

April 9, 2015

Ms. Sarah Saucier, PE
New York State Department of Environmental Conservation
Division of Environmental Remediation, Remedial Bureau C
625 Broadway, 11th Floor
Albany, New York 12233-7014

Re: Final (100%) Remedial Design for the Phase 1 Remedial Action
Ilion (East Street) Former Manufactured Gas Plant Site
Village of Ilion, Herkimer County, New York
Site No. 6-22-019

Dear Ms. Saucier:

Enclosed is the Final (100%) Remedial Design (RD) for the upcoming Phase 1 Remedial Action at the former manufactured gas plant site generally located at 1 East Street in the Village of Ilion, Herkimer County, New York. As previously discussed with NYSDEC, National Grid is currently in the process of selecting a remediation contractor, and anticipates initiating the Phase 1 Remedial Action in late spring/early summer 2015.

National Grid appreciates NYSDEC's and NYSDOH's efforts to facilitate the RD and advance this project to remediation. Please feel free to contact me by phone at (315) 428-5652 or by e-mail at steven.stucker@nationalgrid.com if you have any questions.

Sincerely,



Steven P. Stucker
Project Manager

Enclosure

cc: Amen Omorogbe, PE, NYSDEC
Deanna Ripstein, NYSDOH
Ian Ushe, NYSDOH
Terry Young, PE, ARCADIS
Michael Benoit, PE, ARCADIS
Stephen Myers, de maximis
Adrian Bilger, de maximis



Final (100%) Remedial Design for the Phase 1 Remedial Action

Ilion (East Street) Former Manufactured Gas Plant Site
Village of Ilion, Herkimer County, New York
Site No. 6-22-019

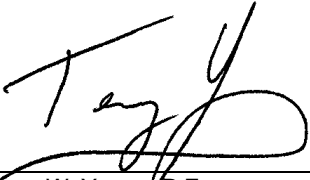
April 2015

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I, Terry W. Young, certify that I am currently a New York State registered Professional Engineer and that this design was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.




Terry W. Young, P.E.
Principal Engineer

April 9, 2015
Date

**Final (100%) Remedial Design
for the Phase 1 Remedial
Action**

Ilion (East Street) Former
Manufactured Gas Plant Site
Village of Ilion, Herkimer County,
New York
Site No. 6-22-019

Owner:
National Grid USA Service Company, Inc.
300 Erie Boulevard West
Syracuse, New York 13202

Engineer:
ARCADIS of New York, Inc.
6723 Towpath Road
PO Box 66
Syracuse, New York 13214-0066

Our Ref.:
B0036713

Date Issued:
April 2015

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Division 01

General Requirements

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SECTION 01 11 00
SUMMARY OF WORK

PART 1 – GENERAL

1.01 LOCATION AND DESCRIPTION OF WORK

- A. The Work is located at the site of a former manufactured gas plant (MGP) at 1 East Street in the Village of Ilion, Herkimer County, New York.
- B. The Work to be performed under this Contract includes, but is not limited to, the following:
 - 1. Site clearing and preparation.
 - 2. Pre-demolition abatement of Asbestos-containing materials and loose lead-containing paint and debris located within or upon a one-story block building (the former gas regulator house).
 - 3. Demolition of the former gas regulator house and certain surface structures and facilities.
 - 4. Excavation of approximately 5,850 in-situ cubic yards of MGP-impacted material to depths ranging from approximately one to 13 feet below existing grade.
 - 5. Demolition of former building foundations, Underground Facilities, and former MGP structures located within the excavation limits.
 - 6. Installation of approximately 335 linear feet of 24-inch diameter high-density polyethylene gravity storm sewer pipe and two precast concrete manholes by open-cut method.
 - 7. Abandonment of approximately 325 linear feet of existing 24-inch diameter gravity vitrified clay and concrete storm sewer pipe by filling and capping in place.
 - 8. Removal of demolition, excavation, and construction waste from the Site and disposal at appropriate, Owner-approved facilities in accordance with Laws and Regulations.
 - 9. Removal of construction wastewater from the Site and disposal at appropriate, Owner-approved facilities in accordance with Laws and Regulations.
 - 10. Backfilling excavation areas.
 - 11. Installation of a permeable two-foot thick soil cover across the Site.
 - 12. Site restoration, including the planting of new trees and lawns and the installation of new chain-link fencing and gates.
- C. Contracting Method: Work shall be performed under one prime contract.
- D. Contaminants: Work related to Asbestos, lead-containing paint and debris, Manufactured Gas Plant Waste, and other Site-related Contaminants, described in reports referenced in the Supplementary Conditions, is included in the Work.

1.02 CONTRACTOR'S USE OF SITE

- A. Use of Premises:
 - 1. Confine construction operations to the work areas shown or indicated on the Drawings. Do not disturb portions of the Site beyond areas of the Work.
 - 2. Confine storage of materials and equipment, and locations of temporary facilities to the areas shown. Move stored products that interfere with operations of Owner, other contractors, and others performing work for Owner.
 - 3. Authorities having jurisdiction at the Site and others performing work for Owner shall, for all purposes that may be required by their contracts, have access to the Site and the premises used by Contractor, and Contractor shall provide safe and proper access.

- B. Access to Site, Access Roads, and Parking Areas: Comply with Section 01 55 13 (Temporary Access Roads and Parking Areas).
- C. Promptly repair damage to premises caused by construction operations. Upon completion of the Work, restore premises to specified condition. If condition is not specified, restore to pre-construction condition.

1.03 EASEMENTS AND RIGHTS-OF-WAY

- A. Easements and rights-of-way will be provided by Owner in accordance with the General Conditions. Confine construction operations within Owner's property, public rights-of-way, easements obtained by Owner, and the limits shown. Use care in placing construction tools, equipment, excavated materials, and materials and equipment to be incorporated into the Work to avoid damaging property and interfering with traffic. Do not enter private property outside the construction limits without permission from the owner of the property.
- B. On Private Property: Limits of Contractor's operations on private property are shown on the Drawings.
- C. Within Highway Rights-of-Way: All Work performed and all operations of Contractor within the limits of highway rights-of-way shall conform to requirements of highway owner and applicable work permits, or authority having jurisdiction over right-of-way. Comply with Section 01 14 33 (Work in Highway Rights-of-Way).

1.04 NOTICES TO OWNERS AND AUTHORITIES OF PROPERTIES ADJACENT TO THE WORK

- A. Notify Owner and Construction Manager when prosecution of the Work may affect adjacent properties or use of adjacent properties. Owner will notify adjacent property owners; do not contact adjacent property owners directly unless authorized by Owner to do so.
- B. When it is necessary to temporarily obstruct access to property, or when utility service connection will be interrupted, provide notices sufficiently in advance to enable affected persons to provide for their needs. Conform notices to Laws and Regulations and, whether delivered orally or in writing, include appropriate information concerning the interruption and instructions on how to limit inconvenience caused thereby.
- C. Notify utility owners and other concerned entities at least two working days, but not more than 10 working days, prior to cutting or closing streets or other traffic areas or excavating near Underground Facilities or exposed utilities.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 14 33

WORK IN HIGHWAY RIGHTS-OF-WAY

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall obtain necessary permits, arrange inspections required by the highway owner, and pay all fees for the Work in the associated highway right-of-way.
2. Comply with applicable rules and regulations of highway owner.
3. Highway owners having jurisdiction over the Work include:
 - a. Village of Ilion, Department of Public Works:
 - 1) East Street: Maintain one lane of traffic in each direction during the Work. Close sidewalk to pedestrian traffic on west side of street, from East Clark Street to State Street, for duration of the Project.
 - 2) State Street: Maintain one lane of traffic in each direction during the Work.
 - 3) East Clark Street: Maintain one lane of traffic in each direction during the Work.

B. Related Sections:

1. Section 01 55 26, Maintenance and Protection of Traffic.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 PREPARATION AND PROTECTION

- A. Contractor shall implement means necessary to prevent accidents caused or influenced by the Work. Provide flagmen, temporary barricades, lights, signs, and other precautions to provide safe conditions during the Work. Comply with Section 01 55 26.

3.02 INSTALLATION

- A. Work shall be located as shown on the Drawings. Install materials, equipment, piping, and appurtenances required for crossings of existing Underground Facilities and above-ground utilities and structures. Furnish and maintain at the Site a supply of pipe fittings, adapters, and short lengths of pipe to expedite utility crossings required.
- B. Pavement: When fill is stabilized in accordance with requirements of highway owner and the Contract Documents, replace highway subbase material and pavement with pavement of similar type and equal thickness to the pavement in place prior to start of the Work. Pavement shall comply with requirements of highway owner and the Contract Documents.

END OF SECTION

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SECTION 01 15 00

CONTRACTOR'S PROJECT OPERATIONS PLAN

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall prepare and submit a Project Operations Plan (POP) in accordance with this Section.
2. POP shall clearly describe Contractor's proposed means, methods, and sequence of construction operations, and shall demonstrate compliance with the Contract Documents.

1.02 SUBMITTALS

A. Informational Submittals:

1. Contractor's POP: Submit in accordance with Article 1.03 of this Section.

1.03 POP SUBMITTAL

A. Contractor's POP shall address and include the following:

1. Contractor's Organizational Structure: Specific chain of command and overall responsibilities of Contractor personnel. Include the following:
 - a. Name, and general functions and responsibilities of the following:
 - 1) Project manager.
 - 2) Site superintendent.
 - 3) Field engineer.
 - 4) Foreman.
 - 5) Equipment operators and laborers.
 - 6) Others as appropriate.
 - b. Designation of Contractor personnel that will reside at the Site for the duration of the Project.
2. Work Schedule: Proposed work days and work hours. Include copy of Contractor's initial Progress Schedule, prepared in accordance with Paragraph 2.06 of the General Conditions and Section 01 32 16 (Construction Progress Schedule).
3. List of major construction equipment.
4. List of major Subcontractors and Suppliers. Include name, role, and contact information for the following:
 - a. Safety representative.
 - b. Air monitoring Subcontractor.
 - c. Surveyor.
 - d. Suppliers and sources of off-site fill, aggregates, and topsoil.
 - e. Treatment, disposal, and recycling facilities.
 - f. Others as appropriate.
5. Site Utilization Plan: Site plan showing the proposed location and layout of the following:
 - a. Temporary utilities.
 - b. Temporary pumping system.
 - c. Field offices and sheds, sanitary facilities, and first-aid facilities.
 - d. Temporary access roads and parking areas.
 - e. Equipment storage and fueling area(s).
 - f. Temporary decontamination area(s). Clearly identify location and size of each.
 - g. Temporary containment area(s). Clearly identify location and size of each.

6. Comprehensive Work Plan: Written description of the general sequence and scope of the following:
 - a. Mobilization and site preparation.
 - b. Site access controls and security.
 - c. Utility clearance, mark-out, and verification.
 - d. Erosion and sediment control.
 - e. Odor, vapor, and dust control.
 - f. Community air monitoring.
 - g. Clearing and grubbing.
 - h. Demolition.
 - i. Excavation, including material handling and staging approach.
 - j. Dewatering.
 - k. Bypass pumping.
 - l. Sewer abandonment.
 - m. Pipe and manhole installation.
 - n. Backfilling and grading.
 - o. Site restoration.
 - p. Construction waste management.
 - q. Demobilization.
- B. Submit POP to Engineer the sooner of: seven days prior to pre-construction conference, or 30 days prior to Contractor's scheduled mobilization to the Site.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 31 13

PROJECT COORDINATION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. This Section includes general requirements for coordinating construction operations on the Project.

1.02 COORDINATION

- A. Contractor shall coordinate the Work, including testing agencies, whether hired by Contractor, Owner, or others, Subcontractors, Suppliers, and others with whom coordination is necessary, in accordance with the General Conditions, Supplementary Conditions, and this Section, to complete the Work within the Contract Times and in accordance with the Contract Documents.
- B. In accordance with the General Conditions, as may be modified by the Supplementary Conditions, Contractor shall cooperate with and coordinate the Work with other contractors, utility service companies, Owner's employees working at the Site, and other entities working at the Site, in accordance with Section 01 11 00 (Summary of Work).
- C. Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- D. Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's Progress Schedule.
 2. Installation and removal of temporary utilities, facilities, and controls.
 3. Delivery and processing of submittals.
 4. Progress meetings.
 5. Startup and adjustment of systems.
 6. Project closeout activities.
- E. Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

- F. Maintain sufficient competent personnel, drafting and CADD equipment, and supplies at the Site for preparing layout drawings, coordination drawings, and record documents. With the Contract Documents and Shop Drawings, use such coordination drawings as tools for coordinating the Work of various trades. Where such coordination drawings are to be prepared by Subcontractors, ensure that each Subcontractor maintains required personnel and facilities at the Site.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 31 19.13

PRE-CONSTRUCTION CONFERENCE

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. A pre-construction conference will be held for the Project. Contractor shall attend the conference and be prepared to discuss all items on the agenda.
 - 2. Construction Manager will distribute an agenda, preside at conference, and prepare and distribute minutes to all conference participants and others as requested.
- B. Purpose of conference is to designate responsible personnel, establish working relationships, discuss preliminary schedules submitted by Contractor, and review administrative and procedural requirements for the Project. Matters requiring coordination will be discussed and procedures for handling such matters will be established.
- C. Date, Time, and Location: Conference will be held within 20 days after the Contract Times start to run and before Work starts at the Site. Owner will establish the date, time, and location of conference and will notify the interested and involved parties.
- D. Prior to the conference, submit the following preliminary schedules in accordance with the General Conditions:
 - 1. Progress Schedule.
 - 2. Schedule of Submittals.
- E. Contractor shall provide information required and contribute appropriate items for discussion. Contractor shall bring to the conference the following, with sufficient number of copies for each attendee:
 - 1. Preliminary Progress Schedule.
 - 2. Preliminary Schedule of Submittals.

1.02 ATTENDANCE

- A. Representatives present for each entity shall be qualified and authorized to act on that entity's behalf.
- B. Attendance:
 - 1. Contractor:
 - a. Project manager.
 - b. Site superintendent.
 - c. Safety representative.
 - 2. Owner.
 - 3. Construction Manager.
 - 4. Engineer.
 - 5. NYSDEC and NYSDOH, if available.
 - 6. Others as requested by Owner, Contractor, or Engineer.

1.03 PRELIMINARY AGENDA

A. Safety moment.

B. Procedural and Administrative:

1. Personnel and Teams:
 - a. Designation of roles and responsible personnel.
 - b. Limitations of authority of personnel, including personnel who will sign Contract modifications and make binding decisions.
 - c. List of proposed Subcontractors and Suppliers.
 - d. Authorities having jurisdiction.
2. Procedures for communication and correspondence.
3. Copies of Contract Documents and availability.
4. The Work and Scheduling:
 - a. Scope of Work.
 - b. Contract Times, including Milestones (if any).
 - c. Phasing and sequencing.
 - d. Preliminary Progress Schedule.
 - e. Critical path activities.
 - f. Working hours.
5. Safety:
 - a. Responsibility for safety.
 - b. Designation of Contractor's safety representative.
 - c. Emergency procedures and accident reporting.
 - d. Emergency contact information.
 - e. Impact of Project on public safety.
6. Permits.
7. Coordination:
 - a. Project coordination.
 - b. Progress meetings.
8. Products and Submittals:
 - a. Preliminary Schedule of Submittals.
 - b. Shop Drawings, Samples, and other submittals.
 - c. Product options, "or equals", and substitutions.
9. Contract Modification Procedures:
 - a. Requests for interpretation.
 - b. Clarification notices.
 - c. Field Orders.
 - d. Work Change Directives.
 - e. Proposal requests.
 - f. Change Order requests.
 - g. Change Orders.
10. Payment:
 - a. Progress payment procedures.
 - b. Taxes.
 - c. Retainage.
11. Testing and inspections.
12. Record documents.
13. Preliminary Discussion of Contract Closeout:
 - a. Procedures for Substantial Completion.
 - b. Contract closeout requirements.
 - c. Correction period.
 - d. Duration of bonds and insurance.

- C. Site Mobilization:
 - 1. Field offices, trailers, and staging areas.
 - 2. Temporary facilities and utilities.
 - 3. Access to Site, access roads, and parking.
 - 4. Maintenance and protection of traffic.
 - 5. Use of premises.
 - 6. Protection of existing property.
 - 7. Security.
 - 8. Temporary Controls:
 - a. Erosion and sediment control.
 - b. Storm water control.
 - c. Odor, vapor, and dust control.
 - d. Noise control.
 - e. Pollution control.
 - 9. Site barriers and temporary fencing.
 - 10. Storage of materials and equipment.
 - 11. Reference points and benchmarks; surveys and layouts.
 - 12. Site maintenance and housekeeping during the Project, including cleaning and removal of trash and debris.
 - 13. Restoration.
- D. General discussion and questions.
- E. Next meeting.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

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SECTION 01 31 19.23

PROGRESS MEETINGS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. Progress meetings will be held on a regular basis throughout the Project. Contractor shall attend each progress meeting and be prepared to discuss in detail all items on the agenda.
 - 2. Construction Manager will preside at progress meetings and will prepare and distribute minutes of progress meetings to all meeting participants and others as requested.
- B. Date and Time:
 - 1. Regular Meetings: Every week on a day and time agreeable to Owner, Construction Manager, Engineer, and Contractor.
 - 2. Other Meetings: As required.
- C. Location: Contractor's field office at the Site or other location mutually agreed upon by Owner, Construction Manager, Engineer, and Contractor.
- D. Handouts: Contractor shall bring to each progress meeting a minimum of 10 copies of each of the following:
 - 1. List of Work accomplished since the previous progress meeting.
 - 2. Up-to-date Progress Schedule.
 - 3. Up-to-date Schedule of Submittals.
 - 4. Detailed "look-ahead" schedule of Work planned for the next two weeks, with specific starting and ending dates for each activity, including shutdowns, deliveries of important materials and equipment, Milestones (if any), and important activities affecting Owner, the Project, and the Site.

1.02 ATTENDANCE

- A. Representatives present for each entity shall be qualified and authorized to act on that entity's behalf.
- B. Attendance:
 - 1. Contractor:
 - a. Project manager.
 - b. Site superintendent.
 - c. Safety representative.
 - d. Air monitoring technician.
 - e. Representatives of other Subcontractors and Suppliers when needed for the discussion of a particular agenda item.
 - 2. Owner.
 - 3. Construction Manager.
 - 4. Engineer.
 - 5. NYSDEC and NYSDOH.
 - 6. Others as appropriate.

1.03 PRELIMINARY AGENDA

- A. Review, comment, and amendment (if required) of minutes of previous progress meeting.
- B. Safety and safe work practices.
- C. Results of community air monitoring performed since previous progress meeting.
- D. Review of progress since previous progress meeting.
- E. Planned progress through next progress meeting.
- F. Review of Progress Schedule:
 - 1. Contract Times, including Milestones (if any).
 - 2. Critical path.
 - 3. Schedules for fabrication and delivery of materials and equipment.
 - 4. Issues potentially affecting the Contract Times, including Milestones (if any).
 - 5. Corrective measures, if required, to achieve Contract Times, including Milestones (if any).
- G. Submittals:
 - 1. Status of critical submittals.
 - 2. Review of Schedule of Submittals and Engineer's submittal log.
- H. Field observations, problems, and conflicts.
- I. Quality standards, testing, and inspections.
- J. Coordination between parties.
- K. Site management issues, including access, security, temporary controls, maintenance and protection of traffic, and housekeeping.
- L. Permits.
- M. Punch list status, as applicable.
- N. Other business.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 16

CONSTRUCTION PROGRESS SCHEDULE

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall prepare, submit, maintain, and update Progress Schedules in accordance with the General Conditions and this Section, unless otherwise accepted by Owner.
2. Owner's acceptance of the Progress Schedule, and comments or opinions concerning the activities in the Progress Schedule shall not control Contractor's independent judgment relative to the means, methods, techniques, sequences, and procedures of construction. Contractor is solely responsible for complying with the Contract Times.
3. If the Progress Schedule reflects completion date(s) different than the Contract Times, the Contract Times are not thereby voided, nullified, or affected. The Contract Times govern. Where the Progress Schedule reflects completion date(s) that are earlier than the Contract Times, Owner may accept such Progress Schedule with Contractor to specifically understand that no Claim for additional Contract Times or additions to the Contract Price shall be brought against Owner resulting from Contractor's failure to complete the Work by the earlier date(s) indicated on the accepted Progress Schedule.

B. Factors Affecting the Progress Schedule:

1. In preparing the Progress Schedule, take into consideration submittal requirements and submittal review times, time for fabricating and delivering materials and equipment, Work by Subcontractors, availability and abilities of workers, availability of construction equipment, weather conditions, restrictions in operations at the Site and coordination with Owner's operations, if any, and other factors that have the potential to affect completion of the Work within the Contract Times.
2. Comply with sequencing requirements, if any, indicated in the Contract Documents.

1.02 SUBMITTALS

A. Informational Submittals:

1. Preliminary Progress Schedule: Submit in accordance with Paragraph 2.04 of the General Conditions.
2. Initial Progress Schedule: After making revisions in accordance with Owner's comments on the preliminary Progress Schedule, submit initial Progress Schedule in accordance with Paragraph 2.06 of the General Conditions.
3. Progress Schedule Updates:
 - a. Submit updated Progress Schedule at each progress meeting. Bring to meeting the minimum number of copies specified in Section 01 31 19.23 (Progress Meetings).
 - b. Submit each updated Progress Schedule with letter of transmittal complying with requirements of Section 01 33 00 (Submittal Procedures) and specifically indicating the following:
 - 1) Listing of activities and dates that have changed since the previous Progress Schedule submittal.
 - 2) Discussion of problems causing delays, anticipated duration of delays, and proposed countermeasures.
 - 3) Completed activities, if any, and the anticipated and actual durations of each.

- c. If the Progress Schedule remains unchanged from one progress meeting to the next, submit written statement to that effect.
- 4. Look-Ahead Schedules: Submit two-week look-ahead schedule at each progress meeting. Bring to meeting the minimum number of copies specified in Section 01 31 19.23.
- 5. Recovery Schedules: Submit in accordance with Article 1.04 of this Section.

1.03 PROGRESS SCHEDULES

A. Format:

- 1. Type: Gantt chart prepared using Microsoft Project 2007 or later edition, Primavera P6, or similar scheduling software.
- 2. Sheet Size: 22 inches by 34 inches, unless otherwise accepted by Owner.
- 3. Time Scale: Indicate first date of each work week.
- 4. Organization:
 - a. Group deliveries of materials and equipment into a separate sub-schedule that is part of the Progress Schedule.
 - b. Group construction into a separate sub-schedule (that is part of the Progress Schedule) by activity.
 - c. Group Work by Subcontractors into a separate sub-schedule (that is part of the Progress Schedule) by activity.
 - d. Group critical activities that dictate the rate of progress (the "critical path") into a separate sub-schedule that is part of the Progress Schedule. Clearly indicate the critical path on the Progress Schedule.
 - e. Organize each sub-schedule by Specification Section or payment item number.
- 5. Activity Designations: Indicate title and related Specification Section or payment item number.

B. Content: Progress Schedules shall indicate the following:

- 1. Dates for shop-testing.
- 2. Delivery dates for materials and equipment to be incorporated into the Work.
- 3. Dates for beginning and completing each phase of the Work by activity and by trade.
- 4. Dates for start-up, check-out, and field-testing.
- 5. Dates corresponding to the Contract Times, and planned completion date associated with each Milestone (if any), Substantial Completion, and readiness for final payment.

C. Progress Schedule Updates: Update Progress Schedule on a weekly basis and to reflect changes to the Contract Times, if any, made by Change Order.

1.04 RECOVERY SCHEDULES

A. General:

- 1. When updated Progress Schedule indicates that the ability to comply with the Contract Times falls two or more weeks behind schedule, and there is no excusable delay, Change Order, or Work Change Directive to support an extension of the Contract Times, Contractor shall prepare and submit a Progress Schedule demonstrating Contractor's plan to accelerate the Work to achieve compliance with the Contract Times ("recovery schedule") for Owner's acceptance.
- 2. Submit recovery schedule within three days after submittal of updated Progress Schedule where need for recovery schedule is indicated.

- B. Implementation of Recovery Schedule:
1. At no additional cost to Owner, do one or more of the following: furnish additional labor, provide additional construction equipment, provide suitable materials, employ additional work shifts, expedite procurement of materials and equipment to be incorporated into the Work, and other measures necessary to complete the Work within the Contract Times.
 2. Upon acceptance of recovery schedule by Owner, incorporate recovery schedule into the next Progress Schedule update.
- C. Lack of Action: Contractor's refusal, failure, or neglect to take appropriate recovery action, or to submit a recovery schedule, shall constitute reasonable evidence that Contractor is not prosecuting the Work or separable part thereof with the diligence that will ensure completion within the Contract Times. Such lack of action shall constitute sufficient basis for Owner to exercise remedies available to Owner under the Contract Documents.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 32 26

CONSTRUCTION PROGRESS REPORTING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. Contractor shall prepare and submit construction progress reports in accordance with this Section.
 - 2. Construction progress reports include:
 - a. Daily construction reports.
 - b. Field condition reports.

1.02 SUBMITTALS

- A. Informational Submittals:
 - 1. Daily Construction Reports: Submit in accordance with Article 1.03 of this Section.
 - 2. Field Condition Reports: Submit in accordance with Article 1.04 of this Section.

1.03 DAILY CONSTRUCTION REPORTS

- A. Prepare daily construction reports throughout the Project. Include in each report, at a minimum, the following:
 - 1. Contractor's name.
 - 2. Owner's name.
 - 3. Project name.
 - 4. Site name and location.
 - 5. Date and day of the week.
 - 6. High and low temperatures and general weather conditions.
 - 7. Number of Contractor employees at the Site.
 - 8. Number of employees at the Site for each Subcontractor.
 - 9. Copy of daily security log, in accordance with Section 01 57 33 (Security).
 - 10. Copy of daily inspection log, in accordance with Section 31 23 00 (Excavation and Fill).
 - 11. Breakdown of employees by trades.
 - 12. Major construction equipment used.
 - 13. Material and equipment deliveries.
 - 14. Waste shipments.
 - 15. Meter readings and similar recordings.
 - 16. Work performed, including field quality control measures and testing.
 - 17. Location of areas in which construction was performed.
 - 18. Major equipment and materials installed as part of the Work.
 - 19. Services connected and disconnected.
 - 20. Equipment or system tests and startups.
 - 21. Stoppages, delays, shortages, and losses.
 - 22. Accidents. Comply with accident reporting requirements of Section 01 35 29 (Contractor's Health and Safety Plan).
 - 23. Emergency procedures.
 - 24. Meetings and significant decisions.
 - 25. Orders and requests of authorities having jurisdiction.
 - 26. Change Orders received and implemented.
 - 27. Work Change Directives received and implemented.

- 28. Field Orders received and implemented.
- 29. Other instructions received from Owner, Construction Manager, or Engineer.

- B. Submit daily construction reports to Construction Manager and Engineer by 9:00 a.m. the next working day after the day covered in the associated report. Daily report shall be signed by responsible member of Contractor's staff, such as Contractor's project manager or superintendent, or foreman designated by Contractor as having authority to sign daily reports.

1.04 FIELD CONDITION REPORTS

- A. Immediately upon discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.
- B. Submit field condition reports to Construction Manager and Engineer with request for interpretation, prepared in accordance with Section 01 26 00 (Contract Modification Procedures).

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 33

PHOTOGRAPHIC DOCUMENTATION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide photographic documentation of the following:
 - a. Pre-construction Site conditions.
 - b. Construction progress.
 - c. Final (post-construction) Site conditions.

B. Image Quality:

1. Photographic documentation shall be in color.
2. Photographic images shall be suitably staged and set up (“framed”), focused, and shall have adequate lighting.
3. For still photographs, use camera with minimum 8.0-megapixel resolution.

1.02 SUBMITTALS

A. Informational Submittals:

1. Pre-Construction Photographic Documentation: Submit acceptable pre-construction photographic documentation prior to mobilizing to and disturbing the Site. Provide pre-construction photographic documentation no later than first Application for Payment, unless other schedule is accepted by Engineer.
2. Construction Progress Photographic Documentation: Submit acceptable construction progress photographic documentation monthly. Submit with each Application for Payment, unless otherwise agreed to by Engineer.

B. Closeout Submittals:

1. Final Photographic Documentation: Submit acceptable final photographic documentation prior to submitting final Application for Payment.

1.03 PHOTOGRAPHIC DOCUMENTATION

A. General:

1. For each photograph taken, provide high-quality digital image in “JPG” file format compatible with Microsoft Windows XP, Microsoft Windows Vista, and Microsoft Windows 7.
2. Image resolution shall be sufficient for clear, high-resolution prints. Minimum resolution shall be 300 dots per inch. Minimum size of digital images shall be 5 inches by 7 inches.
3. Imprint date in each image. Do not imprint time.
4. Digital image filename shall consist of the date and sequential number of the photograph. Do not submit filenames automatically created by digital camera.
 - a. First part of filename shall be the date that the photograph was taken, represented as an eight-digit number (i.e., YYYYMMDD), followed by a hyphen.
 - b. Second part of filename shall be a two-digit number (from 01 to 99) representing the sequential number of the photograph.
 - c. Typical filename for the fifth photograph taken on April 1, 2015 would be “20150401-05.jpg”.
5. Submitting Digital Image Files: Upload digital image files to the Project Internet website.

B. Pre-Construction Photographs:

1. Take at least 25 photographs to record Site conditions prior to construction. Pre-construction photographs are not part of construction progress photographs required under Paragraph 1.03.C of this Section.
2. If disagreement arises on condition of the Site and insufficient pre-construction photographic documentation was submitted prior to the disagreement, restore the grounds or area in question to extent directed by Engineer and to complete satisfaction of Engineer.

C. Progress Photographs:

1. Take at least 10 photographs per week.
2. Maximum number of progress photographs required will be 300, based on the Contract Times and scope of Project on date Contract Times commence running. Proportionately modify amount of photographic documentation if scope of Project or Contract Times are modified.
3. Provide interior and exterior photographic documentation of each structure as directed by Engineer at the time photographic documentation is taken.

D. Final Photographs:

1. Take photographs at time and day acceptable to Engineer. Do not take final photographs prior to Substantial Completion. Work documented in final photographs shall be generally complete, including painting and finishing, furnishings, landscaping, and other visible Work.
2. Take at least 25 final photographs, based on scope of the Project at the time Contract Times commence running. Proportionately modify the number of final photographs if scope of Project is modified. Final photographs are not part of construction progress photographs required under Paragraph 1.03.C of this Section.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide submittals in accordance with the General Conditions, as may be modified by the Supplementary Conditions, and this Section.
2. Provide submittals well in advance of the need for the material, equipment, or procedure (as applicable) in the Work and with ample time required for delivery of material or equipment and to implement procedures following Engineer's review or acceptance of the associated submittal. Work covered by a submittal will not be included in progress payments until review or acceptance of related submittals has been obtained in accordance with the Contract Documents.
3. Contractor is responsible for dimensions to be confirmed and corrected at the Site, for information pertaining solely to the fabrication processes and to techniques of construction, and for coordinating the work of all trades. Contractor's signature of submittal's stamp and letter of transmittal shall be Contractor's representation that Contractor has met its obligations under the Contract Documents relative to that submittal.

B. Samples:

1. Conform submittal of Samples to the General Conditions, as may be modified by the Supplementary Conditions, this Section, and the Specification Section in which the Sample is specified.
2. Furnish at the same time Samples and submittals that are related to the same unit of Work or Specification Section. Engineer will not review submittals without associated Samples, and will not review Samples without associated submittals.
3. Samples shall clearly illustrate functional characteristics of product, all related parts and attachments, and full range of color, texture, pattern, and material.

1.02 TYPES OF SUBMITTALS

- A. Submittals are classified as Action Submittals, Informational Submittals, Closeout Submittals, and Maintenance Material Submittals. The type of each required submittal is designated in the respective Specification Sections. When type of submittal is not specified in the associated Specification Section, submittal will be classified as follows:

1. Action Submittals include:
 - a. Shop Drawings.
 - b. Product data.
 - c. Delegated design submittals, which include documents prepared, sealed, and signed by a design professional retained by Contractor, Subcontractor, or Supplier for materials and equipment to be incorporated into the completed Work. Delegated design submittals do not include submittals related to temporary construction unless specified otherwise in the related Specification Section. Delegated design submittals include design drawings, design data including calculations, specifications, certifications, and other submittals prepared by such design professional.
 - d. Samples.
 - e. Testing plans, procedures, and testing limitations.

2. Informational Submittals include:
 - a. Certificates.
 - b. Design data not sealed and signed by a design professional retained by Contractor, Subcontractor, or Supplier.
 - c. Pre-construction test and evaluation reports, such as reports on pilot testing, subsurface investigations, potential Contaminants, and similar reports.
 - d. Supplier instructions, including installation data, and instructions for handling, starting-up, and troubleshooting.
 - e. Source quality control submittals (other than testing plans, procedures, and testing limitations), including results of shop testing.
 - f. Field quality control submittals (other than testing plans, procedures, and testing limitations), including results of operating and acceptability tests at the Site.
 - g. Supplier reports.
 - h. Sustainable design submittals (other than sustainable design closeout documentation).
 - i. Special procedure submittals, including health and safety plans and other procedural submittals.
 - j. Qualifications statements.
 3. Closeout Submittals include:
 - a. Maintenance contracts.
 - b. Operations and maintenance data.
 - c. Bonds, such as maintenance bonds and bonds for a specific product or system.
 - d. Warranty documentation.
 - e. Record documentation.
 - f. Sustainable design closeout documentation.
 - g. Software.
 4. Maintenance Material Submittals include:
 - a. Spare parts.
 - b. Extra stock materials.
 - c. Tools.
 5. When type of submittal is not specified and is not included in the list above, Engineer will determine the type of submittal.
- B. Not Included in this Section: Administrative and procedural requirements for the following are covered elsewhere in the Contract Documents:
1. Requests for interpretations of the Contract Documents.
 2. Field Orders, Work Change Directives, and Change Orders.
 3. Applications for Payment.
 4. Progress Schedules.
 5. Progress reports.
 6. Photographic documentation.
 7. Reports and documentation required in accordance with applicable permits.
 8. Site survey data.

1.03 SUBMITTALS REQUIRED IN THIS SECTION

- A. Informational Submittals:
1. Schedule of Submittals:
 - a. Timing:
 - 1) Provide submittal within time frames specified in the Contract Documents.
 - 2) Provide updated Schedule of Submittals with each submittal of the updated Progress Schedule.

- b. Content: In accordance with the General Conditions, as may be modified by the Supplementary Conditions, and this Section. Requirements for content of preliminary Schedule of Submittals and subsequent submittals of the Schedule of Submittals are identical. Identify on Schedule of Submittals all submittals required in the Contract Documents. Updates of Schedule of Submittals shall show scheduled dates and actual dates for completed tasks. Indicate submittals that are on the Project's critical path. Indicate the following for each submittal:
 - 1) Date by which submittal will be provided to Engineer.
 - 2) Whether submittal will be for a substitution or "equal". Procedures for substitutions and "or equals" are specified in the General Conditions, as may be modified by the Supplementary Conditions, and the General Requirements.
 - 3) Date by which Engineer's response is required. At least 14 days shall be allowed from Engineer's receipt of each submittal. Allow increased time, upwards of 28 days, for large or complex submittals.
 - 4) For submittals for materials or equipment, date by which material or equipment must be at the Site to avoid delaying the Work and to avoid delaying the work of other contractors.
- c. Prepare Schedule of Submittals using same software, and in same format, specified for Progress Schedules.
- d. Coordinate Schedule of Submittals with the Progress Schedule.
- e. Schedule of Submittals that is not compatible with the Progress Schedule, or that does not indicate submittals on the Project's critical path, or that places extraordinary demands on Engineer for time and resources, is unacceptable. Do not include submittals not required by the Contract Documents.
- f. In preparing Schedule of Submittals:
 - 1) Considering the nature and complexity of each submittal, allow sufficient time for review and revision.
 - 2) Reasonable time shall be allowed for Engineer's review and processing of submittals, for submittals to be revised and resubmitted, and for returning submittals to Contractor.
 - 3) Identify and accordingly schedule submittals that are expected to have long anticipated review times and submittals that may be subject to review by authorities having jurisdiction.

1.04 PROCEDURE FOR SUBMITTALS

- A. Submittal Identification System: Use the following submittal identification system, consisting of submittal number and review cycle number.
 1. Submittal number shall be separate and unique number correlating to each individual submittal required. Contractor shall assign submittal number as follows:
 - a. First part of submittal number shall be the applicable Specification Section number, followed by a hyphen.
 - b. Second part of submittal number shall be a three-digit number (sequentially numbered from 001 through 999) assigned to each separate and unique submittal provided under the associated Specification Section.
 - c. Typical submittal number for the third submittal provided for Section 31 23 00 (Excavation and Fill) would be "31 23 00-003".
 2. Review cycle number shall be a letter designation indicating the initial submittal or re-submittal associated with each submittal number:
 - a. "A" = Initial (first) submittal.
 - b. "B" = Second submittal (i.e., first re-submittal).
 - c. "C" = Third submittal (i.e., second re-submittal).
 3. Typical submittal identification for the second submission (first re-submission) of the third submittal provided for Section 31 23 00 (Excavation and Fill) would be "31 23 00-003-B".

B. Letter of Transmittal for Submittals:

1. Provide separate letter of transmittal with each submittal. Each submittal shall be for one Specification Section.
2. Each letter of transmittal shall contain the following:
 - a. Contractor's name.
 - b. Owner's name.
 - c. Project name.
 - d. Contract or Purchase Order number.
 - e. Transmittal number.
 - f. Submittal number and review cycle.
 - g. Submittal date and dates of any previous submissions.
 - h. Reference to appropriate Specification Section number, page, and paragraph(s).
 - i. Reference to appropriate Drawing sheet(s) and detail(s).
 - j. Clear space at least three inches by three inches in size for affixing Engineer's review stamp.
 - k. Clear space suitably sized for affixing Contractor's stamp.
3. For submittals with proposed deviations from the requirements of the Contract Documents, letter of transmittal shall specifically describe each proposed variation.

C. Contractor's Review and Stamp:

1. Contractor's Review: Before transmitting submittals to Engineer, review submittals to:
 - a. Ensure proper coordination of the Work.
 - b. Determine that each submittal is in accordance with Contractor's desires.
 - c. Verify that submittal contains sufficient information for Engineer to determine compliance with the Contract Documents.
2. Incomplete or inadequate submittals will be returned without review.
3. Contractor's Stamp and Signature:
 - a. Each submittal provided shall bear Contractor's stamp of approval and signature, as evidence that submittal has been reviewed by Contractor and verified as complete and in accordance with the Contract Documents.
 - b. Submittals without Contractor's stamp and signature will be returned without review.
 - c. Contractor's stamp shall contain the following certification statement:

"By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers, and similar data, and I have checked and coordinated each item with other applicable Shop Drawings and all Project requirements."

D. Submittal Marking and Organization:

1. Mark each page of submittal, and each individual component submitted, with submittal number and applicable Specification paragraph.
2. Arrange submittal information in same order as requirements are written in the associated Specification Section.
3. Each Shop Drawing sheet shall have title block with complete identifying information satisfactory to Engineer.
4. Package together submittals for the same Specification Section. Do not provide required information piecemeal.

E. Format of Submittals:

1. Action Submittals and Informational Submittals: Submit electronic copies, except that submittals of Samples shall be as specified in Paragraph 1.04.E.2 of this Section.

2. Samples:
 - a. Securely label or tag Samples with submittal identification number. Label or tag shall include clear space at least three inches by three inches in size for affixing Engineer's review stamp. Label or tag shall not cover, conceal, or alter appearance or features of Sample. Label or tag shall not be separated from the Sample.
 - b. Submit number of Samples required in Specifications. If number of Samples is not specified in the associated Specification Section, provide at least three identical Samples of each item required for Engineer's review. Samples will not be returned to Contractor. If Contractor requires Sample(s) for Contractor's use, notify Engineer in writing and provide additional Sample(s). Contractor is responsible for furnishing, shipping, and transporting additional Samples.
 - c. Deliver one Sample to Engineer's field office at the Site. Deliver balance of Samples to Engineer's office, unless otherwise directed by Engineer.
 3. Closeout Submittals:
 - a. Submit electronic copies of the following Closeout Submittals:
 - 1) Maintenance contracts.
 - 2) Operations and maintenance data.
 - 3) Bonds for specific products or systems.
 - 4) Warranty documentation.
 - 5) Sustainable design closeout documentation.
 - b. Record Documentation: Submit in accordance with Section 01 78 39 (Project Record Documents).
 - c. Software: Submit number of copies required in Specification Section where the software is specified. If number of copies is not specified, provide two copies on compact disc in addition to software loaded on to Owner's computer(s) or microprocessor(s).
 4. Maintenance Material Submittals: For spare parts, extra stock materials, and tools, submit quantity of items specified in associated Specification Section.
- F. Electronic Submittals:
1. Format: Electronic files shall be in Portable Document Format (PDF). Files shall be electronically searchable.
 2. Organization and Content:
 - a. Each electronic submittal shall be one file; do not divide individual submittals into multiple files each.
 - b. When submittal is large or contains multiple parts, provide PDF file with bookmark for each section of submittal.
 - c. Content shall be identical to paper submittal. First page of electronic submittal shall be Contractor's letter of transmittal.
 3. Quality and Legibility: Electronic submittal files shall be made from the original and shall be clear and legible. Do not provide scans of faxed copies. Electronic file shall be full size of original paper documents. All pages shall be properly oriented for reading on a computer screen.
 4. Provide sufficient Internet service and e-mail capability for Contractor's use in transferring electronic submittals and electronic correspondence. Check at least once per day for distribution of electronic submittals and electronic correspondence related to submittals.
 5. Submitting Electronic Files: Upload electronic copies of submittals to the Project Internet website.
- G. Distribution:
1. Engineer will upload electronic copy of each reviewed or accepted submittal requiring Engineer's written response to the Project Internet website.

2. Contractor shall distribute hard copy reproductions of reviewed or accepted submittals, where required, to the job site file and elsewhere, as directed by Engineer. Number of hardcopies shall be as directed by Engineer, but will not exceed six.
- H. Resubmittals: Refer to the General Conditions, as may be modified by the Supplementary Conditions, for resubmittal requirements.
- I. Engineer's Submittal Log:
1. Engineer will maintain a log of required submittals using the form included with this Section. Updated submittal log will be provided to Contractor upon request.
 2. Review submittal log and status of each submittal with Engineer on a weekly or more frequent basis.
 3. Coordinate updates to Schedule of Submittals with Engineer's updates to submittal log.

1.05 ENGINEER'S REVIEW

- A. Timing: Engineer's review will conform to timing accepted by Engineer in the accepted Schedule of Submittals.
- B. Submittals not required in the Contract Documents will not be reviewed by Engineer and will not be recorded in Engineer's submittal log. Hardcopies, if any, of such submittals will be returned to Contractor.
- C. Results of Engineer's Review:
1. Action Submittals: Each submittal will be given one of the following dispositions:
 - a. Reviewed: Upon return of submittal marked "Reviewed", order, ship, or fabricate materials and equipment included in the submittal (pending Engineer's review or acceptance, as applicable, of source quality control submittals) or otherwise proceed with the Work in accordance with the submittal and the Contract Documents.
 - b. Reviewed and Noted: Upon return of submittal marked "Reviewed and Noted", order, ship, or fabricate materials and equipment included in the submittal (pending Engineer's review or acceptance, as applicable, of source quality control submittals) or otherwise proceed with the Work in accordance with the submittal and the Contract Documents, provided it is in accordance with corrections indicated.
 - c. Revise and Resubmit: Upon return of submittal marked "Revise and Resubmit", make the corrections indicated and re-submit to Engineer for review.
 - d. Rejected: This disposition indicates material or equipment that cannot be reviewed. Upon return of submittal marked "Rejected", repeat initial submittal procedure utilizing reviewable material or equipment.
 2. Informational Submittals:
 - a. Each submittal will be given one of the following dispositions:
 - 1) Accepted: Information included in submittal conforms to the applicable requirements of the Contract Documents, and is acceptable. No further action by Contractor is required relative to this submittal, and the Work covered by the submittal may proceed, and products with submittals with this disposition may be shipped or operated, as applicable.
 - 2) Not Accepted: Submittal does not conform to applicable requirements of the Contract Documents and is not acceptable. Revise submittal and re-submit to indicate acceptability and conformance with the Contract Documents.
 - b. The following types of Informational Submittals, when acceptable to Engineer, will not receive a written response from Engineer. Disposition as "Accepted" will be recorded in Engineer's submittal log. When submittals of the following are not acceptable, Engineer will provide written response to Contractor:
 - 1) Safety data sheets.

- 2) Manifests and other shipping documents.
 - 3) Delivery tickets.
 - 4) Compaction testing reports.
 - 5) Concrete testing reports.
 - 6) Manufacturer's instructions.
3. Closeout Submittals: Dispositions and meanings are the same as specified for Informational Submittals. When acceptable, Closeout Submittals will not receive a written response from Engineer. Disposition as "Accepted" will be recorded in Engineer's submittal log. When Closeout Submittal is not acceptable, Engineer will provide written response to Contractor.
 4. Maintenance Material Submittals: Dispositions and meanings are the same as specified for Informational Submittals. When acceptable, Maintenance Material Submittals will not receive a written response from Engineer. Disposition as "Accepted" will be recorded in Engineer's submittal log. When Maintenance Material Submittal is not acceptable, Engineer will provide written response to Contractor, and Contractor is responsible for costs associated with transporting and handling of maintenance materials until compliance with the Contract Documents is achieved.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 ATTACHMENTS

- A. The attachments listed below, which follow after the "End of Section" designation, are part of this Section:
 1. Attachment A: Engineer's submittal log form (eight pages).

END OF SECTION

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NATIONAL GRID USA SERVICE COMPANY, INC.
CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

PHASE 1 REMEDIAL ACTION
ILION (EAST STREET) FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK

ENGINEER'S SUBMITTAL LOG

Item No.	Specification Section		Description	Submittal Type	Submittal ID		Date Submitted	Reviewed By	Status and Date			Comments
	No.	Title			Submittal No.	Review Cycle			Interim		Final	
1	01 15 00	Contractor's Project Operation Plan	Contractor's Project Operations Plan.	Informational	01 15 00-001	A						
2	01 32 16	Construction Progress Schedule	Preliminary Progress Schedule.	Informational	01 32 16-001	A						
3	01 32 16	Construction Progress Schedule	Initial Progress Schedule.	Informational	01 32 16-002	A						
4	01 32 16	Construction Progress Schedule	Progress Schedule updates.	Informational	01 32 16-003	A						
5	01 32 16	Construction Progress Schedule	Look-ahead schedules.	Informational	01 32 16-004	A						
6	01 32 16	Construction Progress Schedule	Recovery schedules.	Informational	01 32 16-005	A						
7	01 32 26	Construction Progress Reporting	Daily construction reports.	Informational	01 32 26-001	A						
8	01 32 26	Construction Progress Reporting	Field condition reports.	Informational	01 32 26-002	A						
9	01 32 33	Photographic Documentation	Pre-construction photographic documentation.	Informational	01 32 33-001	A						
10	01 32 33	Photographic Documentation	Construction progress photographic documentation.	Informational	01 32 33-002	A						
11	01 32 33	Photographic Documentation	Final photographic documentation.	Closeout	01 32 33-003	A						
12	01 33 00	Submittal Procedures	Schedule of submittals.	Informational	01 33 00-001	A						
13	01 35 26.23	Confined Space Entry Plan	Confined Space Entry Plan.	Informational	01 35 26.23-001	A						
14	01 35 26.23	Confined Space Entry Plan	Copies of completed permits required for confined space entry and completed confined space data sheets for each time personnel enter a confined space.	Informational	01 35 26.23-002	A						
15	01 35 29	Contractor's Health and Safety Plan	Contractor's Health and Safety Plan.	Informational	01 35 29-001	A						
16	01 35 29	Contractor's Health and Safety Plan	Qualifications statement for safety representative.	Informational	01 35 29-002	A						
17	01 35 29	Contractor's Health and Safety Plan	Qualifications statement for HASP preparer.	Informational	01 35 29-003	A						
18	01 35 29	Contractor's Health and Safety Plan	Accident reports.	Informational	01 35 29-004	A						
19	01 35 29	Contractor's Health and Safety Plan	Daily health and safety reports.	Informational	01 35 29-005	A						

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	No.	Title			Submittal No.	Review Cycle			Interim	Final	
20	01 35 43.13	Environmental Procedures for Hazardous Materials	Current (dated within the past two years) safety data sheets (SDSs) in accordance with 29 CFR 1910.1200 (OSHA Hazard Communication Standard), manufacturer, Supplier (if different than manufacturer), container size(s) and number of containers proposed to be at the Site, minimum and maximum volume of material intended to be stored at the Site, and description of process or procedures in which Hazardous Material will be used for Hazardous Materials (including chemicals) proposed for use at the Site.	Informational	01 35 43.13-001	A					
21	01 35 43.13	Environmental Procedures for Hazardous Materials	Identification number, analysis results, and number and size of storage containers at the Site for each Hazardous Material generated at the Site.	Informational	01 35 43.13-002	A					
22	01 35 43.13	Environmental Procedures for Hazardous Materials	Copies of permits for storing, handling, using, transporting, and disposing of Hazardous Materials, obtained from authorities having jurisdiction.	Informational	01 35 43.13-003	A					
23	01 35 43.13	Environmental Procedures for Hazardous Materials	Hazardous Materials Communication Plan.	Informational	01 35 43.13-004	A					
24	01 35 43.13	Environmental Procedures for Hazardous Materials	Emergency/Spill Response Plan.	Informational	01 35 43.13-005	A					
25	01 35 49	Community Air Monitoring Plan	Air Monitoring Plan.	Informational	01 35 49-001	A					
26	01 35 49	Community Air Monitoring Plan	Qualifications statement for air monitoring technician.	Informational	01 35 49-002	A					
27	01 35 49	Community Air Monitoring Plan	Weekly air monitoring reports.	Informational	01 35 49-003	A					
28	01 35 49	Community Air Monitoring Plan	Exceedance reports.	Informational	01 35 49-004	A					
29	01 35 49	Community Air Monitoring Plan	TVOC, PM10, and meteorological data files.	Informational	01 35 49-005	A					
30	01 41 26	SWPPP and Permit	Storm water permit certification statement.	Informational	01 41 26-001	A					
31	01 41 26	SWPPP and Permit	Qualifications statement for trained contractor.	Informational	01 41 26-002	A					
32	01 51 41	Temporary Pumping	Copy of notification letters for owners and occupants of each property affected by temporary pumping operations.	Informational	01 51 41-001	A					
33	01 51 41	Temporary Pumping	Temporary Pumping Plan.	Informational	01 51 41-002	A					
34	01 51 41	Temporary Pumping	Qualifications statement for temporary pumping system Supplier.	Informational	01 51 41-003	A					
35	01 52 13	Field Offices and Sheds	1. Site plan indicating proposed location of field office trailer and sheds, parking for field offices, and facilities related to the field offices. 2. Information on proposed field office trailer size, construction, exterior appearance, interior finishes, and security measures. 3. Proposed layout of field office interior, showing location of offices, common areas, closets, with dimensions indicated for each. 4. Listing of utility providers. 5. Product data and technical information for multifunction printer and telephone system.	Action	01 52 13-001	A					
36	01 55 26	Maintenance and Protection of Traffic	Traffic Control Plan.	Informational	01 55 26-001	A					
37	01 57 05	Temporary Controls	Manufacturer's data and specifications for the following: 1. Silt fencing. 2. Erosion control mats or netting, and staples or anchoring stakes. 3. Inlet filter bag. 4. Vapor mitigation agents and proposed application and storage equipment for each.	Action	01 57 05-001	A					

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38	01 57 05	Temporary Controls	Seed Supplier's certification for each grass-seed monostand to be used for temporary plantings.	Informational	01 57 05-002	A					
39	01 57 05	Temporary Controls	Manufacturer's instructions for installing the following: 1. Erosion control mats or netting, and staples or anchoring stakes. 2. Inlet filter bag.	Informational	01 57 05-003	A					
40	01 57 33	Security	Site plan drawing showing proposed locations and extent of breaches in existing fencing and proposed locations and extent of temporary fencing and gates.	Action	01 57 33-001	A					
41	01 57 33	Security	Manufacturer's data, specifications, and installation instructions for temporary fencing, temporary gates, and privacy screens.	Action	01 57 33-002	A					
42	01 57 33	Security	Daily security logs.	Informational	01 57 33-003	A					
43	01 58 13	Temporary Project Signage	Drawings showing layout, text, font, character size, colors, graphics or logos (if any), materials of construction, and dimensions of each temporary sign, and the proposed locations and orientations of temporary signs at the Site.	Action	01 58 13-001	A					
44	01 71 23	Field Engineering	Acceptable plan for conducting all survey Work.	Informational	01 71 23-001	A					
45	01 71 23	Field Engineering	Example of proposed survey field books to be maintained by Contractor's surveyor.	Informational	01 71 23-002	A					
46	01 71 23	Field Engineering	Original survey field books.	Informational	01 71 23-003	A					
47	01 71 23	Field Engineering	Qualifications statement for field engineer.	Informational	01 71 23-004	A					
48	01 71 23	Field Engineering	Qualifications statement for surveyor.	Informational	01 71 23-005	A					
49	01 71 23	Field Engineering	Documentation verifying accuracy of field engineering (if requested by Engineer).	Informational	01 71 23-006	A					
50	01 71 23	Field Engineering	Certificate signed by professional surveyor certifying that elevations and locations of the Work comply with the Contract Documents (if requested by Engineer).	Informational	01 71 23-007	A					
51	01 74 19	Construction Waste Management and Disposal	Waste Management Plan.	Informational	01 74 19-001	A					
52	01 74 19	Construction Waste Management and Disposal	Preliminary waste profile for each landfill and incinerator facility.	Informational	01 74 19-002	A					
53	01 74 19	Construction Waste Management and Disposal	Final (counter-signed) waste profile and proof of acceptance of waste for each landfill and incinerator facility.	Informational	01 74 19-003	A					
54	01 74 19	Construction Waste Management and Disposal	Counter-signed manifests, weight tickets, receipts, and invoices for each recycling and processing facility.	Informational	01 74 19-004	A					
55	01 74 19	Construction Waste Management and Disposal	Counter-signed manifests, weight tickets, receipts, and invoices for each landfill and incinerator facility.	Informational	01 74 19-005	A					
56	01 78 39	Project Record Documents	Record Drawings, Specifications, and Addenda.	Closeout	01 78 39-001	A					
57	02 21 19	Structural Surveys	Qualifications statement for professional engineer.	Informational	02 21 19-001	A					
58	02 21 19	Structural Surveys	Notification of intended start of survey.	Informational	02 21 19-002	A					
59	02 21 19	Structural Surveys	Pre-construction survey reports.	Informational	02 21 19-003	A					
60	02 21 19	Structural Surveys	Post-construction survey reports.	Informational	02 21 19-004	A					
61	02 41 00	Demolition	Demolition, Removal, and Abandonment Plan.	Informational	02 41 00-001	A					
62	02 41 00	Demolition	Qualifications statement for entity performing electrical removals.	Informational	02 41 00-002	A					
63	02 41 00	Demolition	Notification of intended start of demolition Work.	Informational	02 41 00-003	A					
64	02 61 05	Removal and Disposal of Contaminated Materials	Manufacturer's product data for proposed soil drying agent.	Action	02 61 05-001	A					
65	02 61 05	Removal and Disposal of Contaminated Materials	Waste Management Plan.	Informational	02 61 05-002	A					
66	02 61 05	Removal and Disposal of Contaminated Materials	Preliminary waste profile for each treatment facility, landfill, and incinerator facility.	Informational	02 61 05-003	A					

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67	02 61 05	Removal and Disposal of Contaminated Materials	Final (counter-signed) waste profile and proof of acceptance of waste for each treatment facility, landfill, and incinerator facility.	Informational	02 61 05-004	A						
68	02 61 05	Removal and Disposal of Contaminated Materials	Copy of valid NYSDEC waste transporter permit for each waste transporter hauling contaminated materials.	Informational	02 61 05-005	A						
69	02 61 05	Removal and Disposal of Contaminated Materials	Laboratory test reports for waste characterization samples.	Informational	02 61 05-006	A						
70	02 61 05	Removal and Disposal of Contaminated Materials	Counter-signed manifests, weight tickets, receipts, and invoices for each treatment facility, landfill, and incinerator facility.	Informational	02 61 05-007	A						
71	02 82 33	Removal and Disposal of Asbestos-Containing Materials	Copy of valid license to perform Asbestos abatement activities in the State of New York.	Informational	02 82 33-001	A						
72	02 82 33	Removal and Disposal of Asbestos-Containing Materials	Copies of valid Asbestos handler (worker) certificates issued by NYSDOL for all employees assigned to the Project.	Informational	02 82 33-002	A						
73	02 82 33	Removal and Disposal of Asbestos-Containing Materials	Proof of workers having completed a 40-hour Hazardous Waste operations and emergency response (HAZWOPER) training course (and annual refresher training) in accordance with 29 CFR 1910.120 and 29 CFR 1926.65.	Informational	02 82 33-003	A						
74	02 82 33	Removal and Disposal of Asbestos-Containing Materials	ACM Abatement Plan.	Informational	02 82 33-004	A						
75	02 82 33	Removal and Disposal of Asbestos-Containing Materials	ACM Decontamination Plan.	Informational	02 82 33-005	A						
76	02 82 33	Removal and Disposal of Asbestos-Containing Materials	ACM Waste Management Plan.	Informational	02 82 33-006	A						
77	02 82 33	Removal and Disposal of Asbestos-Containing Materials	ACM Respiratory Protection Program.	Informational	02 82 33-007	A						
78	02 82 33	Removal and Disposal of Asbestos-Containing Materials	Manufacturer's certification that vacuums, ventilation equipment, and other equipment required to contain airborne fibers conform to ANSI/AIHA/ASSE Z9.2, and certification that all respirators to be used are National Institute for Occupational Safety and Health (NIOSH)-approved.	Informational	02 82 33-008	A						
79	02 82 33	Removal and Disposal of Asbestos-Containing Materials	Product specifications for all other ACM abatement supplies and equipment to be used on the Project.	Informational	02 82 33-009	A						

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80	02 82 33	Removal and Disposal of Asbestos-Containing Materials	Copies of notification forms prepared for NYSDOL and copy of certified check associated with the notification fee as determined by New York Labor Law Article 30.	Informational	02 82 33-010	A					
81	02 82 33	Removal and Disposal of Asbestos-Containing Materials	Copy of the National Emissions Standards for Hazardous Pollutants (NESHAP) Notification of an Asbestos Abatement Project in accordance with 40 CFR Part 61.145(b).	Informational	02 82 33-011	A					
82	02 82 33	Removal and Disposal of Asbestos-Containing Materials	Preliminary waste profile for each disposal facility.	Informational	02 82 33-012	A					
83	02 82 33	Removal and Disposal of Asbestos-Containing Materials	Final (counter-signed) waste profile and proof of acceptance of waste for each disposal facility.	Informational	02 82 33-013	A					
84	02 82 33	Removal and Disposal of Asbestos-Containing Materials	Project records: 1. Copies of daily work site entry logbooks with information on worker and visitor access. 2. Written logs documenting the daily quantity and type of ACM removed and post-work visual inspections conducted by Contractor. 3. Written results of samples on a weekly basis and a completed written analytical report showing all sampling locations and results. 4. Complete documentation of OSHA-required monitoring of on-site personnel that was conducted during abatement Work. This information will document the worker exposure during work activities associated with the Project. 5. Any reported deviations from the ACM Abatement Plan and/or corrective actions taken during abatement Work. 6. Counter-signed manifests, weight tickets, receipts, and invoices for all ACM and non-ACM wastes generated during abatement Work.	Informational	02 82 33-014	A					
85	02 83 33	Removal and Disposal of Loose Lead-Containing Paint and Debris	Loose Paint and Debris Removal Plan.	Informational	02 83 33-01	A					
86	02 83 33	Removal and Disposal of Loose Lead-Containing Paint and Debris	Information required by 29 CFR 1926.62 if not otherwise submitted under Section 01 35 29.	Informational	02 83 33-02	A					
87	02 83 33	Removal and Disposal of Loose Lead-Containing Paint and Debris	Preliminary waste profile for each disposal facility.	Informational	02 83 33-03	A					
88	02 83 33	Removal and Disposal of Loose Lead-Containing Paint and Debris	Final (counter-signed) waste profile and proof of acceptance of waste for each disposal facility.	Informational	02 83 33-04	A					
89	02 83 33	Removal and Disposal of Loose Lead-Containing Paint and Debris	Copy of valid NYSDEC waste transporter permit for each waste transporter hauling lead waste.	Informational	02 83 33-05	A					
90	02 83 33	Removal and Disposal of Loose Lead-Containing Paint and Debris	Counter-signed manifests, weight tickets, receipts, and invoices for each disposal facility.	Informational	02 83 33-06	A					
91	03 00 05	Concrete	List of concrete materials and proposed concrete mix designs.	Action	03 00 05-001	A					
92	03 00 05	Concrete	Laboratory test reports for concrete cylinders, materials, and mix design tests.	Action	03 00 05-002	A					
93	03 00 05	Concrete	Concrete placement drawings showing the location and type of all joints.	Action	03 00 05-003	A					
94	03 00 05	Concrete	Drawings for fabricating and placing concrete reinforcing.	Action	03 00 05-004	A					
95	03 00 05	Concrete	Manufacturer's specifications with application and installation instructions for proprietary materials and items, including admixtures.	Action	03 00 05-005	A					

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96	03 00 05	Concrete	Qualifications statement for testing laboratory.	Informational	03 00 05-006	A					
97	03 00 05	Concrete	Copy of delivery ticket for each load of concrete delivered to or mixed at the Site.	Informational	03 00 05-007	A					
98	03 00 05	Concrete	Laboratory test reports for field quality control testing performed in accordance with Article 3.09 of Section 03 00 05.	Informational	03 00 05-008	A					
99	07 19 16	Silane Water Repellants	Manufacturer's product data and specifications for proposed water repellent.	Action	07 19 16-001	A					
100	07 19 16	Silane Water Repellants	Manufacturer's certification indicating that water repellent complies with or exceeds requirements of the Contract Documents and is appropriate for surfaces and conditions to which it will be applied.	Informational	07 19 16-002	A					
101	07 19 16	Silane Water Repellants	Manufacturer's instructions for installing, handling, and storing water repellent.	Informational	07 19 16-003	A					
102	07 92 00	Joint Sealants	Manufacturer's data sheets including color charts, specifications, recommendations, and installation instructions for each type of sealant and associated miscellaneous material required.	Action	07 92 00-001	A					
103	07 92 00	Joint Sealants	Manufacturer's certification indicating that materials comply with or exceed requirements of the Contract Documents and are appropriate for surfaces and conditions to which they will be applied.	Informational	07 92 00-002	A					
104	31 05 19.13	Geotextiles for Earthwork	Manufacturer's data, specifications, installation instructions, and dimensions for geotextile.	Action	31 05 19.13-001	A					
105	31 05 19.13	Geotextiles for Earthwork	Affidavit certifying that the geotextile furnished complies with the requirements of Section 31 05 19.13.	Informational	31 05 19.13-002	A					
106	31 09 13	Geotechnical Instrumentation and Monitoring	Manufacturer's data, specifications, and installation and operating instructions for geotechnical instrumentation and accessories furnished under Section 31 09 13.	Action	31 09 13-001	A					
107	31 09 13	Geotechnical Instrumentation and Monitoring	Qualifications statement for geotechnical monitoring technician.	Informational	31 09 13-002	A					
108	31 09 13	Geotechnical Instrumentation and Monitoring	Daily geotechnical monitoring reports.	Informational	31 09 13-003	A					
109	31 23 00	Excavation and Fill	List of CLSM materials and proposed CLSM mix design.	Action	31 23 00-001	A					
110	31 23 00	Excavation and Fill	Laboratory test reports for CLSM cylinders, materials, and mix design tests.	Action	31 23 00-002	A					
111	31 23 00	Excavation and Fill	Manufacturer's specifications with application and installation instructions for proprietary materials and items, including admixtures to be used in CLSM mix.	Action	31 23 00-003	A					
112	31 23 00	Excavation and Fill	Excavation and Backfilling Plan.	Informational	31 23 00-004	A					
113	31 23 00	Excavation and Fill	Qualifications statement for professional engineer.	Informational	31 23 00-005	A					
114	31 23 00	Excavation and Fill	Qualifications statement for testing laboratory.	Informational	31 23 00-006	A					
115	31 23 00	Excavation and Fill	Supplier name, source address, copy of NYSDEC mining permit, and proof of NYSDOT approval, as required, for each proposed source of off-site fill material.	Informational	31 23 00-007	A					
116	31 23 00	Excavation and Fill	Daily inspection logs.	Informational	31 23 00-008	A					
117	31 23 00	Excavation and Fill	Copy of delivery ticket for each load of off-site general fill, subbase, and pipe bedding material delivered to the Site.	Informational	31 23 00-009	A					
118	31 23 00	Excavation and Fill	Copy of delivery ticket for each load of CLSM delivered to or mixed at the Site.	Informational	31 23 00-0010	A					
119	31 23 00	Excavation and Fill	Laboratory test reports for field quality control testing performed in accordance with Article 3.13 of Section 31 23 00.	Informational	31 23 00-011	A					
120	31 50 00	Excavation Support and Protection	Manufacturer's data, specifications, and installation instructions for hydrophilic joint sealant.	Action	31 50 00-001	A					
121	31 50 00	Excavation Support and Protection	Pile Driving Plan.	Informational	31 50 00-002	A					
122	31 50 00	Excavation Support and Protection	Notification of intended start of pile driving Work.	Informational	31 50 00-003	A					
123	31 50 00	Excavation Support and Protection	Copies of certified mill test reports covering chemical and physical properties of structural steel of each type furnished under Section 31 50 00.	Informational	31 50 00-004	A					
124	31 50 00	Excavation Support and Protection	Driving records.	Informational	31 50 00-005	A					
125	31 50 00	Excavation Support and Protection	Qualifications statement for surveyor.	Informational	31 50 00-006	A					

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126	31 50 00	Excavation Support and Protection	Qualifications statement for pile installer (if requested by Engineer).	Informational	31 50 00-007	A					
127	32 15 40	Crushed Stone Surfacing	Supplier name, source address, copy of current NYSDEC mining permit, and proof of NYSDOT approval for proposed source of crushed stone.	Informational	32 15 40-001	A					
128	32 15 40	Crushed Stone Surfacing	Copy of delivery ticket for each load of crushed stone delivered to the Site.	Informational	32 15 40-002	A					
129	32 16 13	Concrete Curbs and Sidewalks	Fabricator's technical information, including catalog information and specifications, for proposed reinforcing materials.	Action	32 16 13-001	A					
130	32 16 13	Concrete Curbs and Sidewalks	Qualifications statement for installer (if requested by Engineer).	Informational	32 16 13-002	A					
131	32 16 13	Concrete Curbs and Sidewalks	Concrete test results for the Work included under Section 32 16 13.	Informational	32 16 13-003	A					
132	32 31 13	Chain-Link Fences and Gates	Shop drawings of typical fence assembly, identifying all materials, dimensions, sizes, weights, and finishes of rails, posts, braces, supports, and other fencing components.	Action	32 31 13-001	A					
133	32 31 13	Chain-Link Fences and Gates	Large-scale details for all connections and gate details.	Action	32 31 13-002	A					
134	32 31 13	Chain-Link Fences and Gates	List of all hardware, fasteners, and accessories.	Action	32 31 13-003	A					
135	32 31 13	Chain-Link Fences and Gates	Copies of manufacturer's technical product information, and specifications for all fencing components.	Action	32 31 13-004	A					
136	32 31 13	Chain-Link Fences and Gates	Data substantiating that weight of coatings on proposed wire and pipe fabrications comply with the Contract Documents.	Action	32 31 13-005	A					
137	32 31 13	Chain-Link Fences and Gates	Shipping list for materials used, endorsed with manufacturer's voucher, signed by authorized employee of manufacturer, certifying that material used in fencing complies with the Contract Documents and with the approved submittals.	Informational	32 31 13-006	A					
138	32 31 13	Chain-Link Fences and Gates	Manufacturer's installation instructions.	Informational	32 31 13-007	A					
139	32 31 13	Chain-Link Fences and Gates	Qualifications statement for fence installer.	Informational	32 31 13-008	A					
140	32 31 13	Chain-Link Fences and Gates	Warranty documentation in accordance with Article 1.07 of Section 32 31 13.	Closeout	32 31 13-009	A					
141	32 31 13	Chain-Link Fences and Gates	Specified number of keys for locksets and padlocks.	Closeout	32 31 13-010	A					
142	32 92 00	Lawns	Planting schedule showing scheduled start and finish dates for lawn Work in each area of the Site.	Action	32 92 00-001	A					
143	32 92 00	Lawns	Composition and analysis of commercial starter fertilizer and all purchase receipts showing the total quantity actually purchased for the Project.	Action	32 92 00-002	A					
144	32 92 00	Lawns	Proportions of each component contained in hydroseed mixture.	Action	32 92 00-003	A					
145	32 92 00	Lawns	Percent PLS for each type of seed and each seed lot.	Action	32 92 00-004	A					
146	32 92 00	Lawns	Qualifications statement for landscape installer.	Informational	32 92 00-005	A					
147	32 92 00	Lawns	Qualifications statement for installer's landscape supervisor (if requested by Engineer).	Informational	32 92 00-006	A					
148	32 92 00	Lawns	Seed Supplier's certification for each seed mixture.	Informational	32 92 00-007	A					
149	32 92 00	Lawns	Supplier name, source address, and copy of current NYSDEC mining permit, if any, for proposed source of imported topsoil.	Informational	32 92 00-008	A					
150	32 92 00	Lawns	Copy of delivery ticket for each load of topsoil delivered to the Site.	Informational	32 92 00-009	A					
151	32 93 43	Trees	Planting schedule showing scheduled start and finish dates for each type of tree in each area of the Site.	Action	32 93 43-001	A					
152	32 93 43	Trees	Manufacturer's specifications and installation instructions for all materials required.	Action	32 93 43-002	A					
153	32 93 43	Trees	Qualifications statement for landscape installer.	Informational	32 93 43-003	A					
154	32 93 43	Trees	Qualifications statement for installer's landscape supervisor (if requested by Engineer).	Informational	32 93 43-004	A					

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155	32 93 43	Trees	Certificates of inspection as may be required by governing authorities having jurisdiction at the Site to accompany shipments.	Informational	32 93 43-005	A						
156	32 93 43	Trees	For standard products, other data certifying that materials comply with specified requirements.	Informational	32 93 43-006	A						
157	32 93 43	Trees	Written statement providing the location from which trees are to be obtained and the names and addresses of the Suppliers.	Informational	32 93 43-007	A						
158	32 93 43	Trees	Report with instructions recommending procedures to be established by Owner for full care, vigorous growth, and maintenance of each type of tree specified, with specific recommendations for type of care, insect and disease prevention, and special winter protection measures to be performed for each type of tree, for each month of the year.	Closeout	32 93 43-008	A						
159	32 93 43	Trees	Written warranty, signed by Contractor and landscape installer, as specified.	Closeout	32 93 43-009	A						
160	31 41 00	Storm Utility Drainage Piping	Details of piping, specials, joints, and connections to piping, structures, and appurtenances.	Action	31 41 00-001	A						
161	31 41 00	Storm Utility Drainage Piping	Manufacturer's data and specifications for pipe and fittings, including details of construction and fabrication.	Action	31 41 00-002	A						
162	31 41 00	Storm Utility Drainage Piping	Manufacturer's data and specifications for detectable underground warning tape.	Action	31 41 00-003	A						
163	31 41 00	Storm Utility Drainage Piping	Certificate of compliance, signed by pipe and fittings manufacturer, certifying that products comply with the applicable reference standards indicated in Article 1.02 of Section 33 41 00.	Informational	31 41 00-004	A						
164	31 41 00	Storm Utility Drainage Piping	Qualifications statement for pipe and fittings manufacturer (if requested by Engineer).	Informational	31 41 00-005	A						
165	31 41 00	Storm Utility Drainage Piping	Qualifications statement for pipe and fittings installer (if requested by Engineer).	Informational	31 41 00-006	A						
166	31 41 00	Storm Utility Drainage Piping	Results of source quality control tests (if requested by Engineer).	Informational	31 41 00-007	A						
167	31 41 00	Storm Utility Drainage Piping	Test reports for field quality control testing performed in accordance with Article 3.05 of Section 33 41 00.	Informational	31 41 00-008	A						
168	31 41 00	Storm Utility Drainage Piping	Record documents for storm utility drainage piping.	Closeout	31 41 00-009	A						
169	33 49 13	Storm Drainage Manholes, Frames, and Covers	Drawings showing design and construction details for the following: 1. Precast concrete manholes, including details of joints between the manhole bases and riser sections and stubs or openings for connections. 2. Manhole steps. 3. Cast iron frames and covers.	Action	33 49 13-001	A						
170	33 49 13	Storm Drainage Manholes, Frames, and Covers	Manufacturer's data and specifications for the following: 1. Resilient pipe connector and corrugated pipe adapter. 2. Cast iron frames and covers.	Action	33 49 13-002	A						
171	33 49 13	Storm Drainage Manholes, Frames, and Covers	Certificate of compliance, signed by precast concrete manhole manufacturer, certifying that products comply with the applicable reference standards indicated in Article 1.02 of Section 33 49 13.	Informational	33 49 13-003	A						
172	33 49 13	Storm Drainage Manholes, Frames, and Covers	Record documents for storm drainage manholes.	Closeout	33 49 13-004	A						

Notes:

1. Submittal status nomenclature is as follows:

Action Submittals:

R - Reviewed

RN - Reviewed and Noted

S - Revise and Resubmit

J - Rejected

Informational Submittals, Closeout Submittals, and Maintenance Material Submittals:

A - Accepted

NA - Not Accepted

2. Yellow shading denotes submittals with an interim status.

3. Green shading denotes submittals with a final status.

SECTION 01 35 26.23

CONFINED SPACE ENTRY PLAN

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Owner has determined that portions of the Site may constitute confined spaces or permit-required confined spaces, as defined in this Section.
2. Contractor shall provide appropriate measures, including labor, supervision, equipment, protective devices, and incidentals, to protect the health and safety of personnel at the Site relative to confined spaces, and who may be affected by the Work in confined spaces including, without limitation, employees and agents of Contractor, Subcontractors, Suppliers, Owner, Construction Manager, Engineer, and Engineer's consultants, while engaged in performance of their respective duties at the Site.
3. Comply with requirements of Owner's confined space entry program, if any.

B. Related Sections:

1. Section 01 35 29, Contractor's Health and Safety Plan.

1.02 TERMINOLOGY

A. The following words or terms are not defined but, when used in this Section, have the following meaning:

1. "Confined spaces" are areas on or about the Site as defined in 29 CFR 1910.146(b) and 29 CFR 1926.21(b)(6). Confined spaces include, but are not limited to, the following:
 - a. Storage tanks, process vessels, bins, boilers, and similar spaces.
 - b. Ventilation or exhaust ducts and stacks.
 - c. Manholes, underground utility vaults and chambers, sewers, pipelines, and tunnels.
 - d. Open-topped spaces greater than four feet deep, such as pits/excavations, tubs, vaults, and vessels.
2. "Entry permit" means the written or printed document provided by the employer of personnel entering permit-required confined space, to allow and control entry into permit-required confined space and that contains the information specified in 29 CFR 1926.146(f).
3. "Permit-required confined space" means confined space as defined in 29 CFR 1926.146(b) and that has one or more of the following characteristics:
 - a. Contains or has the potential to contain a hazardous atmosphere.
 - b. Contains a material with the potential to engulf an entrant.
 - c. Has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls, or by a floor that slopes downward and tapers to a smaller cross-section.
 - d. Contains other recognized serious safety or health hazards.
4. "Hot work permit" means the written authorization of employer of personnel entering a confined space to perform operations, such as riveting, welding, cutting, burning, and heating, capable of providing a source of ignition.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with Laws and Regulations related to protecting personnel working in or entering confined spaces, including:
 - a. 29 CFR 1910, Occupational Safety and Health Standards.
 - b. 29 CFR 1926, Safety and Health Regulations for Construction.

1.04 SUBMITTALS

A. Informational Submittals: If acceptable, written response for Informational Submittals required in this Section will not be returned to Contractor.

1. Confined Space Entry Plan: Submit in accordance with Article 1.05 of this Section.
2. Permits and Reports: For each time personnel enter a confined space, submit copies of completed permits required for confined space entry, and completed confined space data sheets.

1.05 CONFINED SPACE ENTRY PLAN

A. Prepare a Site-specific confined space entry plan, which shall be incorporated into Contractor's Site-specific health and safety plan in accordance with Section 01 35 29. Maintain copy of the confined space entry plan at the Site for access by employees, Owner and authorities having jurisdiction. Confined space entry plan shall include:

1. Results of Contractor's Site-specific hazard assessment to identify confined spaces that are permit-required confined spaces, including list of all such spaces that will be accessed for the Work. Update the list as required throughout the Project.
2. Requirements for safeguarding access to, and restricting non-permitted personnel from access to, permit-required confined spaces during the Work.
3. Project-specific procedures to be followed when entering or accessing permit-required confined spaces.
4. Documentation of training provided to each person that will enter, or work in conjunction with entry to, permit-required confined spaces.
5. Update the plan by adding copies of permits issued and records of entry to permit-required confined spaces, as required in Article 1.06 of this Section.

1.06 CONFINED SPACE SAFETY

A. Personnel entering confined space shall be trained in accordance with 29 CFR 1926.21(b)(6) and 29 CFR 1910.146(g).

B. Comply with 29 CFR 1910.146 and requirements of authorities having jurisdiction.

C. Recordkeeping:

1. Using forms required by Contractor, Owner, or authority having jurisdiction, issue for each instance of access to permit-required confined space, completed permit(s) and complete associated data sheet.
 - a. Permit for entry to permit-required confined space(s).
 - b. Permit for hot work in permit-required confined space(s).
 - c. Complete confined space data sheet.
2. File completed permits and data sheets in the Site-specific confined space entry plan, and submit in accordance with Article 1.04 of this Section.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 35 29

CONTRACTOR'S HEALTH AND SAFETY PLAN

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall prepare and maintain a written, Site-specific Health and Safety Plan (HASP), and conduct all construction activities in a safe manner that avoids:
 - a. Injuries to employees, Subcontractors, and other persons with an interest at or near the Site.
 - b. Employee exposures to health hazards above occupational limits established respectively by the Occupational Safety and Health Administration (OSHA), American Conference of Governmental Industrial Hygienists (ACGIH), and Nuclear Regulatory Commission (NRC), as applicable.
 - c. Exposure of the public and Owner's employees to air contaminants above levels established for public exposure by USEPA, NRC, NYSDEC, NYSDOH, and other authorities having jurisdiction at the Site.
 - d. Significant increases in concentrations of contaminants in soil, water, or sediment near the Site.
 - e. Violations of the Occupational Safety and Health Act, or other Laws or Regulations.

B. Related Sections:

1. Section 01 35 26.23, Confined Space Entry Plan.
2. Section 01 35 43.13, Environmental Procedures for Hazardous Materials.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. HASP Preparer:
 - a. Engage a certified industrial hygienist, accredited by the American Board of Industrial Hygiene, or safety professional certified by the Board of Certified Safety Professionals, to prepare or supervise preparation of Contractor's HASP.
2. Safety Representative:
 - a. Retain the services of an independent, safety industry professional to manage, oversee, and enforce Contractor's health and safety program at the Site, and ensure compliance with Contractor's HASP and applicable Laws and Regulations during the Project. Contractor's safety representative shall have a minimum of five years direct construction safety experience and appropriate training to supervise Hazardous Waste operations and emergency response (HAZWOPER) activities.
 - b. Contractor's safety representative shall be present at the Site at all times when Work is being performed, and shall be dedicated solely to the supervision of Contractor's health and safety program.
 - c. Responsibilities include, but are not necessarily limited to, the following:
 - 1) Supervising the implementation of Contractor's HASP.
 - 2) Providing health and safety orientation training to Contractor's employees, Subcontractors, and Site visitors.
 - 3) Attending pre-construction conference, progress meetings, and other Project meetings, as required.
 - 4) Preparing and maintaining health and safety records and statistics.
 - 5) Leading and documenting daily job safety briefings.

- 6) Preparing and submitting accident reports in accordance with Article 1.05 of this Section.
- 7) Leading accident investigations on Contractor's behalf.
- 8) Preparing and submitting daily health and safety field reports in accordance with Article 1.06 of this Section.

B. Regulatory Requirements:

1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 29 CFR 1904, Recording and Reporting Occupational Injuries and Illnesses.
 - b. 29 CFR 1910, Occupational Safety and Health Standards.
 - c. 29 CFR 1926, Safety and Health Regulations for Construction.
 - d. 40 CFR 261.3, 264, and 265, Resource Conservation and Recovery Act (RCRA).
 - e. 49 CFR 171.8, Transportation, Definitions and Abbreviations.
 - f. 6 NYCRR 371, Identification and Listing of Hazardous Wastes.
 - g. 6 NYCRR 375, Environmental Remediation Programs.
 - h. 12 NYCRR 23, Protection in Construction, Demolition, and Excavation Operations.
 - i. 12 NYCRR 56, Asbestos.
 - j. 12 NYCRR 57, High Voltage Proximity.
 - k. 12 NYCRR 59, Workplace Safety and Loss Prevention Program.
 - l. 12 NYCRR 61, Occupational Licensing and Certification.
 - m. 16 NYCRR 753, Protection of Underground Facilities.
 - n. 17 NYCRR 32, Oil Spill Prevention and Control – Actions to be Taken in Case of Discharge.

1.03 SUBMITTALS

A. Informational Submittals:

1. Contractor's HASP: Submit in accordance with Article 1.04 of this Section.
2. Qualifications Statements:
 - a. HASP Preparer: Submit name and qualifications of certified industrial hygienist or safety professional, including summary of experience and copy of valid certifications.
 - b. Safety Representative: Submit name and qualifications of safety representative, including summary of experience, training received, and copy of valid certifications applicable to the Project.
3. Reports:
 - a. Accident Reports: Submit in accordance with Article 1.05 of this Section.
 - b. Daily Health and Safety Field Reports: Submit in accordance with Article 1.06 of this Section.

1.04 HASP SUBMITTAL

A. General:

1. The Site is currently classified as a Hazardous Waste site, as defined in the General Conditions, which includes, but is not limited to, Hazardous Waste as defined in any of the following: 29 CFR 1926.65(a)(3), RCRA, 49 CFR 171.8, 6 NYCRR 371.1(d), and 6 NYCRR 375-1.2(w).
2. Each employer working at the Site shall develop and implement a written HASP for its employees involved in Hazardous Waste operations. HASP shall include procedures that will be used to ensure the safe handling of Hazardous Waste during excavating, loading, and transporting activities.
3. Comply with 29 CFR 1904, 29 CFR 1910, 29 CFR 1926, 12 NYCRR 23, 12 NYCRR 56, 12 NYCRR 57, 12 NYCRR 59, 12 NYCRR 61, 17 NYCRR 32, and other Laws and Regulations.

4. Include in HASP requirements for complying with Owner's health and safety requirements and Site-specific hazard/emergency response plans, if any.
 5. HASP shall be kept at the Site, shall address safety and health hazards of each phase of operations at the Site, and shall include requirements and procedures for employee protection.
- B. HASP Contents: HASP shall address and include the following:
1. Organizational Structure:
 - a. Specific chain of command and overall responsibilities of supervisors and employees. Include the following:
 - 1) Designation of general supervisor who has responsibility and authority to direct all Hazardous Waste operations.
 - 2) Name of Site safety representative who has responsibility and authority to implement and modify the HASP and verify compliance.
 - 3) Other personnel required for Hazardous Waste operations at the Site and emergency response, and general functions and responsibilities of each.
 - 4) Lines of authority, responsibility, and communication.
 - b. Review and update organizational structure as necessary to reflect current status of Site operations and personnel.
 2. Site description, background, and scope of Work.
 3. Safety and health risk or hazard analysis, and planned hazard controls, for each task and operation required to complete the Project.
 4. Site control measures, including:
 - a. Preventing trespassing.
 - b. Preventing unqualified or unprotected workers from entering restricted areas.
 - c. Preventing the "tracking" of contaminants out of the Site.
 - d. Maintaining a log of employees at the Site and visitors to the Site.
 - e. Delineating exclusion, contamination reduction, and support zones.
 - f. Locating personnel and equipment decontamination zones.
 - g. Communicating routes of escape and gathering points.
 5. Training Program:
 - a. Initial training requirements for Site workers and supervisors.
 - b. Exceptions to initial training requirements.
 - c. Site briefings for visitors and workers.
 - d. Refresher training requirements.
 - e. Certification of training for all Contractor and Subcontractor employees assigned to the Project.
 6. Medical Surveillance Program:
 - a. Provisions of the Site medical surveillance program.
 - b. Communication protocols between the Site, physicians, and workers.
 - c. Medical recordkeeping procedures.
 - d. Certification of medical clearance for all Contractor and Subcontractor employees assigned to the Project.
 7. Personal Protective Equipment (PPE):
 - a. PPE selection criteria.
 - b. Site- and task-specific PPE ensembles.
 - c. Training in the use of PPE.
 - d. Respiratory protection.
 - e. Hearing conservation.
 - f. PPE maintenance and storage.
 8. Exposure Monitoring Program:
 - a. Monitoring procedures to detect the presence of hazardous substances.
 - b. Monitoring procedures to determine worker exposures to hazardous substances and physical hazards.

- c. Action levels and required responses for known and expected hazardous substances and physical hazards.
 - d. Calibration and maintenance procedures for monitoring equipment.
- 9. Heat stress prevention program.
- 10. Spill containment program. Comply with Section 01 35 43.13.
- 11. Decontamination Program:
 - a. Location and type of temporary decontamination facilities.
 - b. General and specific decontamination procedures for personnel and PPE.
 - c. General and specific decontamination procedures for equipment and vehicles.
 - d. Disposal of residual waste from decontamination.
 - e. Decontamination equipment and materials.
 - f. Monitoring procedures used to evaluate the effectiveness of decontamination.
- 12. Emergency Response Plan:
 - a. Potential emergencies that may occur at the Site.
 - b. Pre-emergency planning.
 - c. On-site emergency response equipment, materials, and PPE.
 - d. Emergency Maps: Evacuation routes, gathering points, and route to nearest hospital.
 - e. Emergency roles and responsibilities.
 - f. Emergency alerting and evacuation procedures for Site personnel.
 - g. Procedures for notifying, and list of emergency contact information for:
 - 1) Emergency responders, including fire officials, ambulance service, poison control, police, and local hospitals.
 - 2) Authorities having jurisdiction.
 - 3) Owner, Construction Manager, and Engineer.
 - 4) Contractor's project manager, Site superintendant, safety representative, and foreman.
 - 5) Other entities, as required.
 - h. Emergency response procedures.
 - i. Emergency decontamination, medical treatment, and first-aid.
 - j. Emergency response training.
- 13. Confined space entry program. Comply with Section 01 35 26.23.
- 14. Other standard operating procedures applicable to the Work.

C. Submittal Procedure:

- 1. Submit HASP to Engineer the sooner of: seven days prior to pre-construction conference, or 30 days prior to Contractor's scheduled mobilization to the Site.
- 2. Engineer's review and acceptance of HASP will be only to determine if the topics covered in HASP comply with the Contract Documents. Engineer's review and acceptance will not extend to safety measures, means, methods, techniques, procedures of construction, or whether representations made in the HASP comply with Laws and Regulations, or standards of good practice.
- 3. Do not perform Work at the Site until written HASP has been accepted by Engineer.
- 4. Notwithstanding other provisions of the Contract Documents, changes in the Contract Price or Contract Times will not be authorized due to delay by Contractor in developing, submitting, or revising the HASP.

1.05 ACCIDENT REPORTING AND INVESTIGATION

- A. Immediately notify Owner, Construction Manager, and Engineer of all accidents that:
 - 1. Result in bodily injury, illness, or property damage.
 - 2. Affect the environment.
 - 3. Involve the public.

- B. Submit accident report to Owner, Construction Manager, and Engineer within 24 hours after accident occurs. Include in each report the following:
 - 1. Date, time, and location of accident.
 - 2. Names of all Site personnel involved in or affected by accident.
 - 3. Description of accident and activities being performed when accident occurred.
 - 4. Medical treatment administered, if any.
 - 5. Nature and seriousness of injury or damage.
- C. Comply with 29 CFR 1904.29, including using OSHA 300, 300-A, and 301 forms (or equivalent) to document all accidents that result in bodily injury.
- D. Based upon results of accident investigation, modify HASP as required by changing tasks or procedures to prevent reoccurrence of accident.
- E. Post current copy of Contractor's OSHA 300-A report at conspicuous place at the Site from February 1 through April 30 of each year.

1.06 DAILY HEALTH AND SAFETY FIELD REPORTS

- A. Prepare daily health and safety field reports throughout the Project. Include in each report, at a minimum, the following:
 - 1. Contractor's name.
 - 2. Owner's name.
 - 3. Project name.
 - 4. Site name and location.
 - 5. Date and day of the week.
 - 6. Weather conditions.
 - 7. Delays encountered in construction.
 - 8. Copy of daily job safety briefing form.
 - 9. Acknowledgment of deficiencies noted along with corrective actions taken on current and previous deficiencies.
 - 10. Daily health and safety exposure monitoring results, documentation of instrument calibration, new hazards encountered, and PPE utilized.
 - 11. Problems, real or anticipated, encountered during the Work that should be brought to the attention of Owner, Construction Manager, and Engineer.
 - 12. Deviations from planned Work described in previously-submitted daily health and safety field report(s).
- B. Submit daily health and safety field reports to Construction Manager and Engineer by 9:00 a.m. the next working day after the day covered in the associated report. Daily reports shall be signed by Contractor's safety representative.

1.07 RECORDS

- A. Retain at the Site complete and accurate health and safety records for all Contractor and Subcontractor employees assigned to the Project. Records shall include, at a minimum, the following:
 - 1. Valid Training Certificates:
 - a. Initial 40-hour HAZWOPER training.
 - b. Initial 24-hour HAZWOPER training.
 - c. Eight-hour HAZWOPER supervisor training.
 - d. Annual eight-hour HAZWOPER refresher training.
 - e. 10-hour construction safety training.
 - f. First-aid/cardiopulmonary resuscitation training.

- g. Other training required by Contractor's HASP.
 - 2. Valid medical clearance certificates.
 - 3. Valid respirator fit test certificates.
 - 4. Accident reports, prepared in accordance with Article 1.05 of this Section.
 - 5. Daily health and safety field reports, prepared in accordance with Article 1.06 of this Section.
 - 6. Other records required by Laws and Regulations.
- B. Keep records up-to-date throughout the Project.
- C. Contractor's safety representative shall meet at least monthly with Owner, Construction Manager, and Engineer to review Contractor's health and safety records and verify compliance with this Section.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 35 43.13

ENVIRONMENTAL PROCEDURES FOR HAZARDOUS MATERIALS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall develop, implement, and maintain a Hazardous Materials management program (HMMP) throughout the Project, in accordance with Laws and Regulations.
 - a. Hazardous Materials Brought to Site by Contractor: Transport, handle, store, label, use, and dispose of in accordance with this Section, and Laws and Regulations.
 - b. Hazardous Material Generated by Contractor:
 - 1) Hazardous Material shall be properly handled, stored, labeled, transported, and disposed of by Contractor in accordance with Laws and Regulations, and this Section.
 - 2) If Contractor will generate or has generated Hazardous Material at the Site, obtain Owner's USEPA identification number listing Owner's name and address of the Site as generator of the Hazardous Material.
 - 3) Contractor shall be responsible for identifying, characterizing, profiling, transporting, and disposing of Hazardous Material generated by Contractor.
 - c. Fines or civil penalties levied against Owner for violations committed at the Site by Contractor, and costs to Owner (if any) associated with cleanup of Hazardous Materials shall be paid by Contractor.

B. Enforcement of Laws and Regulations:

1. Interests of Owner are that accidental spills and emissions, Site contamination, and injury of personnel at the Site are avoided.
2. When Owner is aware of suspected violations, Owner will notify Contractor, and authorities having jurisdiction if Owner reasonably concludes that doing so is required by Laws or Regulations.

C. Related Sections:

1. Section 01 35 29, Contractor's Health and Safety Plan.

1.02 DEFINITIONS

A. The following terms are defined for this Section and supplement the terms defined in the General Conditions:

1. Hazardous Material: Material, whether solid, semi-solid, liquid, or gas, that, if not stored or used properly, may cause harm or injury to persons through inhalation, ingestion, absorption or injection, or that may negatively impact the environment through use or discharge of the material on the ground, in water (including groundwater), or to the air. Hazardous Material includes, but is not limited to, chemicals, Asbestos, Hazardous Waste, PCBs, Petroleum, Radioactive Material, and which is or becomes listed, regulated, or addressed pursuant to the following:
 - a. Comprehensive Environmental Response, Compensation, and Liability Act, 42 United States Code (USC) §§9601 et seq. ("CERCLA").
 - b. Hazardous Materials Transportation Act, 49 USC §§1801 et seq.
 - c. Resource Conservation and Recovery Act, 42 USC §§6901 et seq. ("RCRA").
 - d. Toxic Substances Control Act, 15 USC §§2601 et seq.
 - e. Clean Water Act, 33 USC §§1251 et seq.

- f. Clean Air Act, 42 USC §§7401 et seq.
- g. Any other Law or Regulation regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 29 CFR 1910, Occupational Safety and Health Standards.
 - b. 29 CFR 1926, Safety and Health Regulations for Construction.
 - c. 40 CFR 261.3, 264, and 265, Resource Conservation and Recovery Act (RCRA).
 - d. 49 CFR 171.8, Transportation, Definitions and Abbreviations.
 - e. 6 NYCRR 364, Waste Transporter Permits.
 - f. 6 NYCRR 371, Identification and Listing of Hazardous Wastes.
 - g. 6 NYCRR 372, Hazardous Waste Manifest System and Related Standards for Generators, Transporters, and Facilities.
 - h. 6 NYCRR 375, Environmental Remediation Programs.
 - i. 17 NYCRR 32, Oil Spill Prevention and Control – Actions to be Taken in Case of Discharge.

1.04 SUBMITTALS

A. Informational Submittals:

1. Hazardous Materials (including Chemicals) Proposed for Use at the Site: Submit current (dated within the past two years) safety data sheets (SDSs) in accordance with 29 CFR 1910.1200 (OSHA Hazard Communication Standard), manufacturer, Supplier (if different than manufacturer), container size(s) and number of containers proposed to be at the Site, minimum and maximum volume of material intended to be stored at the Site, and description of process or procedures in which Hazardous Material will be used. Furnish information in sufficient time to obtain Owner's acceptance no later than at least three days before bringing Hazardous Material to the Site.
2. Hazardous Material Generated at the Site: Submit for each Hazardous Material generated at the Site identification number, analysis results, and number and size of storage containers at the Site. Furnish information not less than three days after Contractor's receipt of analytical results.
3. Permits: Submit copies of permits for storing, handling, using, transporting, and disposing of Hazardous Materials, obtained from authorities having jurisdiction.
4. Hazardous Materials Communication Plan: Submit in accordance with Article 1.05 of this Section.
5. Emergency/Spill Response Plan: Submit in accordance with Article 1.06 of this Section.

1.05 HAZARDOUS MATERIALS COMMUNICATION PLAN

- #### A. Develop and implement a Hazardous Materials communication plan. At a minimum, maintain at the Site two notebooks containing the following:
1. Inventory of Hazardous Materials, including all chemicals.
 2. Current (dated within the past two years) SDSs for all materials being used to accomplish the Work, whether or not defined as Hazardous Material in this Section. Keep one notebook in Contractor's field office at the Site; keep second notebook at location acceptable to Owner and Engineer. Keep notebooks up-to-date as materials are brought to and removed from the Site.

1.06 EMERGENCY/SPILL RESPONSE PLAN

- A. Develop, implement, and maintain an emergency/spill response plan, for each Hazardous Material or each class/group of Hazardous Materials as applicable. Response plan shall include, at a minimum, the following:
 - 1. Description of equipment and materials available at the Site to contain a spill of, or respond to an emergency related to, the material.
 - 2. Procedures for notifying, and list of emergency contact information for:
 - a. Authorities having jurisdiction.
 - b. Emergency responders.
 - c. Contractor's project manager, Site superintendent, safety representative, and foreman.
 - d. Owner, Construction Manager, and Engineer.
 - e. Other entities as required.
 - 3. Response coordination procedures between Contractor, Owner, and others as appropriate.
 - 4. Site plan showing proposed location of Hazardous Materials storage area, location of spill containment/response equipment and materials, and location of storm water drainage inlets and drainage routes.
 - 5. Description of Hazardous Material handling and spill response training provided to Contractor's and Subcontractors' employees, in accordance with 29 CFR 1926.21(b) and other Laws and Regulations.
- B. Emergency/spill response plan shall be incorporated into Contractor's Site-specific health and safety plan in accordance with Section 01 35 29.

1.07 HAZARDOUS MATERIALS MANAGEMENT

- A. Obtain Owner's acceptance before bringing each Hazardous Material to the Site.
- B. Storage of Hazardous Materials and Non-Hazardous Materials:
 - 1. Hazardous Materials containers shall bear applicable hazard diamond(s).
 - 2. Container Labeling:
 - a. Properly label each container of consumable materials, whether or not classified as Hazardous Materials under this Section.
 - b. Stencil Contractor's name and, as applicable, Subcontractor's name, on each vessel containing Hazardous Material and, for non-Hazardous Materials, on each container over five-gallon capacity. Containers shall bear securely-attached label clearly identifying contents. Label containers that are filled from larger containers.
 - c. If Owner becomes aware of unlabeled containers at the Site, Owner will notify Contractor. Properly label container(s) within one hour of receipt of notification or remove container from the Site.
 - 3. To greatest extent possible, store Hazardous Materials off-site until required for use in the Work.
- C. Hazardous Materials Storage Area:
 - 1. Maintain designated storage area for Hazardous Materials that includes secondary containment. Storage area shall include barriers to prevent vehicles from colliding with storage containers, and shall include protection from environmental factors such as weather.
 - 2. Provide signage in accordance with Laws and Regulations, clearly identifying the Hazardous Materials storage area.

- D. Contractor's safety representative shall meet at least monthly with Owner, Construction Manager, and Engineer to review Contractor's HMMP documents and procedures, and inspect storage areas and the Site in general, to verify compliance with this Section.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 35 49

COMMUNITY AIR MONITORING PLAN

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, services, and incidentals as specified and required to implement and comply with the Project's Community Air Monitoring Plan (CAMP). The CAMP is included with this Section and is part of the Contract Documents.
2. Perform community air monitoring on a continuous basis during all ground-intrusive Work or dust-generating Work. Community air monitoring includes:
 - a. Real-time air monitoring for total volatile organic compounds (TVOCs) and particulate matter less than 10 micrometers in diameter (PM₁₀).
 - b. Periodic monitoring for manufactured gas plant (MGP)-related odors.
3. Perform community air monitoring within areas shown or indicated.
4. Owner will coordinate with property owners and provide access for community air monitoring on private properties.

B. Coordination:

1. Coordinate requirements of this Section with requirements for odor, vapor, and dust control in the Contract Documents.

C. Related Sections:

1. Section 01 57 05, Temporary Controls.

1.02 TERMINOLOGY

A. The following words or terms are not defined but, when used in this Section, have the following meaning:

1. "Dust-generating Work" means any Work with the potential to generate dust. Examples of dust-generating Work include, but are not limited to, the following:
 - a. Demolitions and removals of buildings and other surface structures.
 - b. Crushing and processing demolition debris.
 - c. Handling excavated material and fill material.
 - d. Ground-intrusive Work.
2. "Ground-intrusive Work" means any Work performed below the existing level of the ground, or that involves the disturbance of existing earth, regardless of quantity. Examples of ground-intrusive Work include, but are not limited to, the following:
 - a. Grubbing.
 - b. Demolitions and removals of below-grade construction and Underground Facilities.
 - c. Excavating, trenching, and test pitting.
 - d. Backfilling and grading.
3. "Perimeter of work area" means the limits of Work, or half the distance to the nearest potential receptor or occupied residential/commercial structure, whichever is less, but in no case less than 20 feet.
4. "Work area" means any area where ground-intrusive Work or dust-generating Work is being performed.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Air Monitoring Technician:

- a. Retain the services of an independent, safety industry professional to implement the CAMP on Contractor's behalf. Contractor's air monitoring technician shall have a minimum of five years direct construction safety or environmental monitoring experience, and appropriate health and safety training in accordance with Laws and Regulations.
- b. Contractor's air monitoring technician shall be present at the Site at all times when Work is being performed, and shall be dedicated solely to the implementation of the CAMP.
- c. Responsibilities include, but are not necessarily limited to, the following:
 - 1) Installing the meteorological monitoring system.
 - 2) Selecting upwind and downwind monitoring locations and setting up air monitoring stations on a daily basis.
 - 3) Calibrating air monitoring equipment on a daily basis, or other frequency recommended by the manufacturer.
 - 4) Coordinating equipment maintenance and repairs.
 - 5) Monitoring meteorological conditions throughout the work day and relocating air monitoring stations as necessary and appropriate.
 - 6) Performing hourly or more frequent inspections of air monitoring stations to verify proper function.
 - 7) Performing hourly or more frequent perimeter checks of the work area to monitor for MGP-related odors.
 - 8) Removing air monitoring stations and downloading TVOC and PM₁₀ data from monitoring equipment at the end of each work day.
 - 9) Managing a database of TVOC, PM₁₀, and meteorological data at the Site.
 - 10) Attending progress meetings and other Project meetings, as required.
 - 11) Preparing and submitting weekly air monitoring reports in accordance with Article 1.05 of this Section.
 - 12) Preparing and submitting exceedance reports in accordance with Article 1.06 of this Section.
 - 13) Preparing and submitting daily odor monitoring logs in accordance with Article 1.07 of this Section.
 - 14) Notifying Construction Manager, Engineer, and appropriate Contractor personnel when alert or action levels are exceeded at downwind monitoring locations, and when MGP-related odors are noted at the perimeter of the work area.

B. Regulatory Requirements:

1. Comply with applicable provisions and recommendations of the NYSDEC Technical Guidance for Site Investigation and Remediation (DER-10).

C. Equipment Calibration:

1. Calibrate air monitoring equipment on a daily basis, or other frequency recommended by the manufacturer, in accordance with manufacturer's calibration and quality assurance requirements. Document all instrument readings, field reference checks, and calibrations in a dedicated log.
2. Preventative maintenance and repair of monitoring equipment, if required, shall only be performed by qualified personnel, or authorized representatives of the manufacturer.
3. Prepare and retain at the Site electronic or written records of all equipment calibrations, preventative maintenance, and repairs. Submit to Engineer upon request.

1.04 SUBMITTALS

A. Informational Submittals:

1. Air Monitoring Plan: Submit acceptable plan for implementing the CAMP not less than 21 days before initiating any dust-generating Work or ground-intrusive Work at the Site. Include the following:
 - a. List of proposed equipment for community air monitoring.
 - b. Manufacturer's product data, specifications, and installation or operating instructions for community air monitoring equipment, including the following:
 - 1) Real-time TVOC and PM₁₀ monitoring equipment and accessories.
 - 2) Environmental enclosures and mounting tripods.
 - 3) Alarms and wireless telemetry system.
 - 4) Meteorological monitoring system and accessories.
 - c. Manufacturer's calibration and field quality assurance requirements for real-time TVOC and PM₁₀ monitoring equipment.
 - d. Proposed weekly air monitoring report form.
 - e. Proposed exceedance report form.
 - f. Proposed daily odor monitoring log form.
2. Qualification Statements: Submit name and address of firm, and summary of relevant experience for air monitoring technician.
3. Reports:
 - a. Weekly Air Monitoring Reports: Submit in accordance with Article 1.05 of this Section.
 - b. Exceedance Reports: Submit in accordance with Article 1.06 of this Section.
4. Data Files: Submit in accordance with Article 1.08 of this Section.

1.05 WEEKLY AIR MONITORING REPORTS

A. Prepare weekly air monitoring reports throughout the Project. Include in each report, at a minimum, the following:

1. Contractor's name.
2. Owner's name.
3. Project name.
4. Site name and location.
5. The following for each day that community air monitoring is performed:
 - a. Date and day of the week.
 - b. General location and brief description of Work performed at the Site.
 - c. Daily average concentration of TVOCs and PM₁₀ for each air monitoring station.
 - d. Daily maximum 15-minute time-weighted average (TWA) concentration of TVOCs and PM₁₀ for each air monitoring station.
 - e. Exceedances (if any) of the action levels specified in Paragraphs 3.01.C or 3.03.C of this Section. Provide the following:
 - 1) Time, location, and 15-minute TWA or real-time concentration, as appropriate, of exceedance.
 - 2) Copy of exceedance report, prepared in accordance with Article 1.06 of this Section.
 - f. Site plan showing approximate locations of upwind and downwind air monitoring stations at the Site and prevailing wind direction for the day. Note if air monitoring stations were relocated during the day.
 - g. Copy of daily odor monitoring log, prepared in accordance with Article 1.07 of this Section.

- B. Submit weekly air monitoring reports to Construction Manager and Engineer by 12:00 p.m. the Monday after the week covered in the associated report. Construction Manager or Engineer will distribute weekly air monitoring reports to:
1. Owner.
 2. Construction Manager.
 3. Engineer.
 4. Contractor.
 5. NYSDEC.
 6. NYSDOH.
 7. Others as appropriate.

1.06 EXCEEDANCE REPORTS

- A. Prepare an exceedance report whenever the action levels specified in Paragraphs 3.01.C or 3.03.C of this Section are exceeded. Include in each report the following:
1. Contractor's name.
 2. Owner's name.
 3. Project name.
 4. Site name and location.
 5. Date, day of the week, and time of exceedance.
 6. General location and brief description of work being performed at time of exceedance.
 7. Weather conditions at time of exceedance.
 8. For each air monitoring station, 15-minute TWA or real-time concentration, as appropriate, of TVOCs and PM₁₀ at time of exceedance.
 9. Source or cause of exceedance.
 10. Corrective actions taken or to be taken in response to exceedance.
 11. Date and time verbal or written notification was provided to NYSDEC.
- B. Submit exceedance reports to Construction Manager and Engineer within 12 hours after an action level exceedance. Construction Manager or Engineer will distribute exceedance reports within 24 hours after exceedance to:
1. Owner.
 2. Construction Manager.
 3. Engineer.
 4. Contractor.
 5. NYSDEC.
 6. NYSDOH.
 7. Others as appropriate.

1.07 DAILY ODOR MONITORING LOG

- A. Prepare daily odor monitoring logs throughout the Project. Include in each daily log, at a minimum, the following:
1. Contractor's name.
 2. Owner's name.
 3. Project name.
 4. Site name and location.
 5. Date and day of the week.
 6. Weather conditions.
 7. Time and outcome of each perimeter check.
 - a. Note the presence or absence of MGP-related odors at the perimeter of the work area.
 - b. Identify the general location(s) along the work area perimeter where MGP-related odors are noticed.

8. Time and outcome of any odor complaints from the public.
- B. Submit daily odor monitoring logs to Construction Manager and Engineer in weekly air monitoring report submittal in accordance with Article 1.05 of this Section.

1.08 DATA MANAGEMENT

- A. Maintain a database of TVOC, PM₁₀, and meteorological data files at the Site.
 1. Index TVOC and PM₁₀ data files by date, station number, station location (upwind or downwind), and data type (TVOC or PM₁₀).
 2. Index meteorological data files by date.
- B. Back up data files to disc or portable hard drive on a weekly or more frequent basis.
- C. Submit TVOC, PM₁₀, and meteorological data files on a monthly basis throughout the Project. Provide data files on disc in format acceptable to Engineer. Label each disc with the following information:
 1. Dates covered.
 2. Owner's name.
 3. Project name.
 4. Site name and location.

PART 2 – PRODUCTS

2.01 PERIMETER AIR MONITORING SYSTEM

- A. System Description:
 1. Provide complete, integrated perimeter air monitoring system consisting of the following:
 - a. Four portable air monitoring stations, each capable of measuring real-time ambient air concentrations of TVOCs and PM₁₀, logging air monitoring data, and notifying Site personnel if alert levels or action levels are exceeded.
 - b. One portable meteorological monitoring system capable of measuring wind speed, wind direction, relative humidity, dry bulb temperature, and barometric pressure, and displaying and logging weather data.
- B. Air Monitoring Stations:
 1. Photoionization Detectors: Direct-reading, data-logging photoionization detector with 10.6 eV lamp. Provide one of the following for each air monitoring station:
 - a. MiniRAE 3000 by RAE Systems, Inc.
 - b. Or equal.
 2. Aerosol Photometers: Direct-reading, data-logging aerosol monitor. Provide one of the following for each air monitoring station:
 - a. DustTrak II Aerosol Monitor Model 8530 by TSI, Inc.
 - b. Or equal.
 3. Spare Equipment: Provide and retain at the Site the following:
 - a. Spare photoionization detectors and aerosol photometers to allow for uninterrupted monitoring in the event of equipment damage or malfunction.
 - b. Spare batteries for each photoionization detector and aerosol photometer to allow for continuous real-time monitoring and data-logging for a period of not less than 12 hours.

4. Environmental Enclosures and Mounting Tripods: Provide portable, weather-tight enclosure and compatible mounting (survey) tripod for each air monitoring station. Environmental enclosures shall provide proper operating conditions for photoionization detectors and aerosol photometers.
 5. Alarms and Wireless Telemetry System: Provide for each air monitoring station audible and visible alarms and wireless telemetry system capable of notifying air monitoring technician in real-time (via handheld radio) if alert levels or action levels are exceeded.
 6. Accessories: Provide equipment calibration kits, sampling inlets, data management software, and other accessories recommended by the equipment manufacturers for the intended application.
- C. Meteorological Monitoring System:
1. Product and Manufacturer: Provide one of the following:
 - a. Wireless Vantage Pro2 by Davis Instruments Corporation, Inc.
 - b. Or equal.
 2. Accessories: Provide the following:
 - a. WeatherLink data logger and software suite by Davis Instruments Corporation, Inc.
 - b. Mounting Pole Kit by Davis Instruments Corporation, Inc.
 - c. Other accessories recommended by equipment manufacturer for the intended application.

PART 3 – EXECUTION

3.01 REAL-TIME AIR MONITORING FOR TVOCS AND PM10

- A. Air Monitoring Stations:
1. Installation:
 - a. Deploy air monitoring stations at the start of each work day before any ground-intrusive Work or dust-generating Work is initiated.
 - 1) Position one air monitoring station at the upwind perimeter of the work area and three air monitoring stations at the downwind perimeter of the work area. Determine and designate upwind and downwind air monitoring stations based on prevailing wind direction and nature and location of Work to be performed.
 - 2) Set alarm levels on real-time TVOC and PM₁₀ monitoring equipment to respond to 15-minute TWA concentrations at or below the action levels specified in Paragraph 3.01.C of this Section.
 - 3) Ensure that community air monitoring is being performed before initiating ground-intrusive Work or dust-generating Work.
 - b. Monitor wind direction throughout the day and adjust locations of air monitoring stations if wind direction shifts more than 60 degrees from original upwind direction. Document original upwind and downwind air monitoring stations, and any changes made to monitoring locations during the day.
 2. Protection:
 - a. Protect air monitoring stations from damage due to construction operations, weather, and vandalism.
 - b. Immediately remove from service, and replace at Contractor's expense, damaged equipment.
 3. Removal:
 - a. Remove air monitoring stations at the end of each work day, and only after all ground-intrusive Work or dust-generating Work has been completed for the day.
 - b. Download TVOC and PM₁₀ data from air monitoring stations at the end of each day.

B. Alert Levels and Response:

1. Alert Levels:

- a. TVOCs: 15-minute TWA concentration at downwind air monitoring station of three parts per million (ppm) above background (upwind) 15-minute TWA concentration.
- b. PM₁₀: 15-minute TWA concentration at downwind air monitoring station of 100 micrograms per cubic meter (ug/m³) above background (upwind) 15-minute TWA concentration, or visible dust observed leaving the work area.

2. Response: Implement the following if alert levels are exceeded:

- a. Notify Construction Manager, Engineer, and appropriate Contractor personnel.
- b. Continue Work and employ additional odor, vapor, and dust controls to abate emissions in accordance with Section 01 57 05.
- c. Evaluate and, if necessary and appropriate, modify construction techniques.

C. Action Levels and Response:

1. Action Levels:

- a. TVOCs: 15-minute TWA concentration at downwind air monitoring station of five ppm above background (upwind) 15-minute TWA concentration.
- b. PM₁₀: 15-minute TWA concentration at downwind air monitoring station of 150 ug/m³ above background (upwind) 15-minute TWA concentration.

2. Response: Implement the following if action levels are exceeded:

- a. Stop all Work and immediately notify Construction Manager, Engineer, and appropriate Contractor personnel. Construction Manager or Engineer will notify the NYSDEC project manager by telephone or e-mail within two hours after the exceedance.
- b. Continue monitoring and employ additional odor, vapor, and dust controls to abate emissions in accordance with Section 01 57 05.
- c. Identify the source or cause of the exceedance.
- d. Evaluate and, if necessary and appropriate, modify construction techniques.
- e. Prepare exceedance report in accordance with Article 1.06 of this Section.
- f. Work shall not resume until 15-minute TWA concentrations are below action levels. If the 15-minute TWA concentration of TVOCs exceeds 25 ppm above the background (upwind) 15-minute TWA concentration, Work shall not resume until authorized by Owner.

3.02 PERIODIC MONITORING FOR MGP-RELATED ODORS

A. Perimeter Checks:

1. During work hours, perform hourly or more frequent walks around the entire perimeter of the work area to monitor for MGP-related odors.
2. Document the time and outcome of each perimeter check in daily odor monitoring log in accordance with Article 1.07 of this Section.
3. Implement the following if MGP-related odors are noticed at the perimeter of the work area:
 - a. Notify Construction Manager, Engineer, and appropriate Contractor personnel.
 - b. Continue Work and employ additional odor, vapor, and dust controls to abate emissions in accordance with Section 01 57 05.
 - c. Evaluate and, if necessary and appropriate, modify construction techniques.
 - d. Perform more frequent perimeter checks.
 - e. If MGP-related odors persist at the perimeter of the work area, stop Work and notify Construction Manager, Engineer, and appropriate Contractor personnel.
 - f. Identify the source or cause of MGP-related odors.
 - g. Evaluate and, if necessary and appropriate, further modify construction techniques and employ additional odor, vapor, and dust controls to abate emissions in accordance with Section 01 57 05.

h. Work shall not resume until authorized by Owner.

B. Odor Complaints:

1. Immediately notify Construction Manager and Engineer of any odor complaints from the public. Construction Manager or Engineer will immediately direct such complaints to NYSDEC's on-site representative.
2. Implement the following in response to an odor complaint:
 - a. As appropriate, verify with Construction Manager and Engineer the legitimacy of the complaint based on the Work being performed at the Site, the prevailing wind direction, and other climatological factors.
 - b. Continue monitoring and employ additional odor, vapor, and dust controls to abate emissions in accordance with Section 01 57 05.
 - c. Evaluate and, if necessary and appropriate, modify construction techniques.
3. Document the time and outcome of any odor complaints in daily odor monitoring log in accordance with Article 1.07 of this Section.

3.03 SPECIAL PROCEDURES FOR WORK NEAR OCCUPIED RESIDENTIAL STRUCTURES

A. In addition to the requirements of Articles 3.01 and 3.02 of this Section, comply with the requirements of this Article 3.03 when ground-intrusive Work or dust-generating Work is performed within 20 feet of an occupied residential structure.

B. Real-Time Air Monitoring for TVOCs and PM₁₀:

1. Baseline Air Monitoring:
 - a. Before any ground-intrusive Work or dust-generating Work begins at the Site, perform continuous real-time TVOC and PM₁₀ air monitoring inside of the occupied residential structure to establish baseline concentrations and trends. Baseline monitoring shall be performed over not less than an eight-hour period between 7:00 a.m. and 5:00 p.m. Owner will coordinate with property owner and provide access for baseline air monitoring.
 - b. Submit baseline air monitoring data to Construction Manager and Engineer and identify any unusual readings or observations. Construction Manager and Engineer will discuss such readings with NYSDEC and NYSDOH before any ground-intrusive Work or dust-generating Work begins at the Site.
2. Routine Air Monitoring: During ground-intrusive Work or dust-generating Work, perform continuous real-time TVOC and PM₁₀ air monitoring at the nearest outside wall and at any ventilation system intakes of the occupied residential structure.

C. Action Levels and Response:

1. Action Levels:
 - a. TVOCs: Real-time ambient air concentration of one ppm at the nearest outside wall or at any ventilation system intakes of the occupied residential structure.
 - b. PM₁₀: Real-time ambient air concentration of 150 ug/m³ at the nearest outside wall or at any ventilation system intakes of the occupied residential structure.
2. Response: Implement the following if action levels are exceeded:
 - a. Stop all Work and immediately notify Construction Manager and Engineer. Construction Manager or Engineer will notify the NYSDEC project manager by telephone or e-mail within two hours after the exceedance.
 - b. Perform continuous real-time TVOC and PM₁₀ air monitoring inside of the occupied residential structure.
 - c. Continue monitoring, both inside and outside of the occupied residential structure, and employ additional odor, vapor, and dust controls to abate emissions in accordance with Section 01 57 05.
 - d. Identify the source or cause of the exceedance.

- e. Evaluate and, if necessary and appropriate, modify construction techniques.
- f. Prepare exceedance report in accordance with Article 1.06 of this Section.
- g. Work may resume with continuous real-time TVOC and PM₁₀ air monitoring both inside and outside of the occupied residential structure if:
 - 1) Real-time TVOC and PM₁₀ air concentrations outside of the occupied residential structure are below action levels at the nearest outside wall and at any ventilation system intakes of the occupied residential structure; and
 - 2) Real-time TVOC and PM₁₀ air concentrations inside of the occupied residential structure are below either action levels or baseline concentrations, whichever are greater.
- h. If real-time TVOC and PM₁₀ air concentrations inside of the occupied residential structure are greater than either action levels or baseline concentrations, whichever are greater, Work shall not resume until authorized by Owner.

3.04 FIELD QUALITY CONTROL

- A. Site Inspections:
 - 1. During the work day, perform hourly or more frequent field checks of monitoring equipment to verify proper function. Document the date, day of the week, time, and outcome of each field check in a dedicated log.
 - 2. Immediately remove from service, and replace at Contractor's expense, damaged or malfunctioning equipment.
 - 3. Prepare and retain at the Site electronic or written records of all field checks. Submit to Engineer upon request.

3.05 ATTACHMENTS

- A. The attachments listed below, which follow after the "End of Section" designation, are part of this Section:
 - 1. Attachment A: CAMP (38 pages).

END OF SECTION

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Community Air Monitoring Plan

Phase 1 Remedial Action

Ilion (East Street) Former Manufactured Gas Plant Site

Village of Ilion, Herkimer County, New York

Site No. 6-22-019

April 2015

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Community Air Monitoring Plan

Phase 1 Remedial Action
Ilion (East Street) Former
Manufactured Gas Plant Site
Village of Ilion, Herkimer County,
New York
Site No. 6-22-019

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Community Air Monitoring Plan

Phase 1 Remedial Action,
Ilion (East Street) Former
Manufactured Gas Plant Site

Acronyms and Abbreviations

ARCADIS	ARCADIS of New York, Inc.
CAMP	Community Air Monitoring Plan
COC	constituent of concern
MGP	manufactured gas plant
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAH	polycyclic aromatic hydrocarbon
PM ₁₀	particulate matter less than 10 micrometers in diameter
ppm	parts per million
TWA	time-weighted average
VOC	volatile organic compound
µg/m ³	micrograms per cubic meter



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Community Air Monitoring Plan

Phase 1 Remedial Action,
Ilion (East Street) Former
Manufactured Gas Plant Site

1. Introduction

1.1 General

This Community Air Monitoring Plan (CAMP) has been prepared by ARCADIS of New York, Inc. (ARCADIS), on behalf of National Grid, to summarize the scope of the community air monitoring program that will be implemented during the remediation of the former manufactured gas plant (MGP) site generally located at 1 East Street in the Village of Ilion, Herkimer County, New York (the "Site"). The remediation activities are being performed pursuant to: 1) an Order on Consent (Index No. A4-0473-0000) between the New York State Department of Environmental Conservation (NYSDEC) and National Grid; and 2) NYSDEC's *Record of Decision* (NYSDEC 2011).

As described in the *Final (100%) Remedial Design for the Phase 1 Remedial Action* (ARCADIS 2015), the remedial construction activities will generally include the following:

- Site clearing and preparation;
- Pre-demolition abatement of Asbestos-containing materials and loose lead-containing paint and debris located within or upon a one-story block building (the former gas regulator house);
- Demolition of the former gas regulator house and certain surface structures and facilities;
- Excavation of approximately 5,850 in-situ cubic yards of MGP-impacted material to depths ranging from approximately one to 13 feet below ground surface (bgs);
- Demolition of former building foundations, Underground Facilities, and former MGP structures located within the excavation limits;
- Installation of approximately 335 linear feet of 24-inch diameter high-density polyethylene gravity storm sewer pipe and two precast concrete manholes by open-cut method;
- Abandonment of approximately 325 linear feet of existing 24-inch diameter gravity vitrified clay and concrete storm sewer pipe by filling and capping in place;



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- Removal of demolition, excavation, and construction waste from the Site and disposal at appropriate, National Grid-approved facilities in accordance with applicable laws and regulations;
- Removal of construction wastewater from the Site and disposal at appropriate, National Grid-approved facilities in accordance with applicable laws and regulations;
- Backfilling excavation areas;
- Installation of a permeable two-foot thick soil cover across the Site; and
- Site restoration, including the planting of new trees and lawns and the installation of new chain-link fencing and gates.

This CAMP fulfills the general requirements set forth in Appendices 1A and 1B of NYSDEC's *Technical Guidance for Site Investigation and Remediation* (DER-10; NYSDEC 2010). Appendix 1A of DER-10, which is provided in Appendix A of this CAMP, includes general guidance and protocols for the preparation and implementation of a CAMP. Appendix 1B of DER-10, which is provided in Appendix B of this CAMP, supplements the contents of Appendix 1A and includes additional requirements for fugitive dust/particulate monitoring.

1.2 Site Location and Description

The Site is located at 1 East Street in a mixed commercial/residential area of the Village of Ilion, Herkimer County, New York, and is identified as Block 4, Lot 19 on Section 120.037 of the Village of Ilion tax map. The 1.3-acre property is roughly "L" shaped, and is generally bounded by East Clark Street and privately-owned residential properties to the north, State Street to the south, East Street to the east, and privately-owned commercial and residential properties to the west.

The property is surrounded by an eight-foot high chain-link fence topped with barbed wire, and access gates are located along East Street and State Street. A gravel driveway leads from the East Street access gate to a gravel parking area in the center of the Site. The northern and western portions of the Site are grass-covered, and several large coniferous trees are present across the central and northern portions of the property. To the north of the East Street access gate is a small, single-story cinderblock building that formerly housed a natural gas regulator station. The

southeastern portion of the Site contains the remnants of several building foundations, steel piping, and appurtenances related to the former MGP and electrical substation. Surface topography at the Site is generally flat with a gentle slope from south to north.

1.3 Objective

Community air monitoring will be performed during the remedial construction activities to provide a measure of protection for the downwind community from 1) potential airborne releases of MGP-related constituents of concern (COCs) – specifically, volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) and 2) nuisance MGP-related odors. VOCs are more volatile (easily evaporated) than PAHs and, therefore, are generally of greater concern when monitoring air quality during the remediation of former MGP sites. The airborne concentration of respirable dust (particulate matter less than 10 micrometers in diameter [PM_{10}]) will also be monitored due to its ability to co-transport MGP-related COCs.

1.4 CAMP Organization

The remainder of this CAMP is organized into five sections as follows:

- Section 2 (Odor, Vapor, and Dust Control), summarizes the odor, vapor, and dust controls that will be employed during the project;
- Section 3 (Real-Time Air Monitoring for Total VOCs and PM_{10}), summarizes the air monitoring equipment and action levels for real-time total VOC and PM_{10} monitoring;
- Section 4 (Periodic Monitoring for MGP-Related Odors), summarizes the monitoring requirements and response procedures for MGP-related odors;
- Section 5 (Reporting), summarizes the reporting requirements for the community air monitoring program; and
- Section 6 (References), presents a list of reference documents used in the preparation of this CAMP.



Community Air Monitoring Plan

Phase 1 Remedial Action,
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2. Odor, Vapor, and Dust Control

Ground-intrusive and certain non-intrusive construction activities have the potential to generate localized impacts to air quality. Such activities are anticipated to include, but are not limited to, the following:

- Clearing and grubbing;
- Demolitions and removals of surface structures, Underground Facilities, and below-grade construction;
- Crushing and processing demolition debris;
- Excavating, trenching, and test pitting;
- Handling (including loading and unloading) excavated material and clean fill material;
- Backfilling, grading, and restoring excavation areas and other disturbed areas; and
- Cleaning/decontaminating personnel, equipment, and vehicles.

Odor, vapor, and dust emissions resulting from these activities will be controlled using a combination of: 1) water-based, biodegradable vapor mitigation agents – namely, BioSolve Pinkwater and Rusmar AC-645 Long-Duration Foam; 2) construction techniques; and 3) site management practices.

A solution of BioSolve Pinkwater and water will be sprayed on exposed soils and excavation faces during active excavation/load-out activities. Rusmar AC-645 Long-Duration Foam will be sprayed on excavated soils and excavation faces to form a thick, viscous vapor barrier before extended work breaks and at the end of each work day. BioSolve Pinkwater and Rusmar AC-645 Long-Duration Foam will be mobilized to the Site before any ground-intrusive or dust-generating activities are initiated and will be maintained on-site in sufficient supply throughout the project. The following construction techniques and site management practices will also be used during the project to control odor, vapor, and dust emissions:



Community Air Monitoring Plan

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- Excavating and backfilling, and loading, handling, and unloading excavated material and clean fill material, in a manner that minimizes the generation of airborne dust;
- Hauling excavated material and clean fill material in properly covered vehicles;
- Restricting vehicle speeds on temporary access roads and active haul routes;
- Covering shallow excavations and stockpiles of clean fill material with polyethylene liners (anchored appropriately to resist wind forces) before extended work breaks and at the end of each work day;
- Holding to a minimum the areas of bare soil exposed at one time and complying with other applicable erosion and sediment control requirements of Specification Section 01 57 05 (Temporary Controls); and
- Complying with cleaning and dust control requirements of Specification Section 01 55 13 (Temporary Access Roads and Parking Areas) and progress cleaning requirements of Specification Section 01 74 05 (Cleaning).

As required by Specification Section 01 57 05, odor, vapor, and dust controls will be proactively employed during the work to: 1) prevent exceedances of the total VOC and PM₁₀ action levels specified in Specification Section 01 35 49 (Community Air Monitoring Plan) and in Sections 3.3 and 3.4.2 of this CAMP; and 2) mitigate MGP-related odor emissions to the extent practicable and to the satisfaction of National Grid, ARCADIS, NYSDEC, and NYSDOH.

3. Real-Time Air Monitoring for Total VOCs and PM₁₀

3.1 General

Real-time air monitoring for total VOCs and PM₁₀ will be performed at one upwind and three downwind locations at the perimeter of the work area during all ground-intrusive or dust-generating construction activities. For the purpose of this CAMP, the “perimeter of the work area” is defined as the limits of the area where ground-intrusive or dust-generating work is being performed, or half the distance to the nearest potential receptor or occupied residential/commercial structure, whichever is less, but in no case less than 20 feet. The frequency of community air monitoring will be relative to the level of Site work activities being conducted, and may be adjusted as the work proceeds and in consideration of the monitoring results.

3.2 Perimeter Air Monitoring System

As described in Specification Section 01 35 49 (Community Air Monitoring Plan), real-time air monitoring for total VOCs and PM₁₀ will be performed using a perimeter air monitoring system generally consisting of four portable air monitoring stations and a portable weather station. Each of these components is described in further detail below.

3.2.1 Air Monitoring Stations

Each air monitoring station will contain 1) a portable, data-logging photoionization detector (MiniRAE 3000 by RAE Systems, Inc. or equal) for monitoring the airborne concentration of total VOCs and 2) a portable, data-logging aerosol photometer (DustTrak II Aerosol Monitor Model 8530 by TSI, Inc. or equal) for monitoring the airborne concentration of PM₁₀. The monitoring equipment will be housed in portable, weather-tight enclosures, which will be mounted on surveying tripods at a height of approximately 4.5 to 5.5 feet (breathing zone height).

Air monitoring stations will be deployed at the start of each work day before any ground-intrusive or dust-generating activities are initiated. Upwind and downwind monitoring locations will be selected based on the prevailing wind direction and the nature and location of the activities anticipated to be performed that day. Wind direction will be monitored throughout the day, and stations will be re-located or re-assigned, as appropriate, if the wind direction shifts more than 60 degrees from the



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original upwind direction. Any such changes in monitoring locations will be documented in a field log book.

Monitoring equipment will be calibrated on a daily basis or other frequency recommended by the manufacturers. Hourly or more frequent field checks of the monitoring equipment will also be performed during the work day to verify proper function. Damaged or malfunctioning equipment will be promptly removed from service and replaced. The date, time, and outcome of each equipment calibration and field check will be documented in a field log book.

Total VOC and PM₁₀ data will be downloaded from the air monitoring stations at the end of each work day. Data files will be stored on-site in a computer database, indexed by date, station number, and station location (upwind or downwind), and will be backed-up periodically to disc or a portable hard drive.

3.2.2 Weather Station

A portable weather station (Wireless Vantage Pro2 by Davis Instruments Corporation, Inc. or equal) will be used to monitor local meteorological conditions during the project. The weather station will be installed in a prominent location at the Site to provide representative meteorological data, including wind speed, wind direction, dry-bulb temperature, and relative humidity. Security and accessibility will also be considered in selecting a location for the weather station.

3.3 Action Levels

The total VOC and PM₁₀ action levels for the community air monitoring program are time-weighted average (TWA) concentrations, as calculated over a 15-minute period, and represent the difference between the ambient air TWA concentrations measured at the upwind and downwind monitoring stations. As described below, these action levels, if exceeded, trigger requirements for increased monitoring, corrective actions to abate emissions, and/or temporary work stoppages. Monitoring equipment will be programmed to immediately notify Site personnel (via audible/visible alarms and wireless telemetry) if the total VOC or PM₁₀ action level is exceeded during the project.

3.3.1 Action Levels for VOCs

If the ambient air concentration of total VOCs at the downwind perimeter of the work area or exclusion zone exceeds five parts per million (ppm) above the upwind



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concentration for the 15-minute average, work will be stopped while monitoring continues. Vapor controls will also be employed to reduce or abate the emissions, the source of the elevated total VOC concentration will be identified, and construction techniques will be evaluated and modified, if necessary and appropriate. Work will not resume until the ambient air concentration of total VOCs at the downwind perimeter of the work area or exclusion zone is less than five ppm above the upwind concentration for the 15-minute average.

If the ambient air concentration of total VOCs at the downwind perimeter of the work area or exclusion zone exceeds 25 ppm above the upwind concentration for the 15-minute average, work will stop and vapor controls will be employed. Work will not resume until authorized by National Grid and NYSDEC/NYSDOH.

3.3.2 Action Levels for PM₁₀

If the ambient air concentration of PM₁₀ at the downwind perimeter of the work area or exclusion zone exceeds 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) above the upwind concentration for the 15-minute average, or if airborne dust is observed leaving the work area, dust controls will be employed. Work may continue while dust controls are employed provided that the downwind PM₁₀ concentration does not exceed 150 $\mu\text{g}/\text{m}^3$ above the upwind concentration for the 15-minute average.

If, after employing dust controls, the downwind PM₁₀ concentration is greater than 150 $\mu\text{g}/\text{m}^3$ above upwind concentration for the 15-minute average, work will be stopped while activities are re-evaluated. Work will resume provided that the dust controls are successful in: 1) reducing the downwind PM₁₀ concentration to less than 150 $\mu\text{g}/\text{m}^3$ above the upwind concentration for the 15-minute average; and 2) preventing visible dust from leaving the work area.

3.4 Special Procedures for Work Near Occupied Residential Structures

This section describes the supplemental air monitoring procedures and applicable action levels for ground-intrusive or dust-generating construction activities performed within 20 feet of an occupied residential structure.

3.4.1 Real-Time Air Monitoring for Total VOCs and PM₁₀

Before any ground-intrusive or dust-generating construction activities are performed at the Site, continuous real-time air monitoring for total VOCs and PM₁₀ will be performed



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inside of the occupied residential structure to establish baseline concentrations and trends. Baseline air monitoring will be performed over an eight-hour period during normal working hours, generally between 7:00 a.m. and 5:00 p.m. The baseline air monitoring results will be reviewed and any unusual readings or observations will be discussed with NYSDEC and NYSDOH before ground-intrusive or dust-generating construction activities begin at the Site. During the ground-intrusive or dust-generating construction activities, continuous real-time air monitoring for total VOCs and PM₁₀ will be performed at the nearest outside wall and at any ventilation system intakes of the occupied residential structure.

3.4.2 Action Levels

The total VOC and PM₁₀ action levels for ground-intrusive or dust-generating construction activities performed within 20 feet of an occupied residential structure are real-time concentrations.

3.4.2.1 Action Level for Total VOCs

If the ambient air concentration of total VOCs at the nearest outside wall or at any ventilation system intakes of the occupied residential structure exceeds one ppm, work will be stopped and continuous real-time air monitoring for total VOCs will be performed inside of the occupied residential structure. Monitoring will continue, both inside and outside of the occupied residential structure, while vapor controls are employed to reduce or abate emissions. The source of the elevated total VOC concentration will be identified and construction techniques will be evaluated and modified, if necessary and appropriate. Work will not resume until: 1) the real-time ambient air concentration of total VOCs outside of the occupied residential structure is less than one ppm at the nearest outside wall and at any ventilation system intakes of the occupied residential structure; and 2) the real-time ambient air concentration of total VOCs inside of the occupied residential structure is less than either one ppm or the maximum baseline concentration, whichever is greater.

If the real-time ambient air concentration of total VOCs inside of the occupied residential structure is greater than either one ppm or the maximum baseline concentration, whichever is greater, work will not resume until authorized by National Grid and NYSDEC/NYSDOH.

3.4.2.2 Action Level for PM_{10}

If the ambient air concentration of PM_{10} at the nearest outside wall or at any ventilation system intakes of the occupied residential structure exceeds $150 \mu\text{g}/\text{m}^3$, work will be stopped and continuous real-time air monitoring for PM_{10} will be performed inside of the occupied residential structure. Monitoring will continue, both inside and outside of the occupied residential structure, while dust controls are employed to reduce or abate emissions. The source of the elevated PM_{10} concentration will be identified and construction techniques will be evaluated and modified, if necessary and appropriate. Work will not resume until: 1) the real-time ambient air concentration of PM_{10} outside of the occupied residential structure is less than $150 \mu\text{g}/\text{m}^3$ at the nearest outside wall and at any ventilation system intakes of the occupied residential structure; and 2) the real-time ambient air concentration of PM_{10} inside of the occupied residential structure is less than either $150 \mu\text{g}/\text{m}^3$ or the maximum baseline concentration, whichever is greater.

If the real-time ambient air concentration of PM_{10} inside of the occupied residential structure is greater than either $150 \mu\text{g}/\text{m}^3$ or the maximum baseline concentration, whichever is greater, work will not resume until authorized by National Grid and NYSDEC/NYSDOH.

3.5 Notification and Exceedance Report

National Grid will notify NYSDEC's on-site representative or the NYSDEC project manager (by telephone or e-mail) within two hours if the total VOC or PM_{10} action level is exceeded during the project. Within 24 hours after the exceedance, an exceedance report will be submitted to the NYSDEC and NYSDOH project managers. As described in Specification Section 01 35 49, each exceedance report will include, at a minimum, the following:

- Date, day of the week, and time of exceedance;
- General location and brief description of work being performed at time of exceedance;
- Weather conditions at time of exceedance;
- For each air monitoring station, 15-minute TWA or real-time concentration, as appropriate, of total VOCs and PM_{10} at time of exceedance;



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- Source or cause of exceedance;
- Corrective actions taken or to be taken in response to exceedance; and
- Date and time verbal or written notification was provided to NYSDEC.

A copy of the exceedance report will also be included in the weekly air monitoring report, which is described in further detail in Section 5 of this CAMP.

4. Periodic Monitoring for MGP-Related Odors

4.1 General

During working hours, hourly or more frequent walks around the perimeter of the work area will be performed to monitor for the presence of MGP-related odors. Odor monitoring will be performed by the Contractor's on-site air monitoring technician, who will not be involved in the day-to-day construction activities within the work area where such personnel may become acclimated to MGP-related odors. Perimeter checks will be performed more frequently, as necessary, depending on 1) the nature and location of work being performed and 2) local meteorological conditions.

Meteorological conditions, including temperature, humidity, precipitation, atmospheric pressure, wind direction, and wind speed, can work synergistically with a positive or negative impact on the generation and dissemination of MGP-related odors. For example, MGP-related odors generally tend to be less prevalent with lower temperatures, precipitation, or high humidity. MGP-related odor dissemination is greatly influenced by wind direction and wind speed.

4.2 MGP-Related Odor Response

If MGP-related odors are noticed at the perimeter of the work area, work will continue and odor, vapor, and dust controls will be employed to abate emissions. Additionally, construction techniques will be evaluated and modified, if necessary and appropriate, and more frequent checks of the perimeter of the work area will be performed. If MGP-related odors persist at the perimeter of the work area, work will be stopped while activities are re-evaluated. The source or cause of the MGP-related odors will be identified and additional odor, vapor, and dust controls will be employed. Work will resume provided that the controls are successful in abating odors at the perimeter of the work area.

Any odor complaints received from the public will be directed to NYSDEC's on-site representative. The legitimacy of the complaint will be verified based on the work activities being performed, the prevailing wind direction, and other meteorological factors. In response to a verified odor complaint, perimeter monitoring will continue and additional odor, vapor, and dust controls will be employed to abate odor emissions. Construction techniques will also be evaluated and modified, if necessary and appropriate.



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4.3 Daily Odor Monitoring Log

The time and outcome of each perimeter check will be documented in a daily odor monitoring log, specifically noting the presence or absence of MGP-related odors and identifying the general location(s) along the perimeter of the work area where MGP-related odors (if any) are noticed. The time and outcome of any odor complaints from the public will also be documented in the daily odor monitoring log.

Copies of the daily odor monitoring logs will be included in the weekly air monitoring report, which is described in further detail in Section 5 of this CAMP.



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5. Reporting

Air monitoring reports will be prepared on a weekly basis to summarize the total VOC, PM₁₀, and MGP-related odor monitoring results. Each weekly report will include, at a minimum, the following information for each day that monitoring is performed:

- Date and day of the week;
- General location and brief description of work performed at the Site;
- Daily average concentration of total VOCs and PM₁₀ for each air monitoring station;
- Daily maximum 15-minute TWA concentration of total VOCs and PM₁₀ for each air monitoring station;
- Exceedances (if any) of total VOC and PM₁₀ action levels, including copy of exceedance report(s);
- Site plan showing approximate locations of upwind and downwind air monitoring stations at the Site and prevailing wind direction for the day; and
- Copy of daily odor monitoring log.

Air monitoring reports will be submitted on a weekly basis to National Grid, ARCADIS, NYSDEC, and NYSDOH throughout the project.



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6. References

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Appendices

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Appendix A

NYSDOH Generic Community Air
Monitoring Plan (Appendix 1A of
DER-10)

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Appendix 1A

New York State Department of Health Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

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Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.
4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \text{ mcg}/\text{m}^3$ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

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Appendix B

Fugitive Dust Suppression and
Particulate Monitoring (Appendix 1B
of DER-10)

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Appendix 1B

Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.
2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.
3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM₁₀) with the following minimum performance standards:
 - (a) Objects to be measured: Dust, mists or aerosols;
 - (b) Measurement Ranges: 0.001 to 400 mg/m³ (1 to 400,000 :ug/m³);
 - (c) Precision (2-sigma) at constant temperature: +/- 10 :g/m³ for one second averaging; and +/- 1.5 g/m³ for sixty second averaging;
 - (d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
 - (e) Resolution: 0.1% of reading or 1g/m³, whichever is larger;
 - (f) Particle Size Range of Maximum Response: 0.1-10;
 - (g) Total Number of Data Points in Memory: 10,000;
 - (h) Logged Data: Each data point with average concentration, time/date and data point number
 - (i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
 - (j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
 - (k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
 - (l) Operating Temperature: -10 to 50° C (14 to 122° F);
 - (m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.
4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.
5. The action level will be established at 150 ug/m³ (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m³, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m³ above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m³ continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM₁₀ at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

- (a) Applying water on haul roads;
- (b) Wetting equipment and excavation faces;
- (c) Spraying water on buckets during excavation and dumping;
- (d) Hauling materials in properly tarped or watertight containers;
- (e) Restricting vehicle speeds to 10 mph;
- (f) Covering excavated areas and material after excavation activity ceases; and
- (g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m³ action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

SECTION 01 41 26

STORM WATER POLLUTION PREVENTION PLAN AND PERMIT

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Contractor shall comply with the Project's Storm Water Pollution Prevention Plan (SWPPP) and the substantive requirements of the most current version of NYSDEC's SPDES General Permit for Storm Water Discharges from Construction Activity (hereinafter, the "SPDES General Permit"). Contractor is responsible for providing necessary materials and taking appropriate measures to comply with requirements of the SPDES General Permit and minimize pollutants in storm water run-off from the Site.
- B. Documents: The following are part of the Work included under this Section:
 - 1. SWPPP: Prepared by Engineer, on behalf of Owner, and filed with NYSDEC. The SWPPP is included with this Section and is part of the Contract Documents.
 - 2. SWPPP Revisions: Prepared by Engineer, on behalf of Owner, in accordance with Article 1.04 of this Section. Copy of each SWPPP Revision will be furnished to Contractor. SWPPP Revisions, if any, will become part of the Contract Documents.
 - 3. Storm Water Permit Certification Statement: To be submitted by Contractor to Engineer on the form included with this Section. Do not perform Work at the Site until the storm water permit certification statement has been submitted to Engineer.
 - 4. Storm Water Inspection Reports: Prepared by Engineer's Resident Project Representative (RPR) using the form included with this Section. Storm water inspection reports will be filed in a log book kept at the Site by Engineer. Copy of each report will be furnished to Contractor upon request.
- C. Prevent discharge of sediment to and erosion from the Site to surface waters, drainage routes, public streets and rights-of-way, and private property, including dewatering operations. Prevent trash and construction and demolition debris from leaving the Site via storm water run-off. Provide berms, dikes, and other acceptable methods of directing storm water around work areas to drainage routes.
- D. Do not cause or contribute to a violation of water quality standards, Laws, or Regulations. Provide and implement measures to control pollutants in storm water run-off from the Site to prevent:
 - 1. Turbidity increases that will cause a substantial visible contrast to natural conditions.
 - 2. Increase in suspended, colloidal, and settleable solids that would cause sediment deposition, or impair receiving water quality and use.
 - 3. Presence of residue from oil and floating substances, visible oil, and globules of grease.
- E. Contractor shall pay civil penalties and other costs incurred by Owner, including additional engineering, construction management, and inspection services, associated with non-complying with the SPDES General Permit, erosion and sediment controls, and pollution prevention measures associated with the Work.

- F. Contract Price includes all material, labor, and other permits and incidental costs related to:
 - 1. Installing, constructing, repairing, replacing, and maintaining structural and non-structural items used in complying with the SWPPP and its revisions, if any.
 - 2. Clean-up, disposal, and repairs following wet weather events or spills caused by Contractor.
 - 3. Implementing and maintaining "best management practices", as defined in applicable permits and Laws or Regulations, to comply with requirements that govern storm water discharges at the Site.
 - 4. Inspecting erosion, sediment, and storm water controls and pollution prevention measures as specified.
- G. Coordinate requirements of this Section with requirements for earthwork, erosion and sediment control, pollution control, and landscaping in the Contract Documents, applicable permit requirements, and Laws and Regulations.
- H. Implement SWPPP controls and practices prior to starting other Work at the Site.

1.02 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Trained Contractor:
 - a. Employ and retain at the Site a Site supervisor or project manager with experience and knowledgeable in the principles and practices of erosion and sediment control (hereinafter, the "trained contractor"). Contractor's trained contractor shall be present at the Site at all times when ground-intrusive or other soil-disturbing Work is being performed and shall be responsible for the day-to-day implementation of the SWPPP, including the performance of Site inspections and assessments in accordance with this Section.
 - b. Trained contractor shall have received four hours of NYSDEC-endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC-endorsed entity. Following the initial training, trained contractor shall have completed four hours of training every three years.
- B. Regulatory Requirements:
 - 1. Comply with Laws and Regulations related to environmental protection and restoration, including:
 - a. SPDES General Permit.
 - b. New York State Standards and Specifications for Erosion and Sediment Control.

1.03 SUBMITTALS

- A. Informational Submittals:
 - 1. Storm Water Permit Certification Statement: Submit in accordance with Paragraph 1.01.B.3 of this Section.
 - 2. Qualifications Statements: Submit name and qualifications of trained contractor, including summary of experience, training received, and copy of valid certifications applicable to the Project.

1.04 SWPPP REVISIONS

- A. Engineer will prepare a SWPPP Revision in accordance with the SPDES General Permit:
 - 1. When the provisions of the SWPPP prove to be ineffective in minimizing pollutants in storm water discharges from the Site.

2. When there is a significant change in design, construction, operation, or maintenance of the Project that has or could have an effect on the discharge of pollutants from the Site.
3. To address issues or deficiencies identified during an inspection by Engineer's RPR, Contractor's trained contractor, NYSDEC, or other regulatory authority having jurisdiction.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 INSPECTION AND MAINTENANCE

A. General:

1. Perform Site inspections and assessments as required by the SPDES General Permit and this Section to ensure the continued effectiveness and integrity of all SWPPP controls and practices, including erosion and sediment controls and pollution prevention measures.
2. Initiate repairs or maintenance to SWPPP controls and practices within one day after each inspection.
3. Complete repairs or maintenance to SWPPP controls and practices in accordance with applicable requirements and to satisfaction of Engineer within two days after each inspection. If Site conditions prevent repairs or maintenance from being completed, promptly notify Engineer's RPR and complete repairs or maintenance as soon as Site conditions permit.
4. Cooperate with representatives of authorities having jurisdiction during periodic visits to the Site, and promptly provide information requested by authorities having jurisdiction.

B. Maintenance Inspections:

1. Maintenance inspections shall be performed by Contractor's trained contractor on a daily basis during the Work until all disturbed areas have achieved final stabilization in accordance with the SPDES General Permit and the SWPPP. For temporary Work stoppages and seasonal shut-downs greater than two weeks in duration, maintenance inspections may be suspended if temporary stabilization measures have been applied to all disturbed surfaces, and if approved by Engineer.
2. Immediately notify Engineer's RPR of any deficiencies observed during maintenance inspections, and any maintenance activities or corrective actions required to address those deficiencies.

C. Periodic Inspections:

1. Periodic inspections shall be performed by Contractor's trained contractor, together with Engineer's RPR:
 - a. After installation of SWPPP controls and practices, and temporary field offices and other temporary facilities, prior to starting other Work at the Site.
 - b. Every seven days during the Work, and within 24 hours after wet weather events, until all disturbed areas have achieved final stabilization in accordance with the SPDES General Permit and the SWPPP. For temporary Work stoppages and seasonal shut-downs greater than two weeks in duration, inspection frequency may be reduced to once every 30 days if temporary stabilization measures have been applied to all disturbed surfaces.
2. Engineer's RPR will prepare a storm water inspection report for each periodic inspection.

3.02 ATTACHMENTS

- A. The attachments listed below, which follow after the “End of Section” designation, are part of this Section:
1. Attachment A: SPDES General Permit (60 pages).
 2. Attachment B: SWPPP (42 pages).
 3. Attachment C: Storm water permit certification statement form (two pages).
 4. Attachment D: Storm water inspection report form (four pages).

END OF SECTION



Department of
Environmental
Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP-0-15-002

Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: January 29, 2015

Expiration Date: January 28, 2020

John J. Ferguson
Chief Permit Administrator

A handwritten signature in black ink, appearing to be "John J. Ferguson", written over a horizontal line. The signature is stylized and somewhat cursive.

Authorized Signature

1 / 12 / 15

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York's *State Pollutant Discharge Elimination System ("SPDES")* is a NPDES-approved program with permits issued in accordance with the *Environmental Conservation Law ("ECL")*.

This general permit ("permit") is issued pursuant to Article 17, Titles 7, 8 and Article 70 of the ECL. An *owner or operator* may obtain coverage under this permit by submitting a Notice of Intent ("NOI") to the Department. Copies of this permit and the NOI for New York are available by calling (518) 402-8109 or at any New York State Department of Environmental Conservation ("the Department") regional office (see Appendix G). They are also available on the Department's website at:

<http://www.dec.ny.gov/>

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a point source and therefore, pursuant to Article 17-0505 of the ECL, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. They cannot wait until there is an actual *discharge* from the construction site to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

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SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES
FROM CONSTRUCTION ACTIVITIES**

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(Part I)

I.

Part I. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;
2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State*.
3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

Discharges authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated August 2005, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the Stormwater Pollution Prevention Plan (“SWPPP”) the reason(s) for the deviation or alternative design and provide information

(Part I.B.1)

which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

- (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharges*;
- (ii) Control stormwater *discharges* to *minimize* channel and streambank erosion and scour in the immediate vicinity of the *discharge* points;
- (iii) *Minimize* the amount of soil exposed during *construction activity*;
- (iv) *Minimize* the disturbance of *steep slopes*;
- (v) *Minimize* sediment *discharges* from the site;
- (vi) Provide and maintain natural buffers around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharges*, unless *infeasible*;
- (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted; and
- (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover.

b. **Soil Stabilization.** In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering.** *Discharges* from dewatering activities, including *discharges*

(Part I.B.1.c)

from dewatering of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures.** Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

- (i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;
- (ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and
- (iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited Discharges.** The following *discharges* are prohibited:

- (i) Wastewater from washout of concrete;
- (ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
- (iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;
- (iv) Soaps or solvents used in vehicle and equipment washing; and
- (v) Toxic or hazardous substances from a spill or other release.

f. **Surface Outlets.** When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion

(Part I.B.1.f)

at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

- (i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.
- (ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv

(Part I.C.2.a.ii)

that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 - (1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 - (2) The site *discharges* directly to tidal waters, or fifth order or larger streams.
- (iv) Overbank Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that overbank control is not required.
- (v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that overbank control is not required.

b. Sizing Criteria for New Development in Enhanced Phosphorus Removal Watershed

- (i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be calculated in accordance with the criteria in Section 10.3 of the Design Manual.
- (ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or

(Part I.C.2.b.ii)

standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 - (1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 - (2) The site *discharges* directly to tidal waters, or fifth order or larger streams.
- (iv) Overbank Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that overbank control is not required.
- (v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that overbank control is not required.

c. Sizing Criteria for Redevelopment Activity

(Part I.C.2.c.i)

- (i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.
 - (1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or
 - (2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or
 - (3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or
 - (4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

- (ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.
- (iii) Overbank Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(Part I.C.2.c.iv)

- (iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both *New Development* and *Redevelopment Activity* shall provide post-construction stormwater management controls that meet the *sizing criteria* calculated as an aggregate of the *Sizing Criteria* in Part I.C.2.a. or b. of this permit for the *New Development* portion of the project and Part I.C.2.c of this permit for *Redevelopment Activity* portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;
2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and
3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or

(Part I.D)

if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity to surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.
2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges* from *construction activities*.
3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater *discharges* may be authorized by this permit: *discharges* from firefighting activities; fire hydrant flushings; waters to which cleansers or other components have not been added that are used to wash vehicles or control dust in accordance with the SWPPP, routine external building washdown which does not use detergents; pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated *groundwater* or spring water; uncontaminated *discharges* from construction site de-watering operations; and foundation or footing drains where flows are not contaminated with process materials such as solvents. For those entities required to obtain coverage under this permit, and who *discharge* as noted in this paragraph, and with the exception of flows from firefighting activities, these *discharges* must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.
4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are not authorized by this permit:

(Part I.F)

1. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;
2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;
3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;
4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an endangered or threatened species unless the *owner or operator* has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.C.2 of this permit.
5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;
6. *Construction activities* for residential, commercial and institutional projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which disturb one or more acres of land with no existing *impervious cover*; and
 - c. Which are undertaken on land with a Soil Slope Phase that is identified as an E or F, or the map unit name is inclusive of 25% or greater slope, on the United States Department of Agriculture ("USDA") Soil Survey for the County where the disturbance will occur.
7. *Construction activities* for linear transportation projects and linear utility projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which disturb two or more acres of land with no existing *impervious cover*; and
 - c. Which are undertaken on land with a Soil Slope Phase that is identified as an E or F, or the map unit name is inclusive of 25% or greater slope, on the USDA Soil Survey for the County where the disturbance will occur.

(Part I.F.8)

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.C.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:
- a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the construction site within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the construction site within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.
 - 1-5 acres of disturbance - 20 feet
 - 5-20 acres of disturbance - 50 feet
 - 20+ acres of disturbance - 100 feet, or
 - b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
 - (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
 - (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
 - (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
 - (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or
 - c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:
 - (i) No Affect
 - (ii) No Adverse Affect

(Part I.F.8.c.iii)

(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharges from construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

II.

Part II. OBTAINING PERMIT COVERAGE

A. Notice of Intent (NOI) Submittal

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed NOI form to the Department in order to be authorized to *discharge* under this permit. An *owner or operator* shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (<http://www.dec.ny.gov/>). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address.

**NOTICE OF INTENT
NYS DEC, Bureau of Water Permits
625 Broadway, 4th Floor
Albany, New York 12233-3505**

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the "MS4 SWPPP Acceptance" form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department. An *owner or operator* shall use either the electronic (eNOI) or paper version of the NOI.

The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the address in Part II.A.1.

(Part II.A.2)

The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.E. (Change of Owner or Operator) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4*.

3. The *owner or operator* shall have the SWPPP preparer sign the “SWPPP Preparer Certification” statement on the NOI prior to submitting the form to the Department.
4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

B. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.
2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:
 - a. project review pursuant to the State Environmental Quality Review Act (“SEQRA”) have been satisfied, when SEQRA is applicable. See the Department’s website (<http://www.dec.ny.gov/>) for more information,
 - b. where required, all necessary Department permits subject to the *Uniform Procedures Act* (“UPA”) (see 6 NYCRR Part 621) have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators of construction activities* that are required to obtain UPA permits must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary UPA permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,
 - c. the final SWPPP has been prepared, and
 - d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.
3. An *owner or operator* that has satisfied the requirements of Part II.B.2 above

(Part II.B.3)

will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

- (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or
- (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;
- (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

- (i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed “MS4 SWPPP Acceptance” form, or
- (ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed “MS4 SWPPP Acceptance” form.

4. The Department may suspend or deny an *owner’s or operator’s* coverage

(Part II.B.4)

under this permit if the Department determines that the SWPPP does not meet the permit requirements. In accordance with statute, regulation, and the terms and conditions of this permit, the Department may deny coverage under this permit and require submittal of an application for an individual SPDES permit based on a review of the NOI or other information pursuant to Part II.

5. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.B. of this permit.

C. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.
2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-15-002), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, and all documentation necessary to demonstrate eligibility with this permit at the construction site until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.
3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:
 - a. The *owner or operator* shall

(Part II.C.3.a)

have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

- b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated August 2005.
 - c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.
 - d. The *owner or operator* shall install any additional site specific practices needed to protect water quality.
 - e. The *owner or operator* shall include the requirements above in their SWPPP.
4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.
5. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the *regulated, traditional land use control MS4* in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice

(Part II.D)

D. Permit Coverage for Discharges Authorized Under GP-0-10-001

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-10-001), an *owner or operator* of a *construction activity* with coverage under GP-0-10-001, as of the effective date of GP-0-15-002, shall be authorized to *discharge* in accordance with GP-0-15-002, unless otherwise notified by the Department.

An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-15-002.

E. Change of *Owner or Operator*

2. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.A.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or operator* was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

(Part III)

III.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.
2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.
3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.
4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP:
 - a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;
 - b. whenever there is a change in design, construction, or operation at the construction site that has or could have an effect on the *discharge* of *pollutants*; and
 - c. to address issues or deficiencies identified during an inspection by the *qualified inspector*, the Department or other regulatory authority.
5. The Department may notify the *owner or operator* at any time that the

(Part III.A.5)

SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.C.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor*. The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the

(Part III.A.6)

trained contractor responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the construction site. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated August 2005. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:
 - a. Background information about the scope of the project, including the location, type and size of project;
 - b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge(s)*;
 - c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);
 - d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other

(Part III.B.1.d)

activity at the site that results in soil disturbance;

- e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;
- f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated August 2005, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;
- g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;
- h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;
- i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated August 2005;
- j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;
- k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the construction site; and
- l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated August 2005. Include the reason for the deviation or alternative design

(Part III.B.1.I)

and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

The post-construction stormwater management practice component of the SWPPP shall include the following:

- a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;
- b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;
- c. A Stormwater Modeling and Analysis Report that includes:
 - (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;
 - (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;
 - (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;
 - (iv) Summary table, with supporting calculations, which demonstrates

(Part III.B.2.c.iv)

that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

- (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and
 - (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;
- d. Soil testing results and locations (test pits, borings);
 - e. Infiltration test results, when required; and
 - f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.
3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria*, Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators of construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators of the construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

(Part IV)

IV. Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.
2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York, or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.
2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.
3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

(Part IV.C)

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:
 - a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;
 - b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;
 - c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and
 - d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.
2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:
 - a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.
 - b. For construction sites where soil disturbance activities are on-going and

(Part IV.C.2.b)

the *owner or operator* has received authorization in accordance with Part II.C.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

- c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.
- d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization*, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the “*Final Stabilization*” and “*Post-Construction Stormwater Management Practice*” certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.A.1 of this permit.
- e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall

(Part IV.C.2.e)

be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization*, all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site, and all points of *discharge* from the construction site.
4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:
 - a. Date and time of inspection;
 - b. Name and title of person(s) performing inspection;
 - c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
 - d. A description of the condition of the runoff at all points of *discharge* from the construction site. This shall include identification of any *discharges* of sediment from the construction site. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
 - e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;
 - f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;
 - g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
 - h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

(Part IV.C.4.i)

- i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
 - j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);
 - k. Identification and status of all corrective actions that were required by previous inspection; and
 - l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.
5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.
6. All inspection reports shall be signed by the *qualified inspector*. Pursuant to Part II.C.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

V. Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

- 1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.A.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

(Part V.A.2)

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:
 - a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;
 - b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;
 - c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.E. of this permit.
 - d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.
3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the “*Final Stabilization*” and “*Post-Construction Stormwater Management Practice* certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.
4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the “*MS4 Acceptance*” statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector’s* final site inspection certification(s) required in Part V.A.3. of this permit.

(Part V.A.5)

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:
 - a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,
 - b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),
 - c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,
 - d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

VI. Part VI. REPORTING AND RETENTION OF RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.A.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

(Part VII)

VII. Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator*, its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to \$37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

(Part VII.E)

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit, or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the

(Part VII.H.1.a.i)

corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

- (ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
 - b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or
 - c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:
 - (i) the chief executive officer of the agency, or
 - (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).
2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:
- a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named

(Part VII.H.2.b)

individual or any individual occupying a named position) and,

- c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.
3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.
4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4*, or by a duly authorized representative of that person.

It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any *owner or operator* authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any *discharger* authorized by a general permit to apply for an individual SPDES permit, it shall notify the *discharger* in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the *owner or operator* to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from *owner or operator* receipt of the notification letter, whereby the authorization to

(Part VII.K.1)

discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge(s)*, the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a construction site which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the *owner's or operator's* premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and
3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.
4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

(Part VII.N)

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with *construction activity* covered by this permit, the *owner or operator* of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.
2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

VIII. APPENDIX A

Definitions

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both “sewage” and “stormwater”.

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for “*Construction Activity(ies)*” also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a construction site by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a construction site to a separate storm sewer system and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or point source.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied

on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters,

ditches, man-made channels, or storm drains):

- (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
- (ii) Designed or used for collecting or conveying stormwater;
- (iii) Which is not a *combined sewer*; and
- (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

New Development – means any land disturbance that does meet the definition of Redevelopment Activity included in this appendix.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; and/or an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications.

Performance Criteria – means the design criteria listed under the “Required Elements” sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York..

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is required to gain coverage under New York State DEC's SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Stream bank restoration projects (does not include the placement of spoil material),
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that makes the transition between the road shoulder and the ditch or embankment,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or embankment,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), Overbank Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area with a Soil Slope Phase that is identified as an E or F, or

the map unit name is inclusive of 25% or greater slope, on the United States Department of Agriculture ("USDA") Soil Survey for the County where the disturbance will occur.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for point source discharges, load allocations (LAs) for nonpoint sources, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part

621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

Required SWPPP Components by Project Type

Table 1
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP
THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

<p>The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:</p> <ul style="list-style-type: none"> • Single family home <u>not</u> located in one of the watersheds listed in Appendix C or <u>not directly discharging</u> to one of the 303(d) segments listed in Appendix E • Single family residential subdivisions with 25% or less impervious cover at total site build-out and <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E • Construction of a barn or other agricultural building, silo, stock yard or pen.
<p>The following construction activities that involve soil disturbances of one (1) or more acres of land:</p> <ul style="list-style-type: none"> • Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains • Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects • Bike paths and trails • Sidewalk construction projects that are not part of a road/ highway construction or reconstruction project • Slope stabilization projects • Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics • Spoil areas that will be covered with vegetation • Land clearing and grading for the purposes of creating vegetated open space (i.e. recreational parks, lawns, meadows, fields), excluding projects that <i>alter hydrology from pre to post development</i> conditions • Athletic fields (natural grass) that do not include the construction or reconstruction of <i>impervious area</i> <u>and</u> do not <i>alter hydrology from pre to post development</i> conditions • Demolition project where vegetation will be established and no redevelopment is planned • Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with <i>impervious cover</i> • Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of less than five acres and construction activities that include the construction or reconstruction of impervious area
<p>The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:</p> <ul style="list-style-type: none"> • All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES
POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other agricultural building(e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional, includes hospitals, prisons, schools and colleges
- Industrial facilities, includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's and water treatment plants
- Office complexes
- Sports complexes
- Racetracks, includes racetracks with earthen (dirt) surface
- Road construction or reconstruction
- Parking lot construction or reconstruction
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover*, and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C**Watersheds Where Enhanced Phosphorus Removal Standards Are Required**

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual (“Design Manual”).

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

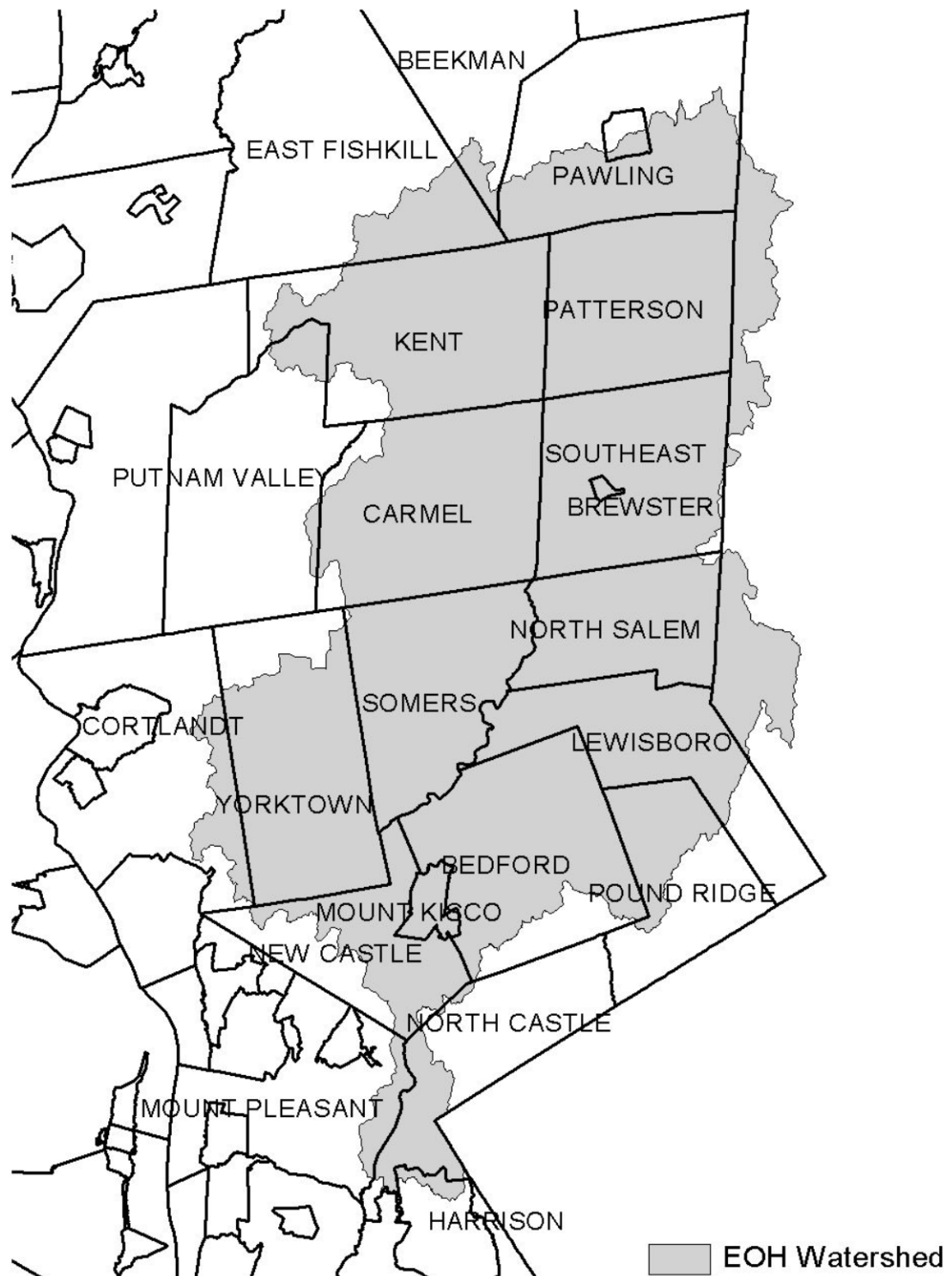


Figure 2 - Onondaga Lake Watershed



Figure 3 - Greenwood Lake Watershed

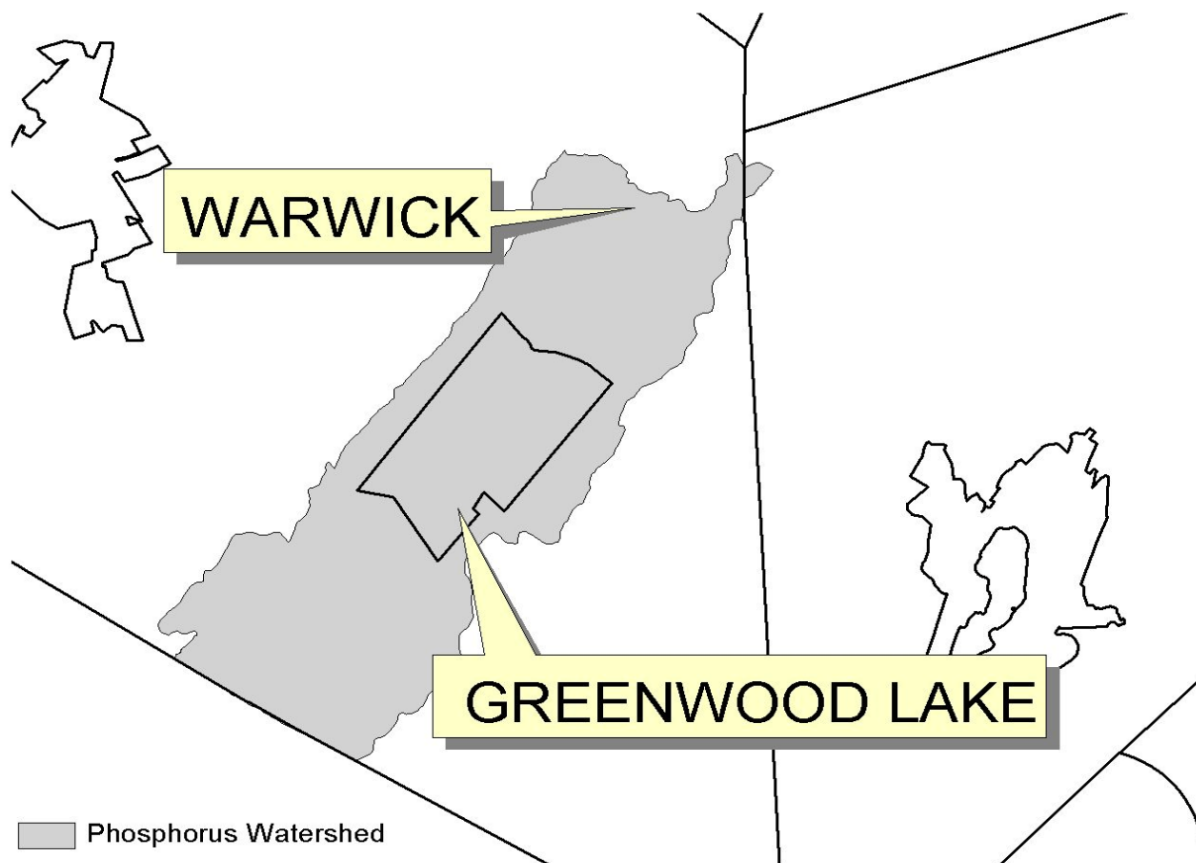


Figure 4 - Oscawana Lake Watershed

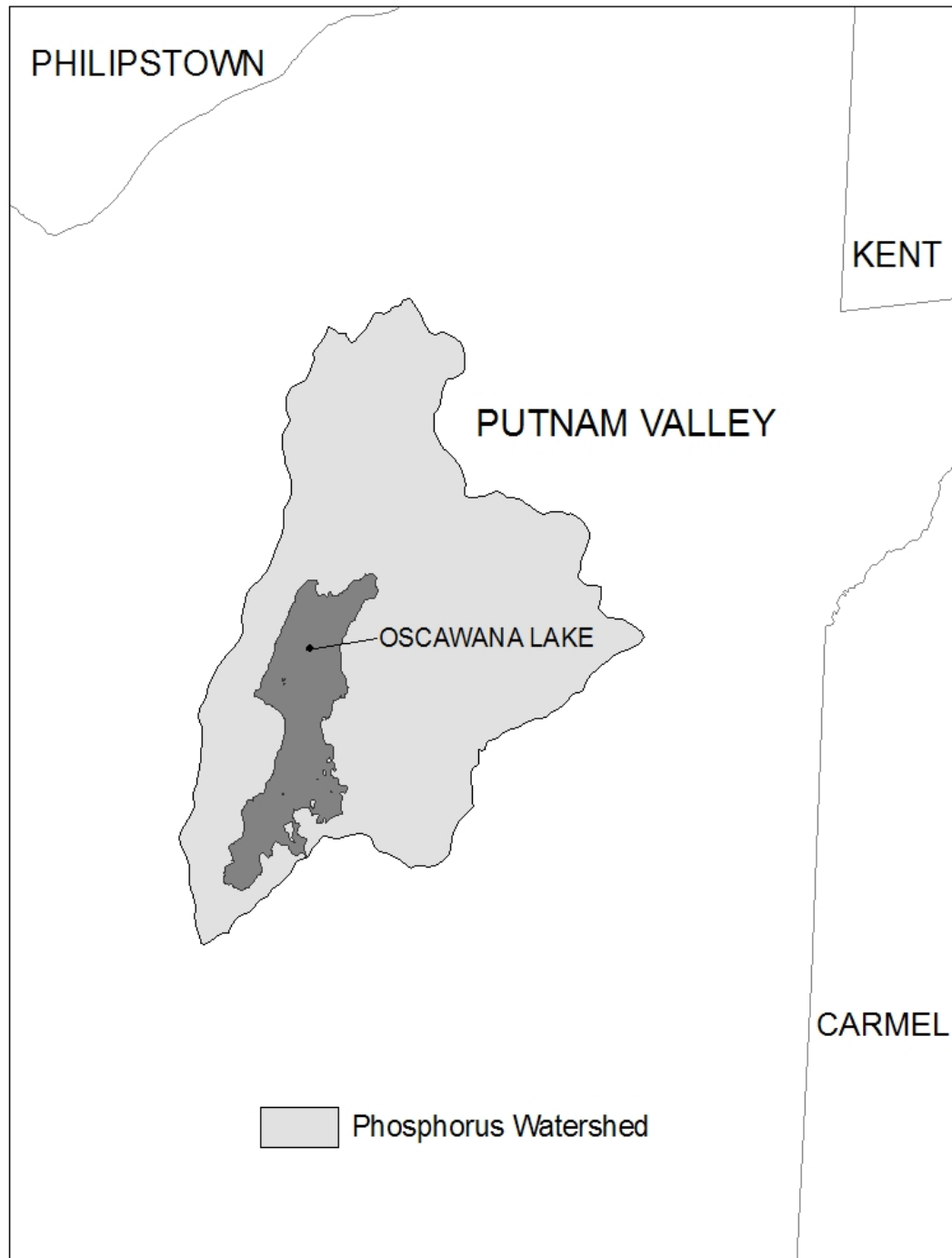
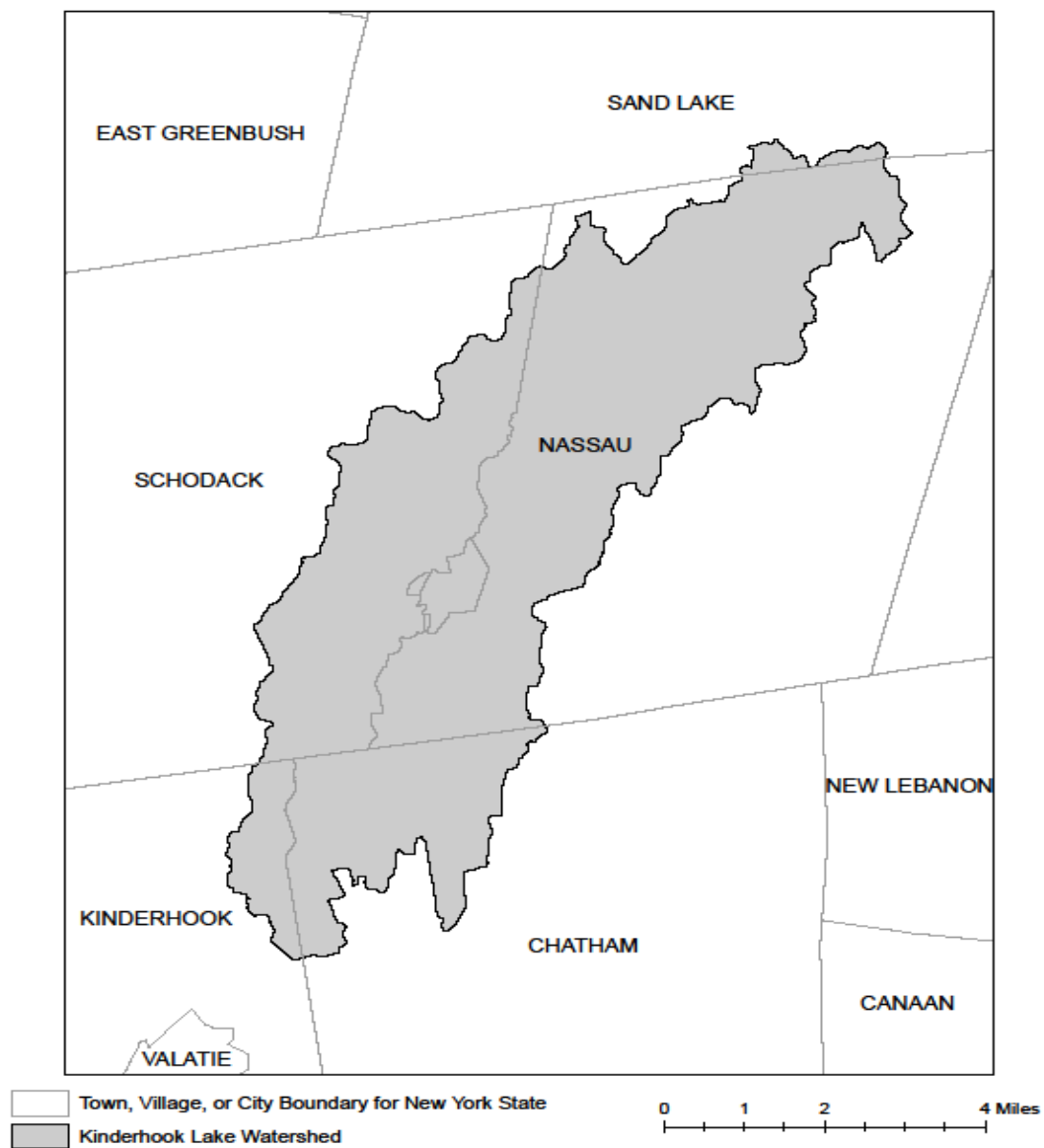


Figure 5: Kinderhook Lake Watershed



APPENDIX D

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

XII. APPENDIX E

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual (“Design Manual”), dated January 2015.

COUNTY	WATERBODY	COUNTY	WATERBODY
Albany	Ann Lee (Shakers) Pond, Stump Pond	Greene	Sleepy Hollow Lake
Albany	Basic Creek Reservoir	Herkimer	Steele Creek tribs
Allegheny	Amity Lake, Saunders Pond	Kings	Hendrix Creek
Bronx	Van Cortlandt Lake	Lewis	Mill Creek/South Branch and tribs
Broome	Whitney Point Lake/Reservoir	Livingston	Conesus Lake
Broome	Fly Pond, Deer Lake	Livingston	Jaycox Creek and tribs
Broome	Minor Tribs to Lower Susquehanna (north)	Livingston	Mill Creek and minor tribs
Cattaraugus	Allegheny River/Reservoir	Livingston	Bradner Creek and tribs
Cattaraugus	Case Lake	Livingston	Christie Creek and tribs
Cattaraugus	Linlyco/Club Pond	Monroe	Lake Ontario Shoreline, Western
Cayuga	Duck Lake	Monroe	Mill Creek/Blue Pond Outlet and tribs
Chautauqua	Chautauqua Lake, North	Monroe	Rochester Embayment - East
Chautauqua	Chautauqua Lake, South	Monroe	Rochester Embayment - West
Chautauqua	Bear Lake	Monroe	Unnamed Trib to Honeoye Creek
Chautauqua	Chadakoin River and tribs	Monroe	Genesee River, Lower, Main Stem
Chautauqua	Lower Cassadaga Lake	Monroe	Genesee River, Middle, Main Stem
Chautauqua	Middle Cassadaga Lake	Monroe	Black Creek, Lower, and minor tribs
Chautauqua	Findley Lake	Monroe	Buck Pond
Clinton	Great Chazy River, Lower, Main Stem	Monroe	Long Pond
Columbia	Kinderhook Lake	Monroe	Cranberry Pond
Columbia	Robinson Pond	Monroe	Mill Creek and tribs
Dutchess	Hillside Lake	Monroe	Shipbuilders Creek and tribs
Dutchess	Wappinger Lakes	Monroe	Minor tribs to Irondequoit Bay
Dutchess	Fall Kill and tribs	Monroe	Thomas Creek/White Brook and tribs
Erie	Green Lake	Nassau	Glen Cove Creek, Lower, and tribs
Erie	Scajaquada Creek, Lower, and tribs	Nassau	LI Tribs (fresh) to East Bay
Erie	Scajaquada Creek, Middle, and tribs	Nassau	East Meadow Brook, Upper, and tribs
Erie	Scajaquada Creek, Upper, and tribs	Nassau	Hempstead Bay
Erie	Rush Creek and tribs	Nassau	Hempstead Lake
Erie	Ellicott Creek, Lower, and tribs	Nassau	Grant Park Pond
Erie	Beeman Creek and tribs	Nassau	Beaver Lake
Erie	Murder Creek, Lower, and tribs	Nassau	Camaans Pond
Erie	South Branch Smoke Cr, Lower, and tribs	Nassau	Halls Pond
Erie	Little Sister Creek, Lower, and tribs	Nassau	LI Tidal Tribs to Hempstead Bay
Essex	Lake George (primary county: Warren)	Nassau	Massapequa Creek and tribs
Genesee	Black Creek, Upper, and minor tribs	Nassau	Reynolds Channel, east
Genesee	Tonawanda Creek, Middle, Main Stem	Nassau	Reynolds Channel, west
Genesee	Oak Orchard Creek, Upper, and tribs	Nassau	Silver Lake, Lofts Pond
Genesee	Bowen Brook and tribs	Nassau	Woodmere Channel
Genesee	Bigelow Creek and tribs	Niagara	Hyde Park Lake
Genesee	Black Creek, Middle, and minor tribs	Niagara	Lake Ontario Shoreline, Western
Genesee	LeRoy Reservoir	Niagara	Bergholtz Creek and tribs
Greene	Schoharie Reservoir	Oneida	Ballou, Nail Creeks
		Onondaga	Ley Creek and tribs
		Onondaga	Onondaga Creek, Lower and tribs

APPENDIX E

List of 303(d) segments impaired by pollutants related to construction activity, cont'd.

COUNTY	WATERBODY	COUNTY	WATERBODY
Onondaga	Onondaga Creek, Middle and tribs	Suffolk	Great South Bay, West
Onondaga	Onondaga Creek, Upp, and minor tribs	Suffolk	Mill and Seven Ponds
Onondaga	Harbor Brook, Lower, and tribs	Suffolk	Moriches Bay, East
Onondaga	Ninemile Creek, Lower, and tribs	Suffolk	Moriches Bay, West
Onondaga	Minor tribs to Onondaga Lake	Suffolk	Quantuck Bay
Onondaga	Onondaga Creek, Lower, and tribs	Suffolk	Shinnecock Bay (and Inlet)
Ontario	Honeoye Lake	Sullivan	Bodine, Montgomery Lakes
Ontario	Hemlock Lake Outlet and minor tribs	Sullivan	Davies Lake
Ontario	Great Brook and minor tribs	Sullivan	Pleasure Lake
Orange	Monhagen Brook and tribs	Sullivan	Swan Lake
Orange	Orange Lake	Tompkins	Cayuga Lake, Southern End
Orleans	Lake Ontario Shoreline, Western	Tompkins	Owasco Inlet, Upper, and tribs
Oswego	Pleasant Lake	Ulster	Ashokan Reservoir
Oswego	Lake Neatahwanta	Ulster	Esopus Creek, Upper, and minor tribs
Putnam	Oscawana Lake	Ulster	Esopus Creek, Lower, Main Stem
Putnam	Palmer Lake	Ulster	Esopus Creek, Middle, and minor tribs
Putnam	Lake Carmel	Warren	Lake George
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Warren	Tribs to L.George, Village of L George
Queens	Bergen Basin	Warren	Huddle/Finkle Brooks and tribs
Queens	Shellbank Basin	Warren	Indian Brook and tribs
Rensselaer	Nassau Lake	Warren	Hague Brook and tribs
Rensselaer	Snyders Lake	Washington	Tribs to L.George, East Shr Lk George
Richmond	Grasmere, Arbutus and Wolfes Lakes	Washington	Cossayuna Lake
Rockland	Congers Lake, Swartout Lake	Washington	Wood Cr/Champlain Canal, minor tribs
Rockland	Rockland Lake	Wayne	Port Bay
Saratoga	Ballston Lake	Wayne	Marbletown Creek and tribs
Saratoga	Round Lake	Westchester	Lake Katonah
Saratoga	Dwaas Kill and tribs	Westchester	Lake Mohegan
Saratoga	Tribs to Lake Lonely	Westchester	Lake Shenorock
Saratoga	Lake Lonely	Westchester	Reservoir No.1 (Lake Isle)
Schenectady	Collins Lake	Westchester	Saw Mill River, Middle, and tribs
Schenectady	Duane Lake	Westchester	Silver Lake
Schenectady	Mariaville Lake	Westchester	Teatown Lake
Schoharie	Engleville Pond	Westchester	Truesdale Lake
Schoharie	Summit Lake	Westchester	Wallace Pond
Schuyler	Cayuta Lake	Westchester	Peach Lake
St. Lawrence	Fish Creek and minor tribs	Westchester	Mamaroneck River, Lower
St. Lawrence	Black Lake Outlet/Black Lake	Westchester	Mamaroneck River, Upp, and tribs
Steuben	Lake Salubria	Westchester	Sheldrake River and tribs
Steuben	Smith Pond	Westchester	Blind Brook, Lower
Suffolk	Millers Pond	Westchester	Blind Brook, Upper, and tribs
Suffolk	Mattituck (Marratooka) Pond	Westchester	Lake Lincolndale
Suffolk	Tidal tribs to West Moriches Bay	Westchester	Lake Meahaugh
Suffolk	Canaan Lake	Wyoming	Java Lake
Suffolk	Lake Ronkonkoma	Wyoming	Silver Lake
Suffolk	Beaverdam Creek and tribs		
Suffolk	Big/Little Fresh Ponds		
Suffolk	Fresh Pond		
Suffolk	Great South Bay, East		
Suffolk	Great South Bay, Middle		

Note: The list above identifies those waters from the final New York State "2014 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy", dated January 2015, that are impaired by silt, sediment or nutrients.

LIST OF NYS DEC REGIONAL OFFICES

<u>Region</u>	<u>COVERING THE FOLLOWING COUNTIES:</u>	<u>DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS</u>	<u>DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM</u>
1	NASSAU AND SUFFOLK	50 CIRCLE ROAD STONY BROOK, NY 11790 TEL. (631) 444-0365	50 CIRCLE ROAD STONY BROOK, NY 11790-3409 TEL. (631) 444-0405
2	BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4997	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4933
3	DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER	21 SOUTH PUTT CORNERS ROAD NEW PALTZ, NY 12561-1696 TEL. (845) 256-3059	100 HILLSIDE AVENUE, SUITE 1W WHITE PLAINS, NY 10603 TEL. (914) 428 - 2505
4	ALBANY, COLUMBIA, DELAWARE, GREENE, MONTGOMERY, OTSEGO, RENSSELAER, SCHENECTADY AND SCHOHARIE	1150 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2069	1130 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2045
5	CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON	1115 STATE ROUTE 86, Po Box 296 RAY BROOK, NY 12977-0296 TEL. (518) 897-1234	232 GOLF COURSE ROAD WARRENSBURG, NY 12885-1172 TEL. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROAD AVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVE. BUFFALO, NY 14203-2999 TEL. (716) 851-7070

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Storm Water Pollution Prevention Plan

Phase 1 Remedial Action

Ilion (East Street) Former Manufactured Gas Plant Site

Village of Ilion, Herkimer County, New York

Site No. 6-22-019

April 2015

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Storm Water Pollution Prevention Plan

Phase 1 Remedial Action
Ilion (East Street) Former
Manufactured Gas Plant Site
Village of Ilion, Herkimer County,
New York
Site No. 6-22-019

Prepared for:
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Our Ref.:
B0036713

Date:
April 2015

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Appendix

NRCS Soil Map and Map Unit Description



Storm Water Pollution Prevention Plan

Phase 1 Remedial Action,
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Manufactured Gas Plant Site

Record of Change

Revision No.	Date	Description of Change
00	April 9, 2015	Initial issue.
01		
02		
03		
04		
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Phase 1 Remedial Action,
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Acronyms and Abbreviations

ARCADIS	ARCADIS of New York, Inc.
bgs	below ground surface
HASP	Health and Safety Plan
MGP	manufactured gas plant
NRCS	Natural Resources Conservation Service
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
RI	remedial investigation
SPDES	State Pollution Discharge Elimination System
SWPPP	Storm Water Pollution Prevention Plan
Tetra Tech	Tetra Tech FW, Inc.



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Storm Water Pollution Prevention Plan

Phase 1 Remedial Action,
Ilion (East Street) Former
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1. Introduction

1.1 General

This Storm Water Pollution Prevention Plan (SWPPP) has been prepared by ARCADIS of New York, Inc. (ARCADIS), on behalf of National Grid, to summarize the storm water management practices that will be implemented during the remediation of the former manufactured gas plant (MGP) site generally located at 1 East Street in the Village of Ilion, Herkimer County, New York (the "Site"). The remediation activities are being performed pursuant to: 1) an Order on Consent (Index No. A4-0473-0000) between the New York State Department of Environmental Conservation (NYSDEC) and National Grid; and 2) NYSDEC's *Record of Decision* (NYSDEC 2011).

As described in the *Final (100%) Remedial Design for the Phase 1 Remedial Action* (Remedial Design; ARCADIS 2015), the remedial construction activities will generally include the following:

- Site clearing and preparation;
- Pre-demolition abatement of Asbestos-containing materials and loose lead-containing paint and debris located within or upon a one-story block building (the former gas regulator house);
- Demolition of the former gas regulator house and certain surface structures and facilities;
- Excavation of approximately 5,850 in-situ cubic yards of MGP-impacted material to depths ranging from approximately one to 13 feet below ground surface (bgs);
- Demolition of former building foundations, Underground Facilities, and former MGP structures located within the excavation limits;
- Installation of approximately 335 linear feet of 24-inch diameter high-density polyethylene gravity storm sewer pipe and two precast concrete manholes by open-cut method;
- Abandonment of approximately 325 linear feet of existing 24-inch diameter gravity vitrified clay and concrete storm sewer pipe by filling and capping in place;



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- Removal of demolition, excavation, and construction waste from the Site and disposal at appropriate, National Grid-approved facilities in accordance with applicable laws and regulations;
- Removal of construction wastewater from the Site and disposal at appropriate, National Grid-approved facilities in accordance with applicable laws and regulations;
- Backfilling excavation areas;
- Installation of a permeable two-foot thick soil cover across the Site; and
- Site restoration, including the planting of new trees and lawns and the installation of new chain-link fencing and gates.

This SWPPP has been prepared in accordance with the substantive requirements of NYSDEC's *SPDES General Permit for Storm Water Discharges from Construction Activity* (SPDES General Permit; NYSDEC 2015).

1.2 Revisions

This SWPPP will be kept current so that it at all times accurately documents the erosion and sediment control practices that are being used or will be used during construction. At a minimum, this SWPPP will be amended: 1) whenever the current provisions prove to be ineffective in minimizing pollutants in storm water discharges from the Site; 2) whenever there is a change in design, construction, operation, or maintenance at the Site that has or could have an effect on the discharge of pollutants; and 3) to address issues or deficiencies identified during an inspection by ARCADIS' qualified inspector, NYSDEC, or other regulatory authority having jurisdiction.

1.3 SWPPP Organization

The remainder of this SWPPP is organized into five sections as follows:

- Section 2 (Site Background), presents general information regarding existing (pre-construction) conditions at the Site;

- Section 3 (Erosion and Sediment Control Plan), summarizes the erosion and sediment controls that will be used or constructed during the remedial construction activities;
- Section 4 (Pollution Prevention Plan), summarizes the pollution prevention and control measures that will be implemented during the remedial construction activities;
- Section 5 (Inspection and Maintenance), summarizes the inspection and maintenance requirements for the erosion and sediment controls and pollution prevention measures identified in this SWPPP; and
- Section 6 (References), presents a list of reference documents used in the preparation of this SWPPP.



Storm Water Pollution Prevention Plan

Phase 1 Remedial Action,
Ilion (East Street) Former
Manufactured Gas Plant Site

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Storm Water Pollution Prevention Plan

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Ilion (East Street) Former
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2. Site Background

2.1 General

This section provides general information regarding the pre-remediation conditions at the Site and in the off-site area, including the investigations and evaluations conducted by National Grid and its consultants in these areas.

2.2 Site Location and Description

The Site is located at 1 East Street in a mixed commercial/residential area of the Village of Ilion, Herkimer County, New York, and is identified as Block 4, Lot 19 on Section 120.037 of the Village of Ilion tax map. As shown on Drawing G-101 (Existing Site Conditions), the 1.3-acre property is roughly "L" shaped, and is generally bounded by East Clark Street and privately-owned residential properties to the north, State Street to the south, East Street to the east, and privately-owned commercial and residential properties to the west.

The property is surrounded by an eight-foot high chain-link fence topped with barbed wire, and access gates are located along East Street and State Street. A gravel driveway leads from the East Street access gate to a gravel parking area in the center of the Site. The northern and western portions of the Site are grass-covered, and several large coniferous trees are present across the central and northern portions of the property. To the north of the East Street access gate is a small, single-story cinderblock building that formerly housed a natural gas regulator station. The southeastern portion of the Site contains the remnants of several building foundations, steel piping, and appurtenances related to the former MGP and electrical substation. Surface topography at the Site is generally flat with a gentle slope from south to north.

2.3 Site Operational History

Coal gas was produced at the Site from the 1870s through 1912. Thereafter, the Site was used for various utility operations (including gas storage and distribution), and as an electrical substation and service center.

The early gas works was located on a 0.7-acre parcel of land at the intersection East Street and the north towpath of the Erie Canal. By 1881, the gas works was fully operational and consisted of a coal shed, an octagonal gas holder, and a gas house with retorts, lime purifiers, and dynamos. The gas works was expanded to the north in



Storm Water Pollution Prevention Plan

Phase 1 Remedial Action,
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1890 with the purchase of an additional 0.31-acre parcel at the intersection of East Street and East Clark Street. In that same year, the Ilion and Mohawk Gas Light Company was contracted by the Village of Ilion to furnish power for lighting, and by 1891, an electric light station was added on the north side of the gas house. By 1897, an 80,000-cubic-foot gas holder was constructed on the parcel to the north of the main gas works, near East Clark Street, and use of the octagonal gas holder was discontinued. Also around this time the former towpath of the Erie Canal, which ran along the south side of the gas works, was converted into a public street known as East Canal Street (now, State Street).

Between 1897 and 1907, additional retorts and dynamos were added to the gas works to increase production capacity, and the lime purifiers were replaced with iron oxide purifiers. During this period, carburetted water gas was also being produced at the Site on an as-needed basis using an auxiliary 50,000-cubic-foot-per-day water gas set, which was located in the retort room of the gas house.

Operations at the former gas works were discontinued sometime between 1912 and 1917, although the plant may have been used on a limited basis during peak demand periods. In 1917, a 200,000-cubic-foot gas distribution holder was constructed between the gas house and the 80,000-cubic-foot gas holder to store and distribute manufactured gas from the Harbor Point MGP in Utica, New York. Site operations were subsequently converted to manufactured gas storage and distribution. The octagonal gas holder was removed sometime before 1924 and the 80,000-cubic-foot gas holder was removed by 1942.

In 1940, an outdoor electrical substation was constructed at the southeast corner of the Site, in the general area of the former octagonal gas holder. Niagara Mohawk Power Corporation (National Grid's predecessor) assumed control of the Site operations in 1950 and introduced natural gas into the local distribution system beginning in 1951. A gas regulator building was constructed east of the 200,000-cubic-foot gas holder to support Site operations. In 1956, the 200,000-cubic-foot gas holder was demolished and most of the remaining gas equipment was removed from the Site. The outdoor electrical substation was decommissioned and removed in 1997, and the remaining buildings associated with the former gas works were demolished in September 2000.



Storm Water Pollution Prevention Plan

Phase 1 Remedial Action,
Ilion (East Street) Former
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2.4 Surface Water Hydrology

The nearest surface water body is an unclassified open drainage swale, which begins approximately 1,500 feet north-northeast of the Site at the outfall of a 24-inch diameter storm sewer. The open swale flows northeast approximately 1,100 feet before joining the Mohawk River. The Mohawk River, a NYSDEC Class B surface water body, is located approximately 2,200 feet northeast of the Site and flows east approximately 80 miles before joining the Hudson River. Other surface water bodies within one mile of the Site include Fulmer Creek, which is located approximately 4,000 feet east of the Site, and Steele Creek, which is located approximately 3,500 feet west of the Site. Both Fulmer Creek and Steele Creek are tributaries of the Mohawk River and are classified by NYSDEC as Class C surface water bodies.

2.5 Hydrostratigraphic Units

The Natural Resources Conservation Service (NRCS) Web Soil Survey identifies the soils at the Site as Herkimer gravelly silt loam (HhA) with a Hydrologic Soil Group classification of B (NRCS 2015). Herkimer gravelly silt loams form on the base of old alluvial fans and contain red and green Utica Shale chips. The soils are well drained to moderately well drained, and have moderate permeability in the shallow zone and rapid permeability in the substratum. The NRCS soil map for the Site and the map unit description are provided in the appendix of this SWPPP.

The hydrostratigraphic units at the Site consist of (from top to bottom) fill, peat, lacustrine deposits, and sand and gravel. The fill unit ranges in thickness from approximately 2.5 feet to 13 feet and generally comprises sand, gravel, silt, clay, and anthropogenic materials, including ash, cinders, clinkers, brick fragments, and wood chips. A thin layer of peat, ranging in thickness from approximately 0.5 foot to three feet, underlies the fill unit in the northern portion of the Site. The depth to the top of the peat unit ranges from approximately 7.5 to 11.5 feet bgs. Except where it is locally covered by sedimentary deposits, such as silts, sands, and clays, the peat (where present) appears to have been the historical ground cover prior to the development of the Site.

Underlying the fill and peat (where present) are lacustrine deposits of silt, sand, and clay. The depth to the top of the lacustrine unit ranges from approximately 2.5 to 12.5 feet bgs. The lacustrine deposits generally range in thickness from approximately two feet to 27 feet and appear to decrease in thickness to the north.



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A regional sand and gravel unit underlies the lacustrine deposits at the Site and is generally encountered at depths ranging from approximately 12 to 34 feet bgs. The sand and gravel unit also contains fluctuating amounts of silts and clays. The thickness of the sand and gravel unit has not been determined with certainty, but is likely 250 feet or greater.

2.6 Hydrogeology

The predominant regional groundwater discharge feature is the Mohawk River. Given the Site's location and proximity to the river, groundwater in the unconsolidated deposits is expected to flow north (towards the river). At the Site, groundwater is encountered within the fill or lacustrine deposits at depths ranging from approximately four to 17 feet bgs, depending on location. A thin saturated zone of up to approximately three feet in thickness is locally present within the fill above the lacustrine deposits. In the southern and central portions of the Site, the top of the lacustrine deposits is located close to ground surface, and the saturated zone is absent within the fill unit. The groundwater flow direction within the fill unit, where the saturated zone is present, is determined by the local topography of the underlying lacustrine deposits. The flow rate is likely negligible since the saturated zone is relatively thin (less than three feet thick). The saturated zone of the fill unit is fed directly by infiltration from ground surface; however, the majority of groundwater at the Site flows within the saturated zone of the sand and gravel unit and originates from areas south (upgradient) of the Site.

The saturated zone of the sand and gravel unit is present throughout the Site and is regional in nature. Based on the eight complete synoptic rounds of groundwater level measurements collected during the preliminary site assessment and remedial investigation (RI), there appears to be a moderate hydraulic gradient of approximately 5/1,000 within the saturated zone of the sand and gravel unit. The flow direction is to the north and northwest, towards the Mohawk River. Slug tests conducted during the RI in wells screened within the sand and gravel unit indicated relatively high values of hydraulic conductivity, on the order of 10^{-3} to 10^{-2} centimeters per second. The magnitude of flow within the saturated zone of the sand and gravel unit is likely significant due to the: 1) significant thickness of the unit (greater than 250 feet); 2) moderate hydraulic gradient; and 3) high hydraulic conductivity.



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2.7 Cultural Resources

A Phase IA cultural resources investigation of the Site was performed on behalf of National Grid by Tetra Tech FW, Inc. (Tetra Tech). The results of the investigation were presented in the *Results of a Phase IA Cultural Resources Survey* (Phase IA Cultural Survey Report; Tetra Tech 2005), which was provided in Appendix I of the NYSDEC-approved *Revised Remedial Investigation Report for the Ilion (East Street) Site* (Tetra Tech 2009).

As described in the Phase IA Cultural Survey Report, the only cultural resources anticipated to be present within the project area are those associated with the former MGP operations, including the remnants of portions of three gas holders and other MGP-related features.



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3. Erosion and Sediment Control Plan

3.1 General

This section summarizes the erosion and sediment controls that will be used or constructed during the remedial construction activities. Erosion and sediment controls will be installed, inspected, and maintained by the Contractor in accordance with the *New York State Standards and Specifications for Erosion and Sediment Control* (NYSDEC 2005; NYS Standards and Specifications) and the following components of the Remedial Design:

- Specification Section 01 41 26, Storm Water Pollution Prevention Plan and Permit;
- Specification Section 01 55 13, Temporary Access Roads and Parking Areas;
- Specification Section 01 57 05, Temporary Controls;
- Specification Section 32 92 00, Lawns;
- Drawing G-105, Temporary Erosion and Sediment Control Plan;
- Drawing G-501, Temporary Erosion and Sediment Control Details;
- Drawing C-107, Soil Cover Final Grading Plan;
- Drawing C-108, Site Restoration Plan; and
- Drawing C-502, Soil Cover and Planting Details.

As Site conditions allow, temporary erosion and sediment controls will be installed before initiating any ground-intrusive activities, and additional erosion and sediment controls will be installed during construction (as needed) to achieve the storm water management objectives of this SWPPP and the SPDES General Permit.



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3.2 Temporary Structural Measures

3.2.1 Silt Fencing and Straw Bale Dikes

Silt fencing and/or straw bale dikes will be used to reduce or otherwise control the potential off-site migration of suspended sediments in storm water run-off, and will be installed before any existing soils or vegetation are disturbed at the Site. Silt fencing and straw bale dikes (where used) will be installed and maintained by the Contractor in accordance with Section 5A of the NYS Standards and Specifications, Specification Section 01 57 05, and Drawings G-105 and G-501.

3.2.2 Storm Drain Inlet Protection

Storm drain inlet protection will be used to protect catch basins with the potential to receive storm water run-off from exposed soils. Storm drain inlet protection will be installed and maintained by the Contractor in accordance with Section 5A of the NYS Standards and Specifications, Specification Section 01 57 05, and Drawing G-105.

3.2.3 Stabilized Construction Entrances and Construction Road Stabilization

Temporary construction entrances and access roads will be used to stabilize entrances to the Site, on-site vehicle transportation routes, and equipment lay-down and parking areas. Temporary construction entrances and access roads will be installed during site preparation activities and before excavation work begins.

Temporary construction entrances and access roads will be constructed and maintained by the Contractor in accordance with Section 5A of the NYS Standards and Specifications, Specification Sections 01 55 13 and 01 57 05, and Drawings G-105 and G-501.

3.3 Vegetative Measures

3.3.1 Temporary Critical Area Plantings (Temporary Seeding)

Temporary seeding will be used in disturbed or bare-soil areas to provide interim protective cover when preparing for a temporary winter shut-down, or when permanent seeding is likely to fail due to mid-summer heat and drought. Temporary seeding will be performed promptly after the completion of clearing/grubbing to minimize the need for scarification. Storm water run-off controls (e.g., silt fencing, straw bale dikes, etc.)



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will be installed, as needed, before temporary seeding is performed to reduce the potential for erosion and/or the washing out of seed in the newly seeded areas.

Temporary seeding will be performed by the Contractor in accordance with Section 3 of the NYS Standards and Specifications and Specification Section 01 57 05.

3.3.2 Permanent Critical Area Plantings (Permanent Seeding)

Permanent seeding will be used in disturbed or bare-soil areas to provide long-term protective cover. Permanent seeding will be performed promptly after the completion of fine grading, and following the achievement of the required final surface grades, to minimize the need for scarification. Storm water run-off controls (e.g., silt fencing, straw bale dikes, etc.) will be installed, as needed, before permanent seeding is performed to reduce the potential for erosion and/or the washing out of seed in the newly seeded areas.

Permanent seeding will be performed by the Contractor in accordance with Specification Section 32 92 00 and Drawings C-108 and C-502.

3.3.3 Mulching

Mulching will be used to 1) temporarily stabilize exposed soil and fill material and 2) moderate seedbed conditions (e.g., temperature, moisture, etc.) during the growth and establishment of vegetation. Mulching will be performed immediately following the temporary/permanent seeding of disturbed or bare-soil areas. Erosion control mats or netting will also be installed in newly seeded/mulched areas where slopes exceed 1:6 (vertical:horizontal) to reduce the potential for erosion and/or the washing out of seed and straw mulch. Mulching provides the added benefit of assisting in the control of dust.

Mulching will be performed by the Contractor in accordance with Section 3 of the NYS Standards and Specifications and Specification Sections 01 57 05 and 32 92 00.

3.4 Site Restoration

Excavation areas will be backfilled and the Site will be restored to the final grades and conditions depicted on Drawings C-107 and C-108. All other disturbed areas will be restored to pre-construction conditions. A final inspection will be performed to verify that all restoration areas have achieved final stabilization. If the restoration areas are



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not suitably stabilized, corrective actions will be taken by the Contractor and a second inspection will be performed. Upon achievement of final stabilization, and acceptance of final Site conditions by National Grid and ARCADIS, the Contractor will remove any temporary erosion and sediment controls (e.g., silt fencing, straw bale dikes, etc.) that are no longer needed.

3.5 Post-Construction Storm Water Management Controls

Due to the nature of the work being performed (i.e., removal of impacted material under a NYSDEC-approved Remedial Design), post-construction water quality and quantity controls have not been provided in this SWPPP.

4. Pollution Prevention Plan

4.1 General

This section summarizes the measures that will be used to control and prevent impacted material, spills, and construction debris from becoming a pollutant source in Site-related storm water run-off. Pollution prevention measures will comply with the following components of the Remedial Design:

- Specification Section 01 35 29, Contractor's Health and Safety Plan;
- Specification Section 01 35 43.13, Environmental Procedures for Hazardous Materials;
- Specification Section 01 55 13, Temporary Access Roads and Parking Areas;
- Specification Section 01 55 26, Maintenance and Protection of Traffic;
- Specification Section 01 57 05, Temporary Controls;
- Specification Section 01 74 05, Cleaning;
- Specification Section 02 61 05, Removal and Disposal of Contaminated Materials;
- Drawing G-502, General Construction Details;
- Drawing C-104, General Excavation Plan;
- Drawing C-105, New Storm Sewer Plan and Profile; and
- Drawing C-106, Soil Cover Subgrade Plan.

4.2 Impacted Material Handling, Transportation, and Disposal

4.2.1 Excavated Soil and Debris

Soil and debris will be excavated to the horizontal and vertical limits depicted or otherwise specified on Drawings C-104, C-105, and C-106. As Site conditions allow, excavated soil and debris will be direct-loaded into properly-licensed and permitted

vehicles (pursuant to Title 6, Part 364 of the New York Codes, Rules, and Regulations [6 NYCRR Part 364]), and will be transported to appropriate off-site disposal facilities in accordance with applicable laws and regulations. Transport vehicles will be water-tight and/or fully-lined with polyethylene liners (or equivalent), and will be equipped with functioning tailgate locks and non-mesh (solid), waterproof tarpaulins.

Excavated soil will be dewatered by the Contractor as necessary to, at a minimum, pass the paint filter liquids test¹ before leaving the Site. The Contractor's means and methods of dewatering will conform to the requirements of Specification Section 02 61 05. Those requirements include prohibitions against the use of quick lime, lime kiln dust, or other lime-based soil drying agents containing more than 50% reactive (free) calcium oxide and magnesium oxide by weight.

Before leaving the Site, transport vehicles will be staged and inspected within a temporary decontamination area (constructed as shown on Drawing G-502), and will be cleaned of any visible soil and sediment. Upon leaving the Site, transport vehicles will follow approved haul routes as required by Specification Section 01 55 26.

In certain instances, excavated soil and debris may be stockpiled on a temporary basis within the limits of the excavation or in a temporary containment area (constructed as shown on Drawing G-502). Temporary stockpiles will be covered at all times (during both working and non-working hours) with minimum six-mil polyethylene liners when not in use. Liners will be properly anchored to prevent uplift due to wind conditions and will be installed to minimize the ponding of precipitation. Temporary stockpiles of excavated soil and debris will be transported off-site for disposal within 24 hours of placement unless a longer duration is approved by National Grid's on-site representative(s).

4.2.2 Construction Wastewater

Construction wastewater resulting from dewatering or decontamination operations will be collected and conveyed in closed conduits or piping to a wastewater holding (fract-type) tank for temporary storage. Holding tanks will be staged on-site within a fully-

¹ Method 9095B, as described in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (United States Environmental Protection Agency Publication SW-846).



Storm Water Pollution Prevention Plan

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lined containment area (constructed as shown on Drawing G-502) to capture any wastewater that may leak or spill from the tanks.

Construction wastewater will be transported from the Site to an appropriate off-site disposal facility in properly-licensed and permitted tanker trucks (pursuant to 6 NYCRR Part 364). Before leaving the Site, tanker trucks will be staged and inspected within a temporary decontamination area (constructed as shown on Drawing G-502), and will be cleaned of any visible soil and sediment. Upon leaving the Site, tanker trucks will follow approved haul routes as required by Specification Section 01 55 26.

4.3 Spill Prevention, Control, and Countermeasures

As required by Specification Section 01 35 29, the Contractor will prepare a Site-specific Health and Safety Plan (HASP) that addresses spill prevention and control, and response to spills and other Site emergencies during the remedial construction activities. The HASP will include evacuation procedures for Site personnel, directions and a figure showing the route to the local hospital, and a contact list with telephone numbers for local and state emergency responders (e.g., police, ambulance, fire, poison control, etc.).

4.3.1 Spill Prevention

The Contractor's spill prevention practices will include, at a minimum, the following:

- Performing regular inspections of construction vehicles, equipment, and portable fuel tanks to check for leaks;
- Performing routine maintenance on construction vehicles and equipment in accordance with the manufacturer's specifications;
- Promptly repairing or replacing damaged or defective construction vehicles and equipment;
- Storing on-site fuel tanks within a containment area (constructed as shown on Drawing C-502) or providing alternate secondary containment;
- Re-fueling vehicles on level ground within a designated area away from steep slopes and storm water run-off conveyance features (e.g., ditches/diversions, storm sewers, etc.);

- Attending to construction vehicles and equipment while re-fueling;
- Turning off internal combustion engines before re-fueling with a flammable liquid;
- Replacing the cap on vehicle fuel tanks before starting the engine;
- Securing/locking fuel pump dispensers when not in use to avoid accidental fuel release; and
- Storing construction vehicles and equipment away from Site hazards and sensitive resources, to the extent practicable.

4.3.2 Spill Control and Countermeasures

The Contractor will maintain on-site sufficient fire extinguishers, spill kits, and oil-absorbent pads, rolls, and booms as required to contain spills (should they occur) and prevent the potential migration of pollutants beyond the work area. In the event of a spill, the Contractor will immediately notify National Grid's on-site representative(s) and implement the following:

1. *Source Isolation/Shut-Down:* As conditions allow, Contractor personnel will attempt to stop or isolate the source of the spill by closing valves and/or shutting down affected vehicles or equipment.
2. *Containment:* If the spilled material is floating on a water surface, spill-absorbent pads/booms will be placed across the path of the floating spill. If the spilled material sinks below the water surface, a dam, weir, or other containment method will be used to stop the flow of the spilled material. If the spill occurs on land, a containment unit will be constructed to stop the flow of the spilled material and sorbents will be applied as necessary.
3. *Clean-Up/Recovery:* Spills in water will be recovered using pumps and sorbents as necessary until the spilled material is recovered and no sheen or other evidence of the spill is observed on the water surface. Spills on land will be recovered using pumps, sorbents, and heavy equipment as necessary until the spilled material is recovered. Construction vehicles and equipment used in the clean-up effort, or otherwise affected by the spill, will also be cleaned/decontaminated.



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4. *Waste Collection, Storage, and Disposal:* Impacted materials, sorbents, and other wastes will be collected and stored in New York State Department of Transportation-approved containers. The containers will be labeled with the waste type and date of accumulation, and will be transported off-site for disposal at a permitted facility in accordance with all applicable laws and regulations.
5. *Post-Spill Maintenance:* Following the clean-up of the spill, personnel will verify that all impacted materials, vehicles, and equipment have either been transported off-site for disposal, or decontaminated, as appropriate. The vehicle or piece of equipment that may have caused the spill will also be repaired. If the vehicle or piece of equipment cannot be repaired, it will be removed from the Site and replaced.

National Grid or a designated representative will notify the NYSDEC Project Manager of all spills, regardless of volume or circumstances involved. Appropriate emergency response groups, including the local fire department, NYSDEC, and National Response Center, will be contacted immediately if the spill or material release has impacted soil, groundwater, or surface water, or is beyond the capabilities of on-site personnel to control using the methods described above.

4.4 Dust Control

Dust controls will be used to prevent surface and air movement of dust from disturbed or open-soil areas that may cause off-site damage, health hazards, and traffic safety problems. Dust controls will be proactively employed by the Contractor in accordance with Specification Section 01 57 05, and may include one or more of the following:

- Excavating, loading, handling, and backfill materials in a manner that minimizes the generation of dust;
- Removing soil and debris from temporary access roads and active haul routes;
- Wetting down temporary access roads and active haul routes;
- Hauling excavated materials and clean backfill materials in properly tarped/covered transport vehicles;
- Restricting vehicle speeds on temporary access roads and active haul routes; and



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- Covering excavations and temporary stockpiles with polyethylene liners (anchored appropriately to resist wind forces) before extended work breaks and at the end of each work day.

4.5 Good Housekeeping Practices

Good housekeeping practices will be used to reduce the potential for construction materials entering Site-related storm water run-off. The Contractor will maintain the Site in a neat and orderly condition throughout the remedial construction activities in accordance with Specification Sections 01 55 13 and 01 74 05. This will include the: 1) routine collection and disposal of trash, rubbish, and sanitary wastes; 2) proper storage of construction materials and equipment at the Site; and 3) routine cleaning of public rights-of-way, streets, and sidewalks.

5. Inspection and Maintenance

5.1 General

This section summarizes the inspection and maintenance requirements for the erosion and sediment controls and pollution prevention measures identified in this SWPPP. SWPPP controls and practices will be inspected and maintained for the duration of the remedial construction activities, and until such time as all disturbed or open-soil areas at the Site have achieved “final stabilization”, as defined in Appendix A of the SPDES General Permit.

5.2 Maintenance Inspections

SWPPP controls and practices within the active work area will be inspected by the Contractor on a daily basis to ensure that they are being maintained in effective operating condition at all times. For temporary work stoppages greater than two weeks in duration (e.g., winter shut-downs, etc.), maintenance inspections may be suspended if temporary stabilization measures have been applied to all disturbed surfaces, and if approved by ARCADIS. Contractor personnel responsible for maintenance inspections will meet the requirements of a “trained contractor”, as defined in Appendix A of the SPDES General Permit.

Any deficiencies observed during the inspection, and any maintenance activities or corrective actions required to address those deficiencies, will be immediately communicated to National Grid’s on-site representative(s). Maintenance activities and corrective actions will be initiated by the Contractor within one working day after the inspection and will be completed within two working days after the inspection. If Site conditions prevent the repairs or maintenance from being completed, the Contractor will promptly notify National Grid’s on-site representative(s) and complete the repairs or maintenance as soon as Site conditions permit.

5.3 Periodic Inspections

SWPPP controls and practices will be inspected by ARCADIS once every seven calendar days (at a minimum) and after wet weather events to verify their continued effectiveness and integrity. For temporary work stoppages greater than two weeks in duration (e.g., winter shut-downs, etc.), the inspection frequency may be reduced to once every 30 calendar days if temporary stabilization measures have been applied to all disturbed surfaces. ARCADIS personnel responsible for periodic inspections will



Storm Water Pollution Prevention Plan

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meet the requirements of a “qualified inspector”, as defined in Appendix A of the SPDES General Permit. The results of each inspection, including any corrective actions to be taken, will be documented using the storm water inspection report form included in Specification Section 01 41 26 (Storm Water Pollution Prevention Plan and Permit).

Any deficiencies observed during the inspection, and any maintenance activities or corrective actions required to address those deficiencies, will be communicated to the Contractor in real-time. Maintenance activities and corrective actions will be initiated by the Contractor within one working day after the inspection and will be completed within two working days after the inspection. If Site conditions prevent the repairs or maintenance from being completed, the Contractor will promptly notify National Grid’s on-site representative(s) and complete the repairs or maintenance as soon as Site conditions permit.



Storm Water Pollution Prevention Plan

Phase 1 Remedial Action,
Ilion (East Street) Former
Manufactured Gas Plant Site

6. References

ARCADIS. 2015. Final (100%) Remedial Design for the Phase 1 Remedial Action, Ilion (East Street) Former Manufactured Gas Plant Site, Village of Ilion, Herkimer County, New York, Site No. 6-22-019. April 2015.

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Storm Water Pollution Prevention Plan

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Appendix

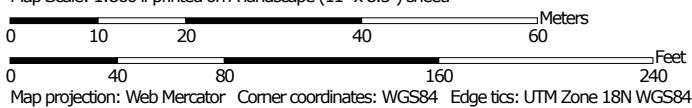
NRCS Soil Map and Map Unit
Description

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Soil Map—Herkimer County, New York, Southern Part
(Ilion (East Street) Former MGP Site)



Map Scale: 1:860 if printed on A landscape (11" x 8.5") sheet.



**Natural Resources
Conservation Service**


Web Soil Survey
National Cooperative Soil Survey

1/24/2015
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Soil Map—Herkimer County, New York, Southern Part
(Ilion (East Street) Former MGP Site)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Herkimer County, New York, Southern Part
Survey Area Data: Version 10, Sep 16, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2010—Oct 8, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Herkimer County, New York, Southern Part (NY615)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HhA	Herkimer gravelly silt loam, 0 to 3 percent slopes	1.5	100.0%
Totals for Area of Interest		1.5	100.0%

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Herkimer County, New York, Southern Part

HhA—Herkimer gravelly silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9swr

Mean annual precipitation: 41 to 50 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 125 to 165 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Herkimer and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Herkimer

Setting

Landform: Alluvial fans

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy old alluvium derived from dark, calcareous shale and varying amounts of sandstone and limestone

Typical profile

H1 - 0 to 9 inches: gravelly silt loam

H2 - 9 to 31 inches: gravelly silt loam

H3 - 31 to 46 inches: gravelly silt loam

H4 - 46 to 75 inches: channery loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 25 percent

Available water storage in profile: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: B

Minor Components

Howard

Percent of map unit: 5 percent

Fredon

Percent of map unit: 5 percent

Palmyra

Percent of map unit: 5 percent

Phelps

Percent of map unit: 5 percent

Data Source Information

Soil Survey Area: Herkimer County, New York, Southern Part

Survey Area Data: Version 10, Sep 16, 2014

NATIONAL GRID USA SERVICE COMPANY, INC.
CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

PHASE 1 REMEDIAL ACTION
ILION (EAST STREET) FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK

STORM WATER PERMIT CERTIFICATION STATEMENT

Contractor shall certify that it understands the permit conditions and Contractor's responsibilities as set forth in the Storm Water Pollution Prevention Plan (SWPPP). Contractor shall sign and submit this certification statement to Engineer prior to performing the Work. Certification statement shall be signed by an owner, principal, president, secretary, or treasurer of the firm.

Firm: _____

Address: _____

Telephone Number: _____

Employee Responsible for SWPPP Implementation ("Trained Contractor"):

Name (Print): _____ Title: _____

I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a Site inspection. I also understand that Owner must comply with the terms and conditions of the most current version of NYSDEC's SPDES General Permit for Storm Water Discharges from Construction Activity (SPDES General Permit), and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations.

Name (Print): _____ Title: _____

Signature: _____ Date: _____

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NATIONAL GRID USA SERVICE COMPANY, INC.
CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

PHASE 1 REMEDIAL ACTION
ILION (EAST STREET) FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK

STORM WATER INSPECTION REPORT

Date and Time of Inspection: _____

Qualified Inspector (Name, Title, and Affiliation): _____

Weather Conditions: _____

Soil Conditions: _____

Describe disturbed areas at time of inspection: _____

Describe areas stabilized (temporary or final) since previous inspection: _____

ATTACH SITE PLAN SHOWING APPROXIMATE LIMITS OF DISTURBED AND NEWLY-STABILIZED AREAS

Describe repairs, maintenance, or corrective actions implemented since previous inspection: _____

ATTACH PHOTOGRAPHS OF AREAS OR ITEMS INSTALLED, REPAIRED, OR REPLACED

Maintaining Water Quality

Yes No NA

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is there an increase in turbidity causing a substantial visible contrast to natural conditions? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is there residue from oil and floating substances, visible oil film, or globules or grease? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | All disturbance is within the limits of the approved plans? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Have receiving lake/bay, stream, and/or wetland been impacted by silt from project? |

Housekeeping

Yes No NA

1. General Site Conditions:

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is construction site litter and debris appropriately managed? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is construction impacting the adjacent property? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is dust adequately controlled? |

2. Temporary Stream Crossing:

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Maximum diameter pipes necessary to span creek without dredging are installed? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Installed non-woven geotextile fabric beneath approaches? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is fill composed of aggregate (no earth or soil)? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Rock on approaches is clean enough to remove mud from vehicles and prevent sediment from entering stream during high flow? |

Run-Off Control Practices

Yes No NA

1. Excavation Dewatering:

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Clean water from upstream pool is being pumped to the downstream pool? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Sediment laden water from work area is being discharged to a silt-trapping device? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Constructed upstream berm with 1-foot minimum freeboard? |

2. Level Spreader:

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Installed per plan? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Flow sheets out of level spreader without erosion on downstream edge? |

3. Interceptor Dikes and Swales:

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Installed per plan with minimum side slopes of 2H:1V or flatter? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Stabilized by geotextile fabric, seed, or mulch with no erosion occurring? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Sediment-laden run-off directed to sediment trapping structure? |

4. Stone Check Dam:

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is channel stable (flow is not eroding soil underneath or around the structure)? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Check dam is in good condition (rocks in place and no permanent pools behind the structure)? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Has accumulated sediment been removed? |

5. Rock Outlet Protection:

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Installed per plan? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Installed concurrently with pipe installation? |

Soil Stabilization

Yes No NA

1. Topsoil and Spoil Stockpiles:

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Stockpiles are stabilized with vegetation and/or mulch? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Sediment control is installed at the toe of the slope? |

2. Revegetation:

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Temporary seed and mulch have been applied to idle areas? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Six inches minimum of topsoil has been applied under permanent seeding? |

Sediment Control Practices

Yes No NA

1. Stabilized Construction Entrance:

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Stone is clean enough to effectively remove mud from vehicles? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Installed per standards and specifications? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Does all traffic use the stabilized entrance to enter and leave construction site? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is adequate drainage provided to prevent ponding at entrance? |

2. Silt Fence:

Sediment accumulation is ____% of design capacity.

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Installed on contour, 10 feet from toe of slope (not across conveyance channels)? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Joints constructed by wrapping the two ends together for continuous support? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Fabric buried six inches minimum below grade? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Posts are stable, fabric is tight and without rips or frayed areas? |

3. Storm Drain Inlet Protection (Use for Stone and Block; Filter Fabric; Curb; or Excavated Practices)

Sediment accumulation ____% of design capacity.

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Installed concrete blocks lengthwise so open ends face outward, not upward? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Placed wire screen between No. 3 crushed stone and concrete blocks? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Drainage area is one acre or less? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Excavated area is 900 cubic feet? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Excavated side slopes are 2H:1V? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2"x4" frame is constructed and structurally sound? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Three-foot maximum spacing between posts? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Fabric is embedded one to 1.5 feet below ground and secured to frame/posts with staples at maximum eight-inch spacing? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Posts are stable, fabric is tight and without rips or frayed areas? |

4. Temporary Sediment Trap:

Sediment accumulation is ____% of design capacity.

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Outlet structure is constructed per the approved plan or drawing? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Geotextile fabric has been placed beneath rock fill? |

5. Temporary Sediment Basin:

Sediment accumulation is ____% of design capacity.

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Basin and outlet structure constructed per the approved plan? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Basin side slopes are stabilized with seed and mulch? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Drainage structure flushed and basin surface restored upon removal of sediment basin facility? |

Describe any repairs, maintenance, or corrective actions required to correct observed deficiencies: _____

ATTACH PHOTOGRAPHS OF DEFICIENT AREAS OR ITEMS OBSERVED DURING THE INSPECTION

Qualified Inspector's Certification:

I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein may be punishable by Law.

Signature: _____ Date: _____

SECTION 01 42 00

REFERENCES

PART 1 – GENERAL

1.01 DEFINITIONS AND TERMINOLOGY

- A. Definitions and terminology applicable to all of the Contract Documents are included in the General Conditions and Supplementary Conditions.
- B. Terminology used in the Specifications includes:
 - 1. “Indicated” refers to graphic representations, notes, or schedules on the Drawings, or to other paragraphs or schedules in the Specifications and similar locations in the Contract Documents. Terminology such as “shown”, “noted”, “scheduled”, and “specified” are used to help the user locate the reference without limitation on the location.
 - 2. “Installer”, “applicator”, or “erector” is Contractor or another entity engaged by Contractor, either as an employee or Subcontractor, to perform a particular construction activity, including installation, erection, application or similar Work. Installers shall be experienced in the Work that installer is engaged to perform.
 - 3. Trades: Use of a term such as “carpentry” does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as “carpenter”, unless otherwise indicated in the Contract Documents or required by Laws or Regulations. Such terminology also does not imply that specified requirements apply exclusively to trade personnel of the corresponding generic name.

1.02 APPLICABLE CODES

- A. References in the Contract Documents to local code(s) shall mean the following:
 - 1. Uniform Fire Prevention and Building Code.
 - 2. Energy Conservation Construction Code of New York State.
 - 3. Village of Ilion Codes.
 - 4. National Electric Code.
 - 5. NFPA 101, Life Safety Code.

1.03 ABBREVIATIONS AND ACRONYMS

- A. Common abbreviations and acronyms that may be found in the Contract Documents are listed below, alphabetically by their written-out meaning:

alternating current	a-c
ampere	A
ante meridian	a.m.
average	avg
biochemical oxygen demand	BOD
brake horsepower	bhp
British thermal unit	Btu

Centigrade (or Celsius)	C
chlorinated polyvinyl chloride	CPVC
chlorofluorocarbons	CFC
Code of Federal Regulations	CFR
cubic inch	cu in
cubic foot	cu ft
cubic yard	cu yd, or CY
cubic meter	m ³
cubic feet per minute	cfm
cubic feet per second	cfs
decibel	db
degrees Centigrade (or Celsius)	degrees C or °C
degrees Fahrenheit	degrees F or °F
diameter	dia
direct current	d-c
dollars	\$
each	ea
efficiency	eff
Fahrenheit	F
feet	ft
feet per hour	fph
feet per minute	fpm
feet per second	fps
figure	Fig
flange	flg
foot-pound	ft-lb
gallon	gal
gallons per hour	gph
gallons per minute	gpm
gallons per second	gps
gram	g
grams per liter	g/L
Hertz	Hz
horsepower	hp or HP
hour	hr

REFERENCES
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NATIONAL GRID USA SERVICE COMPANY, INC.
PHASE 1 REMEDIAL ACTION
ILION (EAST STREET) FORMER MGP SITE
VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK

inch	in.
inches water gage	in. w.g.
inch-pound	in.-lb
inside diameter	ID
iron pipe size	IPS
thousand pounds	kips
thousand pounds per square inch	ksi
kilovolt-ampere	kva
kilowatt	kw
kilowatt-hour	kwhr or kwh
linear foot	lin ft or LF
liter	L
maximum	max
mercury	Hg
microgram	ug
microgram per cubic meter	ug/m ³
milligram	mg
milligrams per liter	mg/l or mg/L
milliliter	ml
millimeter	mm
million gallons per day	mgd or MGD
million gallon	MG
minimum	min
nitrogen oxide (total concentration of mono-nitrogen oxides such as nitric oxide [NO] and nitrogen dioxide [NO ₂])	NO _x
nominal pipe size	NPS
number	no.
New York Codes, Rules, and Regulations	NYCRR
ounce	oz
outside diameter	OD
particulate matter less than 10 micrometers in diameter	PM ₁₀
parts per million	ppm
parts per billion	ppb
polychlorinated biphenyl	PCB
polycyclic aromatic hydrocarbon	PAH

polyvinyl chloride	PVC
post meridian	p.m.
pound	lb
pounds per square inch	psi
pounds per square inch absolute	psia
pounds per square inch gauge	psig
pounds per square foot	psf
revolutions per minute	rpm
second	sec
semi-volatile organic compound	SVOC
specific gravity	sp gr, or SG
square	sq
square foot	sq ft, or sf
square inch	sq in.
square yard	sq yd, or SY
standard	std
standard cubic feet per minute	scfm
volt	V
volts alternating current	vac
volts direct current	vdc
volatile organic compound	VOC

1.04 REFERENCE STANDARDS

- A. Refer to Article 3 of the General Conditions, as may be modified by the Supplementary Conditions, relative to reference standards and resolving discrepancies between reference standards and the Contract Documents. Provisions of reference standards are in effect in accordance with the Specifications.
- B. Copies of Standards: Each entity engaged in the Work shall be familiar with reference standards applicable to its construction activity. Copies of applicable reference standards are not bound with the Contract Documents. Where reference standards are needed for a construction activity, obtain copies of standards from the publication source.
- C. Abbreviations and Acronyms: Where reference standards, specifications, codes, manuals, Laws or Regulations, or other published data of international, national, regional, or local organizations are referred to in the Contract Documents, the organization issuing the standard may be referred to by its abbreviation or acronym only. The following abbreviations or acronyms that may appear in the Contract Documents shall have the meanings indicated below. Listing is alphabetical by abbreviation or acronym.

AASHTO American Association of State Highway and Transportation Officials

REFERENCES
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ACI	American Concrete Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
AWS	American Welding Society
CLFMI	Chain-Link Fence Manufacturers Institute
CRSI	Concrete Reinforcing Steel Institute
CSI	Construction Specifications Institute
EJCDC	Engineers Joint Contract Documents Committee
FHWA	Federal Highway Administration
FS	Federal Specification
IBC	International Building Code
ICC	International Code Council
NEC	National Electric Code
NFPA	National Fire Protection Association
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
OSHA	Occupational Safety and Health Administration
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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REFERENCES
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NATIONAL GRID USA SERVICE COMPANY, INC.
PHASE 1 REMEDIAL ACTION
ILION (EAST STREET) FORMER MGP SITE
VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK

SECTION 01 51 05
TEMPORARY UTILITIES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all temporary utilities required for the Project.
 - a. Make all arrangements with utility service companies for temporary services and obtain required permits and approvals for temporary utilities.
 - b. Pay all utility service costs, including cost of electricity, water, fuel, and other utility services required for the Work.
 - c. Continuously maintain adequate utilities for all purposes during the Project, until removal of temporary utilities and temporary facilities. At a minimum, provide and maintain temporary utilities through Substantial Completion and removal of temporary field offices and sheds.
 - d. Should Owner occupy part of the Project prior to Substantial Completion of the entire Work, cost of utilities consumed via temporary utilities serving the portion occupied by Owner will be shared proportionately between Owner and Contractor as mutually agreed to by the parties.
 - e. Maintain, including cleaning, temporary utilities and continuously provide consumables as required.
 - f. Temporary utilities shall be adequate for personnel using the Site and requirements of the Project.
 - g. Provide temporary utilities in compliance with Laws and Regulations and, when applicable, requirements of utility owners.

B. Provide the following temporary utilities:

1. Electricity.
2. Lighting.
3. Telephone and communications.
4. Heating, ventilating, and temporary enclosures.
5. Water.
6. Fire protection.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:

1. NFPA 10, Standard for Portable Fire Extinguishers.
2. NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.03 REQUIREMENTS FOR TEMPORARY UTILITIES

A. Electrical:

1. Provide temporary electrical service required for the Work, including continuous power for temporary field offices and sheds. Provide temporary outlets with circuit breaker protection and ground fault protection.

- B. Lighting:
1. Minimum lighting shall be five foot-candles for open areas and 10 foot-candles for stairs and shops. Provide minimum of one, 300-watt lamp every 15 feet in indoor Work areas.
- C. Telephone and Communications:
1. Provide temporary telephone and communications required for Contractor's operations at the Site and for summoning emergency medical assistance.
- D. Heating, Ventilating, and Enclosures:
1. Provide sufficient temporary heating, ventilating, and enclosures to ensure safe working conditions and prevent damage to existing facilities and the Work.
 2. Except where otherwise specified, temporary heating shall maintain temperature of the area served between 50 degrees F and maximum design temperature of building or facility and its contents.
 3. Maintain temperature of areas occupied by Owner's personnel or electronic equipment, including offices, lunch rooms, locker rooms, toilet rooms, and rooms containing computers, microprocessors, and control equipment, between 65 degrees F and 80 degrees F with relative humidity less than 75 percent.
 4. Required temperature range for storage areas and certain elements of the Work, including preparation of materials and surfaces, installation or application, and curing as applicable, shall be in accordance with the Contract Documents for the associated Work and the Supplier's recommended temperature range for storage, application, or installation, as appropriate.
 5. Provide temporary ventilation sufficient to prevent accumulation in construction areas and areas occupied by Owner of hazardous and nuisance levels or concentrations of dust and particulates, mist, fumes or vapors, odors, and gases associated with construction.
 6. Provide temporary enclosures and partitions required to maintain required temperature and humidity.
- E. Water:
1. Provide temporary water facilities including piping, valves, meters if not provided by owner of existing waterline, backflow preventers, pressure regulators, and other appurtenances. Provide freeze-protection as required.
 2. Provide water for temporary sanitary facilities, field offices, Site maintenance and cleaning and, when applicable, disinfecting and testing of systems.
 3. Continuously maintain adequate water flow and pressure for all purposes during the Project, until removal of temporary water system.
- F. Fire Protection:
1. Provide temporary fire protection, including portable fire extinguishers rated not less than 2A or 5B in accordance with NFPA 10 for each temporary building and for every 3,000 square feet of floor area under construction.
 2. Comply with NFPA 241 and requirements of fire marshals and authorities having jurisdiction at the Site.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for temporary systems may be new or used, but shall be adequate for purposes intended and shall not create unsafe conditions, and shall comply with Laws and Regulations.

- B. Provide required materials, equipment, and facilities, including piping, wiring, and controls.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install temporary utilities in neat, orderly, manner, and make structurally, mechanically, and electrically sound throughout.
- B. Location of Temporary Utilities:
 - 1. Locate temporary systems for proper function and service.
 - 2. Temporary systems shall not interfere with or provide hazards or nuisances to the Work under this and other contracts, movement of personnel, traffic areas, materials handling, hoisting systems, storage areas, finishes, and work of utility companies.
 - 3. Do not install temporary utilities on the ground, with the exception of temporary extension cords, hoses, and similar systems in place for short durations.
- C. Modify and extend temporary systems as required by progress of the Work.

3.02 USE

- A. Maintain temporary systems to provide safe, continuous service as required.
- B. Properly supervise operation of temporary systems:
 - 1. Enforce compliance with Laws and Regulations.
 - 2. Enforce safe practices.
 - 3. Prevent abuse of services.
 - 4. Prevent nuisances and hazards caused by temporary systems and their use.
 - 5. Prevent damage to finishes.
 - 6. Ensure that temporary systems and equipment do not interrupt continuous progress of construction.
- C. At end of each work day, check temporary systems and verify that sufficient consumables are available to maintain operation until work is resumed at the Site. Provide additional consumables if the supply on hand is insufficient.

3.03 REMOVAL

- A. Completely remove temporary utilities, facilities, equipment, and materials when no longer required. Repair damage caused by temporary systems and their removal, and restore the Site to condition required by the Contract Documents. If restoration of damaged areas is not specified, restore to pre-construction condition.
- B. Where temporary utilities are disconnected from existing utility, provide suitable, water-tight or gas-tight (as applicable) cap or blind flange, as applicable, on service line, in accordance with requirements of utility owner.

END OF SECTION

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SECTION 01 51 41

TEMPORARY PUMPING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, tools, equipment, and incidentals shown, specified, and required for temporary pumping and handling of fluids conveyed through permanent pipe or conduit temporarily removed from service during the Work.
2. Design and provide temporary pumping system, including plugs and bulkheads as required; pumps; piping; instrumentation and controls; fuel and electricity as required; personnel; and appurtenances. Comply with Laws and Regulations and requirements of authorities having jurisdiction. System shall be suitable for its service and operating environment.
3. Capacity, General:
 - a. Provide the temporary pumping system of required capacity with at least one of the largest pumps out of service.
 - b. Pay costs associated with repairing damage to property, including cleaning costs, caused by undersized or inadequate temporary pumping system.
 - c. Engineer's acceptance of temporary pumping submittals does not relieve Contractor from responsibility for the temporary pumping system in accordance with the Contract Documents.
4. Temporary Pumping Capacity for Sewers:
 - a. Required capacity of temporary pumping system shall be determined by Contractor.
 - b. Temporary pumping system shall be adequate to pump the discharge rate conveyed through the permanent pipe or conduit temporarily removed from service. Temporary pumping system shall not result in flow back-ups into structures, overflows to receiving waters, and adverse effects on Owner's system.
 - c. Basis of capacity of temporary pumping system shall consider sewer inspection video and associated data, capacity of the pipe or conduit temporarily removed from service, whether system experiences surcharges during high-flow events, weather, and other factors.
5. Location of temporary pumping system shall not affect Owner's operations, public access to streets and drives, or access to private property, unless approved by authorities having jurisdiction.
6. Provide electricity and fuel as required for temporary pumping system. Secondary containment for fuel tanks shall be in accordance with Laws and Regulations.
7. Obtain Engineer's acceptance of temporary pumping system. Temporary pumping system for which Engineer's acceptance is not obtained in advance will not be eligible for payment.
8. Leakage from temporary pumping system or improper discharge are not allowed.

B. Coordination:

1. Review installation procedures under other Sections and coordinate Work that must be performed with or before Work specified in this Section.

2. Provide to Owner, Construction Manager, and Engineer written notification for delivery to owners and occupants of each property affected by temporary pumping operations. Written notices shall be provided seven days and one day prior to starting temporary pumping and shall include estimated start and end days and times that permanent pipe or conduit will be temporarily out of service and instructions for property owners or occupants during the outage. Owner or Construction Manager will deliver written notifications to property owners and occupants.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. Supplier: Temporary pumping system Supplier shall have at least five years of experience providing temporary pumping systems, and shall submit documentation of furnishing at least five temporary pumping systems on other projects similar in size and service to the temporary pumping system required for the Project.

B. Component Supply and Compatibility:

1. Obtain temporary pumping system from a single Supplier who shall be responsible for providing a complete system.

1.03 SUBMITTALS

A. Informational Submittals:

1. Notification Letters: Submit copy of notification letters for owners and occupants of each property affected by temporary pumping operations.
2. Temporary Pumping Plan: Submit acceptable plan for temporary pumping Work not less than 15 days prior to delivery of the temporary pumping system to the Site. Include the following:
 - a. Detailed schedule of temporary pumping Work in accordance with the accepted Progress Schedule. Include dates of mobilizing, testing, starting and ending dates of temporary pumping, and demobilizing the temporary pumping system. Update and resubmit schedule as required.
 - b. Basis for the capacity of the system proposed.
 - c. Manufacturer's data and specifications on each type and size of pump proposed and its capacity, including pump curves. Provide manufacturer's data and specifications for generators and other equipment required for temporary pumping system.
 - d. Technical information and specifications on noise controls for noise-generating equipment.
 - e. Technical data on temporary piping, pipe joints, controls, secondary containment for fuel tanks, and other information pertinent to the temporary pumping system.
 - f. Layout Drawings:
 - 1) Sketches showing proposed layout of temporary pumping system, including locations of temporary plugs and bulkheads, suction and discharge locations, location of the pumps and hoses, and source of power for temporary pumping system. Sketches shall be scale drawings acceptable to Engineer, and shall include site plans similar to those in the Contract Documents.
 - 2) Details of system suction and discharge locations. Discharge details shall include measures to protect the receiving structure and dissipate energy.
 - g. System curve of flow plotted against total dynamic head, and calculations that substantiate the proposed temporary pumping system, including comparison of net positive suction head required and net positive suction head available.
 - h. Temporary Plugs and Bulkheads: Manufacturer's literature and fabrication drawings showing type of plug or bulkhead as applicable, materials, and hydrostatic head the plug or bulkhead is designed to withstand.

- i. Narrative on temporary pumping system operation, including designation of responsible personnel who will operate and monitor the system, staffing, planned frequency of fueling, contingency plan in the event of pump failure, and statement of existing systems that may be affected during operation of temporary pumping system.
3. Qualifications Statements: Submit name and qualifications of temporary pumping system Supplier.

PART 2 – PRODUCTS

2.01 TEMPORARY PUMPING SYSTEM

- A. General:
 1. System components shall be suitable for continuous operation with the fluid pumped.
 2. Provide noise controls for temporary pumping system. Noise emissions from temporary pumping system shall comply with Laws and Regulations and shall not exceed 70 db at a distance of 30 feet from noise source.
 3. Fuel-consuming temporary pumping system components intended for use when Contractor is not present shall include fuel tanks sized for at least 24 hours of uninterrupted operation at system's operating capacity, and means to automatically notify Contractor upon high and low suction water level and low fuel level.
- B. Pumps:
 1. Provide electric- or diesel-powered pumps suitable for application and flow.
 2. Pumps shall be fully automatic, self-priming units that do not require the use of foot valves or vacuum pumps in the priming system.
- C. Controls:
 1. Provide controls for temporary pumping system to maintain suction structure liquid level that does not result in flow backups and that does not adversely affect Owner's system and private property.
- D. Piping:
 1. Provide flexible, abrasion-resistant hoses in good condition and suitable for system pressures and intended service. Hoses shall have water-tight joints, such as quick-connects by Camlok or equal.
 2. Size discharge hoses for maximum flow velocity of 10 feet per second.
 3. Discharge from temporary pumping system shall not adversely affect collection system structures, pipe or conduits, Owner's operations, or private property, and shall not result in flow backups, flooding, or damage. Provide energy dissipating measures at discharge point as required.
 4. Hoses shall be protected from damage at road, driveway, and sidewalk crossings. For each crossing, provide temporary ramp or cover capable of withstanding AASHTO H20 wheel loadings.
- E. Plugs and Bulkheads:
 1. Acceptable temporary plugs and bulkheads include inflatable dams specifically designed for such service, brick bulkheads, timber bulkheads, sandbags, and other bulkhead methods suitable for the service.
 2. Each plug and temporary bulkhead shall be suitable for the maximum pressure encountered.

PART 3 – EXECUTION

3.01 PREPARATION

A. General:

1. Provide to Owner, Construction Manager, and Engineer written notification for delivery to owners and occupants of each property affected by temporary pumping operations. Owner or Construction Manager will deliver written notifications to property owners and occupants.
2. Temporary piping shall be located off of roads, driveways, and sidewalks wherever possible. Piping shall not be located in environmentally sensitive areas such as wetlands.
3. Hydrostatic Testing:
 - a. Perform successful hydrostatic testing of temporary piping system using clean water at pressure equal to 1.2 times highest expected system operating pressure, for 15 minutes while maintaining test pressure within three psi of required test pressure. Conduct test in presence of Engineer.
 - b. Acceptance Criteria: No leakage.
 - c. Repair observed leaks and repair or replace piping that fails to meet acceptance criteria. Retest after repair.
4. Verify that entire temporary pumping system is ready for operation before commencing temporary pumping. Verify that controls are properly connected and functional.

3.02 TEMPORARY PUMPING

- A. Temporary pumping system shall operate continuously. In the event of equipment failure, immediately make repairs or replace equipment. Provide spare parts and redundant units as necessary for continuous operation.
- B. Provide personnel to monitor, operate, and maintain temporary pumping system 24 hours per day, seven days per week when system is in service.

3.03 REMOVAL

- A. Upon completion of temporary pumping operations:
 1. Remove plugs and bulkheads in manner that allows flow to slowly return to normal, without surging, surcharging, and adverse effects on existing system.
 2. Flush out temporary pumping system with clean water discharged to an appropriate location.
 3. Remove temporary pumping system and appurtenances from the Site.
 4. Repair damage caused by temporary pumping system and its removal, and restore the Site to condition required by the Contract Documents. If restoration of damaged areas is not specified, restore to pre-construction condition.

END OF SECTION

SECTION 01 52 13

FIELD OFFICES AND SHEDS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide and maintain field offices at the Site for Owner, Construction Manager, Engineer, NYSDEC, and Contractor. Provide field offices at locations approved by Engineer.
2. Provide required storage and work sheds.
3. Field offices shall be complete, fully functional, and ready for occupancy within 14 days after Engineer's approval of the submittal required by this Section.
4. Obtain required permits and pay all fees for field offices and sheds. Field offices and sheds shall comply with Laws and Regulations.

B. Related Sections:

1. Section 01 51 05, Temporary Utilities.
2. Section 01 52 16, First-Aid Facilities.

1.02 SUBMITTALS

A. Action Submittals:

1. Field Office Submittal: Submit, as a single submittal, the following:
 - a. Site plan indicating proposed location of field office trailers and sheds, parking for field offices, and facilities related to the field offices.
 - b. Information on proposed field office trailer size, construction, exterior appearance, interior finishes, and security measures.
 - c. Proposed layout of field office interior, showing location of offices, common areas, closets, with dimensions indicated for each.
 - d. Listing of utility providers.
 - e. Product data and technical information for multifunction printer and telephone system.

PART 2 – PRODUCTS

2.01 FIELD OFFICE TRAILERS

- A. Provide two mobile office trailers, each at least 10 feet wide with a minimum floor area of 430 square feet, and each partitioned to provide three separate office spaces.
 1. Trailers shall be completely weather-tight and insulated, with minimum R-19 insulation.
 2. Field Office Ingress and Egress:
 - a. Two doors for ingress and egress for each field office trailer, each with landing, stairs, and railing conforming to building codes in effect at the Site.
 - b. Landing and stairs shall be metal, pressure-treated wood, fiberglass, or concrete, and shall have slip-resistant walking surfaces.
 - c. Railing shall be metal, wood, or fiberglass.
 - d. Doors shall be secure and lockable, and each furnished with suitable, lockable security bar by MasterLock or equal.

3. Windows: Window area equal to at least 10 percent of floor area. Windows shall each have insect screen and operable sash. Provide each window with lock and exterior security bars approved by Engineer.
 4. One lockable closet for storage.
- B. Furnish to Engineer two identical sets of keys suitable for operating all keyed locks, including ingress/egress door locks, security bars for doors, window locks, closets, and office furnishings.

2.02 FIELD OFFICE UTILITIES

- A. Comply with Section 01 51 05.
- B. Provide the following for each field office trailer:
1. Electrical System and Lighting:
 - a. Electric service as required, including paying all costs.
 - b. Interior lighting of 50 foot-candles at desktop height.
 - c. Minimum of eight 120-volt, wall-mounted, duplex convenience electrical receptacles.
 - d. Exterior, wall-mounted, 250-watt lighting at each entrance.
 2. Heating, Ventilating, and Air Conditioning:
 - a. Automatic heating to maintain indoor temperature of at least 65 degrees F in cold weather.
 - b. Automatic cooling to maintain indoor temperature no warmer than 75 degrees F in warm weather.
 - c. Furnish all fuel and pay all utility costs.
 3. Telephone Service:
 - a. Private telephone service, including payment of installation, monthly, and service costs.
 - b. Provide four telephone lines, two for voice and two for fax service (four lines total), each with separate telephone number assigned by the telephone company.
 - c. Pay for unlimited local and long-distance service for duration of the Project.
 4. Internet Service:
 - a. Obtain and pay for Internet service, with unlimited (untimed) Internet access, until removal of field office trailers.
 - b. Provide fiber-optic or cable connection with appropriate modem and appurtenances, and dual-band Wireless-N router.
 - c. Minimum Speed: Up to 15 megabits per second download, up to 1 megabit per second upload.
 - d. Set up system and appurtenances required and verify functionality in each field office space.
- C. Should actions of utility companies delay the complete set up of field offices, Contractor shall provide temporary electricity, heat, telephone, and internet service as required at no additional cost to Owner.

2.03 FIELD OFFICE FURNISHINGS AND EQUIPMENT

- A. Provide the following furnishings and equipment for each field office trailer:
1. Desks: Four five-drawer desks, each five feet long by 2.5 feet wide with at least one file drawer per desk suitable for storing 8.5-inch by 11-inch documents.
 2. Desk Chairs: Four new or used (in good condition) five-point, high backed, cushioned swivel chairs.
 3. Other Chairs: Ten metal folding chairs without arm rests.

4. Tables:
 - a. Two new or used (in good condition) portable folding tables, each eight feet long by 2.5 feet wide.
 - b. Two new or used (in good condition) portable folding tables, each six feet long by 2.5 feet wide.
 5. Plan rack(s) to hold a minimum of eight sets of the Drawings.
 6. Two four-drawer, legal size, fire-proof file cabinets with locks.
 7. Four polyethylene waste baskets, each with minimum capacity of seven gallons.
 8. Suitable doormat at each exterior ingress/egress door.
 9. One tack board, approximately three feet long by 2.5 feet wide, with thumbtacks.
 10. One white board for use with dry markers, approximately six feet long by four feet wide, with marker holding tray, installed by Contractor at location selected by Engineer in the field. Furnish supply of colored markers and eraser for the white board.
 11. Fire extinguisher with associated signage, and smoke detector, in accordance with Laws and Regulations. At a minimum, provide two wall-mounted fire extinguishers and one battery-operated, ceiling-mounted smoke detector. Comply with fire protection requirements of Section 01 51 05.
 12. One first-aid station. Comply with Section 01 52 16.
 13. Two electric clocks.
 14. One electric coffee maker with ten-cup capacity or larger.
 15. One microwave oven with minimum capacity of 0.9 cubic foot.
 16. Two refrigerators, each with minimum capacity of 2.5 cubic feet.
 17. Bottled water with electric cooler dispenser for five-gallon bottles, with cup dispenser.
 18. Multifunction Printer:
 - a. Two new or used (in good condition) machines with the following functions:
 - 1) Photocopying.
 - 2) Network printing.
 - 3) Scanning to produce PDF and JPG files.
 - 4) E-mail.
 - 5) Fax via telephone line.
 - b. Products and Manufacturers: Provide one of the following:
 - 1) Epson WorkForce WF-7520 All-in-One Printer.
 - 2) HP Officejet 7610 Wide Format e-All-in-One Printer.
 - 3) Approved equal.
 - c. Paper Size: 8.5-inch by 11-inch (A), 8.5-inch by 14-inch (legal), and 11-inch by 17-inch (B) capacity.
 - d. Other: Enlarging and reducing capabilities, stream-feed capability, bypass feeder, and double-sided copying capability.
 - e. Provide necessary cables and appurtenances to enable all functions specified in this Section, including scan-and-email and printing from field office computers.
 19. Telephone System:
 - a. Telephone System Features:
 - 1) Provide two cordless telephones, each with hands-free speaker, speed dialing with minimum of 16 programmable numbers, volume control, LCD display, and buttons for hold and mute.
 - 2) Set up and verify operation of each telephone set.
 - b. Provide two digital telephone answering machines.
- B. Provide two-way portable radios and charging units for Construction Manager, Engineer, and key Contractor personnel (e.g., superintendent, foreman, etc.).

2.04 STORAGE AND WORK SHEDS

- A. Provide storage and work sheds sized, furnished, and equipped to accommodate personnel, materials, and equipment involved in the Work, including temporary utility services and facilities required for environmental controls sufficient for personnel, materials, and equipment.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install field offices, sheds, and related facilities in accordance with Laws and Regulations.
- B. Install materials and equipment, including pre-fabricated structures, in accordance with manufacturer's instructions.

3.02 CLEANING, MAINTENANCE, AND SUPPLIES

- A. Provide the following maintenance services:
 - 1. Immediately repair malfunctioning, damaged, leaking, or defective field office trailers, sheds, site improvements, systems, and equipment.
 - 2. Promptly provide snow removal for field offices, including parking areas, walkways, and stairs and landings.
 - 3. Provide continuous maintenance and janitorial service of field offices and sanitary facilities. Clean field offices at least once per week.
 - 4. Properly dispose of trash as needed, at least twice per week. Dispose of other waste, if any, as required, to avoid creation of nuisances.
- B. Provide the following consumables as needed:
 - 1. Light bulbs for interior and exterior lights.
 - 2. Toner or ink cartridges for multifunction printers, as required.
 - 3. Paper supplies for multifunction printers.
 - 4. Dry markers in six colors and white board eraser set.
 - 5. Bottled water suitable for water dispensers and disposable cups.
 - 6. Coffee supplies, including disposable cups, filters, coffee, sugar, creamer, and stir-sticks.
 - 7. Soap, paper towels, cleansers, sanitary supplies, and janitorial implements, including broom.
 - 8. Batteries for smoke detector and other battery-powered items furnished by Contractor.
 - 9. Replace fire extinguishers upon expiration.
 - 10. Replenish contents of first-aid kits as required.

3.03 REMOVAL

- A. Do not remove field offices and sheds until after Substantial Completion. Restore areas upon removal and prior to final inspection.

END OF SECTION

SECTION 01 52 16

FIRST-AID FACILITIES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide first-aid facilities during the Project.
 - a. Pay all costs for first-aid facilities, including installation, maintenance, and removal.
 - b. Maintain, including cleaning, first-aid facilities. Keep first-aid facilities continuously supplied with consumables.
 - c. Facilities shall be adequate for personnel using the Site and requirements of the Project.
 - d. Provide facilities in compliance with Laws and Regulations.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:

1. ANSI Z308.1, Minimum Requirements for Workplace First Aid Kits and Supplies.
2. ANSI Z358.1, Emergency Eye Wash and Shower Equipment.

1.03 REQUIREMENTS FOR FIRST-AID FACILITIES

- A. Provide temporary first-aid stations at or immediately adjacent to the Site's major work areas, and inside each temporary field office. Locations of first-aid stations shall be determined by Contractor's safety representative. At a minimum, first-aid stations provided shall include:
 1. One first-aid kit complying with ANSI Z308.1.
 2. One eyewash station complying with ANSI Z358.1.
- B. Provide list of emergency telephone numbers at each hardwired telephone at the Site. List shall be in accordance with the list of emergency contact information required in Section 01 35 29 (Contractor's Health and Safety Plan).
- C. When Work is in progress, provide at the Site at least one person trained in first-aid and cardiopulmonary resuscitation (CPR). First-aid- and CPR-trained personnel shall possess valid certificate indicating that they have successfully completed a first-aid and CPR training course by the American Red Cross or similar entity.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Location of temporary first-aid facilities shall be as specified in Article 1.03 of this Section.

3.02 USE

- A. Properly supervise temporary first-aid facilities.
- B. Properly dispose of wastes.
- C. Check temporary first-aid stations not less than weekly and verify that sufficient consumables are available. Provide additional consumables if the supply on hand is insufficient.

3.03 REMOVAL

- A. Completely remove temporary first-aid facilities and materials when no longer required. Repair damage caused by temporary first-aid facilities and their removal, and restore the Site to condition required by the Contract Documents. If restoration of damaged areas is not specified, restore to pre-construction condition.

END OF SECTION

SECTION 01 52 19

SANITARY FACILITIES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all temporary sanitary facilities required for the Project.
 - a. Make all arrangements with temporary sanitary facility companies for temporary sanitary services and obtain required permits and approvals for temporary sanitary services.
 - b. Pay all temporary sanitary facility service costs, including cost of electricity, water, fuel, and other utility services required for the Work.
 - c. Continuously maintain adequate temporary sanitary facilities for all purposes during the Project, until removal of temporary sanitary facilities. At a minimum, provide and maintain temporary sanitary facilities through Substantial Completion and removal of temporary field offices and sheds.
 - d. Maintain, including cleaning, temporary sanitary facilities and continuously provide consumables as required.
 - e. Temporary sanitary facilities shall be adequate for personnel using the Site, Site visitors, and requirements of the Project.
 - f. Provide temporary sanitary facilities in compliance with Laws and Regulations and, when applicable, requirements of utility owners.

1.02 REQUIREMENTS FOR TEMPORARY SANITARY FACILITIES

- A. Provide two suitably-enclosed chemical or self-contained toilets. Location of temporary toilets shall be acceptable to Owner.
- B. Provide a supply of potable drinking water and related facilities and consumables.
- C. Provide two suitable temporary washing facilities.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for temporary sanitary facilities may be new or used, but shall be adequate for purposes intended and shall not create unsafe conditions, and shall comply with Laws and Regulations.
- B. Provide required materials, equipment, and facilities, including piping, wiring, and controls.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install temporary sanitary facilities in neat, orderly, manner, and make structurally, mechanically, and electrically sound throughout.

- B. Location of Temporary Sanitary Facilities:
 - 1. Locate temporary sanitary facilities for proper function and service.
 - 2. Temporary sanitary facilities shall not interfere with or provide hazards or nuisances to:
 - a. The Work under this contract.
 - b. Movement of personnel.
 - c. Traffic areas, materials handling, hoisting systems, storage areas, and finishes.
 - d. Work of utility companies.
- C. Modify and extend temporary sanitary facilities as required by progress of the Work.

3.02 USE

- A. Maintain temporary sanitary facilities to provide safe, continuous service as required.
- B. Properly supervise operation of temporary sanitary facilities:
 - 1. Enforce compliance with Laws and Regulations.
 - 2. Enforce safe practices.
 - 3. Prevent abuse of services.
 - 4. Prevent nuisances and hazards caused by temporary sanitary facilities and their use.
 - 5. Prevent damage to finishes.
 - 6. Ensure that temporary sanitary facilities do not interrupt continuous progress of construction.
- C. At the end of each work day, check temporary sanitary facilities and verify that sufficient consumables are available to maintain operation until work is resumed at the Site. Provide additional consumables if the supply on hand is insufficient.

3.03 REMOVAL

- A. Completely remove temporary sanitary facilities and materials when no longer required. Repair damage caused by temporary sanitary facilities and their removal, and restore the Site to condition required by the Contract Documents. If restoration of damaged areas is not specified, restore to pre-construction condition.

END OF SECTION

SECTION 01 55 13

TEMPORARY ACCESS ROADS AND PARKING AREAS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide temporary construction roads, walks, parking areas, and appurtenances required during the Project for use by Contractor, Owner, and emergency vehicles.
2. Temporary roads and parking areas shall be designed and maintained by Contractor and shall be fully passable to vehicles in all weather conditions.

B. Use of Existing Roads:

1. Prevent interference with traffic on existing roads and parking areas. At all times, keep access roads and entrances serving the Site clear and available to Owner and emergency vehicles. Do not use access roads or Site entrances for parking or storage of materials or equipment.
2. Contractor shall indemnify and hold harmless Owner and Engineer from expenses caused by Contractor's operations over existing roads and parking areas.
3. Schedule deliveries to minimize use of driveways and Site entrances.

C. Related Sections:

1. Section 01 55 26, Maintenance and Protection of Traffic.
2. Section 01 57 05, Temporary Controls.

1.02 SITE ACCESS

- ###### A.
- Contractor access to the Site shall be via East Street or State Street gates. Construction traffic on East Clark Street is prohibited.

1.03 CONTRACTOR PARKING

- ###### A.
- Contractor employee vehicles shall park in the area designated on the Drawings, or in other areas approved by Owner.
- ###### B.
- Park construction vehicles and equipment in work areas off of permanent roads and parking areas, in areas of the Site designated for Contractor staging, or in other areas approved by Owner.

PART 2 – PRODUCTS

2.01 MATERIALS

- ###### A.
- Materials for temporary access roads and parking areas shall comply with the Contract Documents.
- ###### B.
- Traffic controls shall comply with requirements of Section 01 55 26.

PART 3 – EXECUTION

3.01 TEMPORARY ACCESS ROADS AND PARKING AREAS

- A. Provide temporary access roads and parking areas adequate to support and withstand traffic loads during the Project. Locate temporary access roads and parking areas within construction limits shown or indicated.
- B. Provide reasonably level, graded, well-drained subgrade of satisfactory soil material, compacted to at least 95 percent of maximum dry density in the upper six inches.
- C. Where required to support loads and provide separation between subgrade and subbase materials, provide stabilizing geotextile fabric.
- D. Provide crushed stone or gravel subbase material a minimum of six inches thick, roller-compacted to level, smooth, dense surface. Subbase for temporary roads and areas traveled by construction vehicles shall be adequate for loads and traffic served.

3.02 TRAFFIC AND PARKING CONTROL

- A. Provide warning signs on permanent roads and drives, and provide “STOP” signs for traffic on temporary access roads where required and at entrances to permanent pavement.
- B. Control all Contractor-related vehicular parking at the Site to preclude interfering with traffic, access by emergency vehicles, and construction operations.
- C. Comply with requirements of Section 01 55 26.

3.03 MAINTENANCE OF ROADS

- A. General:
 - 1. Maintain temporary access roads and parking areas to continuously provide at the Site access for construction vehicles and trucks, Owner’s vehicles, deliveries for Owner, emergency vehicles, and parking areas for Owner’s personnel.
 - 2. Public roads shall be passable at all times unless a road closure is approved in writing by authority having jurisdiction.
 - 3. When granular material of temporary access roads and parking areas without hard surfacing become intermixed with soil, or when temporary access roads otherwise create a nuisance, remove intermixed granular-and-soil material and replace with clean aggregate as required.
 - 4. Provide snow and ice removal for temporary access roads and parking areas.
- B. Cleaning and Dust Control:
 - 1. Cleaning: Clean paved surfaces over which construction vehicles travel. Perform cleaning a minimum of two times per week, or more frequently as directed by Engineer, by mechanical sweeping. Clean the following:
 - a. Roads within limits of the Project.
 - b. Permanent roads at the Site, between the Site entrance and the work areas, and between the Site entrance and construction parking and staging areas.
 - c. Public roads that require sweeping and cleaning due to construction operations.
 - 2. Dust Control:
 - a. Control dust resulting from construction operations to prevent nuisances at the Site and in nearby areas.

- b. Apply water or use other methods approved by Engineer that will minimize airborne dust. Do not use water when water will cause hazardous or objectionable conditions such as ice, mud, ponds, and pollution.
 - c. Provide dust control that is non-polluting and does not contribute to tracking-out of dirt and dust onto pavement. Re-apply dust control treatment as required.
 - d. Comply with dust control requirements of Section 01 57 05.
- C. Protection of Underground Facilities: Provide temporary, heavy-duty steel roadway plates to protect existing manholes, monitoring wells, valve boxes, vaults, and other Underground Facilities near to or visible at the ground surface.

3.04 REMOVAL AND RESTORATION

- A. Removal:
 - 1. Remove and properly dispose of temporary roads, walks, and parking areas that are not intended or acceptable for integration into permanent pavement. Return areas of temporary roads, walks, and parking to pre-construction condition or to condition required by the Contract Documents, as applicable. Remove temporary fencing, gates, and traffic controls associated with temporary roads and parking areas.
 - 2. Where areas of temporary roads and parking will be permanently landscaped, remove pavement, aggregate, soil, and other material that does not comply with the Contract Documents regarding fill, subsoil, and landscaping. Remove and properly dispose of materials contaminated with oil, bitumen, and other petrochemical compounds, and other substances that might impair growth of plants and lawns.
- B. Restoration:
 - 1. Repair or replace existing paving, curbs, gutters, and sidewalks affected by temporary roads and parking areas, and restore to conditions shown, specified, or required by authorities having jurisdiction.
 - 2. Restore to pre-construction conditions existing roads, walks, and parking areas damaged by Contractor, subject to approval of the owner of affected roads, walks, and parking areas.

END OF SECTION

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SECTION 01 55 26

MAINTENANCE AND PROTECTION OF TRAFFIC

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall keep all streets and traffic ways open for passage of traffic and pedestrians during the Work, unless otherwise approved by owner of the street, traffic way, or right-of-way, as applicable.
2. Construction traffic shall access the Site only via the streets specified in Section 01 55 13 (Temporary Access Roads and Parking Areas) and entrances shown on the Drawings.
3. Unless otherwise shown or specified in the Contract Documents, maintenance and protection of traffic shall be in accordance with Section 619 of the NYSDOT Standard Specifications and Standard Sheets.

B. Coordination:

1. Coordinate with owner of the highway or street right-of-way, as applicable, for maintenance and protection of traffic requirements.
2. Give required advance notice to fire departments, police departments, and other emergency services as applicable of proposed construction operations and modifications to existing traffic patterns.
3. Give reasonable notice to Owner of private properties that may be affected by construction operations. Give such notice not less than seven days prior to when such property will or may be affected by construction operations. Owner will notify owners or tenants of private properties.

C. Related Sections:

1. Section 01 55 13, Temporary Access Roads and Parking Areas.

1.02 SUBMITTALS

A. Informational Submittals:

1. Traffic Control Plan: Submit detailed plan, procedures, and sequencing for maintaining and protecting traffic in accordance with the Contract Documents and requirements of authorities having jurisdiction. Include the following:
 - a. Traffic staging plan, and construction sequencing as applicable to maintenance and protection of traffic.
 - b. Map or drawing depicting proposed haul routes.
 - c. Product data, including manufacturer's catalog information and specifications, for temporary signage, temporary signals, temporary illumination devices, and other products to be used in maintaining and protecting traffic.
 - d. Number and types of personnel dedicated to maintaining and protecting traffic during construction.
 - e. Proof of plan acceptance from authorities having jurisdiction.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment used for the maintenance and protection of traffic shall comply with the reference specification indicated in Paragraph 1.01.A.3 of this Section.

PART 3 – EXECUTION

3.01 GENERAL PROVISIONS

- A. When required to cross, obstruct, or temporarily close a street or traffic way, provide and maintain suitable detours, or other acceptable temporary expedient for the accommodation of traffic. Closings shall be for shortest duration practical, and passage shall be restored immediately after completion of Work.
- B. Provide signs, signals, barricades, flares, lights and other equipment, service, and personnel required to regulate and protect all traffic and warn of hazards. Such Work shall comply with the requirements of Owner and authorities having jurisdiction. Remove temporary equipment and facilities when no longer required, and restore grounds to original or to specified conditions, as applicable.
- C. Hydrants, valves, fire alarm boxes, postal boxes and delivery service boxes, and other facilities that may require access during construction shall be kept accessible for use.

3.02 TRAFFIC SIGNALS AND SIGNS

- A. Provide and operate traffic control and directional signals required to direct and maintain an orderly flow of traffic in areas under Contractor's control, and areas affected by construction operations.
- B. Provide traffic control and directional signs, mounted on temporary barriers or standard posts, at the following locations:
 - 1. Each change of direction of a roadway and at each crossroad.
 - 2. Detours and areas of hazard.
 - 3. Parking areas.
 - 4. Each traffic entrance to and exit from the Site.
 - 5. Other locations required by the reference specification indicated in Paragraph 1.01.A.3 of this Section and authorities having jurisdiction.

3.03 TRAFFIC CONTROL PERSONNEL

- A. When construction operations encroach on traffic lanes, furnish qualified and suitably-equipped traffic control personnel as required for regulating traffic and in accordance with requirements of authorities having jurisdiction. Traffic control personnel shall use appropriate flags or mobile signs.

3.04 FLARES AND LIGHTS

- A. During periods of low visibility provide flares and lights for the following:
 - 1. To clearly delineate traffic lanes, to guide traffic, and to warn of hazard areas.
 - 2. For use by traffic control personnel directing traffic.
- B. Provide adequate illumination of critical traffic and parking areas.

3.05 PARKING CONTROL

- A. Control all Contractor-related vehicular parking at the Site to preclude interfering with traffic and parking, access by emergency vehicles, Owner's operations, and construction operations. Provide temporary parking facilities for the public, as required because of construction or operations.
- B. Control parking of construction and private vehicles at the Site as follows:
 - 1. Maintain free vehicular access to and through parking areas.
 - 2. Prohibit parking on or adjacent to access roads, and in non-designated areas.
 - 3. Construction vehicles shall possess current vehicle registration.
 - 4. Private vehicles shall park only in designated areas.

3.06 HAUL ROUTES

- A. Submit proposed haul routes to Owner and Engineer and obtain approval of authorities having jurisdiction.
- B. Confine construction traffic to approved haul routes.
- C. Provide traffic control at critical areas of haul routes to expedite traffic flow, and to minimize interference with normal traffic.

3.07 REMOVAL

- A. Maintain and protect traffic throughout the Project. Provide maintenance and protection of traffic measures at the Site until no longer required due to the progress of the Work. When no longer required, completely remove maintenance and protection of traffic measures and restore the Site to pre-construction condition or to condition required by the Contract Documents, as applicable.

END OF SECTION

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SECTION 01 57 05
TEMPORARY CONTROLS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide and maintain methods, equipment, materials, and temporary construction as required to control environmental conditions at the Site and adjacent areas.
2. Maintain temporary controls until no longer required.
3. Temporary controls include, but are not limited to, the following:
 - a. Erosion and sediment controls.
 - b. Control of surface water, including storm water run-off.
 - c. Odor, vapor, and dust controls.
 - d. Pollution controls.
 - e. Noise controls.

B. Related Sections:

1. Section 01 34 43.13, Environmental Procedures for Hazardous Materials.
2. Section 01 35 49, Community Air Monitoring Plan.
3. Section 01 41 26, Storm Water Pollution Prevention Plan and Permit.
4. Section 01 55 13, Temporary Access Roads and Parking Areas.
5. Section 01 74 05, Cleaning.
6. Section 31 11 00, Clearing and Grubbing.
7. Section 31 23 00, Excavation and Fill.
8. Section 32 92 00, Lawns.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:

1. AASHTO M 288, Standard Specification for Geotextile Specification for Highway Applications.
2. ASTM D4751, Standard Test Method for Determining Apparent Opening Size (AOS) of a Geotextile.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with applicable provisions and recommendations of the following:
 - a. NYSDEC New York State Standards and Specifications for Erosion and Sediment Control.
 - b. NYSDOT Standard Specifications and Standard Sheets.
 - c. Village of Ilion Codes.

1.04 SUBMITTALS

A. Action Submittals:

1. Product Data: Submit manufacturer's data and specifications for the following:
 - a. Silt fencing.
 - b. Erosion control mats or netting, and staples or anchoring stakes.

- c. Inlet filter bag.
 - d. Vapor mitigation agents and proposed application and storage equipment for each.
- B. Informational Submittals:
 - 1. Certificates: For each grass-seed monostand to be used for temporary plantings, submit seed Supplier's certification stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging. Certify that seed has been stored in compliance with all recommendations of the seed Supplier.
 - 2. Manufacturer's Instructions: Submit manufacturer's instructions for installing the following:
 - a. Erosion control mats or netting, and staples or anchoring stakes.
 - b. Inlet filter bag.

PART 2 – PRODUCTS

2.01 EROSION AND SEDIMENT CONTROLS

- A. General:
 - 1. Materials used for erosion and sediment controls shall be in accordance with the applicable regulatory requirements indicated in Article 1.03 of this Section, unless otherwise shown or indicated in the Contract Documents.
- B. Silt Fencing:
 - 1. Filter Fabric:
 - a. Material: Geotextile shall comply with AASHTO M 288 specifications for temporary silt fence.
 - b. Height: Three feet, minimum.
 - 2. Fence Support Posts:
 - a. Material: Hardwood or steel posts may be used.
 - 1) Hardwood posts shall be at least 1.25 inches by 1.25 inches in cross section.
 - 2) Steel posts shall be "T" or "U" shape in cross section with a minimum weight of 1.0 pound per linear foot.
 - b. Length: Four feet, minimum.
 - 3. Fabric fasteners shall be heavy-duty staples, wire ties, or other fastener compatible with support post material.
- C. Straw Bale Dike:
 - 1. Bales shall be firmly-packed, unrotted straw bound firmly with intact bailing wire. Cross-sectional area on the small end of each bale shall be approximately 12 inches by 12 inches or larger.
 - 2. Posts shall comply with requirements for silt fencing support posts, or may be suitable reinforcing steel.
- D. Temporary Plantings:
 - 1. Annual Ryegrass: Provide fresh, clean, new-crop seed with not less than 95 percent germination, not less than 80 percent pure seed, and not more than 0.25 percent weed seed by weight.

2. Aroostook Winter Rye: Provide fresh, clean, new-crop seed with not less than 95 percent germination, not less than 80 percent pure seed, and not more than 0.25 percent weed seed by weight.
- E. Mulch and Soil Stabilization:
1. Straw mulch shall be clean, dry, and seed-free salt hay or threshed straw of wheat, rye, oats, or barley.
 2. Soil stabilization emulsions, when used, shall be an inert, eco-friendly chemical manufactured for the specific purpose of erosion control and soil stabilization, applied with mulch or stabilization fibers.
 3. Wood-fiber or paper-fiber, when used, shall be 100 percent natural and biodegradable.
 4. Temporary Rolled Erosion Control Products:
 - a. Erosion control mat or netting shall be 100 percent natural and biodegradable. Acceptable materials include jute, excelsior, straw or coconut fiber, and cotton.
 - b. Staples or anchoring stakes shall be 100 percent biodegradable.
- F. Protection of Storm Water Drainage Inlets and Catch Basins:
1. Inlet Filter Bag:
 - a. Product and Manufacturer: Provide one of the following for each drainage inlet or catch basin to be protected:
 - 1) Silt Sack, Type B, by ACF Environmental, Inc.
 - 2) Or equal.
 - b. AOS of inlet filter bags shall be between 40 and 80 (US sieve size), as determined by ASTM D4751. Fabric shall be woven polypropylene with double stitching to prevent bursting.
 - c. Inlet filter bags shall fit inside the drainage inlet or catch basin and shall be secured by the structure's grate or by other acceptable means.
 - d. Inlet filter bags shall have means of removing inlet filter bag and the silt and sediment collected in the bag, without dumping filter bag's contents into the drainage inlet or catch basin.
- G. Temporary Construction Entrance:
1. Crushed stone shall be clean, durable, sharp-angled fragments of rock of uniform quality conforming to Material Designation 703-0201, Size Designation No. 3, in accordance with Section 703 of the NYSDOT Standard Specifications.
 2. Geotextile fabric shall comply with AASHTO M 288 specifications for a Class 1 separation geotextile.

2.02 ODOR, VAPOR, AND DUST CONTROLS

- A. Vapor Mitigation Agents: Provide the following:
1. BioSolve Pinkwater, by The BioSolve Company.
 2. AC-645 Long-Duration Foam, by Rusmar, Inc.
- B. Water: Clean, potable.
- C. Provide pressure washers, pneumatic foam unit, portable tanks, hoses, and other equipment required for the storage and application of vapor mitigation agents and water.

PART 3 – EXECUTION

3.01 EROSION AND SEDIMENT CONTROL

A. Installation and Maintenance – General:

1. General:
 - a. Provide erosion and sediment controls as shown and indicated on the Drawings and elsewhere in the Contract Documents. Provide erosion and sediment controls as the Work progresses into previously undisturbed areas.
 - b. Installation of erosion and sediment controls shall be in accordance with the applicable regulatory requirements indicated in Article 1.03 of this Section, unless otherwise shown or indicated in the Contract Documents.
 - c. Use necessary methods to successfully control erosion and sedimentation, including ecology-oriented construction practices, vegetative measures, and mechanical controls. Use best management practices in accordance with Laws and Regulations, and regulatory requirements indicated in Article 1.03 of this Section, to control erosion and sedimentation during the Project.
 - d. Plan and execute construction, disturbances of soils and soil cover, and earthwork by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation. Provide temporary measures for controlling erosion and sedimentation, as indicated in the Contract Documents and as required for the Project.
 - e. Where areas must be cleared for storage of materials or equipment, or for temporary facilities, provisions shall be made for regulating drainage and controlling erosion and sedimentation, subject to Engineer's approval.
 - f. Provide erosion and sediment controls, including stabilization of soils, at the end of each work day.
2. Coordination:
 - a. Coordinate erosion and sediment controls with this Section's requirements on water control and with Section 01 41 26.
 - b. Coordinate temporary erosion and sediment controls with construction of permanent drainage facilities and other Work to the extent necessary for economical, effective, and continuous erosion and sediment control.
3. Before commencing activities that will disturb soil or soil cover at the Site, provide all erosion and sediment control measures required by the Contract Documents for the areas where soil or soil cover will be disturbed.
4. In general, implement construction procedures associated with, or that may affect, erosion and sediment control to ensure minimum damage to the environment during construction. Contractor shall implement any and all additional measures required to comply with Laws and Regulations, and Section 01 41 26.
5. Vegetation Removal:
 - a. Perform clearing, grubbing, and related operations in accordance with Section 31 11 00.
 - b. Remove only those shrubs, grasses, and other vegetation that must be removed for construction. Protect remaining vegetation.
6. Access Roads and Parking Areas: When possible, access roads and temporary roads shall be located and constructed to avoid adverse effects on the environment. Provisions shall be made to regulate drainage, avoid erosion and sedimentation, and minimize damage to vegetation.

7. Earthwork and Temporary Controls:
 - a. Perform excavation, fill, and related operations in accordance with Section 31 23 00.
 - b. Control erosion to minimize transport of silt from the Site into existing waterways and surface waters. Such measures shall include, but are not limited to, using berms, silt fencing, straw bale dikes, gravel or crushed stone, temporary plantings, mulching and soil stabilization, slope drains, and other methods. Apply such temporary measures to erodible materials exposed by activities associated with the construction of the Project.
 - c. Hold to a minimum the areas of bare soil exposed at one time.
 - d. Construct fills and waste areas by selectively placing fill and waste materials to eliminate surface silts and clays that will erode.
 - e. In performing earthwork, eliminate depressions that could serve as mosquito pools.
 - f. Contractor shall provide special care in areas with steep slopes, where disturbance of vegetation shall be minimized to maintain soil stability.
 8. Inspection and Maintenance:
 - a. Periodically inspect areas of earthwork and areas where soil or soil cover are disturbed to detect evidence of the start of erosion and sedimentation. Apply corrective measures as required to control erosion and sedimentation. Continue inspections and corrective measures until soils are permanently stabilized and permanent vegetation has been established.
 - b. Inspect and report not less often than the frequency specified in Section 01 41 26.
 - c. Repair or replace damaged erosion and sediment controls within two days of Contractor becoming aware of such damage.
 - d. Periodically remove silt and sediment that has accumulated in or behind sediment and erosion controls. Properly dispose of silt and sediment.
 9. Duration of Erosion and Sediment Controls:
 - a. Maintain erosion and sediment controls in effective working condition until the associated drainage area has been permanently stabilized.
 - b. Maintain erosion and sediment controls until the Site is restored and site improvements including landscaping, if any, are complete with underlying soils permanently stabilized.
 10. Work Stoppage: If the Work is temporarily stopped or suspended for any reason, Contractor shall provide additional temporary controls necessary to prevent environmental damage to the Site and adjacent areas while the Work is stopped or suspended.
 11. Failure to Provide Adequate Controls: In the event Contractor repeatedly fails to satisfactorily control erosion and siltation, Owner reserves the right to employ outside assistance or to use Owner's own forces for erosion and sediment control. Cost of such work, plus engineering and inspection costs, will be deducted from monies due to Contractor.
- B. Silt Fencing:
1. Install and maintain silt fencing in a vertical plane, at the location(s) shown or indicated on the Drawings.
 2. Locations of Silt Fencing:
 - a. Where possible, install silt fencing along contour lines so that each given run of fencing is at the same elevation.
 - b. On slopes, install silt fencing at intervals that do not exceed the maximum lengths indicated in Table 01 57 05-A.

**TABLE 01 57 05-A
MAXIMUM LENGTH OF SLOPE BETWEEN RUNS**

Slope	Slope Length (feet)
1:2 (50%)	25
1:3 (33%)	50
1:4 (25%)	75
1:5 (20%) and Less	100

- c. Provide silt fencing around the perimeter of each stockpile of topsoil, general fill material, and excavated material. Install silt fencing before expected precipitation and maintain until stockpile is removed.
 - d. Do not install silt fencing at the following types of locations:
 - 1) Area of concentrated storm water flows such as ditches, swales, or channels.
 - 2) Where rock or rocky soils prevent full and uniform anchoring of silt fencing.
 - 3) Across upstream or discharge ends of storm water piping or culverts.
 3. Installation:
 - a. Securely fasten filter fabric to each support post in no less than four locations. Spacing between support posts shall not exceed 10 feet (center to center).
 - b. When two sections of filter fabric abut each other, fold over edges and overlap by minimum of six inches and securely fasten to wire mesh.
 - c. Embed posts in the ground to the depth necessary for proper controls, but not less than 16 inches below ground surface.
 - d. Filter fabric shall extend a minimum of six inches below ground and a minimum of 16 inches above ground.
 - e. Filter fabric at bottom of silt fence shall be buried in a trench, in a "J" configuration, to a depth of six inches.
 - f. Remove sediment accumulated at silt fencing as required. Repair and reinstall silt fencing as required.
 4. Maintenance:
 - a. Do not allow formation of concentrated storm water flows on slopes above silt fencing unless so shown or indicated in the Contract Documents. If unauthorized concentrated storm water flows occur, stabilize the slope via earthmoving and other stabilization measures as required to prevent flow of concentrated storm water flows toward silt fencing.
- C. Straw Bale Dike:
1. Install straw bale dikes where shown or indicated, including in swales, along contours, and along toe of slopes. On slopes, install straw bale dikes at intervals that do not exceed the maximum lengths indicated in Table 01 57 05-A of this Section.
 2. Install bales in shallow excavation as wide as the bale and approximately four to six inches below surrounding grade.
 3. Ends of bale shall tightly abut ends of adjacent bales.
 4. Securely install straw bales using two support posts per bale, driven into the ground a minimum of 1.5 to two feet below bottom of bale. Top of post shall be flush with top of bale. Angle first post for each bale toward the previously-installed bale.
 5. Frequently inspect bales and repair or replace as required. Remove accumulated silt and debris from behind straw bales.

- D. Temporary Plantings:
1. Use temporary plantings to provide interim protective cover in disturbed or bare-soil areas when preparing for seasonal (winter) shut-downs, or to provide temporary protective cover when permanent plantings are likely to fail due to mid-summer heat and drought.
 2. Perform seeding and related operations in accordance with Section 32 92 00.
 3. Application of seed for temporary plantings shall be as follows:
 - a. Annual Ryegrass: Apply during the spring, summer, or early fall at a rate of 30 pounds per acre.
 - b. Aroostook Winter Rye: Apply during the late fall or early winter at a rate of 100 pounds per acre.
- E. Mulching and Soil Stabilization:
1. Use mulching to temporarily stabilize exposed soil and fill material.
 - a. Immediately following final grading, provide mulch and stabilize with mats or netting, or sprayed soil stabilization emulsion with fiber additive.
 - b. Application of mulch for soil stabilization shall be as follows:
 - 1) Straw Mulch: Spread by hand or machine at an approximate rate of two tons per acre to form a continuous loose blanket not less than 1.5 inches in uniform thickness. Anchor mulch by an acceptable method.
 - 2) Soil stabilization emulsions, when used, shall be applied in accordance with manufacturer's instructions, and shall be applied with mulch or stabilization fibers.
 - 3) Wood-Fiber or Paper-Fiber Application: 1,500 pound per acre, installed by hydroseeding.
 - c. Where mats or netting are used:
 - 1) Cover entire area to be stabilized with mats or netting.
 - 2) Provide anchoring trenches at the top and bottom of slopes to receive mats or netting. Bury at least the top and bottom ends of mat or netting, four inches or more wide, at top and bottom of slope. Tamp trench full of soil. Four inches from trench, secure mat or netting with appropriate stakes or staples spaced at intervals of 10 inches, or as recommended by the manufacturer.
 - 3) Overlap adjacent strips of mat or netting by at least four inches.
- F. Protection of Storm Water Drainage Inlets and Catch Basins:
1. Protect each drainage inlet and catch basin that has the potential to receive storm water run-off from exposed soils.
 2. Install inlet filter bags inside of drainage inlet or catch basin in accordance with manufacturer's instructions. Secure inlet filter bag with the structure's grate or by other acceptable means.
 3. Inlet filter bags shall not pose any obstruction above the elevation of the drainage inlet or catch basin grate requiring barricades or flashers.
 4. When removing silt and sediment from inlet filter bag, do not dump filter bag's contents into the drainage inlet or catch basin.
 5. Remove silt and sediment from inlet filter bag, or replace inlet filter bag, when inlet filter bag is not more than half full.
- G. Temporary Construction Entrance:
1. Where shown on the Drawings, and where construction vehicles will regularly transit to paved surfaces from unstabilized surfaces, provide a temporary construction entrance. Contractor vehicles shall use temporary construction entrances.

2. Provide temporary construction entrances of the width, length, and thickness shown or indicated on the Drawings. When not shown or indicated on the Drawings, temporary construction entrance shall be not less than 50 feet long, by 12 feet wide, by six inches thick. Slope of entrance shall not exceed 12 percent.
3. Installation:
 - a. Ensure that subgrade under temporary construction entrance is suitably dense for the intended purpose. Suitably prepare subgrade as required for temporary construction entrance.
 - b. Provide on subgrade a layer of geotextile fabric, installed in accordance with geotextile manufacturer's recommendations for separation.
 - c. Provide crushed stone on installed geotextile. Grade crushed stone for passage of vehicles.
4. Maintenance:
 - a. Maintain temporary construction entrance at not less than the minimum required thickness. Add crushed stone as required to maintain thickness.
 - b. When upper layer of temporary construction entrance becomes contaminated with soil, remove the contaminated material and replace with clean crushed stone.
 - c. Using water to wash down temporary construction entrance or paved areas onto which soil material has been tracked is prohibited.

3.02 SURFACE WATER CONTROL

- A. General:
 1. Provide methods to control surface water to prevent damage to the Work, the Site, and adjoining properties.
 2. Control fill, grading, and ditching to direct surface water away from disturbed areas, excavations, pits, tunnels, and other construction areas, and to direct drainage to proper run-off courses to prevent erosion, damage, or nuisance.
- B. Equipment and Facilities for Surface Water Control:
 1. Provide, operate, and maintain equipment and facilities of adequate size to control surface water.
- C. Discharge and Disposal:
 1. Dispose of surface water in a manner to prevent flooding, erosion, and other damage to any and all parts of the Site and adjoining areas, and that complies with Laws and Regulations.

3.03 ODOR, VAPOR, AND DUST CONTROL

- A. General:
 1. Provide means, methods, and facilities required to control MGP-related odors, vapors, and dust generated during the Work.
 2. Proactively employ odor, vapor, and dust controls during the Work, and evaluate and modify construction techniques and site management practices, as necessary and appropriate, to:
 - a. Mitigate MGP-related odor emissions to the extent practicable, and to the satisfaction of Owner, Engineer, and NYSDEC.
 - b. Prevent exceedances of the community air monitoring action levels specified in Section 01 35 49.

3. If Contractor's means, methods, and facilities are unsuccessful in controlling MGP-related odors, vapors, and dust as specified in this Section, based on visual observations or the results of community air monitoring, Work shall be suspended until appropriate corrective actions are taken by Contractor to remedy the situation to Engineer's satisfaction. Owner will not be liable for any expense or delay resulting from Contractor's failure to control MGP-related odors, vapors, and dust in accordance with this Section.
- B. Vapor Mitigation Agents:
1. Mobilize vapor mitigation agents and means of storage and dispersion at the Site before initiating any ground-intrusive Work or dust-generating Work.
 2. Application of vapor mitigation agents shall be as follows:
 - a. BioSolve Pinkwater:
 - 1) Prepare three-percent solution of BioSolve Pinkwater concentrate and water. Apply to exposed soils and excavation faces using backpack sprayers, power washers, or misters.
 - 2) Apply when actively excavating, when actively handling excavated materials, and as required by Owner, Construction Manager, or Engineer.
 - b. AC-645 Long-Duration Foam:
 - 1) Prepare 13-percent solution of AC-645 Long-Duration Foam concentrate and water. Apply to excavation faces and uncovered stockpiles of excavated materials using pneumatic foam unit. Completely and uniformly cover exposed soil surfaces with minimum three inches of foam.
 - 2) Apply before each work break, at the end of each work day, and as required by Owner, Construction Manager, or Engineer.
- C. Construction Techniques and Site Management Practices:
1. Excavate and backfill, and load, handle, and unload excavated materials and clean fill materials, in manner that minimizes the generation of airborne dust.
 2. Haul excavated materials and clean fill materials in properly covered vehicles.
 3. Restrict vehicle speeds on temporary access roads and active haul routes.
 4. Cover shallow excavations and stockpiles of clean fill materials with polyethylene liners before extended work breaks and at the end of each work day. Anchor liners to resist wind forces; slope to prevent accumulation of water.
 5. Hold to a minimum the areas of bare soil exposed at one time.
 6. Comply with cleaning and dust control requirements of Section 01 55 13 and progress cleaning requirements of Section 01 74 05.

3.04 POLLUTION CONTROL

- A. General:
1. Provide means, methods, and facilities required to prevent contamination of soil, water, and atmosphere caused by discharge of noxious substances from construction operations.
 2. Equipment used during construction shall comply with Laws and Regulations.
 3. Comply with Sections 01 35 43.13 and 01 41 26.
- B. Spills and Contamination:
1. Provide equipment, materials, and personnel to perform emergency measures required to contain and clean up spills, and to remove soils and liquids contaminated by spills.
 2. Provide spill kits, including oil-absorbent pads, socks, and booms, at or immediately adjacent to the Site's major work areas and equipment storage and fueling areas.
 3. Immediately notify Owner, Construction Manager, and Engineer of all spills, regardless of material, volume, or circumstances involved.

4. Excavate contaminated material and properly dispose of off-site, and replace with suitable compacted fill and topsoil.
- C. Protection of Surface Waters:
1. Implement special measures to prevent harmful substances from entering surface waters. Prevent disposal of wastes, effluents, chemicals, and other such substances in or adjacent to surface waters and open drainage routes, in sanitary sewers, or in storm sewers.
- D. Atmospheric Pollutants:
1. Provide systems for controlling atmospheric pollutants related to the Work.
 2. Prevent toxic concentrations of chemicals and vapors.
 3. Prevent harmful dispersal of pollutants into atmosphere.
- E. Solid Waste:
1. Provide systems for controlling and managing solid waste related to the Work.
 2. Prevent solid waste from becoming airborne, and from discharging to surface waters and drainage routes.
 3. Properly handle and dispose of solid waste.

3.05 NOISE CONTROL

- A. Contractor's vehicles, equipment, and operations shall minimize noise emissions to the greatest degree practicable. Provide mufflers, silencers, and sound barriers when necessary, or as directed by Owner or Engineer.
- B. Noise levels shall comply with Laws and Regulations, including OSHA requirements and local ordinances.
- C. Noise emissions shall not interfere with the Work of Owner or others.

3.06 PROHIBITED CONSTRUCTION PROCEDURES

- A. Prohibited construction procedures include, but are not limited to, the following:
1. Dumping or disposing of spoil material, cleared vegetation, debris, or other waste material in any surface waters, drainage ways, or other unauthorized locations.
 2. Indiscriminate, arbitrary, or capricious operation of equipment in any surface waters, drainage ways, or other unauthorized locations.
 3. Pumping of silt-laden water from trenches or other excavations to any surface waters, drainage ways, sewers, or other unauthorized locations.
 4. Damaging vegetation beyond the extent necessary for construction.

3.07 REMOVAL OF TEMPORARY CONTROLS

- A. Remove temporary controls only when directed by Owner or Engineer.

END OF SECTION

SECTION 01 57 33

SECURITY

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall safely guard all Work, the Project, products, materials, equipment, and property from loss, theft, damage, and vandalism until Substantial Completion, or as otherwise directed by Owner. Contractor's duty includes safely guarding Owner's property in vicinity of the Work and Project, the Site, and other private property in the vicinity of the Project from injury and loss in connection with the performance of the Project.
2. Employ a security guard to provide required security and prevent unauthorized entry during non-working hours, seven days a week, from the date of initial mobilization until Substantial Completion, or as otherwise directed by Owner.
3. Costs for security required under this Section shall be paid by Contractor.
4. Make no claim against Owner or property owners for damage resulting from trespass.
5. Pay full compensation for, or repair and replace, damage to property of Owner and others arising from failure to furnish adequate security.
6. Provide temporary fencing, temporary gates, and privacy screens in accordance with the Contract Documents and this Section.

1.02 SUBMITTALS

A. Action Submittals:

1. Shop Drawings: Submit drawings showing proposed locations and extent of breaches in existing fencing and proposed locations and extent of temporary fencing and gates at the Site.
2. Product Data: Submit manufacturer's data, specifications, and installation instructions for temporary fencing, temporary gates, and privacy screens.

B. Informational Submittals:

1. Daily Security Logs: Submit in accordance with Paragraph 1.03.C of this Section.

1.03 CONTRACTOR'S SITE ACCESS AND SECURITY PROCEDURES

- A. Comply with Section 01 55 13 (Temporary Access Roads and Parking Areas) and Owner's security procedures and access restrictions at the Site throughout the Project.
- B. Perform hourly or more frequent inspections of the Site during non-working hours. Document the time and outcome of each inspection in a dedicated log. Log shall be made available to Owner, Construction Manager, and Engineer upon request. In the event of an on-site emergency during non-working hours, Contractor's security guard shall be responsible for notifying Contractor personnel, Owner, Construction Manager, Engineer, local emergency responders, and others as appropriate.
- C. Maintain a daily security log of all Site workers and visitors throughout the Project. Include the date, name, affiliation, purpose of visit, time in, and time out for each Site worker and visitor. Submit copy of daily security log to Construction Manager and Engineer with daily construction report in accordance with Section 01 32 26 (Construction Progress Reporting).

PART 2 – PRODUCTS

2.01 TEMPORARY FENCING AND GATES

- A. Temporary Fencing:
 - 1. Provide portable chain-link fence panels or driven-post chain-link fencing with minimum height of six feet. Fence fabric and framework shall be galvanized steel.
- B. Temporary Gates:
 - 1. Provide chain-link swing gates with minimum height of six feet and minimum width of 12 feet. Gate fabric and framework shall be galvanized steel.
 - 2. Provide suitable locking mechanism for each temporary gate.

2.02 RELATED MATERIALS

- A. Privacy Screens: Provide privacy screens for all existing and temporary fencing and gates used for Site security.
 - 1. Size: Match to height of fence fabric.
 - 2. Color: Green or black.
 - 3. Opacity: 85 percent, minimum.

PART 3 – EXECUTION

3.01 TEMPORARY FENCING AND GATES

- A. Installation:
 - 1. Install temporary fencing and gates at the locations shown or indicated on the Drawings, and at locations where existing security fencing or gates are breached or temporarily removed for the Work.
 - 2. Install privacy screens in accordance with manufacturer's instructions on all existing and temporary fencing and gates used for Site security.
- B. Maintenance:
 - 1. Maintain temporary fencing and gates throughout the Project. Repair damage to temporary fencing and gates, and replace fencing and gates when required to maintain Site security.
 - 2. Adjust or relocate temporary fencing and gates at the Site as needed to accommodate the Work and construction sequencing.
 - 3. Maintain privacy screens throughout the Project. Promptly repair or replace damaged privacy screens.
- C. Removal:
 - 1. Remove temporary fencing and gates when permanent Site security fencing and gates are in place and fully functional, or when otherwise directed by Owner.
 - 2. Repair damage caused by temporary fencing and gates and their removal, and restore the Site to condition required by the Contract Documents. If restoration of damaged areas is not specified, restore to pre-construction condition.

END OF SECTION

SECTION 01 58 13

TEMPORARY PROJECT SIGNAGE

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall furnish and install temporary signage as specified in this Section for Project identification and construction site information.
2. Temporary signs include:
 - a. Project identification signs.
 - b. Project contact signs.
 - c. Danger signs.
 - d. Security signs.
3. Do not display any other temporary signs, other than those specified, without prior approval of Owner.
4. Maintain temporary signs until Substantial Completion, or as otherwise directed by Owner.

1.02 SUBMITTALS

A. Action Submittals:

1. Shop Drawings: Submit drawings showing layout, text, font, character size, colors, graphics or logos (if any), materials of construction, and dimensions of each temporary sign, and the proposed locations and orientations of temporary signs at the Site.

PART 2 – PRODUCTS

2.01 MATERIALS AND CONSTRUCTION

A. Project Identification Signs:

1. Project identification signs, including layout, fonts, logos, and colors, shall be as specified in the NYSDEC guidance document included with this Section.
2. Location: Mounted on fencing at East Street and State Street Site entrances (one sign per Site entrance, two signs total).
3. Text Inserts: Text inserts shall be centered horizontally on sign board in the specified locations.
 - a. Program Name: "Manufactured Gas Plant (MGP) Program".
 - b. Site Name: "Ilion (East Street) Former MGP Site".
 - c. Site Number: "6-22-019".
 - d. Name of Party Performing Remedial Activities: "National Grid".
 - e. Governor: "Andrew M. Cuomo, Governor".
 - f. Commissioner: "Joseph Martens, Commissioner".
 - g. Municipal Executive: "Terry A. Leonard, Mayor".
4. Background Color: White.
5. Text Height: 1.5 inches, minimum.
6. Printing: Digital or screen printing with ultraviolet-resistant inks.
7. Sign Board:
 - a. Material: Aluminum composite, minimum thickness of three millimeters.
 - b. Minimum Dimensions: 96 inches wide by 48 inches high.

8. Supports and Bracing: Provide supports and bracing as required to adequately support and brace signs for the duration of the Project.
 9. Obtain Engineer approval before releasing for manufacture.
- B. Project Contact Signs:
1. Location: Mounted on fencing at East Street and State Street Site entrances next to Project identification signs (one sign per Site entrance, two signs total).
 2. Text: Text shall be centered vertically and horizontally on sign board, and shall read as follows:
 - a. Line 1: "PROJECT CONTACTS".
 - b. Line 2: "NYSDEC FIELD OFFICE: [*Insert telephone number assigned to NYSDEC's field office*]".
 - c. Line 3: "NYSDEC PROJECT MANAGER: MS. SARAH SAUCIER, (518) 402-9662".
 - d. Line 4: "NYSDOH PROJECT MANAGER: MR. IAN USHE, (518) 402-7860".
 - e. Line 5: "NATIONAL GRID PROJECT MANAGER: MR. STEVEN STUCKER, (315) 428-5652".
 - f. Line 6: "CONSTRUCTION MANAGER: DE MAXIMIS, INC., [*Insert telephone number assigned to Construction Manager's field office*]".
 3. Background Color: White.
 4. Text Color: Black.
 5. Text Height: 1.5 inches, minimum.
 6. Printing: Digital or screen printing with ultraviolet-resistant inks.
 7. Sign Board:
 - a. Material: Aluminum composite, minimum thickness of three millimeters.
 - b. Minimum Dimensions: 96 inches wide by 48 inches high.
 8. Supports and Bracing: Provide supports and bracing as required to adequately support and brace signs for the duration of the Project.
 9. Obtain Engineer approval before releasing for manufacture.
- C. Danger Signs:
1. Location: Mounted on fencing at intervals of 100 linear feet and on each side of East Street and State Street Site entrances (two signs per Site entrance).
 2. Text: "DANGER" in upper panel and "CONSTRUCTION AREA AUTHORIZED PERSONNEL ONLY" in lower panel.
 3. Background Color: Red upper panel, black outline along border, and white lower panel.
 4. Text Color: White in upper panel and black in lower panel.
 5. Printing: Digital or screen printing with ultraviolet-resistant inks.
 6. Sign Board:
 - a. Material: Treated polyethylene, thickness of 0.055 inch.
 - b. Minimum Dimensions: 14 inches wide by 10 inches high.
 7. Supports and Bracing: Provide supports and bracing as required to adequately support and brace signs for the duration of the Project.
- D. Security Signs:
1. Location: Mounted on fencing on each side of East Street and State Street Site entrances (two signs per Site entrance) and at entrances of each field office trailer (one sign per trailer entrance).
 2. Text: "SECURITY NOTICE" in upper panel and "ALL VISITORS MUST SIGN-IN AT THE FIELD OFFICE" in lower panel.
 3. Background Color: Yellow upper panel, black outline along border, and white lower panel.
 4. Text Color: Black for upper and lower panels.
 5. Printing: Digital or screen printing with ultraviolet-resistant inks.
 6. Sign Board:

- a. Material: Treated polyethylene, thickness of 0.055 inch.
- b. Minimum Dimensions: 20 inches wide by 14 inches high.
- 7. Supports and Bracing: Provide supports and bracing as required to adequately support and brace signs for the duration of the Project.

PART 3 – EXECUTION

3.01 INSTALLATION, MAINTENANCE, AND REMOVAL

- A. Installation:
 - 1. Install temporary signs within 14 days of Engineer's approval of the submittal required by this Section.
 - 2. Obtain Owner and Engineer approval of installation locations before installing temporary signs.
- B. Maintenance:
 - 1. Maintain temporary signage so that signs are clean, legible, and upright. Cut grass, weeds, and other plants so that temporary signs are not covered or obscured.
 - 2. Repair or replace damaged temporary signs. Relocate signs as required by progress of the Project.
- C. Remove temporary signs upon Substantial Completion, or as otherwise directed by the Engineer.

3.02 ATTACHMENTS

- A. The attachments listed below, which follow after the "End of Section" designation, are part of this Section:
 - 1. Attachment A: Signs for Remedial Programs (two pages).

END OF SECTION

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SIGNS FOR REMEDIAL PROGRAMS

Instructions

Signs are required at sites where remedial activities are being performed under one of the following remedial programs: State Superfund, Voluntary Cleanup Program (VCP), Brownfield Cleanup Program (BCP), Environmental Restoration Program (ERP), Brownfield Opportunity Area (BOA) Program (note: activities under this program would be for investigation). The cost of the sign will be borne by the parties performing the remedial activities based on the legal document the activities are being performed under (i.e. volunteers/participants would pay 100% of the cost under the BCP; municipalities would be reimbursed for 90% of the cost under the ERP).

Sign Requirements

Size: Horizontal format - 96" wide by 48" high

Construction Materials: Aluminum or wood blank sign boards with vinyl sheeting.

Inserts: "Site Name", "Site Number", "Name of Party Performing Remedial Activities" and "Municipal Executive".
Indicate position, size and topography for specific inserts.

Color Scheme: Copy surrounding DEC logo - "NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION" - PMS 355

DEC logo: PMS 301 Blue
PMS 355 Green

Text:

Program (choose one): PMS 301
Brownfield Cleanup Program
Voluntary Cleanup Program
Brownfield Opportunity Areas Program
Petroleum Remediation Program
State Superfund Program
1996 Clean Water/Clean Air Bond Act - Environmental Restoration Program

Site Name, Site Number, Party Performing Remedial Activities PMS 355
Names of Governor, Commissioner, Municipal Executive PMS 301
Transform the Past.....Build for the Future PMS 355

Type Specifications: All type is Caslon 540, with the exception of the logotype.
Format is: center each line of copy with small caps and initial caps.

Production Notes: 96" wide x 48" high aluminum blanks will be covered with vinyl sheeting to achieve background color. Copy and logo will be silk screened on this surface.

See attached format



Program Name

Site Name

Site Number

Name of Party Performing Remedial Activities

Governor

Commissioner

Municipal Executive

Transform the Past.... Build for the Future

SECTION 01 61 00

COMMON PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. This Section includes common requirements for products.

1.02 TERMINOLOGY

A. The following words or terms are not defined but, when used in this Section, have the following meaning:

1. “Products” includes materials, equipment, machinery, components, fixtures, systems, and other goods incorporated in the Work. Products do not include machinery and equipment used for preparing, fabricating, conveying, erecting, or installing the Work. Products include Owner-furnished goods incorporated in the Work where use of such goods is specifically required in the Contract Documents.

1.03 PRODUCT REQUIREMENTS

- A. Provide products that have not been previously been incorporated into another project or facility unless otherwise indicated in the Contract Documents.
- B. To the extent possible, provide products of the same generic kind from a single source.
- C. Provide products complete with accessories, trim, finish, fasteners, and other items shown, indicated, or required for a complete installation for the indicated use and performance.
- D. Standard Products: When available, and unless custom or non-standard options are specified or indicated, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- E. Visual Matching: Where required in the Contract Documents, provide products that match referenced existing construction, approved mock-ups, or approved Sample, as determined by Engineer.
- F. Where the Contract Documents include the phrase “as selected” for product color, finish pattern, option, or similar phrase, provide products selected by Engineer as follows:
 1. Standard Range: Where the Contract Documents include the phrase “standard range of colors, patterns, textures” or similar phrase, provide color, pattern, density, or texture selected by Engineer from manufacturer’s product line that does not include premium items.
 2. Full Range: Where the Contract Documents include the phrase “full range of colors, patterns, textures” or similar phrase, Engineer will select color, pattern, density, or texture from manufacturer’s entire product line, including standard and premium items.

1.04 COMPATIBILITY

- A. Similar products by the same Supplier shall be compatible with each other, unless otherwise indicated in the Contract Documents or approved by Engineer.
- B. Provide products compatible with products previously selected or installed on the Project.

1.05 PRODUCT WARRANTIES

- A. Warranties specified for products shall be in addition to, and run concurrent with, Contractor's general warranty and guarantee and requirements for the required correction period. Disclaimers and limitations in specific product warranties do not limit Contractor's general warranty and guarantee.
 - 1. Product manufacturer's warranty is preprinted written warranty published by product manufacturer and specifically endorsed by product manufacturer to Owner.
 - 2. Special warranty is written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by product manufacturer's warranty or to provide increased rights to Owner.
- B. Requirements for Special Warranties: Provide written special warranty document that contains appropriate terms and identification, ready for execution by product manufacturer and Owner. Submit draft warranty with submittals required for product.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed by product manufacturer and other parties as appropriate.
 - 2. Specified Form: When specified forms are included in the Contract Documents, prepare written document, properly executed by product manufacturer and Owner, using appropriate form.
 - 3. Refer to Specifications for content and requirements for submitting special warranties.
- C. Submit product manufacturer's warranties and special warranties as submittals in accordance with Schedule of Submittals accepted by Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 62 00
PRODUCT OPTIONS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. This Section includes:
 - a. Contractor's options for selecting products.
 - b. Requirements for consideration of "or-equal" products.

1.02 TERMINOLOGY

- A. The following words or terms are not defined but, when used in this Section, have the following meaning:
 - 1. "Products" includes materials, equipment, machinery, components, fixtures, systems, and other goods incorporated in the Work. Products do not include machinery and equipment used for preparing, fabricating, conveying, erecting, or installing the Work. Products include Owner-furnished goods incorporated in the Work where use of such goods is specifically required in the Contract Documents.

1.03 PRODUCT OPTIONS

- A. For products specified only by reference standard or description, without reference to Supplier, provide products meeting that standard, by a Supplier or from a source that complies with the Contract Documents.
- B. For products specified by naming one or more products or Suppliers, provide the named products that comply with the Contract Documents, unless an "or-equal" or substitute product is approved by Engineer.
- C. For products specified by naming one or more products or Suppliers and the term, "or equal", when Contractor proposes a product or Supplier as an "or equal", submit to Engineer a request for approval of an "or-equal" product or Supplier.
- D. For products specified by naming only one product or manufacturer and followed by words indicating that no substitution is allowed, there is no option and no substitution will be allowed.

1.04 "OR-EQUAL" PRODUCTS

- A. For proposed products not named in the Contract Documents and considered as an "or equal", as defined in the Supplementary Conditions, Contractor shall request in writing Engineer's approval of the "or equal". Request for approval of an "or-equal" product shall accompany the Shop Drawing or product data submittal for the proposed product and shall include:
 - 1. Contractor's request that the proposed product be considered as an "or equal" in accordance with the Supplementary Conditions, accompanied by Contractor's certifications required in the General Conditions.

2. Documentation adequate to show that proposed product:
 - a. Does not require extensive revisions to the Contract Documents.
 - b. Is consistent with the Contract Documents.
 - c. Will produce results and performance required in the Contract Documents.
 - d. Is compatible with other portions of the Work.
3. Detailed comparison of significant qualities of proposed product with the products and manufacturers named in the Contract Documents. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements shown or indicated.
4. Evidence that proposed product manufacturer will furnish warranty equal to or better than specified, if any.
5. List of similar installations for completed projects with project names and addresses, and names and address of design professionals and owners, if requested.
6. Samples, if requested.
7. Other information requested by Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 65 00

PRODUCT DELIVERY REQUIREMENTS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. This Section includes general requirements for preparing for shipping, delivering, and handling materials and equipment.
 - 2. Contractor shall make all arrangements for transporting, delivering, and handling of materials and equipment required for prosecution and completion of the Work.
 - 3. When required, move stored materials and equipment without additional compensation and without changes to the Contract Times.

1.02 SUBMITTALS

- A. Refer to individual Specification Sections for submittal requirements relative to delivering and handling materials and equipment.

1.03 PREPARING FOR SHIPMENT

- A. When practical, factory-assemble materials and equipment. Match mark or tag separate parts and assemblies to facilitate field assembly. Cover machined and unpainted parts that may be damaged by the elements with strippable, protective coating.
- B. Package materials and equipment to facilitate handling, and protect materials and equipment from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate the associated purchase order number, bill of lading number, contents by name, Owner's contract name and number, Contractor name, equipment number, and approximate weight. Include complete packing lists and bills of materials with each shipment.
- C. Protect materials and equipment from exposure to the elements and keep thoroughly dry and dust-free at all times. Protect painted surfaces against impact, abrasion, discoloration, and other damage. Lubricate bearings and other items requiring lubrication in accordance with manufacturer's instructions.
- D. Keep Engineer informed of delivery of all materials and equipment to be incorporated in the Work.
- E. Do not ship materials and equipment until:
 - 1. Related Shop Drawings, Samples, and other submittals have been reviewed or accepted (as applicable) by Engineer, including, but not necessarily limited to, all Action Submittals associated with the materials and equipment being delivered.
 - 2. Manufacturer's instructions for handling, storing, and installing the associated materials and equipment have been submitted to and accepted by Engineer in accordance with the Specifications.
 - 3. Results of source quality control testing (factory testing), when required by the Contract Documents for the associated materials or equipment, have been reviewed and accepted by Engineer.
 - 4. Facilities required for handling materials and equipment in accordance with manufacturer's instructions are in place and available.

5. Required storage facilities have been provided.

1.04 DELIVERY

A. Scheduling and Timing of Deliveries:

1. Arrange deliveries of materials and equipment in accordance with the accepted Progress Schedule and in ample time to facilitate inspection prior to installation.
2. Schedule deliveries to minimize space required for and duration of storage of materials and equipment at the Site or delivery location, as applicable.
3. Coordinate deliveries to avoid conflicting with the Work and conditions at the Site, and to accommodate the following:
 - a. Work of other contractors and Owner.
 - b. Storage space limitations.
 - c. Availability of equipment and personnel for handling materials and equipment.
 - d. Owner's use of premises.
4. Deliver materials and equipment to the Site during regular working hours.
5. Deliver materials and equipment to avoid delaying the Work and the Project, including work of other contractors, as applicable. Deliver anchor system materials, including anchor bolts to be embedded in concrete or masonry, in ample time to avoid delaying the Work.

B. Deliveries:

1. Shipments shall be delivered with Contractor's name, Subcontractor's name (if applicable), Site name, Project name, and contract designation clearly marked.
2. Site may be listed as the "ship to" or "delivery" address; but Owner shall not be listed as recipient of shipment unless otherwise directed in writing by Engineer.
3. Provide Contractor's telephone number to shipper; do not provide Owner's telephone number.
4. Arrange for deliveries while Contractor's personnel are at the Site. Contractor shall receive and coordinate shipments upon delivery. Shipments delivered to the Site when Contractor is not present will be refused by Owner, and Contractor shall be responsible for the associated delays and additional costs, if incurred.
5. Comply with Section 01 35 43.13 (Environmental Procedures for Hazardous Materials).

C. Containers and Marking:

1. Have materials and equipment delivered in manufacturer's original, unopened, labeled containers.
2. Clearly mark partial deliveries of component parts of materials and equipment to identify materials and equipment, to allow easy accumulation of parts, and to facilitate assembly.

D. Inspection of Deliveries:

1. Immediately upon delivery, inspect shipment to verify that:
 - a. Materials and equipment comply with the Contract Documents and reviewed or accepted (as applicable) submittals.
 - b. Quantities are correct.
 - c. Materials and equipment are undamaged.
 - d. Containers and packages are intact and labels are legible.
 - e. Materials and equipment are properly protected.
2. Promptly remove damaged materials and equipment from the Site and expedite delivery of new, undamaged materials and equipment, and remedy incomplete or lost materials and equipment to furnish materials and equipment in accordance with the Contract Documents, to avoid delaying progress of the Work.

3. Advise Engineer in writing when damaged, incomplete, or defective materials and equipment are delivered, and advise Engineer of the associated impact on the Progress Schedule.

1.05 HANDLING OF MATERIALS AND EQUIPMENT

- A. Provide equipment and personnel necessary to handle materials and equipment, including those furnished by Owner, by methods that prevent soiling or damaging materials, equipment, and packaging.
- B. Provide additional protection during handling as necessary to prevent scraping, marring, and otherwise damaging materials, equipment, and surrounding surfaces.
- C. Handle materials and equipment by methods that prevent bending and overstressing.
- D. Lift heavy components only at designated lifting points.
- E. Handle materials and equipment in safe manner and as recommended by the manufacturer to prevent damage. Do not drop, roll, or skid materials and equipment off delivery vehicles or at other times during handling. Hand-carry or use suitable handling equipment.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 66 00

PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. This Section includes general requirements for storing and protecting materials and equipment.

1.02 STORAGE

- A. Store and protect materials and equipment in accordance with manufacturer's recommendations and the Contract Documents.
- B. Contractor shall make all arrangements and provisions necessary for, and pay all costs for, storing materials and equipment. Excavated materials, construction equipment, and materials and equipment to be incorporated into the Work shall be placed to avoid injuring the Work and existing facilities and property, and so that free access is maintained at all times to all parts of the Work and to public utility installations in vicinity of the Work. Store materials and equipment neatly and compactly in locations that cause minimum inconvenience to Owner, other contractors, public travel, and owners, tenants, and occupants of adjoining property. Arrange storage in manner to allow easy access for inspection.
- C. Areas available at the Site for storing materials and equipment are shown or indicated in the Contract Documents, or as approved by Owner or Engineer.
- D. Store materials and equipment to become Owner's property to facilitate their inspection and ensure preservation of quality and fitness of the Work, including proper protection against damage by freezing, moisture, and high temperatures with ambient temperatures as high as 90 degrees F. Store in indoor, climate-controlled storage areas all materials and equipment subject to damage by moisture, humidity, heat, cold, and other elements, unless otherwise acceptable to Owner. When placing orders to Suppliers for equipment and controls containing computer chips, electronics, and solid-state devices, Contractor shall obtain, coordinate, and comply with specific temperature and humidity limitations on materials and equipment, because temperature inside cabinets and components stored in warm temperatures can approach 200 degrees F.
- E. Contractor shall be fully responsible for loss or damage (including theft) to stored materials and equipment.
- F. Do not open manufacturer's containers until time of installation, unless recommended by the manufacturer or otherwise specified in the Contract Documents.
- G. Do not store materials or equipment in structures being constructed unless approved by Engineer in writing.
- H. Do not use lawns or other private property for storage without written permission of the owner or other person in possession or control of such premises.

1.03 PROTECTION

- A. Equipment to be incorporated into the Work shall be boxed, crated, or otherwise completely enclosed and protected during shipping, handling, and storage, in accordance with Section 01 65 00 (Product Delivery Requirements).
- B. Store all materials and equipment off the ground (or floor) on raised supports such as skids or pallets.
- C. Protect painted surfaces against impact, abrasion, discoloration, and other damage. Painted equipment surfaces that are damaged or marred shall be repainted in their entirety in accordance with equipment manufacturer and paint manufacturer requirements, to the satisfaction of Engineer.
- D. Protect electrical equipment, controls, and instrumentation against moisture, water damage, heat, cold, and dust. Space heaters provided in equipment shall be connected and operating at all times until equipment is placed in operation and permanently connected.

1.04 UNCOVERED STORAGE

- A. The following types of materials may be stored outdoors without cover on supports so there is no contact with the ground:
 - 1. Reinforcing steel.
 - 2. Pre-cast concrete materials.
 - 3. Structural steel.
 - 4. Metal stairs.
 - 5. Handrails and railings.
 - 6. Grating.
 - 7. Checker plate.
 - 8. Metal access hatches.
 - 9. Castings.
 - 10. Fiberglass products.
 - 11. Rigid electrical conduit.
 - 12. Piping, except PVC or CPVC pipe.

1.05 COVERED STORAGE

- A. The following materials and equipment may be stored outdoors on supports and completely covered with covering impervious to water:
 - 1. Grout and mortar materials.
 - 2. Masonry units.
 - 3. Rough lumber.
 - 4. Soil materials and granular materials such as aggregate.
 - 5. PVC and CPVC pipe.
 - 6. Filter media.
- B. Tie down covers with rope or anchor with sandbags, and slope covering to prevent accumulation of water.
- C. Store loose soil materials and granular materials, with covering impervious to water, in well-drained area or on solid surfaces to prevent mixing with foreign matter. Place, grade, and shape stockpiles for proper drainage.

1.06 FULLY-PROTECTED STORAGE

- A. Store all material and equipment not named in Articles 1.04 and 1.05 of this Section on supports in buildings or trailers that have concrete or wooden flooring, roof, and fully-closed walls on all sides. Covering with visquine plastic sheeting or similar material in space without floor, roof, and walls is not acceptable. Comply with the following:
 - 1. Provide heated storage for materials and equipment that could be damaged by low temperatures or freezing.
 - 2. Provide air-conditioned storage for materials and equipment that could be damaged by high temperatures.
 - 3. Protect mechanical and electrical equipment from being contaminated by dust, dirt, and moisture.
 - 4. Maintain humidity at levels recommended by manufacturers for electrical and electronic equipment.

1.07 HAZARDOUS PRODUCTS

- A. Prevent contamination of personnel, storage area, and the Site. Comply with Laws and Regulations, manufacturer's instructions, and Section 01 35 43.13 (Environmental Procedures for Hazardous Materials).

1.08 MAINTENANCE OF STORAGE

- A. On a scheduled basis, periodically inspect stored materials and equipment to ensure that:
 - 1. Condition and status of storage facilities is adequate to provide required storage conditions.
 - 2. Required environmental conditions are maintained on a continuing basis.
 - 3. Materials and equipment exposed to elements are not adversely affected.

1.09 RECORDS

- A. Keep up-to-date account of materials and equipment in storage to facilitate preparation of Applications for Payment, if the Contract Documents provide for payment for materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 71 23
FIELD ENGINEERING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide field engineering services and professional services of the types indicated for the Project, including:
 - a. Furnishing civil, structural, and other professional engineering services specified or required to execute Contractor's construction methods.
 - b. Developing and making all detail surveys and measurements required for construction, including slope stakes, batter boards, and all other working lines, elevations, and cut sheets.
 - c. Providing materials required for benchmarks, control points, batter boards, grade stakes, structure and pipeline elevation stakes, and other items.
 - d. Keeping a transit, theodolite, or total station (theodolite with electronic distance measurement device), leveling instrument, and related implements such as survey rods and other measurement devices, at the Site at all times, and having a skilled instrument person available when necessary for laying out the Work.
 - e. Being solely responsible for all locations, dimensions, and levels. No data other than Change Order, Work Change Directive, or Field Order shall justify departure from dimensions and levels required by the Contract Documents.
 - f. Rectifying all Work improperly installed because of not maintaining, not protecting, or removing without authorization established reference points, stakes, marks, and monuments.
 - g. Providing such facilities and assistance necessary for Engineer to check lines and grade points placed by Contractor. Do not perform excavation or backfilling Work until all cross-sectioning necessary for determining payment quantities for Unit Price Work have been completed and accepted by Engineer.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. Field Engineer:

- a. Employ and retain at the Site a field engineer with experience and capability of performing all field engineering tasks required of Contractor.
- b. Responsibilities include, but are not necessarily limited to, the following:
 - 1) Checking all formwork, reinforcing, inserts, structural steel, bolts, sleeves, piping, other materials, and equipment for compliance with the Contract Documents.
 - 2) Maintaining field office files, drawings, and record documents, and coordinating field engineering services with Subcontractors and Suppliers as appropriate. Preparing layout and coordination drawings for construction operations.
 - 3) Checking and coordinating the Work for conflicts and interferences, and immediately advising Construction Manager and Engineer of all discrepancies of which Contractor is aware.
 - 4) Cooperating as required with Construction Manager and Engineer in observing the Work and performing field inspections.
 - 5) Reviewing and coordinating the Work with Shop Drawings and Contractor's other submittals.

2. Surveyor:
 - a. Employ or retain the services, as needed, at the Site a surveyor with experience and capability of performing surveying and layout tasks required in the Contract Documents and as required for the Work. Surveyor shall be a professional land surveyor licensed and registered in the State of New York.
 - b. Responsibilities include, but are not necessarily limited to, the following:
 - 1) Providing required surveying equipment, including transit or theodolite, level, stakes, and surveying accessories.
 - 2) Establishing required lines and grades for performing all excavating, filling, compacting, and grading, and for constructing all facilities, structures, pipelines, and site improvements.
 - 3) Preparing and maintaining professional-quality, accurate, well organized, legible notes of all measurements and calculations made while surveying and laying out the Work.
 - 4) Performing such surveys and computations necessary to determine quantities of Work performed, placed, or installed.
 - 5) Performing such surveys necessary to record actual construction, including demolition, excavation, backfilling, and restoration operations.
 - 6) Prior to backfilling operations, surveying, locating, and recording on a copy of the Contract Documents accurate representation of buried Work and Underground Facilities encountered.
 - 7) Preparing certified survey drawings in accordance with Section 01 78 39 (Project Record Documents).
 - 8) Complying with requirements of the Contract Documents relative to surveying and related Work.

1.03 SUBMITTALS

- A. Informational Submittals:
 1. Procedure Submittals: Submit acceptable plan for conducting all survey Work not less than 10 days prior to starting survey Work.
 2. Survey Field Books:
 - a. Submit example of proposed survey field books to be maintained by Contractor's surveyor. Example shall have sufficient information and detail, including example calculations and notes, to demonstrate that field books will be organized and maintained in a professional manner, complying with the Contract Documents.
 - b. Submit original field books within two days after completing survey Work.
 3. Qualifications Statements:
 - a. Field Engineer: Submit name and address of field engineer. When requested by Engineer, submit qualifications.
 - b. Surveyor: Submit name and address of firm, and resumes of each professional land surveyor and crew chief conducting the survey Work. Submit at least 10 days prior to beginning survey Work. During the Project, submit resume for each new registered land surveyor and crew chief employed or retained by Contractor at least 10 days prior to starting on the survey Work.
 4. Certificates:
 - a. Field Engineering: When requested by Engineer, submit documentation verifying accuracy of field engineering.
 - b. Surveying: When requested by Engineer, submit certificate signed by professional surveyor certifying that elevations and locations of the Work comply with the Contract Documents. Explain all deviations, if any.

1.04 RECORDS

- A. Maintain at the Site a complete and accurate log of control and survey Work as it progresses.
 - 1. Survey data shall be in accordance with recognized professional surveying standards, Laws and Regulations, and prevailing standards of practice in the locality where the Site is located. Original field notes, computations, and other surveying data shall be recorded by Contractor's surveyor in Contractor-furnished hard-bound field books, and shall be signed and sealed by Contractor's surveyor. Completeness and accuracy of survey Work, and completeness and accuracy of survey records, including field books, shall be responsibility of Contractor. Failure to organize and maintain survey records in an appropriate manner that allows reasonable and independent verification of calculations, and to allow identification of elevations, dimensions, and grades of the Work, shall be cause for rejecting the survey records, including field books.
 - 2. Illegible notes or data, and erasures on any page of field books, are unacceptable. Do not submit copied notes or data. Corrections by ruling or lining out errors will be unacceptable unless initialed by the surveyor. Violation of these requirements may require re-surveying the data questioned by Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 SURVEYING

- A. Verification of Conditions: Verify Site conditions before starting Work. Promptly notify Engineer of any discrepancies with the potential to affect the Work.
- B. Reference Points:
 - 1. Refer to the General Conditions, as may be modified by the Supplementary Conditions, regarding reference points.
 - 2. Owner's established reference points damaged or destroyed by Contractor will be re-established by Owner at Contractor's expense.
 - 3. From Owner-established reference points, establish lines, grades, and elevations necessary to control the Work. Obtain measurements required for executing the Work to tolerances specified in the Contract Documents.
 - 4. Establish, place, and replace as required, such additional stakes, markers, and other reference points necessary for control, intermediate checks, and guidance of construction operations.
- C. Reference Datums and Coordinate System: Comply with the following:
 - 1. Reference Datums:
 - a. Horizontal: North American Datum of 1983.
 - b. Vertical: North American Vertical Datum of 1988.
 - 2. Coordinate System: State Plane Coordinate System of 1983, New York State, East Zone.
- D. Surveys to Determine Quantities for Payment:
 - 1. For each Application for Payment, perform such surveys and computations necessary to determine quantities of Work performed, placed, or installed. Perform surveys necessary for Engineer to determine final quantities of Work performed or in place.

2. Notify Engineer at least 24 hours before performing survey services for determining quantities. Unless waived in writing by Engineer, perform quantity surveys in presence of Engineer.
- E. Surveys to Record Actual Construction: Perform such surveys necessary to record actual construction including, but not limited to, the following:
1. Horizontal and vertical limits of excavation.
 2. Horizontal and vertical location of existing Underground Facilities and surface structures demolished, realigned, or abandoned in-place.
 3. Horizontal and vertical location of new Underground Facilities, including connections to existing Underground Facilities.
 4. Horizontal and vertical limits of fill for each material classification.
 5. Subgrade and final grade topography.
 6. Horizontal and vertical location of buildings, foundations, and walls.
 7. Horizontal location of exposed piping and utilities, poles, exposed wires, posts, signs, markers, curbs, fencing, gates, guard rails, guard cables, and other facilities visible at or above ground surface.
 8. Horizontal limits of lawns, pavements, roads, walks, drives, and other surface improvements.
 9. Horizontal and vertical location of monitoring wells, including ground surface elevation, outer casing elevation, and inner casing elevation.
 10. Horizontal location, size (diameter), and species of trees and other plantings.
- F. Construction Surveying: Comply with the following:
1. Alignment Staking: Provide alignment stakes at 50-foot intervals on tangent, and at 25-foot intervals on curves.
 2. Structures: Stake out structures, including elevations, and check prior to and during construction.
 3. Pipelines: Stake out pipelines including elevations, and check prior to and during construction.
 4. Road: Stake out roadway elevations at 50-foot intervals on tangent, and at 25-foot intervals on curves.
 5. Cross-Sections: Provide original, intermediate, and final staking as required for site work, and other locations as necessary for quantity surveys.
 6. Easement Staking: Provide easement staking at 50-foot intervals on tangent, and at 25-foot intervals on curves. Also provide wooden laths with flagging at 100-foot maximum intervals.
 7. Record Staking: Provide permanent stake at each blind flange and each utility cap provided for future connections. Stakes for record staking shall be material acceptable to Engineer.
- G. Accuracy:
1. Establish Contractor's temporary survey reference points for Contractor's use to at least second-order accuracy (i.e., 1:10,000). Construction staking used as a guide for the Work shall be set at least third-order accuracy (i.e., 1:5000). Basis on which such orders are established shall provide the absolute margin for error specified below.
 2. Horizontal accuracy of easement staking shall be plus or minus 0.1 foot. Accuracy of other staking shall be plus or minus 0.04 foot horizontally and plus or minus 0.02 foot vertically.
 3. Survey calculations shall include an error analysis sufficient to demonstrate required accuracy.

END OF SECTION

SECTION 01 71 33

PROTECTION OF WORK AND PROPERTY

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall be responsible for taking all precautions, providing all programs, and taking all actions necessary to protect the Work and all public and private property and facilities from damage as specified in the General Conditions, Supplementary Conditions, and this Section.
2. To prevent damage, injury, or loss, Contractor's actions shall include the following:
 - a. Storing materials, supplies, and equipment in an orderly, safe manner that does not unduly interfere with the progress of the Work or work of other contractors or utility companies.
 - b. Providing suitable storage facilities for materials and equipment subject to damage or degradation by exposure to weather, theft, breakage, or other cause.
 - c. Placing upon the Work or any part thereof only loads consistent with the safety and integrity of that portion of the Work and existing construction.
 - d. Frequently removing and disposing of refuse, rubbish, scrap materials, and debris caused by Contractor's operations so that, at all times, the Site is safe, orderly, and workmanlike in appearance.
 - e. Providing temporary barricades and guard rails around openings, scaffolding, temporary stairs and ramps, excavations, elevated walkways, and other hazardous areas.
3. Do not, except after written consent from proper parties, enter or occupy privately-owned land with personnel, tools, materials, or equipment, except on lands and easements provided by Owner. Contractor shall not seek out such written consent unless specifically authorized by Owner to do so.
4. Contractor has full responsibility for preserving public and private property and facilities on and adjacent to the Site. Direct or indirect damage done by, or on account of, any act, omission, neglect, or misconduct by Contractor in executing the Work, shall be restored by Contractor, at its expense to condition equal to that existing before damage was done.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 BARRICADES AND WARNING SIGNALS

A. General:

1. Where the Work is performed on or adjacent to roadway, access road, right-of-way, or public place:
 - a. Provide barricades, fences, lights, warning signs, danger signals, watchmen, and take other precautionary measures for protecting persons, property, and the Work.
 - b. Paint barricades to be visible at night.
 - c. From sunset to sunrise, furnish and maintain at least one light at each barricade.
 - d. Erect sufficient barricades to keep vehicles from being driven on or into Work under construction.

- e. Furnish watchmen in sufficient numbers to protect the Work.
 - 2. Provide temporary barricades to protect personnel and property for Work not in or adjacent to vehicular travel areas, including indoor work, in accordance with Laws and Regulations.
 - 3. Contractor's responsibility for maintaining temporary barricades, signs, lights, and for providing watchmen shall continue until the Work is accepted in accordance with the Contract Documents.
- B. Coordinate Work in this Article 3.01 with Sections 01 55 26 (Maintenance and Protection of Traffic) and 01 57 33 (Security).

3.02 TREE AND PLANT PROTECTION

- A. General:
- 1. Protect existing trees, shrubs, and plants on or adjacent to the Site, shown or designated to remain in place, against unnecessary cutting, breaking, or skinning of trunk, branches, bark, and roots.
 - 2. Do not store materials or equipment, or park construction equipment and vehicles, within the foliage drip line.
 - 3. In areas subject to traffic, provide temporary fencing or barricades to protect trees and plants.
 - 4. Cover exposed roots with burlap, which shall be kept continuously wet. Cover exposed roots with earth as soon as possible. Protect root systems from mechanical damage and damage by erosion, flooding, run-off, and noxious materials in solution.
 - 5. If branches or trunks are damaged, prune branches immediately and protect cut or damaged areas with emulsified asphalt compounded specifically for horticultural use, in manner acceptable to Engineer.
 - 6. When directed by Engineer, remove and dispose of damaged trees and plants that die or suffer permanent injury, and replace at Contractor's expense damaged trees or plants with specimens of equal or better quality.
- B. Coordinate Work in this Article 3.02 with Section 31 11 00 (Clearing and Grubbing).

3.03 PROTECTION OF EXISTING STRUCTURES

- A. Underground Facilities:
- 1. Underground Facilities known to Owner and Engineer, except water, gas, sewer, electric, and communications services to individual buildings and properties, are shown on the Drawings. Information shown for Underground Facilities is the best available to Owner and Engineer but, in accordance with the Supplementary Conditions, is not guaranteed to be correct or complete.
 - 2. Utility Mark-Out:
 - a. Clearly delineate areas of demolition, trenching, excavation, or other subsurface Work at the Site.
 - b. Provide required notification to local one-call notification system (Dig Safely New York) at least two working days, but not more than 10 working days, before planned start of demolition, trenching, excavation, or other subsurface Work.
 - c. Walk the Site and review utility markings before proceeding with demolition, trenching, excavation, or other subsurface Work.
 - d. Protect and preserve staking, markings, or other designations until no longer required for proper and safe Work at or near Underground Facilities.

3. Contractor shall explore ahead of demolition, trenching, excavation, or other subsurface Work, and shall uncover obstructing Underground Facilities sufficiently to determine their location, to prevent damage to Underground Facilities, and to prevent service interruption to building or parcels served by Underground Facilities. If Contractor damages an Underground Facility, or the material surrounding or supporting the same, Contractor shall immediately notify Owner, Construction Manager, Engineer, and the owner of the damaged facility and restore it to original condition, in accordance with requirements of the owner of the damaged facility and the General Conditions. Such repair or restoration Work shall be performed at no additional cost to Owner.
 - a. Undertake such emergency response actions as may be required.
 - b. Collect, containerize, characterize, and properly dispose of any oils or pollutants released from the damaged facility.
 - c. Provide provisions for alternate or temporary service until damaged facility is repaired.
 - d. Provide assistance to the owner of the damaged facility during repairs unless authorized by the facility's owner to undertake such repairs directly.
 4. Necessary changes in the location of the Work may be directed by Engineer to avoid Underground Facilities not shown or indicated on the Contract Documents.
 5. If permanent relocation of an existing Underground Facilities is required and is not otherwise shown or indicated in the Contract Documents, Contractor will be directed in writing to perform the Work. When the relocation Work results in a change in the Contract Price or Contract Times, contract modification procedures and payment for such Work shall be in accordance with the Contract Documents.
- B. Surface Structures:
1. Surface structures are existing buildings, structures, and other facilities at or above ground surface, including their foundations or any extension below ground surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, roads, dams, channels, open drainage, exposed piping and utilities, poles, exposed wires, posts, signs, markers, curbs, walks, fencing, and other facilities visible at or above ground surface.
 2. Existing surface facilities, including but not limited to guard rails, posts, guard cables, signs, poles, markers, curbs, and fencing, that are damaged or temporarily removed to facilitate the Work shall be replaced and restored to their original condition at Contractor's expense.
- C. Protection of Underground Facilities and Surface Structures:
1. Contractor shall sustain in their places and protect from direct or indirect injury all Underground Facilities and surface structures located within or adjacent to the limits of the Work. Such sustaining and supporting shall be done carefully and as required by the party owning or controlling such facility or structure. Before proceeding with the Work of sustaining and supporting such facility or structure, Contractor shall satisfy Engineer that methods and procedures to be used have been approved by party owning same.
 2. Contractor shall bear all risks attending the presence or proximity of all Underground Facilities and surface structures within or adjacent to the limits of the Work, in accordance with the Contract Documents. Contractor shall be responsible for damage and expense for direct or indirect injury caused by its Work to facilities and structures. Contractor shall repair immediately and completely damage caused by its Work, to the satisfaction of the owner of damaged facility or structure.
 3. Comply with 16 NYCRR 753 (Protection of Underground Facilities) and other Laws and Regulations regarding the protection of Underground Facilities.
- D. Coordinate Work in this Article 3.03 with Sections 02 41 00 (Demolition), 31 23 00 (Excavation and Fill), and 31 50 00 (Excavation Support and Protection).

3.04 PROTECTION OF EXISTING MONITORING WELLS

- A. Contractor shall clearly mark, maintain, and protect existing monitoring wells shown or indicated to remain.
- B. Repair or decommission and replace at Contractor's expense existing monitoring wells damaged during the Work.
 - 1. Decommissioning shall be in accordance with the NYSDEC Groundwater Monitoring Well Decommissioning Policy (CP-43).
 - 2. Replace decommissioned monitoring well with new well of equal construction. Install at location selected by Engineer.

3.05 PROTECTION OF INSTALLED MATERIALS, EQUIPMENT, AND LANDSCAPING

- A. Protect installed materials and equipment to prevent damage from subsequent operations. Remove protection facilities when no longer needed prior to completion of the Work.
- B. Control traffic to prevent damage to equipment, materials, and surfaces.
- C. Provide coverings to protect materials and equipment from damage.

END OF SECTION

SECTION 01 74 05

CLEANING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall execute cleaning during the Project, at completion of the Work, and as required by the General Conditions and this Section.
2. Maintain in a clean manner the Site, the Work, and areas adjacent to or affected by the Work.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:

1. NFPA 241, Safeguarding Construction, Alteration, and Demolition Operations.

1.03 PROGRESS CLEANING

A. General: Clean the Site, work areas, and other areas occupied by Contractor at least weekly. Dispose of materials in accordance with the General Conditions and the following:

1. Comply with NFPA 241 for removing combustible waste materials and debris.
2. Do not hold non-combustible materials at the Site more than three days if the temperature is expected to rise above 80 degrees F. When temperature is less than 80 degrees F, dispose of non-combustible materials within seven days of their generation.
3. Provide suitable containers for storage of waste materials and debris.
4. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately.

B. Site:

1. Keep outdoor, dust-generating areas wetted down or otherwise control dust emissions in accordance with Section 01 57 05 (Temporary Controls).
2. At least weekly, brush-sweep roadways and paved areas at the Site that are used by construction vehicles or otherwise affected by construction activities. Comply with requirements of Section 01 55 13 (Temporary Access Roads and Parking Areas).

C. Work Areas:

1. Clean areas where the Work is in progress to level of cleanliness necessary for proper execution of the Work.
2. Remove liquid spills promptly and immediately report all spills, regardless of material, volume, or circumstances involved, to Owner, Construction Manager, Engineer, and authorities having jurisdiction.
3. Where dust would impair proper execution of the Work, broom-clean or vacuum entire work area, as appropriate.
4. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

- D. Installed Work: Keep installed Work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of material or equipment installed, using only cleaning agents and methods specifically recommended by material or equipment manufacturer. If manufacturer does not recommend specific cleaning agents or methods, use cleaning agents and methods that are not hazardous to health and property and that will not damage exposed surfaces.
- E. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration until Substantial Completion.
- F. Waste Disposal:
 - 1. Properly dispose of waste materials, surplus materials, debris, and rubbish off the Site.
 - 2. Do not burn or bury rubbish and waste materials at the Site.
 - 3. Do not discharge volatile or hazardous substances, such as mineral spirits, oil, or paint thinner, into storm sewers or sanitary sewers.
 - 4. Do not discharge wastes into surface waters or drainage routes.
 - 5. Contractor shall be solely responsible for complying with Laws and Regulations regarding storing, transporting, and disposing of waste.
- G. During handling and installation of materials and equipment, clean and protect construction in progress and adjoining materials and equipment already in place. Apply protective covering where required for protection from damage or deterioration, until Substantial Completion.
- H. Clean completed construction as frequently as necessary throughout the construction period.

1.04 CLOSEOUT CLEANING

- A. Complete the following prior to requesting inspection for Substantial Completion:
 - 1. Clean and remove from the Site rubbish, waste material, debris, and other foreign substances.
 - 2. Sweep paved areas broom-clean. Remove petrochemical spills, stains, and other foreign deposits.
 - 3. Hose-clean sidewalks and loading areas.
 - 4. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - 5. Leave surface waterways, drainage routes, storm sewers, and gutters open and clean.
 - 6. Repair pavement, roads, sod, and other areas affected by construction operations and restore to specified condition. If condition is not specified, restore to pre-construction condition.
 - 7. Clean exposed exterior and interior hard-surfaced finishes to dirt-free condition, free of spatter, grease, stains, fingerprints, films, and similar foreign substances.
 - 8. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, and similar spaces.
 - 9. Remove non-permanent tags and labels.
 - 10. Leave the Site clean, and in neat, orderly condition, satisfactory to Owner and Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. This Section includes administrative and procedural requirements for:
 - a. Recycling non-hazardous, uncontaminated demolition and construction waste.
 - b. Disposing of non-hazardous, uncontaminated demolition and construction waste.
- B. Coordination:
 - 1. Coordinate recycling and disposing of waste as specified under this and other Sections.
- C. Related Sections:
 - 1. Section 01 31 13, Project Coordination.
- D. Performance Requirements:
 - 1. Practice efficient waste management in using materials in the Work.
 - 2. Employ reasonable means to divert demolition and construction waste from landfills and incinerators. Facilitate recycling of materials, including the following:
 - a. Demolition Waste:
 - 1) Structural steel and miscellaneous steel and metal.
 - b. Construction Waste:
 - 1) Site-clearing waste.
 - 2) Packaging:
 - a) Paper.
 - b) Cardboard and boxes.
 - c) Pallets and wood crates.
 - 3. Dispose of demolition and construction waste only at Owner-approved facilities.

1.02 TERMINOLOGY

- A. The following words or terms are not defined but, when used in this Section, have the following meaning:
 - 1. "Construction waste" is building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
 - 2. "Demolition waste" is building and site improvement materials resulting from demolition or selective demolition operations.
 - 3. "Disposal" is removal to an off-site location of demolition and construction waste and subsequent sale, recycling, reuse, or placement in an Owner-approved landfill or incinerator facility conforming to Laws and Regulations and acceptable to authorities having jurisdiction.
 - 4. "Recycle" is recovery of demolition waste or construction waste for subsequent processing in preparation for reuse.

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 6 NYCRR 217, Motor Vehicle Emissions.
 - b. Local Law No. 4 of 1988, Herkimer County, New York.
 - c. Local Law No. 1 of 1990, Herkimer County, New York.
 - 2. Obtain required permits and approvals for transportation and disposal Work.
 - 3. Comply with hauling and disposal Laws and Regulations of authorities having jurisdiction.

1.04 SUBMITTALS

- A. Informational Submittals:
 - 1. Waste Management Plan: Submit acceptable plan for managing demolition and construction waste within 14 days of the date the Contract Times commence running, and before removing any waste from the Site. Include the following:
 - a. Procedures for separating each type of recyclable waste, including sizes of containers, container labeling, and designated location at the Site where materials will be separated and stored.
 - b. List of local, Owner-approved disposal facilities that will be used for demolition and construction waste. Include name, address, and telephone number of each recycling or processing facility, landfill, and incinerator facility. Identify type of waste to be disposed of at each facility.
 - 2. Waste Profiles:
 - a. Preliminary Waste Profiles: Submit waste profile, listing Owner's name and address of the Site as generator of waste, for each landfill and incinerator facility. Owner will sign and return each acceptable waste profile to Contractor.
 - b. Final Waste Profiles: Submit counter-signed waste profile and proof of acceptance of waste for each landfill and incinerator facility.
 - 3. Disposal Records:
 - a. Recycling and Processing Facility Records: Submit counter-signed manifests, weight tickets, receipts, and invoices on a monthly basis throughout the Project, and concurrent with each Application for Payment.
 - b. Landfill and Incinerator Facility Records: Submit counter-signed manifests, weight tickets, receipts, and invoices on a monthly basis throughout the Project, and concurrent with each Application for Payment.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Recyclable Waste: On a daily basis, remove all recyclable materials from the work area in acceptable containers.
- B. Provide separate collection containers as required by recycling haulers and to prevent contamination of materials, including protection from the elements as applicable.
- C. Replace loaded containers with empty containers as demand requires, at least weekly.
- D. Handling: Deposit recyclable materials in containers in clean (no mud, adhesives, solvents, or petroleum or coal tar contamination), debris-free condition.
- E. If contamination chemically combines with materials so that materials cannot be cleaned, do not deposit into recycle containers.

- F. Environmental Requirements: Transport recyclable waste materials from the work area to recycling containers, and carefully deposit in containers in manner to minimize noise and dust. Close the covers of container immediately after materials are deposited. Do not place recyclable waste materials on the ground adjacent to container.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 WASTE MANAGEMENT

- A. Provide handling, containers, storage, signage, transportation, and other items required to manage wastes during the Project.
- B. Site Access and Temporary Controls:
 - 1. Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent facilities.
 - a. Designate and label specific areas of the Site necessary for separating materials to be recycled.
 - b. Provide temporary controls in accordance with the Contract Documents.
- C. Shipping Documents: Prepare a non-hazardous waste manifest for each shipment of demolition and construction waste. Owner or an authorized agent will review and sign each manifest as generator of waste.

3.02 RECYCLING WASTE

- A. General:
 - 1. Recycle paper and beverage containers used by Contractor's personnel, Subcontractors, and Suppliers.
 - 2. Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at the Site to the maximum extent practical.
 - a. Provide appropriately marked containers or bins for controlling recyclable waste until recyclable materials are removed from the Site. Post list of acceptable and unacceptable materials at each container and bin. Inspect containers and bins for contamination and remove contaminated materials if found.
 - b. Before removing from the Site, prepare and process recyclable waste as required by recycling or processing facility.
 - c. Stockpile processed materials at the Site without intermixing with other materials. Place, grade, and shape stockpiles to drain water. Cover to prevent dust and blowing debris.
 - d. Stockpile materials away from the construction area. Do not store within drip line of trees.
 - e. Remove recyclable waste from the Site and from Owner's property and transport to Owner-approved recycling or processing facility.
- B. Recycling Demolition Waste:
 - 1. Metals:
 - a. Separate metals by type.
 - b. Stack structural steel according to size, type of member, and length.
 - c. Remove and dispose of bolts, nuts, washers, and other rough hardware.

2. Electrical Devices: Separate switches, receptacles, meters, circuit breakers, and other devices by type and protect from the elements.
- C. Recycling Construction Waste:
1. Site-Clearing Wastes:
 - a. Cut trees, branches, shrubs, brush, and logs into manageable lengths.
 - b. If required by recycling or processing facility, chip trees, branches, shrubs, brush, and logs before removing from the Site.
 2. Packaging:
 - a. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store at dry location.
 - b. Pallets: Require that goods delivered on pallets have the pallets removed from Site, to the extent possible. For pallets that remain at the Site, break down pallets into component wood pieces. Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, and treated wood materials.
 - c. Crates: Break down crates into component wood pieces. Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, and treated wood materials.

3.03 DISPOSAL OF WASTE

- A. General: Except for items or materials to be recycled, remove from the Site and properly dispose of waste at Owner-approved facility such as permitted landfill or incinerator, or other method acceptable to Owner and authorities having jurisdiction.
1. Except as otherwise specified, remove from the Site all waste and debris from the Work as it accumulates. Upon completion of the Work, remove materials, equipment, waste, and debris and leave the Site clean, neat, and orderly. Comply with the Contract Documents regarding cleaning and removal of trash, debris, and waste.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials at the Site.

END OF SECTION

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall maintain and submit to Engineer record documents in accordance with the General Conditions, Supplementary Conditions, and this Section.

1.02 SUBMITTALS

A. Closeout Submittals:

1. Record Documents: Submit in accordance with Article 1.04 of this Section.

1.03 MAINTENANCE OF RECORD DOCUMENTS

A. Maintain in Contractor's field office, in clean, dry, legible condition, complete sets of the following record documents:

1. Drawings, Specifications, and Addenda.
2. Shop Drawings, Samples, and other Contractor submittals, including records of test results, reviewed or accepted, as applicable, by Engineer.
3. Change Orders, Work Change Directives, Field Orders, photographic documentation, survey data, permits, and all other documents pertinent to the Work.

B. Provide files and racks for proper storage and easy access to record documents. File record documents in accordance with the edition of the Construction Specification Institute's "MasterFormat" used for organizing the Project Manual, unless otherwise accepted by Engineer.

C. Make record documents available for inspection upon request of Owner, Construction Manager, or Engineer.

D. Do not use record documents for purpose other than serving as Project record. Do not remove record documents from Contractor's field office without Engineer's approval.

1.04 SUBMITTAL OF RECORD DOCUMENTS

A. Prior to readiness for final payment, submit to Engineer one copy of the following record documents:

1. Drawings.
2. Specifications and Addenda.

B. Submit record documents with transmittal letter on Contractor letterhead complying with letter of transmittal requirements in Section 01 33 00 (Submittal Procedures).

C. Record documents submittal shall include certification, with original signature of an official authorized to execute legal agreements on behalf of Contractor, reading as follows:

"[Insert Contractor's corporate name] has maintained and submitted record documentation in accordance with the General Conditions, Supplementary Conditions, Specification Section 01 78 39, and other elements of Contract Documents, for the National Grid USA Service Company, Inc., Phase 1 Remedial Action, Ilion (East Street) Former MGP Site, Village of Ilion, Herkimer County, New York. We certify that each record document submitted is complete, accurate, and legible relative to the Work performed under our Contract, and that the record documents comply with the requirements of the Contract Documents.

[Provide signature, print name, print signing party's corporate title, and date]"

1.05 RECORDING CHANGES

A. General:

1. At the start of the Project, label each record document to be submitted as "PROJECT RECORD" using legible, printed letters. Letters on record copy of the Drawings shall be two inches high.
2. Keep record documents current. Make entries on record documents within two working days of receipt of information required to record the change.
3. Do not permanently conceal the Work until required information has been recorded.
4. Accuracy of record documents shall be such that future searches for items shown on the record documents may rely reasonably on information obtained from Engineer-accepted record documents.
5. Marking of Entries:
 - a. Use erasable, colored pencils (not ink or indelible pencil) for marking changes, revisions, additions, and deletions to record documents.
 - b. Clearly describe the change by graphic line and make notations as required. Use straight-edge to mark straight lines. Writing shall be legible and sufficiently dark to allow scanning of record documents into legible electronic files.
 - c. Date all entries on record documents.
 - d. Call attention to changes by drawing a "cloud" around the change(s) indicated.
 - e. Mark initial revisions in red. In the event of overlapping changes, use different colors for subsequent changes.

B. Drawings:

1. Record changes on a copy of the Drawings. Submittal of Contractor-originated or -produced drawings as a substitute for recording changes on the Drawings is unacceptable.
2. Record changes on plans, sections, schematics, and details as required for clarity, making reference dimensions and elevations (to Project datum) for complete record documentation.
3. Record actual construction, including:
 - a. Horizontal and vertical location of existing Underground Facilities and surface structures demolished, realigned, or abandoned in-place, referenced to permanent surface improvements. For each Underground Facility or surface structure, provide dimensions to at least two permanent, visible surface improvements.
 - b. Horizontal and vertical limits of excavation.
 - c. Horizontal and vertical location of new Underground Facilities referenced to permanent surface improvements. For each Underground Facility, including pipe fittings, provide dimensions to at least two permanent, visible surface improvements.
 - d. Location of exposed utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.
 - e. Changes in structural and architectural elements of the Work, including changes in reinforcing.
 - f. Field changes of dimensions, arrangements, and details.

- g. Changes made in accordance with Change Orders, Work Change Directives, and Field Orders.
- h. Changes in details on the Contract Drawings. Submit additional details prepared by Contractor when required to document changes.
- 4. Supplemental Drawings:
 - a. In some cases, drawings produced during construction by Engineer or Contractor supplement the Drawings and shall be included with record documents submitted by Contractor. Supplemental record drawings shall include the following:
 - 1) Drawings provided with Change Orders, Work Change Directives, and Field Orders.
 - 2) Drawings that cannot be incorporated into the Drawings due to space limitations.
 - 3) Certified survey drawings, in accordance with Article 1.06 of this Section.
 - b. Supplemental drawings provided with record drawings shall be integrated with the Drawings and include necessary cross-references between drawings. Supplemental record drawings shall be on sheets the same size as the Drawings.
 - c. When supplemental drawings developed by Contractor using computer-aided drafting/design (CADD) software are to be included in record drawings, submit electronic files for such drawings in "DWG" format compatible with AutoDesk AutoCAD 2012 as part of record drawing submittal. Submit electronic files on compact disc labeled, "Supplemental Record Drawings", together with Contractor name, Project name, and Contract name and number.
- C. Specifications and Addenda:
 - 1. Mark each Section to record:
 - a. Manufacturer, trade name, catalog number, and Supplier of each product and item of equipment actually provided.
 - b. Changes made by Addendum, Change Orders, Work Change Directives, and Field Orders.

1.06 CERTIFIED SURVEY DRAWINGS

- A. Prepare the following survey drawings:
 - 1. Excavation plan, depicting the final horizontal and vertical limits of excavation for each excavation area, including subgrade spot elevations and topographic contours.
 - 2. Sewer plan and profile, depicting the horizontal and vertical location of new storm utility drainage piping and manholes, including connections to existing piping and manholes.
 - 3. Soil cover subgrade plan, depicting the horizontal limits of grading and subgrade topographic contours.
 - 4. Final Site plan, depicting final (post-construction) Site conditions.
- B. Drawing Requirements:
 - 1. General Content:
 - a. Property lines, easements, and rights-of-way.
 - b. Topographic contours at minimum one-foot intervals.
 - c. Horizontal and vertical location of buildings, foundations, and walls.
 - d. Horizontal location of exposed piping and utilities, poles, exposed wires, posts, signs, markers, curbs, fencing, gates, guard rails, guard cables, and other facilities visible at or above ground surface.
 - e. Horizontal limits of lawns, pavements, roads, walks, drives, and other surface improvements.
 - f. Horizontal and vertical location of monitoring wells, including ground surface elevation, outer casing elevation, and inner casing elevation.
 - g. Horizontal location, size (diameter), and species of trees and other plantings.
 - 2. Scale: One inch equals 20 feet.

3. Sheet Size: 34 inches wide by 22 inches high.

C. Certification:

1. Each survey drawing shall be signed and sealed by a professional land surveyor licensed and registered in the State of New York.

1.07 ELECTRONIC FILES FURNISHED BY ENGINEER

A. CADD files will be furnished by Engineer upon the following conditions:

1. Contractor shall submit to Engineer a letter on Contractor letterhead requesting CADD files and providing specific definition(s) or description(s) of how files will be used, and specific description of benefits to Owner if the request is granted.
2. Contractor shall execute Engineer's standard agreement for release of electronic files and shall abide by all provisions of the agreement for release of electronic files.
3. Layering system incorporated in CADD files shall be maintained as transmitted by Engineer. CADD files transmitted by Engineer containing cross-referenced files shall not be bound by Contractor. Drawing cross-references and paths shall be maintained. If Contractor alters layers or cross-reference files, Contractor shall restore all layers and cross-references prior to submitting record documents to Engineer.
4. Contractor shall submit record drawings to Engineer in same CADD format that files were furnished to Contractor.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION



Division 02

Existing Conditions

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SECTION 02 21 19

STRUCTURAL SURVEYS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, professional services, and incidentals as specified and required to perform structural surveys.
2. The Work includes, but is not limited to, performing pre-construction and post-construction structural surveys of visible surface structures located at the following properties:
 - a. 4 East Street.
 - b. 245 East State Street.
 - c. 214 East Clark Street.
 - d. 242 East Clark Street.
 - e. 176 East Main Street.
3. Owner will coordinate with property owners and provide access for structural surveys.

1.02 TERMINOLOGY

A. The following words or terms are not defined but, when used in this Section, have the following meaning:

1. "Surface structures" are existing buildings, structures, and other facilities at or above ground surface, including their foundations or any extension below ground surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, roads, dams, channels, open drainage, exposed piping and utilities, poles, exposed wires, posts, signs, markers, curbs, walks, fencing, and other facilities visible at or above ground surface.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Professional Engineer:
 - a. Retain the services of a professional engineer licensed and registered in the State of New York and experienced in providing engineering services of the kind indicated.
 - b. Responsibilities include, but are not necessarily limited to, performing structural surveys, and preparing and certifying survey reports.

1.04 SUBMITTALS

A. Informational Submittals:

1. Qualifications Statements: Submit name, address of firm, and qualifications of professional engineer.
2. Notification of Intended Survey Start: Submit in accordance with Paragraph 3.01.A of this Section.
3. Survey Reports:
 - a. Pre-Construction Survey Reports: Submit in accordance with Article 1.05 of this Section.
 - b. Post-Construction Survey Reports: Submit in accordance with Article 1.05 of this Section.

1.05 SURVEY REPORTS

- A. Prepare separate report for each property and survey. In each report, document the results of the survey and the conditions of visible surface structures located at the property. Include field notes, measurements, and photographs taken during the survey. Number each photograph and label with description and orientation.
- B. Submit reports within 14 days after each survey. Reports shall be certified by Contractor's professional engineer.

1.06 SCHEDULING AND SEQUENCING

- A. Pre-Construction Surveys: Perform pre-construction surveys before initiating any clearing, demolition, or ground-intrusive Work at the Site.
- B. Post-Construction Surveys: Perform post-construction surveys after completion of all pile driving and removal operations and before Substantial Completion.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 PREPARATION

- A. Notification: Notify Owner, Construction Manager, and Engineer in writing not less than 14 days before performing each survey. Do not enter properties without permission of property owners.

3.02 STRUCTURAL SURVEYS

- A. Perform structural surveys to assess and document the pre-construction and post-construction structural and cosmetic conditions of visible surface structures located at each property. Surveys shall be performed by Contractor's professional engineer. Engineer's Resident Project Representative will accompany Contractor's professional engineer for each survey.
- B. For each survey, take comprehensive notes, measurements, and photographs of each surface structure as a whole and of potential areas of damage or deterioration including, but not limited to, the following:
 - 1. Spalling concrete.
 - 2. Cracks.
 - 3. Active leaking.
 - 4. Construction joints. Note if joint is opening (cracking) or tight.
 - 5. Cracking associated with transitions in geometry. Note changes in plan or section dimensions and any settlement or shrinkage cracking.
 - 6. Foundation settlement.
 - 7. Bearing seats of beam/column connections. Carefully examine for potential separation, spalling, and cracking that may be associated with thermodynamic changes or joint rotation.
 - 8. Bolts and connections.
 - 9. Areas of corrosion in structural members associated with cracking.

10. Areas of delaminating concrete or voids in concrete in walls and slabs. Note method of observation (e.g., hammer sounding, chain drag, ultrasonic testing, etc.).
- C. Prepare separate survey report for each property in accordance with Article 1.05 of this Section.

END OF SECTION

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SECTION 02 41 00

DEMOLITION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required for demolition, removal, abandonment, and disposal Work.
2. The Work under this Section includes, but is not necessarily limited to, the following:
 - a. Demolition and removal of existing materials and equipment as shown or indicated in the Contract Documents. The Work includes demolition of structural concrete, foundations, walls, doors, windows, structural steel, metals, roofs, masonry, attachments, appurtenances, piping, electrical and mechanical systems and equipment, paving, curbs, sidewalks, gutters, fencing, Underground Facilities, and similar existing facilities.
 - b. Demolition and removal of all Underground Facilities underneath, and above-grade piping and utilities in, the building(s) and structures shown or indicated for demolition, unless the Underground Facilities or above-grade facilities are shown or indicated as to remain.
 - c. Removal of all utilities and appurtenances embedded in the slabs, foundations, walls, and footings shown or indicated for demolition.
 - d. Abandonment of existing Underground Facilities, where shown or indicated, by filling in-place with controlled low-strength material (CLSM).
3. Demolitions, removals, and abandonments specified under other Sections shall comply with requirements of this Section.
4. Perform demolition, removal, and abandonment Work within areas shown or indicated on the Drawings.
5. Pay all fees associated with transporting and disposing of materials and equipment resulting from demolition.

B. Coordination:

1. Review procedures under this and other Sections and coordinate Work that must be performed with or before demolitions and removals.

C. Related Sections:

1. Section 01 74 05, Cleaning.
2. Section 01 74 19, Construction Waste Management and Disposal.
3. Section 02 61 05, Removal and Disposal of Contaminated Materials.
4. Section 02 82 33, Removal and Disposal of Asbestos-Containing Materials.
5. Section 02 83 33, Removal and Disposal of Loose Lead-Containing Paint and Debris.
6. Section 31 11 00, Clearing and Grubbing.
7. Section 31 23 00, Excavation and Fill.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section.

1. NFPA 51, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Electrical Removals: Entity and personnel performing electrical removals shall be electrician legally qualified to perform electrical construction and electrical work in the jurisdiction where the Site is located.

B. Regulatory Requirements:

1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 29 CFR 1910.251 through 29 CFR 1910.255, Subpart Q – Welding, Cutting, and Brazing.
 - b. 29 CFR 1926.350 through 29 CFR 1926.354, Subpart J – Welding and Cutting.
 - c. 29 CFR 1926.850 through 29 CFR 1926.860, Subpart T – Demolition.
 - d. 12 NYCRR 23-1.25, Welding and Flame Cutting Operations.
 - e. 12 NYCRR 23-3.1 through 12 NYCRR 23-3.3, Subpart 23-3 – Demolition Operations.
 - f. 16 NYCRR 753, Protection of Underground Utilities.
2. Obtain required permits and approvals for demolition, removal, abandonment, and disposal Work.
3. Comply with requirements of authorities having jurisdiction.

1.04 SUBMITTALS

A. Informational Submittals:

1. Demolition, Removal, and Abandonment Plan: Submit acceptable plan for demolition, removal, and abandonment Work not less than 21 days prior to starting demolition Work. Include the following:
 - a. Plan for coordinating shut-offs, locating, capping, temporary services, and continuing utility services.
 - b. Plan for abandoning Underground Facilities, including procedures for accessing, plugging, placing CLSM, and verifying the complete filling of all Underground Facilities to be abandoned.
 - c. Other proposed procedures as applicable.
 - d. List of proposed equipment for demolition, removal, and abandonment Work.
 - e. Planned sequence of demolition, removal, and abandonment operations, including coordination with excavation, pile driving, and piping installation Work.
 - f. Detailed schedule of demolition, removal, and abandonment Work in accordance with the accepted Progress Schedule.
2. Qualifications Statements: Submit name and qualifications of entity performing electrical removals, including copy of licenses required by authorities having jurisdiction.
3. Notification of Intended Demolition Start: Submit in accordance with Paragraph 3.01.A of this Section.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. CLSM: Comply with Section 31 23 00.

PART 3 – EXECUTION

3.01 PREPARATION

A. Notification:

1. At least 48 hours prior to commencing demolition, removal, or abandonment Work, notify Owner, Construction Manager, and Engineer in writing of planned start of demolition Work. Do not start demolitions, removals, or abandonments without permission of Construction Manager.

B. Protection of Surrounding Areas and Facilities:

1. Perform demolition, removal, and abandonment Work in manner that prevents damage and injury to property, structures, occupants, the public, and facilities. Do not interfere with use of, and free and safe access to and from, structures and properties.
2. Closing or obstructing of roads, drives, sidewalks, and passageways adjacent to the Work is not allowed unless indicated otherwise in the Contract Documents. Conduct the Work with minimum interference to vehicular and pedestrian traffic.
3. Provide temporary barriers, lighting, sidewalks, sheds, and other necessary protection.
4. Protect construction and facilities indicated to remain against damage and soiling during demolition, removal, and abandonment Work. Repair damage at Contractor's expense.

C. Existing Utilities: In addition to the requirements of the General Conditions, Supplementary Conditions, and General Requirements, comply with the following:

1. Before proceeding with demolition, locate; identify; drain, purge, or de-energize; and disconnect, seal, or cap as required all utilities serving the building or structure being demolished, such as electric, fuel and gas, communications, service laterals, and heating, ventilating, and air conditioning.
2. Shutdown of utility services shall be coordinated and paid for by Contractor, and will be assisted by Owner as required relative to contacting utility owners.
3. Should uncharted or incorrectly charted Underground Facilities be encountered, Contractor's responsibilities shall be in accordance with the General Conditions as may be modified by the Supplementary Conditions. Cooperate with utility owners in keeping adjacent services and facilities in operation.

D. Remediation:

1. Before performing demolition Work that disturbs Asbestos-containing materials, remove and dispose of Asbestos-containing materials in accordance with Section 02 82 33.
2. Before performing demolition Work involving lead-containing materials, remove and dispose of loose or flaking lead-containing paint and debris in accordance with Section 02 83 33.

3.02 DEMOLITION – GENERAL

A. Locate construction equipment used for demolition, removal, and abandonment Work and remove demolished materials and equipment to avoid imposing excessive loading on supporting and adjacent walls, floors, framing, facilities, and Underground Facilities.

B. Pollution Controls:

1. Use water sprinkling, temporary enclosures, and other suitable methods to limit emissions of dust and dirt to lowest practical level. Comply with Section 01 57 05 and Laws and Regulations.
2. Do not use water when water may create hazardous or objectionable conditions such as icing, flooding, or pollution.

3. Clean adjacent structures, facilities, properties, and improvements of dust, dirt, and debris caused by demolition, removal, and abandonment Work, in accordance with the General Conditions and Section 01 74 05.
- C. Explosives: Use of explosives is prohibited.
- D. Hot Work: Comply with NFPA 51 and Laws and Regulations.
1. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 2. Maintain adequate ventilation when using cutting torches.
- E. Building or Structure Demolition:
1. Unless otherwise approved by Engineer, proceed with demolition from top of building or structure to the ground. Complete demolition Work above each floor or tier before disturbing supporting members of lower levels.
 2. Demolish concrete and masonry in small sections.
 3. Remove structural framing members and lower to ground using hoists, cranes, or other suitable methods. Do not throw or drop to the ground.
 4. Break up and remove foundations and slabs-on-grade unless otherwise shown or indicated as remaining in place.
 5. Break up and remove below-grade construction, including basements, foundation walls, slabs, and footings, to at least six inches below subgrade elevations shown or indicated, unless otherwise directed by Engineer. Upon completing such removals, measure, survey, and record portions of below-grade construction, if any, that remain in place.
- F. Demolition of Site Improvements:
1. Pavement, Sidewalks, Curbs, and Gutters: Demolition of asphalt or concrete pavement, sidewalks, curbs, and gutters, as applicable, shall terminate at saw-cut edges. Edges shall be linear and have a vertical cut face.
 2. Fencing, Guardrails, and Bollards: Remove to the limits shown or indicated. Completely remove below-grade posts and concrete.
 3. Landscaping: Comply with Section 33 11 00.
- G. Demolition of Underground Facilities:
1. Manholes, Vaults, Chambers, and Handholes: Remove to the limits shown or indicated.
 2. Underground Facilities Other than Manholes, Vaults, Chambers, and Handholes:
 - a. Before proceeding with demolition, locate; identify; drain, purge, or de-energize; and make safe for removal and capping all Underground Facilities being demolished. Collect, containerize, and properly dispose of chemicals, gases, coal tar, or other dangerous materials recovered from Underground Facilities.
 - b. Remove Underground Facilities to the extent shown or indicated. Where extent is not shown or indicated, extent of removal shall be 24 inches (horizontally) outside of excavations and six inches below subgrade elevations shown or indicated.
 - c. Unless otherwise shown or indicated, cap ends of piping to remain in accordance with Article 3.04 of this Section.
 - d. Upon completing removals, measure, survey, and record portions of Underground Facilities, if any, that remain.
 3. Where shown or indicated in the Contract Documents, provide temporary services or systems that bypass area of demolition and that maintain continuity of service.

3.03 STRUCTURAL REMOVALS

- A. Remove structures to lines and grades shown or indicated in the Contract Documents, unless otherwise directed by Engineer. Removals beyond limits shown or indicated shall be at Contractor's expense.
- B. Recycling and Reuse of Demolished Materials:
 - 1. All concrete, brick, tile, masonry, roofing materials, reinforcing steel, structural metals, miscellaneous metals, plaster, wire mesh, and other items contained in or upon the building or structure to be demolished shall be removed, transported, and disposed of away from the Site, unless otherwise approved by Engineer.
 - 2. Do not use demolished materials as fill or backfill adjacent to structures, in pipeline trenches, or as subbase under structures or pavement.

3.04 MECHANICAL REMOVALS

- A. Mechanical demolition and removal Work includes dismantling and removing existing piping and appurtenances as shown, indicated, and required for completion of the Work. Mechanical removals include cutting and capping as required.
- B. Demolition and Removals of Piping and Similar Items:
 - 1. Before proceeding with demolition, drain or purge piping of chemicals or fuel and make safe for removal and capping.
 - 2. Remove to the extent shown or indicated existing process, water, waste and vent, chemical, gas, fuel, and other piping. Provide caps on ends of remaining piping. Where piping to be demolished passes through existing walls to remain, cut off and cap pipe on each side of the wall.
 - 3. Caps, Closures, Blind Flanges, and Plugs:
 - a. Provide closure pieces, such as blind flanges and caps, where shown or required to complete the Work.
 - b. Where used in this Section, the term "cap" means the appropriate type closure for the piping being closed, including caps, blind flanges, and other closures.
 - c. Caps shall be compatible with the piping to which the cap is attached, fluid-tight and gas-tight, and appropriate for the fluid or gas conveyed in the pipe.
 - d. Unless otherwise shown or indicated, caps shall be mechanically fastened, fused, or welded to pipe. Plug piping with means other than specified in this Section only when so shown or indicated in the Contractor Documents or when allowed by Engineer.
 - 4. When Underground Facilities are altered or removed, properly cut and cap piping left in place, unless otherwise shown or indicated.

3.05 ELECTRICAL REMOVALS

- A. Electrical demolition Work includes removing existing conduit and raceways, cabling, poles and overhead cabling, lighting fixtures, switches, and miscellaneous electrical equipment, as shown, specified, or required.
- B. Remove existing electrical equipment and fixtures to avoid damaging systems to remain, to keep existing systems in operation, and to maintain integrity of grounding systems.
- C. Cables in conduits to be removed shall be removed back to the power source or control panel, unless otherwise shown or indicated. Verify the function of each cable before disconnecting and removing.

- D. Conduits, raceways, and cabling shall be removed where shown or indicated. Abandoned conduits concealed in floor slabs or in walls shall be cut flush with the slab or wall (as applicable) at point of entrance, suitably capped, and the area repaired in a flush, smooth manner acceptable to Engineer. Exposed conduits, junction boxes, other electrical appurtenances, and their supports shall be disassembled and removed. Repair all areas of the Work to prevent rusting on exposed surfaces.
- E. Conduits in Underground Facilities shall be suitably capped watertight where each enters building or structure to remain.
- F. Remove direct burial cable where shown or indicated. Openings in buildings for entrance of direct burial cable shall be patched with repair mortar or other material approved by Engineer for this purpose, and made watertight.
- G. Existing overhead cables shall be removed as shown and specified.
- H. Lighting fixtures, wall switches, receptacles, starters, and other miscellaneous electrical equipment shall be removed and properly disposed off-site as required.

3.06 ABANDONMENT OF UNDERGROUND FACILITIES

- A. Abandonment Work includes filling existing Underground Facilities, where shown or indicated, with CLSM.
- B. Preparation:
 - 1. Complete demolitions and removals of Underground Facilities before proceeding with abandonment Work.
 - 2. Clean piping and structures to be abandoned of debris that may hinder placement of CLSM. Remove free or standing water before proceeding with placement of CLSM.
 - 3. Install temporarily plugs in connecting pipelines and laterals that are to remain in operation during abandonment operations to keep the lines free of CLSM.
- C. Abandonment of Manholes, Vaults, Chambers, and Handholes: Abandon manholes and other structures, where shown or indicated, by filling with CLSM within the depth of structures left in place after completing required demolitions and removals.
- D. Abandonment of Piping: Abandon piping, where shown or indicated, by filling completely with CLSM the portions left in place after completing required demolitions and removals. Unless otherwise shown or indicated, cap ends of abandoned piping in accordance with Article 3.04 of this Section.
 - 1. Provide intermediate access points at maximum 50-foot intervals along pipeline to be abandoned by excavating, exposing, and cutting into top of piping. Provide additional access points as needed to ensure and verify the complete filling of the pipeline. Comply with Section 31 23 00.
 - 2. Place CLSM to fill the volume between access points as completely as practicable. Continuously place CLSM from access point to access point. Construct or provide temporary bulkheads within pipeline as necessary to control flow and placement of CLSM.
 - 3. During placement of CLSM, compensate for any irregularities in the piping, such as obstructions, open joints, or broken pipe, to ensure no voids remain unfilled.

- E. Monitoring:
 - 1. Continuously monitor placement and record volume of CLSM used to fill each structure or length of pipe. Compare volume used against calculated volume for same space to demonstrate that voids have been filled. Submit records to Engineer.
 - 2. Check flow characteristics and workability of CLSM as placement proceeds.

3.07 DISPOSAL OF DEMOLISHED MATERIALS

- A. Except for items or materials to be recycled and reused, remove from the Site all debris, waste, rubbish, and material resulting from demolition operations and equipment used in demolition Work. Comply with the General Conditions, Supplementary Conditions, and Sections 01 74 05, 01 74 19, and 02 61 05.
- B. Transportation and Disposal:
 - 1. Non-Hazardous Material: Properly transport and dispose of non-hazardous demolition debris at an appropriate, Owner-approved facility in accordance with Laws and Regulations. Non-hazardous material does not contain Asbestos, PCBs, Petroleum, Hazardous Waste, Radioactive Material, or other material designated as hazardous in Laws and Regulations.
 - 2. Hazardous Material: When handling and disposal of hazardous materials is included in the Work, properly transport and dispose of hazardous materials in accordance with Laws and Regulations and the Contract Documents.

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SECTION 02 61 05

REMOVAL AND DISPOSAL OF CONTAMINATED MATERIALS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as specified and required to remove from the Site and dispose of contaminated materials.
2. The Work includes, but is not limited to, characterizing, handling, segregating, dewatering, temporary storage as necessary, loading, transporting, and disposing of contaminated materials at appropriate, Owner-approved facilities in accordance with Laws and Regulations.
3. Pay all fees associated with transporting and disposing of contaminated materials.

B. Coordination:

1. Coordinate disposing of waste as specified under this and other Sections.

C. Related Sections:

1. Section 02 41 00, Demolition.
2. Section 31 11 00, Clearing and Grubbing.
3. Section 31 23 00, Excavation and Fill.

1.02 REFERENCES

A. Terminology:

1. The following words or terms are not defined but, when used in this Section, have the following meaning:
 - a. "Construction wastewater" is water used for working or processing, or resulting from dewatering or decontamination operations.
 - b. "Contaminated material" is material containing Manufactured Gas Plant Waste or Site-related Contaminants. Examples of potential contaminated materials include, but are not limited to, the following:
 - 1) Site grubbing wastes.
 - 2) Construction wastewater.
 - 3) Demolition waste.
 - 4) Excavation waste.
 - 5) Free-phase coal tar.
 - c. "Demolition waste" is building and site improvement materials resulting from demolition or selective demolition operations.
 - d. "Disposal" is removal to an off-site location of contaminated material and subsequent recycling, reuse, or disposal in an Owner-approved treatment facility, landfill, or incinerator facility conforming to Laws and Regulations and acceptable to authorities having jurisdiction.
 - e. "Excavation waste" is earth; sand; clay; gravel; hardpan; soft, weathered, or decomposed rock; debris; and other materials removed from within the excavation limits that does not comply with the requirements for fill, or is in excess of the quantity required for fill.

B. Reference Standards:

1. The following standards are referenced in this Section:
 - a. ASTM D5199, Standard Test Method for Measuring the Nominal Thickness of Geosynthetics.
 - b. ASTM D5261, Standard Test Method for Measuring Mass per Unit Area of Geotextiles.
 - c. GRI GM17, Standard Specification for Test Methods, Test Properties and Testing Frequency for Linear Low-Density Polyethylene (LLDPE) Smooth and Textured Geomembranes.
 - d. GRI GT12, Standard Specification for Test Methods and Properties for Nonwoven Geotextiles Used as Protection (or Cushioning) Materials.
 - e. USEPA SW-846 Method 9095, Paint Filter Liquids Test.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 29 CFR 1910, Occupational Safety and Health Standards.
 - b. 29 CFR 1926, Safety and Health Regulations for Construction.
 - c. 40 CFR 261.3, 264, and 265, Resource Conservation and Recovery Act (RCRA).
 - d. 49 CFR 171.8, Transportation, Definitions and Abbreviations.
 - e. 6 NYCRR 217, Motor Vehicle Emissions.
 - f. 6 NYCRR 364, Waste Transporter Permits.
 - g. 6 NYCRR 370, Hazardous Waste Management System – General.
 - h. 6 NYCRR 371, Identification and Listing of Hazardous Wastes.
 - i. 6 NYCRR 372, Hazardous Waste Manifest System and Related Standards for Generators, Transporters, and Facilities.
 - j. 6 NYCRR 373, Hazardous Waste Management Facilities.
 - k. 6 NYCRR 375, Environmental Remediation Programs.
 - l. Local Law No. 4 of 1988, Herkimer County, New York.
 - m. Local Law No. 1 of 1990, Herkimer County, New York.
2. Comply with applicable provisions and recommendations of the following:
 - a. NYSDEC Management of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment from Former Manufactured Gas Plants (MGPs) (DER-4).
 - b. NYSDOT Standard Specifications and Standard Sheets.
3. Obtain required permits and approvals for contaminated material transportation and disposal Work.
4. Comply with hauling and disposal Laws and Regulations of authorities having jurisdiction.

1.04 SUBMITTALS

A. Action Submittals:

1. Product Data: Submit manufacturer's product data for proposed soil drying agent.

B. Informational Submittals:

1. Waste Management Plan: Submit acceptable plan for managing contaminated materials within 14 days of the date the Contract Times commence running, and before removing any waste from the Site. Include the following:
 - a. Procedures for separating each type of waste, including sizes of containers, container labeling, and designated location at the Site where wastes will be separated and stored.

- b. List of local, Owner-approved disposal facilities that will be used for contaminated materials. Include name, address, and telephone number of each treatment facility, landfill, and incinerator facility. Identify type of waste to be disposed of at each facility.
- 2. Waste Profiles:
 - a. Preliminary Waste Profiles: Submit waste profile, listing Owner's name and address of the Site as generator of waste, for each treatment facility, landfill, and incinerator facility. Owner will sign and return each acceptable waste profile to Contractor.
 - b. Final Waste Profiles: Submit counter-signed waste profile and proof of acceptance of waste for each treatment facility, landfill, and incinerator facility.
- 3. Permits: Submit copy of valid NYSDEC waste transporter permit for each waste transporter hauling contaminated materials.
- 4. Waste Characterization Results: Submit laboratory test reports for waste characterization samples.
- 5. Disposal Records: Submit counter-signed manifests, weight tickets, receipts, and invoices for each treatment facility, landfill, and incinerator facility on a monthly basis throughout the Project, and concurrent with each Application for Payment.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store soil drying agent in closed, water-proof containers not exceeding one ton in weight. Bulk deliveries and on-site storage of soil drying agent are prohibited.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Soil Drying Agent:
 - 1. Soil drying agent shall be non-biodegradable sorbent complying with 40 CFR 264.314(d)(1). Inorganic minerals, if used, shall contain no more than 50 percent reactive (free) calcium oxide and magnesium oxide by weight.
- B. Temporary Containment Areas:
 - 1. Crushed stone shall be clean, durable, sharp-angled fragments of rock of uniform quality conforming to Material Designation 703-0201, Size Designation No. 3, in accordance with Section 703 of the NYSDOT Standard Specifications.
 - 2. Geomembrane shall be chemically-resistant, free of and resistant to fungal or bacterial attack, and free of cuts, abrasions, holes, blisters, contaminants, and other imperfections. Nominal thickness of geomembrane shall be not less than 40 mils when tested in accordance with ASTM D5199. HDPE or LLDPE geomembrane may be used.
 - a. HDPE Geomembrane: Comply with GRI GM13.
 - b. LLDPE Geomembrane: Comply with GRI GM17.
 - 3. Geotextile shall be a non-woven cushioning fabric composed of 100 percent polyester filaments. Fabric shall be inert to biological degradation and naturally encountered chemicals, alkalizes, and acids. Unit weight of fabric shall be not less than 12 ounces per square yard when tested in accordance with ASTM D5261. Comply with GRI GT12.

PART 3 – EXECUTION

3.01 WASTE MANAGEMENT

- A. General:
 - 1. Provide handling, containers, storage, signage, transportation, and other items required to manage wastes during the Project. Containers shall be new or in like-new condition, water-tight, and compatible with wastes to be stored.
 - 2. Segregate waste streams as required by waste transporters and disposal facilities. Crush excavated rock and debris, as necessary, to render material suitable for disposal.
- B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent facilities.
 - 1. Designate and label specific areas of the Site necessary for separating and storing wastes.
 - 2. Provide temporary controls in accordance with the Contract Documents.
- C. Waste Characterization:
 - 1. Determine disposal facility characterization requirements for each waste stream.
 - 2. Collect waste characterization samples, and coordinate and pay for laboratory testing.

3.02 DEWATERING OF EXCAVATED SOILS

- A. Dewater excavated soils as necessary to pass Paint Filter testing procedures (USEPA SW-846 Method 9095) before leaving the Site.
- B. Dewatering may include one or more of the following:
 - 1. Active dewatering of soils before or during excavation in accordance with Section 31 23 00.
 - 2. Blending of dry soils excavated from above the water table with wet soils excavated from below the water table.
 - 3. Stockpiling excavated soils on a temporary basis to allow for gravity dewatering.
 - 4. Use of approved soil drying agent to amend soils excavated from below the water table. Unless otherwise directed by Owner, excavated soils shall be amended with not more than four percent soil drying agent by weight.

3.03 TEMPORARY CONTAINMENT AREAS

- A. General:
 - 1. Provide temporary containment areas for the temporary storage of contaminated materials.
 - 2. Temporary containment areas shall be constructed as shown or indicated in the Contract Documents.
- B. Installation:
 - 1. Provide reasonably level, graded, well-drained subgrade of satisfactory soil material, compacted to at least 95 percent of maximum dry density in the upper six inches. Prepared subgrade shall be free of sharp stones, roots, debris, and other deleterious matter.

2. Install geomembrane, with layer of cushioning geotextile fabric above and below liner, upon prepared subgrade. Comply with manufacturer's installation instructions. Geomembrane shall be sloped to a sump to allow for the collection and removal of leachate.
 3. Provide crushed stone material a minimum of 12 inches thick above geosynthetics. Grade crushed stone to a level, dense surface.
 4. Provide compacted berm around perimeter of temporary containment area not less than 12 inches in height.
- C. Maintenance:
1. Maintain not less than the minimum required thickness of crushed stone above geosynthetics. Add crushed stone as required to maintain thickness.
 2. Remove leachate from temporary containment areas on a regular basis so as to not exceed storage capacity of temporary containment area.
- D. Removal:
1. Completely remove temporary containment areas when no longer required. Repair damage caused by temporary containment areas and their removal, and restore the Site to condition required by the Contract Documents. If restoration of damaged areas is not specified, restore to pre-construction condition.

3.04 TEMPORARY STORAGE OF CONTAMINATED MATERIALS

- A. Excavation Waste:
1. Temporary on-site storage of excavation waste may be necessary to accommodate one or more of the following:
 - a. Construction sequencing.
 - b. Disposal facility scheduling issues.
 - c. Dewatering requirements.
 2. Excavation waste shall be stockpiled in a temporary containment area.
 - a. Place, grade, and shape stockpiles for proper drainage.
 - b. Stockpiles shall be securely covered at all times, during both working and non-working hours, with minimum six-mil polyethylene liners when not in use. Liners shall be properly anchored to prevent uplift due to wind conditions and shall be installed to minimize the ponding of precipitation.
 - c. Inspect stockpiles not less than daily and immediately correct any deficiencies observed.
 3. Based on Site conditions, Owner may elect to limit the maximum size of stockpiles. Limitations to stockpile size shall not result in any additional cost to Owner.
 4. Remove stockpiles from the Site within 24 hours of placement unless a longer duration is approved by Owner or Engineer.
- B. Construction Wastewater:
1. Construction wastewater shall be stored in closed-top steel tanks. Provide not less than two tanks, each with minimum storage capacity of 18,000 gallons.
 2. Storage tanks shall be water-tight and shall be located in a temporary containment area.
- C. Coal Tar:
1. Free-phase coal tar, if encountered, shall be collected and stored in 55-gallon steel drums.
 2. Drums shall be water-tight and shall be located in a temporary containment area.

3.05 LOADING AND TRANSPORTATION

- A. Prepare a waste manifest for each shipment of contaminated material. Owner or an authorized representative will review and sign each manifest as generator of waste.
- B. Waste transporters hauling contaminated materials shall possess valid permit issued by NYSDEC pursuant to 6 NYCRR 364.
- C. Vehicles transporting contaminated materials shall be fully-lined with minimum six-mil polyethylene liners, an equivalent material, or otherwise water-tight, and shall be equipped with functioning tailgate locks and non-mesh (solid), water-proof tarpaulins.
- D. Exercise care when loading wastes to prevent contamination of transport vehicles and adjacent surfaces.
- E. Inspect vehicles before leaving the Site. Clean vehicles of visible soil or debris within a temporary decontamination area.
- F. Keep all streets, sidewalks, and pavements clean and free from dirt, mud, stone, and other hauled materials. Comply with Section 01 74 05 and cleaning requirements of Section 01 55 13.
- G. Vehicles transporting contaminated materials from the Site shall follow approved haul routes in accordance with Section 01 55 26.

3.06 DISPOSAL

- A. Remove from the Site and properly dispose of contaminated material at Owner-approved treatment facility, landfill, or incinerator facility permitted to accept each type of waste.
 - 1. Direct-load contaminated material to the extent practicable. Except as otherwise specified, remove contaminated material from the Site as fast as it accumulates.
 - 2. Remove and transport contaminated material in a manner that will prevent spillage on adjacent surfaces and areas.

END OF SECTION

SECTION 02 82 33

REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIALS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as specified and required to remove from the Site and dispose of Asbestos-containing materials (ACMs) associated with the structures subject to demolition.
2. The Work includes, but is not limited to, removing, handling, segregating, temporary storage as necessary, loading, transporting, and disposing of all ACMs associated with the structures subject to demolition at appropriate, Owner-approved facilities in accordance with Laws and Regulations.
3. Pay all fees associated with transporting and disposing of ACMs.

B. Coordination:

1. Review procedures under this and other Sections and coordinate Work that must be performed with or before ACM removal and disposal Work.

C. Related Sections:

1. Section 01 35 29, Contractor's Health and Safety Plan.
2. Section 02 41 00, Demolition.

1.02 REFERENCES

A. Terminology:

1. The following words or terms are not defined but, when used in this Section, have the following meaning:
 - a. "Airlock" shall mean a structure consisting of two curtained doorways separated by a distance of at least three feet with plastic curtains weighted so as to assure closure after passage of one and before opening of the second. The curtained doorways shall consist of minimum three overlapping sheets of plastic secured at the top and at alternate sides.
 - b. "Asbestos" shall mean fibrous chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite. The term "Asbestos" shall include all Asbestos materials and all Asbestos-contaminated materials such as disposable protective equipment and plastic used for work zone isolation.
 - c. "Dry" shall mean having no apparent wetness visually or tactually.
 - d. "Friable" shall mean a condition such that, when dry, a material is capable of being crumbled, pulverized, powdered, or crushed by hand pressure.
 - e. "HEPA filter" shall mean High Efficiency Particulate Air filter, capable of trapping and retaining 99.97 percent of Asbestos fibers greater than 0.3 microns (um) equivalent aerodynamic diameter.
 - f. "Intact" shall mean Asbestos material that has not crumbled, been pulverized, or otherwise been damaged or disturbed, and the material's matrix has not noticeably deteriorated.
 - g. "Isolation barrier" shall mean the plastic-covered floors, walls, and ceilings of a work zone which create the work zone boundary and isolate this area from its surroundings.

- h. "Non-friable" shall mean a condition such that, when dry, a material is not capable of being crumbled, pulverized, powdered, or crushed by hand pressure.
- i. "Non-friable organically-bound materials" shall mean non-friable Asbestos materials embedded in flexible to rigid asphalt or vinyl matrices including, but not limited to, flooring materials, adhesives, mastics, asphalt shingles, roofing materials, and caulks.
- j. "Personnel decontamination area" shall mean an area designated for controlled passage of all persons, consisting of a clean room, shower room, and an equipment (dirty) room separated from each other and from the work zone by airlocks.
- k. "Project Monitor" shall mean any person unaffiliated with Contractor who oversees the performance of ACM abatement activities for the purpose of compliance with applicable Laws and Regulations. The Project Monitor shall possess all required certifications.
- l. "Wet" or "wetted" shall mean moistened with a wetting agent (water or amended water) such that the material or surface is not friable.
- m. "Work zone" shall refer to the area within the isolation barrier (work zone boundary) in which Asbestos removal work occurs.

B. Reference Standards:

- 1. The following standards are referenced in this Section:
 - a. ANSI/AIHA/ASSE Z9.2, Fundamentals Governing the Design and Operation of Local Exhaust Ventilation Systems.

1.03 QUALITY ASSURANCE

A. Qualifications:

- 1. Contractor performing the ACM abatement Work of this Section shall be licensed to perform ACM abatement operations in New York State.
- 2. All Asbestos abatement workers shall possess valid Asbestos handler (worker) certificates issued by NYSDOL.

B. Regulatory Requirements:

- 1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 29 CFR 1910.1001, Asbestos.
 - b. 29 CFR 1926.1101, Asbestos.
 - c. 40 CFR 61.140 through 40 CFR 61.157, Subpart M – National Emission Standard for Asbestos.
 - d. 40 CFR 763, Asbestos.
 - e. 6 NYCRR 364, Waste Transporter Permits.
 - f. 12 NYCRR 56, Asbestos.
 - g. New York Labor Law, Article 30 – Asbestos or Products Containing Asbestos; Licensing.
- 2. Obtain required permits, variances, and approvals for ACM removal, transportation, and disposal Work.
- 3. Comply with requirements of authorities having jurisdiction.

1.04 QUALITY CONTROL

- A. Contractor shall be responsible for achieving post-abatement work area visual inspection and clearance air monitoring requirements as applicable and specified herein.

- B. Contractor shall be responsible for achieving acceptable visual inspection and air clearance sampling for each abatement area as follows:
1. The Asbestos Project Monitor will inspect the work area and surrounding areas for clearance using visual and physical methods, prior to the performance of clearance air monitoring.
 2. Following a visual inspection, clearance air sampling (if required) will be performed by an independent third party for analysis by Phase Contrast Microscopy (PCM). Work shall be considered acceptable if all samples for a particular work area yield results with maximum total airborne fiber concentrations of less than 0.01 fibers per cubic centimeter of air (fibers/cc) for each sample collected and analyzed.

1.05 SUBMITTALS

A. Informational Submittals:

1. Copy of valid license to perform Asbestos abatement activities in the State of New York.
2. Copies of valid Asbestos handler (worker) certificates issued by NYSDOL for all employees assigned to the Project.
3. Proof of workers having completed a 40-hour Hazardous Waste operations and emergency response (HAZWOPER) training course (and annual refresher training) in accordance with 29 CFR 1910.120 and 29 CFR 1926.65.
4. An ACM Abatement Plan that presents: (i) Contractor's detailed approach for completing the ACM abatement activities based on all available information, all applicable Project-specific variances and applicable Laws and Regulations; (ii) Contractor's equipment, materials, and methods; (iii) control systems/methods for prevention of visible emissions to be implemented during removal of non-structural materials including but not limited to dust and flying debris; (iv) methods for the on-site management of ACM; and (v) methods for protecting structures and utilities. The ACM Abatement Plan shall also include a figure presenting all proposed regulated ACM abatement work areas, proposed ACM abatement support areas, equipment and personnel decontamination areas for ACM abatement activities, and the configuration and location of disposal containers. Contractor may present alternative methods to the abatement processes described herein, for review by Engineer. Any such modifications or substitutions to methods, procedures, or design shall comply with Laws and Regulations. Contractor shall submit the proposed modification or substitution (including proposed Project-specific variances) for review and acceptance by Engineer. It is highly recommended that proposed variance conditions that may affect the value of the Work be submitted along with the Bid for Owner approval prior to Contract Award. Financial implications associated with either Owner or NYSDOL rejection of proposed variance conditions shall be the responsibility of Contractor.
5. An ACM Decontamination Plan that identifies the appropriate procedures and methods that will be employed to properly decontaminate Project-related equipment that comes in contact with Project media in accordance with Laws and Regulations. The plan shall address the generation, collection, and handling of solids, liquids, personal protective equipment (PPE), and other related wastes generated by decontamination activities. In addition, the ACM Decontamination Plan shall address methods to be employed for personnel decontamination. Equipment and personnel decontamination activities shall be performed in an area designated by Contractor and approved by Engineer. Liquids generated by decontamination efforts and disposable equipment shall be containerized for sampling and off-site disposal.
6. An ACM Waste Management Plan that includes the following:
 - a. Identification of anticipated waste streams and estimated volumes of waste to be generated.

- b. List of local, Owner-approved disposal facilities that will be used for ACM and non-ACM wastes. Include name, address, and telephone number of each facility. Identify type of waste to be disposed of at each facility.
 - c. Copy of valid NYSDEC waste transporter permit for each waste transporter hauling ACM waste.
- 7. Contractor's written ACM Respiratory Protection Program that includes:
 - a. A statement of respiratory protection training.
 - b. Current copies of qualitative and/or quantitative respirator fit test results for all employees assigned to the Project. Respirator fit tests must be performed using respirator brands worn by Contractor's employees.
 - c. Copies of the current medical certificates for all employees assigned to the Project. Certificates shall have the name of the medical center, name of attending physician, and signature of attending physician, and indication that the individual is physically capable of performing ACM abatement work without restrictions.
- 8. The following documents:
 - a. Manufacturer's certification that vacuums, ventilation equipment, and other equipment required to contain airborne fibers conform to ANSI/AIHA/ASSE Z9.2, and certification that all respirators to be used are National Institute for Occupational Safety and Health (NIOSH)-approved.
 - b. Product specifications for all other ACM abatement supplies and equipment to be used on the Project. These product specifications include, but are not limited to, protective clothing, head gear, footwear, safety belts, goggles, fire-retardant polyethylene sheeting, fire-retardant plywood, pressurized washers, shredders, and all other PPE, equipment, or supplies that will require decontamination on the Project.
 - c. Copies of notification forms prepared for NYSDOL and copy of certified check associated with the notification fee as determined by New York Labor Law Article 30.
 - d. Copy of the National Emissions Standards for Hazardous Pollutants (NESHAP) Notification of an Asbestos Abatement Project in accordance with 40 CFR Part 61.145(b).
- 9. Waste Profiles:
 - a. Preliminary Waste Profiles: Submit waste profile, listing Owner's name and address of the Site as generator of waste, for each disposal facility. Owner will sign and return each acceptable waste profile to Contractor.
 - b. Final Waste Profiles: Submit counter-signed waste profile and proof of acceptance of waste for each disposal facility.
- 10. Submit the following on a weekly basis, or upon completion of abatement Work, whichever comes first:
 - a. Copies of daily work site entry logbooks with information on worker and visitor access.
 - b. Written logs documenting the daily quantity and type of ACM removed and post-work visual inspections conducted by Contractor.
 - c. Written results of samples on a weekly basis and a completed written analytical report showing all sampling locations and results.
 - d. Complete documentation of OSHA-required monitoring of on-site personnel that was conducted during abatement Work. This information will document the worker exposure during work activities associated with the Project.
 - e. Any reported deviations from the ACM Abatement Plan and/or corrective actions taken during abatement Work.
 - f. Counter-signed manifests, weight tickets, receipts, and invoices for all ACM and non-ACM wastes generated during abatement Work.

1.06 SITE CONDITIONS

A. Existing Conditions:

1. The Project Site is a NYSDEC-listed inactive hazardous waste site. Prior to commencement of Work, Contractor shall certify that all personnel employed at the Site, who are directly involved with abatement Work, including Contractor parties, have completed a 40-hour hazardous waste site health and safety training course (and annual refresher training) in accordance with 29 CFR 1910.120 and 29 CFR 1926.65. Contractor shall also certify that any individuals who later became employed by Contractor for such purposes also receive such training prior to performing Work at the Project Site.
2. The Supplementary Conditions indicate information available relative to the presence of Asbestos at the Site, including reports of pre-demolition surveys and characterization activities prepared by Owner and Engineer.
3. Contractor shall verify all existing conditions including, but not limited to, the type, condition, location, and quantity of ACMs currently located at the Project Site.

1.07 PROJECT AND AIR MONITORING MONITOR

- A. Engineer will perform monitoring of Contractor work practices and performance, inspection of the Work sites, and air sampling and analysis for each phase of the ACM removal Work. Contractor shall provide free and safe access to all work areas at all times and shall provide electric power for the purposes of conducting air sample collection activities.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Contractor shall provide USDOT-approved containers for containerization of materials generated during the ACM removal Work. This shall include drums for water and/or paint chips generated during abatement.
- B. Larger containers shall meet applicable State of New York and USDOT requirements and shall be lined with two (2) six-mil (0.006 inch thick) pre-formed polyethylene liners, or equivalent, provided by Contractor. The liners shall also be of sufficient size so that they can be sealed across the top of the load when full. Each container shall be in good condition with no holes or rusted areas. Containers shall be hard wall, water-tight, and lockable with no visible emissions. No open containers will be permitted on-site (e.g., open with canvas cover, etc.). While on-site, containers shall be marked with danger labels.
- C. All plywood shall be fire retardant/fire-rated.
- D. The respirators used shall be selected by Contractor and shall be supplied and utilized in full compliance with Laws and Regulations. Disposable single-use respirators are prohibited.
- E. The wetting agent shall be Foster 32-90 Asbestos Removal Surfactant or equal. The wetting agent shall be applied by means of an airless sprayer.
- F. Bags used for disposal shall be minimum six-mil in thickness, polyethylene and shall be preprinted with the Asbestos “DANGER” label.
- G. Polyethylene sheeting used for isolating the work zone and constructing the decontamination units shall be new, unused, reinforced, fire-retardant, and a minimum of six-mil in thickness.

- H. Asbestos “DANGER” signs and labels shall be as specified in 29 CFR 1926.1101(k), and shall read as follows:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

- I. The vacuum cleaners used shall employ filters which bear the rating High Efficiency Particulate Air (HEPA).
- J. Temporary lighting, heating, hot water heating units, ground fault interrupters, and all other equipment on-site shall be UL approved or equal, and shall be safe, proper, and sufficient to the purpose intended.

PART 3 – EXECUTION

3.01 REMOVAL OF ASBESTOS-CONTAINING MATERIALS

- A. Contractor shall abate, handle, and containerize all ACM in accordance with Laws and Regulations, including 12 NYCRR 56.
- B. Contractor shall erect warning signs around the work space and at every point of potential entry from the outside at least 10 days prior to the start of Work. Signs shall comply with 29 CFR 1926.1101 and shall be placed in accordance with the requirements of 12 NYCRR 56-3.6. The warning signs shall be a bright color so that they will be easily noticeable. The size of the sign and the size of the lettering shall conform to OSHA requirements.
- C. Contractor shall provide OSHA and NESHAPS-required labels for all polyethylene waste bags and all drums utilized to transport ACM waste. Contractor shall provide any other signs, labels, warning, and posted instructions that are necessary to protect, inform, and warn authorities having jurisdiction, visitors, and the general public of the hazard from Asbestos exposure. These items shall be posted in a prominent and convenient place for the workers, along with a copy of the latest applicable regulations from OSHA, USEPA, NIOSH, and the State of New York.
- D. Work shall be performed in accordance with Laws and Regulations.
- E. During and following the removal activities, Contractor shall containerize and place removed ACM into temporary staging area(s) separate from any other waste material or directly into appropriate transportation containers. Temporary staging area(s), if needed, shall be constructed in accordance with Laws and Regulations to shelter waste materials from the elements (e.g., wind, precipitation, surface water run-off, etc.).
- F. At the end of each work day, Contractor shall remove the ACM debris accumulated during that day's work activities from the work area and place into the approved containers. No removed or bagged ACM shall be allowed to be stored within the building. Dumpsters shall be covered appropriately and tightly secured at the end of each shift.
1. Unless as otherwise noted, Contractor shall separate ACM from non-ACM demolition waste to the greatest degree possible.

2. Decontamination methods shall include HEPA-vacuuming and wet-wiping all surfaces such that all visible traces of ACMs have been removed as determined by the on-site Asbestos Project Monitor. Any material that becomes contaminated with Asbestos as a result of Contractor's acts shall be removed and disposed as ACM at Contractor's expense.
- G. For suspect ACM that is not identified in this Section, not included in the previously conducted ACM surveys, and not in a location that was visible at the Project Site at the time of Contract execution, Contractor shall immediately notify Construction Manager and Engineer of the location, quantity, and condition of the suspect material prior to the initiation of any further abatement activity. Additional suspect ACM shall not be removed without prior written authorization of Construction Manager.

3.02 AIR QUALITY MONITORING

- A. Contractor shall be responsible for all personal air monitoring to accurately determine the airborne concentrations of Asbestos fibers to which its employees may be exposed. Monitoring shall be in accordance with 29 CFR 1926.1101.
- B. Personal sample results shall be posted in the work area daily.
- C. Samples submitted to a laboratory for analysis shall be analyzed and the results shall be available within 72 hours after being collected.
- D. The laboratory performing analysis shall be a regular successful participant in the NIOSH Proficiency Analytical Testing (PAT) program, and shall hold a current valid laboratory certification for the above analysis issued by NYSDOH.
- E. Persons performing sampling shall hold a current state license or certification where applicable.
- F. All sampling and laboratory data, such as sampling volumes and laboratory quality control data, shall be available to Owner upon request.
- G. Engineer will perform air sampling and analysis for each phase of the ACM removal activities as specified in 12 NYCRR 56-4. Engineer will perform monitoring/inspection of Contractor work practices and performance, and inspection of the Project Site. Contractor shall cooperate with Engineer's Asbestos air sampling technician and Project Monitor to provide safe access to all work areas at all times and providing electric power for the purposes of conducting air sample collection and inspection activities.
- H. During removal activities, if air quality regulatory levels related to Asbestos are exceeded, Contractor shall take all appropriate measures to reduce airborne Asbestos concentrations to below regulatory levels (e.g., wetting, engineering controls, etc.).

3.03 LABELING

- A. Contractor shall provide labels and label all containers consistent with the requirements of 40 CFR 61 and 29 CFR 1926.1101. The labeling shall comply with Laws and Regulations.

3.04 UTILITY SERVICES

- A. Water and electricity are not available at the Project Site. Contractor shall be responsible for providing utilities as necessary for completion of the Work described herein.

- B. Employ heavy-duty abrasion-resistant hoses with a pressure rating 1.5 times greater than the maximum pressure of the water distribution system to provide water into each work area and to each decontamination unit.
- C. Provide sufficient hot water for the decontamination unit shower. Water used in the Asbestos removal process (including decontamination water) as well as excess water associated with wetting ACM prior to and during Asbestos abatement operations shall be collected and processed through a filtration system. The filtration system must be provided with at least a 5.0-micron particle size filtration capability. A multi-stage filtering system containing a series of several filters with progressively smaller pore sizes shall be used to avoid rapid clogging of the filtering systems by larger particles.
- D. All power equipment used inside the work zone shall be individually protected by in-line ground fault interrupters.
- E. All used or unused electrical circuits within the work zone shall be shutoff. All circuits that are shut off shall be taped or locked in the off position and labeled with a printed tag which reads as follows:

TEMPORARILY DISCONNECTED DUE TO ASBESTOS REMOVAL PROJECT
DO NOT ACTIVATE THESE CIRCUITS

- F. Operation of all electrical equipment shall be in compliance with the National Electric Code.
- G. If necessary, temporary lighting shall be provided sufficient for clear visibility throughout all work areas including the decontamination units.
- H. Protect lamps with guard cages or tempered glass enclosures, where fixtures are exposed to breakage by construction operations. Provide vapor tight fixtures in work area and decontamination units. Provide exterior fixtures where fixtures are exposed to the weather or moisture.
- I. Use only grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Use single lengths or use waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas of work.
- J. Provide Type "A" fire extinguishers for work zones where there is minimal danger of electrical or grease-oil-flammable liquid fires. In other locations, provide Type "ABC" dry chemical extinguishers or a combination of several extinguishers of NFPA recommended types for the exposures in each case.
- K. An emergency/fire exit shall be maintained in addition to the primary decontamination exit.

END OF SECTION

SECTION 02 83 33

REMOVAL AND DISPOSAL OF LOOSE LEAD-CONTAINING PAINT AND DEBRIS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as specified and required to remove from the Site and dispose of loose lead-containing paint and debris associated with the structures subject to demolition.
2. The Work includes, but is not limited to, removing, handling, segregating, temporary storage as necessary, loading, transporting, and disposing of all dislodged, loose, flaking, peeling, and separated paint and surface debris associated with the structures subject to demolition at appropriate, Owner-approved facilities in accordance with Laws and Regulations.
3. Pay all fees associated with transporting and disposing of loose paint and debris.
4. Contractor shall assume all painted surfaces subject to demolition contain detectable concentrations of lead. In addition, certain painted or coated surfaces contain PCBs and, depending on the specific structure/area, debris may contain lead, Asbestos, and PCBs. Contractor shall review the available characterization data for each structure and recognize that paint and debris removal activities and management of residuals (removed paint and paint/debris present on adjacent floor surfaces) likely contains regulated materials and will require appropriate worker safety precautions, project controls, and waste management activities.
5. Comply with Laws and Regulations concerning construction work involving lead-containing materials, including 29 CFR 1926.62 (Lead).
6. Paint and debris removal shall occur at several times during implementation of the Project, corresponding to the completion of or preparation for various project Phases. At a minimum, cleaning shall occur prior to building demolition and prior to post-demolition restoration activities.

B. Coordination:

1. Review procedures under this and other Sections and coordinate Work that must be performed with or before loose paint and debris removal.

C. Related Sections:

1. Section 01 35 29, Contractor's Health and Safety Plan.
2. Section 02 41 00, Demolition.

1.02 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 29 CFR 1910.20, Access to Employee Exposure and Medical Record.
 - b. 29 CFR 1910.134, Respiratory Protection.
 - c. 29 CFR 1910.1025, Occupational Safety and Health Standards.
 - d. 29 CFR 1910.1200, Hazard Communication.
 - e. 29 CFR 1926.55, Gases, Vapors, Fumes, Dusts, and Mists.

- f. 29 CFR 1926.59, Hazard Communication.
 - g. 29 CFR 1926.62, Lead.
 - h. 29 CFR 1926.103, Respiratory Protection.
 - i. 40 CFR 50, National Primary and Secondary Ambient Air Quality Standards.
 - j. 40 CFR 60, Standards of Performance for New Stationary Sources.
 - k. 40 CFR 117, Determination of Reportable Quantities of Hazardous Substances.
 - l. 40 CFR 171, Standards for Transportation of Hazardous Materials.
 - m. 40 CFR 172, Hazardous Materials Tables and Hazardous Materials Communications Regulations.
 - n. 40 CFR 173, General Requirements for Shipments and Packaging.
 - o. 40 CFR 178, Shipping Container Specifications.
 - p. 40 CFR 260, Hazardous Wastes Management Systems General.
 - q. 40 CFR 261, Identification and Listing of Hazardous Waste.
 - r. 40 CFR 262, Generators of Hazardous Wastes.
 - s. 40 CFR 263, Transporters of Hazardous Wastes.
 - t. 40 CFR 264/265, Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.
 - u. 40 CFR 268, Land Disposal Restrictions.
 - v. 40 CFR 302, Designation, Reportable Quantities, and Notification.
 - w. 6 NYCRR 364, Waste Transporter Permits.
2. Obtain required permits and approvals for loose paint and debris transportation and disposal Work.
 3. Comply with requirements of authorities having jurisdiction.

1.03 SUBMITTALS

A. Informational Submittals:

1. Loose Paint and Debris Removal Plan: Submit acceptable plan for loose paint and debris removal Work not less than 21 days prior to starting demolition Work. Plan shall fully describe the activities related to the removal of loose paint from all materials subject to demolition. Submittal shall comply with applicable OSHA requirements and include, at a minimum, a detailed description of engineering and work practice controls; the methods, procedures, and equipment to be used for paint and debris removal and management activities; designated areas within the Project Site and sequencing of paint and debris removal areas (considering coordination with other Work, unique aspects of the Project Site, different disposal requirements for residuals, etc.); and specific exceptions/areas where the requirements of this Section cannot be implemented due to safety concerns or for other considerations, as well as Contractor's proposed alternate means and methods for paint and debris removal associated with these areas.
2. Health and Safety Submittals: Submit information required by 29 CFR 1926.62 if not otherwise submitted under Section 01 35 29.
3. Waste Profiles:
 - a. Preliminary Waste Profiles: Submit waste profile, listing Owner's name and address of the Site as generator of waste, for each disposal facility. Owner will sign and return acceptable waste profile to Contractor.
 - b. Final Waste Profiles: Submit counter-signed waste profile and proof of acceptance of waste for each disposal facility.
4. Permits: Submit copy of valid NYSDEC waste transporter permit for each waste transporter hauling lead waste.
5. Disposal Records: Submit counter-signed manifests, weight tickets, receipts, and invoices for each disposal facility upon completion of loose paint and debris removal Work.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. All loose paint, and dust, dirt, debris, and all material containing loose paint, shall be stored in USDOT-approved containers for off-site disposal. Contractor to provide containers.
- B. Contractor shall use equipment and methods that minimize generation of airborne dust (e.g., vacuuming with High Efficiency Particulate Air [HEPA] vacuums, air filtration, etc.).

PART 3 – EXECUTION

3.01 GENERAL

- A. Remove loosely adhered paint from all interior and exterior surfaces of the building and structures to be demolished (e.g., walls, floors, ceilings, piping, structural supports, etc.). The level of effort for paint removal shall be specific to the nature, condition, and extent of the painted surface, but shall include manual removal techniques using a wire brush or similar equipment.
- B. Paint removal activities shall occur in specific areas identified by Contractor in consideration of the Work, related sequencing of activities, and safety. Following completion of paint removal activities and prior to demolition, Contractor shall identify specific areas for Engineer review. Engineer will inspect each area to confirm adequacy of Contractor's paint removal activities. Except as otherwise noted or approved by Engineer, paint removal activities shall occur for a given area of the Project prior to the initiation of demolition of that area.
- C. Loose paint that is present on the building surfaces at the time of demolition is unacceptable, even if Contractor has previously conducted paint removal efforts in that area. At Engineer's direction, Contractor may be required to conduct additional paint removal activities.
- D. Removal using mechanical equipment or high-pressure water spray is not required. At the Engineer's discretion, Contractor may not be required to remove paint from surfaces that are in good condition and adequately adhered to building material surfaces at the time of demolition.
- E. Following paint removal activities and prior to demolition activities, Contractor shall collect and containerize residual materials from all areas where paint removal activities were performed, to minimize the potential for such materials to become airborne during demolition activities and to minimize the co-mingling of demolition debris. Residual materials, regardless of whether they were present prior to or resulting from the Work include, but are not limited to, loose paint, dirt, debris, and building materials. Contractor shall remove these materials to the satisfaction of Engineer. Contractor shall characterize residual materials to determine appropriate waste management requirements.

3.02 CLEANUP AND DISPOSAL

- A. Cleanup:
 - 1. Maintain all surfaces, including protective tarps and coverings within the lead control area, free of accumulations of paint chips, dust, and debris. Restrict the spread of dust and debris; keep waste from being distributed over the work area.

2. Do not dry-sweep or use compressed air to cleanup the area. Perform housekeeping at the end of each shift and when paint removal operations have been completed by cleaning the lead control area of visible lead-containing paint chips using a HEPA-filtered vacuum.
- B. Collection and Disposal of Debris:
1. Collect lead-contaminated waste, scrap, debris, bags, containers, equipment, clothing, and protective equipment, separating waste by type (contaminated clothing, used containers, drop cloths, and surface materials shall be separated).
 2. Do not fill container or roll-off in excess of the capacity marked on the container. Cover containers immediately after filling.
 3. Store removed lead-containing paint, lead-contaminated clothing and equipment, dust, and debris in USDOT-approved container systems. Label each container to identify the waste and the date wastes were first put into the container, and ensure that labels remain intact and legible.
 4. No water mixed with or contaminated by hazardous or toxic debris may be released into a drain or sewer. Such discharges of lead into water may be considered a violation of the Clean Water Act and treated as a reportable quantity in accordance with 40 CFR 117. Such release will be grounds for termination of the Contract for cause, and Contractor will be liable for fines, penalties, and remediation costs.
 5. Remove from the Site and properly dispose of wastes at Owner-approved treatment, storage, and disposal facilities permitted to accept each type of waste. As necessary, dispose of lead-containing paint wastes to ensure containers do not remain at the Site longer than the shorter of the following: 90 days from the initial loading date affixed to the container, and the date of Substantial Completion.
 6. Handle, label, store, transport, and dispose of lead and lead-contaminated waste in accordance with 40 CFR 261, 40 CFR 263, 40 CFR 264, and 40 CFR 265. Comply with land disposal restriction notification requirements as required by 40 CFR 268 and other Laws and Regulations.

END OF SECTION



Division 03

Concrete

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SECTION 03 00 05

CONCRETE

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install concrete, reinforcing, and related materials.
2. The Work includes:
 - a. Providing concrete consisting of Portland cement, fine and coarse aggregates, water, and approved admixtures; combined, mixed, transported, placed, finished, and cured.
 - b. Fabricating and placing reinforcing, including ties and supports.
 - c. Design, erection, and removal of formwork.
 - d. Building into the concrete all sleeves, frames, anchorage devices, inserts, and other items required to be embedded in concrete.
 - e. Providing openings in concrete as required to accommodate Work under this and other Sections.

B. Coordination:

1. Review installation procedures under other Sections and coordinate the installation of items to be installed in the concrete Work.

C. Classification of Concrete:

1. Class "A" concrete shall be placed without forms or with simple forms, with little or no reinforcing and includes the following:
 - a. Manhole invert channels and bench walls.
2. Class "B" concrete shall be placed without forms or with simple forms, with little or no reinforcing and includes the following:
 - a. Concrete fill.
 - b. Unreinforced encasements.
 - c. Concrete footings.
 - d. Concrete curbs and sidewalks.

D. Related Sections:

1. Section 07 92 00, Joint Sealants.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:

1. ACI 224R, Control of Cracking in Concrete Structures.
2. ACI 301, Specifications for Structural Concrete.
3. ACI 304R, Guide for Measuring, Mixing, Transporting, and Placing Concrete.
4. ACI 305R, Guide to Hot Weather Concreting.
5. ACI 306R, Guide to Cold Weather Concreting.
6. ACI 309R, Guide for Consolidation of Concrete.
7. ACI 318, Building Code Requirements for Structural Concrete and Commentary.
8. ACI 347, Guide to Formwork for Concrete.
9. ACI SP-66, ACI Detailing Manual.
10. ASTM A1064/A1064M, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

11. ASTM C31/C31M, Standard Practice for Making and Curing Concrete Test Specimens in the Field.
12. ASTM C33/C33M, Standard Specification for Concrete Aggregates.
13. ASTM C39/C39M, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
14. ASTM C42/C42M, Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
15. ASTM C94/C94M, Standard Specification for Ready-Mixed Concrete.
16. ASTM C117, Standard Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing.
17. ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
18. ASTM C138/C138M, Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.
19. ASTM C143/C143M, Standard Test Method for Slump of Hydraulic-Cement Concrete.
20. ASTM C150/C150M, Standard Specification for Portland Cement.
21. ASTM C172/C172M, Standard Practice for Sampling Freshly Mixed Concrete.
22. ASTM C231/C231M, Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
23. ASTM C260/C260M, Standard Specification for Air-Entraining Admixtures for Concrete.
24. ASTM C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
25. ASTM C494/C494M, Standard Specification for Chemical Admixtures for Concrete.
26. ASTM C1064/C1064M, Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
27. ASTM C1077, Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation.
28. ASTM C1107/C1107M, Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
29. ASTM D1752, Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.
30. ASTM E329, Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
31. CRSI MSP, Manual of Standard Practice.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Testing Laboratory: Retain the services of an independent testing laboratory experienced in the design and testing of concrete materials and mixes to perform material evaluation tests and to design concrete mixes. Testing laboratory shall comply with ASTM C1077 and ASTM E329, and shall be responsible for quality assurance and field quality control testing required in this Section.

B. Quality Assurance Testing:

1. Verify each concrete mix design by laboratory trial batch, unless indicated otherwise. Perform the following testing on each trial batch:
 - a. Aggregate gradation for fine and coarse aggregates in accordance with ASTM C117 and ASTM C136.
 - b. Slump in accordance with ASTM C143/C143M.
 - c. Air content in accordance with ASTM C231/C231M.
 - d. Compressive strength based on three cylinders, each tested at seven days and at 28 days in accordance with ASTM C39/C39M.
2. Submit for each trial batch the following information:
 - a. Project identification name and number (if applicable).

- b. Date of test report.
 - c. Complete identification of aggregate source of supply.
 - d. Tests of aggregates for compliance with the Contract Documents.
 - e. Scale weight of each aggregate.
 - f. Absorbed water in each aggregate.
 - g. Brand, type, and composition of cementitious materials.
 - h. Brand, type, and quantity of each admixture.
 - i. Quantity of water used in trial batch.
 - j. Proportions of each material per cubic yard.
 - k. Gross weight and yield per cubic yard of trial mixture.
 - l. Measured slump.
 - m. Measured air content.
 - n. Compressive strength developed at seven days and 28 days, from not less than three test cylinders cast for each seven-day and 28-day test, and for each design mix.
3. Requirement for laboratory trial batch may be waived by Engineer if sufficient field test data documenting compliance with specified material properties and performance properties is submitted to and accepted by Engineer. Tests shall have been made on concrete with identical mix design to mix design proposed for the Work, including sources of aggregate and manufacturers of cementitious materials and admixtures.

1.04 SUBMITTALS

A. Action Submittals:

1. Shop Drawings:

- a. Submit list of concrete materials and proposed concrete mix designs. Include results of tests performed to qualify the materials and to establish the mix designs.
- b. Laboratory Trial Batch Reports: Submit laboratory test reports for concrete cylinders, materials, and mix design tests.
- c. Submit concrete placement drawings showing the location and type of all joints.
- d. Submit drawings for fabricating and placing concrete reinforcing. Comply with ACI SP-66.

2. Product Data:

- a. Submit manufacturer's specifications with application and installation instructions for proprietary materials and items, including admixtures.

B. Informational Submittals:

- 1. Qualifications Statements: Submit name and qualifications of testing laboratory to be employed, and qualifications of testing laboratory's personnel that will perform quality assurance and field quality control testing required in this Section. If more than one laboratory will be employed, submit qualifications statement for each laboratory.
- 2. Delivery Tickets: Submit copy of delivery ticket for each load of concrete delivered to or mixed at the Site. Each delivery ticket shall contain information in accordance with ASTM C94/C94M along with project name, contract number, date, mix type, mix time, quantity delivered to or mixed at the Site, and quantity of water introduced.
- 3. Field Quality Control Submittals: Submit laboratory test reports for field quality control testing performed in accordance with Article 3.09 of this Section.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Transportation, Delivery, and Handling:

- 1. Deliver concrete reinforcing products to Site bundled, tagged, and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings on approved Shop Drawings.

2. Materials used for concrete shall be clean and free from foreign matter during transportation and handling, and kept separate until measured and placed into concrete mixer.
 3. Implement suitable measures during hauling, piling, and handling to ensure that segregation of coarse and fine aggregate particles does not occur and grading is not affected.
 4. Deliver grout materials from manufacturers in unopened containers that bear intact manufacturer labeling.
 5. Comply with Section 01 65 00 (Product Delivery Requirements).
- B. Storage:
1. Store formwork materials above ground on framework or blocking. Cover wood for forms and other accessory materials with protective, waterproof covering. Provide for adequate air circulation or ventilation under cover.
 2. Store concrete reinforcing materials to prevent damage and accumulation of dirt and excessive rust. Store on heavy wood blocking so that reinforcing does not come into contact with the ground. Space framework or blocking supports to prevent excessive deformation of stored materials.
 3. Store concrete joint materials on platforms or in enclosures or covered to prevent contact with ground and exposure to weather and direct sunlight.
 4. For storage of concrete materials, provide bins or platforms with hard, clean surfaces.
 5. Comply with Section 01 66 00 (Product Storage and Handling Requirements).

PART 2 – PRODUCTS

2.01 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type II.
- B. Aggregates: ASTM C33/C33M, Class Designation 4S.
1. Fine Aggregate: Clean, sharp, natural sand free of loam, clay, lumps, and other deleterious substances. Dune sand, bank-run sand, and manufactured sand are unacceptable.
 2. Coarse Aggregate: Clean, uncoated, processed aggregate free of clay, mud, loam, or foreign matter.
 - a. Coarse aggregate shall comply with the following:
 - 1) Crushed stone, processed from natural rock or stone.
 - 2) Washed gravel, either natural or crushed. Slag, pit gravel, and bank-run gravel are unacceptable.
 - b. Coarse Aggregate Size: ASTM C33/C33M, Nos. 57 or 67, unless otherwise approved by Engineer.
- C. Water: Clean, potable.
- D. Chemical Admixtures:
1. Air-Entraining Admixture: ASTM C260.
 2. Water-Reducing Admixture: ASTM C494/C494M, Type A.
 3. Water-Reducing and Set-Adjusting Admixtures: ASTM C494/C494M, Types D and E.
 4. High Range Water-Reducing Admixture: ASTM C494/C494M, Type F/G.
 5. Use only admixtures that have been tested and approved in the mix designs.
 6. Do not use calcium chloride or admixtures containing chloride ions.

2.02 CONCRETE MIXES

A. General:

1. Normal Weight: 145 pounds per cubic foot.
2. Use air-entraining admixture in all concrete. Provide not less than four percent, nor more than eight percent, entrained air for concrete exposed to freezing and thawing, and provide from three to five percent entrained air for other concrete.

B. Proportioning and Design of Class "A" Concrete Mix:

1. Minimum Compressive Strength at 28 Days: 4,500 psi.
2. Maximum Water-Cement Ratio by Weight: 0.42.
3. Minimum Cement Content: 564 pounds per cubic yard.

C. Proportioning and Design of Class "B" Concrete Mix:

1. Minimum Compressive Strength at 28 Days: 3,000 psi.
2. Maximum Water-Cement Ratio by Weight: 0.50.
3. Minimum Cement Content: 517 pounds per cubic yard.

D. Slump Limits:

1. Proportion and design mixes to result in concrete slump at point of placement of not less than one inch and not more than four inches.
2. When using high-range water reducers, slump prior to addition of admixture shall not exceed three inches. Slump after adding admixture shall not exceed eight inches at point of placement.

E. Adjustment of Concrete Mix:

1. Concrete mix design adjustments may be requested by Contractor when warranted by characteristics of materials, Site conditions, weather, test results, or other, similar circumstances.
2. Submit for Engineer's approval laboratory test data for adjusted concrete mix designs, including compressive strength test results.
3. Implement adjusted mix designs only after Engineer's approval.
4. Adjustments to concrete mix designs shall not result in additional costs to Owner.

2.03 FORM MATERIALS

- A. Provide form materials with sufficient stability to withstand pressure of placed concrete without bow or deflection. Contractor shall be responsible for designing the formwork system to resist all applied loads including pressures from fluid concrete and construction loads.

2.04 REINFORCING MATERIALS

- A. Welded Wire Reinforcement: ASTM A1064/A1064M. Furnish in flat sheets, not rolls.

- B. Steel Wire: ASTM A1064/A1064M.

- C. Provide supports for reinforcing including bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing in place.

1. Use wire bar-type supports complying with CRSI MSP recommendations, except as specified in this Section. Do not use wood, brick, or other unacceptable materials.
2. For slabs on grade, use precast concrete blocks, four inches square minimum with compressive strength equal to or greater than the surrounding concrete, or supports with sand plates or horizontal runners where base materials will not support chair legs.

3. For all concrete surfaces where legs of supports are in contact with forms, provide supports having either hot-dip galvanized, plastic-protected, or stainless steel legs in accordance with CRSI MSP.
4. Provide precast concrete supports over waterproof membranes.

2.05 RELATED MATERIALS

- A. Preformed Expansion Joint Filler: Provide preformed expansion joint filler complying with ASTM D1752, Type I (sponge rubber) or Type II (cork).
- B. Joint Sealant and Accessories: Comply with Section 07 92 00 for joint sealant and accessories used on isolation joints, control joints, and expansion joints.
- C. Membrane-Forming Curing Compound: ASTM C309, Type ID.

2.06 GROUT

- A. Non-Shrink Grout: ASTM C1107/C1107M.
 1. Pre-packaged, non-metallic, cementitious grout requiring only the addition of water at the Site.
 2. Minimum Compressive Strength at 28 Days: 7,000 psi.
 3. Product and Manufacturer: Provide one of the following:
 - a. NS Grout by Euclid Chemical Company.
 - b. Set Grout by Master Builders, Inc.
 - c. NBEC Grout by Five Star Products, Inc.
 - d. Or equal.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine the substrate and conditions under which the Work will be performed and notify Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected in a manner acceptable to Engineer.

3.02 FORMWORK

- A. Construct formwork in accordance with ACI 347 such that concrete members and structures are of correct size, shape, alignment, elevation, and position.
- B. Provide openings in formwork to accommodate the Work of other trades. Accurately place and securely support items required to be built into formwork.
- C. Clean and adjust forms prior to placing concrete. Apply form release agents or wet forms as required. Re-tighten forms during and after concrete placing, when required, to eliminate cement paste leaks.
- D. Removing Formwork:
 1. Comply with ACI 301 and ACI 347, except as otherwise indicated in the Contract Documents.

2. Do not remove formwork and shoring until supported concrete members have acquired minimum of 90 percent of specified compressive strength. Results of suitable quality control tests of field-cured specimens may be submitted to Engineer for review as evidence that concrete has attained sufficient strength for removal of supporting formwork and shoring prior to removal times indicated in the Contract Documents.
3. Removal time for formwork is subject to Engineer's acceptance.
4. Repair form tie-holes in accordance with ACI 301.

3.03 REINFORCING, JOINTS, AND EMBEDDED ITEMS

- A. Comply with applicable recommendations of Laws and Regulations and standards referenced in this Section, including CRSI MSP, for details and methods of placing and supporting reinforcing.
- B. Clean reinforcing to remove loose rust and mill scale, earth, ice, and other materials which act to reduce or destroy bond between reinforcing material and concrete.
- C. Position, support, and secure reinforcing against displacement during formwork construction and concrete placing. Locate and support reinforcing by means of metal chairs, runners, bolsters, spacers, and hangers, as required.
 1. Place reinforcing to obtain minimum concrete coverages as shown on the Drawings and as required in ACI 318. Arrange, space, and securely tie bars and bar supports together with 16-gage wire to hold reinforcing accurately in position during concrete placing. Set with ties so that twisted ends are directed away from exposed concrete surfaces.
 2. Do not secure reinforcing to formwork using wire, nails, or other ferrous metal. Metal supports subject to corrosion shall not be in contact with formed or exposed concrete surfaces.
- D. Provide sufficient quantity of supports of strength required to carry reinforcing. Do not place reinforcing more than two inches beyond the last leg of continuous bar support. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.
- E. Install welded wire reinforcement in lengths as long as practical. Lap adjoining sections a minimum of one full mesh plus two inches and lace splices with 16-gage wire. Do not make end laps midway between supporting beams, or directly over beams of continuous structures. Offset end laps in adjacent widths to prevent continuous laps.
- F. Do not place concrete until reinforcing is inspected and Engineer indicates that conditions are acceptable for placing concrete. Concrete placed in violation of this paragraph will be rejected. Notify Engineer in writing at least two working days prior to proposed concrete placement.
- G. Joints:
 1. Provide construction, isolation, expansion, and control joints as indicated or required. Locate construction joints so as to not impair the strength and appearance of the structure. Place isolation and control joints in slabs-on-grade to stabilize differential settlement and random cracking.
 2. In walls, locate joints at a maximum spacing of 40 feet and approximately 12 feet from corners.
 3. In foundation slabs and slabs-on-grade, locate joints at intervals of approximately 40 feet.
 4. In mats and structural slabs and beams, locate joints in compliance with ACI 224R.
 5. Locations of joints shall be in accordance with the Contract Documents and approved Shop Drawings.

6. Where construction joints are indicated to be roughened, intentionally roughen surfaces of previously-placed concrete to amplitude of 1/4 inch.
- H. Installation of Embedded Items: Set and build into the Work anchorage devices and embedded items required for other Work that is attached to, or supported by, cast-in-place concrete. Use setting diagrams, templates, and instructions provided under other Sections for locating and setting. Do not embed in concrete uncoated aluminum items. Where aluminum items are in contact with concrete surfaces, coat aluminum to prevent direct contact with concrete.

3.04 CONCRETE PLACING

- A. Site Mixing: Use drum-type batch machine mixer, mixing not less than 1.5 minutes for one cubic yard or smaller capacity. Increase required mixing time by a minimum of 15 seconds for each additional cubic yard or fraction thereof.
- B. Ready-Mixed Concrete: Comply with ASTM C94/C94M.
- C. Concrete Placing:
 1. Place concrete in a continuous operation within planned joints or sections in accordance with ACI 304R.
 2. Do not begin placing concrete until work of other trades affecting concrete is completed.
 3. Wet concrete and subgrade surfaces to saturated surface dry condition immediately prior to placing concrete.
 4. Deposit concrete as near its final location as practical to avoid segregation due to re-handling or flowing.
 5. Avoid separation of the concrete mixture during transportation and placing. Concrete shall not free-fall for distance greater than four feet during placing.
 6. Complete concrete placing within 90 minutes of addition of water to the dry ingredients.
- D. Consolidate placed concrete in accordance with ACI 309R using mechanical vibrating equipment supplemented with hand rodding and tamping, such that concrete is worked around placing and other embedded items and into all parts of formwork. Insert and withdraw vibrators vertically at uniformly-spaced locations. Do not use vibrators to transport concrete within the formwork. Vibration of formwork or placing is not allowed.
- E. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placing, and curing.
 1. In hot weather, comply with ACI 305R.
 2. In cold weather, comply with ACI 306R.

3.05 QUALITY OF CONCRETE WORK

- A. Make concrete solid, compact, smooth, and free of laitance, cracks, and cold joints.
- B. Concrete for liquid-retaining structures and concrete in contact with earth, water, or exposed directly to the elements shall be watertight.
- C. Cut out and properly replace to extent directed by Engineer, or repair to satisfaction of Engineer, surfaces that contain cracks or voids, are unduly rough, or are in defective in any way. Patches or plastering are unacceptable.
- D. Repair, removal, and replacement of defective concrete directed by Engineer shall be at no additional cost to Owner.

3.06 CURING

- A. Begin initial curing as soon as free water has disappeared from exposed surfaces. Where possible, keep continuously moist for not less than 72 hours. Continue curing by using moisture-retaining cover or membrane-forming curing compound. Cure formed surfaces by moist curing until formwork is removed. Provide protection, as required, to prevent damage to exposed concrete surfaces. Total curing period shall not be less than seven days. Curing methods and materials shall be compatible with scheduled finishes.

3.07 FINISHING

- A. Float Finish:
 - 1. After placing concrete slabs, do not work the surface further until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently. Use a wood float only. Check and level surface plane to a tolerance not exceeding 1/4 inch in ten feet when tested with a ten foot straightedge placed on the surface at not less than two different angles. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, re-float the surface to a uniform, smooth, granular texture.
 - 2. Use float finish for the following:
 - a. Exterior below-grade horizontal surfaces.
 - b. Surfaces to receive additional finishes, except as shown or indicated.
- B. Trowel Finish:
 - 1. After floating, begin first trowel finish operation using power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over the surface.
 - 2. Consolidate concrete surface by the final hand troweling operation. Finish shall be free of trowel marks, uniform in texture and appearance, and with surface plane tolerance not exceeding 1/8 inch in 10 feet when tested with a 10-foot straight edge. Grind smooth surface defects that would otherwise project through applied floor covering system.
 - 3. Use trowel finish for interior exposed slabs, unless otherwise shown or indicated.
- C. Non-Slip Broom Finish:
 - 1. Immediately after float finishing, slightly roughen concrete surface by drawing a fine-hair fiber bristle broom across surface, perpendicular to line of traffic. Coordinate required final finish with Engineer before applying finish.
 - 2. Use non-slip broom finish for the following:
 - a. Exterior exposed horizontal surfaces subject to lightweight foot traffic.
 - b. Interior and exterior concrete steps and ramps.

3.08 GROUT PLACING

- A. Place grout as shown and indicated, and in accordance with grout manufacturer's instructions and recommendations. If grout manufacturer's instructions conflict with the Contract Documents, notify Engineer and do not proceed until obtaining Engineer's clarification.
- B. Dry-packing is not allowed, unless otherwise indicated.
- C. Manufacturers of proprietary grout materials shall make available upon 72-hours notice the services of qualified, full-time, factory-trained employee to aid in ensuring proper use of grout materials at the Site.
- D. Placing grout shall comply with temperature and weather limitations described in Article 3.04 of this Section.

3.09 FIELD QUALITY CONTROL

A. Site Tests:

1. Perform sampling and testing for field quality control during placement of concrete.
Comply with the following:
 - a. Sampling of Fresh Concrete: ASTM C172/C172M. Engineer will direct where samples are to be obtained.
 - b. Slump: ASTM C143/C143M. Perform one test for each concrete load at point of discharge.
 - c. Temperature: ASTM C1064/C1064M. Perform one test for every two concrete loads at point of discharge, and when a change in the concrete is observed. Test each load when time from batching to placement exceeds 75 minutes.
 - d. Air Content: ASTM C231. Perform one test for every two concrete loads at point of discharge, and when a change in the concrete is observed.
 - e. Unit Weight: ASTM C138/C138M. Perform one test for every two concrete loads at point of discharge, and when a change in the concrete is observed.
 - f. Compressive Strength:
 - 1) Prepare one set of test cylinders for each 50 cubic yards of concrete, or fraction thereof, placed each day. Each set shall consist of four standard cylinders, unless otherwise directed by Engineer. Cast, store, and cure test specimens in accordance with ASTM C31/C31M.
 - 2) Perform compressive strength testing in accordance with ASTM C39/C39M. For each set of concrete cylinders, test one specimen at seven days and three specimens at 28 days.
 - 3) Concrete that does not comply with strength requirements will be considered as defective Work.
2. Submit test results, certified by testing laboratory, to Engineer within 24 hours of completion of test.
3. When there is evidence that strength of in-place concrete does not comply with the Contract Documents, Contractor shall employ the services of concrete testing laboratory to obtain cores from hardened concrete for compressive strength determination. Cores and tests shall comply with ASTM C42/C42M.

END OF SECTION



Division 07

Thermal and Moisture Protection

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SECTION 07 19 16

SILANE WATER REPELLANTS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install silane water repellents.
2. Extent of surface-applied silane water repellents includes all concrete sidewalks and concrete driveways.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate the installation of items that must be installed with or before water repellants.

C. Related Sections:

1. Section 32 16 13, Concrete Curbs and Sidewalks.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:

1. National Cooperative Highway Research Program (NCHRP) Report 244, Concrete Sealers for Protection of Bridge Structures.

1.03 QUALITY ASSURANCE

A. Component Supply and Compatibility:

1. Before purchasing water repellent, investigate its compatibility with surfaces and conditions to which it will be applied. Provide products that are fully compatible with actual installation conditions, verified by manufacturer's published data or certification.

B. Mock-Up:

1. Prior to installing materials required under this Section, apply water repellent to test area acceptable to Engineer.
2. Test area shall indicate, relative to silane water repellent, range of color change, surface sheen, and workmanship to be expected in the completed Work. Obtain Engineer's approval of visual qualities of test area before starting water repellent Work.
3. Water repellent application that does not comply with standards approved on test area shall be removed and reapplied to comply with the Contract Documents.

1.04 SUBMITTALS

A. Action Submittals:

1. Product Data: Submit manufacturer's product data and specifications for proposed water repellent.

B. Informational Submittals:

1. Certificates: Submit manufacturer's certification indicating that water repellent complies with or exceeds requirements of the Contract Documents and is appropriate for surfaces and conditions to which it will be applied.

2. Manufacturer's Instructions: Submit manufacturer's instructions for installing, handling, and storing water repellent.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's instructions for handling, storing, and shelf-life.

1.06 SITE CONDITIONS

A. Environmental Requirements:

1. Comply with manufacturer's installation instructions regarding required temperature of surface to which material is applied.
2. Maintain ambient temperature above 20 degrees F during 24 hours after application.
3. Prohibitions:
 - a. Do not apply water repellent when ambient air temperature is lower than 50 degrees F.
 - b. Do not apply water repellent when ice or frost covers the substrate.
 - c. Do not apply water repellent when ambient temperature of surface exceeds 100 degrees F.
 - d. Do not apply water repellent in rainy conditions or when heavy rain is expected within four hours after application.
 - e. Do not apply water repellent until all concrete patching, pointing, and cleaning operations have been completed and concrete has cured a minimum of 30 days under normal weather conditions.
 - f. Do not apply water repellent until sealants for joints adjacent to surfaces receiving water repellent treatment have been installed and cured.
 - 1) Water repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those used in the Work.
 - 2) Provide manufacturers' test results of compatibility.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Silane Water Repellent:

1. Penetrating silane solution, with or without diffused quartz carbide, containing not less than 40 percent by weight active alkyltrialkoxysilane. When dry, water repellent shall be colorless and without gloss.
2. VOC Content: 400 grams per liter, maximum.
3. Performance Criteria:
 - a. Reduction in Water Absorption: 80 percent, minimum, in accordance with NCHRP Report 244, Series II (northern exposure).
 - b. Reduction in Chloride Ion Ingress: 85 percent, minimum, in accordance with NCHRP Report 244, Series IV (northern exposure).
4. Product and Manufacturer: Provide one of the following:
 - a. Aquanil Plus 40-A, by ChemMasters.
 - b. Protectosil BHN, by Evonik Industries.
 - c. Or equal.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine under which the Work will be performed and notify Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to Engineer.
- B. Verify that surfaces to receive water repellent are clean, and free of efflorescence, stains, oil, grease, and other foreign matter detrimental to application.

3.02 PREPARATION

- A. Protection of Adjacent Surfaces:
 - 1. Protect adjacent surfaces that will not receive silane water repellent. When applied or splashed onto surfaces not required to receive water repellent, remove immediately, using method recommended by water repellent manufacturer. Maintain cleaning materials available at the Site for immediate use.
- B. Surface Preparation:
 - 1. Remove loose particles and foreign matter. Remove grease and oil using solvent, effective alkaline cleaner, or detergent as instructed by water repellent manufacturer. Scrub surfaces with water.
 - 2. Surfaces shall be dry prior to applying water repellent.

3.03 APPLICATION

- A. Provide water repellent in accordance with water repellent manufacturer's instructions and recommendations.
- B. Apply in two continuous, uniform coats as recommended by water repellent manufacturer. Allow to dry between coats as recommended by water repellent manufacturer.
- C. Protect materials in vicinity of application. During windy conditions, do not apply water repellent by spraying. When plants and other flora receive water repellent coating, immediately remove water repellent from plants and flora by washing.

3.04 FIELD QUALITY CONTROL

- A. Site Tests: After water repellent has dried, spray with water the surfaces to which water repellent was applied. After surfaces have adequately dried, inspect for signs of water adsorption in presence of Engineer, and reapply water repellent to areas that indicate water absorption.

END OF SECTION

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SECTION 07 92 00

JOINT SEALANTS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, tools, equipment, and incidentals as shown, specified, and required to furnish and install joint sealants.
2. Extent of each type of sealant is shown or indicated and includes the following:
 - a. Exterior joints in construction systems not filled by another material, and that are not required to be open for operation.

B. Coordination:

1. Review installation procedures under other Sections and coordinate installation of items that must be installed with or before joint sealants.
2. Coordinate final selection of joint sealants so that materials are compatible with all sealant substrates specified.

C. Related Sections:

1. Section 03 00 05, Concrete.
2. Section 32 16 13, Concrete Curbs and Sidewalks.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:

1. ASTM C510, Standard Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants.
2. ASTM C661, Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer.
3. ASTM C793, Standard Test Method for Effects of Laboratory Accelerated Weathering on Elastomeric Joint Sealants.
4. ASTM C920, Standard Specification for Elastomeric Joint Sealants.
5. FS TT-S-00230 Sealing Compound: Elastomeric Type, Single Component (for Calking, Sealing, and Glazing in Buildings and Other Structures).

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Installer: Engage a single installer regularly engaged in sealant installation and with successful experience in applying types of products required, and who employs only tradesmen with specific skill and successful experience in the type of Work required.

B. Component Supply and Compatibility:

1. Before purchasing each sealant, investigate its compatibility with joint surfaces, joint fillers, and other materials in joint system. Provide products that are fully compatible with actual installation condition, verified by manufacturer's published data or certification, and as shown on approved Shop Drawings and other approved submittals.

1.04 SUBMITTALS

A. Action Submittals:

1. Product Data: Submit manufacturer's data sheets including color charts, specifications, recommendations, and installation instructions for each type of sealant and associated miscellaneous material required. Include manufacturer's published data, indicating that each product complies with the Contract Documents and is intended for the applications shown or indicated.

B. Informational Submittals:

1. Certificates: Submit manufacturer's certification indicating that materials comply with or exceed requirements of the Contract Documents and are appropriate for surfaces and conditions to which they will be applied.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Comply with Sections 01 65 00 (Product Delivery Requirements) and 01 66 00 (Product Storage and Handling Requirements), and the following:

1. Delivery:
 - a. Deliver products in sealant manufacturer's original unopened, undamaged containers, indicating compliance with approved Shop Drawings.
 - b. Include the following information on label:
 - 1) Name of material and Supplier.
 - 2) Formula or Specification Section number, lot number, color, and date of manufacture.
 - 3) Mixing instructions, shelf life, and curing time, when applicable.
2. Storage:
 - a. Do not store or expose materials to temperature above 90 degrees F or store in direct sunlight.
 - b. Do not use materials that are outdated as indicated by shelf life.
 - c. Store sealant tape in manner that will not deform tape.
 - d. In cool or cold weather, store containers for sixteen hours before using in temperature of approximately 75 degrees F.
3. Handling:
 - a. Do not open containers or mix components until necessary preparatory Work and priming are complete.

1.06 SITE CONDITIONS

A. Environmental Requirements:

1. Do not install joint sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation.
2. Proceed with the Work when forecasted weather conditions are favorable for proper cure and development of high-early bond strength.
3. Where joint width is affected by ambient temperature variations, install elastomeric sealants when temperatures are in the lower third of manufacturer's recommended installation temperature range, so that sealant will not be subjected to excessive elongation and bond stress at subsequent low temperatures.
4. Supplemental heat sources required to maintain both ambient and surface temperatures within the range recommended by manufacturer for material applications are not available at the Site.
5. Provide supplemental heat and energy sources, power, equipment, and operating, maintenance, and temperature monitoring personnel.

PART 2 – PRODUCTS

2.01 SYSTEM PERFORMANCE

- A. Provide elastomeric joint sealants for exterior joint applications that establish and maintain watertight, continuous joint seals without staining or deteriorating joint substrates.
- B. Provide colors selected by Engineer from sealant manufacturer's standard color chart. "Or-equal" manufacturers shall provide same generic products and colors as available from manufacturers specified.

2.02 MATERIALS

- A. Exterior Horizontal Joints:
 - 1. Single-component, self-leveling, polyurethane sealant complying with ASTM C920, Type S, Grade P, Class 25, Use T.
 - 2. Product and Manufacturer: Provide one of the following:
 - a. Sikaflex-1c SL by Sika Corporation.
 - b. MasterSeal SL1 by BASF Construction Chemicals, LLC.
 - c. Or equal.
 - 3. Stain and Color Change: No discoloration or stain when tested in accordance with ASTM C510.
 - 4. Hardness: Hardness rating of not less than 25 or more than 50 when tested in accordance with ASTM C661.
 - 5. Accelerated Aging: No change in sealant characteristics after 250 hours when tested in accordance with ASTM C793.
- B. Miscellaneous Materials:
 - 1. Joint Cleaner: As recommended by sealant manufacturer.
 - 2. Joint Primer and Sealer: As recommended by sealant manufacturer for compatibility with sealant.
 - 3. Bond Breaker Type: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for compatibility with sealant, to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.
 - 4. Sealant Backer Rod: Compressible rod stock polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam, or other flexible, permanent, durable non-absorptive material as recommended by sealant manufacturer for compatibility with sealant. Provide size and shape of rod that will control joint depth for sealant placement, break bond of sealant at bottom of joint, form optimum shape of sealant bead on back side, and provide highly-compressible backer to minimize possibility of sealant extrusion when joint is compressed.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine joint surfaces, substrates, backing, and anchorage of units forming sealant rabbet, and conditions under which sealant Work will be performed, and notify Engineer in writing of conditions detrimental to the proper and timely completion of the Work and performance of sealants. Do not proceed with sealant Work until unsatisfactory conditions are corrected in a manner acceptable to Engineer.

3.02 PREPARATION

A. Protection of Adjacent Surfaces:

1. Do not allow joint sealants to overflow or spill onto adjoining surfaces, or to migrate into voids of adjoining surfaces including rough textured materials. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces, by either the primer/sealer or sealant materials.

B. Joint Surface Preparation:

1. Clean joint surfaces immediately before installing sealant compound. Remove dirt, weakly-adhering coatings, moisture, and other substances that would interfere with bonds of sealant compound as recommended in sealant manufacturer's written instructions as shown on approved Shop Drawings.
2. If necessary, clean porous materials by grinding, sandblasting, or mechanical abrading. Blow out joints with oil-free compressed air or by vacuuming joints prior to applying primer or sealant.
3. Roughen joint surfaces on vitreous-coated and similar non-porous materials, when sealant manufacturer's data indicates lower bond strength than for porous surfaces. Rub with fine abrasive cloth or steel wool to produce a dull sheen.
4. Concrete Joint Preparation: Comply with Sections 03 00 05 and 32 16 13.

3.03 INSTALLATION

- A. Install joint sealants after adjacent areas have been cleaned and before joint has been cleaned and primed, to ensure sealant joints will not be soiled. Replace sealant joints soiled after installation.
- B. Comply with sealant manufacturer's written instructions except where more stringent requirements are shown or indicated in the Contract Documents.
- C. Prime or seal joint surfaces as shown on approved Shop Drawings and other approved submittals. Do not allow primer or sealer to spill or migrate onto adjoining surfaces. Allow primer to dry prior to applying sealants.
- D. Apply masking tape before installing primer, in continuous strips in alignment with joint edge to produce sharp, clean interface with adjoining materials. Remove tape immediately after joints have been sealed and tooled as directed.
- E. Confirm that compressible joint filler is installed before installing sealants. Refer to Section 32 16 13 for locations.
- F. Do not install sealants without backer rods and bond breaker tape.
- G. Roll back-up rod stock into joint to avoid lengthwise stretching. Do not twist, braid, puncture, or prime backer rods.
- H. Employ only proven installation techniques that will ensure that sealants are deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.

- I. Install sealants to depths recommended by sealant manufacturer but within the following general limitations, measured at the center (thin) section of bead.
 - 1. For horizontal joints in sidewalks, pavements, and similar locations sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to depth equal to 75 percent of joint width, but not more than 5/8 inch deep or less than 3/8 inch deep.
 - 2. For vertical joints subjected to normal movement and sealed with elastomeric sealants and not subject to traffic, fill joints to a depth equal to 50 percent of joint width, but not more than 1/2 inch deep or less than 1/4 inch deep.
- J. Remove excess and spillage of compounds promptly as the Work progresses.
- K. Cure sealant compounds in compliance with manufacturer's instructions and recommendations, to obtain high-early bond strength, internal cohesive strength, and surface durability.

3.04 EXISTING JOINTS

- A. Mechanically remove existing sealant and backer rod.
- B. Clean joint surfaces of residual sealant and other contaminants capable of affecting sealant bond to joint surface.
- C. Allow joint surfaces to dry before installing new sealants.

3.05 ADJUSTING AND CLEANING

- A. Where leaks and lack of adhesion are evident, replace sealant.
- B. Clean adjacent surfaces of sealant and soiling resulting from the Work. Use solvent or cleaning agent recommended by sealant manufacturer. Leave all finish Work in neat, clean condition.

3.06 PROTECTION

- A. During and after curing period, protect joint sealants from contact with contaminating substances and from damage resulting from construction operations or other causes, so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original Work.

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Division 31

Earthwork

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SECTION 31 05 19.13
GEOTEXTILES FOR EARTHWORK

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. Contractor shall provide all labor, materials, tools, equipment, and services as shown, specified, and required to furnish and install geotextiles.
- B. Related Sections:
 - 1. Section 31 23 00, Excavation and Fill.

1.02 REFERENCE STANDARDS

- A. The following standards are referenced in this Section:
 - 1. AASHTO M 288, Standard Specification for Geotextile Specification for Highway Applications.

1.03 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer: Geotextile manufacturer shall be a specialist in the manufacture of geotextile separation and stabilization fabrics, and shall have produced and successfully installed a minimum of five million square feet.

1.04 SUBMITTALS

- A. Action Submittals:
 - 1. Product Data: Submit geotextile manufacturer's data, specifications, installation instructions, and dimensions.
- B. Informational Submittals:
 - 1. Certificates: Submit affidavit certifying that the geotextile furnished complies with the requirements of this Section. Do not ship geotextile to the Site until affidavit is submitted to Engineer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Each roll of geotextile delivered to the Site shall be labeled by the manufacturer identifying the manufacturer's name, product identification, lot number, roll number, and roll dimensions.
- B. All rolls and packages shall be inspected by Contractor upon delivery to the Site. Contractor shall notify Engineer if any loss or damage exists to geotextile. Replace loss and repair damage to new condition, in accordance with manufacturer's instructions.
- C. Geotextile shall be protected from ultraviolet light exposure, precipitation or other inundation, mud, dirt, dust, puncture, cutting, or any other damaging or deleterious conditions. Geotextile rolls shall be shipped and stored in relatively opaque and watertight wrappings.

PART 2 – PRODUCTS

2.01 GEOTEXTILE SEPARATION FABRIC

- A. Geotextile shall be composed of high-tenacity polypropylene yarns, which are woven into a stable network such that the yarns retain their relative position. The fabric shall be inert to biological degradation and resistant to naturally encountered chemicals, alkalis, and acids. Geotextile fabric shall comply with AASHTO M 288 specifications for a Class 1 separation geotextile.
- B. Product and Manufacturer: Provide one of the following:
 - 1. Mirafi 600X by TenCate Mirafi.
 - 2. US 315 by US Fabrics, Inc.
 - 3. Or equal.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which the Work will be performed and notify Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected in a manner acceptable to Engineer.

3.02 PREPARATION

- A. Excavate or fill subgrade, as required, to bring subgrade to elevations shown or indicated. Maintain all angles of repose. Confirm that subgrade is at proper elevations and that no further earthwork is required to bring the subgrade to proper elevations.
- B. Remove all stones greater than two inches in any dimension, construction debris, trash, rubble, and all other extraneous materials from the subgrade.
- C. Notify Engineer that subgrade has been prepared, and obtain Engineer's approval before installing geotextile.

3.03 INSTALLATION

- A. Geotextile shall be laid flat and smooth so that it is in direct contact with the subgrade. On slopes steeper than 10 percent, lay geotextile with the machine direction of the fabric parallel to the slope direction. Geotextiles shall be placed (rolled out) in the direction of most frequent vehicular travel.
- B. Continuously overlap geotextile panels a minimum of 12 inches at all longitudinal and transverse joints. Where seams must be oriented across the slope, lap the upper panel over the lower panel.
- C. Geotextile shall be weighted with sandbags or equivalent when required. Such sandbags shall be installed during placement and shall remain until replaced with cover materials.
- D. During installation of geotextile, care shall be taken not to entrap in the geotextile stone, excessive dust, mud, or moisture that could damage or cause clogging of the geotextile.

- E. Use proper tools to cut and size geotextile; exercise care while cutting geotextile.
- F. Geotextile shall not be exposed to precipitation prior to being installed, and shall not be exposed to direct sunlight for more than 15 days.

3.04 GEOTEXTILE REPAIR

- A. Any holes or tears in the fabric shall be repaired as follows:
 - 1. On Slopes: A fabric patch shall be sewn into place using a double sewn lock stitch (1/4 inch to 3/4 inch apart and no closer than one inch from any edge). Should any tear exceed 10 percent of the width of the roll, that roll shall be removed from the slope and replaced.
 - 2. Non-Slopes: A fabric patch shall be spot-seamed in place with a minimum of 24 inches of overlap in all directions.

3.05 PLACEMENT OF COVER MATERIALS

- A. Place cover materials in such a manner as to ensure that geotextile is not damaged or dislodged.

END OF SECTION

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SECTION 31 09 13

GEOTECHNICAL INSTRUMENTATION AND MONITORING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, equipment, materials, services, and incidentals as shown, specified, and required to furnish, install, monitor, protect, and remove geotechnical instrumentation.
2. Types of geotechnical instrumentation required under this Section include the following:
 - a. Tiltmeters.
 - b. Seismographs.
3. Owner will coordinate with property owners and provide access for installation and monitoring of geotechnical instrumentation on private properties.
4. Provide and maintain safe means of access to all geotechnical instrumentation for the duration of the Project.

B. Related Sections:

1. Section 31 23 00, Excavation and Fill.
2. Section 31 50 00, Excavation Support and Protection.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. Geotechnical Monitoring Technician:
 - a. Employ and retain at the Site a geotechnical monitoring technician with experience and capability of performing all geotechnical monitoring tasks required of Contractor. Contractor's geotechnical monitoring technician shall have a minimum of five years direct construction or environmental monitoring experience, and appropriate health and safety training in accordance with Laws and Regulations.
 - b. Responsibilities include, but are not necessarily limited to, the following:
 - 1) Installing and removing all geotechnical instrumentation.
 - 2) Calibrating geotechnical instrumentation at frequencies recommended by the manufacturer.
 - 3) Coordinating instrument maintenance and repairs.
 - 4) Collecting and recording instrument readings.
 - 5) Managing a database of geotechnical monitoring data at the Site.
 - 6) Preparing and submitting daily geotechnical monitoring reports in accordance with Article 1.04 of this Section.
 - 7) Responding to exceedances of alert or action levels during the Work.
 - 8) Notifying Construction Manager, Engineer, and appropriate Contractor personnel when alert or action levels are exceeded during the Work.

B. Instrument Calibration:

1. A factory calibration shall be conducted on all geotechnical instrumentation at the place of manufacture before shipment to the Site. Review calibration record for each instrument and match to serial number of instrument. Submit factory calibration records to Engineer upon request.

2. During the Work, calibrate geotechnical instrumentation at frequencies recommended by the manufacturer, in accordance with manufacturer's calibration and quality assurance requirements. Document all instrument readings, field reference checks, and calibrations in a dedicated log.
 3. Preventative maintenance and repair of geotechnical instrumentation, if required, shall only be performed by qualified personnel, or authorized representatives of the manufacturer.
 4. Prepare and retain at the Site electronic or written records of all instrument calibrations, preventative maintenance, and repairs. Submit to Engineer upon request.
- C. Pre-Installation Testing:
1. Examine geotechnical instrumentation and accessories upon delivery to the Site for damage due to shipment.
 2. Verify instruments and accessories are in working order before installing.
 3. Immediately remove from the Site, and replace at Contractor's expense, damaged or malfunctioning instruments and accessories.

1.03 SUBMITTALS

- A. Action Submittals:
1. Product Data: Submit manufacturer's data, specifications, and installation and operating instructions for all geotechnical instrumentation and accessories furnished under this Section.
- B. Informational Submittals:
1. Qualifications Statements: Submit name, address, and summary of relevant experience for geotechnical monitoring technician.
 2. Geotechnical Monitoring Reports: Submit in accordance with Article 1.04 of this Section.

1.04 GEOTECHNICAL MONITORING REPORTS

- A. Prepare daily geotechnical monitoring reports throughout the Project. Include in each report, at a minimum, the following:
1. Contractor's name.
 2. Owner's name.
 3. Project name.
 4. Site name and location.
 5. Date and day of the week.
 6. High and low temperatures and general weather conditions.
 7. General location and brief description of Work performed at the Site.
 8. Sheet Pile Deflection Monitoring Records: Provide the following for each tiltmeter:
 - a. Serial number.
 - b. Location.
 - c. Baseline readings.
 - d. Cumulative
 - e. Time and reading for each monitoring event. Include cumulative readings and change from baseline reading.
 9. Vibration Monitoring Records: Provide the following for each seismograph:
 - a. Serial number.
 - b. Location.
 - c. Start time, stop time, and duration of monitoring.
 - d. Maximum peak particle velocity for monitoring period.
 - e. Histograms of longitudinal, transverse, and vertical readings in units of inches per second.

10. Exceedances (if any) of the alert levels and action levels specified in this Section.
Provide the following:
 - a. Time, location, and instrument reading of exceedance.
 - b. Summary of Work being performed at time of exceedance.
 - c. Corrective actions taken or to be taken in response to exceedance.
 11. Site plan showing approximate locations of all geotechnical instrumentation at the Site.
Label each instrument with its serial number.
- B. Submit daily geotechnical monitoring reports to Engineer by 9:00 a.m. the next working day after the day covered in the associated report.

PART 2 – PRODUCTS

2.01 INSTRUMENTATION

- A. Service Conditions:
1. Geotechnical instrumentation shall be specifically designed, manufactured, and installed for the application intended and environmental conditions required.
 2. Furnish power and batteries in sufficient supply to allow for continuous real-time monitoring and data-logging for a period of not less than 12 hours.
- B. Tiltmeters:
1. Provide bi-axial tiltmeters for monitoring deflection of temporary steel sheet piling during excavation and backfilling operations in each excavation area.
 2. Manufacturer: Provide products of one of the following:
 - a. Durham Geo-Enterprises, Inc.
 - b. Jewell Instruments, LLC.
 - c. Rieker, Inc.
 - d. RST Instruments, Ltd.
 - e. Or equal.
 3. Angular Range: Plus-or-minus 10 degrees.
 4. Resolution: 0.005 degree.
 5. Furnish not less than six tiltmeters, complete with readout displays, data loggers, mounting hardware, protective housings, software, and other accessories recommended by manufacturer for the intended application.
- C. Seismographs:
1. Provide portable seismographs with triaxial geophones for the continuous monitoring of vibrations during pile driving and pile removal operations.
 2. Manufacturer: Provide products of one of the following:
 - a. GeoSonics/Vibra-Tech, Inc.
 - b. InstanTel.
 - c. Or equal.
 3. Range: 0.01 to 10 inches per second.
 4. Resolution: 0.005 inch per second.
 5. Accuracy: Plus-or-minus five percent.
 6. Frequency Response Range: Two to 250 Hertz.
 7. Furnish not less than six seismographs, complete with readout displays, data loggers, protective housings, software, and other accessories recommended by manufacturer for the intended application.

D. Spare Equipment:

1. Furnish and retain at the Site spare instrumentation, readout indicators, data loggers, batteries, and accessories to allow for uninterrupted monitoring in the event of instrument damage or malfunction.

PART 3 – EXECUTION

3.01 INSTALLATION

A. General:

1. Install geotechnical instrumentation in accordance with manufacturer's instructions and in locations to be selected by Engineer.
2. Lay out and stake individual instrument locations for approval of Engineer. Adjust locations when requested, and obtain Engineer's acceptance of layout before installing. Make minor adjustments as required.

B. Tiltmeters:

1. Install tiltmeters following completion of pile driving operations and before initiating excavation Work within temporary sheet pile enclosures.
2. Install tiltmeters, in up to six locations to be selected by Engineer, on the inside face of temporary steel sheet piling, one inch down from the top edge.

C. Seismographs:

1. Install seismographs at the start of each work day, at up to six locations to be selected by Engineer, before any pile driving or pile removal Work is initiated.

3.02 SHEET PILE DEFLECTION MONITORING

A. Monitoring Schedule:

1. Baseline Monitoring: Perform baseline tiltmeter monitoring, at up to six simultaneous locations to be selected by Engineer, upon completion of pile driving operations and before initiating excavation Work within temporary sheet pile enclosures.
2. Routine Monitoring: Collect and record tiltmeter readings twice per day, in the morning and afternoon, during excavation and backfilling operations within temporary sheet pile enclosures.

B. Alert Level and Response:

1. Alert Level: 1.5 inches per foot (7.18 degrees) of movement relative to baseline reading.
2. Response: Implement the following if alert levels are exceeded:
 - a. Continue Work and immediately notify Construction Manager and Engineer.
 - b. Increase monitoring frequency to four times per day.

C. Action Level and Response:

1. Action Level: 1.9 inches per foot (9.10 degrees) of movement relative to baseline reading.
2. Response: Implement the following if action levels are exceeded:
 - a. Stop all Work and immediately notify Construction Manager and Engineer.
 - b. Consult with Construction Manager and Engineer to determine appropriate mitigative measures, including, but not limited to, the following:
 - 1) Installing additional tiltmeter(s) in location(s) to be selected by Engineer.
 - 2) Increasing frequency of monitoring.
 - 3) Modifying excavation and backfilling techniques or sequencing.

- c. Immediately backfill excavation area if sheet pile deflection exceeds 2.0 inches per foot (9.58 degrees) relative to baseline reading.

3.03 VIBRATION MONITORING

A. Monitoring Schedule:

1. Baseline Monitoring:
 - a. Perform baseline vibration monitoring, at up to six simultaneous locations to be selected by Engineer, before initiating any pile driving operations at the Site.
 - b. Baseline monitoring shall be performed continuously between the hours of 7:00 a.m. and 5:00 p.m. over a period of not less than five working days.
2. Routine Monitoring: Continuously monitor vibrations, at up to six simultaneous locations to be selected by Engineer, during all pile driving and pile removal operations.

B. Alert Levels and Response:

1. Alert Levels:
 - a. Off-Site Areas: Peak particle velocity of 0.5 inch per second.
 - b. Site: Peak particle velocity of one inch per second.
 - c. Above Buried Gas Lines: Peak particle velocity of 1.5 inches per second.
2. Response: Continue Work and notify Construction Manager and Engineer.

C. Action Levels and Response:

1. Action Levels:
 - a. Off-Site Areas: Peak particle velocity of 0.8 inch per second.
 - b. Site: Peak particle velocity of 1.5 inches per second.
 - c. Above Buried Gas Lines: Peak particle velocity of two inches per second.
2. Response: Implement the following if action levels are exceeded:
 - a. Stop all Work and immediately notify Construction Manager and Engineer.
 - b. Consult with Construction Manager and Engineer to determine appropriate mitigative measures, including, but not limited to, modifying pile driving/removal techniques, sequencing, or equipment.

3.04 PROTECTION AND MAINTENANCE

- A. Protect geotechnical instrumentation from damage due to construction operations, weather, and vandalism. Provide suitable protective barriers, covers, and enclosures around instruments in construction areas.
- B. Exercise caution during the progress of Work to prevent damage to geotechnical instrumentation. Immediately remove from service, and repair or replace at Contractor's expense, geotechnical instrumentation damaged during the Work. Perform no work within 100 feet of a damaged instrument until it has been replaced or repaired to operating condition.

3.05 REMOVAL

A. General:

1. Completely remove geotechnical instrumentation and protective barriers when no longer required. Repair damage caused by geotechnical instrumentation and their removal, and restore the Site to condition required by the Contract Documents. If restoration of damaged areas is not specified, restore to pre-construction condition.

B. Tiltmeters:

1. Remove tiltmeters upon completion of backfilling operations and before initiating pile removal Work within temporary sheet pile enclosures.

C. Seismographs:

1. Remove seismographs at the end of each work day, and only after all pile driving and pile removal operations have been completed for the day.
2. Download monitoring data from seismographs at the end of each day.

3.06 FIELD QUALITY CONTROL

A. Site Inspections:

1. During the work day, perform hourly or more frequent field checks of geotechnical instrumentation to verify proper function. Document the date, day of the week, time, and outcome of each field check in a dedicated log.
2. Immediately remove from service, and replace at Contractor's expense, damaged or malfunctioning instruments.
3. Prepare and retain at the Site electronic or written records of all field checks. Submit to Engineer upon request.

END OF SECTION

SECTION 31 11 00
CLEARING AND GRUBBING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals required to perform clearing and grubbing as shown and specified in the Contract Documents.
2. The Work includes removing from the Site and disposing of trees, shrubs, stumps, roots, brush, logs, vegetation, topsoil, rubbish, and other objectionable material.
3. Pay all fees associated with transporting and disposing of debris resulting from clearing and grubbing.
4. Limits of Clearing and Grubbing Work: Clear and grub the areas shown or indicated on the Drawings.

B. Related Sections:

1. Section 01 41 26, Storm Water Pollution Prevention Plan and Permit.
2. Section 01 57 05, Temporary Controls.
3. Section 01 74 19, Construction Waste Management and Disposal.
4. Section 02 41 00, Demolition.
5. Section 02 61 05, Removal and Disposal of Contaminated Materials.

1.02 WARRANTY

- A. Contractor shall warrant that Work performed under this Section will not permanently damage trees, shrubs, turf, and plants designated to remain, or other adjacent work, facilities, or property. If damage resulting from Contractor's operations becomes evident during the correction period, Contractor shall replace damaged items and property at no additional cost to Owner.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 PREPARATION

A. Protection:

1. Throughout the Project, protect existing site improvements, including streets, drives, and Underground Facilities to remain (if any), and adjacent property and structures. Repair damage caused by Contractor to original condition or replace in kind, to satisfaction of Engineer, and at no additional cost to Owner.
2. Protect trees, shrubs, vegetation, and grassed areas to remain by providing temporary fencing, barricades, wrapping, or other methods shown, specified, or accepted by Engineer. Correct at Contractor's expense damage caused by Contractor outside the limits of clearing and grubbing Work.
3. Do not remove trees without the approval of Owner or Engineer, unless shown or indicated for removal on the Drawings.

4. Do not locate construction equipment, stored materials, or stockpiles within the drip line of trees and vegetation to remain.
- B. Site Preparation:
1. Obtain, pay costs associated with, and comply with applicable permits, if any, required for clearing and grubbing Work.
 2. Delineation of Clearing and Grubbing Limits:
 - a. Locate and clearly flag trees, vegetation, and other items to remain within the limits of clearing and grubbing.
 - b. Provide flagging to delineate limits of areas to be cleared or grubbed. Review at Site with Engineer before initiating clearing and grubbing Work.
 - c. Replace flagging that is lost, removed, or destroyed until clearing and grubbing Work is complete and Engineer allows removal of flagging.
 3. Erosion and Sediment Controls:
 - a. Install applicable erosion and sediment controls before initiating clearing and grubbing Work.
 - b. Comply with Section 01 41 26 and erosion and sediment control requirements of Section 01 57 05.
 - c. Adjust, relocate, or install additional erosion and sediment controls as clearing and grubbing Work progresses to previously uncleared, ungrubbed areas of the Site.

3.02 CLEARING AND GRUBBING

- A. Remove all trees, shrubs, stumps, roots, brush, logs, rubbish, and debris within limits of clearing and grubbing shown or indicated in the Contract Documents, unless otherwise shown or indicated.
- B. Trees and shrubs to remain that have been damaged or require trimming shall be treated and repaired under the direction of a qualified arborist, or other professional with qualifications acceptable to Engineer. Trees and shrubs intended to remain, that are damaged beyond repair or that are removed, shall be replaced by Contractor at no additional cost to Owner.
- C. Removal of Site Improvements: Comply with Section 02 41 00.

3.03 DISPOSAL OF CLEARED AND GRUBBED MATERIALS

- A. Properly transport and dispose of cleared and grubbed materials at appropriate, Owner-approved facilities in accordance with Laws and Regulations.
1. Site-Clearing Wastes: Comply with Section 01 74 19.
 2. Site-Grubbing Wastes: Comply with Section 02 61 05.

END OF SECTION

SECTION 31 23 00
EXCAVATION AND FILL

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals required to perform all excavating, filling, and grading, and disposing of earth materials as shown, specified, and required to complete the Work.
2. Perform excavation and fill Work within the areas shown or indicated on the Drawings.
3. Preparation of subgrade for pavements and crushed stone surfacing is included under this Section.
4. No classification of excavated materials will be made. Excavation includes all materials regardless of type, character, composition, moisture, or condition thereof, except rock requiring drilling, blasting, or special equipment for removal.

B. Coordination:

1. Review procedures under this and other Sections and coordinate Work that must be performed with or before excavation and fill Work.

C. Related Sections:

1. Section 01 35 49, Community Air Monitoring Plan.
2. Section 01 41 26, Storm Water Pollution Prevention Plan and Permit.
3. Section 01 55 26, Maintenance and Protection of Traffic.
4. Section 01 57 05, Temporary Controls.
5. Section 02 41 00, Demolition.
6. Section 02 61 05, Removal and Disposal of Contaminated Materials.
7. Section 31 11 00, Clearing and Grubbing.
8. Section 31 50 00, Excavation Support and Protection.

1.02 REFERENCES

A. Terminology:

1. The following words or terms are not defined but, when used in this Section, have the following meaning:
 - a. "Debris" means man-placed buried material including, but not limited to, brick, concrete, metal, wood, ash, cinders, and glass.
 - b. "Subgrade" means the uppermost surface of native soil material unmoved from cuts; the bottom of excavation.

B. Reference Standards:

1. The following standards are referenced in this Section:
 - a. ANSI/AISC 360, Specification for Structural Steel Buildings.
 - b. ASTM C33/C33M, Standard Specification for Concrete Aggregates.
 - c. ASTM C94/C94M, Standard Specification for Ready-Mixed Concrete.
 - d. ASTM C117, Standard Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing.
 - e. ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - f. ASTM C150/C150M, Standard Specification for Portland Cement.

- g. ASTM C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
- h. ASTM D422, Standard Test Method for Particle-Size Analysis of Soils.
- i. ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ [600 kN-m/m³]).
- j. ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- k. ASTM D4832, Standard Test Method for Preparation and Testing of Controlled Low-Strength Material (CLSM) Test Cylinders.
- l. ASTM D6023, Standard Test Method for Density (Unit Weight), Yield, Cement Content, and Air Content (Gravimetric) of Controlled Low-Strength Material (CLSM).
- m. ASTM D6938, Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
- n. ASTM E329, Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
- o. USEPA SW-846 Method 6010, Inductively Coupled Plasma-Atomic Emission Spectrometry.
- p. USEPA SW-846 Method 7471, Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique).
- q. USEPA SW-846 Method 8081, Organochlorine Pesticides by Gas Chromatography.
- r. USEPA SW-846 Method 8082, Polychlorinated Biphenyls (PCBs) by Gas Chromatography.
- s. USEPA SW-846 Method 8151, Chlorinated Herbicides by GC Using Methylation or Pentafluorobenzoylation Derivatization.
- t. USEPA SW-846 Method 8260, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).
- u. USEPA SW-846 Method 8270, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).
- v. USEPA SW-846 Method 9012, Total and Amenable Cyanide (Automated Colorimetric, with Off-Line Distillation).

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Professional Engineer: Retain the services of a professional engineer licensed and registered in the State of New York and experienced in providing engineering services of the kind indicated. Responsibilities include, but are not necessarily limited to, the following:
 - a. Reviewing system performance and requirements shown or indicated in the Contract Documents.
 - b. Preparing or supervising the preparation of design calculations and related submittals verifying compliance of the system with the requirements of the Contract Documents.
 - c. Signing and sealing all calculations, drawings, and submittals prepared by professional engineer.
 - d. Certifying that:
 - 1) it has performed the design of the system in accordance with the performance requirements stated in the Contract Documents; and
 - 2) said design conforms to Laws and Regulations, and to the prevailing standards of practice.
2. Testing Laboratory: Retain the services of an independent testing laboratory to design CLSM mix and perform quality assurance and field quality control testing required in this Section. Testing laboratory shall comply with ASTM E329, and shall be experienced in the types of testing required.

- B. Regulatory Requirements:
1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 29 CFR 1926.650 through 29 CFR 1926.652, Subpart P – Excavations.
 - b. 6 NYCRR 375, Environmental Remediation Programs.
 - c. 12 NYCRR 23-4.1 through 12 NYCRR 23-4.5, Subpart 23-4 – Excavation Operations.
 - d. 16 NYCRR 753, Protection of Underground Utilities.
 2. Comply with applicable provisions and recommendations of the following:
 - a. NYSDEC Technical Guidance for Site Investigation and Evaluation (DER-10).
 - b. NYSDOT Standard Specifications and Standard Sheets.
 3. Obtain required permits and approvals for excavation and fill Work, including work permits from right-of-way owners.
- C. Quality Assurance Testing:
1. Verify CLSM mix design by laboratory trial batch, unless indicated otherwise. Perform the following testing on each trial batch:
 - a. Aggregate gradation in accordance with ASTM C117 and ASTM C136.
 - b. Air content in accordance with ASTM D6023.
 - c. Unconfined compressive strength of CLSM mix at 28 days in accordance with ASTM D4832.
 2. Submit for each trial batch the following information:
 - a. Project identification name and number (if applicable).
 - b. Date of test report.
 - c. Complete identification of aggregate source of supply.
 - d. Tests of aggregates for compliance with the Contract Documents.
 - e. Brand, type, and composition of cementitious materials.
 - f. Brand, type, and quantity of each admixture.
 - g. Quantity of water used in trial batch.
 - h. Proportions of each material per cubic yard.
 - i. Gross weight and yield per cubic yard of trial mixture.
 - j. Measured air content.
 - k. Unconfined compressive strength.
 3. Requirement for laboratory trial batch may be waived by Engineer if sufficient field test data documenting compliance with specified material properties and performance properties is submitted to and accepted by Engineer. Tests shall have been made on CLSM with identical mix design to mix design proposed for the Work, including sources of aggregate and manufacturers of cementitious materials and admixtures.

1.04 SUBMITTALS

- A. Action Submittals:
1. Shop Drawings:
 - a. Submit list of CLSM materials and proposed CLSM mix design. Include results of tests performed to qualify the materials and to establish the mix design.
 - b. Laboratory Trial Batch Reports: Submit laboratory test reports for CLSM cylinders, materials, and mix design tests.
 2. Product Data:
 - a. Submit manufacturer's specifications with application and installation instructions for proprietary materials and items, including admixtures to be used in CLSM mix.

B. Informational Submittals:

1. Excavation and Backfilling Plan: Submit acceptable plan for excavation, backfilling, and related Work not less than 21 days prior to starting excavation Work. Include the following:
 - a. Name of Contractor's "competent person" in responsible charge of excavation and fill Work.
 - b. Plan for coordinating shut-offs, locating, capping, abandoning, temporary services, and continuing utility services.
 - c. Copies of "manufacturer's data" or other tabulated data if protective system(s) are designed on the basis of such data.
 - d. Design calculations and assumptions for construction surcharges, including magnitude and location relative to excavations, prepared by Contractor's professional engineer. Engineer's review and acceptance of submittal does not imply approval by Engineer of the associated Work. Contractor shall be solely responsible for designing, installing, operating, and maintaining the system(s) required to satisfactorily perform all necessary shoring, bracing, and protection.
 - e. Proposed excavation, dewatering, backfilling, and compaction procedures. Where different procedures or equipment will be used for different types of material or at different locations at the Site, indicate where each procedure and equipment item will be used.
 - f. List of proposed equipment for excavation, dewatering, backfilling, and compaction Work.
 - g. Planned sequence of excavation and backfilling operations, including coordination with demolition, pile driving, and piping installation Work.
 - h. Detailed schedule of excavation and backfilling Work in accordance with the accepted Progress Schedule.
2. Qualifications Statements:
 - a. Professional Engineer: Submit name, address of firm, and qualifications of professional engineer.
 - b. Testing Laboratory: Submit name and qualifications of testing laboratory to be employed, and qualifications of testing laboratory's personnel that will perform quality assurance and field quality control testing required in this Section. If more than one laboratory will be employed, submit qualifications statement for each laboratory.
3. Source Quality Control Submittals: Submit Supplier name, source address, copy of NYSDEC mining permit, and proof of NYSDOT approval, as required, for each proposed source of off-site fill material.
4. Daily Inspection Logs: Submit in accordance with Paragraph 3.12.A.5 of this Section.
5. Delivery Tickets:
 - a. Submit copy of delivery ticket for each load of off-site general fill, subbase, and pipe bedding material delivered to the Site. Each delivery ticket shall indicate Supplier name and source address, project name, contract number, date, material type, NYSDOT item number when applicable, and quantity delivered.
 - b. Submit copy of delivery ticket for each load of CLSM delivered to or mixed at the Site. Each delivery ticket shall contain information in accordance with ASTM C94/C94M along with project name, contract number, date, mix type, mix time, quantity delivered to or mixed at the Site, and quantity of water introduced.
6. Field Quality Control Submittals: Submit laboratory test reports for field quality control testing performed in accordance with Article 3.13 of this Section.

1.05 SITE CONDITIONS

A. Subsurface Information:

1. The Supplementary Conditions indicate information available relative to subsurface conditions at the Site. Such information and data are not intended as a representation or warranty of continuity of conditions between soil borings or test pits, nor of groundwater levels at dates and times other than date and time when measured, nor that purpose of obtaining the information and data were appropriate for use by Contractor. Owner and Engineer will not be responsible for interpretations or conclusions drawn therefrom by Contractor.
2. Soil borings and other exploratory operations may be made by Contractor, at no additional cost to Owner. Coordinate Contractor-performed test borings and other exploratory operations with Owner and utility owners as appropriate. Perform such explorations without disrupting or otherwise adversely affecting operations of Owner or utility owners. Comply with Laws and Regulations relative to required notifications.

B. Existing Structures:

1. The Contract Documents show or indicate certain structures and Underground Facilities adjacent to or within the limits of the Work. Such information was obtained from existing records and is not guaranteed to be correct or complete. Contractor shall explore ahead of demolition, trenching, excavation, or other subsurface Work to determine the exact location of all existing structures and Underground Facilities. Existing structures and Underground Facilities shall be supported and protected from damage by Contractor. Immediately repair and restore existing structures and Underground Facilities damaged by Contractor without additional cost to Owner.
2. Movement or operation of construction equipment over Underground Facilities shall be at Contractor's sole risk and only after Contractor has prepared and submitted to Engineer and utility owners (as applicable), and received acceptance therefrom, a plan describing Contractor's analysis of the loads to be imparted and Contractor's proposed measures to protect structures and Underground Facilities during the Project.
3. Coordinate with utility owners for shut off of services in active piping and conduits, and for testing, shut off of services, and draining, purging, or de-energizing where specified or required of piping and conduits of unknown status. When required by utility owner, Owner will assist Contractor with utility owner notifications. Completely remove buried piping and conduits indicated for removal and not otherwise indicated as being abandoned or to remain in place.
4. In general, service lines and laterals to individual houses and businesses are not shown; however, Contractor shall assume that a service exists for each utility owner to each house, business, and property.
5. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, except when such interruption is indicated in the Contract Documents or when allowed in writing by Engineer after acceptable temporary utility services are provided by Contractor for the affected structure or property.

PART 2 – PRODUCTS

2.01 MATERIALS

A. General Fill Material:

1. Material shall be free of rock and gravel larger than three inches in any dimension, debris, waste, frozen materials, organic material, and other deleterious matter.
2. Gradation shall be as specified in Table 31 23 00-A.

**TABLE 31 23 00-A
GRADATION REQUIREMENTS FOR GENERAL FILL MATERIAL**

U.S. Sieve Size	Percentage by Weight Passing Sieve
3-inch	100
No. 200	10-30

3. Fill shall have a liquid limit not greater than 45, and plasticity index not greater than 25.
 4. Material shall be free of foreign chemical contaminants and shall comply with the soil cleanup objectives for restricted residential use, as set forth in 6 NYCRR 375-6.8(b).
 5. Excavated materials from areas shown or indicated on the Drawings may be used for general fill on Owner's property.
 - a. Materials shall be free of visible coal tar, as determined by Engineer and NYSDEC, and shall comply with the general fill gradation requirements of this Section.
 - b. Materials shall only be used for general fill at depths greater than two feet below finished grade.
 6. When on-site materials are found unsuitable for use as general fill, provide approved off-site general fill material.
- B. Amended General Fill Material:**
1. Material shall be a mixture of general fill material and aerobic bioremediation enhancer. Provide the following:
 - a. General Fill Material: Comply with Paragraph 2.01.A of this Section.
 - b. Aerobic Bioremediation Enhancer: PermeOx Ultra, by PeroxyChem.
 2. Amended General Fill Mix: 0.18 pound aerobic bioremediation enhancer per cubic yard of general fill material.
- C. Subbase Material:**
1. Material shall be naturally- or artificially-graded mixture of natural or crushed gravel, crushed stone, or natural or crushed sand. Crushed slag is unacceptable.
 2. Gradation shall be as specified in Table 31 23 00-B.

**TABLE 31 23 00-B
GRADATION REQUIREMENTS FOR SUBBASE MATERIAL**

U.S. Sieve Size	Percentage by Weight Passing Sieve
2-inch	100
1/4-inch	25-60
No. 40	5-40
No. 200	0-10

3. Plasticity index of material passing the No. 40 sieve shall not exceed 5.0.
 4. Material shall be free of foreign chemical contaminants and shall comply with the soil cleanup objectives for restricted residential use, as set forth in 6 NYCRR 375-6.8(b).
- D. Pipe Bedding Material:**
1. Material shall be crushed stone and gravel, free of rock or gravel larger than one inch in any dimension, debris, waste, frozen materials, organic material, and other deleterious matter.
 2. Gradation shall be as specified in Table 31 23 00-C.

TABLE 31 23 00-C
GRADATION REQUIREMENTS FOR PIPE BEDDING MATERIAL

U.S. Sieve Size	Percentage by Weight Passing Sieve
1-inch	100
3/8-inch	30-65
No. 4	25-55
No. 10	15-40
No. 40	8-20
No. 200	2-8

3. Material shall be free of foreign chemical contaminants and shall comply with the soil cleanup objectives for restricted residential use, as set forth in 6 NYCRR 375-6.8(b).

E. CLSM:

1. Materials:
 - a. Portland Cement: ASTM C150/C150M, Type I or Type II.
 - b. Fine Aggregate: ASTM C33/C33M.
 - c. Water: Clean, potable.
 - d. Fly Ash Mineral Admixture: ASTM C618, Class F.
 - e. Chemical Admixtures: Provide chemical admixtures in accordance with product manufacturer's published instructions. Admixtures shall be compatible with each other. Do not use calcium chloride or admixtures containing chloride ions. Use only admixtures that have been tested and approved in the mix design.
2. CLSM Mix: Materials shall be selected and proportioned by Contractor on the basis of field experience or laboratory trial batch to produce a cohesive, non-segregating mixture complying with the following performance criteria:
 - a. Unconfined Compressive Strength: 30 to 150 psi at 28 days, in accordance with ASTM D4832.
 - b. Placement Characteristics: Self-leveling, self-compacting.
 - c. Shrinkage Characteristics: Non-shrink.

2.02 SOURCE QUALITY CONTROL

- A. Off-Site Fill Sources: Provide off-site general fill, subbase, and pipe bedding materials from a NYSDEC-permitted mine, pit, or quarry. Sources shall be approved by NYSDOT for furnishing aggregates for NYSDOT projects.
- B. Tests: Engineer will collect samples and coordinate and pay for laboratory testing of Contractor's proposed off-site general fill, subbase, and pipe bedding materials to verify compliance with the Contract Documents.
 1. Geotechnical Testing: Engineer will collect one representative sample each of Contractor's proposed off-site general fill, subbase, and pipe bedding materials. Each sample will be tested as follows:
 - a. General Fill:
 - 1) Gradation in accordance with ASTM D422.
 - 2) Moisture/density relationship in accordance with ASTM D698.
 - 3) Atterberg limits in accordance with ASTM D4318.
 - b. Subbase Material:
 - 1) Gradation in accordance with ASTM D422.
 - 2) Moisture/density relationship in accordance with ASTM D698.
 - 3) Atterberg limits in accordance with ASTM D4318.
 - c. Pipe Bedding Material:
 - 1) Gradation in accordance with ASTM D422.
 - 2) Moisture/density relationship in accordance with ASTM D698.

2. Chemical Testing: Chemical testing will be performed on each proposed off-site fill material with greater than 10 percent by weight passing the No. 80 sieve, as determined by gradation testing performed in accordance with Paragraph 2.02.B.1 of this Section.
 - a. Engineer will collect a combination of discrete and composite samples of each off-site fill material in accordance with Subdivision 5.4(e) and Table 5.4(e)10 of DER-10.
 - b. Each discrete sample will be tested for VOCs in accordance with USEPA SW-846 Method 8260.
 - c. Each composite sample will be tested for the following:
 - 1) SVOCs in accordance with USEPA SW-846 Method 8270.
 - 2) PCBs in accordance with USEPA SW-846 Method 8082.
 - 3) Pesticides in accordance with USEPA SW-846 Method 8081.
 - 4) Herbicides in accordance with USEPA SW-846 Method 8151.
 - 5) Total metals in accordance with USEPA SW-846 Methods 6010.
 - 6) Total mercury in accordance with USEPA SW-846 Methods 7471.
 - 7) Total cyanide in accordance with USEPA SW-846 Method 9012.
3. Engineer will report results of each test to Contractor.
4. If testing results indicate that a proposed off-site fill material does not comply with the Contract Documents, Contractor shall identify and propose a new off-site source of the specified material.
 - a. Submit required information for proposed off-site fill source and Supplier in accordance with Article 1.04 of this Section.
 - b. Engineer will collect samples and coordinate laboratory testing in accordance with this Paragraph 2.02.B. Contractor shall be responsible for cost of testing.
5. Engineer will submit testing results for acceptable off-site fill materials to NYSDEC.
6. Do not ship off-site fill materials to the Site until proposed materials, sources, and Suppliers are accepted by Engineer and approved by NYSDEC.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Provide Engineer with sufficient notice and with means to examine areas and conditions under which excavating, filling, and grading Work will be performed. Engineer will advise Contractor in writing when Engineer is aware of conditions that may be detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.02 PREPARATION

- A. Erosion and Sediment Control: Provide temporary erosion and sediment controls in accordance with Section 01 57 05, and comply with Section 01 41 26.
- B. Odor, Vapor, and Dust Control: Provide odor, vapor, and dust controls in accordance with Section 01 57 05, and comply with Section 01 35 49.
- C. Site Preparation:
 1. Clearing and Grubbing: Comply with Section 31 11 00.
 2. Demolitions, Removals, and Abandonments: Comply with Section 02 41 00.
- D. Temporary Barriers:
 1. Provide temporary barrier surrounding excavations and excavation work areas to provide temporary protection to persons and property. Barrier shall have openings only at vehicular, equipment, and worker access points.

2. During non-working hours, completely enclose all sides of excavation with temporary barriers.
3. Minimum Material Requirements for Temporary Barriers:
 - a. Temporary barrier shall be not less than snow fence-type fencing, four feet high.
 - b. Fence shall be constructed of vertical hardwood slats measuring not less than 1.5 inches by 1/4 inch interwoven with strands of horizontal wire, or shall be of equivalent plastic construction.
 - c. Posts:
 - 1) Posts shall be steel, either "U"-, "Y"-, or "T"-shaped, or channel section.
 - 2) Posts shall have a nominal weight of not less than 1/3-pound per linear foot, exclusive of the anchor.
 - 3) Posts shall have tapered anchors weighing not less than 0.67 pound, each firmly attached by means of welding, riveting, or clamping.
 - 4) Posts shall have corrugations, knobs, notches, or studs placed and constructed to engage a substantial number of fence line wire in the proper position.
 - d. Provide each post with sufficient quantity of galvanized wire fasteners or clamps, of not less than 0.120 inch in diameter, for attaching fence wire to post.

E. Maintenance and Protection of Traffic: Comply with Section 01 55 26.

3.03 TEST PITS

- A. General: In advance of the construction, excavate, make observations and measurements, and fill test pits to determine conditions or location of existing structures and Underground Facilities. Perform all Work required in connection with excavating, stockpiling, maintaining, sheeting, shoring, and filling test pits. Contractor shall be responsible for the definite location of each existing structure and Underground Facility involved within the areas of excavation for the Work. Exercise care during such location work to avoid damaging and disrupting the affected structure or Underground Facility. Contractor shall be responsible for repairing, at its expense, damage caused during the Work to existing structures or Underground Facilities to remain.
- B. Payment for Test Pits: There shall be no separate payment for test pits.

3.04 DEWATERING

- A. General:
 1. Provide and maintain adequate drainage and dewatering equipment to remove and dispose of all surface water and groundwater entering excavations, or other parts of the Work and work areas. Keep each excavation dry during excavation, subgrade preparation, and continually thereafter until backfilling operations are completed and acceptable to Engineer.
 2. Keep all working areas at the Site free of surface water at all times. Provide temporary drainage ditches and temporary dikes, and provide required temporary pumping and other work necessary for diverting or removing rainfall and all other accumulations of surface water from excavation and fill areas. Perform diversion and removal of surface water in a manner that prevents accumulation of water behind permanent or temporary structures and at any other locations in the work area where such accumulations may be detrimental.
 3. Contractor shall be responsible for the condition of piping, conduits, and channels used for drainage, and such piping, conduits, and channels shall be clean and free of sediment.
 4. Remove water from excavations as fast as water collects.

B. Temporary Dewatering System:

1. Contractor shall design, provide, operate, and maintain dewatering system to include sufficient trenches, sumps, pumps, hose, piping, well points, and similar facilities, necessary to depress and maintain groundwater level two feet below the base of each excavation until backfilling operations are completed and acceptable to Engineer.
2. Design and operate dewatering system to avoid settlement and damage to existing structures and Underground Facilities, and to minimize the turbidity of the collected water.
3. To the extent practicable, groundwater table shall be lowered in advance of excavation for a sufficient period of time to allow dewatering of fine grain soils.
4. Operate dewatering system continuously during active excavation and backfilling Work. Provide standby pumping facilities and personnel to maintain the continued effectiveness of the system. Do not discontinue dewatering operations without first obtaining Engineer's acceptance for such discontinuation.
5. If, in Engineer's opinion, groundwater levels are not being lowered or maintained as required, provide additional or alternate temporary dewatering devices, as necessary, at no additional cost to Owner.
6. Locate elements of temporary dewatering system to allow continuous dewatering operation without interfering with the Work to the extent practicable.

C. Disposal of Water Removed by Dewatering System:

1. Water used for working or processing, or resulting from dewatering or decontamination operations shall be collected, containerized, removed, transported, and disposed of away from the Site, unless otherwise approved by Engineer.
2. Convey water from excavations in closed, water-tight conduits or piping. Do not use trench excavations as temporary drainage ditches.
3. Handling, temporary storage, and disposal of construction wastewater shall be in accordance with Laws and Regulations and Section 02 61 05.

3.05 EXCAVATION

- A. Perform all excavation required to complete the Work as shown, specified, and required. Excavation shall include removing and handling of earth, sand, clay, gravel, hardpan, soft, weathered, or decomposed rock, pavements, rubbish, and other materials within the excavation limits.
- B. Excavation Protection: Provide excavation protection systems in accordance with Laws and Regulations to prevent injury to persons and property, including surface structures and Underground Facilities.
1. Excavation Less Than Five Feet Deep: Excavations in stable rock or in soil conditions where there is no potential for a cave-in may be made with vertical sides. Under all other conditions, excavations shall be sloped and benched.
 2. Excavations Greater Than Five Feet Deep: Excavations in stable rock may be made with vertical sides. Under all other conditions, excavations shall be sloped and benched, shielded, or shored and braced.
 3. Provide and maintain excavation support and protection systems in accordance with Section 31 50 00 and, for piping installation Work, the submittal accepted by Engineer and required under Paragraph 1.04.B.1 of this Section.
- C. Maintain excavations in dry condition in accordance with Article 3.04 of this Section.
- D. Extend excavations sufficiently on each side of structures, footings, and similar construction to allow setting of forms, installation of shoring and bracing, and the safe sloping of banks, as necessary.

E. Subgrades:

1. General:

- a. Subgrades shall be firm and intact, dense, and thoroughly compacted and consolidated; shall be free of standing water and mud, muck, and other soft or unsuitable materials; and shall remain firm and intact under all construction operations. Subgrades that are otherwise solid but become soft or mucky on top due to construction operations shall be reinforced with general fill material. Finished elevation of stabilized subgrades shall not be above subgrade elevations shown or indicated.
- b. If, in Engineer's opinion, subgrade becomes softened or mucky because of construction delays, failure to dewater properly, or other cause within Contractor's control, the subgrade shall be excavated to firm material, trimmed, and backfilled with compacted general fill material at Contractor's expense.

2. Proof-Rolling Subgrades:

- a. Prior to placing fill or constructing pavements or slabs, proof-roll the subgrade surface with sufficient proof-rolling apparatus. Before starting proof-rolling, submit to and obtain acceptance from Engineer of proof-rolling apparatus and procedure to be used.
- b. Proof-rolling operations shall be made in the presence of Engineer. Notify Engineer at least 24 hours in advance of start of proof-rolling operations.
- c. Subgrades displaying pronounced elasticity or deformation, deflection, cracking, or rutting shall be stabilized as directed by Engineer. Unsuitable materials shall be undercut to the depth directed by Engineer and replaced with compacted general fill material. Other suitable stabilization methods may be directed by Engineer.

F. Pipe Trench Preparation:

1. Not more than 150 feet of trench shall be opened in advance of installing pipe in trench.
2. Trench width shall be minimized to the greatest extent practical, and shall comply with the following:
 - a. Trench width shall be sufficient to provide space for installing, jointing, and inspecting piping. Refer to the Drawings for trench requirements. In no case shall trench be wider at top of pipe than pipe barrel OD plus two feet, unless otherwise shown or indicated.
 - b. Enlargement of trench width at pipe joints may be made when required and approved by Engineer.
 - c. Trench width shall be sufficient for shoring and bracing, or shielding and dewatering.
 - d. Trench width shall be sufficient to allow thorough compaction of fill adjacent to bottom half of pipe.
 - e. Do not use excavating equipment that requires the trench to be excavated to excessive width.
3. Depth of trench shall be as shown or indicated on the Drawings. If required and approved by Engineer in writing, depths may be revised.
4. Where bedrock or other unyielding material is encountered at the bottom of the trench, remove such material to a minimum depth of six inches below the bottom of the pipe and replace with pipe bedding material.
5. Where Engineer considers existing material beneath bedding material unsuitable, remove and replace such unsuitable material with pipe bedding material.

G. Excavated Materials to be Used as General Fill:

1. Stockpile excavated materials that are suitable for use as general fill.
2. As excavation proceeds, keep stockpiles of excavated materials suitable for use as general fill separate from unsuitable materials and waste materials.

3. Store excavated materials, with covering impervious to water, in well-drained area or on solid surfaces to prevent mixing with foreign matter. Place, grade, and shape stockpiles for proper drainage.
4. Locate and retain soil materials away from edge of excavations.
5. Dispose of excess soil material and waste materials as specified in this Section.

H. Disposal of Excavated Materials:

1. Material removed from excavations that does not comply with the requirements for general fill, or is in excess of the quantity required for general fill, shall be removed, transported, and disposed of away from the Site, unless otherwise approved by Engineer.
2. Handling and disposal of excavation waste shall be in accordance with Laws and Regulations and Section 02 61 05.

I. Unauthorized Excavation: All excavations outside the lines and grades shown or indicated and that are not approved by Engineer, together with removing and disposing of the excavated material and backfilling with suitable material, shall be at Contractor's expense. Fill unauthorized excavations with properly-compacted general fill material at Contractor's expense.

3.06 SHORING AND BRACING FOR PIPING INSTALLATION WORK

A. General:

1. Design and provide shoring and bracing as shown, specified, and required for piping installation Work.
2. Clearances and types of temporary shoring and bracing, insofar as they may affect the finished character of the Work, will be subject to Engineer's acceptance, but Contractor is responsible for adequacy of all shoring and bracing.
3. Materials:
 - a. Previously-used materials shall be in good condition, and shall not be damaged or excessively pitted.
 - b. All steel work for shoring and bracing shall be in accordance with ANSI/AISC 360, except that field welding will be allowed.
4. As excavation progresses, carry down shoring and bracing to required elevation at bottom of excavation.
5. Comply with Laws and Regulations regarding shoring and bracing.
6. Maintain shoring and bracing in excavations regardless of time period excavations will be open.
7. Unless otherwise shown, specified, or directed, remove materials used for temporary construction when the Work is completed. Perform such removal in manner not injurious to the structures and Underground Facility, their appearance, and adjacent construction.

3.07 TRENCH SHIELDS

A. Excavation of earth material below bottom of trench shield shall not exceed the limits established in Laws and Regulations.

B. When using a shield for installing piping:

1. Portions of trench shield extending below the mid-diameter of an installed, rigid pipe, such as pre-stressed concrete pipe and other types of rigid pipe, shall be raised above the pipe's mid-diameter elevation prior to moving the shield along the trench for further construction.
2. Bottom of shield shall not at any time extend below mid-diameter of installed pipe that is flexible or has flexing capability, such as steel, ductile iron, PVC, CPVC, polyethylene, and other pipe that has flexing capability.

- C. When using a shield for installing structures, bottom of the shield shall not extend below the top of the bedding for the structures.
- D. When removing the shield or moving the shield ahead, exercise extreme care to prevent moving piping, structures, and other Underground Facilities, and to prevent disturbance of bedding material for piping, structures, and other Underground Facilities. When piping, structures, or Underground Facilities are disturbed, remove and reinstall the disturbed items in accordance with the Contract Documents.

3.08 FILL AND COMPACTION

- A. Provide and compact all fill required for the finished grades as shown and as specified in this Section.
- B. Place fill in excavations as promptly as progress of the Work allows, but not until completing the following:
 - 1. Surveying and recording of horizontal and vertical limits of excavation.
 - 2. Inspection, testing, approval, and recording of horizontal and vertical locations of Underground Facilities.
 - 3. Removal of trash and debris.
- C. Fill that includes organic materials or other unacceptable material shall be removed and replaced with approved fill material in accordance with the Contract Documents.
- D. Placement – General:
 - 1. Place fill to the grades shown or indicated. Bring up evenly on all sides fill around structures and Underground Facilities.
 - 2. Fill areas shall be undercut and proof-rolled as directed by Engineer.
 - 3. Place fill materials at moisture content and density specified in Paragraph 3.08.G and Table 31 23 00-D of this Section. Furnish and use equipment capable of adding measured amounts of water to the fill materials to bring fill materials to a condition within required moisture content range. Furnish and use equipment capable of discing, aerating, and mixing the fill materials to ensure reasonable uniformity of moisture content throughout the fill materials, and to reduce moisture content of borrow materials by air drying, when necessary. When subgrade or lift of fill materials requires moisture-conditioning before compaction, fill material shall be sufficiently mixed or worked on the subgrade to ensure uniform moisture content throughout the lift of material to be compacted. Materials at moisture content in excess of specified limit shall be dried by aeration or stockpiled for drying.
 - 4. Perform compaction with equipment suitable for the type of fill material placed. Select and use equipment capable of providing the minimum density required in the Contract Documents. Furnish and use equipment capable of compacting in restricted areas next to structures and around piping and Underground Facilities. Effectiveness of the equipment selected by Contractor shall be tested at start of compacted fill Work by constructing a small section of fill within or adjacent to the area where fill will be placed. Record total number of coverages with selected compaction equipment and perform field moisture content and density tests to ensure that specified compaction of fill has been obtained. If tests on the test section of fill indicate that required compaction has not obtained, do one or more of the following:
 - a. Increase the amount of coverages.
 - b. Decrease the lift thicknesses.
 - c. Use different compaction equipment.

5. Place fill materials in horizontal, loose lifts, not exceeding specified uncompacted thickness. Place fill in a manner ensuring uniform lift thickness after placing. Mechanically compact each lift, by not less than two complete coverages of the compactor. One coverage is defined as the conditions reached when all portions of the fill lift have been subjected to the direct contact of compactor's compacting surface. Compaction of fill materials by inundation with water is unacceptable.
 6. Do not place fill materials when standing water is present on surface of the area where fill will be placed. Do not compact fill when standing water is present on the fill to be compacted. Do not place or compact fill in a frozen condition or on top of frozen material. Fill containing organic materials or other unacceptable material previously described shall be removed and replaced prior to compaction.
 7. If required densities are not obtained because of improper control of placement or compaction procedures, or because of inadequate or improperly-functioning compaction equipment, Contractor shall perform all work required to provide the required densities. Such work shall include, at no additional cost to Owner, complete removal of unacceptable fill areas and replacement and re-compaction until acceptable fill is provided.
 8. Repair, at Contractor's expense, observed or measured settlement. Make repairs and replacements as required within five days after being so advised by Engineer.
- E. Fill in Pipe Trenches:
1. Where shown or indicated, provide geotextile separation fabric between pipe embedment and native material in accordance with Section 31 05 19.13.
 2. Place pipe bedding material in pipe trenches in horizontal layers, and thoroughly compact each layer before the next layer is placed.
 3. Pipe trenches may be backfilled prior to testing of piping, unless nature of the test requires observation of piping during testing.
 4. Pipe Bedding: Install piping on not less than four-inch layer of pipe bedding material. Pipe bedding material shall extend 12 inches above the top of the pipe.
 5. Placing and Compacting Pipe Trench Fill: Unless otherwise shown, placement and compaction of pipe trench fill material shall comply with the following:
 - a. Pipe bedding material shall be spread and the surface graded to provide a uniform and continuous support beneath piping at all points between bell holes or pipe joints. Slight disturbance of installed pipe bedding material surface during withdrawal of pipe slings or other lifting tackle is acceptable.
 - b. After each pipe's bedding material has been graded, and the piping has been aligned, joined in accordance with the Contract Documents, and placed in final position on bedding material, provide and compact sufficient pipe trench fill material under and around each side of the pipe and back of the bell or end thereof to hold piping in proper position and maintain alignment during subsequent pipe jointing and embedment operations. Deposit and compact pipe trench fill material uniformly and simultaneously on each side of piping to prevent lateral displacement of piping. Place and compact pipe trench fill material to an elevation 12 inches above top of pipe, unless otherwise shown or specified.
 - c. Each layer of pipe trench fill material shall be compacted by at least two complete coverages of all portions of surface of each lift using appropriate compaction equipment.
 - d. Method of compaction and compaction equipment used shall be appropriate for material to be compacted and shall not transmit damaging shocks to the piping.
 6. Trench Plugs: Provide CLSM trench plugs where shown or indicated on the Drawings. Trench plugs shall be at least 12 inches thick, shall extend horizontally the full width of the trench, and shall extend vertically a minimum of four inches below and six inches above pipe embedment. Locate trench plugs a minimum of five feet away from pipe joints and fittings.

- F. Subbase Placement:
1. Provide subbase material where shown to the limits shown or indicated.
 2. Place subbase material in compacted lifts not exceeding depth of six inches each.
- G. Compaction Density Requirements:
1. Compaction required for all types of fills shall be in accordance with Table 31 23 00-D of this Section. Moisten material or aerate the material as necessary to provide the moisture content that will facilitate obtaining the required compaction.

**TABLE 31 23 00-D
MINIMUM DENSITY REQUIREMENTS**

Fill Material	Maximum Uncompacted Lift Thickness (inches)	Percent Compaction (ASTM D698)
General Fill Material		
More Than Five Feet Below Final Grade	18	95
Less Than Five Feet Below Final Grade	12	95
Amended General Fill Material		
More Than Five Feet Below Final Grade	18	95
Less Than Five Feet Below Final Grade	12	95
Subbase Material		
Below Pavements and Sidewalks	6	98
All Other Locations	12	95
Pipe Bedding Material		
Below Piping, Structures, and Pavements	8	98
All Other Locations	6	95

2. Fill shall be wetted and thoroughly mixed to achieve optimum moisture content plus-or-minus two percent.
 3. Replace natural, undisturbed soils or compacted soil subsequently disturbed or removed by construction operations with materials compacted as indicated in Table 31 23 00-D of this Section.
 4. Field quality control testing for density, to verify that specified density was obtained, shall be performed within the top five feet of the excavation.
 5. When field quality control testing indicates unsatisfactory compaction, provide additional compaction necessary to obtain the specified compaction. Perform additional compaction Work at no additional cost to Owner until specified compaction is obtained. Such work includes complete removal of unacceptable (as determined by Engineer) fill areas and replacement and re-compaction until acceptable fill is provided in accordance with the Contract Documents.
- H. Replacement of Unacceptable Excavated Materials: In cases where over-excavation to replace unacceptable soil materials is required, backfill the excavation to required subgrade with general fill material and thoroughly compact in accordance with Paragraph 3.08.G and Table 31 23 00-D of this Section.

3.09 GRADING

- A. General:
1. Uniformly grade areas within limits of grading under this Section, including adjacent transition areas.
 2. Smooth subgrade surfaces within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

3. Blend grading over trench to elevations shown or indicated. Where elevations are not shown or indicated, blend finished grade with existing grade on each side of trench.
- B. Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding. Finish surfaces free of irregular surface changes, and comply with the following:
1. Grassed Areas or Areas Covered with Gravel, Stone, Wood Chips, or Other Special Cover: Finish areas to receive topsoil or special cover to within not more than one inch above or below the required subgrade elevations.
 2. Sidewalks: Shape surface of areas under sidewalks to line, grade, and cross section, with finish surface not more than one inch above or below the required subgrade elevation.
 3. Pavements: Shape surface of areas under pavements to line, grade, and cross section, with finish surface not more than 1/2 inch above or below the required subgrade elevation.
- C. Compaction: After grading, compact subgrade surfaces to achieve required subgrade elevations and percentage of maximum density for each material classification.

3.10 CLSM

- A. CLSM Placement:
1. Discharge CLSM from the mixer by reasonable means into the space to be filled.
 2. Bring CLSM uniformly up to the fill line shown or indicated in the Contract Documents. If not shown or indicated, bring CLSM uniformly up to the desired level.
 3. Placement of fill over the CLSM may proceed after a curing period of not less than three days.

3.11 SUBBASE COURSE FOR PAVEMENT AND CRUSHED STONE SURFACING

- A. General:
1. Place subbase material, in layers of specified thickness, over ground surface to support pavement base course or crushed stone surfacing.
 2. After completing filling and grading, shape and compact subgrade to an even, firm foundation in accordance with this Section. Remove unsuitable subgrade materials, including soft materials, boulders, vegetation, and loose stones, and replace with compacted fill material as directed by Engineer.
- B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of subbase course.
- C. Subbase Course Placement:
1. Place subbase course material on prepared subgrade in layers of uniform thickness, in accordance with indicated cross-section and thickness. Maintain optimum moisture content for compacting subbase material during placing operations.
 2. Provide geotextile separation fabric over the prepared subgrade in accordance with Section 31 05 19.13.
 3. Compaction and Grade Control: Comply with compaction requirements for excavation and fill in this Section, and the following requirements:
 - a. Compaction with roller shall begin at the sides of the area to be paved or receive crushed stone surfacing, and shall continue toward the center. Continue compaction until there is no movement of the course ahead of the roller.
 - b. After rolling, check for grade with a line not less than 40 feet in length. Depressions over 1/2 inch deep shall be filled to satisfaction of Engineer.

4. After completing compaction, other than that necessary for bringing material for the next course, do not haul or drive over the compacted subbase.
5. Do not install subbase in excess of 500 feet in length without compacting to prevent softening of the subgrade.
6. If subgrade material becomes churned up into or mixed with the subbase material, remove the mixed material and replace with clean, compacted subbase material.

D. Shoulders:

1. Place shoulders along edges of subbase course to prevent lateral movement. Construct shoulders of acceptable soil materials, placed in such quantity to compact to thickness of each lift of subbase material.
2. Compact and roll not less than 12-inch width of shoulder simultaneously with compacting and rolling of each lift of subbase material.

3.12 INSPECTION OF EXCAVATION AND FILL WORK

A. Daily Inspections:

1. Perform daily or more frequent inspections of all excavations, adjacent areas, and protective systems as required by Laws and Regulations and this Section to ensure their continued effectiveness and integrity, and the safety of exposed employees.
2. Inspections shall be performed by Contractor's competent person, together with Engineer's Resident Project Representative:
 - a. Prior to the start of Work and as needed throughout the day.
 - b. After every rainstorm or other hazard-increasing occurrence.
3. During each inspection, note the condition of each excavation, the adjacent areas, and protective systems, and any evidence of situations that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions.
4. Where Contractor's competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions or corrective actions have been taken to ensure their safety.
5. Document the date, time, and outcome of each inspection in a dedicated log. Submit copy of inspection log to Construction Manager and Engineer with daily construction report in accordance with Section 01 32 26 (Construction Progress Reporting).

3.13 FIELD QUALITY CONTROL

A. Site Tests:

1. Perform field moisture content and density tests in accordance with ASTM D6938 to verify that specified compaction of fill materials has been obtained. Comply with the following:
 - a. Trenches for Structures and Underground Facilities:
 - 1) In Open Fields: Perform test at two locations every 1,000 linear feet.
 - 2) Along Dirt or Gravel Roads or Off Traveled Right-of-Way: Perform test at two locations every 500 linear feet.
 - 3) Crossing Paved Roads: Perform test at two locations along each crossing.
 - 4) Under Pavement Cuts or Within Two Feet of Pavement Edges: Perform test at one location every 400 linear feet.
 - b. General Fill Material: Perform one test per 1,000 square feet on every compacted lift less than five feet below finished grade.
 - c. Amended General Fill Material: Perform one test per 1,000 square feet on every compacted lift less than five feet below finished grade.

- d. Subbase Material: Perform one test per 1,000 square feet on every compacted lift.
2. Submit test results, certified by testing laboratory, to Engineer within 24 hours of completion of test.
3. If testing laboratory reports or inspections indicate subgrade, bedding, or fill compaction below specified density, Contractor shall remove unacceptable materials as necessary and replace with specified materials, and provide additional compaction at Contractor's expense until subgrades, bedding, and fills are acceptable. Costs for retesting of subgrade, bedding, or fills that did not originally comply with specified density shall be paid by Contractor.

END OF SECTION

SECTION 31 50 00

EXCAVATION SUPPORT AND PROTECTION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish, install, monitor, and maintain excavation support and protection systems capable of supporting excavation sidewalls, and resisting soil and hydrostatic pressures and superimposed and construction loads.
2. The Work includes furnishing, driving, removing, and all other steel sheet pile Work, as specified.
3. Extent of steel sheet piling is shown or indicated on the Drawings.
4. Install excavation and support systems without damaging existing buildings, structures, Underground Facilities, and site improvements adjacent to excavation.

B. Coordination:

1. Review procedures under this and other Sections and coordinate Work that must be performed with or before excavation support and protection system Work.

C. Related Sections:

1. Section 02 41 00, Demolition.
2. Section 31 09 13, Geotechnical Instrumentation and Monitoring.
3. Section 31 23 00, Excavation and Fill.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:

1. ASTM A572/A572M, Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Surveyor:
 - a. Engage a registered professional land surveyor licensed and registered in the State of New York and experienced in providing surveying services of the kind indicated.
 - b. Responsibilities include, but are not necessarily limited to, the following:
 - 1) Performing or supervising performance of field survey work to check lines and elevations of steel sheet piling.
 - 2) Preparing field survey reports.
2. Installer:
 - a. Engage an experienced pile installer possessing a minimum of five years experience installing piles substantively similar to those specified, to perform all pile driving indicated in the Contract Documents.

B. Regulatory Requirements:

1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 29 CFR 1926.750 through 29 CFR 1926.761, Subpart R – Steel Erection.

- b. 12 NYCRR 23-2.3, Structural Steel Assembly.
- c. 16 NYCRR 753, Protection of Underground Utilities.

1.04 SUBMITTALS

A. Action Submittals:

1. Product Data: Submit manufacturer's data, specifications, and installation instructions for hydrophilic joint sealant.

B. Informational Submittals:

1. Pile Driving Plan: Submit acceptable plan for pile driving and related Work not less than 21 days prior to starting pile driving Work. Include the following:
 - 1) Plan for coordinating shut-offs, locating, capping, abandoning, temporary services, and continuing utility services.
 - 2) Proposed procedures for storing, handling, preparing, driving, and removing piles in accordance with this Section.
 - 3) Proposed procedures for accommodating or removing obstructions encountered during pile driving operations.
 - 4) Other proposed procedures as applicable.
 - 5) List of proposed equipment for pile driving Work.
 - 6) Complete data on hammer and other driving equipment to be used.
 - 7) Planned sequence of pile driving operations, including coordination with demolition, excavation, and piping installation Work.
 - 8) Quality control procedures to ensure piles are driven within the tolerances specified in this Section.
 - 9) Detailed schedule of pile driving Work in accordance with the accepted Progress Schedule.
2. Notification of Intended Pile Driving Start: Submit in accordance with Paragraph 3.02.A of this Section.
3. Certificates: Submit copies of certified mill test reports covering chemical and physical properties of structural steel of each type furnished under this Section.
4. Driving Records: Within two days of driving, submit copies of driving record of each pile, including the following information:
 - a. Project name, Contract number, report date, and date of pile driving.
 - b. Contractor and Subcontractor names.
 - c. Pile location and number.
 - d. Pile section designation.
 - e. Total length of pile.
 - f. Type, size, and energy rating of hammer.
 - g. Starting and finishing driving times.
 - h. Rate of penetration in feet per minute, as well as changes in rate of penetration and depth at which change occurred.
 - i. Ground, tip, and butt elevation of pile.
 - j. Total length of pile in ground.
 - k. Data on and description of unusual occurrences or obstructions, if any, during pile driving.
5. Qualifications Statements:
 - a. Surveyor: Submit name and address of firm, and resumes of each professional land surveyor and crew chief conducting the survey Work. Submit at least 10 days prior to beginning survey Work. During the Project, submit resume for each new registered land surveyor and crew chief employed or retained by Contractor at least 10 days prior to starting on the survey Work.
 - b. Installer: When requested by Engineer, submit qualifications of pile installer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery:

1. Deliver materials to the Site in such quantities and at such times to ensure continuity of pile driving operations in accordance with the accepted Progress Schedule.

B. Storage:

1. Store piles in orderly groups above ground on level blocks or racks to minimize potential for permanent deflection, distortion, or damage to interlocks.

C. Handling:

1. Handle piling with care using only handling holes or lifting devices to prevent permanent deflection, distortion, or damage to interlocks.
2. Do not drag piles across the ground.

1.06 SITE CONDITIONS

A. Subsurface Information:

1. The Supplementary Conditions indicate information available relative to subsurface conditions at the Site. Such information and data are not intended as a representation or warranty of continuity of conditions between soil borings or test pits, nor of groundwater levels at dates and times other than date and time when measured, nor that purpose of obtaining the information and data were appropriate for use by Contractor. Owner and Engineer will not be responsible for interpretations or conclusions drawn therefrom by Contractor.
2. Soil borings and other exploratory operations may be made by Contractor, at no additional cost to Owner. Coordinate Contractor-performed test borings and other exploratory operations with Owner and utility owners as appropriate. Perform such explorations without disrupting or otherwise adversely affecting operations of Owner or utility owners. Comply with Laws and Regulations relative to required notifications.

B. Existing Structures:

1. The Contract Documents show or indicate certain structures and Underground Facilities adjacent to or within the limits of the Work. Such information was obtained from existing records and is not guaranteed to be correct or complete. Contractor shall explore ahead of demolition, trenching, excavation, or other subsurface Work to determine the exact location of all existing structures and Underground Facilities. Existing structures and Underground Facilities shall be supported and protected from damage by Contractor. Immediately repair and restore existing structures and Underground Facilities damaged by Contractor without additional cost to Owner.
2. Movement or operation of construction equipment over Underground Facilities shall be at Contractor's sole risk and only after Contractor has prepared and submitted to Engineer and utility owners (as applicable), and received acceptance therefrom, a plan describing Contractor's analysis of the loads to be imparted and Contractor's proposed measures to protect structures and Underground Facilities during the Project.
3. Coordinate with utility owners for shut off of services in active piping and conduits, and for testing, shut off of services, and draining, purging, or de-energizing where specified or required of piping and conduits of unknown status. When required by utility owner, Owner will assist Contractor with utility owner notifications. Completely remove buried piping and conduits indicated for removal and not otherwise indicated as being abandoned or to remain in place.

4. In general, service lines and laterals to individual houses and businesses are not shown; however, Contractor shall assume that a service exists for each utility owner to each house, business, and property.
 5. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, except when such interruption is indicated in the Contract Documents or when allowed in writing by Engineer after acceptable temporary utility services are provided by Contractor for the affected structure or property.
- C. Line and Level:
1. Using reference points and engineering surveys provided by Owner, Contractor shall establish and locate all other lines and levels, and is responsible for the correct location and deviation of all piles.
 2. Install piles at the proper locations and orientation shown or indicated in the Contract Documents.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. General:
1. Provide materials that are either new or in serviceable (like-new) condition.
 2. Unless otherwise shown or indicated, all materials and work for structural steel and miscellaneous metal work shall comply with applicable provisions of the latest edition of the AISC Steel Construction Manual.
- B. Steel Sheet Piles:
1. Hot-rolled steel sections of continuous interlocking type complying with ASTM A572/A572M, Grade 50. Provide AZ 17-700 sections of the minimum lengths shown or indicated on the Drawings.
- C. Steel Corner Piles:
1. Provide steel corner piles of continuous interlocking type, and of the types and lengths shown or indicated on the Drawings.
- D. Hydrophilic Joint Sealant:
1. Single-component, bentonite-free hydrophilic sealant. Sealant shall be expandable by a minimum of 200 percent of dry volume when in the presence of water to form water-tight joint seal.
 2. Product and Manufacturer: Provide one of the following:
 - a. Swellseal WA, by De Neef Construction Chemicals, Inc.
 - b. Or equal.

2.02 EQUIPMENT

- A. Driving Hammer: Drive piles with variable-moment vibratory hammer. Use hammer with sufficient energy to drive piling to required tip elevations without damaging piles. Size or capacity of hammer shall be as recommended by hammer manufacturer for the total pile mass weight and character of soil formation to be penetrated.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which the Work will be performed and notify Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected in a manner acceptable to Engineer.

3.02 PREPARATION

- A. Notification:
 - 1. At least seven days prior to commencing pile driving Work, notify Owner, Construction Manager, and Engineer in writing of planned start of pile driving Work. Do not start pile driving operations without permission of Construction Manager.
- B. Protection of Surrounding Areas and Facilities:
 - 1. Protect structures, utilities, sidewalks, pavements, and other facilities indicated to remain from damage caused by settlement, lateral movement, undermining, washout, dewatering, and other hazards that could develop during excavation support and protection system operations. Repair damage at Contractor's expense.
- C. Demolition:
 - 1. Before proceeding with pile driving operations, locate, identify, and remove or relocate obstructing structures and Underground Facilities. Comply with Section 02 41 00 and Article 3.03 of this Section.
- D. Pile Preparation:
 - 1. Pile Markings: Label each pile using a waterproof marking device with its total length and a unique identification number. Identification number shall be clearly visible and located within two feet of the top of each pile.
 - 2. Splices: Use of splices is prohibited.
 - 3. Joint Preparation: Seal sheet pile interlocks with hydrophilic joint sealant to prevent water infiltration during excavation and backfilling operations. Contractor shall be responsible for all delays, repairs, additional Work, and expenses resulting from improper sealing of interlocks.
 - a. Clean interlock surfaces immediately before installing sealant. Remove dirt, weakly-adhering coatings, moisture, and other substances that would interfere with bonds of sealant compound as recommended in sealant manufacturer's written instructions. Blow out interlocks with oil-free compressed air.
 - b. Apply hydrophilic joint sealant to female interlock after cleaning. Locate sealant as near as possible to center of interlock. Sealant shall be continuous along entire length of interlock. Comply with sealant manufacturer's written instructions.

3.03 PRE-TRENCHING

- A. General: Before proceeding with pile driving operations, excavate and clear pile alignment of near-surface boulders, cobbles, debris, foundations, and other obstructions. Perform all work required in connection with excavating, stockpiling, maintaining, shoring, and backfilling trenches. Contractor shall be responsible for clearing sheet pile alignment to a minimum depth of eight feet below grade. Exercise care during pre-trenching Work to avoid damaging and disrupting existing structures and Underground Facilities to remain. Contractor shall be responsible for repairing, at its expense, damage caused during the Work to existing structures and Underground Facilities to remain. Comply with Laws and Regulations and Section 31 23 00.
- B. Payment for Pre-Trenching: There shall be no separate payment for pre-trenching.

3.04 PILE DRIVING

- A. Drive piles in plumb position to lines and grades shown or indicated, and tightly interlock along entire length of each pile to form a continuous wall.
- B. Prevent damage due to excessive bending or twisting when lifting and positioning piles for driving. Bent or twisted piles may be rejected by Engineer.
- C. Provide temporary wales, templates, or guide structures to ensure that piles are placed and driven to the correct alignment. Use a system of structural framing sufficiently rigid to resist lateral and driving forces and to adequately support sheet piling until design tip elevation is achieved. Templates shall not move when supporting sheet piling. Fit templates with wood blocking to bear against the web of each alternate sheet pile and hold the sheet pile at the design location alignment. Provide outer template straps or other restraints as necessary to prevent sheets from warping or wandering from design alignment.
- D. Carefully plumb piles before driving. During driving, monitor, prevent, and correct tendency of piles to bend, twist, rotate, or pull out of their interlocks. Remove and re-drive piles known or suspected to have pulled out of their interlocks. Integrity of each sheet pile, including interlock, shall be maintained during driving.
- E. Driving Tolerances:
 - 1. Drive piles within the following maximum tolerances:
 - a. Horizontal: Three inches from location indicated for center of gravity of each pile.
 - b. Plumbness: One inch in ten feet from vertical, or a maximum of four inches.
 - 2. Remove and re-drive sheet piles damaged or driven outside the above tolerances at no additional cost to Owner.
- F. Obstructions:
 - 1. Should an obstruction including, but not limited to, boulders, rock, rubble, fill, or existing foundations be encountered that prevents driving of pile to its required tip elevation, threatens pile damage, or causes pile to drift from required location, cease driving operations and immediately notify Engineer. Engineer will determine corrective measures, including, but not necessarily limited to, pre-spudding, pre-drilling, and pile relocation, required to accommodate or remove obstruction.

2. Pre-Spudging:
 - a. Drive small diameter steel spud or steel H-pile at locations and to depths as required for satisfactory driving results.
 - b. Pre-spudging equipment and method shall be approved by Engineer prior to commencing pre-spudging operation.
3. Pre-Drilling:
 - a. Drill holes with six-inch diameter auger at locations and to depths as required for satisfactory driving results.
 - b. Pre-drilling equipment and method shall be approved by Engineer prior to commencing pre-drilling operation.
4. Corrective measures due to obstructions will be paid by Owner via Change Order or other method in accordance with the Contract Documents.

3.05 MONITORING

- A. Monitor excavation support and protection systems and surrounding conditions daily during excavation progress and for as long as excavation remains open. Comply with Section 31 09 13.
- B. Immediately notify Engineer of any movement, cracking, or settlement of the ground surface surrounding the excavation, or of any visual damage to or movement of adjacent structures, utility poles, or other facilities.
- C. Promptly correct bulges, breakage, leaks, or other evidence of movement to ensure that excavation support and protection systems remain stable.

3.06 PILE REMOVAL

- A. Remove piles when approved by Engineer and when construction has progressed sufficiently to support excavation and bear soil and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils or damaging existing structures and Underground Facilities to remain. Repair any damage at Contractor's expense.
- B. Backfill voids resulting from the removal of sheet piles with approved fill material in accordance with Section 31 23 00.
- C. Clean piles of visible soil upon removal. If coal tar is observed on piles, wrap pile in minimum six-mil polyethylene sheeting and transport pile to a temporary containment area for further cleaning. Thoroughly clean each sheet pile interlock and remove joint sealant.

3.07 REUSE OF PILES

- A. Inspect piles upon removal, and prior to reuse, for damage resulting from driving, excavation and backfilling operations, or removal. Promptly replace damaged or defective piles at Contractor's expense, and before reusing at the Site.

END OF SECTION

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Division 32

Exterior Improvements

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SECTION 32 15 40
CRUSHED STONE SURFACING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. Contractor shall provide all labor, materials, tools, equipment, and incidentals as shown, specified, and required to furnish and install crushed stone surfacing.
 - 2. Extent of crushed stone surfacing is shown or indicated on the Drawings.
- B. Coordination:
 - 1. Review installation procedures under this and other Sections and coordinate the installation of items that must be installed with or before crushed stone surfacing.
- C. Related Sections:
 - 1. Section 31 23 00, Excavation and Fill.

1.02 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Reference Specifications: Comply with applicable requirements of the NYSDOT Standard Specifications.

1.03 SUBMITTALS

- A. Informational Submittals:
 - 1. Source Quality Control Submittals: Submit Supplier name, source address, copy of current NYSDEC mining permit, and proof of NYSDOT approval for proposed source of crushed stone.
 - 2. Delivery Tickets: Submit copy of delivery ticket for each load of crushed stone delivered to the Site. Each delivery ticket shall indicate Supplier name and source address, project name, contract number, date, material type, NYSDOT item number, and quantity delivered.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Crushed Stone: Provide clean, durable, sharp-angled fragments of rock of uniform quality conforming to Material Designation 703-0201, Size Designation No. 2, in accordance with Section 703 of the NYSDOT Standard Specifications.

2.02 SOURCE QUALITY CONTROL

- A. Crushed Stone Source: Provide crushed stone from a NYSDEC-permitted mine, pit, or quarry. Source shall be approved by NYSDOT for furnishing aggregates for NYSDOT projects.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine the subgrade and subbase on which crushed stone surfacing will be installed and notify Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected in a manner acceptable to Engineer.
- B. Subgrade:
 - 1. Verify that earthwork is completed to correct line and grade.
 - 2. Verify that subgrade is smooth, properly compacted, and free of frost and excessive moisture in accordance with Section 31 23 00.
 - 3. Do not commence the Work under this Section until conditions are satisfactory.

3.02 PREPARATION

- A. Prepare subgrade and provide subbase for crushed stone surfacing in accordance with Section 31 23 00. Before installing crushed stone surfacing, obtain Engineer's concurrence that subgrade and subbase are suitable for installing crushed stone surfacing.

3.03 INSTALLATION

- A. Place and uniformly spread crushed stone to a depth of three inches, but not less than required to meet finished grades after rolling.
- B. Perform rolling with consecutive passes to achieve an even and smooth finish without roller marks, within plus-or-minus 1/2 inch of final elevations. Roll and rake and remove all ridges, and fill depressions, as required.
- C. If subbase material becomes churned up into or mixed with the crushed stone, remove the mixed material and replace with clean, crushed stone.

3.04 CLEANING AND REPAIR

- A. Repair all erosion channels that may form until time of Substantial Completion.
- B. Keep crushed stone surfacing free of all foreign materials including, but not limited to, soil, debris, and weeds, until time of Substantial Completion.

3.05 INSPECTION AND ACCEPTANCE

- A. When the crushed stone surfacing is completed, including cleaning and repair, Engineer will make an inspection to determine acceptability.
- B. Where inspected crushed stone surfacing does not comply with the requirements, replace rejected Work and continue specified cleaning and repair until reinspected by Engineer and found to be acceptable.

END OF SECTION

SECTION 32 16 13

CONCRETE CURBS AND SIDEWALKS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install conventionally-formed concrete curbs and sidewalks.
2. Width, thickness, geometry, and extent of curb and sidewalk shall be as shown or indicated on the Drawings.
3. Requirements for concrete sidewalks apply to concrete driveways, unless otherwise shown or specified, or unless concrete pavement requirements are included in the Contract Documents.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate the installation of items that must be installed with or before concrete curbs and sidewalks.

C. Related Sections:

1. Section 03 00 05, Concrete.
2. Section 07 19 16, Silane Water Repellants.
3. Section 07 92 00, Joint Sealants.
4. Section 31 23 00, Excavation and Fill.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. Installer:
 - a. Installer shall have not less than two years experience installing concrete curbs and sidewalks similar to those required for the Work.
 - b. When required by Engineer, submit record of experience documenting not less than three successful, completed projects. For each project, submit the following information:
 - 1) Project name.
 - 2) Location of project.
 - 3) Approximate quantity of concrete curb and sidewalk constructed by installer.
 - 4) Contract price of concrete curb and sidewalk construction.
 - 5) Name and contact information for project owner.
 - c. When the Work includes 65 cubic yards or more of curb and sidewalk concrete, furnish services of an ACI-certified concrete flatwork finisher to supervise finishing. Submit proof of ACI flatwork certification prior to placing concrete.

1.03 SUBMITTALS

A. Action Submittals:

1. Product Data: Submit fabricator's technical information, including catalog information and specifications, for proposed reinforcing materials, sufficient for Engineer to verify compliance with the Contract Documents.

- B. Informational Submittals:
 - 1. Qualifications Statements: When requested by Engineer, submit qualifications statement for installer.
 - 2. Field Quality Control Submittals: Submit concrete test results for the Work included under this Section.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Sections 03 00 05, 07 19 16, and 07 92 00.

1.05 SITE CONDITIONS

- A. Environmental Requirements:
 - 1. When temperature and environmental conditions warrant, comply with requirements for cold weather placing and hot weather placing under Section 03 00 05, unless otherwise required under this Section.
 - 2. Temperature of aggregate base material under concrete shall be 39 degrees F or higher. Aggregate base material shall not have snow, ice, frost, or standing water on its surface at the time of concrete placing. Use of insulating materials and heating equipment may be required before concrete placing begins.
 - 3. Discontinue concrete placing when the air temperature falls below 39 degrees F. Do not place concrete in the rain.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Aggregate Base Material for Curbs and Sidewalks:
 - 1. Subbase material in accordance with Section 31 23 00, unless otherwise shown or indicated.
- B. Concrete Materials:
 - 1. Comply with applicable requirements of Section 03 00 05, including requirements for formwork, concrete materials, admixtures, bonding materials, curing materials, and others as required.
 - 2. Concrete Mix, Design, and Testing:
 - a. Comply with applicable requirements of Section 03 00 05 for concrete mix design, sampling, testing, and quality control.
 - b. Design the mix to produce concrete of properties of compressive strength, slump range, and air content as specified in Section 03 00 05.
- C. Reinforcing Materials:
 - 1. Unless otherwise shown or indicated, provide for sidewalks reinforcing not less than six-inch by six-inch, W2.9 by W2.9 welded smooth wire reinforcement complying with Section 03 00 05.
- D. Expansion Joint Material:
 - 1. Preformed Expansion Joint Filler: Comply with Section 03 00 05 for preformed expansion joint fillers.
 - 2. Joint Sealant: Comply with Section 07 92 00 for joint sealant and accessories used on expansion joints and control joints.

- E. Silane Water Repellant:
 - 1. Comply with Section 07 19 16 for silane water repellant used on concrete sidewalks.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine the subgrade, subbase, and conditions under which the Work will be performed and notify Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected in a manner acceptable to Engineer.
- B. Subgrade:
 - 1. Verify that earthwork is completed to correct line and grade.
 - 2. Verify that subgrade is smooth, properly compacted, and free of frost and excessive moisture in accordance with Section 31 23 00.
 - 3. Do not commence the Work under this Section until conditions are satisfactory.

3.02 SUBBASE FOR CURBS AND SIDEWALKS

- A. Subbase Under Curb or Sidewalk:
 - 1. Install subbase in accordance with Section 31 23 00. Properly compact subbase to thickness shown or indicated in the Contract Documents.
 - 2. When thickness of subbase is not shown or indicated, provide subbase of six inches under curbs and sidewalks.

3.03 CONSTRUCTION OF FORMS

- A. Set forms to line and grade. Forms shall be free from warp.
- B. Install forms along full length of curb and sidewalk.
- C. Forms shall extend to the full depth of the curb and sidewalk (as applicable), and shall be secured so no displacement occurs during concrete placing.

3.04 REINFORCING

- A. Locate, place, and support reinforcing in accordance with Section 03 00 05, unless otherwise shown on the Drawings.
- B. Size of reinforcing shall be as shown or indicated in the Contract Documents.
- C. Unless otherwise shown or indicated, locate reinforcing for sidewalks at the mid-depth point in the concrete slab.

3.05 CONCRETE PLACING

- A. General:
 - 1. Comply with Section 03 00 05 and this Section relative to mixing and placing concrete.
- B. Placing:
 - 1. Curbs: Place concrete using methods that prevent segregation of the mix. Consolidate concrete along face of forms with an internal vibrator.

2. Sidewalks: Place concrete in one-course, monolithic construction, for full width and depth of sidewalk.
- C. Curbs:
1. Provide curb-cuts and driveway entrances for vehicle passage and pedestrian passage where shown, and when not shown but where existing sidewalks and curbs are being replaced, provide curb-cut or driveway entrance (as applicable) at location of existing driveways and pedestrian access ramps in sidewalks.
 2. Neatly form transitions from curb to curb-cut or driveway entrance.
 3. Unless otherwise shown or indicated, top of curb at curb-cut or driveway entrance shall be not greater than 1/4 inch above elevation of finished pavement surface.

3.06 JOINTS

- A. General:
1. Provide construction joints, expansion joints, and control joints in concrete curbs and sidewalks.
 2. Provide expansion, contraction, and construction joints perpendicular to formed faces of curb or sidewalk.
 3. Construct transverse joints at right angles to the Work centerline and as shown.
- B. Construction Joints: Place construction joints at locations where concrete placing operations are stopped for more than 30 minutes, except where such pours terminate at expansion joints.
- C. Expansion Joints:
1. General: Provide preformed expansion joint filler at locations indicated. When curb or sidewalk is not poured monolithically, provide expansion joints where each abuts the other.
 2. Curbs: Provide 11/16-inch wide preformed expansion joint filter at 30-foot intervals along length of curb, at expansion joints in pavement, at movable structures (such as bridges), and between curb and structures and returns.
 3. Sidewalks: Provide 1/2-inch wide preformed expansion joint filler at 30-foot intervals along length of sidewalk and at all joints between sidewalk and the following:
 - a. Curb.
 - b. Gutters.
 - c. Pavement.
 - d. Buildings.
 - e. Drainage structures.
 - f. Utility metal appurtenances such as manhole cover frames and valve boxes.
 - g. Similar construction.
 4. Place top of expansion joint material not less than 1/2 inch or more than one inch below concrete surface. Apply joint sealer on top of expansion joint material flush with concrete surface, and in accordance with sealant manufacturer's instructions and Section 07 92 00.
- D. Control Joints: Provide joints as indicated below:
1. Curbs: Provide at intervals of 10 feet on centers. Joint shall be not less than 1/8 inch and not more than 1/4 inch in width, and shall have a depth of 1.5 inches.
 2. Sidewalks: Provide at intervals of five feet on centers. Joint shall be not less than 1/8 inch and not more than 1/4 inch in width, and shall have a depth of not less than one-third the total thickness of concrete sidewalk.
 3. Joints may be formed or saw-cut.

3.07 CONCRETE FINISHING

- A. Smooth exposed surface by hand-screeding and floating.
- B. Work edges of sidewalks, back top edge of curb, and transverse joints, and round to 1/4-inch radius.
- C. Complete surface finishing by drawing a fine-hair broom across surface, perpendicular to line of traffic.

3.08 CURING

- A. Protect and cure finished concrete curbs and sidewalks in accordance with Section 03 00 05.
- B. Cure driveways and sidewalks at driveways for not less than three days prior to opening to vehicle traffic. In colder weather, as indicated in Article 1.05 of this Section, curing period shall be not less than six days prior to opening to vehicle traffic unless other provisions to determine strength are provided and approved by Engineer.

3.09 SEALING

- A. Apply silane water repellant to cured concrete sidewalks in accordance with water repellant manufacturer's instructions and Section 07 19 16.

3.10 REPAIR AND CLEANING

- A. Repair or replace broken or defective curbs and sidewalk as directed by Engineer.
- B. Sweep the concrete curb and sidewalk Work and wash free of stains, discolorations, dirt, and other foreign material.

END OF SECTION

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SECTION 32 31 13

CHAIN-LINK FENCES AND GATES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, tools, equipment, and incidentals as shown, specified, and required to furnish and install chain-link fencing and gates.
2. Extent of chain-link fencing and gates is shown or indicated on the Drawings.
3. Types of products required under this Section include the following:
 - a. Aluminized steel chain-link fabric.
 - b. Galvanized steel framework.
 - c. Auxiliary system components, gates, accessories, fasteners, and fittings.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate the installation of items that must be installed with or before chain-link fences and gates.

C. Related Sections:

1. Section 03 00 05, Concrete.

1.02 REFERENCES

A. Terminology:

1. The following words or terms are not defined but, when used in this Section, have the following meaning:
 - a. "Knuckling" describes the type of selvage obtained by interlocking adjacent pairs of wire ends and then bending the wire ends back into a closed loop.
 - b. "Fencing" describes an assembly of metal components, including wire chain-link fabric fastened to top, bottom, and intermediate horizontal rails, and to vertical line posts, corner posts, and terminal posts. This assembly includes all auxiliary components, gates, fittings, fasteners, and other accessories, all with specified protective coatings.
2. Terminology used in this Section and not defined in this Article will be construed in accordance with the terminology used in ASTM F552 and CLFMI CLF-PM0610.

B. Reference Standards:

1. The following standards are referenced in this Section:
 - a. ASTM A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - b. ASTM A90/A90M, Standard Test Method for Weight (Mass) of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
 - c. ASTM A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - d. ASTM A428/A428M, Standard Test Method for Weight (Mass) of Coating on Aluminum-Coated Iron or Steel Articles.
 - e. ASTM A491, Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric.
 - f. ASTM A641/A641M, Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

- g. ASTM A780/A780M, Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
- h. ASTM A817, Standard Specification for Metallic-Coated Steel Wire for Chain-Link Fence Fabric and Marcellled Tension Wire.
- i. ASTM A824, Standard Specification for Metallic-Coated Steel Marcellled Tension Wire for Use With Chain-Link Fence.
- j. ASTM B6, Standard Specification for Zinc.
- k. ASTM B221, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- l. ASTM F552, Standard Terminology Relating to Chain-Link Fencing.
- m. ASTM F567, Standard Practice for Installation of Chain-Link Fence.
- n. ASTM F626, Standard Specification for Fence Fittings.
- o. ASTM F900, Standard Specification for Industrial and Commercial Swing Gates.
- p. ASTM F1043, Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework.
- q. ASTM F1083, Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.
- r. ASTM F1184, Standard Specification for Industrial and Commercial Horizontal Slide Gates.
- s. CLFMI CLF-PM0610, Product Manual.

1.03 QUALITY ASSURANCE

A. Qualifications:

- 1. Installer:
 - a. Engage a single installer skilled, trained, and with successful and documented experience in the installation of fencing, and who agrees to employ only tradesmen with specific skill and successful experience in the type of Work required.
 - b. Installer shall be acceptable to fencing manufacturer.

B. Component Supply and Compatibility:

- 1. Provide fencing as complete system with all gates, hardware, appurtenances, and other components produced by a single manufacturer, including custom erection accessories, fittings, clamps, and fastenings as required for complete system.

1.04 SUBMITTALS

A. Action Submittals:

- 1. Shop Drawings:
 - a. Submit shop drawings of typical fence assembly, identifying all materials, dimensions, sizes, weights, and finishes of rails, posts, braces, supports, and other fencing components. Show fence heights and locations of gates. Show gate swing or other operation, hardware, and accessories. Include plans, elevations, and sections, with required installation and operating clearances, and details of post anchorage, attachments, and bracing.
 - b. Submit large-scale details for all connections and gate details.
 - c. Submit list of all hardware, fasteners, and accessories.
- 2. Product Data:
 - a. Submit copies of manufacturer's technical product information, and specifications for all fencing components.
 - b. Submit data substantiating that materials proposed comply with the following:
 - 1) Weight of aluminum coating on wire fabrications, in compliance with ASTM A428/A428M.
 - 2) Weight of zinc coating on pipe fabrications, in compliance with ASTM A90/A90M.

- B. Informational Submittals:
 - 1. Certifications: Submit shipping list for materials used, endorsed with manufacturer's voucher, signed by authorized employee of manufacturer, certifying that material used in fencing complies with the Contract Documents and with the approved submittals.
 - 2. Manufacturer's Instructions: Submit manufacturer's installation instructions.
 - 3. Qualifications Statements: Submit name and address of fence installer.
- C. Closeout Submittals:
 - 1. Submit warranty documentation in accordance with Article 1.07 of this Section.
 - 2. Submit specified number of keys for locksets and padlocks.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials in manufacturer's original, unopened packaging with all factory-applied tags, labels, and other identifying information intact, legible, and accurately representing material on approved submittals.
- B. Storage:
 - 1. Store all materials under weather-proof cover, off the ground and away from other construction activities.
 - 2. Do not store material in a manner that would create a humidity chamber. Provide for free movement of air under protective cover and between components of the fencing.
- C. Handling: Handle material in manner that is in compliance with manufacturer's recommendations and that avoids damaging coatings.

1.06 SITE CONDITIONS

- A. Obtain measurements at the Site to verify layout information and dimensions for fencing and gates in relation to reference points provided by Owner or indicated in the Contract Documents.

1.07 WARRANTY

- A. General Warranty: The special warranties specified in this Article shall not deprive Owner of other rights or remedies Owner may otherwise have under the Contract Documents and shall be in addition to and run concurrent with other warranties made by Contractor under the Contract Documents.
- B. Special Warranties: Submit manufacturer's written 10-year warranty against rusting or corrosion of metal.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. General:
 - 1. Pipe sizes specified are actual outside dimension.
 - 2. Wire gages shall conform to American Steel and Wire Company gage.

- B. Steel Wire:
 - 1. Chain-Link Fabric and Tension Wire: ASTM A817, Type I.
 - 2. Tie Wires and Hog Rings: ASTM A641/A641M, Class 3 or A.
- C. Steel Pipe:
 - 1. ASTM F1083, Regular Grade, Standard Weight (Schedule 40).
- D. Square and Rectangular Aluminum Tube:
 - 1. ASTM B221.

2.02 FENCE FABRIC

- A. Steel Chain-Link Fabric: ASTM A491.
 - 1. Wire Size: Nine gage.
 - 2. Mesh Size: Two inches.
 - 3. Nominal Fabric Height: 72 inches.
 - 4. Selvage: Knuckled at top, twisted at bottom.
- B. Provide fence fabric imprinted with manufacturer's trade name, country of origin, core wire gage, and finished outside diameter gage.

2.03 FENCE FRAMEWORK

- A. Steel Fence Framework: ASTM F1043, Group IA. Provide posts and rails of the following minimum sizes:
 - 1. End, Corner, and Pull Posts: 2.375-inch OD pipe weighing 3.65 pounds per linear foot.
 - 2. Line Posts: 1.900-inch OD pipe weighing 2.72 pounds per linear foot.
 - 3. Gate Posts:
 - a. Swing Gates: 2.375-inch OD pipe weighing 3.65 pounds per linear foot.
 - b. Cantilever Slide Gates: Four-inch OD pipe weighing 9.11 pounds per linear foot.
 - 4. Top Rail: 1.660-inch OD pipe weighing 2.27 pounds per linear foot. Furnish in manufacturer's longest lengths.
 - 5. Brace Rail: 1.660-inch OD pipe weighing 2.27 pounds per linear foot.

2.04 GATES

- A. Swing Gates: ASTM F900.
 - 1. Gate Framework: ASTM F1043, Group IA. Fabricate gate perimeter frames of 1.660-inch OD pipe weighing 2.27 pounds per linear foot. Provide gate frames with intermediate horizontal rails. Provide additional horizontal and vertical members to ensure proper gate operation and for attachment of fabric, hardware, and accessories. Space so that frame members are not more than eight feet apart.
 - 2. Gate Hardware: Gate hardware shall be of sufficient strength and durability to support the gate and repeated open-close cycles.
 - a. Gate Hinges: Provide non-lift-off-type hinges of galvanized pressed steel. Hinges shall permit the gate to swing a full 180 degrees inward.
 - b. Gate Latch: Provide forked-type latch of galvanized pressed steel to permit operation from either side of gate, with padlock eye as integral part of latch. Latch shall be capable of retaining gate in closed position and shall have provision for padlock.
 - 3. Assemble gate frames by welding. Use same fabric as provided for fence. Install fabric with tension bars at vertical edges. Attach tension bars to gate frame with tension bands spaced not more than 15 inches on centers. Attach hardware with rivets or by other means that will provide security against removal and breakage.

- B. Cantilever Slide Gates: ASTM F1184, Type II, Class 2.
1. Gate Framework: ASTM B221. Fabricate gate perimeter frames of square or rectangular extruded aluminum-alloy tubing in accordance with manufacturer's design and based on gate opening and height. Top horizontal member shall be one-piece precision extruded structural section with integral enclosed track to accommodate truck assemblies. Provide additional vertical members to ensure proper gate operation and for attachment of fabric, hardware, and accessories. Space so that frame members are not more than eight feet apart.
 2. Gate Hardware: Gate hardware shall be of sufficient strength and durability to support the gate and repeated open-close cycles.
 - a. Provide manufacturer's internal truck assemblies, hanger brackets, guides, stays, bracing, and accessories as required. Internal truck assemblies shall be self-aligning, factory lubricated and sealed ball-bearing wheels. Each internal roller truck assembly shall be affixed to hanger bracket by means of a 5/8-inch diameter stainless steel bolt. Attachment of center bolt to truck body shall be by means of a swivel joint to ensure equivalent and consistent loading on all bearing wheels and internal track surfaces throughout the travel of the gate.
 - b. Gate latch shall be capable of retaining gate in closed position and shall have provision for padlock
 3. Assemble gate frames by welding or with special malleable or pressed steel fittings and rivets for rigid connections. Use same fabric as provided for fence. Install fabric with stretcher bars at vertical edges. Bars may also be used at top and bottom edges. Attach stretchers to gate frame at not more than 15 inches on centers. Attach hardware with rivets or by other means that will provide security against removal and breakage.
 4. Install diagonal cross-bracing on gates consisting of adjustable-length truss rods provided with turnbuckles to ensure frame rigidity without sag or twist.
- C. Padlocks: Provide each gate with heavy-duty bronze padlock and shackle chain as follows:
1. Product and Manufacturer: Provide one of the following:
 - a. No. 160DHM with 11/32-inch marine brass shackle by Master Lock Company.
 - b. Or equal.
 2. Provide three keys for each padlock. Where more than one gate is required for same enclosure, padlocks shall be keyed identically.

2.05 AUXILIARY FENCING MATERIALS AND ACCESSORIES

- A. Steel Tension Wire: ASTM A824, Type I.
- B. Fittings: ASTM F626.
1. Post Caps: Galvanized pressed steel, designed to fit snugly over tubular posts and exclude moisture.
 - a. Provide one loop-type cap for each line post.
 - b. Provide one dome-type cap for each terminal post.
 2. Rail and Brace Ends: Provide galvanized pressed steel rail and brace ends for each connection of brace or rail to terminal posts.
 3. Top Rail Sleeves: Galvanized pressed steel or round steel tubing with minimum thickness of 0.051 inch and minimum length of six inches. Provide one sleeve for each length of rail.
 4. Tie Wires and Clips:
 - a. Tie Wires: Nine-gage galvanized steel wire with Class 3 or A coating in accordance with ASTM A641/A641M.
 - b. Hog Rings: 12-gage galvanized steel wire with Class 3 or A coating in accordance with ASTM A641/A641M.

5. Tension and Brace Bands:
 - a. Tension Bands: Galvanized pressed steel with minimum thickness of 0.074 inch (14 gage) and minimum width of 3/4 inch.
 - b. Brace Bands: Galvanized pressed steel with minimum thickness of 0.105 inch (12 gage) and minimum width of 3/4 inch.
6. Tension Bars: Galvanized, merchant-quality steel in one-piece lengths equal to full height of fabric, with minimum cross-section of 3/16 inch by 3/4 inch. Provide one tension bar for each gate and end post, and two tension bars for each corner and pull post.
7. Truss Rod Assembly: Galvanized, merchant-quality steel rod with minimum diameter of 3/8 inch, complete with pressed steel tightener.

C. Concrete: Concrete shall be Class "B", in accordance with Section 03 00 05.

2.06 FINISHING

A. Aluminized Finish:

1. Provide aluminized finish for steel chain-link fabric and tension wire. Ingot or pig aluminum used for aluminizing shall conform to the following impurity limits:
 - a. Copper: 0.10 percent, maximum.
 - b. Iron: 0.50 percent, maximum.
2. Aluminize metal using hot-dip process in accordance with the following:
 - a. Chain-Link Fabric and Tension Wire: ASTM A817.
3. Provide minimum weights of aluminum as follows:
 - a. Chain-Link Fabric and Tension Wire: 0.40 ounce of aluminum per square foot of uncoated wire surface, as determined by ASTM A428/428M.

B. Galvanized Finish:

1. Provide galvanized finish for steel framework, auxiliary system components, and miscellaneous accessories. Zinc for galvanizing shall be of High Grade or Special High Grade conforming to ASTM B6 with maximum aluminum content of 0.01 percent.
2. Galvanize metal using hot-dip process in accordance with the following:
 - a. Steel Pipe: ASTM A53/A53M.
 - b. Tie Wires and Hog Rings: ASTM A641/641M.
 - c. Fittings: ASTM F626.
 - d. Hardware and Accessories: ASTM A153/A153M.
3. Provide minimum weights of zinc as follows:
 - a. Steel Pipe: 1.80 ounces of zinc per square foot. Apply Type A coating both inside and outside according to ASTM F1043, as determined by ASTM A90/A90M.
 - b. Tie Wires and Hog Rings: 0.90 ounce of zinc per square foot of uncoated wire surface, as determined by ASTM A90/A90M.
 - c. Fittings: 1.20 ounces of zinc per square foot of surface area, as determined by ASTM A90/A90M.
 - d. Hardware and Accessories: Zinc weights in accordance with Table 1 of ASTM A153/A153M.

C. Welded Joints:

1. Repair zinc coatings at welded joints by applying zinc-rich paint, as specified in ASTM A780/A780M.

2.07 SOURCE QUALITY CONTROL

- A. Fabrication Tolerances: Fabric, posts, rails, and other supports shall be straight or uniformly curved to provide the profiles shown, to dimensional tolerance of 1/16 inch in 10 feet without warp or rack in the finished Work.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which the Work will be erected and notify Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected in a manner acceptable to Engineer.

3.02 PREPARATION

- A. Confirm that areas to receive fencing are at proper elevations and that no further earthwork is required to bring the subgrade to proper elevations.
- B. Confirm that property lines and legal boundaries of Work are clearly established before initiating the installation of fencing.

3.03 INSTALLATION

- A. Comply with ASTM F567. Do not begin installation of fencing until final grading is completed.
- B. Post Locations:
 - 1. Space line posts equidistant at intervals not exceeding 10 feet on centers.
 - 2. Set terminal posts at the beginning and end of each continuous length of fence and at abrupt changes in vertical and horizontal alignments.
- C. Setting Posts:
 - 1. Posts shall be set in concrete footings, except as otherwise shown or specified.
 - 2. Excavate or drill holes of diameters and depths specified for post footings in firm, undisturbed or compacted soil.
 - a. End, Corner, Pull, and Line Posts: Provide post holes excavated or drilled approximately three inches deeper than bottom of post, with bottom of posts set not less than two feet below finished grade plus an additional three inches for each one-foot increase in fence height over four feet. Hole diameter shall be a minimum of four times the largest cross-section of post to be installed.
 - b. Gate Posts: Provide post holes excavated or drilled approximately six inches deeper than bottom of post. Hole diameter shall be a minimum of four times the largest cross-section of post to be installed.
 - 1) Swing Gates: Bottom of posts shall be set not less than two feet below finished grade plus an additional three inches for each one-foot increase in fence height over four feet.
 - 2) Cantilever Slide Gates: Bottom of posts shall be set not less than three feet below finished grade.
 - 3. When solid rock or concrete is encountered at ground surface, drill into rock or concrete at least 12 inches for line posts and at least 18 inches for end, corner, pull, and gate posts. Hole diameter shall be a minimum of one inch greater than the largest cross-section of post to be installed.

4. If solid rock or concrete is below soil overburden, drill to full depth required, except penetration into rock or concrete need not exceed the minimum depths specified for rock or concrete encountered at ground surface.
5. Remove loose and foreign materials from sides and bottoms of holes, and moisten soil prior to placing concrete.
6. Center and align posts in holes three or six inches above bottom of excavation, as specified.
7. Place concrete around posts in continuous pour, and vibrate or tamp for consolidation. Check each post for vertical and top alignment, and hold in position during placement and finishing operations.
8. Extend concrete to two inches above ground surface, or to two inches below ground surface if cover of sod, bituminous asphalt paving, or other material is shown or indicated to conceal concrete. Crown to shed water away from posts.
9. Extend footings for gate posts to underside of bottom hinge. Set keeps, stops, sleeves, and other accessories into concrete as required.
10. Keep exposed concrete surfaces moist for at least seven days after placement, or cure with membrane curing materials, or other acceptable curing method.
11. Allow concrete to attain at least 75 percent of its minimum 28-day unconfined compressive strength, but in no case sooner than seven days after placement, before installing rails, tension wires, or chain-link fabric.
12. Do not stretch and tension fabric and wires, and do not hang gates, until concrete has attained its full design strength.
13. Provide caps on top of each post to exclude moisture and to receive top rail.

D. Rails and Braces:

1. Top Rails: Run rail continuously through post caps or extension arms, bending to radius for curved runs. Provide expansion couplings as recommended by fencing manufacturer to form continuous rail between terminal posts.
2. Brace Assemblies: Provide brace assemblies at end and gate posts, and at both sides of corner and pull posts, with horizontal brace located at mid-height of fabric. Diagonal bracing, consisting of adjustable-length truss rods, shall run from center of first line post to bottom of terminal post. Install brace assemblies so posts are plumb when diagonal rod is under proper tension.

E. Tension Wire:

1. Install tension wire within bottom six inches of chain-link fabric.
2. Stretch tension wire taut and free of sag, from end to end of each stretch of fence, and secure to terminal posts with brace bands.
3. Fasten tension wire to each line post with tie wire.

F. Chain-Link Fabric:

1. Install fabric on security side of fence, and anchor to framework so that fabric remains in tension after pulling force is released.
 - a. Fasten to terminal posts and gate posts with tension bars threaded through mesh and secured with tension bands at maximum intervals of 15 inches.
 - b. Fasten to line posts, gate frames, and rails with tie wires spaced at maximum intervals of 15 inches on posts and 24 inches on rails.
 - c. Fasten to tension wire with hog rings spaced at maximum intervals of 24 inches.
2. Leave approximately two inches between finished grade and bottom selvage, except where bottom of fabric extends into concrete.
3. Join roll of chain-link fabric by weaving a single picket into the ends of roll to form continuous mesh.

- G. Gates:
 - 1. Install gates plumb, level, and secure for full opening without interference.
 - 2. Adjust hardware for smooth operation and lubricate where necessary.
- H. Tie Wires: Use "U"-shaped wires conforming to diameter of pipe. Clasp pipe and fabric firmly with ends twisted at least two full turns. Bend ends of wire to minimize hazard to persons and clothing.
- I. Fasteners: Install nuts for tension band and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

3.04 ADJUSTMENT AND CLEANING

- A. Repair coatings damaged in the shop or at the Site by recoating with manufacturer's recommended repair compound, applied in accordance with manufacturer's directions. Repair hot-dip galvanized coatings in accordance with ASTM A780/A780M.
- B. Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, and malfunction throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- C. Lubricate operating equipment and clean exposed surfaces.
- D. Repair and replace broken or bent components.

END OF SECTION

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SECTION 32 92 00

LAWNS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, tools, equipment, and incidentals as shown, specified, and required to furnish and install lawns.
2. Extent of lawns is shown or indicated on the Drawings.
3. Types of products required under this Section include the following:
 - a. Topsoil.
 - b. Lawn grass seed.
 - c. Fertilizers.
 - d. Mulches.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate the installation of items that must be installed with or before lawns.

1.02 REFERENCES

A. Terminology:

1. The following words or terms are not defined but, when used in this Section, have the following meaning:
 - a. "Finished grade" describes the finished surface elevation of topsoil.
 - b. "Percent pure live seed", or "percent PLS", is the percent (%) purity multiplied by percent (%) germination divided by 100, and shall be calculated for all seed lots using each seed lot's own unique purity and germination test results. A PLS pound is the bulk weight of seed required to equal one pound of 100 percent pure, germinated seed.
 - c. "Subgrade" describes the surface or elevation of subsoil remaining after completing excavation, or the top surface of a fill or backfill, before placing topsoil.

B. Reference Standards:

1. The following standards are referenced in this Section:
 - a. Association of Official Analytic Chemists (AOAC), Official Methods of Analysis of AOAC International.
 - b. Association of Official Seed Analysts (AOSA), Journal of Seed Technology, Rules for Testing Seeds.
 - c. ASTM D422, Standard Test Method for Particle-Size Analysis of Soils.
 - d. ASTM D977, Specification for Emulsified Asphalt.
 - e. ASTM D2974, Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.
 - f. ASTM D4972, Standard Test Method for pH of Soils.
 - g. ASTM D5268, Standard Specification for Topsoil Used for Landscaping Purposes.
 - h. USEPA SW-846 Method 6010, Inductively Coupled Plasma-Atomic Emission Spectrometry.
 - i. USEPA SW-846 Method 7471, Mercury in Solid or Semisolid Waste (Manual Cold Vapor Technique).
 - j. USEPA SW-846 Method 8081, Organochlorine Pesticides by Gas Chromatography.

- k. USEPA SW-846 Method 8082, Polychlorinated Biphenyls (PCBs) by Gas Chromatography.
- l. USEPA SW-846 Method 8151, Chlorinated Herbicides by GC Using Methylation or Pentafluorobenzoylation Derivatization.
- m. USEPA SW-846 Method 8260, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).
- n. USEPA SW-846 Method 8270, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).
- o. USEPA SW-846 Method 9012, Total and Amenable Cyanide (Automated Colorimetric, with Off-Line Distillation).

1.03 QUALITY ASSURANCE

A. Qualifications:

- 1. Installer:
 - a. Engage a single landscape installer skilled, trained, and with successful and documented experience in the planting of lawns and in the installation of the types of materials required, and who agrees to employ only tradesmen with specific skill and successful experience in the type of Work required.
 - b. When requested by Engineer, submit record of experience documenting not less than three successful, completed projects. For each project, submit the following information:
 - 1) Project name.
 - 2) Location of project.
 - 3) Names and telephone numbers of owner, architects, or engineers responsible for the project.
 - 4) Approximate area of lawns installed.
 - 5) Approximate contract price of lawns installed.
 - c. Installer's Site Supervisor: Require installer to maintain an experienced full-time landscape supervisor on-site during the time of preparation for, and planting of, lawns. Supervisor shall have achieved landscape or horticultural certification acceptable to governing authorities having jurisdiction at the Site.
 - d. Ratio of laborers to certified landscape supervisors shall not exceed 12 to one. Certified landscape supervisor shall be on-site throughout the day-to-day performance of the Work of this Section.
 - e. Application of herbicides, chemicals, and insecticides shall be done by personnel licensed to perform such applications by governing authorities having jurisdiction at the Site and in accordance with each manufacturer's instructions provided on each product label.

B. Regulatory Requirements:

- 1. Comply with applicable provisions and recommendations of the following:
 - a. 6 NYCRR 375, Environmental Remediation Programs.
 - b. NYSDEC Technical Guidance for Site Investigation and Remediation (DER-10).

1.04 SUBMITTALS

A. Action Submittals:

- 1. Shop Drawings:
 - a. Submit planting schedule showing scheduled start and finish dates for lawn Work in each area of the Site.
- 2. Product Data:
 - a. Submit composition and analysis of commercial starter fertilizer and all purchase receipts showing the total quantity actually purchased for the Project.

- b. Submit proportions of each component contained in hydroseed mixture. Identify number of pounds of each component required for each 100 gallons of water. Include the number of square feet of lawn mixture that can be installed with each full tank of hydroseed mixture.
- c. Submit percent PLS for each type of seed and each seed lot. Include bulk weight of seed required to equal one pound of 100 percent pure, germinated seed.

B. Informational Submittals:

- 1. Qualifications Statements:
 - a. Installer: Submit name and address of landscape installer. When requested by Engineer, submit qualifications and record of experience.
 - b. Landscape Supervisor: When requested by Engineer, submit name and qualifications of installer's landscape supervisor, including copy of valid certifications applicable to the Project.
- 2. Certificates:
 - a. For each seed mixture, submit seed Supplier's certification stating the botanical and common name, and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging. Certify that seed has been stored in compliance with all recommendations of the seed Supplier.
- 3. Source Quality Control Submittals:
 - a. Submit Supplier name, source address, and copy of current NYSDEC mining permit, if any, for proposed source of imported topsoil.
- 4. Delivery Tickets:
 - a. Submit copy of delivery ticket for each load of topsoil delivered to the Site. Each delivery ticket shall indicate Supplier name and source address, project name, contract number, date, material type, and quantity delivered.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery:

- 1. Do not deliver topsoil, fertilizer, or grass seed until Site conditions are ready for installation.
- 2. Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery.
- 3. Deliver seed in undamaged, original containers, sealed by the Supplier and indicating compliance with the required seed mixture.
- 4. Inspect materials upon arrival at the Site. Immediately and permanently remove unacceptable materials from Site.

B. Storage:

- 1. Store and cover materials to prevent deterioration. Remove packaged materials that become wet or show deterioration or water marks from the Site.
- 2. Seed that becomes wet, moldy, or damaged during the time of storage on-site, or that has been damaged during transit, is not acceptable.

1.06 SITE CONDITIONS

A. Environmental Requirements:

- 1. Proceed with and complete lawn planting as rapidly as portions of the Site become available, working within the seasonal limitations for each type of lawn planting required.
- 2. Proceed with planting only when current and forecasted weather conditions are favorable to successful planting and establishment of lawns.
 - a. Do not spread seed when wind velocity exceeds five miles per hour.

- b. Do not plant when drought, excessive moisture, or other unsatisfactory conditions prevail.
- B. Scheduling:
 - 1. Plant during one of the following periods:
 - a. Spring Planting: March 15 to June 1.
 - b. Fall Planting: September 1 to October 30.
 - 2. Do not begin lawn planting until water, acceptable for use and adequate in supply, is available on-Site and can be successfully transported to the areas of Work. Coordinate provision of adequate and acceptable water supply with Progress Schedule.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Topsoil:
 - 1. Material shall be fertile, friable, natural-loam surface soil, capable of sustaining vigorous plant growth; free of any admixture of subsoil, clods of hard earth, plants or roots, sticks, stones larger than one inch in diameter, pests and pest larvae, or other extraneous material harmful to plant growth, in compliance with ASTM D5268.
 - 2. Gradation shall be as specified in Table 32 92 00-A.

**TABLE 32 92 00-A
GRADATION REQUIREMENTS FOR TOPSOIL**

U.S. Sieve Size	Percentage by Weight Passing Sieve
1-inch	100
No. 10	90-100
No. 200	35-70

- 3. Clay content of material passing the No. 200 sieve shall not exceed 20 percent.
 - 4. Material shall have a pH range of 5.0 to 7.0.
 - 5. Organic content of material passing the No. 10 sieve shall be not less than five percent, and shall not exceed 20 percent.
 - 6. Material shall be free of foreign chemical contaminants and shall comply with the soil cleanup objectives for restricted residential use, as set forth in 6 NYCRR 375-6.8(b).
- B. Lawn Grass Seed:
 - 1. Lawn Grass Seed Mixture: Provide fresh, clean, new crop seed complying with the tolerance for purity and germination established by AOSA. Provide seed of the grass species, proportions, and minimum percentages of purity and germination, and maximum percentage of weed seed, specified.
 - 2. Seed Species: Seed of grass species as follows, with not less than 95 percent germination, not less than 80 percent pure seed, and not more than 0.25 percent weed seed by weight:
 - a. Kentucky Bluegrass (*Poa pratensis*): 50 percent by weight.
 - b. Creeping Red Fescue (*Festuca rubra* variety): 30 percent by weight.
 - c. Perennial Ryegrass (*Lolium perenne*): 10 percent by weight.
 - d. Redtop (*Agrostis gigantea*): 10 percent by weight.
- C. Fertilizer: Commercial-grade, complete starter fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium.

- D. Mulches:
1. Straw Mulch: Provide clean, dry, and seed-free salt hay or threshed straw of wheat, rye, oats, or barley.
 2. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; non-toxic; free of plant-growth or germination inhibitors; with maximum moisture content of 15 percent and pH range of 4.5 to 6.5.
 3. Non-Asphaltic Tackifier: Colloidal tackifier recommended by fiber mulch manufacturer for slurry application; non-toxic and free of plant-growth or germination inhibitors.
 4. Asphalt Emulsion: ASTM D977, Grade SS-1; non-toxic and free of plant-growth or germination inhibitors.
- E. Water: Clean, acceptable for lawn application, and containing no material harmful to plant growth and establishment.

2.02 SOURCE QUALITY CONTROL

- A. Analysis and Standards: Package all products with manufacturer's certified analysis performed in accordance with methods established by AOAC, wherever applicable, or as specified.
- B. Topsoil Source: Provide imported topsoil from a NYSDEC-permitted mine, pit, or quarry, or a commercial processing facility specializing in the manufacture of topsoil.
- C. Seed that has been stored at temperatures, or under conditions not recommended by the seed Supplier, or has become wet, moldy, or otherwise damaged, shall not be acceptable. The PLS for each seed lot shall be 75 percent, minimum.
- D. Certify that all seed has been stored under conditions recommended by the seed Supplier and has not been subjected to conditions damaging to PLS percentages.
- E. Seed may be mixed by an approved method on-site or at the seed Supplier's facilities. If the seed is mixed on-site, each variety shall be delivered in the original containers and shall bear the Supplier's certified analysis. Where seed is mixed by the seed Supplier, provide Engineer with the seed Supplier's certified statement as to the composition of the mixture.
- F. Tests: Engineer will collect samples, and coordinate and pay for laboratory testing of Contractor's proposed topsoil material to verify compliance with the Contract Documents.
1. Geotechnical Testing: Engineer will collect one representative sample of Contractor's proposed topsoil material. Sample will be tested for the following:
 - a. Gradation in accordance with ASTM D422.
 - b. pH in accordance with ASTM D4972.
 - c. Organic content in accordance with ASTM D2974.
 2. Chemical Testing: Engineer will collect a combination of discrete and composite samples of Contractor's proposed topsoil material in accordance with Subdivision 5.4(e) and Table 5.4(e)10 of DER-10.
 - a. Each discrete sample will be tested for VOCs in accordance with USEPA SW-846 Method 8260.
 - b. Each composite sample will be tested for the following:
 - 1) SVOCs in accordance with USEPA SW-846 Method 8270.
 - 2) PCBs in accordance with USEPA SW-846 Method 8082.
 - 3) Pesticides in accordance with USEPA SW-846 Method 8081.
 - 4) Herbicides in accordance with USEPA SW-846 Method 8151.
 - 5) Total metals in accordance with USEPA SW-846 Methods 6010.
 - 6) Total mercury in accordance with USEPA SW-846 Methods 7471.

- 7) Total cyanide in accordance with USEPA SW-846 Method 9012.
3. Engineer will report results of each test to Contractor.
4. If testing results indicate that the proposed topsoil material does not comply with the Contract Documents, Contractor shall identify and propose a new source of material.
 - a. Submit required information for proposed topsoil source and Supplier in accordance with Article 1.04 of this Section.
 - b. Engineer will collect samples and coordinate laboratory testing in accordance with this Paragraph 2.02.F. Contractor shall be responsible for cost of testing.
5. Engineer will submit testing results for acceptable topsoil material to NYSDEC.
6. Do not ship topsoil to the Site until proposed material, source, and Supplier are accepted by Engineer and approved by NYSDEC.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which lawn Work will be performed and notify Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected in a manner acceptable to Engineer.

3.02 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, and trees, shrubs, and other plants from damage caused by planting operations. Protect adjacent and adjoining areas from hydroseeding overspray.
- B. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Excavate or fill subgrade, as required, to bring subgrade to elevations shown or indicated. Maintain all angles of repose. Confirm that subgrade is at proper elevations and that no further earthwork is required to bring the subgrade to proper elevations. Provide subgrade elevations that slope parallel to finished grade and in the direction shown on the Drawings.
- D. Remove all construction debris, trash, rubble, and other extraneous materials from subgrade. In the event that fuels, oils, concrete washout, or other material harmful to plant growth or germination have been spilled into the subgrade, excavate the subgrade sufficiently to remove all such harmful materials and fill with approved fill, compacted to the required subgrade compaction level.
- E. Notify Engineer that subgrade has been prepared, and obtain Engineer's approval before spreading topsoil.

3.03 FINE GRADING

- A. Do not attempt to spread excessively wet, muddy, or frozen topsoil. Do not spread topsoil more than five days before seeding.
- B. Spread topsoil to a depth of six inches but not less than required to meet finished grades after light rolling and natural settlement.

1. Spread approximately one-half the thickness of required topsoil depth. After spreading topsoil, rototill, disk, or harrow topsoil and subgrade to bring top two inches of subgrade upward into topsoil layer, so that there is a transitional layer between topsoil and subgrade.
 2. Spread remainder of topsoil to required finished grades.
 3. Compact each lift sufficiently to reduce settling, but not enough to prevent the movement of water and feeder roots through topsoil.
 4. Phase the placement of the final lift so that wheeled vehicles do not have to travel over areas where final lifts have already been placed.
 5. Spread and compact to a smooth, uniform surface plane, to within plus-or-minus 1/2 inch of finished elevations. Roll and rake and remove all ridges, and fill depressions, as required. Remove all stones larger than one inch in any dimension, and all sticks, roots, trash, and other extraneous materials.
- C. Moisten prepared areas before seeding. Water thoroughly and allow surface moisture to dry before seeding. Do not create a muddy topsoil condition.
- D. Restore topsoil to specified condition if eroded or otherwise disturbed after fine grading and before seeding.

3.04 CONVENTIONAL SEEDING

- A. Maintain grade stakes until removal is approved by Engineer.
- B. Rake or harrow all seedbeds immediately prior to seeding to produce a rough, grooved surface, no deeper than one inch. Seed only when seedbed is in a friable condition and not muddy or hard.
- C. Sow seed using a spreader or seeding machine.
- D. Distribute seed evenly over entire area by sowing equal quantity in two directions at right angles to each other.
- E. Sow lawn grass seed mixture at a rate of not less than five pounds per 1,000 square feet.
- F. Rake the seed lightly into the uppermost 1/8 inch of topsoil and roll in two directions with a light lawn roller. Take care during raking that seed is not raked from one spot to another.
- G. Protect seeded areas against erosion by spreading straw mulch after completion of seeding operations.
1. Spread straw mulch at an approximate rate of two tons per acre to form a continuous loose blanket not less than 1.5 inches deep.
 2. Anchor mulch by spraying with asphalt emulsion at a rate of 10 to 13 gallons per 1,000 square feet.
 3. Spread mulch with equipment that will blow or eject, by means of a constant air stream, controlled quantities of the mulch and asphalt in a uniform pattern over the specified area. If the mulch is excessively cut or broken, take measures to reduce the cutting or breakage. Introduce the asphalt into the air stream by means of a spray arranged so that it will partially coat the mulch with a spotty asphalt tack prior to the depositing of the mulch covering. Rate of application shall be not less than 75 gallons per ton of mulch.
- H. Using a uniform fine spray, thoroughly and evenly water seeded areas. Provide adequate water to moisten seedbed to a depth of two inches.

- I. Maintain all seedbeds in a uniformly moist condition, conducive to seed germination and plant establishment, as specified.
- J. Reseed areas that remain without mulch for longer than three days.
- K. Take precautions to prevent damage or staining of construction or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.
- L. Prevent foot or vehicular traffic, or the movement of equipment, over the mulched areas. Reseed areas damaged as a result of such activity.

3.05 HYDROSEEDING

- A. Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
- B. Mix slurry with asphalt-emulsion tackifier.
- C. Apply slurry uniformly to all areas to be seeded in a two step process.
 - 1. Apply first slurry application at a minimum rate of 500 pounds per acre dry weight, but not less than the rate required to obtain specified seed sowing rate so that the seed comes into direct contact with topsoil.
 - 2. Apply slurry cover coat of fiber mulch at a rate of 1,000 pounds per acre.

3.06 RECONDITIONING EXISTING LAWNS

- A. Recondition existing lawns damaged by Contractor's operations, including areas used for the storage of materials and equipment and areas damaged by the movement of vehicles. Recondition existing lawns where minor regrading is required.
- B. Provide fertilizer, seed, and mulch as required to recondition existing lawns. Provide new topsoil as required to fill low spots and meet final or existing grades, as specified.
- C. Till stripped, bare, and compacted areas thoroughly to a depth of 12 inches.
- D. Remove diseased or unsatisfactory lawns; do not bury into soil. Remove topsoil containing extraneous materials resulting from Contractor's operations, including oil drippings, stone, gravel, and other construction materials.
- E. In areas approved by Engineer, where substantial lawns remain (but are thin), mow, dethatch, core aerate, and rake. Fill low spots, remove humps, cultivate soil, fertilize, and seed. Apply mulch, if required, to maintain moist condition.
- F. Water newly planted areas and keep moist until new lawns are established, as specified.

3.07 ACCEPTANCE CRITERIA FOR LAWNS

- A. Lawn Work will be considered acceptable when a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 80 percent over any 10 square feet and bare spots not exceeding five inches by five inches.

3.08 CLEANING AND PROTECTION

- A. Promptly remove soil and debris, created by lawn Work, from paved areas. Clean wheels of vehicles before leaving Site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Take all precautions to ensure that hydroseed slurry is only placed on the areas designated. Completely clean any overspray, on areas not designated to receive slurry.
- C. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades until specified acceptance criteria is achieved.

3.09 MAINTENANCE

- A. Maintain lawns until specified acceptance criteria is achieved.
 - 1. Maintain lawns by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and re-mulch to produce a uniformly smooth lawn.
 - 2. In areas where mulch has been disturbed by wind or maintenance, add new mulch. Anchor as required to prevent displacement.
 - 3. Watering: Provide and maintain temporary piping, hoses, and lawn watering equipment to convey water from sources. Keep newly-germinated plants uniformly moist to a depth of four inches, applied at a minimum rate of one inch per week or greater as required to maintain minimum moisture depth specified.
 - a. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 - b. After grasses show mature blades, watering shall be performed to provide moisture to a depth of six inches, and shall not be performed again until top one inch of loam has dried.
 - 4. After seed has passed its expected germination period, reseed all areas and parts of areas that fail to show a uniform stand of grass. Reseed repeatedly until all areas are covered with grass.

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SECTION 32 93 43

TREES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, tools, equipment, services, and incidentals as shown, specified, and required to furnish and install trees.
2. Extent of trees is shown or indicated on the Drawings.
3. Types of products required under this Section include the following:
 - a. Coniferous evergreen trees.
 - b. Topsoil.
 - c. Mulches.
 - d. Securement and protection accessories.
 - e. Accessories.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate the installation of items that must be installed with or before trees.

C. Related Sections:

1. Section 32 31 13, Chain-Link Fences and Gates.
2. Section 32 92 00, Lawns.

1.02 REFERENCES

A. Terminology:

1. The following words or terms are not defined but, when used in this Section, have the following meaning:
 - a. "Balled and burlapped stock" describes trees dug with firm, natural balls of earth in which they are grown, with ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of tree required; wrapped, tied, rigidly supported, and drum-laced as recommended by ANSI Z60.1.
 - b. "Balled and potted stock" describes trees dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than diameter and depth recommended by ANSI Z60.1 for type and size of tree required.
 - c. "Container-grown stock" describes healthy, vigorous, well-rooted trees, grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for kind, type, and size of tree required.
 - d. "Fabric bag-grown stock" describes healthy, vigorous, well-rooted trees established and grown in-ground in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth, and volume required by ANSI Z60.1 for type and size of tree.
 - e. "Finished grade" describes the finished surface elevation of topsoil.
 - f. "Subgrade" describes the surface or elevation of subsoil remaining after completing excavation, or the top surface of a fill or backfill, before placing topsoil.

B. Reference Standards:

1. The following standards are referenced in this Section:
 - a. ANSI Z60.1, American Standard for Nursery Stock.
 - b. Association of Official Analytic Chemists (AOAC), Official Methods of Analysis of AOAC International.
 - c. ASTM A641, Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
 - d. Hortus Third: A Concise Dictionary of Plants Cultivated in the United States and Canada, Liberty Hyde Bailey Hortorium.
 - e. United States Department of Agriculture (USDA):
 - 1) Description of the Eco-Regions of the United States.
 - 2) Plant Hardiness Zone Maps.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Installer:
 - a. Engage a single landscape installer skilled, trained, and with successful and documented experience in the planting of trees and in the installation of the types of materials required, and who agrees to employ only tradesmen with specific skill and successful experience in the type of Work required.
 - b. When requested by Engineer, submit record of experience documenting not less than three successful, completed projects. For each project, submit the following information:
 - 1) Project name.
 - 2) Location of project.
 - 3) Names and telephone numbers of owner, architects, or engineers responsible for the project.
 - 4) Amount and kinds of trees installed.
 - 5) Approximate contract price of trees.
 - c. Installer's Site Supervisor: Require installer to maintain an experienced full-time landscape supervisor on-site during the time of preparation for, and planting of, trees. Supervisor shall have achieved landscape or horticultural certification acceptable to governing authorities having jurisdiction at the Site.
 - d. Ratio of laborers to certified landscape supervisors shall not exceed 12 to one. Certified landscape supervisor shall be on-site throughout the day-to-day performance of the Work of this Section.
 - e. Application of herbicides, chemicals, and insecticides shall be done by personnel licensed to perform such applications by governing authorities having jurisdiction at the Site and in accordance with each manufacturer's instructions provided on each product label.

B. Pre-Installation Conference:

1. Prior to commencement of tree planting and associated Work, Contractor shall schedule and meet at the Site with the landscape installer, the installers of other work in and around planting areas that follows the tree planting Work, including fencing Work specified in Section 32 31 13 and lawn Work specified in Section 32 92 00, and Construction Manager, Engineer, and other representatives directly concerned with performance of the Work. Review foreseeable methods and procedures related to the tree planting Work, including the following:
 - a. Review Project requirements and the Contract Documents.
 - b. Review required submittals, both completed and yet to be completed.
 - c. Review availability of water and methods of delivery.
 - d. Review status of below-grade work and required access during planting and extended service periods.

- e. Review Project Schedule and availability of materials, tradesmen, equipment, and facilities needed to make progress and avoid delays.
- f. Review environmental conditions, other Project conditions, and procedures for coping with unfavorable conditions.
- g. Review procedures needed for protection of trees during the remainder of the construction period.
- h. Review required inspection, testing, and certifying procedures.
2. Record the discussions of the conference and the decisions and agreements or disagreements reached, and furnish copy of the record to each party attending.
3. Record all revisions or changes agreed upon, reasons therefor, and parties agreeing or disagreeing with them.
4. Reconvene the meeting at the earliest opportunity if additional information must be developed in order to conclude the subjects under consideration.

1.04 SUBMITTALS

A. Action Submittals:

1. Shop Drawings: Submit planting schedule showing scheduled start and finish dates for each type of tree in each area of the Site.
2. Product Data: Submit manufacturer's specifications and installation instructions for all materials required.

B. Informational Submittals:

1. Qualifications Statements:
 - a. Installer: Submit name and address of landscape installer. When requested by Engineer, submit qualifications and record of experience.
 - b. Landscape Supervisor: When requested by Engineer, submit name and qualifications of installer's landscape supervisor, including copy of valid certifications applicable to the Project.
2. Certificates:
 - a. Submit certificates of inspection as may be required by governing authorities having jurisdiction at the Site to accompany shipments.
 - b. For standard products, submit other data certifying that materials comply with specified requirements.
3. Source Quality Control Submittals:
 - a. Submit written statement providing the location from which trees are to be obtained and the names and addresses of the Suppliers.

C. Closeout Submittals:

1. Care and Maintenance Data:
 - a. Submit report with instructions recommending procedures to be established by Owner for full care, vigorous growth, and maintenance of each type of tree specified, with specific recommendations for type of care, insect and disease prevention, and special winter protection measures to be performed for each type of tree, for each month of the year. Include color pictures of each type of tree used in the Project, showing full tree form and close-ups of leaf and flower forms, along with botanical and common names adjacent to written full care and maintenance recommendations.
 - b. Submit report prepared in Microsoft Word or portable document format (PDF), with scanned pictures as specified, and provide Owner with two copies on compact disc.
 - c. Submit prior to expiration of specified extended service periods.
2. Warranty Documentation:
 - a. Submit written warranty, signed by Contractor and landscape installer, as specified.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery:

1. Deliver each type of tree as the Work progresses, after preparations for planting that specific type of tree is completed, and when tree will be planted immediately upon arrival at the Site. Do not stockpile trees on-site.
2. Deliver packaged materials in original, unopened containers, legibly showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery. Provide protective covering.
3. Do not drop trees during delivery.
4. Immediately remove unacceptable material from the Site.

B. Storage:

1. If planting is delayed more than six hours after delivery, set trees in shade, protect from weather and mechanical damage, and keep roots moist.
2. Set balled stock on ground and cover ball with soil, moistened peat moss, or other acceptable material.
3. Store and cover materials to prevent deterioration. Remove packaged materials that have become wet, or show deterioration or water marks, from the Site.

C. Handling:

1. Handle balled and burlapped trees so that the ball will not be loosened or broken. Immediately remove split, broken, or loosened balled and burlapped trees from the Site and replace with new trees.
2. Do not remove container-grown trees from containers until planting time.
3. Do not lift or drag trees by stems or trunks. Handle trees by lifting root ball or container.
4. Water as necessary to maintain tree root systems in a moist condition.

1.06 SITE CONDITIONS

A. Existing Conditions:

1. Obstructions Below Ground and Underground Facilities: Exercise extreme caution in all tree planting operations, as there are obstructions below ground and Underground Facilities throughout the Site. Study and be familiar with the locations of these obstructions and Underground Facilities. Place trees, where shown in the proximity of these obstructions and Underground Facilities, clear of any interference. Repair all damage to obstructions and Underground Facilities caused by the Work of this Section.

B. Environmental Requirements:

1. Proceed with and complete the Work as rapidly as portions of the Site become available, working within the seasonal limitations for each kind of tree shown or indicated.
2. Herbicides, chemicals, and insecticides shall not be used on areas bordering wetlands.
3. Do not resort to chemical control measures at the first sign of insect or disease attack. Make an attempt to determine the environmental cause of the attack and take corrective measures.
4. Apply chemical insect and disease measures locally and specifically to the area and type of tree in need of such insect and disease control, so as not to damage trees, or endanger the environment. Select natural chemical controls specific to the type of insect or disease encountered, or provide naturally controlling insect predators and bacterial controls for release at the Site.
5. Trees exhibiting a broad and heavy infestation of insects or diseases, or where insects or diseases have disfigured trees such that they no longer provide their intended aesthetic effect, shall be replaced with new trees.

C. Scheduling:

1. Coordinate tree planting with specified extended service periods to provide required service from date of acceptable completion of each type of tree. Plant during one of the following periods:
 - a. Spring Planting: March 15 to June 15.
 - b. Fall Planting: September 1 to October 30.
2. Do not begin tree planting until water, acceptable for use and adequate in supply, is available on-site and can be successfully transported to the areas of Work. Coordinate provision of adequate and acceptable water supply with Project schedule.
3. Do not proceed with installation of trees until all subgrade utility services have been installed, are operating successfully, and have been approved by Engineer.
4. Plant tree only after final grades are established and prior to planting of lawns, unless otherwise acceptable to Engineer. If tree planting occurs after lawn Work, protect lawn areas and promptly repair damage to lawns resulting from tree planting operations.
5. Apply anti-desiccant to trees using power spray to provide an adequate film over trunks, branches, stems, twigs, and foliage to protect during digging, handling, and transportation.
 - a. One week before evergreen trees are to be dug, spray with anti-desiccant at nursery before moving and again two weeks after planting.
 - b. Apply anti-desiccant to evergreens, again, immediately after the first frost.

1.07 ALTERNATIVES

- A. Do not select trees differing from those shown or indicated, without consulting Engineer for approval.
- B. Trees differing from those shown or indicated may be allowed by Engineer, at the varietal level only. Submit proof of non-availability and proposal for types of equivalent trees.
- C. Bring to the attention of Engineer tree selections believed to be unsuitable for the microclimate or ecoregion of the Project, based on USDA information specified, or other authoritative sources.

1.08 WARRANTY

- A. General Warranty: The special warranties specified in this Article shall not deprive Owner of other rights or remedies Owner may otherwise have under the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under the Contract Documents.
- B. Special Warranty: Warrant the following trees, for the warranty period indicated, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate care and maintenance, or abuse by Owner, or incidents that are beyond Contractor's control.
 1. Warranty Period for Trees: One year from date of end of extended service period.
 2. Replace trees that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
 3. A limit of one replacement of each tree will be required, except where losses or replacement failures are due to Contractor's failure to comply with specified requirements.

1.09 EXTENDED SERVICE

A. Extended Landscape Service:

1. Begin extended service immediately after each planted area is acceptably completed. Provide extended service for not less than 90 days after tree plantings are acceptably completed.
2. Prune, cultivate, water, weed, fertilize, shade, mist, restore planting saucers, tighten and repair stakes and guy supports, and reset trees to proper grades or vertical position, as required to establish healthy, viable trees.
 - a. Do not allow trees to wilt or show other signs of environmental stress. Visit the Site twice a week during the extended service periods, to inspect the condition of the trees and immediately provide required care.
 - b. Contractor shall provide landscape installer who shall be available on-call if notified between regular visits that trees require critical care or maintenance, throughout the time of extended service periods.
3. Check and observe trees for signs of insect and disease attack. Take corrective measures immediately upon notice of such attack. Control damaging insects and diseases, as specified.
4. Remove dead trees immediately. Replace immediately, unless required to plant in the succeeding planting season.

B. Provide sufficient water to ensure that the top six inches of the planting bed mix remains moist at all times.

1. Apply water using a one-inch diameter hose with an attached metering gauge.
2. For trees in seeded areas or mulched beds, apply water to the ground surface directly under the canopy. Apply water at a sufficiently slow rate to prevent water run-off from the soil surface but great enough to provide 0.2 inch of water per square foot of canopy area per hour for five hours each week.

C. Any decline in the condition of trees shall require Contractor to take immediate action to identify potential problems and undertake corrective measures. If required, engage professional arborists or horticulturists to inspect trees, identify problems, and recommend correctives procedures. Advise Engineer of all such actions and submit inspection and recommendation reports.

PART 2 – PRODUCTS

2.01 TREES

A. General Landscape Design Criteria:

1. Provide trees true to name and variety, established in Hortus Third.
2. Provide nursery-grown trees complying with ANSI Z60.1, typical of their species or variety and with a normal habit of growth for type of tree required, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully-branched, healthy, vigorous trees free of disease, insects, eggs, larvae, and defects such as knots, sun-scald, injuries, abrasions, and disfigurement.
3. Label each tree with securely attached, waterproof tag bearing legible designation of botanical and common name.
4. Where formal arrangements or consecutive order of trees are shown, select trees for uniform height and spread, and label with number to assure symmetry in planting.

- B. Coniferous Evergreens:
 - 1. Form and Size: Normal-quality, well-balanced, coniferous evergreens, of type, height, spread, and shape required, complying with ANSI Z60.1. Provide balled and burlapped or container-grown trees.

2.02 STAKES AND GUYS

- A. Upright and Guy Stakes: Rough-sawn, sound, hardwood or softwood stakes, free of knots, holes, cross grain, and other defects, two inches by two inches by length indicated, pointed at one end.
- B. Guy and Tie Wire: ASTM A641, Class 1, galvanized steel wire, two-strand, twisted, 0.106 inch in diameter.
- C. Hose Chafing Guard: Reinforced rubber or plastic hose at least 1/2 inch in diameter, black, cut to lengths required to protect tree trunks from damage.

2.03 RELATED MATERIALS

- A. Topsoil: Comply with Section 32 92 00.
- B. Wood Chip Mulch: Provide either hardwood or softwood chips as produced by any standard chipping machine containing no wood shavings, sawdust, or foreign material such as stones. Chip sizes larger than three inches in greatest dimension are not acceptable.
- C. Anti-Desiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully-labeled containers and mix according to manufacturer's written instructions.
- D. Provide herbicides, chemicals, and insecticides as needed for disease, fungus, or pest control. All herbicides, chemicals, and insecticides shall bear approval labels indicating they are approved by USDA for the intended uses and application rates.

2.04 SOURCE QUALITY CONTROL

- A. General:
 - 1. Provide quality, size, genus, species, and variety of trees indicated, complying with applicable requirements of ANSI Z60.1.
 - 2. Ship trees with certificates of inspection as required by governing authorities having jurisdiction at the Site.
- B. Analysis and Standards: Package standard products with manufacturer's certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the AOAC, wherever applicable or specified.
- C. Provide trees grown in a recognized nursery in accordance with good horticultural practice, with healthy root systems developed by transplanting or root pruning. Provide healthy, vigorous trees grown for at least two years under climatic conditions similar to conditions in the locality of the Project and free of disease, insects, eggs, larvae, and defects such as knots, sun-scald, injuries, abrasions, or disfigurement.
 - 1. Provide trees of the sizes shown or indicated. Trees of larger size may be used if acceptable to Engineer, and if sizes of roots or balls are increased proportionately.

2. Measure according to ANSI Z60.1 with branches and trunks in their normal position. Do not prune to obtain required sizes. Take caliper measurements six inches above ground for trees up to four-inch caliper size, and 12 inches above ground for larger sizes.
 3. Measure main body of tree for height and spread; do not measure branches, or roots, tip-to-tip.
- D. Trees showing signs of graft incompatibility shall be removed from the Site. Visual indication of graft incompatibility shall include:
1. Development of over-growths by rootstock or scion resulting in the development of shoulders or inverted shoulders.
 2. Suckering of the rootstock combined with poor growth or dieback of the scion.
 3. Any mechanical weakness between scion and rootstock.
 4. Any marked difference in bark pattern and structure between scion and rootstock.
- E. Inspection:
1. Engineer may inspect trees either at place of growth or at the Site, before planting, for compliance with requirements for genus, species, variety, size, and quality. Engineer retains right to inspect trees further for size and condition of ball and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of Work. Immediately remove rejected trees from the Site.
 2. Notify Engineer of sources of planting materials, minimum of one month in advance of delivery to the Site.
- F. Do not prune trees before delivery, except as approved by Engineer, in writing. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind tie trees in such a manner as to destroy their natural shape.
- G. Requirements for Balled and Burlapped Trees:
1. Where shown to be balled and burlapped, provide trees dug with a firm, natural ball of earth in which they are grown.
 2. Provide ball size of not less than the diameter and depth recommended by ANSI Z60.1 for the type and size of trees required. Increase ball size or modify ratio of depth to diameter as required to encompass the fibrous and feeding root system necessary for full recovery of trees subject to unusual or atypical conditions of growth, soil conditions, or horticultural practice.
 3. Wrap and tie earth ball as recommended by ANSI Z60.1 for the size of balls required. Drum-lace balls with a diameter of 30 inches or greater.
- H. Requirements for Container-Grown Trees:
1. Where shown as acceptable, provide healthy, vigorous, well rooted trees established in the container in which they are sold. Provide balled and burlapped stock when required trees exceed maximum size recommended by ANSI Z60.1 for container grown trees.
 2. Containers: Use rigid containers that will hold ball shape and protect root mass during shipping. Provide trees established in containers of not less than the minimum sizes recommended by ANSI Z60.1 for the kind, type, and size of tree required.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which tree planting Work will be performed and notify Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected in a manner acceptable to Engineer.
- B. Inspect trees for injury, insect infestation, and improper pruning. Do not begin tree planting until deficiencies are corrected, or trees are replaced.

3.02 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, and lawns and existing plants from damage caused by tree planting operations.
- B. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water run-off or airborne dust to adjacent properties and walkways.
- C. Lay out and stake individual tree locations. Adjust locations when requested, and obtain Engineer's acceptance of layout before planting. Make minor adjustments as required.

3.03 PLANTING BED ESTABLISHMENT

- A. Remove all existing soil from planting beds to the depth shown, but not less than 12 inches, so that finished trees are level with adjacent final lines, grades, and elevations after addition of topsoil and after light rolling and natural settlement.
- B. Loosen subgrade of planting beds to a minimum depth of six inches. Remove stones larger than two inches in any dimension and sticks, roots, rubbish, and other extraneous matter.
- C. Spread topsoil to a depth required meeting finished grades after natural settlement. Do not spread if topsoil or subgrade is frozen, muddy, or excessively wet.
 - 1. Spread approximately one-half the thickness of topsoil over loosened subgrade. Mix thoroughly into top four inches of subgrade.
 - 2. Spread remainder of topsoil to required finished grades.
- D. Fine Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly-fine texture. Roll and rake, remove ridges, and fill depressions to meet finished grades.
- E. Restore planting beds if eroded or otherwise disturbed after fine grading and before planting.

3.04 TREE PIT EXCAVATION

- A. Pits and Trenches: Excavate circular pits with sides sloped inward. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of tree pit smeared or smoothed during excavation. Properly dispose of subsoil removed from pits and trenches.
 - 1. Excavate approximately three times as wide as ball diameter for balled and burlapped stock or container-grown stock.
- B. Obstructions: Notify Engineer if unexpected rock or obstructions detrimental to trees are encountered in excavations.

- C. Drainage: Notify Engineer if subsoil conditions evidence unexpected water seepage or retention in tree pits.

3.05 TREE PLANTING

- A. Set trees plumb and in center of pit or trench with top of root ball set such that it will be one inch above adjacent finished grades, at tree trunk, after topsoil has settled.
 - 1. Remove burlap and wire baskets from tops of root balls and partially from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use tree if root ball is cracked or broken before or during planting operation.
 - 2. Place topsoil around root ball in layers. Each layer shall be not more than six inches deep. Tamp to settle topsoil and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of topsoil.
 - 3. Remove all soil from around the root flare of the trunk of each tree and from the top of the root ball to determine the true depth of the root flare. Plant with root flare at surface of finished topsoil.
- B. Carefully remove root ball from container without damaging root ball or tree. After removal of tree from container, or sides from box, tease out feeder roots to assure positive contact and embedment into topsoil.
- C. Set fabric bag-grown trees plumb and in center of pit or trench with top of root ball one inch above adjacent finished grades. Carefully remove root ball from fabric bag without damaging root ball or tree. Do not use tree if root ball is cracked or broken before or during planting operation.
- D. Apply two-inch average thickness of organic mulch extending 12 inches beyond edge of tree pit or trench, and finish level with adjacent finished grades. Do not place mulch within three inches of trunks.
- E. Perform complete sequence of planting steps for each tree within the same day.
- F. Dish top of backfill to allow for mulching. Provide dish four feet in diameter approximately four inches deep around each tree, with topsoil berm around edge of excavations to form shallow saucer to collect water.
- G. After watering, any settlement within basins shall be refilled to required grade with topsoil.

3.06 TREE PRUNING

- A. Prune, thin-out, and shape trees in accordance with standard horticultural practice. Prune trees to retain required height and spread. Remove all dead wood and suckers, and all broken and badly bruised branches. Do not cut tree leaders unless otherwise directed by Engineer. Prune to retain natural character and accomplish their use in the landscape design. Required tree sizes are the size after pruning.
- B. Remove and replace excessively pruned or misformed stock resulting from improper pruning.
- C. Paint cuts over 1/2 inch in size with standard tree wound compound, covering exposed, living tissue.
- D. All pruning wounds shall show vigorous bark on all edges at the time of harvest.

3.07 GUYING AND STAKING

- A. Guy and stake trees immediately after planting.
- B. Upright Staking and Tying: Stake trees of two-inch through five-inch caliper. Stake trees of less than two-inch caliper only as required to prevent wind tip-out. Use a minimum of two stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation and to extend at least 72 inches above grade. Set vertical stakes and space to avoid penetrating root balls or root masses. Support trees with two strands of tie wire encased in hose sections at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree. Use the number of stakes as follows:
 - 1. Use two stakes for trees up to 12 feet in height and 2.5 inches or less in caliper.
 - 2. Use three stakes for trees greater than 12 feet, but less than 14 feet in height, and up to four inches in caliper. Space stakes equally around trees.

3.08 ACCEPTANCE CRITERIA FOR TREES

- A. Tree planting Work will be considered acceptable when trees are firmly planted, properly located and vertically upright, with all securement devices and accessories, mulches and saucers formed and in-place; with trees showing no signs of environmental stress, disease, insect infestations, growth below the graft union, damage, disfigurement, or areas of missing or dead foliage, and with expanding candles or other indications of vigorous, healthy growth.

3.09 CLEANING AND PROTECTION

- A. Protect trees from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and extended service periods. Treat, repair, or replace damaged trees.
- B. Protection includes all temporary fences, barriers, and signs and other Work incidental to proper maintenance.

3.10 INSPECTION AND ACCEPTANCE

- A. Where trees do not comply with specified acceptance criteria, replace trees and continue extended service period until trees comply with criteria for acceptance.

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Division 33

Utilities

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SECTION 33 41 00

STORM UTILITY DRAINAGE PIPING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish, install, and test storm utility drainage piping. The Work includes the following:
 - a. All types and sizes of storm utility drainage piping.
 - b. Unless otherwise shown or specified, this Section includes all storm utility drainage piping Work required, beginning at the outside face of structures or structure foundations, including piping beneath structures, and extending away from structures.
 - c. Work on or affecting existing storm utility drainage piping.
 - d. Installation of all jointing and gasket materials, specials, sleeves, and other Work required for a complete, storm utility drainage piping installation.
 - e. Field quality control, including testing.
 - f. Cleaning.
2. Extent of storm utility drainage piping is shown or indicated on the Drawings.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate the installation of items that must be installed with or before storm utility drainage piping Work.

C. Related Sections:

1. Section 03 00 05, Concrete.
2. Section 31 05 19.13, Geotextiles for Earthwork.
3. Section 31 23 00, Excavation and Fill.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:

1. ASTM D2321, Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
2. ASTM D3212, Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
3. ASTM D3350, Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
4. ASTM F477, Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
5. ASTM F2648, Standard Specification for 2- to 60-inch (50- to 1,500-mm) Annular Corrugated Profile Wall Polyethylene (PE) Pipe and Fittings for Land Drainage Applications.
6. ASCE Manual of Practice No. 37, Design and Construction of Sanitary and Storm Sewers.

1.03 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer:
 - a. Manufacturer shall have a minimum of five years experience producing pipe and fittings substantively similar to the materials specified, and shall be able to show evidence of at least five installations in satisfactory operation for at least five years.
 - 2. Installer:
 - a. Engage a single installer for the entire piping system with undivided responsibility for performance and other requirements, and who agrees to employ only tradesmen with specific skill and experience in the type of Work required.
 - b. Installer shall have a minimum of five years experience installing pipe and fittings substantively similar to the materials specified.
- B. Component Supply and Compatibility:
 - 1. Pipe and fittings shall be the product of a single manufacturer.
 - 2. Pipe and fittings manufacturer shall prepare or review and approve all Shop Drawings and other submittals for all components furnished under this Section.
 - 3. All components shall be specifically constructed for the specified service conditions and shall be integrated into the overall assembly by the pipe and fittings manufacturer.
- C. Regulatory Requirements:
 - 1. Comply with requirements and recommendations of authorities having jurisdiction over the Work, including:
 - a. Village of Ilion, Department of Public Works.
 - 2. Obtain required permits for Work in roads, rights-of-way, and other areas of the Work.

1.04 SUBMITTALS

- A. Action Submittals:
 - 1. Shop Drawings: Submit details of piping, specials, joints, and connections to piping, structures, and appurtenances.
 - 2. Product Data: Submit manufacturer's data and specifications for the following:
 - a. Pipe and fittings, including details of construction and fabrication.
 - b. Detectable underground warning tape.
- B. Informational Submittals:
 - 1. Certificates:
 - a. Submit certificate of compliance, signed by pipe and fittings manufacturer, certifying that products comply with the applicable reference standards indicated in Article 1.02 of this Section.
 - 2. Qualifications Statements:
 - a. Manufacturer: When requested by Engineer, submit qualifications of pipe and fittings manufacturer.
 - b. Installer: When requested by Engineer, submit name, address of firm, and qualifications of pipe and fittings installer.
 - 3. Source Quality Control Submittals:
 - a. When requested by Engineer, submit results of source quality control tests.
 - 4. Field Quality Control Submittals:
 - a. Submit test reports for field quality control testing performed in accordance with Article 3.05 of this Section.

C. Closeout Submittals:

1. Record Documentation:

- a. Maintain accurate and up-to-date record documents showing modifications made in the field, in accordance with approved submittals, and other Contract modifications relative to storm utility drainage piping Work. Submittal shall show actual location of all storm utility drainage piping Work and appurtenances at same scale as the Drawings.
- b. Show piping with elevations referenced to Project datum and dimensions from permanent structures. For each horizontal bend in piping, include dimensions to at least three permanent structures, when possible. For straight runs of piping provide offset dimensions as required to document piping location.
- c. Include profile drawings with storm utility drainage piping record documents when the Contract Documents include piping profile drawings.
- d. Comply with Section 01 78 39 (Project Record Documents).

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery:

1. Deliver materials to the Site to ensure uninterrupted progress of the Work.
2. Upon delivery inspect pipe and appurtenances for cracking, gouging, chipping, denting, and other damage and immediately remove from the Site and replace with acceptable material.

B. Storage:

1. Store materials to allow convenient access for inspection and identification. Store material off ground using pallets, platforms, or other supports. Protect packaged materials from corrosion and deterioration.
2. Pipe and fittings other than PVC may be stored outdoors without cover. Cover PVC pipe and fittings stored outdoors.

C. Handling:

1. Handle pipe, fittings, specials, and accessories carefully in accordance with pipe manufacturer's recommendations. Do not drop or roll material off trucks. Do not drop, roll, or skid piping.
2. Avoid unnecessary handling of pipe.
3. Keep pipe interiors free from dirt and foreign matter.
4. Protect interior linings and exterior coatings of pipe and fittings from damage. Replace pipe and fittings with damaged lining regardless of cause of damage.

PART 2 – PRODUCTS

2.01 STORM SEWER PIPE AND FITTINGS

A. Service Conditions:

1. Piping system shall be specifically designed, constructed, and installed for the service intended.
2. Pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, and other defects. Unless otherwise shown or indicated, pipe shall be uniform in color, opacity, density, and other physical properties.
3. Buried pipe shall be capable of withstanding an external live load, including impact, equal to AASHTO H20 wheel loading, with cover shown or indicated on the Drawings.

- B. Corrugated HDPE Pipe:
 - 1. Product and Manufacturer: Provide one of the following:
 - a. N-12 WT IB Pipe by Advanced Drainage Systems, Inc.
 - b. Or equal.
 - 2. Pipe: ASTM F2648.
 - a. Nominal Inside Diameter: 24 inches.
 - b. Pipe Stiffness: 34 psi at five percent deflection, minimum.
 - c. Inner Liner Thickness: 0.060 inch, minimum.
 - 3. Fittings: ASTM F2306.
 - a. Bell and spigot connections shall utilize a spun-on or welded bell and valley or saddle gasket complying with ASTM F477.
 - b. Gaskets shall be installed by the pipe manufacturer and shall be covered with a removable, protective wrap to protect gasket from debris during shipping and storage.
 - 4. Joints:
 - a. Pipe shall be joined together using an integral bell and spigot design meeting the water-tight performance requirements of ASTM F2306 and ASTM D3212.
 - b. Jointing lubricant shall be as recommended by pipe manufacturer.

2.02 RELATED MATERIALS

- A. Concrete Collar:
 - 1. Concrete: Concrete shall be Class "B", in accordance with Section 03 00 05.
 - 2. Geotextile: Comply with Section 31 05 19.13.
- B. Non-Shrink Grout: Comply with Section 03 00 05.
- C. Detectable Underground Warning Tape:
 - 1. Tape shall be of inert, acid- and alkali-resistant, polyethylene, five mils thick, six inches wide, with aluminum backing, and shall have 15,000 psi tensile strength and 80 percent elongation capability. Tape shall be suitable for direct burial.
 - 2. Message shall read, "CAUTION BURIED STORM DRAIN LINE BELOW" with bold letters approximately two inches high. Messages shall be printed at maximum intervals of two feet. Tape shall be colored green.

2.03 SOURCE QUALITY CONTROL

- A. Pipe and fittings manufacturer shall have an established quality assurance program responsible for inspecting incoming and outgoing materials, and assuring the long-term performance of materials and products.
- B. Where applicable and when requested by Engineer, submit results of source quality control tests specified in reference standards indicated in Article 1.02 of this Section.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which the Work will be performed and notify Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected in a manner acceptable to Engineer.

3.02 INSTALLATION

A. General:

1. Install piping as shown, specified, and as recommended by pipe and fittings manufacturer.
2. In the event of a conflict between manufacturer's recommendations and the Contract Documents, request interpretation from Engineer before proceeding.
3. Engineer will observe excavations and bedding prior to laying pipe by Contractor. Notify Engineer in advance of excavating, bedding, pipe laying, and backfilling operations.
4. Minimum cover over storm utility drainage piping shall be one foot, unless otherwise shown or approved by Engineer.
5. Earthwork is specified in Section 31 23 00.
6. Excavation in excess of that required or shown, and that is not authorized by Engineer shall be filled at Contractor's expense with granular material furnished, placed, and compacted in accordance with Section 31 23 00.

B. Manufacturer's Installation Specialist:

1. Provide services of competent installation specialist of pipe manufacturer when pipe installation commences.
2. Retain installation specialist at the Site for a minimum of one work day (eight hours) or until competency of pipe installation crew has been satisfactorily demonstrated.

C. Separation of Sewers and Water Mains:

1. Horizontal and Vertical Separation:
 - a. Where possible, install storm sewers at least 10 feet horizontally from any existing or proposed water mains or service lines. The distance shall be measured edge to edge.
 - b. If local conditions preclude the specified clear horizontal separation, installation will be allowed if the sewer is in a separate trench, or on an undisturbed earth shelf on one side of the water main or service line, and if the top of the sewer is at least 18 inches below the bottom of the water main or service line.
2. Crossings:
 - a. Provide minimum vertical distance of 18 inches between outside of water main and outside of sewer when sewer crosses above or below water main.
 - b. Arrange crossing so that sewer joints are equidistant and as far as possible from water main joints.
 - c. Where water main crosses under sewer, provide adequate structural support for sewer to maintain line and grade. At a minimum, provide compacted select backfill for 10 feet on each side of crossing.
3. Where it is not possible to provide minimum separation described above:
 - a. Sewer shall be designed and constructed equal to water pipe, and shall be hydrostatically tested at 150 psi to assure water-tightness; or
 - b. Sewer or water main shall be encased in water-tight carrier pipe extending 10 feet on each side of crossing, measured perpendicular to water main.

D. Plugs:

1. Temporarily plug installed pipe at the end of each day of work or other interruption of pipe installation to prevent entry of animals, liquids, and persons into pipe, and entrance or insertion of deleterious materials into pipe.
2. Install standard plugs in bells at dead ends, tees, and crosses. Cap spigot and plain ends.
3. Fully secure and block plugs, caps, and bulkheads installed for testing to withstand specified test pressure.

4. Where plugging is required for phasing of the Work or subsequent connection of piping, install watertight, permanent-type plugs, caps, or bulkheads acceptable to Engineer.
- E. Bedding Pipe: Bed pipe as specified and as shown or indicated on the Drawings.
1. Trench excavation and backfill, and bedding materials shall comply with Section 31 23 00.
 2. Where Engineer deems existing bedding material unsuitable, remove and replace existing bedding with approved granular material furnished, placed, and compacted in accordance with Section 31 23 00.
 3. Where pipe is installed in rock excavation, provide a minimum of three inches of granular bedding material underneath pipes smaller than four inches in nominal diameter, and a minimum of six inches of granular bedding material underneath pipes four inches in nominal diameter and larger.
 4. Excavate trenches below bottom of pipe by amount shown or indicated in the Contract Documents. Remove loose, unyielding, and unsuitable material from bottom of trench.
 5. Carefully and thoroughly compact pipe bedding with hand-held pneumatic compactors.
 6. Do not lay pipe until Engineer approves condition of bedding.
 7. Do not bring pipe into position until preceding length of pipe has been bedded and secured in its final position.
- F. Laying Pipe:
1. Comply with manufacturer's instructions and requirements of the following:
 - a. ASTM D2321.
 - b. ASCE Manual of Practice No. 37.
 2. Install pipe accurately to line and grade shown or indicated in the Contract Documents, unless otherwise approved by Engineer. Remove and reinstall pipes that are not installed correctly.
 3. Slope piping uniformly between elevations shown.
 4. Keep groundwater level in trench at least 24 inches below bottom of pipe before laying pipe. Do not lay pipe in water. Maintain dry trench conditions until jointing and backfilling operations are complete. Keep clean and protect interiors of pipe, fittings, valves, and appurtenances.
 5. Start laying pipe at lowest point and proceed towards higher elevations, unless otherwise approved by Engineer.
 6. Place bell and spigot-type pipe so that bells face the direction of laying, unless otherwise approved by Engineer.
 7. Excavate around joints in bedding and lay pipe so that pipe barrel bears uniformly on trench bottom.
 8. Deflections at joints shall not exceed 75 percent of amount allowed by pipe manufacturer, unless otherwise approved by Engineer.
 9. Carefully examine pipe, fittings, and specials for cracks, damage, and other defects while suspended above trench before installation. Immediately remove defective materials from the Site and replace with acceptable products.
 10. Inspect interior of all pipe, fittings, and specials and completely remove all dirt, gravel, sand, debris, and other foreign material from pipe interior and joint recesses before pipe and appurtenances are moved into excavation. Bell and spigot-type mating surfaces shall be wiped clean and dry immediately before pipe is laid.
 11. Field-cut pipe, where required, with machine specially designed for cutting the type of pipe being installed. Make cuts carefully, without damage to pipe, coating, or lining, and with smooth end at right angles to axis of pipe. Do not flame-cut pipe.
 12. Do not place blocking under pipe, unless specifically approved by Engineer for special conditions.
 13. Touch up protective coatings in manner satisfactory to Engineer prior to backfilling.
 14. Notify Engineer in advance of backfilling operations.

15. On steep slopes, take measures acceptable to Engineer to prevent movement of pipe during installation.
16. Exercise care to avoid flotation when installing pipe in locations with high groundwater.

G. Jointing Pipe:

1. HDPE Pipe Joints:
 - a. Bell and Spigot Joints:
 - 1) Remove all burrs and provide reference mark at correct distance from pipe end. Place mark such that no more than 1/2 inch of machined spigot surface will be visible outside of bell after pipe has been joined.
 - 2) Clean spigot end and bell thoroughly with soap and water before positioning gasket.
 - 3) Lubricate spigot groove with manufacturer's recommended lubricant. Thoroughly clean gasket and place in spigot groove starting at bottom, ensuring that gasket fins face backwards toward pipe.
 - 4) Thoroughly lubricate gasket with pipe manufacturer's recommended lubricant and equalize stretch in gasket by running screwdriver under gasket around its entire circumference three times. Reposition gasket in groove after stretching.
 - 5) Thoroughly clean and lubricate receiving bell. Align pipe as straight as possible and insert spigot end of pipe carefully into bell until reference mark on spigot is flush with bell.
 - 6) If mechanical means are used to insert spigot end, protect with wood the end of pipe being pushed, to ensure even distribution of pressure.

H. Backfilling:

1. Comply with applicable requirements of Section 31 23 00.
2. Place backfill as Work progresses. Backfill by hand and use power tampers until pipe is covered by at least one foot of backfill.

I. Transitions from One Type of Pipe to Another:

1. Provide necessary adapters, specials, and connection pieces required when connecting different types and sizes of pipe or connecting pipe made by different manufacturers.
2. Concrete Collar:
 - a. Where shown or indicated, a concrete collar shall be formed by butting two dissimilar pipe ends together, wrapping the junction with a geotextile to keep the connection free of debris, and pouring concrete that completely covers both pipe ends. Concrete shall be Class "B" in accordance with Section 03 00 05. Align pipe inverts before installing concrete collar.
 - b. Minimum width of concrete collar shall be the greater of:
 - 1) One half of the outside diameter of the largest pipe.
 - 2) 12 inches.
 - c. Collar shall extend a minimum of four inches above and four inches below pipe with largest outside diameter.

J. Connections to Existing Structures:

1. Core drill existing manhole to clean opening. Do not use pneumatic hammers, chipping guns, or sledge hammers.
2. Install water-tight neoprene gasket and seal with non-shrink grout.
3. Prevent construction debris from entering existing sewer line when making connection.
4. Repair existing invert channel with grout. Contour to provide continuous flow channel to new pipe connection.

K. Closures:

1. Provide closure pieces shown or required to complete the Work.

3.03 TRACER TAPE INSTALLATION

- A. Detectable Underground Warning Tape for Non-Metallic Pipelines:
 - 1. Provide polyethylene tracer tape with aluminum backing for buried, non-metallic piping.
 - 2. Provide magnetic tracer tape 12 to 18 inches below finished grade, above and parallel to buried pipe.
 - 3. For pipelines buried eight feet or greater below finished grade, provide second line of magnetic tracer tape 2.5 feet above crown of buried pipe, aligned along the pipe centerline.
 - 4. Tape shall be spread flat with message side up before backfilling.

3.04 WORK AFFECTING EXISTING UNDERGROUND FACILITIES

- A. Location of Existing Underground Facilities:
 - 1. Locations of existing Underground Facilities shown or indicated on the Drawings should be considered approximate.
 - 2. Determine the true location and size of existing Underground Facilities to which connections are to be made, crossed, and that could be disturbed, and determine location of Underground Facilities that could be disturbed during excavation and backfilling operations, or that may be affected by the Work.
- B. Taking Existing Pipelines and Underground Facilities Out of Service:
 - 1. Do not take existing pipelines or Underground Facilities out of service unless specifically shown or indicated in the Contract Documents, or approved by Engineer.
 - 2. Notify Engineer in writing prior to taking pipeline or Underground Facilities out of service. Shutdown notification shall be provided in advance of the shutdown in accordance with the General Conditions and Section 01 51 41 (Temporary Pumping).
 - 3. Do not cut existing pipelines or Underground Facilities until provisions have been made to bypass them.
- C. Work on Existing Pipelines or Underground Facilities:
 - 1. Cut or tap piping or Underground Facilities as shown or required with machines specifically designed for cutting or tapping pipelines or Underground Facilities, as applicable.
 - 2. Install temporary plugs to prevent entry of mud, dirt, water, and debris into pipe.
 - 3. Provide necessary adapters, sleeves, fittings, pipe, and appurtenances required to complete the Work.

3.05 FIELD QUALITY CONTROL

- A. Televised Inspection:
 - 1. Televiser completed sewer and appurtenant structures, including manholes and chambers, and provide to Engineer copy of video on digital video disc (DVD). Repair apparent leaks and re-televiser the pipe until acceptance by Engineer.
 - 2. Inspection shall be performed by Subcontractor certified in Pipeline Assessment Certification Program (PACP) by National Association of Sewer Service Companies (NASSCO). Provide copy of PACP certification prior to starting inspection. Televising shall conform to coding and reporting standards and guidelines specified in PACP. Identify report annotations, pipe conditions, and pipe defects in accordance with PACP. Severity ratings shall be calculated in accordance with PACP.

3. Camera shall be pan-and-tilt, radial viewing, pipe inspection camera that pans plus-or-minus 275 degrees and rotates 360 degrees. Use camera with an accurate footage counter that displays on television monitor exact distance of camera from centerline of starting manhole. Use camera with height adjustment so that lens is always centered at one-half inside diameter or higher, in pipe being televised. Provide lighting system that allows features and condition of pipe to be clearly seen. Camera shall operate in 100 percent humidity. Camera, television monitor, and other components of video system produce a minimum 450-line resolution colored video picture. Picture quality and definition shall be satisfactory to Engineer.
4. Repair apparent leaks in pipe Work in manner satisfactory to Engineer without additional cost to Owner and re-televiser the pipe.

3.06 CLEANING

- A. Thoroughly clean all piping in a manner approved by Engineer prior to placing in service.

END OF SECTION

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SECTION 33 49 13

STORM DRAINAGE MANHOLES, FRAMES, AND COVERS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install precast concrete storm drainage manholes.
2. Manholes shall conform in shape, size, dimensions, material, and other respects to the details shown or indicated on the Drawings, or as directed by Engineer.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate the installation of items that must be installed with or before storm drainage manholes.

C. Related Sections:

1. Section 03 00 05, Concrete.
2. Section 31 23 00, Excavation and Fill.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:

1. ANSI A14.3, American National Standard for Ladders, Fixed, Safety Requirements.
2. ASTM A48/A48M, Standard Specification for Gray Iron Castings.
3. ASTM C32, Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale).
4. ASTM C144, Standard Specification for Aggregate for Masonry Mortar.
5. ASTM C150/C150M, Standard Specification for Portland Cement.
6. ASTM C207, Standard Specification for Hydrated Lime for Masonry Purposes.
7. ASTM C443, Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
8. ASTM C478, Standard Specification for Precast Reinforced Concrete Manhole Sections.
9. ASTM C923, Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 29 CFR 1910, Occupational Safety and Health Standards.
2. Comply with requirements and recommendations of authorities having jurisdiction over the Work, including:
 - a. Village of Ilion, Department of Public Works.
3. Obtain required permits for Work in roads, rights-of-way, and other areas of the Work.

1.04 SUBMITTALS

A. Action Submittals:

1. Shop Drawings: Submit drawings showing design and construction details for the following:
 - a. Precast concrete manholes, including details of joints between the manhole bases and riser sections and stubs or openings for connections.
 - b. Manhole steps.
 - c. Cast iron frames and covers.
2. Product Data: Submit manufacturer's data and specifications for the following:
 - a. Resilient pipe connector and corrugated pipe adapter.
 - b. Cast iron frames and covers.

B. Informational Submittals:

1. Certificates: Submit certificate of compliance, signed by precast concrete manhole manufacturer, certifying that products comply with the applicable reference standards indicated in Article 1.02 of this Section.

C. Closeout Submittals:

1. Record Documentation:
 - a. Maintain accurate and up-to-date record documents showing modifications made in the field, in accordance with approved submittals, and other Contract modifications relative to storm drainage manhole Work. Submittal shall show actual location of all storm drainage manhole Work and appurtenances at same scale as the Drawings.
 - b. Show manholes with rim and invert elevations referenced to Project datum.
 - c. Comply with Section 01 78 39 (Project Record Documents).

PART 2 – PRODUCTS

2.01 PRECAST CONCRETE MANHOLES

- A. Except where otherwise specified, precast manhole components shall consist of reinforced concrete pipe sections especially designed for manhole construction and manufactured in accordance with ASTM C478, except as modified herein.
- B. Precast, reinforced concrete manhole bases, riser sections, flat slabs and conical tops, and other components shall be manufactured by wet cast methods only, using forms that will provide smooth surfaces free from irregularities, honeycombing, or other imperfections.
- C. Joints between manhole components shall be bell-and-spigot-type, employing a single, continuous rubber O-ring gasket complying with ASTM C443. The circumferential and longitudinal steel reinforcement shall extend into the bell and spigot ends of the joint without breaking the continuity of the steel.
- D. All precast manhole components shall be of approved design and of sufficient strength to withstand the loads imposed upon them. They shall be designed for a minimum earth cover loading of 130 pounds per cubic foot, AASHTO H20 wheel loadings, and an allowance of 30 percent in roadways and 15 percent in rights-of-way for impact. Precast manhole bases shall have two cages of reinforcing steel in their walls, each of the area equal to that required in the riser sections. Wall thickness shall be not less than five inches. Concrete flat slab tops shall be not less than six inches thick.

- E. Lifting holes, if used in manhole components, shall be tapered, and no more than two holes shall be cast in each section. Tapered, solid rubber plugs shall be furnished to seal the lifting holes. Lifting holes shall be made to be sealed by plugs driven from the outside face of the section only.
- F. The point of intersection of the sewer pipe centerlines shall be marked with a 1/4-inch diameter steel pin firmly enclosed in the floor of each manhole base and protruding approximately one inch above the finished floor of the base.
- G. Mark date of manufacture and name or trademark of manufacturer on inside of barrel.
- H. The barrel of the manhole shall be constructed of various lengths of riser pipe manufactured in increments of one foot to provide the correct height with the fewest joints. Openings in the barrel of the manholes for sewer or drop connections will not be permitted closer than one foot from the nearest joint. Special manhole base or riser sections shall be furnished as necessary to meet this requirement.
- I. Pipe openings shall be precast or machine cored. Provide resilient pipe connector and corrugated pipe adapter complying with ASTM C923 for each opening. Connector shall be flexible and water-tight.
- J. A precast eccentric cone or flat slab top shall be provided at the top of the manhole barrel to receive the cast iron frame and cover. Provide precast flat slab top when distance from rim to top of bench wall is less than eight feet. In all other cases, provide precast eccentric cone top.
- K. Manhole steps shall conform to the requirements of 29 CFR 1910.27 and ANSI A14.3. Vertical separation of steps shall be uniform at maximum of 12 inches on centers. Steps shall project evenly from manhole walls.

2.02 FRAMES AND COVERS

- A. Provide cast iron frames and covers of the shape, size, and dimensions shown or indicated on the Drawings. Frames and covers shall be designed for AASHTO H20 wheel loadings.
 - 1. Castings: ASTM A48/A48M, Class No. 30B. Provide castings of uniform quality, free from pouring faults, sponginess, cracks, blowholes, and other defects in positions affecting their strength.
 - 2. Identification: The words "STORM SEWER" shall be cast integrally in center of cover in raised letters.
 - 3. Manufacturers: Provide products of one of the following:
 - a. East Jordan Iron Works, Inc.
 - b. Neenah Foundry Company.
 - c. Or equal.

2.03 RELATED MATERIALS

- A. Aggregate Bedding Material for Manholes: Pipe bedding material in accordance with Section 31 23 00, unless otherwise shown or indicated.
- B. Non-Shrink Grout: Comply with Section 03 00 05.
- C. Grade Rings: ASTM C478.
- D. Brick: ASTM C32, Grade MS.

- E. Mortar: Mortar shall be composed of Portland cement, hydrated lime, and sand, in which the volume of sand shall not exceed three times the sum of the volumes of cement and lime.
 - 1. Portland Cement: ASTM C150/C150M, Type II.
 - 2. Hydrated Lime: ASTM C207, Type S.
 - 3. Sand: ASTM C144, except that 100 percent of the sand shall pass the No. 8 sieve.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Verify Site conditions, including locations, invert elevations, materials, and dimensions of existing piping to which connections are to be made, before ordering precast manholes.
- B. Examine the areas and conditions under which the Work will be performed and notify Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected in a manner acceptable to Engineer.

3.02 INSTALLATION

- A. Precast Manhole Bases:
 - 1. Install precast bases on not less than 12-inch layer of aggregate bedding material placed and compacted in accordance with Section 31 23 00. Precast bases shall be set at the proper grade and carefully leveled and aligned.
- B. Precast Manhole Sections:
 - 1. Install sections, joints, and gaskets in accordance with manufacturer's recommendations.
 - 2. Set sections vertical with steps and sections in true alignment. All joints shall be sealed inside and out with non-shrink grout and troweled smooth to the contour of the wall surface. Raised or rough joint finishes will not be accepted.
 - 3. Lifting holes shall be sealed tight with a solid rubber plug driven into the hole from the outside of the barrel and the remaining void filled with 1:2 cement-sand mortar.
- C. Manhole Channels:
 - 1. All invert channels through manholes shall be constructed of Class "A" concrete in accordance with Section 03 00 05.
 - a. Accurately shape invert to a semi-circular bottom conforming to inside of connecting pipes, and steel-trowel finish to a smooth, dense surface.
 - b. Make changes in size and grade gradually.
 - c. Make changes in direction of entering sewer and branches to a true curve of as large a radius as manhole size will permit.
 - d. Benches shall be built up to the heights shown or as directed by Engineer, and shall be given a uniform float finish. Care shall be taken to slope all benches for proper drainage to the invert channel.
- D. Grade Rings:
 - 1. Grade rings or brick stacks shall be used for all precast manholes and structures, where required. Stacks or grade rings shall be a maximum of 12 inches in height, constructed on the flat slab or conical top on which the manhole frame and cover shall be placed. The height of the brick stack or grade rings shall be such as required to bring the manhole frame to the proper grade.
 - 2. Each grade ring or brick course shall be laid in a full bed of mortar and shall be thoroughly bonded.

3. Brick shall be satisfactorily wet when being laid and each brick shall be laid in mortar so as to form full bed, end, and side joints in one operation. The joints shall not be wider than 3/8 inch, except when the bricks are laid radially, in which case the narrowest part of the joint shall not exceed 1/4 inch. Masonry work shall be kept moist for a period of three days after completion, and precautions shall be taken to prevent freezing during cold weather.
4. The outside of brick stacks and grade rings shall be neatly plastered with 1/2 inch of cement mortar as the Work progresses.

3.03 GRADING AT MANHOLES

- A. All manholes and structures in unpaved areas shall be built, as shown or directed by Engineer, to an elevation higher than the original ground. The ground surface shall be graded to drain away from the manhole. Fill shall be placed around manholes to the level of the upper rim of the manhole frame, and the surface evenly graded on a 20 percent slope to the existing surrounding ground, unless otherwise shown or directed by Engineer. The slope shall be covered with four inches of topsoil, seeded, and maintained until a satisfactory growth of grass is obtained.
- B. Manholes and structures in paved areas shall be constructed to meet the final surface grade. In paved areas, all manholes and structures shall be 1/2 inch below final wearing surfaces. Manholes and structures shall not project above finished roadway pavements to prevent damage from snowplows.
- C. Contractor shall be solely responsible for the proper height of all manholes and structures necessary to reach the final grade at all locations. Contractor is cautioned that Engineer's review of Shop Drawings for manhole components will be general in nature and Contractor shall provide an adequate supply of random length precast manhole riser sections to adjust any manhole to meet field conditions for final grading.

3.04 CONNECTIONS TO EXISTING SEWERS

- A. Use pipes no longer than five feet in length when connecting existing sewers to precast manholes. Pipe connection at manhole wall shall be completely water-tight.

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Drawings

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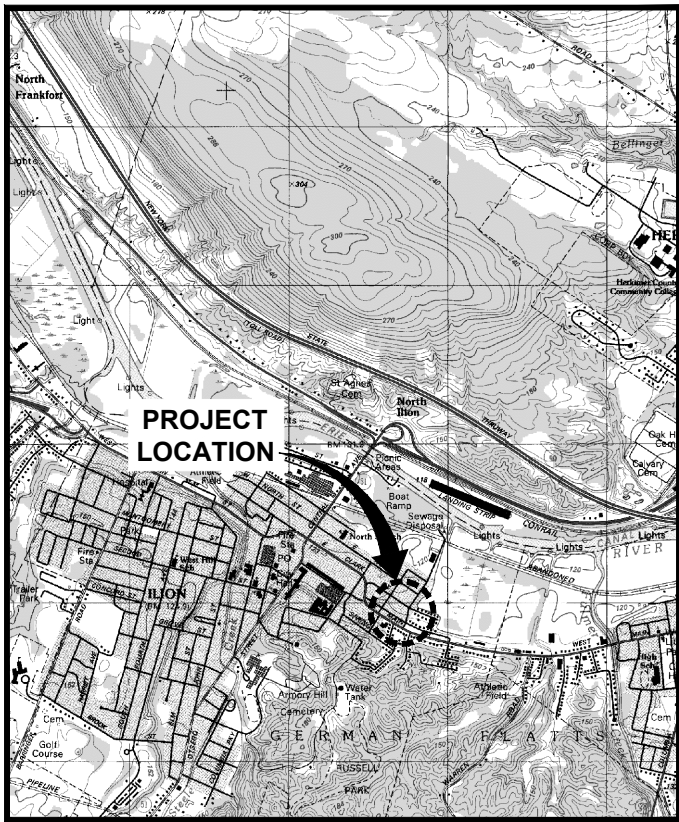
CONTRACT DRAWINGS

PHASE 1 REMEDIAL ACTION

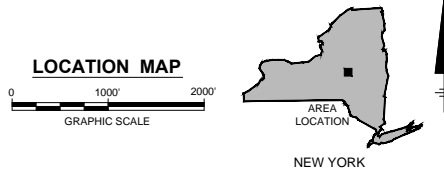
ILION (EAST STREET)

FORMER MANUFACTURED GAS PLANT SITE

VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., ILION, NEW YORK, 1982.



DATE ISSUED
APRIL 2015

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SYRACUSE, NEW YORK



ARCADIS OF NEW YORK, INC.

LIST OF DRAWINGS

GENERAL

- G-001 COVER SHEET, LOCATION MAP, AND LIST OF DRAWINGS
- G-002 GENERAL REQUIREMENTS NOTES, ABBREVIATIONS, AND LEGEND
- G-101 EXISTING SITE CONDITIONS
- G-102 EXISTING SITE UTILITIES
- G-103 EXISTING SOIL BORINGS, TEST PITS, AND MONITORING WELLS
- G-104 SITE UTILIZATION PLAN
- G-105 TEMPORARY EROSION AND SEDIMENT CONTROL PLAN
- G-501 TEMPORARY EROSION AND SEDIMENT CONTROL DETAILS
- G-502 GENERAL CONSTRUCTION DETAILS

CIVIL

- C-101 SITE CLEARING PLAN
- C-102 PHASE 1 DEMOLITION PLAN
- C-103 PHASE 2 DEMOLITION PLAN
- C-104 GENERAL EXCAVATION PLAN
- C-105 NEW STORM SEWER PLAN AND PROFILE
- C-106 SOIL COVER SUBGRADE PLAN
- C-107 SOIL COVER FINAL GRADING PLAN
- C-108 SITE RESTORATION PLAN
- C-201 GRADING PROFILES
- C-501 STORM SEWER DETAILS
- C-502 SOIL COVER AND PLANTING DETAILS
- C-503 FENCING DETAILS
- C-504 SITE RESTORATION DETAILS

STRUCTURAL

- S-101 EXCAVATION SUPPORT PLAN
- S-301 EXCAVATION SUPPORT SECTIONS

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GENERAL REQUIREMENTS NOTES:

SURVEY:

- COORDINATE SYSTEM IS THE NEW YORK STATE PLANE COORDINATE SYSTEM OF 1983, EAST ZONE. HORIZONTAL REFERENCE DATUM IS NAD83. VERTICAL REFERENCE DATUM IS NAVD88.
- BASE MAP MODIFIED FROM DRAWING TITLED "BOUNDARY AND TOPOGRAPHIC SURVEY, LANDS NOW OR FORMERLY OF NIAGARA MOHAWK POWER CORPORATION", DATED NOVEMBER 13, 2013, PREPARED BY C.T. MALE ASSOCIATES, ENGINEERING, SURVEYING, ARCHITECTURE AND LANDSCAPE ARCHITECTURE, P.C.
- ACTUAL SITE CONDITIONS AT THE TIME OF CONSTRUCTION MAY DIFFER FROM THOSE SHOWN OR INDICATED ON THE DRAWINGS. VERIFY SITE CONDITIONS BEFORE STARTING WORK. PROMPTLY NOTIFY ENGINEER OF ANY DISCREPANCIES WITH THE POTENTIAL TO AFFECT THE WORK.

SAFETY:

- CONTRACTOR IS RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY MEASURES AND PROGRAMS IN CONNECTION WITH THE PROJECT. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF, AND SHALL PROVIDE THE NECESSARY PRECAUTIONS TO PROTECT SITE WORKERS, CONSTRUCTION OVERSIGHT PERSONNEL, AND SITE VISITORS. CONTRACTOR IS RESPONSIBLE FOR THE HEALTH AND SAFETY OF ITS DIRECT EMPLOYEES, SUBCONTRACTORS, SUPPLIERS, AND OTHER ON-SITE PARTIES UNDER CONTRACTOR'S DIRECTION.
- CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS, AND ORDERS OF PUBLIC BODIES HAVING JURISDICTION FOR THE SAFETY OF PERSONS OR PROPERTY OR TO PROTECT THEM FROM DAMAGE, INJURY, OR LOSS, INCLUDING WITHOUT LIMITATION, THE DEPARTMENT OF LABOR SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION PROMULGATED UNDER THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 (PL 91-596) AND UNDER SECTION 107 OF THE CONTRACT WORK HOURS AND SAFETY STANDARDS ACT (PL 91-54) AND AMENDMENTS THERETO.
- CONTRACTOR SHALL FURNISH, ERECT, AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND THE PROGRESS OF THE WORK, ALL NECESSARY SAFEGUARDS FOR THE SAFETY AND PROTECTION OF PERSONS AND PROPERTY, INCLUDING EXCAVATION SHORING/BRACING, SCAFFOLDING, SHIELDING, MECHANICAL/ELECTRICAL PROTECTION, SPECIAL GROUNDING, SAFETY RAILINGS, BARRIERS, AND ALL APPLICABLE RECOMMENDATIONS OF THE MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION OF THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, INC.
- MATERIALS SUBJECT TO HANDLING DURING THE PROJECT MAY CONTAIN HAZARDOUS CONSTITUENTS OR CHEMICALS AND SHALL BE HANDLED IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS. CONTRACTOR SHALL DEVELOP AND IMPLEMENT APPROPRIATE HEALTH AND SAFETY MEASURES FOR ITS EMPLOYEES, SUBCONTRACTORS, AND SITE VISITORS, AND FOR THE PROTECTION OF THE ENVIRONMENT AND SURROUNDING COMMUNITY. CONTRACTOR'S HASP SHALL BE DEVELOPED IN ACCORDANCE WITH ALL APPLICABLE OSHA, FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS, INCLUDING 29 CFR 1910.120 AND 29 CFR 1926.65.
- SEVERAL CONTRACTOR ACTIVITIES WILL BE PERFORMED ADJACENT TO, OR IN THE VICINITY OF UTILITIES, INCLUDING (BUT NOT LIMITED TO) UTILITY POLES, GUY WIRES, AND OVERHEAD ELECTRIC DISTRIBUTION LINES. CONTRACTOR'S HASP SHALL RECOGNIZE THESE HAZARDS AND INCORPORATE SPECIAL PRECAUTIONS AND CONTROLS SPECIFIC TO WORKING NEAR SUCH HAZARDS.

WASTE MANAGEMENT:

- CONTRACTOR IS RESPONSIBLE FOR SCHEDULING, COORDINATING, LOADING, TRANSPORTING, AND DISPOSING OF WASTE MATERIALS AT APPROPRIATE, OWNER-APPROVED FACILITIES IN ACCORDANCE WITH LAWS AND REGULATIONS AND SPECIFICATION SECTIONS 01 74 19 (CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL) AND 02 61 05 (REMOVAL AND DISPOSAL OF CONTAMINATED MATERIALS).
- EXISTING SITE FEATURES NOT SPECIFICALLY SHOWN OR INDICATED ON THE DRAWNGS MAY REQUIRE REMOVAL BY CONTRACTOR TO ACCOMMODATE THE WORK. THE REMOVAL OF SUCH FEATURES SHALL NOT BE PERFORMED WITHOUT THE PRIOR APPROVAL OF OWNER OR ENGINEER.

SITE MANAGEMENT AND TEMPORARY CONTROLS:

- CONTRACTOR IS RESPONSIBLE FOR ALL FEDERAL, STATE, AND LOCAL PERMITS THAT MAY BE REQUIRED TO PERFORM THE WORK.
- ALL WORK SHALL BE PERFORMED WITHIN THE PROJECT WORK LIMITS. NO WORK SHALL BE PERFORMED BEYOND THE PROJECT WORK LIMITS WITHOUT OWNER'S PRIOR APPROVAL.
- ALL WORK SHALL BE PERFORMED IN A NEAT AND ORDERLY MANNER, IN CONFORMANCE WITH BEST MODERN TRADE PRACTICE, AND BY COMPETENT, EXPERIENCED PERSONNEL. MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH ALL LAWS AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION.
- CONSTRUCTION VEHICLES AND EQUIPMENT SHALL BE DECONTAMINATED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS BEFORE ARRIVING ON-SITE AND BEFORE LEAVING THE SITE. VEHICLES AND EQUIPMENT THAT COME IN CONTACT WITH CONTAMINATED MATERIAL SHALL BE APPROPRIATELY DECONTAMINATED BEFORE HANDLING OFF-SITE FILL MATERIALS OR ON-SITE MATERIALS SUITABLE FOR USE AS FILL.
- CONTRACTOR SHALL PROVIDE AND MAINTAIN SITE SECURITY MEASURES IN ACCORDANCE WITH SPECIFICATION SECTION 01 57 33 (SECURITY) TO PREVENT UNAUTHORIZED ENTRY OF PERSONS/VEHICLES INTO THE PROJECT WORK LIMITS DURING BOTH WORKING AND NON-WORKING HOURS (24 HOURS A DAY, SEVEN DAYS A WEEK).
- CONTRACTOR SHALL PROVIDE TEMPORARY TRAFFIC CONTROL MEASURES AND COORDINATE THE HAULING OF MATERIALS ON PUBLIC ROADWAYS IN ACCORDANCE WITH SPECIFICATION SECTIONS 01 14 33 (WORK IN HIGHWAY RIGHTS-OF-WAY) AND 01 55 26 (MAINTENANCE AND PROTECTION OF TRAFFIC). THE LOADING/UNLOADING OF MATERIALS AND EQUIPMENT WITHIN PUBLIC ROADWAYS IS PROHIBITED WITHOUT THE PRIOR WRITTEN APPROVAL OF AUTHORITIES HAVING JURISDICTION.
- SURFACE STRUCTURES AND FACILITIES DAMAGED OR DISTURBED DURING THE WORK SHALL BE RESTORED AT CONTRACTOR'S EXPENSE TO THEIR ORIGINAL CONDITION OR AS SHOWN OR INDICATED IN THE CONTRACT DOCUMENTS.
- CONTRACTOR SHALL COMPLY WITH ALL NOISE ORDINANCES AND MAKE EVERY EFFORT TO MINIMIZE NOISE CAUSED BY CONSTRUCTION OPERATIONS. EQUIPMENT SHALL BE EQUIPPED WITH SILENCERS OR MUFFLERS DESIGNED TO OPERATE WITH THE LEAST POSSIBLE NOISE IN COMPLIANCE WITH LAWS AND REGULATIONS.
- CONTRACTOR SHALL PROVIDE MEANS, METHODS, AND FACILITIES REQUIRED TO CONTROL MGP-RELATED ODORS, VAPORS, AND DUST GENERATED DURING THE WORK. COMPLY WITH ODOR, VAPOR, AND DUST CONTROL REQUIREMENTS OF SPECIFICATION SECTION 01 57 05 (TEMPORARY CONTROLS).
- PERFORM COMMUNITY AIR MONITORING ON A CONTINUOUS BASIS DURING ALL GROUND-INTRUSIVE WORK OR DUST-GENERATING WORK, AND COMPLY WITH SPECIFICATION SECTION 01 35 49 (COMMUNITY AIR MONITORING PLAN).

EXISTING STRUCTURES AND UNDERGROUND FACILITIES:

- THE LOCATIONS, ALIGNMENTS, AND CONSTRUCTION OF EXISTING STRUCTURES AND UNDERGROUND FACILITIES SHOWN OR INDICATED ON THE DRAWINGS ARE APPROXIMATE, ARE BASED ON INFORMATION READILY AVAILABLE TO OWNER AND ENGINEER, AND ARE NOT GUARANTEED TO BE CORRECT, ACCURATE, OR COMPLETE. CONTRACTOR SHALL VERIFY THE ACCURACY AND COMPLETENESS OF THE INFORMATION SHOWN OR INDICATED ON THE DRAWINGS.
- COMPLY WITH 16 NYCRR 753 (PROTECTION OF UNDERGROUND FACILITIES) AND OTHER LAWS AND REGULATIONS REGARDING THE PROTECTION OF UNDERGROUND FACILITIES.
- CONTRACTOR SHALL MAINTAIN AND PROTECT ALL UTILITIES AND UNDERGROUND FACILITIES THAT MAY BE AFFECTED BY THE WORK. ALL UTILITIES, UNLESS OTHERWISE SHOWN OR INDICATED, SHALL REMAIN ACTIVE FOR THE DURATION OF THE WORK.
- CONTRACTOR SHALL CONTACT AND COORDINATE WITH APPROPRIATE UTILITY OWNERS TO FIELD-VERIFY THE STATUS (ACTIVE OR INACTIVE) OF UNDERGROUND FACILITIES, AND FOR THE TEMPORARY BRACING, DEACTIVATION, REMOVAL, RELOCATION, OR REPLACEMENT OF ANY UNDERGROUND FACILITIES, OVERHEAD WIRES, UTILITY POLES, OR GUY WIRES LOCATED NEAR OR WITHIN WORK AREAS, OR THAT MAY BE AFFECTED BY THE WORK.

ABBREVIATIONS:

BGS	BELOW GROUND SURFACE
CFR	CODE OF FEDERAL REGULATIONS
CLSM	CONTROLLED LOW-STRENGTH MATERIAL
CONC.	CONCRETE
CY	IN-SITU CUBIC YARDS
DBH	DIAMETER AT BREAST HEIGHT
EA.	EACH
EL.	ELEVATION
GA.	GAUGE
GALV.	GALVANIZED
HASP	HEALTH AND SAFETY PLAN
HDPE	HIGH-DENSITY POLYETHYLENE
INV.	INVERT
MAX.	MAXIMUM
MGP	MANUFACTURED GAS PLANT
MIN.	MINIMUM
NAD83	NORTH AMERICAN DATUM OF 1983
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
O.D.	OUTSIDE DIAMETER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PVC	POLYVINYL CHLORIDE
RET.	RETAINING
TYP.	TYPICAL
VCP	VITRIFIED CLAY PIPE

LEGEND:

	PROJECT WORK LIMITS
	PROPERTY LINE (APPROXIMATE)
	TOPOGRAPHIC CONTOUR (1-FOOT INTERVAL)
	HORIZONTAL LIMIT OF FORMER SITE FEATURE (APPROXIMATE)
	EDGE OF BUILDING
	EDGE OF GRAVEL
	EDGE OF PAVEMENT/CONCRETE
	CHAIN-LINK FENCE
	STOCKADE FENCE
	PICKET FENCE
	28" SPRUCE
	24"
	SIGN
	MW-01
	BOLLARD
	GAS VALVE
	GAS TEST STATION
	FIRE HYDRANT
	WATER VALVE
	DRAINAGE MANHOLE
	SANITARY MANHOLE
	ELECTRICAL MANHOLE
	CATCH BASIN (SQUARE)
	CATCH BASIN (ROUND)
	PANEL BOX
	UTILITY POLE
	GUY WIRE
	OVERHEAD WIRES
	ELECTRICAL LINE
	GAS LINE
	SANITARY SEWER LINE
	STORM SEWER LINE
	WATER LINE
	UNKNOWN UTILITY LINE
	PROFILE/SECTION/DETAIL REFERENCE
	DRAWING REFERENCE

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.		USE TO VERIFY FIGURE REPRODUCTION SCALE

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Professional Engineer's Name		
TERRY W. YOUNG		
Professional Engineer's No.		
074847		
State	Date Signed	Project Mgr.
NY	4/9/2015	MJB
Designed by	Drawn by	Checked by
DGN	BGG	MJB



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NATIONAL GRID USA SERVICE COMPANY, INC. • SYRACUSE, NEW YORK

PHASE 1 REMEDIAL ACTION

ILION (EAST STREET) FORMER MANUFACTURED GAS PLANT SITE

VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK

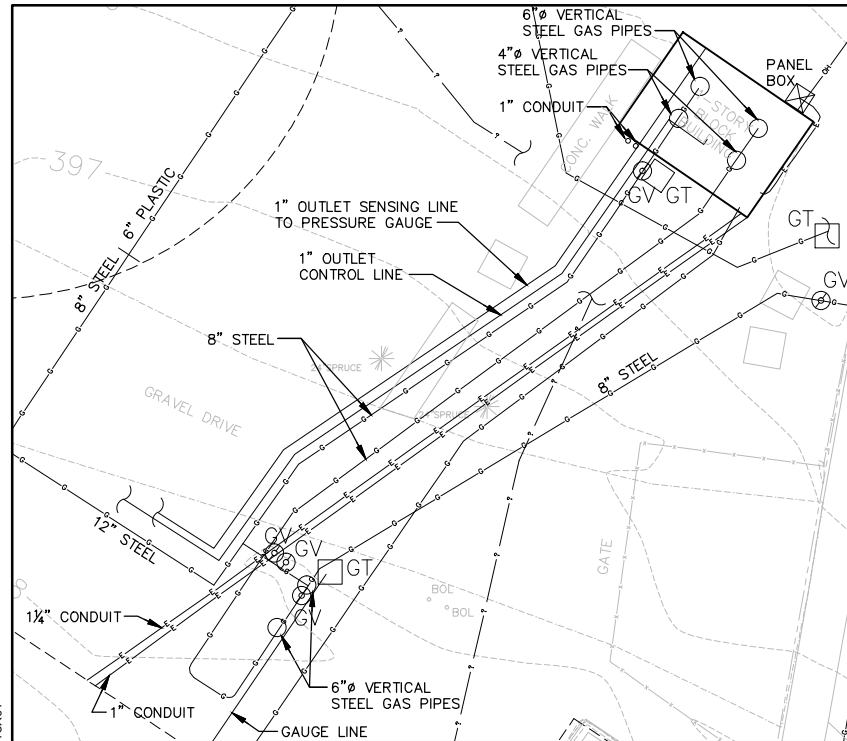
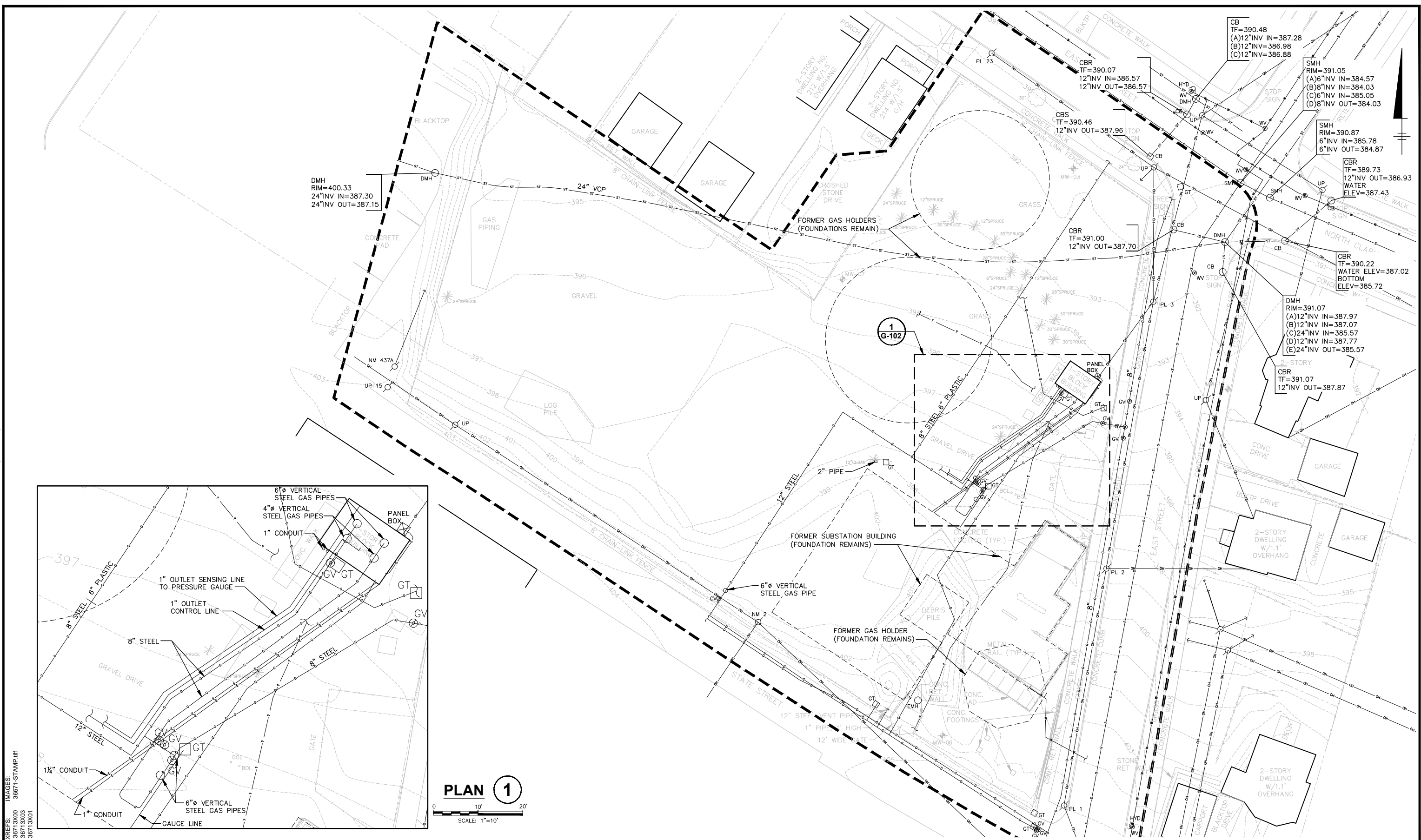
GENERAL REQUIREMENTS NOTES, ABBREVIATIONS, AND LEGEND

ARCADIS Project No. 80036713.0000.00004

Date APRIL 2015

ARCADIS 6723 TOWPATH ROAD P.O. BOX 66 SYRACUSE, NY 13214-0066 TEL. 315.446.9120

G-002



PLAN 1
SCALE: 1"=10'



No.	Date	Revisions	By	Ckd

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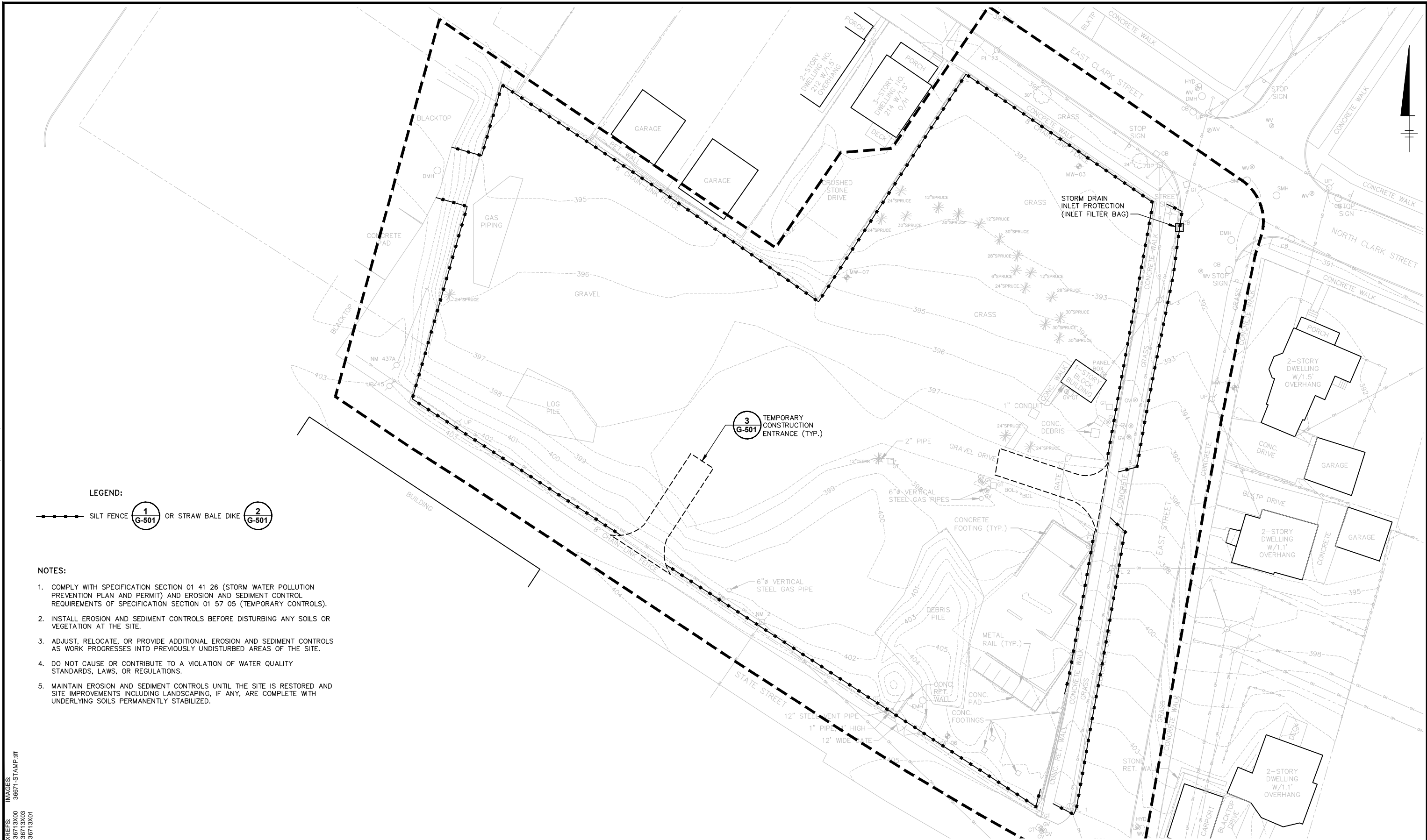
Professional Engineer's Name TERRY W. YOUNG		
Professional Engineer's No. 074847		
State NY	Date Signed 4/9/2015	Project Mgr. MJB
Designed by DGN	Drawn by BGG	Checked by MJB

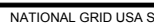


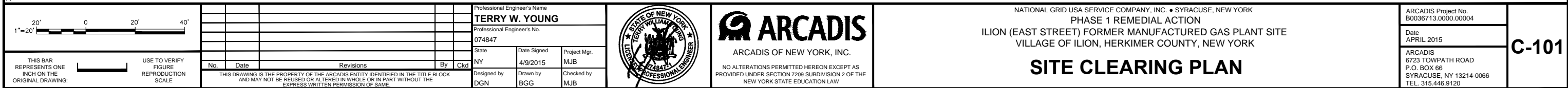
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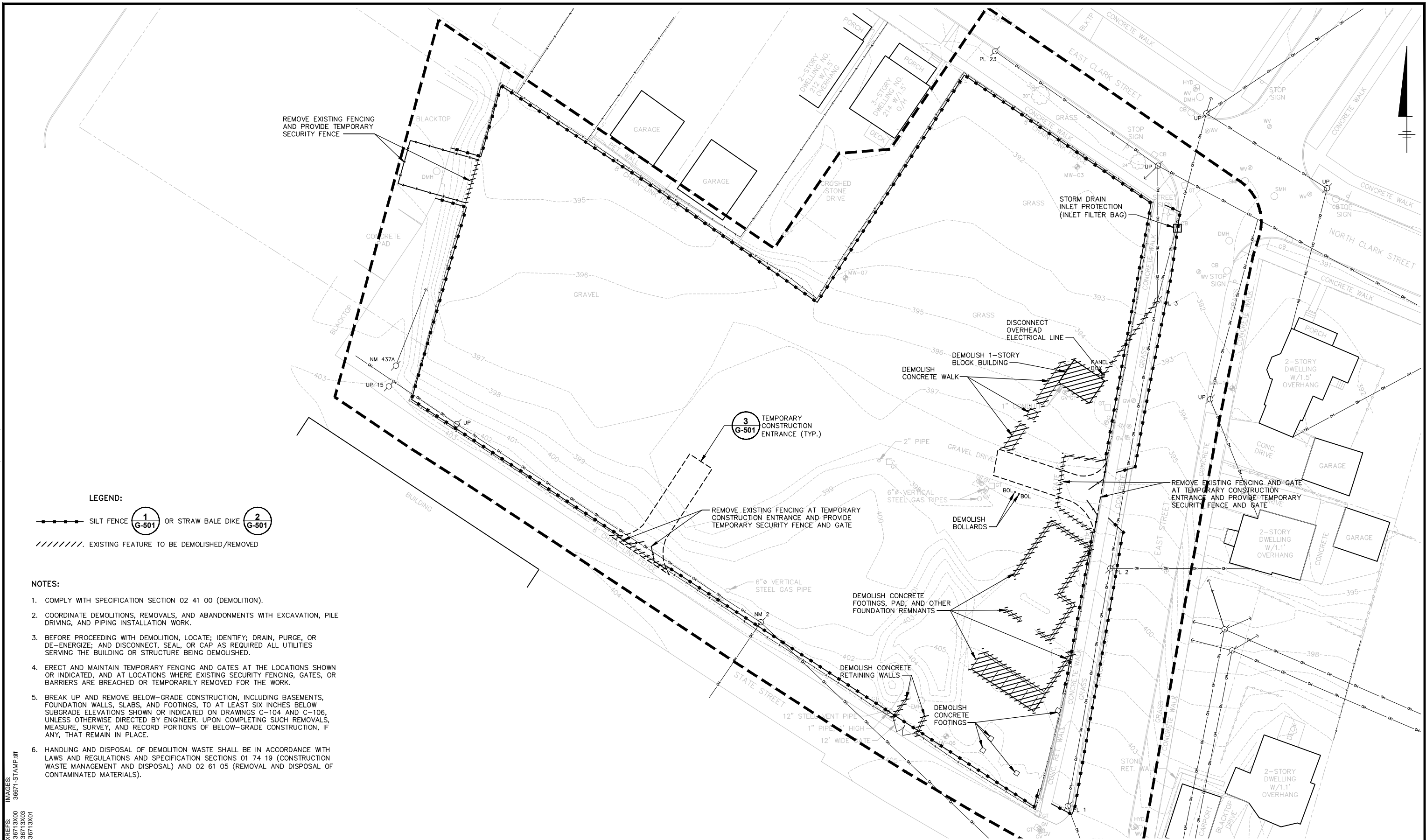
NATIONAL GRID USA SERVICE COMPANY, INC. • SYRACUSE, NEW YORK
PHASE 1 REMEDIAL ACTION
ILION (EAST STREET) FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK
EXISTING SITE UTILITIES

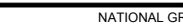
ARCADIS Project No. B0036713.0000.00004	G-102
Date APRIL 2015	
ARCADIS 6723 TOWPATH ROAD P.O. BOX 66 SYRACUSE, NY 13214-0066 TEL. 315.446.9120	



<div>20'020'40'</div> <div>1"=20'</div>						Professional Engineer's Name TERRY W. YOUNG			NATIONAL GRID USA SERVICE COMPANY, INC. • SYRACUSE, NEW YORK		ARCADIS Project No. B0036713.0000.00004	
						Professional Engineer's No. 074847			PHASE 1 REMEDIAL ACTION		Date APRIL 2015	
						State NY			ILION (EAST STREET) FORMER MANUFACTURED GAS PLANT SITE		ARCADIS 6723 TOWPATH ROAD P.O. BOX 66 SYRACUSE, NY 13214-0066 TEL. 315.446.9120	
						Date Signed 4/9/2015			VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK		G-105	
						Project Mgr. MJB						
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.		USE TO VERIFY FIGURE REPRODUCTION SCALE		Revisions		By		Ckd				
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								Drawn by BGG				
<div>TEMPORARY EROSION AND SEDIMENT CONTROL PLAN</div>												





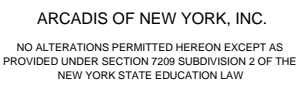
<div>20'020'40'</div> <div>1"=20'</div>						Professional Engineer's Name TERRY W. YOUNG Professional Engineer's No. 074847			NATIONAL GRID USA SERVICE COMPANY, INC. • SYRACUSE, NEW YORK PHASE 1 REMEDIAL ACTION ILION (EAST STREET) FORMER MANUFACTURED GAS PLANT SITE VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK				ARCADIS Project No. B0036713.0000.00004		C-102		
						State NY			Date Signed 4/9/2015		Project Mgr. MJB		Date APRIL 2015				
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.		USE TO VERIFY FIGURE REPRODUCTION SCALE		No. Date Revisions By Ckd		Designed by DGN			Drawn by BGG		Checked by MJB		ARCADIS 6723 TOWPATH ROAD P.O. BOX 66 SYRACUSE, NY 13214-0066 TEL. 315.446.9120				
THIS DRAWING IS THE PROPERTY OF THE ARCADIS ENTITY IDENTIFIED IN THE TITLE BLOCK AND MAY NOT BE REUSED OR ALTERED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF SAME.								PHASE 1 DEMOLITION PLAN									

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: B.GETTS LD: PIC: T.YOUNG PM: M.BENOIT TM: D.NODINE LYR: ON="OFF"="REF"
G:\ENVCAD\S\RACIAL\USE\ACT\B0036713\00000004\DWG\CONTRACT\376713C\103.DWG LAYOUT: C-103 SAVED: 3/27/2015 9:08 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: M-LD28-PDF PLOTSTYLETABLE: PLTCONT.CTB PLOTTED: 4/8/2015 11:22 AM BY: DECLERCO, BRIAN

NOTES:

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Professional Engineer's No. 074847		
State NY	Date Signed 4/9/2015	Project Mgr. MJB
Designed by DGN	Drawn by BGG	Checked by MJB



PHASE 2 DEMOLITION PLAN

Date
APRIL 2015

ARCADIS
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NY 13214-0066
TEL. 315.446.9120

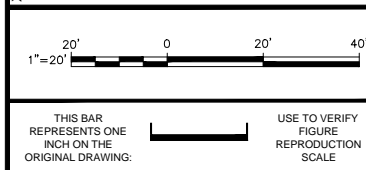
C-103

CITY: SYRACUSE, NY DIV: GROUP: ENV: CAD DB: B: GETTS LD: PIC: T: YOUNG PM: M: BENOIT TM: D: NODINE LVR: ON: OFF: REF: G: ENV: CAD: SYRACUSE: SELECT: 1900367130000000040: DWG: CONTRACT: 196713C106: DWG LAYOUT: C-106 SAVED: 3/27/2015 9:18 AM ACAD: VER: 19.1S (LMS TECH) PAGES: SETUP: M-LD2B-PDF PLOT: STYLE: TABLE: PLT: CONT: QTB PLOTTED: 4/8/2015 11:22 AM BY: DECLERCO, BRIAN

REFS: 36713X00 36713X01 36713X02 36713X03 36713X04
IMAGES: 36671-STAMP.tif

- LEGEND:**
- 396 --- EXISTING GRADE TOPOGRAPHIC CONTOUR (1-FOOT INTERVAL)
 - 394 — SUBGRADE TOPOGRAPHIC CONTOUR (1-FOOT INTERVAL)
 - - - - - GRADE BREAK/LIMIT OF GRADING
 - EXCAVATION AREA (EXCAVATION REQUIRED TO ACHIEVE SUBGRADE ELEVATIONS SHOWN OR INDICATED)
 - + + + + + EXCAVATED MATERIAL TO BE USED AS GENERAL FILL (SEE NOTES 4 AND 5)

- NOTES:**
- COMPLY WITH SPECIFICATION SECTION 31 23 00 (EXCAVATION AND FILL).
 - COORDINATE EXCAVATION AND BACKFILLING OPERATIONS WITH DEMOLITION, PILE DRIVING, AND PIPING INSTALLATION WORK.
 - SUBGRADE ELEVATIONS SHOWN OR INDICATED REPRESENT TOP OF PREPARED SUBGRADE ON WHICH SOIL COVER SYSTEM SHALL BE INSTALLED.
 - IF FREE OF VISIBLE COAL TAR, EXCAVATED MATERIALS FROM AREAS SHOWN OR INDICATED MAY BE USED AS GENERAL FILL ON OWNER'S PROPERTY AT DEPTHS GREATER THAN TWO FEET BELOW FINISHED GRADE. WHEN ON-SITE MATERIALS ARE FOUND UNSUITABLE FOR USE AS GENERAL FILL, PROVIDE APPROVED OFF-SITE GENERAL FILL MATERIAL.
 - MATERIAL REMOVED FROM EXCAVATIONS THAT DOES NOT COMPLY WITH THE REQUIREMENTS FOR GENERAL FILL, OR IS IN EXCESS OF THE QUANTITY REQUIRED FOR GENERAL FILL, SHALL BE REMOVED, TRANSPORTED, AND DISPOSED OF AWAY FROM THE SITE, UNLESS OTHERWISE APPROVED BY ENGINEER.
 - HANDLING AND DISPOSAL OF EXCAVATION WASTE SHALL BE IN ACCORDANCE WITH LAWS AND REGULATIONS AND SPECIFICATION SECTION 02 61 05 (REMOVAL AND DISPOSAL OF CONTAMINATED MATERIALS).
 - PROTECT AND EXTEND, AS NECESSARY, EXISTING MONITORING WELLS DURING CONSTRUCTION.



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Professional Engineer's Name TERRY W. YOUNG		
Professional Engineer's No. 074847		
State NY	Date Signed 4/9/2015	Project Mgr. MJB
Designed by NWF	Drawn by BGG	Checked by PTO



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NATIONAL GRID USA SERVICE COMPANY, INC. • SYRACUSE, NEW YORK
PHASE 1 REMEDIAL ACTION
ILION (EAST STREET) FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK
SOIL COVER SUBGRADE PLAN

ARCADIS Project No. B0036713.0000.00004	C-106
Date APRIL 2015	
ARCADIS 6723 TOWPATH ROAD P.O. BOX 66 SYRACUSE, NY 13214-0066 TEL. 315.446.9120	

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REFS: 36713X00 36713X01 36713X02 36713X03 36713X04 36713X05
IMAGES: 36671-STAMP.tif

20'0"

0

20'0"

40'0"

1"=20'

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Professional Engineer's Name		
TERRY W. YOUNG		
Professional Engineer's No.		
074847		
State	Date Signed	Project Mgr.
NY	4/9/2015	MJB
Designed by	Drawn by	Checked by
NWF	BGG	PTO



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PHASE 1 REMEDIAL ACTION

ILION (EAST STREET) FORMER MANUFACTURED GAS PLANT SITE

VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK

SOIL COVER FINAL GRADING PLAN

ARCADIS Project No. B0036713.0000.00004	C-107
Date APRIL 2015	
ARCADIS 6723 TOWPATH ROAD P.O. BOX 66 SYRACUSE, NY 13214-0066 TEL. 315.446.9120	

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Professional Engineer's Name
TERRY W. YOUNG
Professional Engineer's No.
074847
State
NY
Date Signed
4/9/2015
Project Mgr.
MJB
Designed by
DGN
Drawn by
BGG
Checked by
MJB



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NATIONAL GRID USA SERVICE COMPANY, INC. • SYRACUSE, NEW YORK
PHASE 1 REMEDIAL ACTION
ILION (EAST STREET) FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK

SITE RESTORATION PLAN

ARCADIS Project No.
B0036713.0000.00004
Date
APRIL 2015
ARCADIS
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NY 13214-0066
TEL. 315.446.9120

C-108

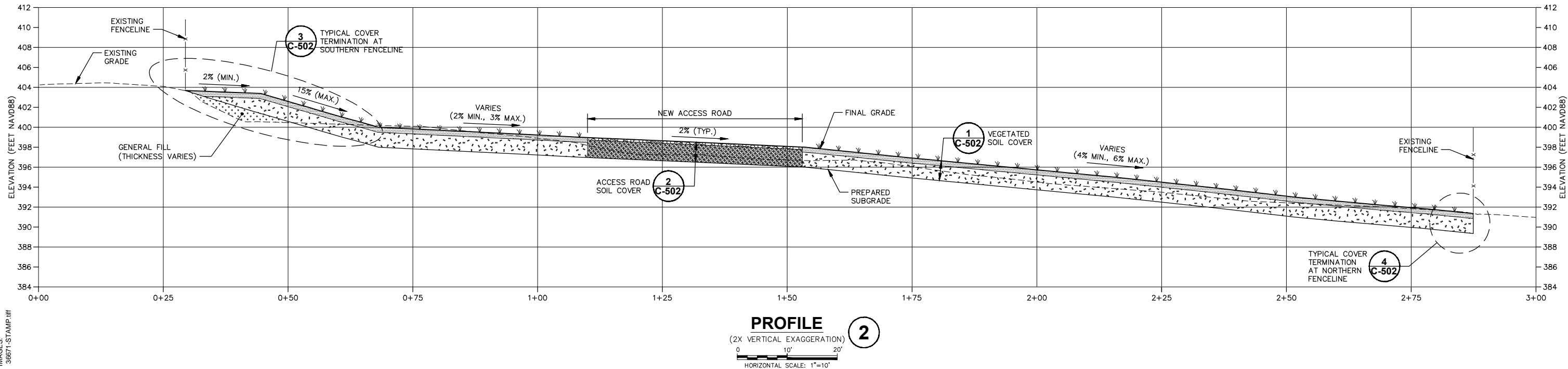
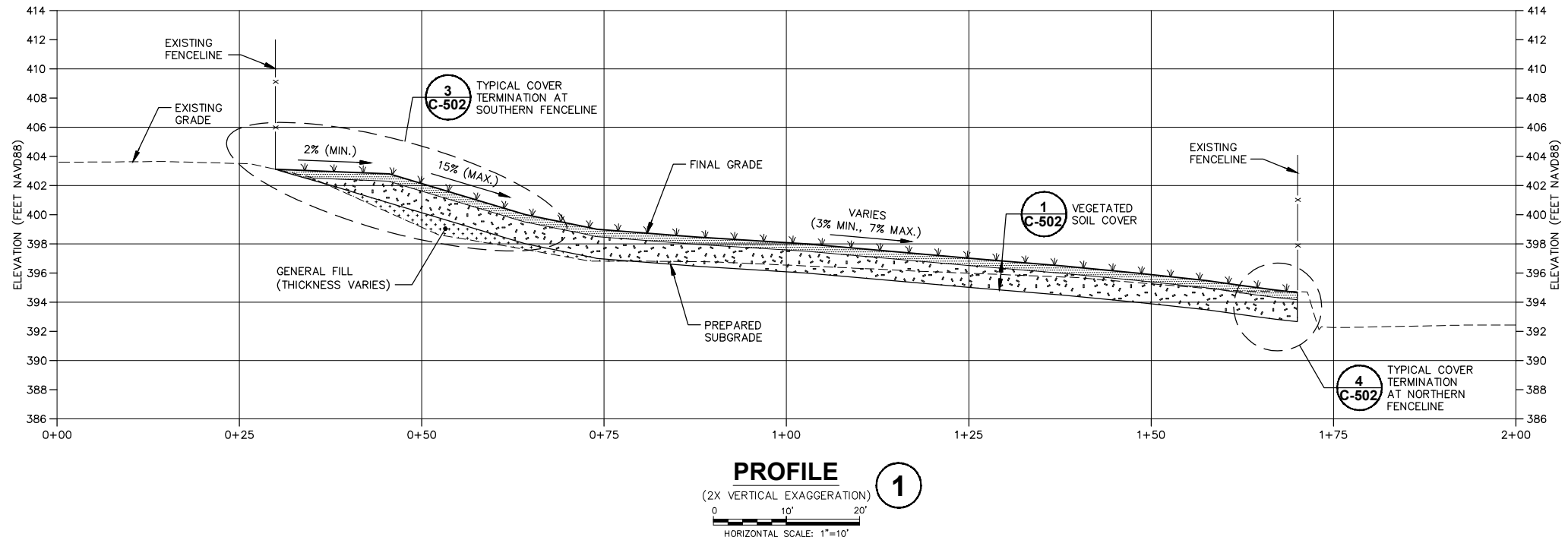
- LEGEND:**
- NEW LAWN
 - NEW CRUSHED STONE SURFACING



- NOTES:**
- FURNISH AND INSTALL NEW CRUSHED STONE SURFACING WHERE SHOWN OR INDICATED IN ACCORDANCE WITH SPECIFICATION SECTION 32 15 40 (CRUSHED STONE SURFACING).
 - FURNISH AND INSTALL NEW CHAIN-LINK FENCING AND GATES WHERE SHOWN OR INDICATED IN ACCORDANCE WITH SPECIFICATION SECTION 32 31 13 (CHAIN-LINK FENCES AND GATES). COORDINATE THE INSTALLATION OF NEW FENCING AND GATES WITH THE REMOVAL OF EXISTING AND TEMPORARY FENCING AND GATES.
 - FURNISH AND INSTALL NEW LAWNS WHERE SHOWN OR INDICATED. RECONDITION EXISTING LAWNS DAMAGED BY CONTRACTOR'S OPERATIONS, INCLUDING AREAS USED FOR TEMPORARY CONSTRUCTION FACILITIES AND EQUIPMENT AND MATERIAL STORAGE, AND AREAS DAMAGED BY THE MOVEMENT OF VEHICLES. RECONDITION EXISTING LAWNS WHERE MINOR REGRADING IS REQUIRED. COMPLY WITH SPECIFICATION SECTION 32 92 00 (LAWNS).
 - FURNISH AND INSTALL NEW TREES WHERE SHOWN OR INDICATED. ADJUST LOCATIONS WHEN REQUESTED AND OBTAIN ENGINEER'S ACCEPTANCE BEFORE PLANTING. COMPLY WITH SPECIFICATION SECTION 32 93 43 (TREES).
 - EXISTING SURFACE STRUCTURES AND FACILITIES REMOVED OR DAMAGED DURING THE WORK SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT CONTRACTOR'S EXPENSE.

PLANT LIST						
KEY	NAME		REMARKS	QUANTITY	SIZE (FEET)	SHEARING DESIGNATION
	BOTANICAL	COMMON				
JV	JUNIPEROUS VIRGINIANA	EASTERN RED CEDAR	CONIFEROUS EVERGREEN TREE	7	4-5	NATURAL
TO	THUJA OCCIDENTALIS	NORTHERN WHITE CEDAR	CONIFEROUS EVERGREEN TREE	14	4-5	NATURAL

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


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SCALE AS INDICATED	Professional Engineer's Name TERRY W. YOUNG			 ARCADIS OF NEW YORK, INC.	NATIONAL GRID USA SERVICE COMPANY, INC. • SYRACUSE, NEW YORK PHASE 1 REMEDIAL ACTION ILION (EAST STREET) FORMER MANUFACTURED GAS PLANT SITE VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK	ARCADIS Project No. B0036713.0000.00004	Date APRIL 2015	C-201
	Professional Engineer's No. 074847							
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	No. Date Revisions By Ckd		Designed by NWF	Drawn by BGG	Checked by PTO			
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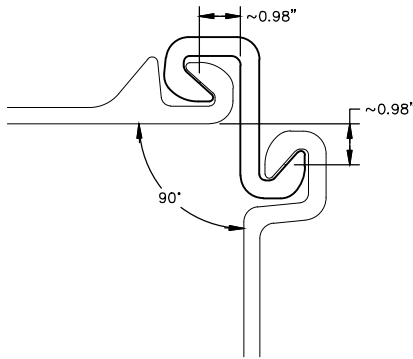
LEGEND:

-  AZ 17-700 STEEL SHEET PILING
-  SLOPE (1V:1.5H)
-  CP3-A X PILE CONTROL POINT
-  EXCAVATION AREA
-  EXCAVATION AREA ID

NOTES:

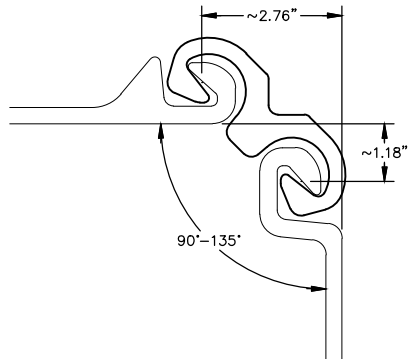
1. COMPLY WITH SPECIFICATION SECTIONS 31 09 13 (GEOTECHNICAL INSTRUMENTATION AND MONITORING), 31 23 00 (EXCAVATION AND FILL), AND 31 50 00 (EXCAVATION SUPPORT AND PROTECTION).
2. COORDINATE PILE DRIVING OPERATIONS WITH DEMOLITION, EXCAVATION, AND PIPING INSTALLATION WORK.
3. BEFORE PROCEEDING WITH PILE DRIVING OPERATIONS, LOCATE, IDENTIFY, AND REMOVE OR RELOCATE OBSTRUCTING STRUCTURES AND UNDERGROUND FACILITIES. COMPLY WITH SPECIFICATION SECTION 02 41 00 (DEMOLITION) FOR DEMOLITIONS AND REMOVALS.
4. TEMPORARY LOADING OR STOCKPILING OF SOILS MAY BE PERMITTED WITHIN 25 FEET OF SHEET PILE WALL DURING EXCAVATION AND BACKFILLING OPERATIONS. LOADING OR STOCKPILING ACTIVITIES SHALL BE LIMITED TO A PERIOD OF NO MORE THAN ONE HOUR.

PILE CONTROL POINT AND CONNECTOR SCHEDULE				
EXCAVATION AREA ID	PILE CONTROL POINT ID	COORDINATES		CONNECTOR TYPE
		NORTHING	EASTING	
1	CP1-A	1522830.61	351011.54	C 14
	CP1-B	1522857.37	351029.84	C 14
	CP1-C	1522827.94	351072.83	C 14
	CP1-D	1522801.17	351054.53	C 14
2	CP2-A	1522811.44	351073.82	--
	CP2-B	1522796.74	351095.39	C 14
	CP2-C	1522750.57	351063.77	--
3	CP3-A	1522679.82	351016.01	C 14
	CP3-B	1522706.51	351032.61	OMEGA 18
	CP3-C	1522710.07	351053.27	OMEGA 18
	CP3-D	1522700.24	351068.64	OMEGA 18
	CP3-E	1522684.26	351074.33	OMEGA 18
	CP3-F	1522654.79	351056.38	C 14



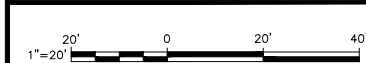
GRADE: S 355 GP
WEIGHT: 9.68 LB/FT

C 14 CONNECTOR 1
NOT TO SCALE



GRADE: S 355 GP
WEIGHT: 12.10 LB/FT

OMEGA 18 CONNECTOR 2
NOT TO SCALE



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Professional Engineer's Name TERRY W. YOUNG		
Professional Engineer's No. 074847		
State NY	Date Signed 4/9/2015	Project Mgr. MJB
Designed by AJB/KLW	Drawn by BGG	Checked by APC



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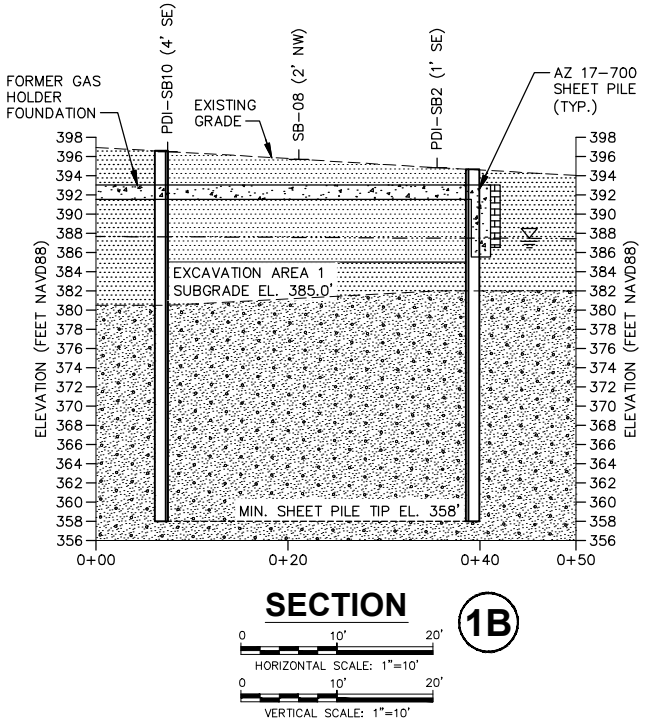
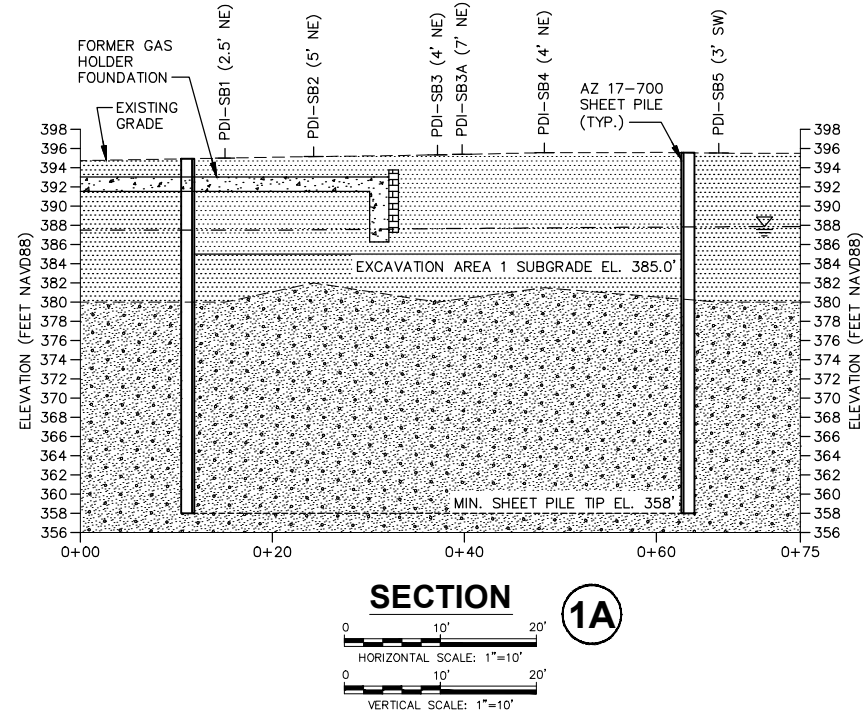
NATIONAL GRID USA SERVICE COMPANY, INC. • SYRACUSE, NEW YORK
PHASE 1 REMEDIAL ACTION
ILION (EAST STREET) FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK

EXCAVATION SUPPORT PLAN

ARCADIS Project No. B0036713.0000.00004
Date APRIL 2015
ARCADIS 6723 TOWPATH ROAD P.O. BOX 66 SYRACUSE, NY 13214-0066 TEL. 315.446.9120

S-101

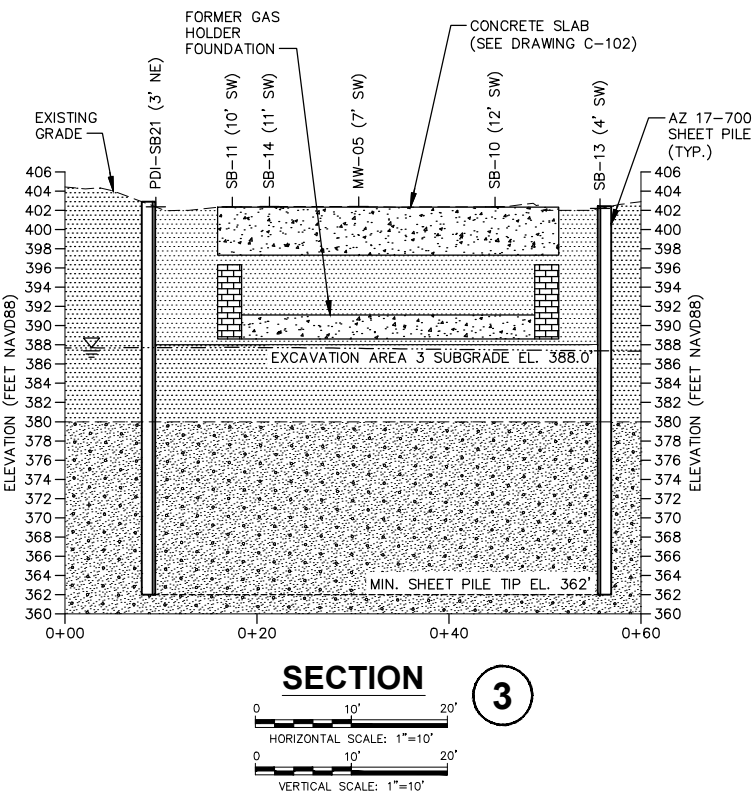
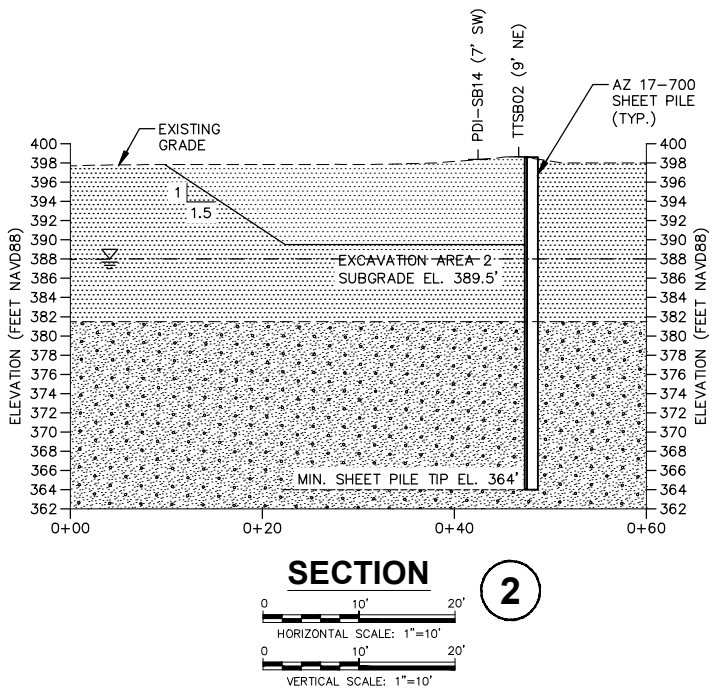
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IMAGES: 36671-STAMP.dwg



LEGEND:

- UPPER SILT/SAND UNIT
- LOWER SAND/GRAVEL UNIT
- GROUNDWATER ELEVATION (MAY 20, 2014)

- NOTES:
- SOIL TYPES AND GEOLOGIC CONTACTS ARE APPROXIMATE AND ARE INTERPOLATED BETWEEN SOIL BORING LOCATIONS. ACTUAL SUBSURFACE CONDITIONS MAY BE DIFFERENT THAN THOSE SHOWN OR INDICATED.
 - ADDITIONAL STRUCTURES AND UNDERGROUND FACILITIES MAY BE PRESENT THAT ARE NOT SHOWN OR INDICATED.



SCALE AS INDICATED		Professional Engineer's Name TERRY W. YOUNG			NATIONAL GRID USA SERVICE COMPANY, INC. • SYRACUSE, NEW YORK PHASE 1 REMEDIAL ACTION ILION (EAST STREET) FORMER MANUFACTURED GAS PLANT SITE VILLAGE OF ILION, HERKIMER COUNTY, NEW YORK		ARCADIS Project No. B0036713.0000.00004		S-301
		Professional Engineer's No. 074847					Date APRIL 2015		
		State NY			Date Signed 4/9/2015		Project Mgr. MJB		
		Designed by AJB/KLW			Drawn by BGG		Checked by APC		
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EXCAVATION SUPPORT SECTIONS