamination operations.
- J. Provide overspray barriers on each side of the decontamination area to prevent contamination of adjacent areas.
- K. Manage decontamination residuals, including water, soil, residues, used PPE, and other materials removed during decontamination.

### 3.03 DECONTAMINATION OF EQUIPMENT

- A. Before first use, clean equipment with brushes and a pressure washer or similar equipment to remove loose materials.
- B. Following last use, inspect and decontaminate all equipment upon removal from the Exclusion Zone.

- C. All cleaning and decontamination of equipment must occur in the Decontamination Zone as required in the Contract Documents.
- D. Decontamination of equipment must occur in the Equipment Decontamination Pad.
- E. Implement all decontamination procedures as described in the TEP and as required in the Contract Documents.

#### 3.04 PERSONNEL DECONTAMINATION

- A. Ensure that personnel exiting the Exclusion Zone perform decontamination as required in the Contractor's HASP and in accordance with the Contract Documents.

#### 3.05 MANAGEMENT OF DECONTAMINATION RESIDUALS

- A. Collect decontamination liquid for transfer and treatment at the on-site water treatment system (WTS) or for off-site disposal.
- B. Collect decontamination solids and manage/handle solids as impacted material, as specified in the Contract Documents.

END OF SECTION 02 51 00

## SECTION 02 55 00

### IN-SITU SOLIDIFICATION

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. The Work required under this section includes furnishing all labor, equipment, supplies, field and laboratory testing, materials, and performing all operations required for completing the in-situ solidification (ISS) portion of the Work.

##### 1.02 REFERENCES

- A. The most recent version of the following publications is incorporated by reference.
1. American Petroleum Institute (API) API RP 13-B1 for Viscosity and Density.
  2. ASTM C150 Standard Specification for Portland Cement.
  3. ASTM C989 Ground Granulated Blast Furnace Slag (GGBFS) as a Constituent in Concrete and Mortar
  4. ASTM D1633 Standard Test Method for Compressive Strength of Molded Soil-Cement Cylinders.
  5. ASTM D4832 Standard Test Method for Preparation and Testing of Controlled Low Strength Materials Test Cylinders.
  6. ASTM D5084-00 Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.
  7. NYSDEC Technical and Administrative Guidance Memorandum (TAGM) ----- FOR ISS

##### 1.03 DEFINITIONS

- A. The following definitions are used in this section:
1. Solidifying Reagents – Portland cement, ground granulated blast furnace slag (GGBFS), and other cementitious or otherwise beneficial chemicals, minerals, or admixtures approved by the Construction Administrator (CA) for solidifying impacted soils.
  2. Grout – A homogeneous mixture of water and solidifying reagents that acts as the cutting fluid for bucket mixing of soils.
  3. Homogeneous Mixture – The cell of grout and impacted soils that have been thoroughly mixed together to create a solidified material that meets the performance requirements specified in this section.
  4. ISS Working Platform – The engineered surface of solidified soil and supporting structures on which the ISS mixing equipment is placed while operating.

5. Obstruction – Subsurface manmade or natural object that impedes bucket advancement.
6. Cell Overlap – The overlap distance of adjacent mixing cells
7. Refusal – A condition that occurs during mixing when the excavator bucket can no longer be advanced either due to an obstruction or soil geotechnical properties.
8. Swell – The increase in volume caused by addition of reagent to the target treatment soil volume. For example, if the target treatment soil depth is 15 feet, and the resulting homogeneous soil-cement mixture has a depth of 20 feet, then the swell is 5 feet, or 33 percent.

## 1.04 GENERAL

- A. In the applicable locations shown on the Contract Documents, perform ISS using direct mixing with excavator buckets.
- B. Bucket mixing may only occur to a maximum depth of 20 feet below the working platform.
- C. Review the available subsurface data and select equipment of sufficient size and power to complete the ISS scope of Work shown on the Contract Drawings.
- D. Design, construct, and maintain a working platform that can support the ISS equipment during the performance of the Work.
- E. Perform all required QC mixing, sampling and analysis required to control and to document the Work, and in accordance with NYSDEC TAGM.
- F. Provide all equipment, labor, and materials to implement the Work.

## 1.05 QUALIFICATIONS

- A. The Contractor, or ISS Subcontractor, must have completed at least 5 ISS remediation projects within the last 7 years to the maximum required depths and of similar size and scope.
- B. The ISS Superintendent must have a minimum of 5 years of experience with bucket mixed ISS projects while serving in the role of the ISS Superintendent.
- C. The equipment operators, batch plant operator, ISS rig operator, field support and engineering staff, and technical staff involved with the ISS system operation must have a minimum of 2 years of experience with bucket mixed ISS projects of similar size and scope.

## 1.06 SUBMITTALS

- A. Submit an ISS Implementation Plan as part of the SOP. At a minimum, the ISS Implementation Plan will consist of the following:
  1. Results of the Contractors bench-scale treatability ISS testing with confirmed mix percentages and measurement reference for all mix reagents including water.

2. Description and specifications of bucket mixing ISS equipment including dimensions and reach of the excavator, and minimum required offset from existing structures and from buried and overhead utilities.
3. Site layout illustration showing storage area, grout plant, and haul routes.
4. Description and calculations for the working platform with illustration of how the working platform will be installed during the performance of the Work.
5. The ISS mix designs for the ISS monolith, with the sources of all imported materials including water, cement, slag, pre-blended cement, and any other additives. Provide certifications from vendors attesting to the quality of the materials with supporting analytical data.
6. A plan showing the proposed dimensions, depths, overlap, and layout of the ISS cells, and proposed sequence of cell installation across the site. Proposed sequence must account for work in proximity to the site buildings and should be designed to prevent destabilization through a staggered or skipped cell approach.
7. Real-time survey methods for measuring and recording installation data and quantities for the ISS cells (e.g. location, top of ISS elevation, depth of completion, injection quantity, etc.).
8. Sample calculations providing the dosage of grout (in gallons) to treatment soil (in cubic yards) for a theoretical cell.
9. List of best management practices for controlling exhaust, dust, smoke, odors, and noise generated from the ISS equipment and grout plant. Describe specific controls to minimize fugitive dust generated while offloading, handling, and dosing dry bulk reagents to the batch plant.
10. Methods for measuring and mixing reagents to proper proportions, and mud balance requirements for verifying grout density.
11. Total estimated quantity of water and solidification reagents required for the Work.
12. The water supply source and required flow rate for ISS mixing operation. Include discussion of best management practices for utilizing treated contact water for grout mixing, if planning to do so.
13. The power source and electrical requirements for the ISS equipment.
14. Solidification procedures and sequencing logistics with other Site Work.
15. Best management practices to minimize the open excavation/ISS area, to minimize fugitive emissions and contact water generation.
16. Storm water management procedures, especially with regards to minimizing run-on to the excavation area, minimizing run-on water incorporated into the ISS cells, and separating ISS contact water from other contact water to minimize the pH adjustment required for contact water treatment.
17. Estimated production rate and schedule for solidification Work.
18. Estimated swell ratio, and total swell quantity for the Work.

19. Strategies to minimize the quantity of swell generated during the Work, to minimize the quantity of swell requiring disposal after curing, and to minimize the effort required for top of swell grading after curing.
  20. Methods for re-mixing cells that do not meet NYSDEC TAGM performance requirements.
  21. Any proposed changes to the Contract Documents to increase the efficiency or performance of the Remedy.
  22. Description and frequency of the Contractor-performed QC testing, with a list of equipment and personnel that will be used to perform the QC testing.
  23. Equipment decontamination procedures and waste management practices.
  24. Resumes for ISS Superintendent, ISS equipment operators, batch plant operators, supervisory engineering staff, and other technical staff involved with the ISS operation.
  25. List of reserve or backup ISS equipment to be maintained at the site.
- B. Submit a summary of the ISS Work performed as part of the Daily Report that includes, at a minimum, daily and running totals for
1. Number of cells installed.
  2. ISS target volume installed (pay quantity).
  3. Grout batch IDs, plus weight and volume of each grout batch.
  4. Weight of each pay item reagent used for grout.
  5. Weight of water used for grout.
  6. Cell QA/QC samples collected and formed for curing.
  7. Cell QA/QC samples submitted for laboratory testing.
- C. Submit a data sheet for each individual cell completed that includes the following information on a per-cell basis.
1. Cell ID.
  2. Date completed.
  3. Coordinates of cell vertices.
  4. Actual top elevation of ISS treatment (top of undisturbed native soil for treatment after all pre-excavation was removed) for cell vertices.
  5. Actual bottom elevation of ISS treatment for cell vertices.
  6. Cell soil volume, minus any overlap with previously installed cells (in-place cubic yards, pay item).
  7. Cell starts and finish time.
  8. Grout batch IDs used for this cell, plus total weight and volume of grout injected into this cell

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9. Weight of each solidifying reagent and water delivered to the cell, compared with target quantities for that cell
  10. Any unforeseen site conditions or equipment problems that affected the solidification efforts.
  11. Any modifications or deviations from the Contract Drawings or the ISS Implementation Plan.
  12. Obstructions encountered, and total time spent removing obstructions.
  13. A list of the QA/QC samples collected.
  14. Any instantaneous data logs that can be collected by the ISS excavator on a per cell basis
- D. Submit a data sheet for each batch of grout that includes the following information
1. Batch ID.
  2. Batch start time.
  3. Target unit weight (pounds/cubic foot).
  4. Measured volume or weight of water added.
  5. Calculated and measured weight of each solidifying reagent.
  6. Results of a mud balance density test on every fifth grout batch.
- E. Upon completion of ISS Work, submit a final ISS summary that includes the following information
1. Total quantities of solidifying reagents delivered to the site and used during the Work. Provide supporting documentation in the form of weight receipts, bills of lading, flow meter records, etc.
  2. Any unforeseen site conditions or equipment problems that affected solidification efforts.
  3. The full laboratory results for contractor-collected QC data.
  4. The sample tracking spreadsheet (described later in this section) tabulating the QC and QA sample results.
  5. Any modifications or deviations from the Contract Documents or the ISS Implementation Plan.
  6. ISS survey documentation requirements are described in the Contract Documents.
  7. QA/QC performance data relative to NYSDEC TAGM.
- 1.07 ISS MIX DESIGN
- A. As detailed below, the CA performed a treatability study to identify a mix design that meets the performance standards of the ISS monolith.

- B. For the ISS monolith, the CA performed a treatability study using soils collected from the site. The Approved Mix Design below is based on this treatability study. The percentages below are expressed as dry weight of reagent to wet weight of ISS treatment soil.
1. GGBFS: 3.5%
  2. Portland cement: 3.5%
- C. The CA performed a modified-effort Proctor test on a composite sample of the ISS treatment soil. The maximum dry density of the composite soil sample was 122 pounds per cubic foot at an optimum water content of 11.1 percent, corresponding to a maximum saturated unit weight of approximately 136 pounds per cubic foot.
- D. For the ISS monolith, the Contractor may accept the Approved Mix Design. However, the Contractor will not be allowed to reduce or alter ISS mix percentages without additional bench-scale treatability data. Based on the results of Contractor's treatability study, Contractor may suggest an alternate mix design for consideration of Construction Administrator.
- E. Minimize swell by minimizing the water-to-cement (W:C) ratio of the grout. This is the ratio of the weight of water in the grout to the total weight of cement (Portland + slag) in the grout. For the interior ISS monolith, make every effort to perform the ISS remedy at a **W:C ratio of less than 1.25**. Work closely with the CA during the first week of ISS mixing to optimize the W:C ratio with respect to reagent dosages and the amount of grout volume required to fluidize the soil.
- F. After optimization, do not change the W:C ratio without prior written approval from the CA.
- G. Do not modify the Approved Mix Designs without prior written approval from the CA.
- H. The CA will require additional performance testing to support any Contractor requested changes to the Approved Mix Designs, the costs of which are to be borne by the Contractor.

#### 1.08 SAMPLING FREQUENCY

- A. Quality control sampling frequency is listed below. Also refer to the quality assurance subsection later in this section for more details on sample collection.
1. For bucket mix areas, one sample per mix cell, with a minimum of 1 sample collected per active mixing rig per day, and no less than 1 sample per 500 cubic yards of ISS target volume.

#### 1.09 PERFORMANCE STANDARDS

- A. The performance standards for the ISS are listed below. A 28-day cure time period applies to all testing.
1. For the ISS monolith, the following performance standards apply
    - a. Unconfined Compressive Strength (UCS) greater than or equal to 50 psi but less than 500 psi after 28 days.

- b. Permeability less than or equal to  $1.0 \times 10^{-6}$  cm/sec.
    2. The solidified material, when observed along the break point of the UCS testing specified in this section, must have no non-aqueous phase liquids (NAPL) present.
  - B. These test methods will be used to determine whether the performance standards for the ISS have been met
    1. Permeability by ASTM D 5084-00 - Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.
    2. Strength by ASTM-D 1633-00 Standard Test Method for Compressive Strength of Molded Soil-Cement Cylinders.
    3. Visual inspection by the CA for the Homogeneous Mixture qualities described below.
  - C. Create a Homogenous Mixture of the solidifying reagents and in-situ soils. The CA will verify that a homogenous mixture has been created using the following criteria applied to collected samples.
    1. No visible NAPL or sheen.
    2. Grout and soil appear evenly mixed.
    3. Consistency of color from samples collected at different depth intervals within the column or cell.
    4. There are no unmixed soil clumps greater than 3 inches in any dimension.
  - D. Sample collection responsibilities, frequency, and other details are covered later in this section.

## PART 2 PRODUCTS

### 2.01 ISS EQUIPMENT

- A. Furnish ISS equipment of sufficient size and power to perform the ISS scope of Work shown on the Contract Drawings.
- B. Provide an excavator capable of removing obstructions encountered during the Work.
- C. The CA and Owner are not responsible for additional costs associated with incorrect assumptions on production rates made by the Contractor.
- D. Furnish a solidifying reagent grout batch mixing system that meets the following requirements
  1. Uses a scale that is calibrated at the site by a third-party subcontracted to Contractor.
  2. Is capable of proportioning the mix constituents with a precision of +/- 0.2% of full scale, or 40 pounds, whichever is less, and blending them into a homogeneous mixture of uniform consistency.

3. Is capable of providing grout in sufficient quantity to support the ISS Work without interruption. Batch plants which require slowing or stopping of the injection procedure while mixing additional batches are not acceptable.
- E. Calibrate scales, flow meters, and automatic metering systems in the presence of the CA prior to the beginning of grout injection. Automatic metering systems must have a manual backup method for verifying quantities.
  1. Scales and metering systems should be recalibrated a minimum of once per month or if batch mixing records or quality control testing indicate that grout mixture does not meet the specified requirements.

## 2.02 SOLIDIFYING REAGENTS

- A. Portland cement of Type I/II per ASTM C150.
- B. GGBFS Grade 100 or Grade 120 per ASTM C989.
- C. Water must be either potable water available from hydrants at the site, or reuse contact water that has been treated by the WTS and subjected to the applicable testing and limits as required by the NYSDEC discharge permit.
- D. Maintain a readily available quantity of solidifying reagents to allow for uninterrupted performance of the Work.
- E. Protect reagent materials from spillage and wastage. Minimize fugitive emissions of dust. Use sealed systems with particulate filtration during transfer and storage. Protect reagents from precipitation, humidity, and other potential deleterious weather conditions.
- F. Label containers for materials storage per the supplier's requirements and maintain Material Safety Data Sheets for all reagents on the site.
- G. Do not use solidifying reagent additives other than those listed in the Approved Mix Designs (e.g., thinners, retarders, accelerators) without prior written approval from the CA.

## PART 3 EXECUTION

### 3.01 COORDINATION

- A. Coordinate the ISS Work with the other activities that constitute the Remedy, including demolition, utility protection, excavation, dewatering, and backfilling so that the Work proceeds smoothly from one operation to the next.

### 3.02 OFFSETS

- A. Maintain safe distances of equipment offsets from buildings, active utilities, and all other existing infrastructure, both above and below grade.
- B. Perform ISS only in areas cleared of utilities.
- C. Maintain offsets from active utilities and site buildings as required in the Contract Documents. If other active utilities are present in the ISS area, the CA and Owner will

select safe offsets distances that the Contractor will be required to maintain from those utilities.

### 3.03 GROUT MIXING

- A. Add the calculated quantities of solidifying reagents to each cell, as calculated from the applicable Approved Mix Design.
- B. Thoroughly mix the water and solidifying reagents into a consistent and homogenous mixture using high shear mixing devices.
- C. Pump or otherwise deliver the solidifying reagent mixture from the mixing plant to the ISS equipment or ISS cell at an adequate pressure and flow rate for the solidification process.
- D. Meter solidifying reagent with a calibrated flow meter that has the ability to display the instantaneous flow rate (gpm) and totalized volume (gallons) injected into each column or cell. Totalized flow must be able to be re-zeroed after completing each cell.
- E. Record the total volume of solidifying reagent delivered to each cell.
- F. Discard solidifying reagent that reaches a temperature of more than 80°F or is held for greater than 1 hour.
- G. Mix the solidifying reagent to the satisfaction of the CA.

### 3.04 PILOT TEST/START UP PHASE

- A. Prior to initiation of full-scale ISS mixing, the Contractor MUST perform a pilot test of the proposed mix design.
  1. Perform pre-excavation and initiate dewatering within the area of the pilot cell at a minimum.
  2. Temporary berms must be placed around the pilot cell prior to mixing to prevent material overflow into neighboring cells and areas.
  3. The contractor must perform QC testing for the pilot demonstration as detailed in the Quality Control portions of this section.

### 3.05 SOIL SOLIDIFICATION

- A. Construct and maintain a stable ISS working platform.
- B. Perform solidification to the extents, depths, and elevations described in the Contract Documents.
- C. Layout cells in a manner to solidify the entire area so that no material is untreated.
- D. Record the as-built location (x,y,z) of the top of each cell vertex immediately before starting to mix the cell.
- E. Record the actual bottom elevation of each cell vertex.
- F. In the event that the ISS equipment meets an obstruction causing refusal shallower than expected completion depth, notify the CA immediately. The CA will instruct one of the following courses of action be taken:

1. Attempt to remove the obstruction.
  2. If the obstruction cannot be removed within 15 minutes of commencing removal efforts, the CA will either declare refusal for the cell (or portion thereof) or direct the Contractor to continue to attempt to remove the obstruction. The first 15 minutes of obstruction removal is not considered extra Work and must be included in the base unit price for ISS. Work past the first 15 minutes of obstruction removal will be measured and paid on the unit price basis.
  3. Determinations made by the CA, relative to the presence of obstructions, are final.
- G. All reagent addition to a cell is to be at the prescribed proportions of the mix designs as calculated for each cell. Additional grout may be added when necessary to achieve proper mixing, as required in the field by the CA.
- H. Mix grout with in-situ soil until it is a homogeneous mixture of soil and solidifying reagent from the top of the completed cell, including swell, to the completion depth of the cell.
- I. Continue to mix the cell until the CA is satisfied that a homogenous mixture has been achieved.

### 3.06 SWELL MANAGEMENT

- A. In selecting the maximum ISS pre-excavation depth of six feet, minimizing dewatering and excavation support concepts were considered in combination with the estimated ISS swell. It is anticipated that ISS swell regrading will be necessary to provide the four-foot freeboard needed for granular backfill and cover. The intent of the design is to minimize off-site disposal of ISS swell. However, if excess swell is present following swell regrading, this material must be disposed off-site.
- B. Do not place ISS swell outside of the footprint of the ISS treatment area. ISS swell may not be placed in areas where only excavation, and not ISS, is performed. The intent of the design is to generate an ISS monolith of homogeneously mixed cells and swell with as-close-to-vertical edges as possible at the horizontal extents of ISS treatment.
- C. Grade the top of the ISS swell to drain radially toward the edges of the ISS treatment area. The top of ISS swell contours should be a minimum four feet lower than the final ground surface restoration contours. Make every effort to perform rough grading before the swell cures. Fine grading may be performed after curing but swell that is cut during fine grading must be disposed off-site and the intent of the design is to minimize disposal of swell.
- D. Do not cut, fill, or otherwise disturb solidified material with heavy equipment until the area has been approved for backfill by the CA.
- E. Excess swell that must be disposed offsite may be disposed at either a landfill or thermal treatment facility if the swell meets facility acceptance criteria and given Owner and CA approval.
- F. Break apart cured swell to meet the sizing requirements for the applicable disposal facility, at no additional cost to Owner.

### 3.07 QUALITY CONTROL

- A. The Contractor is responsible for quality control testing in accordance with the Contract Documents, and NYSDEC TAGM. It is the responsibility of the Contractor to describe the nature and frequency of QC testing within the ISS Implementation Plan. The Contractor's QC testing is in addition to the CA-specified quality assurance testing described later in this section.
- B. Administer and provide all labor, materials, and pay for all costs associated with the QC program described in the Contractor ISS Implementation Plan.
- C. Quality Control testing results provided by the Contractor to the CA are for informational purposes only. It is up to the CA to evaluate whether QC results provided by the Contractor may be used as evidence for meeting the performance standards.
- D. Maintain a sample tracking spreadsheet that tabulates the result of each QC and QA sample result received by both the Contractor and the CA.

### 3.08 QUALITY ASSURANCE

- A. The CA will oversee a QA program during the performance of the ISS Work to measure and document compliance with the ISS performance criteria.
- B. While the CA will oversee and administer the QA program, it is the responsibility of the Contractor to provide the following associated with the CA's QA program.
  - 1. Collection of depth-discrete column samples.
  - 2. Physical screening of samples to exclude particles larger than 0.375 inches.
  - 3. Placement of samples into (Contractor-provided) plastic molds and curing the samples for 28 days.
  - 4. Pocket penetrometer testing of the curing samples.
  - 5. Storage of samples until Substantial Completion of the Remedy.
  - 6. Collection of solidified ISS cores to be evaluated as part of NYSDEC's ISS QA/QC process. Cores must be collected in accordance with the most recent version of NYSDEC's In-Situ Solidification QA/QC guidelines.
- C. It is the responsibility of the CA to provide the following associated with the CA's QA program
  - 1. Labor and materials for packaging the cured samples for shipment.
  - 2. Payment of shipping or courier fees to send the cured samples to the lab.
  - 3. Payment for laboratory analysis of the cured samples.
  - 4. Management of laboratory data for the QA program.
  - 5. Reporting for the QA program.
- D. Maintain the sampling equipment needed to support the QA program at the site and in good working order during the performance of the ISS Work.
- E. Initiate sampling activities within 20 minutes of a request made by the CA.

- F. Collect a sample of the solidifying reagent for density verification testing according to API Method RP 13-B1 at a frequency of every fifth batch mixed, and at the direction of the CA.
- G. For bucket mixed cells, collect for the CA, at least one in-situ bulk sample of newly solidified soil for every cell of soil that is solidified, with a minimum of 1 sample collected per active mixing rig per day, and no less than one sample per 500 cubic yards of ISS target volume.
1. Sampling of the treated soil must occur within 1 hour of mixing and while the CA judges that the soil is still wet enough to mold.
  2. Provide and collect samples with a sampling tool capable of taking samples of mixed material from discrete depths. Sampler must be hydraulically powered and capable of being fully opened and closed using controls at the ground surface. The sampler must be capable of retrieving a discrete sample from the deepest estimated completion depth within the ISS treatment area.
  3. The CA may instruct the Contractor to collect samples using an on-site excavator periodically in lieu of using the discrete interval sampling tool. The collection methodology used will be at the sole discretion of the CA.
  4. Collect discrete samples from up to four depth intervals per sampled column at the direction of the CA. Place the material from each depth interval into separate buckets for observation by the CA.
  5. After observation by the CA, pass the sampled material through a mesh screen to remove particles larger than 0.375 inches, and homogenize the material from different depths into a single composite sample, adding approximately equal amounts per depth interval.
  6. Place the composite sample material into molds with lids and cure them undisturbed for up to 28 days in a 100% humidity, climate-controlled environment at a temperature between 65-80F. A closed-top cooler with standing water stored inside a job trailer is an acceptable curing environment.
  7. The CA requires a minimum of four 3x6-inch cylinders and four 2x4-inch cylinders per QA composite sample. This will require approximately 15 pounds of screened composite sample material.
  8. After curing as described above for 28 days, archive the capped cylinders at the site in sealed zip-top plastic bags with wet paper towels in a climate-controlled environment between 65-80F.
  9. It is the Contractor's responsibility to collect, form, cure, store, ship, and test additional cylinders as necessary to satisfy the Contractor's QC testing requirements.
- H. The CA will use data from field observations and QA sample results to evaluate whether the Contractor's ISS operations meet the specified performance standards and will collect and test QA samples at his discretion. The CA will analyze a minimum of one sample from every 500 cubic yards of target ISS volume.

## 3.09 REPROCESSING

- A. Reprocess columns and/or cells if the CA judges that a QA sample fails to meet one or more of the performance standards for ISS Work.
- B. The CA is sole and final arbiter of whether a QA sample passes or fails, and of whether the Contractor's ISS operations meet the specified performance standards.
- C. A failed QA sample will require reprocessing of all cells deemed by the CA to be associated with that failed sample. The CA is sole and final arbiter of which columns are represented by a QA sample.
- D. Begin performing reprocessing within one working day of receiving notice that reprocessing is required. All reprocessing Work must be performed by the Contractor.
- E. In the case of reprocessing due to factors primarily attributable to the Contractor or its subcontractors, such as insufficient mixing, improper solidification reagent dosing, or out-of-range water to reagent weight ratio, no payment for reprocessing will be made.
- F. In the case of reprocessing due to factors not primarily attributable to Contractor, or as otherwise negotiated and documented between the Contractor and the CM.

END OF SECTION 02 55 00

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**SECTION 02 61 00****CONTAMINATED MATERIALS MANAGEMENT****PART 1 GENERAL**

## 1.01 SUMMARY

- A. The Work required under this section includes furnishing all labor, materials, and equipment, and performing all operations required for the proper management, on-site handling, on-site reuse, off-site transportation, and disposal of waste materials and waste liquids generated during performance of the Remedial Action.
- B. Excavated Material generated during the Work and remediation-related liquid wastes are classified in two categories:
  - 1. Material determined through analytical testing and approved by the Construction Administrator (CA) to be suitable for reuse on site.
  - 2. Contaminated Material requiring off-site transportation and disposal.
- C. Contaminated Material generated during the Work is classified in two categories:
  - 1. Remediation Waste – Media or materials containing site-related contaminants and are unsuitable for reuse on site, which includes but is not limited to, the following:
    - a. Excavated bulk material (soil not otherwise determined to be suitable for reuse on site).
    - b. Debris including, but not limited to concrete, brick, stone, asphalt, piping, wood, roots, and hardened tar not otherwise determined to be suitable for reuse on site.
    - c. Wastewater, including stormwater or groundwater removed from the excavation area and decontamination water.
    - d. Tar/asbestos wrap on piping (see National Grid EP).
    - e. Lead contaminated materials (see National Grid EP).
  - 2. Construction-related Contaminated Waste – Waste media or materials generated during the Work which do not contain site-related contaminants and are unsuitable for future use (e.g., cement batch plant wastes, unused water treatment or decontamination reagents, or spent lubricants or solvents). This category excludes structural demolition material (e.g., two-foot retaining wall at the southern perimeter of the site) and construction-related wastes suitable for disposal as routine municipal solid waste.

## 1.02 GENERAL

- A. This section includes requirements for off-site transportation of Contaminated Material (including Remediation Waste and Construction-related Contaminated Waste) to National Grid approved disposal or recycling facilities. The Contractor is responsible for

the cost of all material transportation. Only use routes outlined in the Contract Documents. It is the responsibility of the Contractor to use equipment and personnel capable of navigating the local traffic patterns while maintaining minimum daily production, as required, to meet the Project milestones. The Contractor is responsible for all delays caused as a result of trucks not following approved traffic routes, inadequate scheduling of trucks, causing traffic delays, or from using equipment that cannot safely navigate the local roadways. The Contractor is also responsible for all delays caused by failure to receive confirmation that the disposal facilities are able to receive an adequate quantity of material daily to maintain the Contractor's schedule.

- B. Refer to the materials management plan (flow chart) in the Contract Documents for details on the disposition of the anticipated waste streams to be generated during the performance of the Work.
- C. For the duration of the Work, Contractor is to maintain copies on site of all documents related to the off-site transportation and disposal of Material.
- D. Wastewater from dewatering activities and equipment decontamination must be collected and pumped into a temporary storage container meeting all applicable regulations until the Wastewater is properly treated with the onsite Water Treatment System and meets the requirements of the NYSDE discharge permit, or is disposed of off site at a National Grid approved facility.
- E. The Contractor is solely responsible for proper vehicle loading. Ensure the vehicle contents are properly contained and secured in the vehicle, including the proper lining, and covering of loads. All vehicles leaving the site must abide by all load and weight limits. All fines, taxes, penalties, or judgments resulting from overweight or improperly loaded vehicles are the responsibility of the Contractor.
- F. The Contractor is to develop and implement a driver orientation plan that includes, but is not limited to
  - 1. An in-person or virtual orientation detailing, at a minimum
    - a. An overview of the Project.
    - b. Requirements of the traffic plan.
    - c. Village of Canastota traffic rules and regulations.
    - d. Driver conduct.
    - e. Approved haul routes.
    - f. Approved staging areas.
    - g. A prohibition to stage or park trucks near the neighboring commercial and residential areas prior to working hours, and to only park or queue in pre-designated areas.
    - h. A hand-out detailing the haul routes, speed limits, warnings, designated staging areas, etc.
    - i. Other staging/idling guidelines and requirements.
    - j. Incident reporting requirements.

- k. Abatement of waste materials.
  - 1. New York State Idling Law.
- 2. All truck drivers are required to sign the orientation plan stating that they have read and understood the information.
- 3. Provide all truck drivers with hard copies of the orientation package including the transportation plan and the traffic plan.
- 4. All trucks will carry a copy of their Part 364 Waste Transporter Permit.
- G. The Contractor is to identify at least one National Grid-approved disposal facility from the list of approved facilities provided with the Contract Documents for each anticipated waste stream. Submit the names of the disposal facilities proposed for use on the list of Subcontractors included with Contractors Bid.
- H. Furnish any additional analytical testing required by the disposal facilities to accept the materials.

### 1.03 CONTRACTOR RESPONSIBILITIES

- A. Segregate and manage Contaminated Material at the Work Site in accordance with all applicable laws and regulations.
- B. Perform all additional analytical testing required to characterize Excavated Material for off-site disposal or recycling.
- C. Propose off-site disposal or recycling facilities for Contaminated Material requiring transport off site, including off-spec or excess ISS material and decontamination residuals, and, if on-site water treatment is used, water treatment residuals.
- D. Ensure transportation of impacted materials shall be performed by personnel with proper training and in compliance with applicable Regulations including, but not limited to, New York State, RCRA, US DOT, local, and other applicable Regulations.
- E. Prepare all documentation and permits required for on-site treatment of Wastewater (if used) and off-site treatment, disposal, or recycling of Contaminated Material.
- F. Submit to the CA copies of all waste manifests, bills of lading, and certified weight slips for all materials removed from the site.
- G. The Contractor is responsible for the acceptance of Contaminated Material at the facilities. In the event that the identified and approved facilities stop accepting the Contaminated Material (e.g., due to capacity restrictions), the Contractor shall identify alternate facilities and make arrangements with such facilities to accept material from the Work. Alternate facilities are subject to review and approval by National Grid and the CA.
- H. In the event that an alternate facility is needed to accept Contaminated Material, the Contractor will supply a written submission to the Construction Administrator (CA) on the material type, amount, location, and reason the approved facility stopped accepting the material.

- I. Provide, maintain, and utilize an anti-tracking pad for trucks exiting the site, and promptly (minimum daily) collect any soil tracked onto public roadways for appropriate off-site disposal with impacted soils.

## 1.04 CONSTRUCTION ADMINISTRATOR (CA) RESPONSIBILITIES

- A. Provide existing waste characterization data to the Contractor.
- B. Review proposed receiving facilities, analytical test results, and documentation and recommend appropriate facilities to National Grid.

## 1.05 NATIONAL GRID RESPONSIBILITIES

- A. Approve off-site disposal/recycling facilities as appropriate for the Work.
- B. Act as generator for all waste streams transported off site. National Grid (or authorized designee) will sign all manifests/bills of lading as required for Project-generated waste transported off site.

## 1.06 SUBMITTALS

- A. Submit a Contaminated Material Management Plan providing, at a minimum, the following information
  - 1. Credentials of the Waste Management Coordinator responsible for regulatory compliance of Contaminated Material management.
  - 2. Procedures for on-site segregation, management, and temporary storage of the different waste streams comprising Remediation Waste and Construction-related Contaminated Waste.
  - 3. Procedures for minimizing the volume of decontamination residuals and water treatment system residuals, if any.
- B. Designate and submit primary and alternate disposal facilities for each anticipated waste stream. Upon final approval from National Grid, contract with all primary facilities prior to any excavation. Submit copies of contracts from each facility or letters from each facility-indicating acceptance of the total estimated volume of material from the Project.
- C. Submit copies of operating permits and acceptance letters, criteria, and submitted analytical results for each receiving facility.
- D. Submit copies of all waste manifests, bills of lading, and certified weight slips from a scale approved for use by the Construction Administrator (CA) and/or National Grid for all materials removed from the site for disposal.
- E. Submit copies of Part 364 Permits for all waste transporters.
- F. Provide truck driver orientation signature sheets for all truck drivers.

## 1.07 DEMOLITION MATERIALS

- A. Segregate the materials generated during the demolition of existing structures. Refer to Section 02 41 19.

- B. If Asbestos-Containing Materials are encountered, develop an Asbestos Abatement Plan for the handling and disposal of asbestos-containing materials.
- C. If abandoned pipes with flowable fluid are encountered, it must be containerized. Water from pipes may be combined with other Wastewater generated for treatment or off-site disposal by the Contractor. Other fluids must be containerized and staged by the Contractor for subsequent characterization and disposal.
- D. Dispose of non-environmentally impacted construction and demolition debris (including asphalt) at an appropriately licensed and operated recycling or C&D facility.
- E. If decontamination efforts are not successful, dispose of environmentally impacted construction and demolition debris at a Subtitle C or D landfill, as applicable.

## PART 2 MATERIALS

### 2.01 STORAGE CONTAINER AND TRANSPORT VEHICLE REQUIREMENTS

- A. The license plates on trucks must be properly affixed and visible at all times.
- B. Proper placards must be displayed, and extraneous or incorrect placards must be covered and/or removed prior to the truck departing the site.
- C. All required permits must be properly displayed on trucks or readily available for verification by the CA.
- D. Drivers must remain in the truck at all times unless they are wearing the correct personal protective equipment required for the site.
- E. Standing on the back of the truck is prohibited. Ladders or scaffolding must be used when securing tarps and/or covers. Liners must be installed at a pre-determined location out of reach from equipment used to load truck boxes or trailers to prevent accidental loading while truck box or trailer is occupied.
- F. Except for demolition waste, provide impermeable liners for the interior of the excavated impacted material storage containers, trailers, and truck boxes to prevent the leakage of entrained liquid. The liner material must be strong enough to withstand the placement of excavated material into the container without tearing, chemically resistant to the contaminants within the material, and be of sufficient length and width to cover the interior bed of the container, trailer, or truck box with no seams while completely covering over the load with sufficient overlap.
- G. Provide vehicles and containers used for storage and/or transport of impacted demolished materials and/or soil materials with sealed, gasketed tailgate dump trucks or trailers. The vehicles and storage containers used for the storage and/or transport of impacted materials must be structurally sound and tight to prevent leakage or spillage of materials.
- H. Provide vehicles and containers used for the storage and/or transport of materials with impermeable sealable covers to minimize the release of odors from the containers during transport. The use of mesh or fabric covers is not permitted except for the transportation on non-impacted construction or demolition debris, and only if permitted under applicable laws and standards.

- I. Furnish appropriate on-site storage (e.g., a frac tank or equivalent) meeting all applicable regulations for the temporary storage of any Wastewater generated during the performance of the Work. It is the responsibility of the Contractor to select an appropriately sized storage unit based on their selected means and methods, the anticipated amount of Wastewater to be encountered, and planned treatment/disposal method. The selected storage method must include appropriate support, containment, and/or other controls as required by applicable regulations.
- J. Use containment materials that will not degrade and are compatible with the contaminants in the waste.
- K. The CA reserves the right to reject vehicles or containers that are not properly equipped and/or arrive to the site in a dirty condition.

## 2.02 ODOR SUPPRESSANT

- A. Provide odor and dust suppressing foam (short, medium, and long-term) to supplement covers, as directed by the CA.

## 2.03 2.3 ANTI-TRACKING PAD

- A. Furnish, utilize, and maintain anti-tracking pad(s) at all exits of the work area as indicated in the Contract Documents.

## PART 3 EXECUTION

### 3.01 STORAGE, LOADING AND TRANSPORTATION OF MATERIAL

- A. Comply with requirements provided in the Contract Documents when stockpiling impacted materials. When not direct-loaded, segregate Excavated Material into stockpiles for grossly contaminated bulk solid waste, debris, and construction-related contaminated waste (e.g., grout batch plant wastes) in separate lined and covered stockpile pads.
- B. Amend Contaminated Material destined for off-site disposal as necessary to meet the moisture requirements of the specified disposal facility, at the direction of the CA. Material amendment is not a permissible alternate to proper dewatering or stockpile management (i.e. covering). Amend excavated materials only after written approval has been received from the CA.
- C. Process and segregate debris destined for off-site disposal, as necessary to meet disposal facility requirements.
- D. Trucks must arrive on site in a clean condition. The CA may instruct a truck to depart the site if it arrives dirty.
- E. Use a pre-characterization sampling and analysis program to allow for the direct load, transport, and disposal of all MGP-related impacted material whenever possible.
- F. Provide traffic control at the site entry to ensure a smooth flow of traffic and to minimize congestion at the site entrance. At a minimum, the traffic control must include the usage of flaggers and proper signage.

- G. Appropriately cover trucks filled with excavated material prior to exiting the site to prevent vapor and fugitive dust emissions during transport. Supplement with odor suppressant foam as needed. Gross vehicle weights shall conform to the most current DOT regulations for the Federal, State, and local level.
- H. All Work in and around trucks shall be performed in appropriate personal protective equipment. These activities must be specifically addressed in the Site-Specific Contractor HASP.
- I. Prior to leaving the site, inspect all material transport vehicles and containers for evidence of contamination (including inside of wheels, exterior sidewalls and top of truck box or trailer, as well as undercarriage). All trucks leaving the site shall proceed to a decontamination station for cleaning prior to exiting onto public roads, unless otherwise approved as described in the Contract Documents.
1. Brush off equipment, vehicles and trailers within the excavation area prior to movement to the decontamination pads to decrease the amount of respirable particulates leaving the remediation area.
  2. If directed by the CA, pressure wash vehicles and equipment on the decontamination pad before they depart the site.
  3. All equipment leaving the site will be decontaminated per these guidelines. In addition, any equipment or tools previously used to excavate impacted material will be decontaminated prior to use in backfilling or handling of clean material (e.g. excavator buckets, bulldozer blades, skid steer buckets).
  4. Provide staging so that liners and covers can be placed safely into/onto trucks.
  5. Size decontamination pads to ensure that the largest piece of Contractor equipment can be adequately decontaminated.
  6. Collect and pump wastewater generated from equipment decontamination into frac tank(s).
  7. Transport wastewater from the site using a properly licensed liquid waste hauler.
  8. Bulk soil collected from the decontamination pads with the MGP-related impacted material for off-site disposal.
- J. Trucks shall proceed directly to the designated disposal facility. Trucks may not be pre-loaded with material for overnight storage.
- K. The Contractor is responsible for any and all actions necessary to remedy situations involving material spilled or leaked in transit, or mud or dirt tracked off site. This includes trucks carrying imported fill or other materials to the site (i.e. dust generated from trucks entering the site on adjacent roads). Perform any needed transportation related cleanup in accordance with all applicable Federal, State, and local regulations at no additional cost to National Grid.
- L. All transporters used shall be properly licensed, permitted, and certified for the service provided.
- M. Waste streams generated from the site may not be combined with any other waste streams (e.g. debris cannot be bulked with soil) without the CA's written approval.

- N. National Grid, or the National Grid designee will sign transport bills of lading or manifests. National Grid will provide a NYSDEC issued hazardous waste generator ID number. Maintain copies of all documents involving transportation of materials from the site. Submit copies of these records to the CA at a frequency agreed to by the Contractor and National Grid. Turn over all records to the CA at the completion of the Work.
- O. Ensure that transport vehicles are properly secured, labeled, and placarded prior to exiting the site.

### 3.02 DISPOSAL OF MATERIALS

- A. Dispose of soils that contain MGP-related impacts at an off-site licensed disposal facility that has been approved for use by National Grid.
- B. Dispose of construction and demolition debris at an off-site licensed disposal facility that has been approved for use by National Grid.
- C. Do not comingle waste streams without prior written approval from the CA.
- D. The Contractor is responsible for the acceptance of materials at the facilities. This includes collecting and furnishing any additional laboratory analysis required by the facilities for acceptance of the material. In the event that the identified and approved facilities cease to accept the materials, the Contractor will be responsible for identifying alternate facilities, and making arrangements with such facilities to accept material from the site with no change in the unit price submitted in the Contractor's Bid for this Project. Alternate facilities are subject to review and approval by National Grid.
- E. All laboratory analyses arranged by the Contractor will be paid by the Contractor and conducted by a laboratory approved by the CA.
- F. In the event that an alternate facility is needed to accept the material, the Contractor will supply a written submission to National Grid on the material type, amount, location, and reason the approved facility ceased to accept the material. Alternate facilities not previously audited by National Grid will require an audit prior to allowing transport of materials to the facility. Any charges or fees incurred by the Contractor associated with delays to the Project schedule during this audit process are the responsibility of the Contractor.
- G. If any materials are encountered during excavation that appear to exhibit hazardous characteristics, where hazardous material was not expected to be encountered, notify the CA immediately and segregate these materials in a sealed container or covered stockpile. Sample and dispose of this material appropriately.
- H. Decontaminate and process construction debris and/or bulky material within the excavation, if encountered, if possible.
- I. Segregate non-contaminated construction debris and bulky wastes (including asphalt) for transport to the appropriate disposal or recycling facility.
- J. If Wastewater is not disposed at a National Grid-approved off-site liquid waste treatment facility, treat Wastewater on site and/or discharge under an appropriate permit and in accordance with all applicable regulations and National Grid requirements. In this case,

the Contractor shall design, permit, construct, test, monitor, operate, decontaminate, and/or dispose treatment system equipment and materials, as required.

- K. Dispose of wastewater that is not discharged to an on-site wastewater treatment system at an off-site liquid waste treatment facility approved by National Grid. Provide all laboratory analysis required to dispose of the wastewater generated during the performance of the Work.
- L. Bulk solid material collected in wastewater treatment system (if used) resulting from settling with excavated impacted material for disposal.
- M. The Contractor is solely responsible for disposal of construction-related wastes suitable for disposal as routine municipal solid waste; no additional compensation will be provided for disposal of these materials.

END OF SECTION 02 61 00

## **SECTION 26 01 00**

### **BASIC ELECTRICAL REQUIREMENTS**

#### **PART 4 GENERAL**

##### **4.01 APPLICABLE PROVISIONS**

- A. Applicable provisions of Division 1 shall govern all work under this Section.

##### **4.02 APPLICABLE PUBLICATIONS**

- A. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto:

1. ANSI - American National Standards Institute.
2. ASTM - American Society for Testing and Materials.
3. EPA - Environmental Protection Agency.
4. ETL - Electrical Testing Laboratories, Inc.
5. IEEE - Institute of Electrical and Electronics Engineers.
6. IES - Illuminating Engineering Society.
7. ISA - Instrument Society of America.
8. NBS - National Bureau of Standards.
9. NEC - National Electric Code.
10. NEMA - National Electrical Manufacturers Association.
11. NESC - National Electrical Safety Code.
12. NFPA - National Fire Protection Association.
13. UL - Underwriters Laboratories Inc.

##### **4.03 DESCRIPTION OF WORK**

- A. All work and materials are to conform in every detail to applicable rules and requirements of the New York State Electrical Code, the National Electrical Code (ANSI/NFPA 70), other applicable National Fire Protection Association codes, the National Electrical Safety Code, and present manufacturing standards (including NEMA). Work shall be done under the direction of a currently certified State of New York Certified Master Electrician.
- B. Intent:
1. The CONTRACTOR shall furnish and install all the necessary materials, apparatus, and devices to complete the electrical equipment and systems installation herein specified.

2. If an item is either called for in the specifications or shown on the plans, it shall be considered sufficient for the inclusion of said item in this contract. If a conflict exists within the Specifications or exists within the Drawings, the CONTRACTOR shall furnish the item, system, or workmanship that is the highest quality, largest, or most closely fits the design intent (as determined by the CA). Refer to the General Conditions of the Contract for further clarification.
3. It must be understood that the details and drawings are diagrammatic. The CONTRACTOR shall verify all dimensions at the site and be responsible for their accuracy.
4. All sizes as given are minimum except as noted.
5. Materials and labor shall be new (unless noted or stated otherwise), first class, and workmanlike, and shall be subject at all times to inspections, tests and approval from the commencement until the acceptance of the completed work.

#### 4.04 SHOP DRAWINGS

- A. Submit shop drawings in accordance with Division 1.
- B. Furnish submittals in accordance with provisions of Section 01 20 00.
- C. Submit the above required information for all equipment and systems as indicated above and in the respective specification sections, marking each submittal with that specification section number. Mark general catalog sheets and drawings to indicate specific items being submitted and proper identification of equipment by name and/or number, as indicated in the contract documents. Failure to do this may result in the submittal(s) being returned to the CONTRACTOR for correction and resubmission. Failing to follow these instructions does not relieve the CONTRACTOR from the requirement of meeting the project schedule.
- D. Submittals shall be grouped to include complete submittals of related systems, products, and accessories in a single submittal. Mark dimensions and values in units to match those specified. Include wiring diagrams of electrically powered equipment.
- E. Clearly notate any exception taken to these specifications.
- F. Review of manufacturer's drawing constitutes acceptance of general design only and will not release the CONTRACTOR for fulfilling the terms and intent of the contract documents.

#### 4.05 QUALITY ASSURANCE

- A. Substitution of Materials: Refer to General Conditions of the Contract.
- B. Where equipment or accessories are used which differ in arrangement, configuration, dimensions, ratings, or engineering parameters from those indicated on the contract documents, the CONTRACTOR is responsible for all costs involved in integrating the equipment or accessories into the system and the assigned space and for obtaining the performance from the system into which these items are placed.
- C. All materials shall be listed by and shall bear the label of an approved electrical testing laboratory. If none of the approved electrical testing laboratories has published standards

for a particular item, then other national independent testing standards shall apply and such items shall bear those labels. Where one of the approved electrical testing laboratories has an applicable system listing and label, the entire system shall be so labeled.

- D. The following laboratories are approved for providing electrical product safety testing and listing services as required in these specifications:
1. Underwriters Laboratories Inc.
  2. Electrical Testing Laboratories, Inc.

#### 4.06 CONTINUITY OF EXISTING SERVICES AND SYSTEMS

- A. No outages shall be permitted on existing systems except at the time and during the interval agreed upon in writing by the Village of Canastota, Contractor, National Grid, and the CA. Any outage must be scheduled when the interruption causes the least interference with normal schedules and routines.
- B. This CONTRACTOR shall restore any circuit interrupted as a result of this work to proper operation as soon as possible.

#### 4.07 CERTIFICATES AND INSPECTIONS

- A. Refer to General Conditions of the Contract.
- B. Obtain and pay for all required inspections. Deliver originals of inspection certificates to the CA. Include copies of the certificates in the Operating and Maintenance Instructions.

#### 4.08 OPERATION AND MAINTENANCE MANUALS AND INSTRUCTIONS

- A. Submit an Operation & Maintenance Manuals and Instructions.
- B. Submit assembled material as an electronic pdf as well as in a three-ring or post binder(s), using an index at the front of each volume and tabs for each system or type of equipment. Include the following information:
1. Copies of as-built submittals.
  2. Manufacturer's wiring diagrams.
  3. Records of tests performed to certify compliance with system requirements.
  4. Certificates of inspection by regulatory agencies.
  5. Parts lists for manufactured equipment.
  6. Preventive maintenance recommendations.
  7. Warranties.
  8. Additional information as indicated in the technical specification sections.
- C. Test Reports and Demonstration Log:
1. Permanently record checks and tests and demonstrations.

2. Submit copy of complete testing or demonstration report no later than 7 days after testing or demonstration is complete.

#### 4.09 TRAINING OF OWNER PERSONNEL

- A. Instruct Village of Canastota personnel in the proper operation and maintenance of systems and equipment provided as part of this project in accordance with the General Conditions. Use the Operating and Maintenance manuals during this instruction. Demonstrate startup and shutdown procedures for all equipment. All training is to be during normal working hours.

### PART 5 EXECUTION

#### 5.01 EXCAVATION AND BACKFILL

- A. Perform all excavation and backfill work to accomplish indicated electrical systems installation in accordance with other sections of this specification.

#### 5.02 CUTTING AND PATCHING

- A. Refer to other portions of these specifications.
- B. Complete underground electrical service installation prior to paving asphalt areas and performing site restoration work.
- C. Post-construction building conditions shall be left as close to reasonably feasible to pre-construction conditions, or better.

#### 5.03 EQUIPMENT ACCESS

- A. Install all piping, conduit, ductwork, and accessories to permit access to equipment for maintenance. Coordinate the exact location access panels and doors, making sure that access is available for all equipment and specialties.

#### 5.04 WORKING CLEARANCES

- A. Minimum installed equipment working clearances as required by the NEC.

#### 5.05 COORDINATION

- A. The CONTRACTOR shall cooperate with other trades in locating work in a proper manner. Should it be necessary to raise or lower or move longitudinally any part of the electrical work to better fit the general installation, such work shall be done at no extra cost to GEI, the Village of Canastota or National Grid. The CONTRACTOR shall coordinate location of electrical outlets with adjacent equipment before installing.
- B. The CONTRACTOR shall verify that all devices are compatible for the surfaces on which they will be used. This includes, but is not limited to, meter boxes, light fixtures, panel boards, devices, etc.
- C. Coordinate all work with the Village of Canastota prior to installation.
- D. Verify the integrity of any fire or smoke rating on these surfaces.

## 5.06 HOUSEKEEPING AND CLEAN UP

- A. Refer to other portions of these specifications.
- B. The CONTRACTOR shall clean up and remove from the premises, on a daily basis, all debris and rubbish resulting from its work and shall repair all damage to new and existing equipment resulting from its work. When job is complete, the CONTRACTOR shall remove all tools, excess material and equipment, etc., from the site.

## 5.07 DEMONSTRATIONS

- A. Upon the request of the Village of Canastota, National Grid or CA, demonstrate the proper operation of all electrical systems and equipment in the presence of the Village of Canastota, National Grid and/or CA designated representatives. The demonstrations shall include, but not be limited to, the following equipment and systems:
  - 1. Circuit breakers.
  - 2. Disconnect switches.
  - 3. Control systems.
- B. Demonstration Log:
  - 1. Keep log of individual demonstrations.
  - 2. Data:
    - a. Date and time of demonstration.
    - b. Village of Canastota, National Grid, and/or CA's representative.
    - c. Equipment or system demonstrated.
    - d. Result of demonstration:
      - 1) Success or fail.
      - 2) If failure, description of failure.
      - 3) Corrective action taken.
      - 4) Redemonstration result.

## 5.08 TESTS

- A. Test work and equipment installed to ensure proper and safe operation in accordance with intent of drawings and specifications.
  - 1. Check interlocking and automatic control sequences and test operation of safety and protective devices.
  - 2. Correct defects.
  - 3. Cooperate supplier's and manufacturer's representatives in order to achieve proper and intended operation of equipment.
- B. Test, adjust, and record operating voltages at each system level before energizing branch circuits.

1. Transformer taps must be adjusted to obtain as near as possible nominal system voltage. Prior to energization of transformers, check phase-to-phase and phase--to-ground insulation resistance levels. Check transformers for continuity of circuits and short circuits.
  2. Where transformer is under utility jurisdiction, obtain services of utility to correct voltage.
  3. Replace devices and equipment damaged due to failure to comply with this requirement.
  4. Ampere readings on any cable operating in parallel to insure an even division of current.
- C. Balance load among feeder conductors at each panel board, switchboard or substation and reconnect loads as may be necessary to obtain reasonable load balance on each phase. Electrical imbalance shall not exceed 7-1/2 percent.
- D. Control Circuits, Service Feeder, Panel Feeders, Motor Circuits, and Transformers:
1. Megger check of phase-to-phase and phase-to-ground insulation levels. Do not megger check solid state equipment.
  2. Continuity.
  3. Short circuit.
  4. Operational check.
- E. Wiring Devices:
1. Test receptacles with Hubbell 5200, Woodhead 1750 or equal tester for current polarity, proper ground connection, and wiring faults.
- 5.09 ADJUSTMENT AND CLEANING
- A. Circuit Breakers:
1. Adjustable settings shall be set to provide selective coordination, proper operation, and compliance with NEC.
- 5.10 GROUNDING SYSTEMS
- A. Visual and Mechanical Inspection:
1. Inspect ground system for compliance with drawings and specifications.
- 5.11 GROUND FAULT SYSTEMS
- A. Electrical Tests:
1. Measure system neutral insulation resistance to ensure no shunt ground paths exist, neutral-ground disconnect link removed, neutral insulation resistance measured, and link replaced.
  2. Determine relay pickup current by primary injection at sensor and circuit interrupting device operated.

3. Test relay timing by injecting 150% and 300% of pickup current into sensor. Electrically monitor total trip time.
  4. Test system operations at 55% rated voltage.
  5. Test secondary service cable.
- B. Test Parameters:
1. System neutral insulation shall be minimum 100 ohms, preferably 1 megohm or larger.

END OF SECTION 26 01 00

## SECTION 26 05 33

### CONDUIT

#### PART 1 GENERAL

##### 1.01 WORK INCLUDED

- A. Rigid metal conduit and fittings.
- B. Non-metallic conduit and fittings.

##### 1.02 RELATED WORK

- A. Section 31 23 16 - Excavation: Trench Excavation for utilities on site.

##### 1.03 REFERENCES

- A. ANSI/NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.
- B. FS WW-C-581 - Specification for Galvanized Rigid Conduit.
- C. NEMA TC 2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).
- D. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

#### PART 2 PRODUCTS

##### 2.01 RIGID METAL CONDUIT AND FITTINGS

- A. Rigid Steel Conduit: FS WW-C-581.
- B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; threaded type material to match conduit.

##### 2.02 PLASTIC CONDUIT AND FITTINGS

- A. Conduit: NEMA TC 2; Schedule 80 PVC.
- B. Fittings and Conduit Bodies: NEMA TC 3.

##### 2.03 CONDUIT SUPPORTS

- A. Conduit Clamps, Straps, and Supports: Steel or malleable iron.

#### PART 3 EXECUTION

##### 3.01 CONDUIT SIZING, ARRANGEMENT AND SUPPORT

- A. Size conduit for conductor type installed 1/2-inch minimum size.
- B. Arrange conduit to present a neat appearance.

- C. Route exposed conduit parallel and perpendicular to walls and adjacent piping.
- D. Maintain minimum 6-inch clearance between conduit and piping. Maintain 12-inch clearance between conduit and heat sources.
- E. Arrange conduit supports to prevent distortion of alignment by wire pulling operations. Fasten conduit using galvanized straps, lay-in adjustable hangers, clevis hangers, or bolted split stamped galvanized hangers.
- F. Group conduit in parallel runs where practical.
- G. Do not fasten conduit with wire or perforated pipe straps. Remove all wire used for temporary conduit support during construction before conductors are pulled.
- H. Support above grade conduit at a maximum of 7 feet on center.

### 3.02 CONDUIT INSTALLATION

- A. Cut conduit square using a saw or pipe cutter; de-burr cut ends.
- B. Bring conduit to the shoulder of fittings and couplings and fasten securely.
- C. Use conduit hubs (or sealing locknuts) for fastening conduit to cast boxes, and for fastening conduit to sheet metal boxes in damp or wet locations.
- D. Install no more than the equivalent of four 90-degree bends between boxes. All 90-degree bends in conduit runs shall be rigid steel conduit.
- E. Use conduit bodies to make sharp changes in direction, as around beams.
- F. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 2-inch (50 mm) size.
- G. Avoid moisture traps where possible; where unavoidable, provide junction box with drain fitting at conduit low point.
- H. Use suitable conduit caps to protect installed conduit against entrance of dirt and moisture.
- I. Provide No. 12 AWG insulated conductor or suitable pull string in empty conduit, except sleeves and nipples.
- J. Install expansion joints where conduit crosses building expansion joints.
- K. Where conduit penetrates fire-rated walls and floors, provide mechanical fire-stop fittings with UL listed fire rating equal to wall or floor rating. Seal opening around conduit with UL listed foamed silicone elastomer compound.
- L. Wipe plastic conduit clean and dry before joining. Apply a full even coat of cement to entire area that will be inserted into fitting. Let joint cure for 20 minutes minimum.

### 3.04 CONDUIT INSTALLATION SCHEDULE

- A. Underground Installations more than five feet from foundation wall: Schedule 80 plastic conduit.
- B. Installations in or under concrete slab, or underground within five feet of foundation wall: Rigid steel conduit.
- C. In Slab Above Grade: Rigid steel conduit.
- D. Exposed Outdoor Locations: Rigid steel conduit.
- E. Wet Interior Locations: Rigid steel conduit.
- F. Concealed Dry Interior Locations: Rigid steel conduit.
- G. Exposed Dry Interior Locations: Rigid steel conduit.
- H. Classified Areas: Rigid steel conduit with seal boxes, etc.

END OF SECTION 26 05 33

## SECTION 31 10 00

### SITE PREPARATION

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. The Work required under this section includes furnishing all labor, materials, and equipment, and performing all operations required for site preparation prior to the removal of MGP impacted materials.

##### 1.02 SUBMITTALS

- A. Provide the Dig Safely New York ticket number(s) and the findings of the utility mark out to National Grid and the Construction Administrator (CA) prior to excavation and ISS.

#### PART 2 PRODUCTS

(Not Used)

#### PART 3 EXECUTIONS

##### 3.01 GENERAL SITE PREPARATION ACTIVITIES

- A. The following list of activities are cumulatively considered to be site preparation activities.
  1. Utility mark outs.
  2. Conducting a Preconstruction Survey in accordance with the Contract Documents.
  3. Provide flagging to delineate limits of areas to be cleared or grubbed. Review at site with Construction Administrator (CA) before commencing removal of trees, vegetation, and other materials to be removed.
  4. Installing instrumentation in accordance with the Specifications and Contract Drawings and obtaining baseline readings.
  5. Removing, relocating and salvaging existing site features that may be suitable for reuse including the concrete and gravel loading ramp adjacent to the southeast corner of the Salt Storage Unit.
  6. Removing and salvaging or disposing of existing fencing in conflict with excavation limits.
  7. Installing all temporary signage.
  8. Installing and maintaining all temporary fencing/barriers.
  9. Installing and maintaining all temporary erosion controls.

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- 10. Clearing all debris, rubble, and vegetation from the air monitoring station locations as directed by the CA.
  - 11. Initiating the Contractor's air monitoring program.
- B. All site preparation activities listed above must be completed as required in the Contract Document, and to the satisfaction of the Construction Administrator (CA), prior to beginning any intrusive work.
- 3.02 TEMPORARY CONSTRUCTION ENTRANCES
- A. Obtain the appropriate permits and approvals required for temporary entrances and exits, as required in the Contract Documents.
  - B. Install the temporary entrance/exits in accordance with any Village of Canastota requirements.
- 3.03 DEBRIS REMOVAL
- A. Unless otherwise noted in the Contract Documents, remove all surficial debris (i.e. trash, metal, concrete, asphalt, etc.) within the Limit of Work area. Confirm debris for disposal with CA prior to disposal and provide adequate advanced notice such that CA can verify debris is not wanted by Canastota Village. Conduct all handling, segregating, and screening activities that are necessary to facilitate off-site disposal in accordance with the Contract Documents.
  - B. Contaminated materials must be segregated from non-contaminated materials and prepared, as necessary, for disposal at the facilities approved for use during performance of the Work in accordance with the Contract Documents.
  - C. Dispose of all debris at an approved disposal or recycling facility.
- 3.04 WORKING RESTRICTIONS – EXISTING UTILITIES
- A. There are overhead and underground electrical, communication and sanitary utilities near the work area. Use extreme caution during the implementation of the Work so as not to damage or interfere with these utilities.
  - B. Maintain the minimum required setbacks for all equipment and vehicles operating in the vicinity of energized lines. Establish signage for working near energized power lines as required by OSHA in addition to local, state, and federal requirements.
  - C. Protect existing underground utilities from movement and associated damage. Maintain clear surface markings showing the alignment of the utilities and coordinate with the utilities for all routine observation or monitoring that may be required on their behalf during the Work.
  - D. Coordinate with the utility provider to sheath or protect overhead electrical lines if required.
  - E. Do not load or empty trucks under the overhead electrical utilities. Do not open truck covers under the overhead electrical utilities. Provide warning signs of overhead lines and clearances for truck drivers at the site entrance.

- F. Provide ground level warning signs every 25 ft under overhead power lines within the work area.
- G. Trucks are not permitted to move outside Exclusion Zone with raised beds.

### 3.05 SNOW REMOVAL

- A. Perform all snow removal and lawful disposal activities as needed for the successful completion of the Work.
- B. Arrange for snow removal to be performed as soon as practicable after a snow event to minimize the amount of time lost due to inclement weather.
- C. Remove/relocate snow to maintain emergency vehicle access and egress points on the site at all times while the Work is being performed.

END OF SECTION 31 10 00

## SECTION 31 23 16

### EXCAVATION

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. The Work required under this section includes furnishing all labor, materials, and equipment, and performing all operations required for the excavation, and handling of material during performance of the RA.
- B. All excavation work performed must be done in a manner that complies with the Community Air Monitoring Plan (CAMP) that has been prepared for the site.

##### 1.02 SUBMITTALS

- A. Excavation Plan: Submit an Excavation Plan showing sequencing, staging, and phasing of the excavation and materials handling activities as part of the Contractor SOP, including, but not limited to
  - 1. Coordination with the in-situ solidification component of the Work into the Excavation Plan.
  - 2. Equipment, methods, and sequence of Excavation Work.
  - 3. Procedures and sequencing for coordination of Excavation with dewatering.
  - 4. Excavation production rates in the form of a table of excavation volumes per week for each week of the Project Schedule. In the same table, show the estimated quantities of stockpiling and off-site transportation.
  - 5. Keep records of use of stabilization agent including, at a minimum, product used, day, time, quantity used, and source of material being amended. Submit records upon completion of excavation.
  - 6. If the Contractor chooses to use a excavation support system as an alternative to the use of OSHA compliant sloping cuts, submit a Support of Excavation design and supporting calculations package stamped and sealed by a professional engineer licensed in the state of New York for review by the CA.

#### PART 2 PRODUCTS

##### 2.01 GENERAL

- A. Provide a stabilization agent, such as cement kiln dust (CKD), or equivalent to amend soils too wet to transport in trucks, as directed by the Construction Administrator (CA). The stabilization agent used must be acceptable to the disposal facility and in accordance with NYSDEC requirements for amendments. Submit the manufacturer MSDS and product information for all amendments as part of the Contractor SOP prior to the material being imported to the site.

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**PART 3 EXECUTION****3.01 PREPARATION**

- A. Ensure that the Contractors Pre-Construction Survey has been completed and submitted in accordance with the Contract Documents.
- B. Layout the limits/extents of the excavation.
- C. Before excavation begins, implement the Contractor designed dewatering systems and water treatment system.

**3.02 CAMP REQUIREMENTS**

- A. Implement airborne dust and vapor suppression measures required to comply with the CAMP and as directed by the CA. These actions may include any of the following, or other appropriate measures, to minimize air emissions.
  - 1. Applying water on exposed soil surfaces and/or roadways to suppress dust.
  - 2. Covering working areas of exposed soils or stockpiles with tarpaulins, vapor suppressing foam, odor suppression, or other vapor controls.
  - 3. Modifying the means and methods of the Work (i.e. using different or additional equipment, etc.).
  - 4. Modifying the production rate (i.e. excavation rate, etc.).
  - 5. Changing the sequence of activities.

**3.03 EXCAVATION**

- A. Perform excavations in accordance with OSHA regulations.
- B. Perform the excavation to the lines and grades indicated on the Contract Drawings, and as directed by the CA.
- C. Dewater the excavation as necessary to remove excess water during the excavation Work. Use of stabilization agent is not permitted to offset unsuitable dewatering practices. The Construction Manger is responsible for determining if dewatering practice is unsuitable during the Work. If determined to be unsuitable the Contractor may need to modify the dewatering program at no additional cost to National Grid.
- D. Manage excavated materials in accordance with the Contract Documents. Material management is to include, but not be limited to, the following
  - 1. Excavate the subsurface soil to the contours, elevations, and dimensions indicated.
  - 2. Whenever possible, perform the excavation of impacted material as a direct-load operation.
  - 3. Transport and dispose of excavated material at a regulated, licensed, and National Grid-approved disposal facility, or hazardous material facility, as directed by the CA and in accordance with the Contract Documents.

4. Segregate bulk solid waste and construction debris encountered within the excavation from excavated soil to allow for disposal of the materials at their respective applicable facility.
  5. Gravity dewater excavated soil such that the water is allowed to drain back into the excavation or is captured within lined stockpile areas. Water draining from contaminated excavated soil shall not be permitted to drain back into areas that are not contaminated.
  6. Use stabilization only for soils that are inherently too wet and cannot be dried sufficiently using gravity techniques. Stabilization agents may only be used with the approval of the CA and at the minimum effective application rates.
- E. Perform all excavations using proper shoring and bracing and/or excavation sloping/benching to ensure slope stability. Shoring and bracing, if used, shall be in compliance with the Contractors Support of Excavation design submittal.
- F. The excavation portion of the Work will be above and below the water table. Perform the excavation below the water table using techniques to minimize the water content of the excavated soil such that they can be transported in trucks without stabilization or other special measures. If needed, use short term stockpiling within the excavation to allow excavated soil to drain back into the excavation or be collected and containerized for proper disposal (if not sent to an on-site wastewater treatment system) as space and equipment allow and with CA concurrence.
- G. Use stabilization only for soils that are inherently too wet and cannot be dried sufficiently using other techniques. Stabilization may only be used with the approval of the CA.
- H. Remove all subsurface structures within the excavation limits. If structures not shown on the Contract Documents are encountered, notify the CA immediately. No additional payment will be made for removal of unidentified structures without proper notification and written approval.

### 3.04 SOFT EXCAVATION

- A. Perform the initial excavation work to verify the Gas Holder location using soft excavation techniques (i.e., hand-dig, vacuum excavation or equivalent).
- B. The soft excavation equipment must be properly grounded for the duration of the soft excavation portion of the work.
- C. Any hand tools used must be made of non-sparking materials and are subject to inspection by the CA or National Grid representative at any time.
- D. Soft excavate to expose the existing Sanitary Sewer at the proposed manhole MH-1 location adjacent to the Pump Station.

### 3.05 MOVEMENT MONITORING

- A. Ensure baseline readings have been collected (by CA) and the Optical Monitoring Program is operable before commencing excavation.
- B. Ensure crack width gauges are installed and baselines have been established (by CA) prior to commencement of excavation.

- C. Modified construction methods or other preventative measures are required if threshold values are exceeded during the Work.

### 3.06 EXCAVATION SCHEDULE

- A. The excavation may not be backfilled until approval has been received by the CA and documentation samples, if required, have been collected.

### 3.07 FIELD QUALITY CONTROL

- A. Conduct daily inspections of excavated areas during the Work to identify any potential hazards or deviations from the plan and to ensure conformance with safety protocols and regulatory requirements. Keep detailed records of inspections, noting any issues observed and actions taken. Provide records to CA at completion of excavation, or as requested during the Work.
- B. Report any incidents, near misses, or non-conformities promptly and initiate corrective actions as necessary in accordance with the Contract Documents and Contractors HASP.

### 3.08 CONSTRUCTION METHODS

- A. Establish excavation rates that will permit continuous Work while accommodating the receiving capacity of the selected treatment/disposal facilities.
- B. Perform the excavation as a direct-load operation, when practicable.
- C. Divert or otherwise prevent surface water from entering excavations to the extent practicable without causing damage or flooding to adjacent properties.

END OF SECTION 31 23 16

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**SECTION 31 23 19****DEWATERING****PART 1 GENERAL**

## 1.01 SUMMARY

- A. The Work required under this section includes furnishing all labor, materials, and equipment, and performing all operations required for the dewatering of the Bulk Excavation and ISS areas during performance of the Remedial Action.
- B. Perform Dewatering Work using a network of localized sump pumps or a well point system.

## 1.02 SEQUENCING AND SCHEDULING

- A. For the Bulk Excavation and ISS Areas, dewater the excavations as necessary to minimize the water content of the excavated material and to perform remedial activities under controlled conditions in the dry. Operate dewatering systems to maintain the groundwater table below the bottom of the excavation and to provide a stable working platform.
- B. Coordinate and schedule the dewatering Work in a manner that minimizes the quantity of water pumped while not affecting the excavation, solidification, and backfill schedules.

## 1.03 SUBMITTALS

- A. Design a water treatment system (WTS) to meet the expected volume and discharge requirements. Contractor shall perform any required bench/ pilot tests to validate the treatment system design. The design shall include.
  - 1. Description, layout, and process and instrumentation diagram (P&ID) of WTS, equipment (including size and capacity), processes, controls, instrumentation, and monitoring.
  - 2. Electrical one-line, load calculations.
  - 3. Operation & Maintenance (O&M) plan with their design of the WTS to include regular maintenance, monitoring, and daily operating and record-keeping procedures, including performance parameters and operation and equipment logs. The O&M plan shall be prepared consistent with the requirements of this section.
  - 4. Calculation and support documentation for treatment system design, component selection and sizing.
  - 5. Coordination summary for the excavation dewatering system.
  - 6. A backup liquid plan.
  - 7. A coal tar NAPL separation and management plan.
  - 8. NYSDEC discharge testing requirements and limits, if applicable.
  - 9. Testing requirement for acceptance at offsite disposal facility, if applicable.

- B. The WTS design shall be prepared by a Professional Engineer registered in the State of New York.

## **PART 2 PRODUCTS**

### **2.01 DEWATERING EQUIPMENT**

- A. Furnish, install, and operate pumping equipment of sufficient capacities to meet the requirements for the removal of groundwater, stormwater, and surface runoff water from the excavation areas as necessary to complete the Work.
- B. Keep on site or have immediate access to, additional pumps of sufficient capacity to maintain dewatering activities during any pump breakdown, maintenance, or in case of flooding.
- C. The dewatering networks are required to have redundant features such as adequate standby pumping capacity, valves, and piping so that damage to, or failure of, a principal component of the network will not result in the failure of the entire network.
- D. Provide sufficient suction and discharge hoses or piping for transferring pumped liquids without causing erosion, sedimentation, or other adverse consequences.
- E. Provide freeze protection for all dewatering hoses, piping, and pumping equipment necessary to execute the Work throughout the winter months, including but not limited to insulation, heat wraps, heaters, and/or enclosures. Freeze protection chemicals or solutions shall not be used on site without prior approval by the Construction Administrator (CA).
- F. Equipment for dewatering may be new or used but shall be suitable for the Work and maintained in good condition.
- G. All dewatering equipment shall remain the property of the Contractor or Subcontractor at the conclusion of the Work.
- H. Decontaminate dewatering equipment in accordance with the Contract Documents and remove the equipment from the site at the completion of the Work.

## **PART 3 EXECUTION**

### **3.01 DEWATERING - GENERAL**

- A. For the Bulk Excavation Area, design, furnish, install, operate, and remove a dewatering network to allow excavation to the depths shown on the Contract Documents. The network should be designed to keep groundwater levels at least 2 feet below active excavation activities while minimizing the amount of water discharged.
- B. For the ISS Area, design, furnish, install, operate, and remove a dewatering network to allow excavation to the depths shown on the Contract Documents, to keep groundwater levels at least 2 feet below the excavation subgrade, and to provide a stable ISS working platform for solidification of all areas shown on the Contract Documents.
- C. The water from the active excavation and ISS areas or water in contact with exposed impacted soils may contain MGP residuals. Direct the water pumped from the

excavation and ISS areas into the on-site wastewater treatment system in accordance with the Contract Documents.

- D. Review the available sub-surface and geotechnical information to determine the pumping rates and storage requirements that will be required to complete the Work.
- E. Furnish, at a minimum, all labor, materials, and equipment required to perform all operations required to design, install, test, pump, measure, and maintain the excavation dewatering equipment and water storage systems, including the storage tank, pumps, sumps, electric power supply, and distribution equipment as required to dewater the excavations so that the Work can be conducted under controlled conditions. Decontaminate and demobilize all dewatering equipment and materials after completing the excavation, solidification, and backfill Work in accordance with the Contract Documents.
- F. Repair or replace damaged pumps, piping, hoses, tanks, and all other dewatering equipment and materials within four working hours, if damaged. Damage includes any pump and power failures, leaks, breaks, clogs, or other conditions that adversely affect the dewatering system or releases contaminated water.
- G. Grade the site using run-on/runoff controls including, but not limited to, slopes, berms, and sumps to channel surface water runoff away from the excavation and ISS areas.
- H. Prevent any impacted water from contacting soils, or water outside of the active excavation and ISS areas. If environmental contamination results from the Contractor's failure to control impacted water, remove the contamination to the satisfaction of the CA, at no additional cost to National Grid.
- I. For the Bulk Excavation Area, after the excavation is completed and inspected by the CA, backfilling may proceed with the water levels maintained at least 2 feet below the backfill level until final grades are achieved.
- J. Install, operate, and remove the dewatering systems in accordance with applicable Federal, State, and local Laws and Regulations, permits, and generally accepted industry practices.

END OF SECTION 31 23 19

## SECTION 31 23 23

### BACKFILL AND GRADING

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. The Work required under this section includes furnishing all labor, materials, equipment, and performing all operations required for the backfilling and grading of excavation and solidification areas.

##### 1.02 SUBMITTALS

- A. Backfilling Plan: Submit a backfilling plan showing the sequence of excavation, soil solidification, and backfill activities. Include a description of the type, number, location, etc. of equipment that is planned to be used. Incorporate the Backfilling Plan into the Site Operations Plan submittal as described in the Contract Documents.
- B. Borrow Source Evaluation: Submit the results of the borrow source evaluation for each source to be used for imported backfill indicating the material is in compliance with the geotechnical and environmental criteria. Perform, and receive Construction Administrator (CA) acceptance of, a borrow source evaluation prior to the import of fill from the borrow source. Include the following.
  - 1. Name, address, telephone number, and website address of the borrow source.
  - 2. Letter from the borrow source stating that the soil is native in origin and to the best of their knowledge, free of contamination.
  - 3. Analytical results from the borrow source, specific to the actual fill being imported to the site, as confirmation that the material is free of contamination and in compliance with the clean fill environmental criteria.
  - 4. Geotechnical test results from the borrow source, specific to the actual fill being imported to the site, as confirmation that the material is in compliance with the geotechnical criteria.

#### PART 2 PRODUCTS

##### 2.01 GEOSYNTHETIC MATERIALS

- A. Geotextile filter fabric for general use must be TenCate Mirafi 180N or CA-approved equivalent.
- B. Surface clean cover visual demarcation layer must be Tenax Beacon Plus high-visibility orange safety fence made of UV-stabilized polyethylene with a weight not less than 12 pounds per 4-foot x 100-foot roll, with grid spacing no larger than 3.5-inch x 2-inch, or CA-approved equivalent.
- C. Haul road and truck loop tri-axial geogrid must be Tensar TX-140 or CA-approved equivalent.

## 2.02 BACKFILL

### A. Imported Clean Sand Bedding

1. Furnish Imported Clean Sand that is free of organic or deleterious materials and meets the following gradation requirements, or equivalent, as approved by the CA.

U.S. Standard Sieve	Percent Finer by Dry Weight
3/8 inch	100
#4	90-100
#50	10-40
#100	3-15
No. 200	0 to 7

### B. Imported Granular Fill

1. Furnish Imported Granular Fill that is free of organic or deleterious materials and meets the following gradation requirements, or equivalent, as approved by the CA.

U.S. Standard Sieve	Percent Finer by Dry Weight
1 inch	100
No. 4	70 to 100
No. 200	0 to 10

2. Complete a Modified Proctor maximum density test via ASTM D1557-latest edition, and grain size analysis via ASTM D6913-latest edition for each sample of Imported Clean Fill collected.

### C. Pavement Subbase

1. Furnish material that conforms to material designation 304-1 Type 4 in the September, 2024, Standard Specification prepared by the New York State Department of Transportation. Use Road Base that is free of organic matter and meets the following requirements.

U.S. Standard Sieve	Percent Finer by Dry Weight
2 inch	100
0.25 inch	30 to 65
No. 40	5 to 40
No. 200	0 to 10

2. Complete a Modified Proctor maximum density test via ASTM D1557-latest edition, and grain size analysis via ASTM D6913-latest edition for each sample of sand fill collected.

### D. Topsoil

1. Furnish Topsoil that conforms to material designation Topsoil-Type A in section §713-01 of the New York State Department of Transportation Standard Specification, which includes the following gradation requirements.

U.S. Standard Sieve	Percent Finer by Dry Weight
2 inch	100
1 inch	85 to 100
0.25 inch	65 to 100
No. 200	20 to 65
2-micron particle	0 to 20

2. Complete an analysis for pH, organic content, and grain size via ASTM D6913-latest edition, for each sample of topsoil collected.
3. Collect one sample per borrow source.

E. Environmental Analysis Requirements

1. In addition to any laboratory analysis required specific to the fill type, analyze each fill sample for RCRA 8 Metals, PCBs by EPA Method 8082, VOCs by EPA Method 8260, SVOCs by EPA Method 8270, 1,4-dioxane by EPA Method 8270, pesticides by Method 8081, herbicides by Method 8150, and the list of NYSDEC-specified per-and polyfluoroalkyl substances (PFAS) compounds by EPA Method 1633 at a laboratory that is appropriately licensed to perform the analyses in the State of New York. Forward analytical results to the CA at least two weeks prior to the material being imported to the site.
2. All imported fills must meet the Commercial Use Soil Cleanup Objectives listed in Appendix 5 of the DER-10/Technical Guidance for Site Investigation and Remediation published by the NYSDEC to meet the environmental analysis requirements for the Project.
3. The imported fill must meet criteria identified in the special testing requirements for import or reuse of soil as provided in NYSDEC’s guidance document titled Sampling, Analysis, and Assessment of Per-and-polyfluoroalkyl Substances (PFAS) under NYSDEC’s Part 375 Remedial Programs (current version).
4. For each borrow source containing greater than 10%, by weight, passing size 100 sieve, collect samples per table below (Table 5.4(e)10 from NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation). Also note that additional analysis may be required if the material does not come from a virgin borrow source or a DEC-registered C&D processing facility.

Contaminant	VOCs <sup>a</sup>		SVOCs, Inorganics & PCBs/Pesticides	
	Soil Quantity (cubic yards)	Discrete Samples	Composite	Discrete Samples/Composite
	0-50	1	1	Each composite sample for analysis is created from 3-5 discrete samples from representative locations in the fill.
	50-100	2	1	
	100-200	3	1	
	200-300	4	1	
	300-400	4	2	
	400-500	5	2	
	500-800	6	2	
	800-1000	7	2	
➤ 1000	Add an additional 2 VOC and 1 composite for each additional 1000 Cubic yards or consult with DER. <sup>b</sup>			

<sup>a</sup> VOC samples cannot be composited. Discrete samples must be taken to maximize the representativeness of the results.

<sup>b</sup> For example, a 3,000 cubic yard soil pile to be sampled and analyzed for VOCs would require 11 discrete representative samples. The same pile to be sampled for SVOCs would require 4 composite samples with each composite sample consisting of 3-5 discrete samples.

## 2.03 WATER

- A. Contact water that has been treated by the wastewater treatment system at the Site may be used for adjusting the moisture content of backfill as necessary to achieve optimum compaction performance. Water used for this purpose is subject to the NYSDEC discharge permit including but not limited to the frequency of testing and constituent limits.

## PART 3 EXECUTION

### 3.01 BORROW SOURCE EVALUATION

- A. Perform borrow source and material evaluations per the Contract Documents.
- B. Contractor must perform one sieve analysis and one modified Proctor test for every 1,000 tons of imported fill material, and whenever the fill source changes, and whenever the CA judges that the fill characteristics have changed. All soil sample collection, testing, and payment is the responsibility of the Contractor.
- C. Notify the CA at least one week prior to borrow source sample collection so he can be present for sample collection.

### 3.02 ONSITE STOCKPILING OF BACKFILL

- A. Plan for stockpiling and backfilling to minimize handling in accordance with Green Remediation Best Management Practices as well as to minimize onsite stockpile volumes and allow for sufficient stockpile areas.

- B. Pending placement, fill materials may be stockpiled on the Site. Refer to the Contract Drawings for additional details that pertain to protection of stockpiles.
- C. Maintain separate stockpiles for each fill material by type. Do not mix different fill materials, and do not allow fill materials to become impacted by commingling with impacted material or contact water.

### 3.03 STOCKPILING OF CLEAN BACKFILL MATERIALS

- A. Stockpile clean backfill materials as shown on the CA-approved Site Operations Plan.
- B. Stockpile clean backfill materials separately from all other materials. Equipment used for handling impacted materials must be decontaminated prior to handling clean backfill materials in accordance with the Contaminated materials Management and Decontamination Specifications.
- C. Minimize the stockpiling of clean backfill materials to the extent possible. With the approval of the CA, the Work may be sequenced for direct unloading (end-dumping) of clean backfill materials directly into the excavation for placement and compaction using operated equipment.

### 3.04 DEMARCATION BARRIER

- A. Provide a demarcation barrier to separate clean fill materials from underlying native soils.
- B. The orange demarcation layer shall be placed on top of the solidified ISS soils when clean imported soils are placed directly atop the ISS mass. In excavation areas without ISS the demarcation barrier shall be placed on top of the native material prior to placing backfill, including sloped excavation areas.
- C. Orange geotextile will be used as the demarcation layer. Place the demarcation layer in the areas of the Project Limits where mass excavation is performed, and where no prior surface demarcation layer has been placed.
- D. Prepare the surface to receive the demarcation layer by removing debris and mowing vegetation, if present, to within three inches of the ground surface. The ground surface must be smooth and even to receive the demarcation layer. Do not place the demarcation layer until the surface preparation is approved by the CA.
- E. Where valves, pipes, and other structures emerge from the existing ground surface, cut, and place the demarcation layer to accommodate these penetrations so that the edges of the geotextile are no more than one foot away from the penetrations.
- F. Install, overlap, and anchor the demarcation layer per manufacturer recommendations.
- G. Cover the demarcation layer with clean cover material to the lines and grades indicated on the Drawings. Place the clean cover material such that the compacted thickness is no less than 6 inches. Place the clean cover material in a single layer and compact as directed by the CA. Non-vibratory compaction may be required in proximity to active utilities and other equipment.

### 3.05 BACKFILL PLACEMENT AND TESTING

- A. Perform borrow source evaluations for geotechnical and environmental criteria provided herein to ensure that the imported material meets the Project requirements. Submit the results of the borrow source evaluation to the CA at least two weeks prior to import on site.
- B. Place demarcation layer atop native soil.
- C. Backfill the excavation areas to the lines and grades shown on the Drawings. The final grade elevations shown on the Drawings indicate how the Site is to be left at the completion of the Remedy. The Site must not be left with any low spots that accumulate water.
- D. Do not place backfill without the approval of the CA. Placement of backfill prior to CA approval is at the Contractor’s risk and may require removal at the Contractor’s cost. Commence backfill placement and compaction upon approval by the CA that the horizontal and vertical limits of the excavation have been reached. Collect all required measurements for Record Documents prior to backfilling.
- E. Backfill materials and subgrade shall be protected from freezing prior to backfill placement and be free of ice, snow, and frozen globules.
- F. Dewater the excavation as necessary to remove excess water during backfilling operations and to prevent a surface release of groundwater. Ensure that groundwater within the excavation does not overtop the excavation walls during backfill operations. Convey water to the wastewater treatment plant.
- G. Place backfill using a method that does not cross contaminate backfill or disturb/damage adjacent structures and property.
- H. Place and compact fill in maximum 12-inch loose lifts.
- I. Maintain moisture content within +3 to -3 percent of the optimum moisture content to attain required compaction density.
- J. Place and compact the backfill to the percent of the maximum dry density (as determined by Modified Proctor during the borrow source evaluation) indicated in the table below. Do not compact Topsoil. Do not place overlying lifts of backfill until in-place compaction tests indicate that the current layer has been compacted in accordance with this criterion.

<b>Project Area</b>	<b>Percent Compaction (%)</b>	<b>Test Frequency (per lift of material)</b>
Below finished grade in non-landscaped areas.	95	250 sq. ft (max)
Below landscaped areas (do not compact topsoil).	92	250 sq. ft (max)

- K. Contractor must subcontract with a third-party soil testing firm to perform in-place density and water content testing by ASTM D6938 Standard Test Method for In-Place

Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods-Shallow Depth. Record and provide results of compaction testing to Construction Manger on a daily basis. At a minimum records should indicate location, lift elevation at time of test, time of test and day.

- L. When tests indicate Work does not meet specified requirements, provide additional compaction, or remove Work, replace and retest.
- M. The CA reserves the right to reject fill that differs visually from the identified source materials and to request that the Contractor randomly re-test fill materials for conformance with these Technical Specifications. Remove fill that fails to meet the requirements.

### 3.06 GRADING TOLERANCES

- A. Final ground surface: Plus, or minus 0.5 inch from the elevations shown on the Drawings.
- B. The Site must not be left with any low spots that accumulate water.

### 3.07 PROTECTION OF FINISHED WORK

- A. Remove surplus fill materials from the Site.
- B. Protect compacted fill from erosion and other weather damage. Smooth drum roll the top layer of placed fill to shed water at the end of each day and prior to any anticipated precipitation.
- C. Divert or otherwise prevent surface water from entering excavations to the greatest extent practicable without causing damage or flooding to adjacent properties.
- D. Reshape and re-compact fill subjected to vehicular traffic or other disturbance.

END OF SECTION 31 23 23

## SECTION 32 12 00

### ASPHALT PAVING

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. The Work required under this section includes furnishing all labor, materials and equipment, and performing all operations required for the installation of flexible, hot-mix, hot-laid, asphalt concrete pavement (HMA).
- B. Installation of pavement and/or any related structures must be carried out in accordance with Village of Canastota requirements and the State of New York Department of Transportation (NYSDOT) Standard Specifications.
- C. The Work includes
  - 1. Preparation such as saw-cutting, cold milling, cleaning, compaction, and other preparation for installing asphalt concrete pavement.
  - 2. Providing asphalt concrete paving materials.
  - 3. Providing tack coat material.
  - 4. Providing quality controls and testing.
- D. Coordination
  - 1. Review installation procedures under this and other Sections and coordinate the installation of items that must be installed with or before paving.

##### 1.02 GENERAL

- A. Properly surface the full width of all surfaces to be restored.

##### 1.03 SOURCE QUALITY CONTROL

- A. Qualifications
  - 1. Asphalt Concrete Production Facility: Production facility for asphalt concrete, tack coat materials, and other bitumastic materials shall be approved by NYSDOT for furnishing such materials for NYSDOT use.
  - 2. Remediation Contractor's Testing Laboratory: Retain the services of an independent testing laboratory to perform testing and determine compliance with the Contract Documents of the materials provided under this Section. Testing laboratory shall comply with ASTM E329 and shall be experienced in the types of testing required.
- B. Regulatory Requirements
  - 1. Comply with applicable requirements of the NYSDOT Standard Specifications (latest edition) and Standard Sheets.
- C. Testing

1. Test bituminous materials and asphalt concrete mix design for each asphalt concrete material in accordance NYSDOT requirements.
2. To facilitate laboratory testing, Remediation Contractor shall
  - a. Secure and deliver to testing laboratory representative Samples of materials that Contractor proposes to furnish and that are required to be tested.
  - b. Furnish such labor as is necessary to obtain and handle Samples at the Site or at asphalt concrete production facility and other material sources.
  - c. Advise testing laboratory and Construction Administrator (CA) sufficiently in advance of operations to allow for completion of tests and for the assignment of personnel.

#### 1.04 SUBMITTALS

##### A. Mix Design

1. Submit the proposed asphalt concrete mix design for each asphalt concrete material, and other bituminous materials, required under this Section. Provide complete data on materials, including location of the Work, source, material content and percentages, temperatures, and all other pertinent data.
2. Proposed gradation for each aggregate to be used for subbase and in asphalt paving material. Submit gradation test results for the same material furnished on a previous project. Indicate the proportion of reclaimed asphalt pavement.
3. In lieu of the information required above, submit certificates of compliance with the reference specifications, for each for the following.
  - a. Each asphalt concrete mix design required.
  - b. Bituminous materials required.
  - c. Aggregates to be used in asphalt paving, from each material source and each required gradation.
  - d. Density of uncompacted asphalt concrete material.
  - e. Density of previously compacted, previously-tested asphalt concrete material.
  - f. Density and voids analysis for each asphalt concrete material test specimen.
  - g. Evidence of asphalt concrete plant inspection and compliance with the reference specifications.

##### B. Pavement Markings

1. Submit manufacturer cut sheets for all pavement paints proposed for use to the Construction Administrator (CA) for review and acceptance prior to application.

##### C. Informational Submittals

1. Qualifications Statements

- a. Asphalt Concrete Production Facility: Submit name, address, and proof of NYSDOT approval for asphalt concrete production facility.
  - b. Remediation Contractor's Testing laboratory: Submit name and qualifications of testing laboratory to be employed, and qualifications of testing laboratory's personnel that will perform source quality control and field quality control testing required in this Section. If more than one laboratory will be employed, submit qualifications statement for each laboratory.
- D. Quality Control Test Data Submittals
- 1. Submit for quality control tests required.
- E. Delivery Tickets
- 1. Submit copy of delivery ticket for each load of asphalt concrete, tack coat materials, and other materials obtained from asphalt concrete production facility, signed by Remediation Contractor.
- F. Field Quality Control Submittals
- 1. Submit results of required field quality control testing.

## 1.05 SITE CONDITIONS

- A. Environmental Requirements
- 1. Temperature
    - a. Place HMA when the adjacent pavement surface temperature is equal or greater than those specified in NYSDOT Table 402-1.
  - 2. Prohibitions
    - a. Do not place asphalt paving materials when weather is foggy or during precipitation.
    - b. Do not place asphalt paving materials when the base on which the material will be placed contains moisture in excess of optimum.
    - c. Place HMA top course within the seasonal limits provided by NYSDOT.
    - d. Place asphalt paving materials only when CA concurs that weather conditions are suitable.

## PART 2 MATERIALS

### 2.01 ASPHALT CONCRETE MIXES

- A. Asphalt Concrete Mixtures: Provide the following materials designed and manufactured in accordance with the NYSDOT Standard Specifications
- 1. Binder Course: NYSDOT 25 F9 Binder Course HMA, 80 Series Compaction.
  - 2. Surface Course: NYSDOT 12.5 F2 Top Course HMA, 80 Series Compaction.

## 2.02 BITUMINOUS MATERIALS

- A. Bituminous Materials for Asphalt Concrete
  - 1. Bituminous materials for asphalt concrete shall comply with the NYSDOT Standard Specifications.
- B. Tack Coat
  - 1. Tack coat shall be emulsified asphalt that conforms to the requirements of NYSDOT Section 702.

## 2.03 AGGREGATES IN ASPHALT PAVEMENTS

- A. Aggregates for Asphalt Concrete
  - 1. Aggregate materials used in asphalt pavement shall be in accordance with the NYSDOT Standard Specifications for the required mixes.

## 2.04 PAVEMENT MARKING PAINT

- A. Not Required.

## PART 3 EXECUTION

### 3.01 GENERAL

- A. Perform the work consisting of pavement courses composed of mineral aggregate and asphalt material heated and mixed in a central mixing plant and placed on a prepared course. HMA designed and constructed in accordance with this section shall conform to the lines, grades, thicknesses, and typical cross sections indicated. Construct each course to the depth, section, or elevation required by the drawings and roll, finish, and approve it before the placement of the next course.
  - 1. Subbase Course: Place and compact subbase material in accordance with the Contract Documents.
  - 2. Asphalt Pavement Courses: Provide the following minimum thicknesses to match the existing pavement section.
    - a. Binder Course: 4.0 inches compacted thickness.
    - b. Surface Course: 2.0 inches compacted thickness.

### 3.02 INSPECTION

- A. Provide final pavement surfaces of uniform texture, at required grades and cross-sections.
- B. Construct paved surfaces to the lines, grades, and typical sections shown or indicated. If grading is not provided, match existing lines and grades.
- C. Examine the subgrade, subbase, and base on which asphalt paving will be installed and notify CA in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.
- D. Do not place materials on subgrades or subbase that is muddy or has water thereon.

### 3.03 PREPARATION

- A. Before starting installation of asphalt paving, perform the following.
  - 1. Grade Control: Establish and maintain throughout asphalt paving installation the required lines and grades, including crown and cross-slope for each asphalt concrete course during construction operations.
  - 2. Subgrade: The subgrade shall be shaped to line and grade and compacted in accordance with the Contract Documents.

### 3.04 TRANSPORTING AND PLACING

- A. Transporting
  - 1. Asphalt concrete mixture shall be transported to the area of paving and placed as soon as possible after mixing.
  - 2. Transport the hot-mix asphalt from the mixing plant to the Site in clean, tight vehicles. Schedule deliveries so that placing and compacting of mixture is uniform with minimum stopping and starting of the paver.
  - 3. Provide adequate artificial lighting for night placements. Hauling over freshly placed material will not be permitted until the material has been compacted as specified, and allowed to cool to 60 degrees C 140 degrees F. To deliver mix to the paver, use a material transfer vehicle operated to produce continuous forward motion of the paver.
- B. Placing
  - 1. Place and compact the mix at a temperature suitable for obtaining density, surface smoothness, and other specified requirements. Upon arrival, place the mixture to the full width by an asphalt paver; it shall be struck off in a uniform layer of such depth that, when the work is completed, it will have the required thickness and conform to the grade and contour indicated. Regulate the speed of the paver to eliminate pulling and tearing of the asphalt mat.
  - 2. On isolated areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the mixture may be spread and luted by hand tools.
  - 3. Placement of each asphalt concrete course shall be completed over the full width of the section under construction during each day's paving operations.
  - 4. Spread and finish asphalt concrete courses by means of self-propelled mechanical spreading and finishing equipment. Compacted thickness of layers placed shall not exceed 150 percent of specified thickness unless approved in writing by CA.
  - 5. When more than one width of asphalt concrete material will be placed, a six-inch wide strip of asphalt concrete adjacent to the area on which the future material is to be placed shall not be rolled until such future material is placed.
    - a. Do not leave the unrolled strip unrolled for more than two hours after placement unless the six-inch unrolled strip is first heated with a joint heater.

- b. After the first strip or width of asphalt concrete is compacted, place, finish, and compact the second width or strip as required for the first width, except that rolling shall be extended to include the six-inch strip of the first width not previously compacted.

### 3.05 JOINTS

#### A. Pavement Patching/Repair

1. When pavement is to join previously laid pavement or concrete, the existing or previously-laid pavement shall be neatly and carefully edged to allow for overlapping and feathering of the subsequent course of asphalt concrete material.
2. Where new pavement is to meet existing pavement, the existing pavement shall be saw-cut and notched.
3. Where new pavement will meet existing asphalt pavement, remove existing pavement 12 inches onto undisturbed existing pavement course at edges where new pavement will meet existing pavement.

#### B. Tack Coat

1. Provide tack coat material at the following locations.
  - a. At edges where new pavement will connect to existing or previously-installed pavement.
  - b. On surface of existing or previously-installed pavement course over which new pavement will be installed, prior to placement of the subsequent pavement course. Tack coat may be deleted when a succeeding layer of asphalt pavement is being applied over a freshly-placed asphalt pavement course that has been subjected to very little or no traffic, with approval of CA.
  - c. Where new pavement will abut curbing, concrete gutters, drainage structures and frames, manhole cover frames, valve boxes, and similar items.
2. Install tack coat immediately prior to installing pavement. Place pavement while tack coat is wet. Apply tack coat in accordance with NYSDOT standard specifications.

#### C. Construction Joints

1. Construction joints shall be made in such a manner as to ensure a neat junction, thorough compaction, and bond throughout.
2. Provide a transverse joint extending over the full width of the strip being laid and at right angles to its centerline at the end of each workday and at other times when the placement of hot-mix asphalt concrete will be suspended for a period of time that will allow asphalt concrete mixture to chill.
3. Thoroughly compact by rolling the forward end of a freshly laid strip of asphalt concrete before the asphalt concrete mixture becomes chilled. When the Work is resumed, the end shall be cut vertically for the full depth of the layer.

- D. Transverse Joints
  - 1. Use of transverse joints are not permitted.

### 3.06 COMPACTION

- A. After placing, the mixture shall be thoroughly and uniformly compacted by rolling. Compact the surface as soon as possible without causing displacement, cracking, or shoving. The sequence of rolling operations and the type of rollers used shall be at the discretion of the Contractor. The speed of the roller shall, at all times, be sufficiently slow to avoid displacement of the hot mixture and be effective in compaction.
- B. Any displacement occurring as a result of reversing the direction of the roller, or from any other cause, shall be corrected at once. Furnish sufficient rollers to handle the output of the plant. Continue rolling until the surface is of uniform texture, true to grade and cross section, and the required field density is obtained. To prevent adhesion of the mixture to the roller, keep the wheels properly moistened but excessive water will not be permitted.
- C. In areas not accessible to the roller, the mixture shall be thoroughly compacted with hand tampers.
- D. Any mixture that becomes loose and broken, mixed with dirt, contains check-cracking, or is in any way defective shall be removed full depth, replaced with fresh hot mixture, and immediately compacted to conform to the surrounding area. This work shall be done at the Contractor's expense. Skin patching will not be allowed.
- E. Rollers
  - 1. During rolling operations, roller speed shall not exceed three miles per hour. When sufficient number of rollers is not available, reduce the quantity of asphalt concrete placed to accommodate the available rollers' speed.
  - 2. Required rollers shall be in acceptable operating condition, prior to placing of asphalt concrete.
  - 3. Use of vibratory rollers in lieu of steel-wheeled rollers is acceptable, however, when thickness of asphalt concrete is one inch or less, rolling shall be in the static mode.
  - 4. Rolling of initially-placed asphalt concrete material, or breakdown rolling, shall begin as soon as the asphalt concrete mixture will bear the roller without undue displacement.
  - 5. Rolling shall be longitudinal, overlapping on successive trips by not less than one-half roller rear wheel width, and not more than three-quarters of roller rear wheel width. Alternate trips of the roller shall be of slightly different lengths.
  - 6. At all times, roller motion shall be slow enough to avoid displacing the asphalt concrete.
  - 7. Operate rollers continuously from breakdown of laid asphalt concrete through finish rolling.

8. Perform finish rolling using a steel-wheeled roller or a vibratory steel-wheel roller operating in the static mode.
  9. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.
  10. At each location not accessible to roller, thoroughly compact asphalt concrete with tampers and finish, where necessary, with a hot smoothing iron to provide uniform, smooth layer over the entire area so compacted.
- F. Each compacted asphalt concrete course shall be within plus-or-minus 1/4 inch of the indicated thickness. Total thickness of asphalt pavement shall be within plus-or-minus 1/2 inch of the indicated thickness.
- G. Curing
1. Do not allow traffic onto pavement until directed by CA. Traffic will not be allowed on new asphalt concrete pavement until surface temperature is less than 140 degrees F.
  2. Hold construction traffic on new pavement to a minimum as acceptable to CA.
- H. Defective Pavement Work
1. When directed by CA, remove, and replace defective asphalt paving Work. Cut out such areas of defective pavement and fill with fresh asphalt concrete materials, compacted to required density.

### 3.07 FIELD QUALITY CONTROL

- A. On-Site Material Testing
1. Employ a testing laboratory to perform field quality control testing. Submit certified reports of all test results to Contractor and Construction Administrator (CA) within 24 hours of testing.
    - a. Measure temperature at time of placement.
    - b. Perform field density tests to verify that required compaction of asphalt materials has been obtained.
    - c. Test the proposed materials for compliance with the Contract Documents.
  2. Density
    - a. Asphalt: Test in accordance with ASTM D2950/D2950M. Test one sample every 1,000 square feet of pavement. Test for each asphalt concrete course installed.
    - b. Subbase: Test in accordance with ASTM D6938/D6938M. Test one sample every 1,000 square feet of pavement. Test for each lift of sub-base course installed.
    - c. In addition, when directed by CA, compare density of in-place asphalt paving materials against laboratory specimen or certificates on same asphalt pavement mixture, using nuclear density device.

- d. Criteria for Acceptance: Density of in-place asphalt pavement material shall be not less than 90 percent of the recorded laboratory specimen or certificate density. Density shall be not greater than 98 percent.
  - 3. Asphalt Concrete Pavement Thickness Depth check readings shall be taken for each course of compacted pavement at a frequency of one reading from every 1,000 square feet of compacted pavement. Comply with thickness tolerance specified in Article 3.03 of this Section.
  - 4. Repair holes from test specimens in accordance with this Section's requirements for repairing defective Work.
- B. Surface Smoothness
  - 1. Test finished surface of each asphalt paving course for smoothness, using a 10-foot straightedge applied parallel to and at right angles to centerline of paved areas.
  - 2. Check surfaced areas at intervals as directed by CA.
  - 3. Surfaces will be acceptable relative to smoothness when measurements are equal to or less than the following.
    - a. Binder Course: 3/8 inch vertical in 10 feet horizontal.
    - b. Top Course: 1/4 inch vertical in 10 feet horizontal.
  - 4. Elevation of finished surface of pavement shall be within plus-or-minus 1/2 inch of elevations shown or indicated.

### 3.08 CLEANING

- A. After completing paving operations, clean surfaces of excess or spilled bituminous materials, excess asphalt concrete, and foreign matter.

### 3.09 PROTECTION

- A. Protect finished pavement until pavement has become properly hardened and cool.
  - 1. Cover openings of drainage structures, manholes, valve boxes, and similar items in the paved area until permanent coverings are provided.

### 3.10 RESTORATION OF PAVED SURFACES

- A. Surface the paved surfaces that were removed to accommodate the excavation Work performed during the Remedial Action (RA), as shown on the Contract Drawings.
- B. Complete all restorations in accordance with the Village of Canastota requirements, where applicable.

### 3.11 APPLICATION OF PAVEMENT MARKINGS

- A. Not Required.

END OF SECTION 32 12 00

## SECTION 32 90 00

### RESTORATION AND PLANTING

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. The Work required under this section includes furnishing all labor, equipment, supplies, and materials, and performing all operations required for establishing satisfactory vegetative coverage as shown on the Design Drawings.

##### 1.02 GENERAL

- A. Perform planning in accordance with standard local practice and all applicable regulations.

##### 1.03 WORK INCLUDES

- A. Performing final grading, removing debris, rock, and unsuitable material, placing topsoil, fertilizing, seeding and mulching all areas disturbed by the Work not designated to be restored to an asphalt or gravel surface per the Contract Documents.
- B. Restoring the Contractor staging and stockpile areas to their original condition or better.
- C. Restoring all other disturbed areas to their original condition or better.
- D. Providing erosion control such as erosion control blankets for any areas prone to erosion.
- E. Maintaining moisture levels that promote germination and establishment until the grass has reached a uniform height of at least 3 inches and is adequately established as determined by the Construction Administrator (CA) in writing.

##### 1.04 SUBMITTALS

- A. Seed Samples and Data showing the seed mix composition, % pure seed, guarantee of % germination, and name of manufacturer.
- B. Manufacturer's Product Data for mulch and fertilizer.
- C. Information about placement methodology and timeline for seeding, mulching, fertilizing, and watering.

##### 1.05 PLANTING/SEEDING CONDITIONS

- A. The restoration area shall be graded as shown on the plans and details, unless otherwise pre-approved by the CA.
- B. Do not seed in frozen ground or when soil is in an unsatisfactory condition, as determined by the CA.
- C. Coordinate the seeding schedule with the CA.
- D. Proceed with seeding only when existing and forecasted weather conditions permit.

## 1.06 WARRANTY

- A. A 1-year warranty period for seeded grass areas will commence from the date at which the initial grass seeding is accepted by the CA.

## PART 2 PRODUCTS

### 2.01 GRASS SEEDS

- A. Grass seed shall be of a variety native to the local area to increase the rate of survival and minimize the need for irrigation. Choose plant species that require little to no mowing. Follow EPA Green Remediation Best Management Practices in selection of grass species.
- B. Grass seeds shall be delivered to the site in bags or containers that are unopened and clearly labeled to show the name and address of the supplier, the seed name, lot number, net weight of seed, the percentage of weed seed, the guaranteed percent purity, and the guaranteed percent germination in accordance with U.S. Department of Agriculture Rules and Regulations under Federal Seed Act in effect on the date of bidding.
- C. All seed furnished shall be free from noxious seeds such as Russian or Canadian thistle, European bindweed, Johnson grass, and leafy spurge. Seed which has become set, moldy, or otherwise damaged in transit or storage will not be accepted.

### 2.02 WATER

- A. Water free of wastewater effluent or other hazardous chemicals.
- B. Moisture retention additive, if utilized, shall be meet the requirements of Section 713 of the NYSDOT Standard Specifications.

### 2.03 TOPSOIL

- A. Clean salvaged or imported material consisting of loam, sandy loam, silt loam, silty clay loam, or clay loam humus-bearing soils.
- B. Material shall be free of rocks, gravel, wood, debris, invasive species and of noxious weeds and their seeds and capable of passing the 1" sieve.
- C. Topsoil material shall meet the requirements of Section 713 of the NYSDOT Standard Specifications.
- D. Refer to Section 31 23 23 for additional requirements.

### 2.04 FERTILIZER

- A. Fertilizer shall be in accordance with Section 713 of the NYSDOT Standard Specifications.
- B. Use a commercial granular fertilizer that is consistent with the grass seeds used.
- C. All fertilizers shall be delivered fully labeled according to applicable regulations, bearing name, trade name or trademark of producer, along with producer's warranty.

## 2.05 MULCH

- A. Mulch shall be certified weed free hay or straw mulch in accordance with Section 713 of the NYSDOT Standard Specifications.

## 2.06 EROSION CONTROL MATTING

- A. Rolled erosion control products shall be NYDOT Standard Specifications Class I or Class II.
- B. Soil Stabilizers, if used, shall be in accordance with NYSDOT Standard Specifications Section 713.

## PART 3 EXECUTION

### 3.01 PROTECTION

- A. Areas outside the limits of site disturbance shall be protected from damage by the Contractor. Any disturbance of vegetation or native ground outside of the limits of work shown on the Contract Drawings shall be restored by the Contractor at no additional expense to National Grid.

### 3.02 PREPARATION

- A. All areas to be restored shall receive topsoil, grass seeds, fertilizer, and mulch.
- B. Prior to restoring disturbed areas, remove all equipment, debris, construction materials, office facilities, temporary fences or gates, and all other properties in accordance with the Contract Documents from the area to be restored.
- C. Remove all rocks, debris, and litter that will prevent compliance with topsoil and seeding specifications.
- D. Final grade all disturbed areas with a smooth blade grader, bulldozer, or other approved equipment, to the lines and grades shown on the Contract Drawings, or as directed by the CA.
- E. Final grade shall be within 2" of subgrade elevations.
- F. Till or disc the subsoil to a depth of 2"- 4" to allow aeration.

### 3.03 PLACING TOPSOIL

- A. Place topsoil at the areas requiring restoration to achieve final grades indicated on the Drawings, allowing for settlement.
- B. Place topsoil to the depth shown on the Contract Drawings. If no depth is shown, provide a minimum of 12" of topsoil.
- C. Do not apply topsoil to saturated, snow covered or frozen subgrades.

## 3.04 PLACING SEED, FERTILIZER AND MULCH

- A. Seeding shall be completed between April 1-June 15 and September 1-October 15, or as approved by the CA. In between these dates, a cover crop may be used, until the appropriate time to seed specified mix.
- B. Seeding shall not occur in extremely windy conditions, when the soil is frozen or wet or when the temperatures is lower, or forecasted to be lower, than 32 degrees Fahrenheit prior to becoming fully established per the Contract Documents.
- C. Seed shall be drilled with a drill that is capable of placing the specified seed at the specified rate, at a ½-inch to ¾-inch depth. The drill should have an 8-inch or less drill row spacing and be equipped with packer wheels to firm the soil over the drill row.
- D. Areas that cannot be drilled may be broadcast seeded. The specified seeding rate in these areas shall be as specified for the specific planting zone. Broadcast seed shall be raked, harrowed, or otherwise covered by soil to a depth of ½-inch to ¾-inch.
- E. Apply fertilizer at a rate recommended by the seed supplier.
- F. Apply mulch and/or erosion mat at locations susceptible to erosion, as directed by the CA.
- G. Seeded areas shall be moist before seeding and shall be kept at a moisture level to promote germination and growth as specified in the Contract Documents.

END OF SECTION 32 90 00

## SECTION 33 30 00

### SANITARY SEWER, MANHOLES, AND FORCE MAIN

#### PART 4 GENERAL

##### 4.01 WORK INCLUDED

- A. Valves, fittings, and accessories.
- B. Sanitary sewers and connections to existing sanitary sewers.
- C. Manhole structures and connections to existing sanitary sewer manholes.
- D. Force main piping, underground marking tape, and connections to existing sanitary sewer force main.

##### 4.02 REFERENCES

- A. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-flow Applications.
- B. ASTM C478 - Precast Reinforced Concrete Manhole Sections.
- C. ANSI/ASTM D3034 - Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- D. ASTM D5926-04 – Standard Specification for Poly (Vinyl Chloride) (PVC) Gaskets for Drain, Waste, and Vent (DWV), Sewer, Sanitary, and Storm Plumbing Systems.

##### 4.03 SUBMITTALS

- A. Submit product data on pipes, joints, valves, fittings, pipe accessories, manholes, and appurtenances to Construction Administrator (CA).
- B. Submit in accordance with Section 01 33 00.

##### 4.04 PROJECT RECORD DOCUMENTS

- A. Accurately record location of pipe runs, connections, manholes, cleanouts, and invert elevations.
- B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

##### 4.05 MEASUREMENT AND PAYMENT

- A. Measurement and payment shall be in accordance with Section 01 20 00.

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**PART 5 PRODUCTS****5.01 PIPE MATERIALS**

- A. Sanitary Sewer Main: PVC sanitary sewer main pipe shall be SDR 35 per ASTM 3034 for the sizes indicated on the Drawings.

**5.02 JOINTS FOR PVC PIPE**

- A. Joints for PVC sanitary sewer main, laterals, and fittings shall be suitable for force main application.

**5.03 PIPE ACCESSORIES**

- A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required wyes, bends, elbows, reducers, traps, and other configurations required.
- B. Valves and miscellaneous accessories: Manufacturer and model shall be as indicated on the Drawings or an approved equal with end design to connect to piping as shown.

**5.04 DETECTABLE WARNING TAPE**

- A. Detectable warning tape shall be 5 mils thick and feature a print style which cannot be scraped off or erased.
- B. Detectable warning tape shall be six (6) inches in width and shall read: "CAUTION – SANITARY FORCE MAIN BURIED BELOW" and green in color.
- C. Detectable warning tape shall be woven reinforced for non-stretch, non-distorting, high-strength for plowing requirements.
- D. Manufacturers:
  - 1. Reef Industries, Terra Tape, Sentry Line Reinforced Detectable, or CA Approved Equal.

**5.05 MANHOLES**

- A. Base, riser section and flat top shall be constructed in accordance with ASTM C478.
- B. Joints shall meet ASTM C443 and be watertight.
- C. Connections between manhole structure and pipes shall meet ASTM C923.
- D. Manhole Steps:
  - 1. Provide plastic coated steel or cast iron steps with 16" spacing. EJIW 8512, M.A. Industries PS-1-PF or Neenah R-1881-J or equal.
  - 2. Top step to be a minimum of 18" below top of casting in order to enable clear access through cover.

**5.06 EXAMINATION**

- A. Verify that excavation base is ready to receive Work, and excavations, dimensions, and elevations are adequate to perform the Work.

## 5.07 PREPARATION

- A. Hand trim excavations to required elevations. Correct over excavation with material as specified.
- B. Remove large stones or other hard matter which could damage drainage pipe or impede consistent backfilling or compaction.

## 5.08 DEWATERING SYSTEM AND BYPASS PUMPING

- A. The Contractor shall determine prior to bid the extent of dewatering required. Contractor should familiarize himself/herself with existing soil conditions and evaluate the extent of dewatering required to lower the ground water table in the area of excavation by pumping in order to provide dry laying conditions for the pipe, and also to prevent cave-ins and unnecessarily large excavations.
- B. The Contractor shall have available adequate equipment to perform the work of dewatering necessary for the timely and safe progress of the work.
- C. The Contractor shall have available bypass pumping equipment, labor, and materials to perform the work of bypass pumping for the interrupted flow of sewage in the sewer main during construction of new sewer.
- D. Equipment used for dewatering and bypass pumping shall be of a size and type adequate to perform the job and shall be operated in such a manner as to create as little nuisance to the public as possible. In particular on operations which require continuous pumping over prolonged periods of time, contractor should do everything reasonably possible to reduce noise from pumps, generators, and other equipment
- E. The Contractor shall monitor his/her dewatering operation at all times to ensure that the method used does not undermine pipe bedding, place nearby utility in jeopardy, allow groundwater to enter sanitary sewer pipe, or cause subsidence or damage to adjacent properties.
- F. Contractor shall, on his own accord, conduct field investigations as deemed necessary to satisfy himself/herself so as to the extent of dewatering and bypass pumping required to satisfactorily conduct the work as per Drawings, Specifications and as directed by the CA.

## 5.09 PVC SANITARY SEWER FORCE MAIN

- A. Install pipe, fittings, and accessories in accordance with the Contract Documents and the manufacturer's specifications and instruction.
- B. Bedding, covering and backfilling the pipe shall be done in accordance with the Contract documents.
- C. Compaction of each successive lift shall refer to the Specifications for compaction requirements. Do not displace or damage pipe when compacting.
- D. Connect to existing sanitary sewers and manholes, including all fittings, as shown on the Drawings and as specified herein.

- E. Pipe shall be laid at the grade indicated on the Drawings. Invert elevations at each manhole shall be field verified and where deviations from plan elevations are encountered, CA shall be notified immediately.
- F. Force Main piping shall be installed level or with a continuous upward slope towards the discharge point.
- G. Pressure Testing:
  - 1. Pipe shall be capped and filled with water, taking care to bleed off any trapped air. It shall then be subjected to a hydrostatic pressure of 1.5 times the anticipated working pressure in the finished force main. The force main section shall be pressure tested prior to backfilling unless otherwise directed by the CA.
  - 2. The test procedure consists of two (2) steps: The initial expansion and the test phases. To compensate for initial expansion of the pipe under the test, sufficient make-up water shall be added to the system at hourly intervals for three (3) hours to return to the test pressure. After completion of the first phase, the actual test shall begin.
  - 3. The test phase shall not exceed three (3) hours. After this testing period, a measured amount of make-up water shall be added to return to the test pressure. The amount of make-up water shall not exceed the allowance given in the following Table. Alternatively, testing for leakage can be done by maintaining the test pressure over a period of four (4) hours, and then dropping the pressure by 10 %. If the pressure remains steady (within 5% of the target value) for an hour, no leakage in the system is indicated.

Nominal Pipe Size (inches)	Make-Up Water Allowance (U.S. Gallons per 100 Feet of Pipe)		
	1 Hour Test	2 Hour Test	3 Hour Test
3	0.10	0.15	0.25
4	0.13	0.25	0.40
6	0.30	0.60	0.90
8	0.50	1.0	1.5
10	0.75	1.3	2.1
12	1.1	2.3	3.4

- 4. Method of testing and measurement shall be observed and accepted by the CA.
- 5. If a sewer fails to pass any of the previously described tests, the Contractor shall determine the location of the leaks, excavate, repair them, and retest the sewer. The tests shall be repeated until satisfactory results are obtained.

## 5.10 MANHOLES

- A. Form bottom of excavation clean, compacted and smooth to correct elevation.
- B. Install backfill in lifts and compact per the Specifications.
- C. Precast concrete units shall be constructed and installed in accordance with ASTM C478 and the details shown on the Drawings.

- D. Establish elevations and pipe inverts for inlets and outlets as required to complete the Work.
- E. Cast lid and frame level in flat top covers and set to height or elevation indicated on the Drawings. If no rim elevation is provided, lid and frame shall be installed level and flush with surrounding grade upon completion of final site restoration.
- F. Use adjusting rings as required, but no more than 4, to obtain proper rim elevations.
- G. Mortar joints of adjusting rings, plaster outside and strike inside clean.

#### 5.11 PVC SANITARY SEWER LATERALS

(Not Applicable)

#### 5.12 DETECTABLE WARNING TAPE

- A. Detectable warning tape shall be installed centered directly above the force main pipe and as shown in the Drawings.

#### 5.13 INSPECTION AND ACCEPTANCE TESTING FOR PVC SANITARY SEWER MAIN

- A. The Contractor shall perform testing, post construction televising and report, and infiltration or exfiltration (if required by CA) for each PVC sewer installed on the project in the presence of the CA. If the Contractor performs any of the inspection and acceptance in the absence of the CA, the Contractor shall be required to repeat the testing in the presence of the CA at no extra cost to the GEI or National Grid.
- B. The Contractor shall supply the qualified personnel and all equipment and materials necessary to perform the testing as described. Post construction televising shall be considered incidental and shall be included in the Contract Unit Price for the Sanitary Sewer Force Main Realignment.
- C. The Contractor shall complete inspection and acceptance testing prior to final surface restoration but after backfilling and ground water has returned to its normal level (when dewatering systems are used).
- D. Within five (5) working days following pipe-laying and backfilling of each manhole to manhole section, the Contractor shall complete all testing. Should the workmanship employed or pipe material selected fail to meet the test requirements, the Contractor shall utilize different techniques to achieve the desired results.
- E. Any defects found during the inspection and acceptance testing shall be promptly repaired by the Contractor as no additional cost to GEI or National Grid.
- F. Post Construction Televising and Report:
  - 1. After completion of installation of gravity sanitary sewer mains and manholes, Contractor to submit post construction televising inspection on 100% of new sewer mains in-place. The inspection report should include a digital color video recording, which should include date of televising, running footage (in tenths) explaining the location and manhole identification, and note any observed deficiencies.

2. CA and Contractor shall both be present to observe the televising. If the CA determines that at a certain location spot, the quality of work is not as per Drawings and Specifications and is not acceptable, Contractor shall immediately repair and restore the location to the satisfaction of the CA, at no extra cost to GEI or National Grid.
  3. Upon completion of the post construction televising, the Contractor shall submit to CA a written report and video recording for all sanitary sewer main televised.
  4. All sewer cleanout residue shall be removed and disposed in accordance with all rules, laws, and regulations.
- G. Where structural failures of the pipe have occurred, the broken pipe sections shall be excavated, removed, and reconstructed. The Contractor shall not be permitted to use “Fernco” connectors for repair of mainline pipe sections. The Contractor shall remove the defective section of sewer pipe and relay all sections of sewer pipe from the defective section to the nearest manhole structure otherwise approved by the CA in writing.
- 5.14 SYSTEM TESTING AND STARTUP
- A. In the presence of the CA, the Contractor shall fill the force main with clean water, bleeding all air from the force main. Following satisfactory completion of all testing, and with the CA’s approval, the Contractor shall put the system into operation.
- 5.15 PROTECTION
- A. Protect pipe from damage or displacement until backfilling operation and site remediation is complete.
- 5.16 INSULATION  
(Not Applicable)

END OF SECTION 33 30 00