SEWER SERVICE EXPANSION AREA - SEWERSHED "L"
VILLAGE OF SAG HARBOR
SUFFOLK COUNTY, NY 11963

GENERAL CONSTRUCTION

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SECTION 01100 – SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:

1. Project information
2. Project Milestones
3. Contracts
4. Work Covered by Contract Documents
5. Work Under Separate Contract
6. Work Sequence
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8. Specifications and Drawing Conventions
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B. Related Section:

1. Division 01 Section 01500 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: Project consists of the construction of a new 8-inch diameter gravity sewer piping within the Village of Sag Harbor.

B. Project Location: New gravity sewer piping to be routed along the following Village streets: Sage, Church, Washington, Division, Rysam, Burke, Rector, Cross and Bay and will discharge to existing sewer manholes located on Madison Street, Main Street, Division Street and Bay Street.

C. Owner: Village Sag Harbor, Suffolk County, NY.

D. Owner's Representative: Contract Documents prepared by Cameron Engineering & Associates, LLP, 177 Crossways Park Drive, Woodbury, NY 11797, (516) 827-4900.

E. Project Coordinator: General Construction Contractor shall be responsible for coordination of his/her subcontractors and for overall Project coordination.

1.4 PROJECT MILESTONES

A. Project milestones and guidelines shall be met as follow:

1. Gravity sewer piping system shall be 100% complete and fully ready for operation (i.e., installed, tested, commissioned and accepted) within **540** days of the Notice to Proceed date.

2. In addition to liquidated damages, Contractor shall be responsible for any/all costs associated with holding, hauling and disposal of any/all sanitary wastewater generated should the above milestones not be met.

1.5 CONTRACT

A. Project will be conducted under a General Construction Contract.

B. Compensation for all Work required by the Contract Documents shall be included in the Bid Form. The specifications are divided into various sections for clarity and ease of understanding. However, at times, various aspects of the work are described under different sections. Whenever a type of labor, material or construction is necessary, the requirements governing the type of work shall apply regardless of where they may be found in the Contract Documents and regardless of the specific section, title or heading.

1.6 WORK COVERED BY CONTRACT DOCUMENTS

A. Contractor is responsible for loading and unloading of all their equipment, materials, tools and other incidentals and appurtenances related to the Project.

B. The work under the Contract shall include, but not necessarily be limited to, the furnishing of all materials, labor, tools, equipment, and necessary accessories to construct gravity sewer piping in the Village of Sag Harbor, NY as shown in the Contract Documents and as specified herein. In general, the work shall include, but not necessarily be limited to:

1. Construction of a new 8-inch diameter gravity sewers, including all new piping, manholes and associated fittings, valves and appurtenances along the following Village streets: Sage, Church, Washington, Division, Rysam, Burke, Rector, Cross and Bay and discharge to existing sewer manholes located on Madison Street, Main Street, Division Street and Bay Street as indicated in the Contract Documents and as specified herein.

1.7 WORK UNDER SEPARATE CONTRACTS

A. General: Cooperate fully with separate contractors so work may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the work of this Contract with work performed under separate contracts, as required.

1.8 WORK SEQUENCE

A. Contractor shall submit a comprehensive schedule, work sequence, dewatering plans, as required for the Project, to the Owner and Owner's Representative for review. The hours of dewatering shall be approved by the Owner and Owner's Representative.

B. Work sequence shall minimize disruption of normal sewer and stormwater flows. Contractor shall provide all pumps and power for the pumps, piping, valves and appurtenances for bypass of sewer and stormwater flows during the construction activities. Timing of bypass and/or shutdowns shall be approved by the Owner and Owner's Representative.

C. Sequence of construction shall be discussed with Owner and Owner's Representative at the pre-construction meeting and any required subsequent meeting(s) until all parties are in full agreement.

D. Contractor shall submit dewatering permit application to the NYSDEC within fifteen (15) days of Notice to Proceed, where applicable.

1.9 USE OF PREMISES

A. General: Contractor shall provide a designated area for equipment, tool and material storage. Contractor shall provide their own trailer, phone, fax and sanitary facilities.

B. Limit use of the Project Site to the areas within the Work as indicated. Do not disturb portion of the site beyond areas in which the Work is indicated. Contractor and subcontractor personnel shall be restricted to areas that are under construction for the Project. Contractor and subcontractor personnel found outside of the designated construction areas shall be dismissed and prohibited from any further Work at the Plant site.

C. It is the intent of the contract that the Contractor provide sufficient work force(s) at all times during normal business working hours and days of each week to complete the work without resorting to overtime work. This includes working designated work hours for all personnel, regardless of trade. All contractor and subcontractor personnel shall maintain designated lunch and breaks, unless specific work agreed to in advance between Contractor, Owner and Owner's Representative (i.e., concrete pour or other task requiring continuous uninterrupted work to complete) and complete a full 8-hour workday.

D. Do not interrupt utilities serving any facility unless Owner and Owner's Representative are notified a minimum of two (2) days in advance of the utility interruption. Obtain Owner and Owner's Representative written permission before proceeding with utility interruption.

E. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Parking shall be in designated areas only. If applicable, Village parking passes must be on display on every vehicle windshield.

F. Schedule deliveries to minimize use of driveways and entrances by construction operations and to minimize space and time requirements for storage of materials and equipment on-site.

1.10 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative and streamlined language is generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified in the Contract Documents are described in detail in the Specifications. One or more of the following are used in the Contract Documents to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled in the Contract Documents.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

1.11 MISCELLANEOUS PROVISIONS

A. Compensation for all work required by the Contract Documents shall be included in the Bid Proposal. These specifications are divided into various sections for clarity and ease of understanding. However, at times, various aspects of the work are described under different sections. Whenever a type of labor, material or construction is necessary, the requirements governing the type of work shall apply regardless of where they may be found in the Contract Documents and regardless of the specific section, title or heading.

1.12 CONTRACTOR’S RESPONSIBILITY

A. Contractor shall do all the work and furnish at his own cost and expense all plant, labor, materials, equipment, and other facilities, except as herein otherwise provided, that may be necessary and proper for performing and completing the work. Contractor shall be

responsible for the entire work until completed and accepted by the Owner.

B. Work shall be performed in accordance with the true intent and meaning of the Contract Documents. Unless expressly provided, all Work must be performed in accordance with the best modern practice, with materials and workmanship of the highest quality, all as determined by, and entirely to the satisfaction of, the Owner and Owner's Representative.

C. Unless otherwise expressly provided, the means and the methods of construction shall be such as the Contractor may choose, subject, however, to review by the Owner and Owner's Representative. Such review, or the Owner and Owner's Representative failure to exercise his right to reject such means and methods thereon, shall not relieve the Contractor of his obligations to accomplish the result intended by the Contract, nor shall the exercise of such right to reject create a cause of action for damages.

D. Lands by Contractor: Any land and access thereto not furnished by the Owner that the Contractor deems necessary for the Contract work, for temporary construction facilities including field offices, access and egress or for storage of materials shall be provided by the Contractor at no cost to the Owner. Contractor shall obtain permits and written approvals from the appropriate jurisdictional agency and property owner for use of premises not furnished by the Owner, and of all offsite areas which include offsite borrow pits and waste areas. Such permits and approvals must specify treatment of said areas during and at the completion of construction. opies of all permits and approvals shall be furnished to the Owner's Representative.

E. Full-time supervision by the Contractor shall be provided at all times.

1.13 PERMITS AND LICENSES

A. Contractor must comply with all local, State, and Federal laws, rules and regulation applicable to this Contract and to the Work to be done hereunder, and he must obtain at his own expense all permits and/or licenses necessary for the prosecution of the Work other than those permits obtained by the Owner. It is the responsibility of the Contractor to discover what permits he needs for this Work.

B. Contractor will be required to procure and use all necessary forms required by State and Federal Agencies. Any cost involved will be sustained by the Contractor.

C. Where permits are issued by New York State for work performed on State Highways, all work performed on or adjacent to State Highways will be supplemented by the requirements of the Specifications of the New York State Department of Transportation, including materials, methods, and workmanship.

D. Any stipulation or requirement of agreements or permits to enter upon or cross lands under jurisdiction of Federal, State, Municipal, or any other authority, whether incorporated or not in this document, is binding on the Contractor.

1.14 COMPLIANCE WITH LAWS

A. Contractor shall keep himself informed of all current Federal, State, Local Laws and Ordinances.

B. The Work shall be performed by the Contractor, in all respects, in strict conformity with all such laws, rules, regulations, requirements and ordinances of the Federal, State and Local governments and all departments and bureaus thereof, and of the National Fire Protection Association. Should the Drawings or the Specifications conflict with the law, Contractor shall immediately notify the Owner's Representative in writing of such conflict, and shall thereafter follow the written instructions of the Owner's Representative in respect thereto; or should the Drawings or Specifications demand more than the law requires, the Drawings and Specifications shall be followed nevertheless.

1.15 ACCIDENTS

A. Accidents resulting in injury or death or which result in property damage must be reported immediately to the Owner and Owner's Representative. Contractor shall make an initial notification either by telephone or facsimile with a formal written report to follow immediately.

B. Contractor shall promptly report in writing to the Owner and Owner's Representative all accidents whatsoever arising out of, or in connection with the performance of the work, giving full details and statements of witnesses.

1.16 TEMPORARY SERVICES

A. Water and Power

1. Contractor shall provide at his own expense all temporary water and electric, as specified herein. Meters shall be provided and read monthly by Contractor, Owner and Owner's Representative. Contractor shall be billed for water and electric at rates paid by Owner.

B. Light and Telephone

1. Contractor shall provide at his own expense all telephone and temporary and security lighting as required for the proper performance and inspection of his work.

C. Sanitary Facilities

1. Contractor shall provide sanitary services/facilities. Contractor shall prohibit and prevent the committing of nuisances on the site of the work or on adjoining property and shall discharge any employee who violates this rule. Ample washroom, toilet facilities, and a potable water supply for use of all employees shall be furnished and maintained by the Contractor in strict conformance with the applicable regulations of the New York State Department of Labor, Board of Standards and Appeals. Field Offices shall be connected to site sewage disposal facilities.

1.17 PROTECTION OF UTILITIES AND UTILITY CONFLICTS

A. A careful search has been made, in good faith, of all known municipally owned or private utilities within or adjacent to the Contract area. However, there is no guarantee that all existing utilities have been found. The location of the utilities as shown on the Contract Plans, are approximate only. The Owner therefore does not guarantee the locations shown on the Plans of pipes, service connections, ducts, utilities, and other underground structures, or

that all such pipes, service connections, ducts, utilities, and other underground structures are shown on the Plans. The information given is intended only as a guide to the Contractor. Contractor is specifically directed to familiarize himself with the existence of aerial, surface, or subsurface structures of municipal and other public service corporations within the Contract Area.

B. Contractor's attention is also directed to the fact that during the life of this Contract, the owners and operators of utilities may make changes in their facilities. Contractor will be required to determine the exact locations and elevations of all pertinent structures, utilities, and facilities, before construction work and new installations are started, so that there will be no interference with the Work. Conflict between existing structures, utilities, and facilities and new Work shall be ascertained by the Contractor and called to the attention of the Owner's Representative. Contractor shall take these conditions into consideration in making up his bid. He shall not claim damages and shall not be entitled to payment because of any omission or faulty location on the Plans or any pipes, ducts, utilities, or other underground structures.

C. It is understood and agreed that the Contractor has considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated positions, and that no additional compensation will be allowed for any delays, inconveniences, or damage sustained by him due to any interference from the utility appurtenances or from the operation of moving them.

D. Contractor shall protect in a suitable manner all utilities encountered and shall repair any damage to structures, utilities, and facilities caused by his operations. If the nature of the damage is such as to endanger the satisfactory functioning of the utilities and the necessary repairs are not immediately made by the Contractor, the work may be done by the respective owning companies and the cost thereof charged against the Contractor.

E. Contractor shall give the utility corporations involved and/or Owner reasonable notice, but not less than seventy-two (72) hours, in advance of operations which may or will affect their structures or facilities.

F. Contractor shall cooperate with the municipally owned and/or public utility corporations whose structures (aerial, surface, or subsurface) are within the limits of or along the outside of the trench width, to make it possible for them to maintain uninterrupted service. Contractor shall conduct his operations in such a way as to delay or interfere as little as practicable with the work of the utility corporations.

G. Contractor shall do all work and pay all costs of protecting, supporting, and maintaining all surface, subsurface, or overhead structures, and all other property, including pipes, service connections, conduits, ducts, tubes, chambers, and appurtenances, public or private, in the vicinity of the work (except such which by law, franchise, permit, contract, consent, or agreement the owner thereof is required to protect, support, maintain, relocate, or restore) repairing the same if damaged, and restoring to their original condition all areas disturbed. He shall not claim or be entitled to any damages for delay or otherwise by reason of such required work, and he thereby assumes all risks in connection therewith.

H. In general, it is the intention of the Owner not to order utilities moved; however, where direct conflict is encountered, the Owner's Representative will be contacted for resolution.

Contractor shall not remove any structures or part of a structure owned by any utility corporation without the approval of the Owner's Representative.

I. Contractor will see to it that utility valve boxes and manholes are readily accessible at all times. Contractor will not store materials over them and should it become necessary to cover the boxes or manholes with soil, he will devise a method for finding them quickly and assist the utility company to uncover them. Further, the boxes and manholes will be uncovered during non-working hours.

1.18 PROTECTION OF WATER SUPPLIES

A. Water Supply Interconnections

1. There shall be no physical connection between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any sewage or polluted water into the potable supply.

1.19 PROTECTION OF COUNTY HORIZONTAL CONTROL MONUMENTS AND OBSERVATION WELLS

A. Contractor shall verify the locations of all traverse monuments and observation wells and inform the Owner's Representative of any discrepancies. It shall be the responsibility of the Contractor to protect these monuments and observation wells from any and all harm during the life of the Contract. Contractor shall take whatever measures necessary and perform whatever work that is required to afford such protection of the monuments and observation wells to the satisfaction of the Owner's Representative.

1. In the event that monuments are damaged, disturbed, or destroyed in any way by action of the Contractor, then the Contractor shall replace the monuments in exact kind to the accuracy of first order or second order work as required and approved and under the direct supervision of the Owner's Representative.
2. In the event that observation wells are damaged, disturbed, or destroyed in any way by action of the Contractor, Contractor shall provide the Owner with a new observation well of the type and depth and at the location required by the Owner.

B. No payment will be made for costs accruing to the Contractor by reason of this requirement.

1.20 PRESERVATION OF WETLANDS AND WATERWAYS AND HAZARDOUS WASTE DISPOSAL

A. Contractor is not permitted to dump soil onto those areas designated as wetland or waterways. Further, the Contractor shall not stockpile or store soil, materials, tools, or equipment on wetlands.

B. Burning of any materials within the limits of the County will not be permitted.

C. Hazardous waste material encountered during the excavation must be disposed of according to latest Environmental Agency guidelines and at no additional cost to the Owner.

D. Owner shall be supplied with a complete original copy of the manifest and receipt of delivery/disposal from end disposal point/facility of any hazardous waste handled, removed, transported and disposed of that has been generated from this Project. Such documentation shall be complete from "cradle to grave" (i.e., point of origin to final disposal site).

1.21 SPRINKLER SYSTEM

A. If the Contractor in the course of his work removes or damages existing underground lawn sprinkler systems located within the Project site, he shall repair the damage to the sprinkler system or replace it, as directed by the Owner's Representative and at no additional cost to Owner. Failure of the Contractor to repair damages within 14 days of notification by Owner, a penalty of $500.00 per day beyond the 14 days and until such time sprinkler system is repaired to the satisfaction of the Owner will be assessed by the Owner and deducted from the Contractors next payment requisition.

1.22 GROUNDWATER AND FLOOD FLOWS

A. Contractor shall take all necessary precautions and shall furnish any and all labor, equipment, and materials required to handle all water, sewage, storm, seepage, surface, subsurface, and flood flows which may be encountered at any time during construction of the work, and he shall assume all costs connected therewith. The manner of providing for these flows shall be subject to approval of the Owner's Representative.

1.23 SIZE LIMITATION FOR CONSTRUCTION EQUIPMENT

A. Contractor shall limit the size and weight of construction equipment in locations where operation of large and heavy equipment will result in extensive damage to trees, utilities and pavements. If the operation of the equipment selected by the Contractor results in excessive damage to trees, pavements and utilities, Contractor shall replace it with smaller and lighter equipment at the request of the Owner's Representative.

1.24 CONSTRUCTION LIMITATIONS

A. Any impact to nearby residents shall be mitigated to the fullest extent possible. Construction noise, dust, odors and related construction impacts shall be restricted to the governing codes and regulations. If the construction impacts are excessive, as determined by the Owner's Representative, Contractor shall provide alternative construction methods to complete the construction.

B. Owner reserves the right to back charge Contractor for all costs associated with maintaining the Project Site should the Contractor fail to maintain the Project Site in a condition acceptable to the Owner.

C. Contractor shall not stage/store/locate equipment, materials or other construction items that restrict traffic flow. Temporary material staging/storage in the field shall be limited to what can be constructed that day. Provide a traveled way suitable for two (2) lanes of moving traffic at all times. Keep traveled way reasonably smooth and hard at all times. Contractor shall not open roadway beyond what construction can be completed in that day.

D. Noise mitigation for pumping activities may require construction of a temporary insulated enclosure(s) to attenuate and reduce travel of noise off of the Owner's property. If necessary, this shall be done at the Contractor's expense and at no additional cost to Owner.

1.25 SUBCONTRACTORS

A. All subcontractors shall be approved by Owner and Owner's Representative prior to their starting Work on the Project. Background information shall be provided to Owner and Owner's Representative describing the work experience documentation of the subcontractor.

1.26 OSHA COMPLIANCE

A. In addition to the existing prevailing wage rate law, Labor Law §220, section 220-h, confined space training, trench safety training, and lock out/tag out training all laborers, workers and mechanics working on the site shall be required to complete OSHA 10-hour Construction Safety and Health Course S1537-A. All laborers, workers and mechanics working on the site shall be certified as having successfully completed the OSHA 10-hour construction safety and health course. Daily hygiene and hand washing are of paramount importance, as the Work is being conducted at an active wastewater treatment facility.

1.27 PROJECT SITE INFORMATION

A. Limited site soil boring data, samples and soil reports are available for inspection and are for informational purposes only. Any opinions/information expressed in these reports are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner's Representative and Owner shall not be responsible for interpretations or conclusions drawn from this data. Bidders must make their own interpretation of subsurface conditions, including groundwater depth, that may affect methods or the cost of construction of the Work.

B. Contractor shall satisfy himself by actual examination of the site of the Work, as no claim shall be made by the Contractor for additional compensation by reasons of the fact that existing conditions, including groundwater depth, are other than as shown of the Contract Documents.

C. Contractor, at his own expense, shall make test borings or dig test holes to locate and determine the depth to groundwater, including a determination of any seasonal variations. Any/all expenses for making test borings and/or digging test holes and other investigative work shall be borne by the Contractor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01100

SECTION 01105 - PROJECT COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes a description of specific requirements associated with other contracts.

B. Related Sections:

1. Division 01 Section "Summary" for the Work covered by the Contract Documents, restrictions on use of the Project sites and work restrictions.

1.3 COORDINATION WITH OTHER CONTRACTS

A. During the progress of the Work, other Contractors may be engaged in performing other work and be awarded work under separate contracts. In that event, the Contractor shall coordinate the work to be done hereunder with the work of such other contractors and the Contractor shall fully cooperate with such other contractors and carefully fit its own work to that provided under other contracts as directed by the Owner's Representative.

B. Contractor shall not commit or permit any act which will interfere with the performance of work by any other contractor.

C. If Owner's Representative determines that the Contractor is failing to coordinate his work with the work of other contractors as the Owner's Representative has directed, then the Owner shall have the right to withhold any payments otherwise due hereunder until the Owner's Representative's directions are complied with by the Contractor.

D. If the Contractor notifies the Owner's Representative in writing that another contractor is failing to coordinate his work with the work of this Contract as directed, the Owner's Representative must promptly investigate the charge. If he finds it to be true, he must promptly issue such directions to the other contractor with respect thereto as the situation may be required. The Owner shall not, however, be liable for any damages suffered by this Contractor by reason of the other contractor's failure to comply with the directions so issued by the Owner's Representative, or by reason of another contractor's default in performance, it being understood that the Owner does not guarantee the responsibility or continued efficiency of any contractor.

E. Should the Contractor sustain any damage through any act or omission of any other contractor having a contract with the Owner for the performance of work upon the site or of work which may be necessary to be performed for the proper prosecution of the work to be performed hereunder, or through any act of omission of a subcontractor of such

contract, the Contractor shall have no claim against the Owner for such damage, but shall have a right to recover such damage from the other contractor under the provision similar to the following paragraph, which have been or will also be inserted in the contracts with such other contractors:

1. Should any other contractor having or who shall hereafter have a contract with the Owner for the performance of work upon the site sustain any damage through any act or omission of the Contractor hereunder or through any act or omission of any subcontractor of the Contractor, the Contractor agrees to reimburse such other contractor for all such damages and to defend at his own expense, any suit based upon such claim and if any judgment or claims against the Owner shall be allowed, the Contractor shall pay or satisfy such judgment or claim and pay all costs and expenses in connection therewith and agrees to indemnify and hold the Owner harmless from all such claims.

F. If any portion of the Work to be performed under this Contract depends upon the work of the Owner's forces or any other contractor, the Contractor shall inspect same and promptly give to the Owner's Representative notice of all defects in the work of such other contractor or Owner's forces. Contractor shall further notify the Owner's Representative of all delays by such other contractor as will affect the timely performance of the Work to be performed under this Contract. Failure of the Contractor to so inspect and give notice shall constitute an acceptance by him and an acknowledgement of the timely performance of work by other contractors.

G. Contractor shall notify the Owner's Representative immediately of damage to his Work as a result of work being performed by others through their neglect, ignorance, carelessness or other reasons attributable to the offending contractor.

H. Contractor's attention is specifically directed to the fact that because of the work on other contracts within the limits of this Contract, he may not have exclusive occupancy of the territory within the limits of the Contract. Each contractor shall afford the Owner and separate contractor's reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work and shall connect and coordinate his work with theirs as required by the Contract Documents.

1.4 GENERAL REQUIREMENTS OF CONTRACTS

A. Work under this contract and work under separate contracts shall be closely coordinated to achieve fully operating systems. Project milestones and guidelines shall be met to coordinate the startup, testing, commissioning and sequencing of various systems. Work between the contracts shall be coordinated to provide smooth transition amongst different tasks for each contract. Related construction sequencing shall be coordinated by the Owner and/or Owner's Representative.

B. Use of project site shall be closely coordinated so all work can be completed without interruption. Trailer locations, staging areas and related use of site shall be coordinated between the contractors to prevent work interruption.

C. Final connections of the gravity sewer shall be made by the work under this Contract and only after the sewer has been properly tested, commissioned and accepted by Owner.

D. Where common or mutual work is specified (i.e., common trenches, temporary electric connection, safety fence, etc.), work shall be performed under this contract. When work is separate and divisible, work to be performed by each Contractor.

E. Contactor under this contract shall be responsible for pest control, storm water control, site storm drainage and sediment and erosion control at the gravity sewer construction site work areas. Contractor for work under the separate contract shall be responsible for these tasks on their project outside the limits of the gravity sewer construction site work areas.

F. Any conflicts amongst projects shall be brought to the attention of the Owner and Owner's Representative for resolution. Decision of the Owner shall be final.

G. Extent of Contract: Unless the Agreement contains a more specific description of the work, requirements indicated on Drawings and in Specification Sections determine which contract includes a specific element of Project.

1. Unless otherwise indicated, the work described in this Section for each contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the Contract Documents.

H. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in this Section and in Division 01 Section "Temporary Facilities and Controls," Contractor is responsible for the following:

1. Installation, operation, maintenance, and removal of each temporary facility necessary for its own normal construction activity, and costs and use charges associated with each facility, except as otherwise provided for in this Section.
2. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
3. Its own storage and fabrication sheds.
4. Temporary enclosures for its own construction activities.
5. Staging and scaffolding for its own construction activities.
6. General hoisting facilities for its own construction activities.
7. Waste disposal facilities, including collection and legal disposal of its own hazardous, dangerous, unsanitary, or other harmful waste materials.
8. Progress cleaning of work areas affected by its operations on a daily basis.
9. Secure lockup of its own tools, materials, and equipment.
10. Noise control, erosion control, environmental protection and fire protection shall be in compliance with local laws, codes and regulations for its own construction activities.
11. Weather protection, dust protection, security, temporary heat, temporary light, temporary ventilation, temporary cooling, tree protection, safety fencing, protection of work, protection of existing structures and flood protection for its own construction activities.
12. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
13. Site sanitary sewerage for its own construction trailer.
14. Temporary roads and paved areas for its own construction activities.
15. Project identification and temporary signs for its own construction project.
16. General waste disposal facilities areas for its own construction activities.
17. Temporary stairs areas for its own construction activities.
18. Temporary fire-protection facilities areas for its own construction activities.

19. Barricades, warning signs, and lights areas for its own construction activities.
20. Security enclosure and lockup areas for its own construction activities.
21. Environmental protection areas for its own construction activities.
22. Restoration of Owner's existing facilities used as temporary facilities areas for its own construction activities.
23. Temporary wastewater conveyance systems for its own construction activities.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION 01105

SECTION 01140 - WORK RESTRICTIONS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Gravity sewer installation, testing and commissioning.

B. Site access and control of areas outside of site.

C. Contractor use of the premises.

D. Contractor storage, parking and deliveries.

E. Work hours, employee conduct and miscellaneous employee requirements.

F. Contract requirements related to maintaining Owner's current operations and excess inspection required.

G. Minimum safety and confined space access requirements.

H. Excavating in the immediate vicinity of any underground gas facility.

I. Procedure for working near transmission mains.

1.2 GENERAL

A. Contractor shall provide for suitable and sufficient means to bypass and/or divert stormwater flow, as necessary, to conduct the required Work during construction activities. Means and methods for bypass of stormwater flows shall be submitted by the Contractor and reviewed by the Owner and Owner's Representative prior to commencement of construction activities.

B. Contractor shall provide all piping, pumps, valves and appurtenances for bypass of stormwater flow during the construction activities, as required and/or as directed by the Owner and/or Owner's Representative. Timing of shutdowns and/or bypassing (i.e., daily and seasonal) shall be reviewed by the Owner and Owner's Representative.

C. Recommended sequence of construction operations shall be discussed with the Owner and Owner's Representative at the pre-construction meeting and as appropriate throughout the Project during Progress Meetings.

D. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.

E. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner and Owner's Representative not less than two (2) days in advance of proposed utility interruptions.
2. Obtain Owner and Owner's Representative written permission before proceeding with utility interruptions.

F. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner and Owner's Representative not less than two (2) days in advance of proposed disruptive operations.
2. Obtain Owner and Owner's Representative written permission before proceeding with disruptive operations.

G. Nonsmoking Building: Smoking is not permitted within any building or within 25 feet of entrances, operable windows, or outdoor air intakes.

H. Controlled Substances: Use of tobacco products and other controlled substances inside buildings is not permitted as stated herein.

I. Employee Identification: Provide identification tags for Contractor personnel working on the Project site. Require personnel to utilize identification tags at all times to be on display on the outermost clothing at all times.

J. Compliance and certification with relevant OSHA training, confined space and trench safety courses shall be maintained and provided by all Contractor personnel and subcontractors.

K. For the purposes of this contract any reference in the contract, specifications and drawings that refers to GALVANIZED shall mean only hot dipped galvanization of any and all metals. Only hot dipped galvanized metals shall be accepted where called for galvanized metals. All other forms of galvanized metals shall be rejected and replaced immediately.

1.3 GRAVITY SEWER INSTALLATION, TESTING AND COMMISSIONING

A. A maximum of 600 continuous linear feet of gravity sewer shall be installed and tested, as specified, at any given time. Testing shall be conducted from manhole to manhole. Upon successful completion and acceptance of same by the Owner, Contractor shall provide for permanent trench restoration, as specified. Contractor can continue to install pipe, however, if more than 60 feet of additional pipe is installed before beginning the removal of temporary pavement and installation of permanent trench restoration on the previous piping segments a stop work order will be issued by the Owner. If multiple crews are utilized, each crew shall be held to this installed distance before permanent trench restoration must be completed.

1.4 SITE ACCESS AND CONTROL

A. Contractor shall use an entrance designated by the Owner's Construction Representative.

1. Owner may permit, solely at the Owner's discretion, the temporary use of another entrance for site access.
2. Owner will only review requests made by the Contractor for an exception to the designated site entrance if made in writing at least 72 hours in advance of each of the times desired for use.

B. Contractor shall maintain access to each property driveway clear of materials, vehicles and any other obstacle or debris. Failure to do so will result in a minimum back charge of $750 per occurrence.

C. Owner intends to be a good neighbor to the residences and local business owners. Contractor shall not close any road for any period of time, unless otherwise directed by Owner's Construction Representative. Contractor shall take whatever measures are necessary to not cause any inconvenience to residences and businesses.

D. Contractor shall be responsible to employ methods to prevent construction materials and/or debris from leaving the site. Routinely monitor the areas surrounding the site during the day as well as at the end of the workday and immediately clean-up any area to its previous condition.

E. Employ methods to prevent the transmission of dirt from vehicles from depositing on roadways.

F. Contractor shall be responsible to immediately clean roadway, should the measures being taken by the Contractor not satisfactorily control the transmission of any dirt to the roadway.

G. Any damages to work areas, spills of soil, liquid, or any other material shall immediately be repaired, cleaned and restored to its previous condition.

H. Comply with all Federal, State and Local requirements for allowable weight limits of vehicles on all roads.

I. Owner reserves the right to back charge the Contractor for all costs associated with maintaining the grounds as well as maintaining areas outside the site, which may be disturbed by the Contractor should the Contractor fail to maintain or repair the aforementioned in a condition acceptable to the Owner.

1.5 CONTRACTOR USE OF THE PREMISES

A. Premises, for the purpose of this Contract, shall mean the site, buildings and other structures located within the property line or in any temporary or permanent construction easements identified on the plans.

B. Use and manage the premises and the associated construction activities as follows:

1. To not hinder the Owner's ability to operate their facilities.
2. To allow for stockpiling of construction material and debris without any significant hardship, as defined by the Owner's Construction Representative, on the Owner or other contractors.
3. To allow for the stockpiling of excavated soil and imported fill, when called for, without any significant hardship, as defined by the Owner's Construction Representative, on the Owner or other contractors.
4. To allow utility companies to install their work.
5. To allow for the delivery of equipment and materials by independent trucking companies by leaving enough space for backing in and out of areas.

6. To allow for the safe, unimpeded travel way of the Owners vehicles, Owner's Construction Representative's vehicles, Architect's and Engineer's vehicles, construction vehicles and heavy construction equipment about the entire site.

C. Maintain the premises in a safe condition throughout the construction period. Compliance with OSHA regulations and site safety shall be the responsibility of the Contractor as it relates to work of the Contract. The posting of all applicable OSHA safety signs shall be the responsibly of the Contractor.

D. Provide temporary handrails, as required, for their work or for work put in place by their Contract that will require temporary handrails.

E. Contractor shall be responsible for protecting Owners and public property. All existing buildings, structures, shrubs, trees, lawn fixtures, sculptures and miscellaneous equipment shall be protected at all times. Any removals or relocation of said objects, if allowed shall be as directed by Owner's Construction Representative.

F. Protect all of the physical structures, property and improvements upon the site from damage by their Work and shall immediately repair or replace damage caused by construction operations, employees or equipment employed by the Contractor. All labor, materials and equipment and outside contractors that are employed by the Owner to repair damage caused by the Contractor shall be billed to the Contractor directly or withheld from money due the Contractor for work already completed.

G. Keep all existing operations areas, driveways, roads, and parking areas free and clear of materials and equipment. Do not unreasonably encumber the site with materials and equipment. Confine stockpiling of excess excavated material, materials and equipment to areas designated by the Owner's Construction Representative. Locate storage sheds and trailers to areas designated by the Owner's Construction Representative.

H. Immediately remove excess excavated material or relocate to areas on the site requiring placement of fill. Do not stockpile excess material on the site without written approval of the Owner's Construction Representative.

I. Additional compensation for relocating staging areas, equipment and material storage, and trailers are not to be considered an extra cost to the Contractor, as this is an anticipated expense that shall be considered at the time of the bid.

J. Contractor shall be responsible to clean up all materials and debris. Failure to maintain a clean work site daily will result in other's performing the work and the Contractor being back charged for the cleaning cost plus construction administration fees.

K. Do not discard or dispose of any waste on-site.

L. Open fires will not be permitted on the site.

M. Employ erosion control measures to protect properties located adjacent to the work as directed by the Owner's Construction Representative and as required by regulatory agencies.

N. Install erosion control measures as indicated in the Contract and as directed by the Owner's Construction Representative. Contractor shall confine stormwater runoff to the site.

O. Contractor shall be responsible for managing dust as specified in Section 01500.

1.6 CONTRACTOR STORAGE, PARKING AND DELIVERIES

A. Provide exterior storage containers, as required and as directed by the Owner's Construction Representative. Final location of storage container shall be determined by the Owner's Construction Representative.

B. Do not unreasonably encumber the premises with materials and equipment. Store all equipment and materials to allow the Owner's employees to operate and conduct their business safely.

C. Confine premise storage areas to locations designated by the Owner's Representative. Immediately repair or replace damaged facilities at storage areas to the satisfaction of the Owner's Representative and to a condition that existed before the damage occurred as determined by preconstruction photographs, or if photographs are unavailable, to that deemed by the Owner's Representative.

D. Storage of chemicals and paints shall follow manufacturer's guidelines.

E. Compressed gas containers shall be properly stored and secured per OSHA, to the satisfaction of the Owner's Construction Representative. Failure to do so will result in a $250 back charge, per occurrence.

F. Provide a minimum of 48 hours advance written notice to the Owner's Representative for deliveries of materials, site visits by inspectors, manufacturer's representatives or any other occasion that impacts the use of the site. Contractor shall be responsible for any costs that are incurred by the Owner, for failure to meet previously agreed upon appointments or work schedules.

G. Deliveries sent to the Owner will not be signed for or unloaded by the Owner or Owner's Representative. They will be directed to the construction site and if no employee is on site, the delivery will be rejected, at the Contractor's expense.

H. Night deliveries of equipment (past the designated quitting time) will not be permitted. Do not schedule trucking companies to deliver equipment or wait for the job site to open. Delivery trucks shall not obstruct the site entrance, shall not sit within the neighborhood causing an obstruction or perceived nuisance, nor be left idling on or off the site for any period of time.

I. Parking shall be in areas designated by the Owner's Representative. All automotive type vehicles are to be locked when parked or unattended to prevent unauthorized use. Do not leave vehicles or equipment unattended with the motor running or the ignition key in place. Any vehicles or trucks in non-designated areas may be towed at contractor's expense.

1.7 WORK HOURS, EMPLOYEE CONDUCT AND MISCELLANEOUS EMPLOYEE REQUIREMENTS

A. Contractor will be permitted to schedule working days and hours as specified in the General Conditions, unless otherwise specified herein.

B. Unless otherwise directed, roadwork within the Village of Sag Harbor shall be Monday to Friday 9:00 am to 6:00 pm. Unless otherwise directed, one 10' wide lane of traffic shall be maintained in each direction.

C. All Contractor personal shall act in a professional manner. Any person using inappropriate language or who is disruptive to the work environment will be banned from the site.

D. Proper work attire is required. Shirts are to be worn at all times and no short pants are permitted.

E. Contractor personal shall not converse with local residents or Owner's employees.

F. Any Contractor personal found under the influence of any drug or alcohol will be banned from the site.

1.8 CONTRACT REQUIREMENTS RELATED TO MAINTAINING OWNER'S CURRENT OPERATIONS AND EXCESS INSPECTION REQUIRED

A. Schedule working days and hours as specified. Pay all excess costs for inspection services provided by the Owner, Owner's Representative and/or Engineer for working beyond the times specified.

B. The hourly rate charged for inspection services beyond normal working hours shall be at standard hourly billing rates adjusted by an appropriate premium for overtime, whether time-and-one-half, double time, or otherwise, as applicable and prior to applying multipliers per inspector. The actual amount charged will be calculated in accordance with the General Conditions.

C. It is the Contractor's responsibility to determine the dollar amount to be included in the bid to pay for the services of each inspector to be present during the entire time work is being performed during low flow periods or beyond a normal 8-hour day. The maximum hourly billing rate applies for all instances where excess engineering is performed beyond a normal 8-hour workday, not just work to be performed during low flow periods.

D. Contractor will be allowed to work early morning hours if a planned tie-in must be performed. Early morning work may be required since it is a low flow period. Provide 72 hours advanced notice to the Owner's Representative for all early morning work together with a written plan as to the steps necessary to prosecute the work. The overtime salary costs for early morning tie-in work associated with having Owner operations staff present shall be paid by the Contractor.

1.9 MINIMUM SAFETY AND CONFINED SPACE ACCESS REQUIREMENTS

A. All manholes will be classified as "Confined Space" until the new sewers are connected to the existing collection system. Once connected to the existing collection system, all new

manholes will be classified as “Permit Confined Space” as specified herein for permit confined space requirements.

B. The following minimum requirements are to be provided in addition at all applicable Federal, State, County and Local health and safety requirements and all OSHA requirements.

C. Fall Protection:

1. Provide fall prevention for all personnel working more than 5 feet above the next closest lower floor/grade level.
2. All personnel shall connect to a suitable fall prevention device when climbing or descending between any levels greater than 5 feet vertically via any ladder or non-staircase type access way.

D. Confined Space Areas:

1. Any space over five (5) feet in depth and not designated for continuous occupation shall be considered a Confined Space (i.e., tanks, pits, vaults, manholes, wet wells, etc.).
2. Any tank and structure being constructed becomes a confined space once all sides of the structure are formed or constructed thus leaving access via the top side only.
3. All new structures shall be considered Confined Space until they are physically connected to any other Permit Confined Space via a pipeline or passageway, at which time the space shall be classified as Permit Confined Space.
4. Confined Space Requirements:

    a. These minimum requirements shall be provided for by the Contractor when personnel are required to enter a classified Confined Space during the work.
    b. These minimum requirements are in addition to all required safety and precautionary provisions as required by all OSHA, Federal, State, County or local requirements.

        1) Check space for atmospheric hazards prior to any entry, each day and at all times during the entry.
        2) Utilize four (4) gas - Oxygen (O2), Carbon Dioxide (CO), Hydrogen Sulfide (HS) and Lower Explosive Limit (LEL) - portable monitor to test the space before and during the entry period.
        3) All entrants shall be outfitted with a full body harness with D-ring attachment and shall attach to fall protection when entering or exiting the space.
        4) Rescue winch and hoist retrieval system set up and in place at the space.
        5) Hard hat.

    c. Permit Confined Space Areas:

        1) Any space over four (4) feet in depth and not designated for continuous occupation and that contained sewage or chemicals at some time shall be considered a Permit Confined Space (i.e., tanks, pits, vaults, manholes, wet wells, etc.).

2) Any tank or structure being constructed becomes a Permit Confined Space once all sides of the structure are formed or constructed thus leaving access via the top side only and the top side has a deck or limited entry/exit access point less than 50% of the total floor area.
3) All new structures shall be as a Permit Confined Space when they are physically connected to any other Permit Confined Space via a pipeline or passageway.
4) All existing structures that contained sewage or chemicals at some time shall be considered Permit Confined Space until such time as they are permanently disconnected from any other Permit Confined Space and the interior of the structures is suitably cleaned of all containments, at which time they shall be considered as a Confined Space.

1.10 EXCAVATING IN THE IMMEDIATE VICINITY OF ANY UNDERGROUND GAS FACILITY

A. Description:

1. The intent of this procedure is to establish guidelines for gas utility personnel and gas utility contractor crews excavating in the immediate vicinity of any underground gas facility.
2. Additional procedures for planned excavation in the vicinity of gas transmission lines are to be followed as specified herein.

B. Procedure

1. The following procedure is to be followed by all employees of the company and its contractors when it becomes necessary, either planned or unplanned, to excavate in the immediate vicinity of any underground gas facility:

a. Prior to any excavation in the vicinity of any suspected underground gas facility, the person in direct charge of the field operation shall take the following precautions:

1) Visually inspect the immediate vicinity for paved or backfilled cuts or trenches that may indicate the location of underground gas facilities.
2) Visually inspect the immediate vicinity for valve, drip or anode boxes, and for any other gas-related appurtenances such as vent poles, pipeline markers or gas manhole covers.
3) Obtain the appropriate intersection drawings and any related fields sketches, if available, and review for the presence of gas transmission mains, regulator stations or gate stations in the vicinity of the proposed excavation. If such installations are indicated then notification shall be made to the GSO system control center. These installations will have detailed as-built drawings. A copy of the specific drawing for the site should be reviewed to determine piping configuration, control lines and all other appurtenances in the vicinity of excavation. The construction inspection group shall be requested to perform a mark-out of all gas lines and structures in the vicinity of proposed excavation. Conductive pipe locating equipment should be utilized by trained and qualified personnel to locate lines and hand excavation shall be

used to expose all underground gas structures in the affected area before proceeding with powered excavation, if powered excavation is necessary.

4) The drawings/field sketches shall be reviewed for locations of H.P. and L.P. drips in the vicinity of the excavation. Pump all drips that will have standpipes physically within the proposed excavation limits.

Note: drips may only be pumped by qualified personnel, see environmental procedures for the handling and transportation of drip liquids. H.P. drips require specialized equipment and require "central operations support" personnel to pump them. If a drip is found to contain liquid, all liquids must be removed prior to the start of the construction. As necessary, the pumped drip should be rechecked again for liquids just prior to the immediate start of construction in that vicinity. If a standpipe shown on a drawing cannot be located after a thorough investigation, hand excavation must be used in the indicated area to avoid potential damage to the hidden standpipe and to avert the release of liquids.

5) Review the gas service records. Obtain available sketches for large diameter or high- pressure service installations. Wherever possible, gain entrance to building to verity point of entry of gas service (as well as water, sewer, electric and telephone) as well as to connect m-scope equipment directly to service where necessary. Look for curb valve boxes, high-pressure vents and outside meter sets to indicate service locations.

6) Where indicated on plans refer to detailed construction drawings, appropriate drawings and available field sketches. If actual locations or incorrect field records are discovered upon excavation, then appropriate data corrections shall be submitted (i.e., service correction forms, corrected field sketches, etc.).

2. The "tolerance zone" is defined as 5 feet plus ½ the gas pipe diameter distance away from the locator's mark outline of the gas facility (i.e., Facility centerline) in either direction from the line.
3. Test holes shall be excavated to expose the physical location and verity underground gas facilities as directed by the National Grid representative for any work performed by owning utility crews or owning utility contractor crews.
4. Except for surface pavement breaking, test holes or any other excavation shall be excavated by hand within the gas facility's "tolerance zone". Upon locating and verify the gas facility, powered excavation (i.e., backhoes, dig-its, augurs, etc.) shall be used only outside the zone of protection for the gas line. The zone of protection shall be defined as 4 inches from any face of a distribution gas facility and 24 inches from any face of a gas transmission line.
5. Exposed gas facilities shall be supported as necessary during excavation activities to prevent failure. Undermine or 1:1 slope conditions with respect to cast iron mains should be prevented, if possible.
6. Additional procedures for planned excavation in the vicinity of gas transmission lines are to be followed as specified herein.

1.11 PROCEDURE FOR WORKING NEAR TRANSMISSION MAINS

A. Description:

1. This procedure provides the guidelines for any work near transmission pipe by third party contractors, National Grid in house contractors or National Grid crews. For this procedure transmission pipe is any main or service operating at or above 125 psig.

B. Procedure:

1. Definitions

a. Near Zone - defined as the area within 15 feet of a proposed excavation.
b. Tolerance Zone - defined as 5 feet plus ½ the gas pipe diameter distance away from the locator's mark outline of the gas facility (i.e., facility centerline) in either direction from the line.
c. In-house Contractor – National Grid contractor performing gas work for the owning utility. Third Party Contractor- outside contractor performing non-gas work for outside municipality.
d. National Grid Lead Person – National Grid employee responsible for overseeing the prescribed work.
e. National Grid Representative – National Grid Lead Person, or the agreed to in-house contractor lead person in charge of the worksite in the absence of the National Grid Lead Person.

2. General

a. Whenever a transmission main or service falls within the Near Zone and is to be exposed or is found exposed or has evidence of a recent excavation;

1) Notify Central Dispatch; LI: (516) 545-4047

b. If any contractor is excavating near a transmission main and there is no National Grid Lead Person present:

1) Inform the contractor that a gas transmission main is in the vicinity and if appropriate, ask that the contractor stop work.
2) Call Central Dispatch
3) Stand by the excavation until a National Grid representative arrives.

c. Central Dispatch must notify the appropriate Corrosion area, the Lead Gas Controller and the Section Managers of Gas Systems Operations, Damage Prevention, Field Operations and Construction.
d. When work is to be performed by the National Grid, a Rule 753 notification must be filed if powered excavation is planned.
e. In Long Island: Markout contractor notifies the appropriate Operations Area of Transmission main involvement. Markout contractor completes markout.

C. On site Coordination:

1. A National Grid Lead Person must be onsite continuously during any excavation work in the Near Zone.

2. The National Grid Lead Person/Supervisor shall conduct a walk through at site with the KED in-house contractor or outside third party contractor lead person prior to the initiation of work.
3. The National Grid Lead Person shall conduct daily job briefings with the onsite in-house contractor or third party contractor crew lead person.
4. In the NEAR ZONE, test holes must be excavated to sufficiently locate and verify the transmission pipe with respect to the proposed work and in advance of the proposed excavation. Test holes shall be excavated as directed by the National Grid Lead Person for work by third party contractors, National Grid crews or National Grid in house contractors. If there is any difficulty in locating the pipe, request assistance from Central Dispatch.

   There may be instances where the National Grid Lead Person may determine to not require a test hole or deviate from test opening requirements due to his knowledge and experience with the location of the facilities in reference to the proposed excavation. The Lead Person shall require approval from his Supervisor, Project Engineer or the Field Operations Manager when making this determination and document the results by region on the LI Transmission Inspection Form or the NYC Transmission Pipe Protection Review (PRR) Form as appropriate.
5. Except for surface pavement breaking, soil excavation for purposes of test holes or excavation of the gas pipe SHALL be made by HAND EXCAVATION within the transmission pipe's "TOLERANCE ZONE". Upon verification of the gas facility, powered excavation (i.e., backhoes, dig-its, augurs, etc.) shall be used only “outside” the tolerance zone of protection for the gas line.

   Note: As per PSC Code 753-3.6 Verification of underground facilities,” Powered or mechanized equipment may be used within the tolerance zone for removal of pavement or masonry but only to the depth of such pavement or masonry."

6. Within the NEAR ZONE, whenever there is a change in cover or lateral direction of the transmission pipe, the PIPE DIRECTION CHANGE MUST BE LOCATED, and done so by HAND EXCAVATION. This is to prevent possible damage to the transmission pipe in case the pipe direction changes are not accurately represented on company records.
7. Within the NEAR ZONE, test holes shall always be excavated at points along the transmission pipe where the transmission gas pipe will be crossed at any angle by a proposed trench or excavation.
8. Within the NEAR ZONE, test holes shall be excavated at a minimum of 50 feet intervals over transmission pipe that runs adjacent to a proposed construction trench. Test holes shall also be excavated over transmission pipe that runs adjacent to a proposed individual construction excavation(s).
9. If the transmission main is located in an extraordinary location with respect to the scope of the proposed construction (i.e., proposed utility poles inside sidewalk curb line and transmission main located in NEAR ZONE within an active paved town highway or NYS roadway), test openings may be made at distances greater than 50 feet intervals apart or deemed not required within the confines of the extraordinary location. THIS SHALL BE DECIDED UPON, HOWEVER, ONLY WITH PERMISSION AND AT THE DISCRETION OF AN EXPERIENCED NATIONAL GRID LEAD PERSON/SUPERVISOR USING SOUND JUDGEMENT.

SOUND JUDGEMENT shall be based on, but not limited to, an ACCOUNTABLE DEGREE OF ACCURACY of a SAFE DISTANCE between the location of National Grid's facility and the proposed work, the scope of the proposed work, any additional given conditions at the time, and the procedures herein. Any reason NOT TO TEST WHOLE OR DEVIATE FROM TEST OPENING REQUIREMENTS herein for a particular location MUST BE NOTED AS SUCH on the LI-Transmission Main Inspection Form.

10. Existing gas valve boxes can be used to determine the point location of a transmission line providing the valve is verified as an active transmission main valve, its current location verified correct with existing Graphic Records information and the valve stem visible.
11. Visually inspected anode boxes, and other gas-related appurtenances such as pipeline markers can be utilized as a guide to indicate the general location of underground gas facilities.
12. All relevant updated company and third party drawings should be on site and reviewed.
13. Any inaccuracies are to be noted and forwarded to Graphic Records for immediate updating.
14. Once located, review and correct all previous mark outs.
15. The Transmission pipe shall be protected as required by Standard Drawings CNST-6040 or CNST-6050. A decision not to the pipe must be approved by the Project Engineer or the Field Operations Manager. The decision shall be documented and approved as such on the appropriate regional forms:

    LI - Transmission Main Inspection Form, or the

D. Forms - must be completed and on-site at all times:

    LI - Transmission Main Inspection Form

E. Corrosion Inspection:

1. Whenever the transmission main is exposed or damage to the coating or pipe is suspected, a Corrosion representative will inspect the pipe and follow through with recommendations and reporting in accordance with 040036-TI, Inspecting Exposed Steel for corrosion.
2. Any metal damage to the pipe may be repaired after consultation and approval from Gas Engineering and in accordance with EMER-5010, Repair of Transmission Mains. F. Filing Requirements: LI: File ALL completed Forms and information for the useful life of the main.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01140

NO TEXT THIS PAGE

SECTION 01210 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowance include the following:

1. Allowance shall be included in the Contractor's Total Bid. Any allowance amounts not used during the Project shall be deducted from the final payment at project completion by a credit Change Order.

2. Owner and Owner's Representative shall determine which items qualify to be paid for as allowance items and which items are to be included in other Bid items as non-allowance work.

1.3 SUBMITTALS

A. Submit proposals and backup for purchase of products or systems included in allowance.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of the allowance as necessary.

C. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance should lump sum not be agreed to.

D. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.4 COORDINATION

A. Coordinate allowance with other portions of the Work. Furnish templates as required to coordinate installation.

1.5 ALLOWANCES

A. Contractor shall use the allowance only as directed in writing by Owner's Representative for

Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, insurance, equipment rental, and all other costs associated with providing a completely integrated and functioning system.

C. At Project closeout, credit unused amounts remaining in the allowance to Owner by Change Order.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALLOWANCES

A. Unforeseen Construction Allowance – An allowance for eighty thousand dollars ($80,000) for unforeseen construction on the Project, as necessary to perform the work and as authorized by the Owner and/or Owner's Representative. Unforeseen construuction shall also be as specified in the General Conditions. Overhead and profit shall be included as specified in the General Conditions.

END OF SECTION 01210

SECTION 01250 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Sections:

1. Divisions 02 through 15 Sections for specific requirements and limitations for substitutions.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those specified by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

B. Equivalent Materials and Equipment

1. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular manufacturer, the naming of the item is intended to establish the type, function and quality required. If the name is followed by words "or equal", materials or equipment of other suppliers may be accepted by Owner's Representative if sufficient information is submitted by Contractor to allow Owner's Representative to determine that the material or equipment proposed is equivalent or equal to that named. Requests for review of substitute items of material and equipment will not be accepted by Owner's Representative from anyone other than Contractor. If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall make written application to Owner's Representative for acceptance thereof. The application shall state that the evaluation and acceptance of the proposed substitute will not prejudice Contractor's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified shall be identified in the application and available

maintenance, repair and replacement service shall be indicated. The application shall also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by Owner's Representative in evaluating the proposed substitute. Owner's Representative may require Contractor to furnish at Contractor's expense additional data about the proposed substitute.

2. Whenever a material or article is specified or described without the phrase "or equal," the phrase "or equal" shall be deemed included.

1.4 SUBMITTALS

A. Substitution Requests: Submit three (3) copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Contractor shall submit his request for substitutions and any monetary changes associated therewith to the Owner. Contractor's submittal shall include all necessary data for Owner's Representative evaluation. The following listing summarizes the data required:

    a. Complete date substantiating compliance of proposed substitution with Contract Documents. Substitution shall not change design intent.
    b. For Products:

        1) Product identification, including manufacturer's name and address.
        2) Manufacturer's literature including, but not necessarily limited to, product description, performance and test date and reference data.
        3) Samples where appropriate.
        4) Name and address of similar projects on which product was used, and date of installation.

2. Itemized comparison of proposed substitution with product or method specified. Different types of products and methods will be considered provided final performance is at least equal to that specified.
3. Data relating to impact on construction schedule occasioned by the proposed substitution.
4. Relation/impact to other contracts.
5. Accurate cost data on proposed substitution in comparison with product or method specified, including costs of all redesigns required.
6. In making request for substitution, the Contractor represents:

    a. He has personally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified. He will provide the same guarantee for substitution as for product or method specified.
    b. He will coordinate installation of accepted substitution into work, making such design and construction changes as may be required for work to be completed in all respect.

7. Substitutions will not be considered at any time if:

a. They are indicated or implied on shop drawings or project data submittals without formal request submitted in accordance with this section.
b. Acceptance will require substantial revision of Contract Documents.
c. Acceptance will create problems in stocking of repair parts and in future maintenance by the Owner.

8. Owner's Representative decision regarding evaluation of substitutions shall be considered final and binding. Request for time extension and additional costs based on submission of, acceptance of, or rejection of substitutions will not be allowed.
9. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
10. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution. Provide coordination drawings and coordination details, as requested by Owner's Representative.
11. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
12. Certificates and qualification data, where applicable or requested.
13. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
14. Research reports evidencing compliance with building code in effect for Project.
15. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
16. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
17. Licensed Professional Engineer seal and signature on submittal as determined necessary by Owner's Representative.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers. All data on proposed substitution must substantiate compliance with the Contract Documents. Include product identification and description, performance and test data, references and samples where applicable, and other information required by the Owner's Representative.

1.6 PROCEDURES

A. Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions at no additional cost to Owner.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than fifteen (15) days prior to time required for preparation and review of related submittals.

1. Conditions: Owner’s Representative will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Owner’s Representative will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Substitutions intended as equivalent or alternate that do not conform to the specifications without exception and/or do not meet the pre-approval deadline will be rejected. Only written requests will be considered. Substitutions will not be considered if indicated or implied on shop drawing submissions without the required written request. Substitutions will not be considered if they require substantial revision of the Contract Documents to accommodate their use.

1. Conditions: Owner’s Representative will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Owner’s Representative will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Owner’s Representative for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented and properly submitted.
e. Requested substitution will not adversely affect Contractor's construction schedule.

f. Requested substitution has received necessary approvals of authorities having jurisdiction.
g. Requested substitution is compatible with other portions of the Work.
h. Requested substitution has been coordinated with other portions of the Work.
i. Requested substitution provides specified warranty.
j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01250

NO TEXT THIS PAGE

SECTION 01270 – CONSTRUCTION SURVEYS, LAYOUT AND LEVELS

PART 1 - GENERAL

1.1 CONSTRUCTION SURVEY BY THE CONTRACTOR

A. Contractor shall establish baselines for locating the principal component parts of the Work and provide all surveys and stake-outs of working or construction lines or grades as needed to establish baselines and bench marks; to provide quantity surveys, measurements, and computations, to provide original and final surveys for final quantity determination, for the setting of forms, string lines, grade control and other controls which may be required for the proper execution of the work in the Contract.

B. Contractor shall preserve and maintain in proper position all hubs, stakes, grade stakes and lines until authorized to remove same. If Contractor fails to protect the aforementioned items, he shall reset all disturbed items at his own expense. If in the opinion of the Owner's Representative the replacement of any disturbed stake necessitates the use of a Owner's Representative survey party, arrangements for such resetting will be made by the Owner's Representative and the costs therefore will be deducted from monies owed the Contractor.

C. Any work done without lines and grades or without instruction having been given by the Owner's Representative will not be estimated or paid for. Any work done may be ordered removed and replaced at no cost to the Owner and/or Owner's Representative.

D. Contractor shall furnish, at his own expense, all stakes, templates and such temporary structures as may be necessary for marking and maintaining points and lines for the work.

E. Contractor shall, unless otherwise directed by the Owner's Representative, utilize a Laser-Transit control for the installation of all piping. The laser beam shall be used coaxially through the center of the pipe being laid. The laser beam projector is to be rigidly mounted to its support platforms, with a two-point suspension or equivalent, assuming that all ground and equipment vibrations be kept to an absolute minimum. Any other equipment necessary to control atmospheric conditions in the pipe to keep line and grade to acceptable standards of accuracy shall be furnished by the Contractor.

F. Construction survey personnel shall be New York State licensed and registered land surveyors or New York State licensed and registered engineers. Contractor shall provide a list outlining the minimum requirements expected.

G. Contractor shall keep a transit and leveling instrument on the site at all times. Construction survey personnel shall be licensed and registered land surveyors or licensed and registered engineers. Contractor shall provide a list outlining the minimum requirements expected. Survey personnel (skilled survey party) shall be employed or obtained whenever necessary for layout and checking of work in progress. The survey party shall check the initial setting of the laser equipment and shall check all pertinent elevations immediately after their installation. The survey party shall conduct all surveys necessary for the recording of all information necessary for the preparation of Record Plans (As-Built Drawings). Copies of all survey notes shall be transmitted to the Owner's Representative on a weekly basis.

PART 2 - MATERIALS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01270

SECTION 01290 – SCHEDULE OF VALUES AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections:

1. Division 01 Section "Allowances" for procedural requirements governing the handling and processing of allowances.
2. Division 01 Section "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.
3. Division 01 Section "Shop Drawing Procedures" for administrative requirements governing the preparation and submittal of the submittal schedule.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Correlate line items in the schedule of values with other required administrative forms and schedules, including the following:

a. Application for Payment forms with continuation sheets.
b. Submittal schedule.
c. Items required to be indicated as separate activities in Contractor's construction schedule.

2. Submit the schedule of values to Owner’s Representative no later than five (5) business days from date on Notice to Proceed.

B. Format and Content: Establish line items for the schedule of values in accordance with unit prices and lump sum prices from bid sheet.

1. Identification: Include the following Project identification on the schedule of values:

a. Project name and location.
b. Name of Owner’s Representative.
c. Owner’s Representative's project number.
d. Contractor's name and address.
e. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.

   a. Related Specification Section or Division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.
   g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

      1) Labor.
      2) Materials.
      3) Equipment.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports.

4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

7. Allowances: Provide a separate line item in the schedule of values for each allowance.

8. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

   a. Temporary facilities that are not direct cost of actual work-in-place shall be shown as separate line items in the schedule of values.

9. Schedule Updating: Update and resubmit the schedule of values before each Application for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

10. Where a line item is provided for bond, insurance, mobilization or other similar Project setup task, as determined by Owner’s Representative, the costs for these setup items shall be equally prorated and paid over the first twelve (12) months of the project.

11. Provide a separate line item for approval of as-built drawings. Amount for as-built line item shall be approved by Owner’s Representative.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Owner's Representative and paid for by Owner.

1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Times: Progress payments shall be submitted to Owner's Representative. The period covered by each Application for Payment is one month, ending on the last day of the month.

1. Submit draft copy (pencil copy) of Application for Payment for review by Owner's Representative.

D. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Owner's Representative will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

a. Materials previously stored and included in previous Applications for Payment.
b. Work completed for this Application utilizing previously stored materials.
c. Additional materials stored with this Application.
d. Total materials remaining stored, including materials with this Application.

G. Transmittal: Submit six (6) signed and notarized original copies of each Application for Payment to Owner's Representative. One copy shall include waivers of lien and similar attachments if required.

1. Transmit copies with a transmittal form listing attachments and recording appropriate information about application.

H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Products list (preliminary if not final).
5. Submittal schedule (preliminary if not final).
6. Initial progress report.
7. Report of preconstruction conference.

I. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner use of designated portions of the Work.

J. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01290

SECTION 01300 – SHOP DRAWING PROCEDURES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Whenever possible throughout the Contract Documents, the minimum acceptable quality of workmanship and materials has been defined either by manufacturer's name and catalog number or by reference to recognized industry standards.

B. Contractor shall to Owner's Representative for review and approval with such promptness as to cause no delay in Work, all Shop Drawings and samples required by the Contract Documents.

C. All submissions shall be identified as Owner's Representative may require.

1.2 RELATED SECTION

A. Section 01250 – Substitution Procedures.

B. Section 01290 - Schedule of Values and Payment Procedures.

C. Section 01321 - Construction Progress Documentation.

1.3 SUBMITTAL PROCEDURES

A. Transmit each submittal with Owner's Representative accepted form (sample provided at end of section).

B. Identify Project, Contractor, Subcontractor or supplier, pertinent drawing and detail number, and specification section number, as appropriate.

C. Apply Contractor's stamp, signed or initialed certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.

D. Schedule submittals to expedite the Project and deliver to Owner's Representative. Coordinate submission of related items.

E. For each required submittal for review, allow fourteen (14) business days, excluding delivery time to and from the Contractor, for Owner's Representative review in accordance with these specifications.

F. Identify variations from Contract Documents and Product or system limitations.

G. Provide space for Owner's Representative and Contractor's review stamp.

H. Revise and resubmit as required. Identify all changes made since previous submission.

I. Distribute copies of reviewed submittals as specified herein. Instruct parties to promptly report any inability to comply with provisions.

J. Submittals not requested will not be recognized or processed.

1.4 MAINTENANCE OF PLANT OPERATIONS (MOPO)

A. Owner and Owner's Representative shall determine and notify Contractor whether planned activities that could affect Owner's operations will require MOPO Plan(s). MOPO Plans shall minimize disruption of normal sewer flows and sewer service. Contractor shall provide all piping, valves and appurtenances for bypass of sewage flow during the construction activities. Bypassing may be required to perform the necessary construction activities. Timing of shutdowns shall be approved by the Owner and Owner's Representative. Contractor shall submit Maintenance of Plant Operations Plans prior to bypassing flows.

B. Submittal and review of any requested MOPO Plan shall be included in the price of the Contract and shall be submitted until approved by Owner and Owner's Representative. Compliance and enacting all approved MOPO Plan(s) shall be at no additional cost to the Owner.

1.5 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial schedules within five (5) business days after date stated in Notice to Proceed.

B. Revise and resubmit as required.

C. Submit all revised schedules with each Application for Payment, identifying changes since previous version.

D. Submit computer generated horizontal bar chart with separate line for each section of work, identifying first workday of each week.

E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.

F. Indicate estimated percentage of completion for each item of Work at each submission.

G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner.

1.6 SCHEDULE OF VALUES

A. Within five (5) calendar days from the date shown on the Notice to Proceed, submit a Schedule of Values to the Owner and Owner's Representative for review and approval, showing a breakdown of all construction activities for the Project. The Schedule of Values shall be detailed to indicate separate costs for all work of the Project.

B. When a line item is provided for bonds, insurance, mobilization, demobilization, supervision, construction progress schedule, field offices, traffic maintenance and protection, sediment and erosion control or other similar project tasks, as determined by the Owner's Representative, the costs shall be equally prorated and paid monthly over the duration of the Contract.

1.7 SUBCONTRACTOR LIST

A. Within ten (10) calendar days from the date shown on the Notice of Award, submit a Subcontractor

List to the Owner and/or Owner's Representative for review and approval. Include a minimum of three (3) references per subcontractor, listing contact name and telephone number. Contractor shall provide one (1) hard copy of all final shop drawings to Owner's Representative Field Office within three (3) days of receipt of approval of final electronic shop drawing submittal.

B. Contractor shall provide one (1) hard copy of all final shop drawings to Owner's Representative Office within three (3) days of receipt of approval of final electronic shop drawing submittal.

1.8 PROPOSED PRODUCTS LIST

A. Within five (5) business days after Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product. Identify deviation(s) or change(s) or product(s) that will be proposed for substitution from specified products.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.9 SHOP DRAWINGS - GENERAL

A. Number shop drawing submittals consecutively and show:

1. All working and erection dimensions (all measurements shall be field verified).
2. Arrangement and sectional views.
3. Necessary details, including information for making connections to other work.
4. Kinds of materials and finishes.
5. Reference to Contract Drawings and Specifications. Quote drawing number(s) and exact specification section and paragraph.
6. Clearly indicate all deviations from Contract Documents.

B. Shop Drawings shall be dated and shall contain:

1. Name and Contact Number of Project.
2. Description of required equipment, materials and classified item numbers.
3. Locations at which materials or equipment are to be installed in the work.

C. Submit shop drawings with a letter of transmittal and shop drawing submittal form (refer to sample at end of section) and containing the name of the Project, Owner's Project Number, Owner's Representative Project Number, Contractor's name, number of drawings, titles and other pertinent data, as requested by the Owner's Representative.

D. Shop Drawing Stamp shall indicate:

1. "No Exceptions Taken"
2. "Make Corrections Noted"
3. "Amend and Resubmit"
4. "Rejected – See Remarks"

E. Shop drawings must be resubmitted until stamped "No Exceptions Taken" or "Make Corrections Noted". The submittal will be reviewed only for general conformance with the design concept and for general compliance with the Contract Documents. The review does not relieve the Contractor from any responsibility for all of the requirements of the Contract Documents, including, but not limited to: job conditions, clearances, physical dimensions, coordination and construction techniques and processes; nor permit any deviation from drawings and specifications-any such deviation requires a specific written order.

F. Drawings shall be produced in the same AutoCAD program, version, and operating system as the original Contract Drawings. Electronic data, where applicable, shall be submitted on CD.

G. Subcontractor's drawings shall be checked and stamped by the Prime Contractor before submission to the Owner's Representative.

H. For drawings returned "Amend and Resubmit' or "Rejected – See Remarks", correct the original drawings, submit corrected reprints, and resubmit until final "No Exceptions Taken" or "Make Corrections Noted" is obtained.

I. If shop drawing item is rejected, Owner will receive a copy of the transmittal returning shop drawings to Contractor.

J. For drawings returned "No Exceptions Taken" and "Make Corrections Noted" the Contractor shall obtain and issue sufficient prints as specified herein.

K. Do not work as called for by shop drawings until Owner's Representative review has been completed. Contractor may proceed with fabrication if shop drawing is stamped "No Exceptions Taken" or "Make Corrections Noted".

L. If shop drawings show variations from Contract requirements because of standard shop practice, or other reasons, Contractor shall make specific mention of such variation in his letter of transmittal.

M. Owner's Representative will review with reasonable promptness Shop Drawings and samples, but Owner's Representative's review will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences of procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review of a separate item as such will not indicate approval of the assembly in which the item functions. Contractor shall make corrections required by Owner's Representative and shall return the required number of corrected copies of Shop Drawings and submit as required new samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Owner's Representative on previous submittals.

N. Approval of shop drawings is general. It does not relieve the Contractor of the responsibility for accuracy of such drawings, nor for the furnishing of materials or work required by the Contract and not shown on the shop drawings.

O. Changes shall not be permitted on Shop Drawings that have been previously submitted for approval, except for items that have been noted for corrections or coordination.

P. If the Contractor should alter any information on previously submitted shop drawings besides the notation called for by the Owner's Representative, he must circle this new information to bring it to the attention of the Owner's Representative.

Q. Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to Owner's Representative's review and approval of the pertinent submission will be the sole expense and responsibility of Contractor.

R. In submitting shop drawings for review, submit all associated drawings relating to a complete

assembly at one time so that each may be checked in relation to the entire proposed assembly.

S. Have copies of all "No Exceptions Taken" and "Make Corrections Noted" shop drawings on the job at all times and make them available to the Owner's Representative.

T. Contractor shall refer to the relevant specification sections where shop drawings, product data and samples are required to be submitted.

1.10 ELECTRONIC SUBMITTAL PROCEDURES

A. Summary:

1. Shop drawing and product data submittals shall be transmitted to Owner's Representative in electronic (PDF) format.
2. The intent of electronic submittals is to expedite the construction process by reducing paperwork, improving information flow, and decreasing turnaround time.
3. The electronic submittal process is not intended for color samples, color charts, or physical material samples.

B. Procedures:

1. Submittal Preparation - Contractor may use any or all of the following options:

    a. Subcontractors and Suppliers provide electronic (PDF) submittals to Contractor.
    b. Subcontractors and Suppliers provide paper submittals to General Contractor who electronically scans and converts to PDF format.
    c. Subcontractors and Suppliers provide paper submittals to Scanning Service which electronically scans and converts to PDF format.

2. Contractor shall review and apply electronic stamp certifying that the submittal complies with the requirements of the Contract Documents including verification of manufacturer/product, dimensions and coordination of information with other parts of the work.
3. Contractor shall transmit each submittal to Owner's Representative via electronic (PDF) format.
4. Owner's Representative review comments will be provided on the electronic (PDF) format shop drawing submittal. Contractor will receive email of the completed review.
5. Distribution of reviewed submittals to subcontractors and suppliers is the responsibility of the Contractor.
6. Submit paper copies of reviewed submittals at project closeout for record purposes in accordance with Section 01710 - Record Drawings and Closeout Procedures.

C. Costs:

1. Contractor shall include the full cost of Internet Service and Equipment Requirements:

    a. Email address and Internet access at Contractor's main office.
    b. Adobe Acrobat (www.adobe.com), Bluebeam PDF Revu (www.bluebeam.com), or other similar PDF review software for applying electronic stamps and comments.

1.11 HARD COPY SUBMITTAL PROCEDURES

A. Contractor shall provide one (1) hard copy of all final shop drawings to Owner and Owner's

Representative within three (3) days of receipt of approval of final electronic shop drawing submittal.

1.12 MANUFACTURER INSTALLATION INSTRUCTIONS

A. When specified in individual specification sections, submit printed instructions for delivery, pre-installation maintenance, maintenance during storage, assembly, installation, start-up, adjusting, and finishing, to Owner's Representative in quantities specified for Product Data.

B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.13 MANUFACTURER CERTIFICATES

A. When specified in individual specification sections, submit copies of certification by manufacturer to Owner's Representative.

B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product but must be acceptable to Owner's Representative.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01300

SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General project coordination procedures.
2. Administrative and supervisory personnel.
3. Coordination drawings.
4. Requests for Information (RFI's).
5. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Sections:

1. Division 01 Section "Summary" for coordination of subcontractors and overall Project coordination.
2. Division 01 Section "Shop Drawing Procedures" for preparing and submitting various Shop Drawings.
3. Division 01 Section "Construction Progress Documentation" for preparing and submitting Project look aheads and schedules.
4. Division 01 Section "Record Drawings and Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Owner, Owner's Representative, or Contractor seeking information from each other during construction.

1.4 COORDINATION

A. Coordination: 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.
4. Provide for overall Project coordination.

B. Coordinate all work with Suffolk County Transit, local school district busing companies and local homeowner and civic associations, as required.

1.5 KEY PERSONNEL

A. Key Personnel Names: Within five (5) business days of starting construction operations, submit a list of key personnel assignments, including superintendent, two (2) project managers and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities, including who will respond to any emergency, at anytime on a 24/7 basis throughout the duration of the Project; list addresses and telephone numbers, including home, office, cellular and pager telephone numbers and email addresses. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room(s), in temporary field office(s), and by each temporary telephone. Keep list current at all times.

1.6 PROJECT SUPERINTENDENCE/SUPERVISORS

A. Project Superintendent and his Supervisor(s) shall be required to be on-site whenever work is being performed by the Contractor and/or his subcontractor(s). Project Superintendent shall not be permitted to conduct day to day “hands on” work unless temporarily instructing personnel on means and methods of construction. Supervisor shall be the on-site representative and shall communicate with the Owner’s Representative and Owner on a daily basis.

1.7 REQUESTS FOR INFORMATION (RFI’s)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Owner’s Representative will return RFI’s submitted to Owner’s Representative by other entities controlled by Contractor with no response.
2. Coordinate and submit RFI’s in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.
3. Date.
4. Name of Contractor.

5. Name of Owner’s Representative.
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: Software-generated form with substantially the same content as indicated above and acceptable to Owner’s Representative.

D. Owner and/or Owner’s Representative's Action: Owner and/or Owner’s Representative will review each RFI, determine action required, and respond. Allow ten (10) business days for Owner and/or Owner’s Representative's response for each RFI. RFI’s received by Owner and/or Owner’s Representative after 1:00 p.m. will be considered as received the following working day.

1. The following RFI’s will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for coordination information already indicated in the Contract Documents.
    d. Requests for adjustments in the Contract Time or the Contract Sum.
    e. Requests for interpretation of Owner’s Representative's actions on submittals.
    f. Incomplete RFI’s or inaccurately prepared RFI’s.

2. Owner and/or Owner’s Representative's action may include a request for additional information, in which case Owner and/or Owner’s Representative's time for response will date from time of receipt of additional information.
3. Owner and/or Owner’s Representative's action on RFI’s that may result in a change to the Contract Time or the Contract Sum may require Contractor to submit Change Order Proposal.

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Owner and/or Owner’s Representative in writing within ten (10) business days of receipt of the RFI response.

E. On receipt of Owner’s Representative's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Owner’s Representative within ten (10) business days if Contractor disagrees with response.

F. RFI Log: Prepare, maintain, and submit a tabular log of RFI's organized by the RFI number. Submit log monthly. Include the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Owner's Representative.
4. RFI number including RFI's that were dropped and not submitted.
5. RFI description.
6. Date the RFI was submitted.
7. Date Owner's Representative's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.8 PROJECT MEETINGS

A. General: Owner's Representative will schedule and conduct meetings and conferences at Project site at a time convenient to Owner and/or Owner's Representative, unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Contractors' Site Superintendent shall be required to attend all meetings scheduled by the Owner's Representative and shall be a competent supervisor familiar with the Work and have authority to act for the Contractor. If Contractors' Site Superintendent fails to attend any scheduled meetings without prior approval, Contractor shall be directed to replace the current Contractors' Site Superintendent. Non-attendance by the Contractors' Site Superintendent will form the basis for review of the Contractor's responsible bidder status.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Owner's Representative will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned within five (5) business days of the meeting.
4. Contractor shall supply an itemized summary of work completed since the previous meeting and an itemized list of work projected for the next Project meeting. The lists shall be reviewed at each meeting for status and compliance with projections. Deviations in the Project schedule shall be monitored, in part, through the review and compliance with the projected work schedules.

B. Preconstruction Conference: Owner's Representative will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and/or Owner's Representative, but no later than fifteen (15) days after execution of the Agreement.

1. Conduct the conference to review responsibilities and personnel assignments.
2. Attendees: Owner, Owner's Representative, Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect progress, including the following:

a. Introduction of all Parties
b. Maintenance of Plant Flow and Treatment (MOPO)
c. Tentative construction schedule.
d. Critical work sequencing and long-lead items.
e. Designation of key personnel and their duties, including a list of contact informaton.
f. Lines of communications.
g. Procedures for processing field decisions and Change Orders.
h. Procedures for RFI's.
i. Procedures for testing and inspecting.
j. Procedures for processing Applications for Payment.
k. Distribution of the Contract Documents.
l. Submittal procedures.
m. Preparation of record documents.
n. Use of the premises.
o. Work restrictions.
p. Working hours.
q. Responsibility for temporary facilities and controls.
r. Dewatering.
s. Procedures for disruptions and shutdowns.
t. Construction waste management and recycling.
u. Parking availability.
v. Office, work, and storage areas.
w. Equipment deliveries and priorities.
x. First aid.
y. Security.
z. Progress cleaning.
aa. PLA compliance.
bb. Review of subcontractor approval and PLA compliance.
cc. Prevailing Wage and Certified Payroll.
dd. Confined Space Entry and Plant Safety Requirements.
ee. Payment Procedures.

4. Minutes: Owner's Representative will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned within five (5) business days of the meeting.

C. Project Closeout Conference: Contractor will schedule and conduct a Project closeout conference, at a time convenient to Owner's Representative, but no later than thirty (30) days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of Owner's Representative and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

a. Preparation of record documents.
b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
c. Submittal of written warranties.
d. Requirements for preparing operations and maintenance data.
e. Requirements for demonstration and training.
f. Preparation of Contractor's punch list.
g. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
h. Submittal procedures.

4. Minutes: Owner's Representative will record significant discussions and agreements achieved and distribute the meeting minutes to everyone concerned within five (5) business days of the meeting.

D. Progress Meetings: Owner's Representative will schedule and conduct progress meetings at bi-monthly intervals, unless otherwise directed.

1. Attendees: In addition to representatives of Owner's Representative, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings as requested by Owner's Representative. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work. Contractors' Site Superintendent shall be required to attend all progress meetings scheduled by the Owner's Representative and shall be a competent supervisor familiar with the Work and have authority to act for the Contractor. If Contractors' Site Superintendent fails to attend any scheduled progress meetings without prior approval, Contractor shall be directed to replace the current Contractors' Site Superintendent. Non-attendance by the Contractors' Site Superintendent, will form the basis for review of the Contractor's responsible bidder status.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for previous and next periods.

b. Review present and future needs of each entity present, including the following:

1) Sequence of operations.
2) Status of submittals.
3) Deliveries.
4) Off-site fabrication.
5) Access.
6) Site utilization.

7) Temporary facilities and controls.
8) Progress cleaning.
9) Quality and work standards.
10) Status of correction of deficient items.
11) Field observations.
12) Status of RFI's.
13) Status of proposal requests.
14) Pending changes.
15) Status of Change Orders.
16) Pending claims and disputes.
17) Documentation of information for payment requests.
18) Review of previous 2-week and upcoming 2-week periods.

3. Minutes: Owner's Representative will record significant discussions and agreements achieved along with changes made to the 2-week look ahead and look back schedules and note all items that were not completed from the previous progress meeting. Minutes shall be distributed to all concerned parties within ten (10) business days of the meeting.
4. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

1.9 WEEKLY WORK SCHEDULES

A. Weekly work schedules shall be submitted by Contractor to Owner's Representative and Owner on a weekly basis. Schedules shall be submitted not later than 12:00 noon on the Friday preceding the planned work week. All work for the upcoming week for all Contractor and subcontractor efforts shall be shown. Each day of the week will indicate the work for that day, who is performing the work (Contractor or which sub), any equipment or large items needed to perform the work (i.e., crane, backhoe, excavator, concrete, rebar, testing personnel manufacturer's representatives, etc.). Contractor shall reimburse Owner for improper notification as required in Section 01320 – Contractor Cost for Owner's Representative Services. Please note any and all special circumstances required from Owner's Representative and/or Owner such as all shutdown, mark out assistance, conflicts with other onsite Contractors, conflicts with daily Plant operations and maintenance, non holiday days or hours off for required training for Contactor staff and events of similar nature and impact on the Project

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01310

NO TEXT THIS PAGE

SECTION 01320 – CONTRACTOR COST FOR OWNER'S REPRESENTATIVE SERVICES

PART 1 - GENERAL

1.1 DESCRIPTION

A. In the event that the Owner's Representative is required to provide additional office or field services as a result of substitution of materials or equipment or changes by the Contractor in dimension, weight, power requirements, etc., of the equipment and accessories provided, or as a result of Contractor's errors, omissions or failure to conform to the requirements of the Contract Documents or if the Owner's Representative is required to examine and evaluate any changes proposed by the Contractor and solely for the convenience of the Contractor; then the Owner's Representative charges in connection with such additional services shall be charged to the Contractor by the Owner.

B. In the event that the Owner's Representative is not provided with written notification a minimum 24 business hours in advance regarding the cancellation of scheduled work in accordance with the Contractor's approved construction schedule and required 2-week "look-ahead" submittals as specified in Section 01321 - Construction Progress Documentation, then the Owner's Representative charges shall be charged to the Contractor by the Owner.

C. Contractor shall keep the Owner's Representative informed of the progress of the Contractor's Work and particularly when the Contractor intends to cover Work not yet observed by the Owner's Representative and/or tested by the Contractor. All construction observations by the Owner's Representative and testing performed by the Contractor shall be completed in such a manner as not to unreasonably delay the Work. Contractor shall be charged for any additional services by the Owner's Representative when the Work is not ready at the time specified by the Contractor.

1.2 COSTS

A. Contractor shall respond to required submittals with complete information and accuracy to achieve required approvals within three (3) submissions. All costs to the Owner's Representative involved with subsequent submissions of Shop Drawings, Samples, RFI's or other items requiring approval, will be back charged to the Contractor, at the minimum rate of $1,000 per submittal or the actual cost based upon the number of hours to review the submittal times the Owner's Representative normal billing rate, whichever is greater. These costs shall be deducted from payments due for Work completed by the Contractor. In the event an approved item is requested by the Contractor to be changed or substituted for, all involved costs in the reviewing and approval process will likewise be back charged to the Contractor unless judged by the Owner's Representative that the need for such deviation from previously approved data is beyond the control of the Contractor.

B. Contractor shall provide advanced written notification a minimum 24 business hours regarding cancellation of scheduled work in accordance with the Contractor's approved construction schedule and required 2-week "look-ahead" submittals as specified in Section 01321- Construction Progress Documentation. All costs involved as a result of the Contractor's lack of advanced written notification shall be back charged to the Contractor unless judged by the Owner's Representative that the need for such deviation is beyond the control of the Contractor. The Owner will deduct and retain sufficient sums from the monies due on the Contractor's Application for Payment to cover the cost of the Owner's Representative. A minimum of four (4) hours of Owner's Representative's

time will be back charged to the Contractor at the Owner's Representative standard hourly billing rate adjusted by the appropriate premium for overtime, whether time-and-one-half, double time, or otherwise, as applicable, prior to applying the Owner's Representative multiplier.

C. Contractor shall provide advanced written notification a minimum 24 business hours regarding any delays in required observations by Owner's Representative particularly any delays in testing or covering any work. All costs involved as a result of the Contractor's lack of advanced written notification and/or the Work not ready at the time specified by the Contractor shall be back charged to the Contractor unless judged by the Owner's Representative that the need for such deviation is beyond the control of the Contractor. The Owner will deduct and retain sufficient sums from the monies due on the Contractor's Application for Payment to cover the cost of the Owner's Representative. A minimum of four (4) hours of Owner's Representative's time will be back charged to the Contractor at the Owner's Representative standard hourly billing rate adjusted by the appropriate premium for overtime, whether time-and-one-half, double time, or otherwise, as applicable, prior to applying the Owner's Representative multiplier.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01320

SECTION 01321 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's construction schedule.
2. Daily construction reports.
3. Material location reports.
4. Field condition reports.
5. Special reports.

B. Related Sections:

1. Division 01 Section "Shop Drawing Procedures" for submitting schedules and reports.

2. Division 01 Section "Project Management and Coordination" for submitting weekly work schedules.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

C. Event: The starting or ending point of an activity.

D. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

E. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

A. Contractor's Construction Schedule: Initial schedule and two week “look-aheads”, of size required to display entire schedule for entire construction period and for every two week period for the entire construction period as follows:

1. Submit a working copy of schedule for entire construction period and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date.
2. Submit two week “look-ahead” schedules for entire construction period and labeled to comply with requirements for submittals.

B. Daily Construction Reports: Submit at weekly intervals.

C. Material Location Reports: Submit at weekly intervals.

D. Field Condition Reports: Submit at time of discovery of differing conditions.

E. Special Reports: Submit at time of unusual event.

F. Qualification Data: For scheduling consultant.

G. Accident Reports: Submit immediately after accident. Address underlying cause of accident immediately.

1.5 QUALITY ASSURANCE

A. Pre-scheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:

1. Review content and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Discuss constraints.
4. Review schedule for work of Owner's separate contracts.
5. Review time required for review of submittals and resubmittals.
6. Review requirements for tests and inspections by independent testing and inspecting agencies.
7. Review time required for completion and startup procedures.
8. Review and finalize list of construction activities to be included in schedule.
9. Review submittal requirements and procedures.
10. Review procedures for updating schedule.

1.6 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities.

B. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each major heading as a separate numbered activity for each principal element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Owner’s Representative.
2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
4. Startup and Testing Time: Include not less than 2 months for startup and testing.
5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Owner’s Representative's administrative procedures necessary for certification of Substantial Completion.
6. Punch List and Final Completion: Include at least 60 days for punch list and final completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule and show how the sequence of the Work is affected.

1. Work Restrictions: Show the effect of the following items on the schedule:

a. Coordination with existing construction.
b. Uninterruptible services.
c. Partial use before Substantial Completion.

d. Use of premises restrictions.
e. Provisions for future construction.
f. Seasonal variations.
g. Environmental control.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, completion of each segment of construction, the Notice to Proceed, Substantial Completion, and final completion.

E. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.

F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered RFIs.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.

G. Recovery Schedule: When periodic update indicates the Work is fourteen (14) or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance and date by which recovery will be accomplished.

H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

I. Contractor's Construction Schedule: Prepare and submit two week “look-aheads” for every two-week period for the entire construction period. Label to comply with requirements for submittals.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's construction schedule within five (5) days after date established for the Notice to Proceed. Base schedule on the start-up construction schedule and additional information received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three (3) months or longer to complete indicate an estimated completion percentage in ten percent (10%) increments within time bar.

2.3 REPORTS

A. Daily Construction Reports: Contractor shall prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. Approximate count of personnel at Project site.
3. Equipment at Project site.
4. Material deliveries.
5. High and low temperatures and general weather conditions, including presence of rain or snow.
6. Accidents.
7. Meetings and significant decisions.
8. Unusual events (refer to special reports).
9. Stoppages, delays, shortages, and losses.
10. Meter readings and similar recordings.
11. Emergency procedures.
12. Orders and requests of authorities having jurisdiction.
13. Change Orders received and implemented.
14. Services connected and disconnected.
15. Equipment or system tests and startups.
16. Partial completions.
17. Substantial Completions authorized.

B. Material Location Reports: At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.

C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.4 SPECIAL REPORTS

A. General: Submit special reports directly to Owner's Representative within one (1) day of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one (1) week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Owner's Representative, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

3.2 MAINTAINING SCHEDULE

A. Contractor shall perform the Work in accordance with the Project Schedule and provide all resources necessary to maintain progress of the work activities as scheduled, so that no delays are caused to other Contractors engaged in the Work.

B. Should Contractor fail to maintain progress according to the Project Schedule or cause delay to contractors, Contractor shall provide such additional manpower, equipment, additional shifts, or other measures as directed to bring the operations back on schedule.

END OF SECTION 01321

SECTION 01323 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Periodic construction photographs.
3. Final Completion construction photographs.
4. Preconstruction video.

B. Related Sections include the following:

1. Division 01 Section "Shop Drawing Procedures" for submitting photographic documentation.

1.3 SUBMITTALS

A. Submit two (2) prints of each photographic view within seven (7) days of taking photographs and two (2) sets of CD version of all photographs.

1. Format: 8-by-10-inch smooth-surface matte prints on single-weight commercial-grade photographic paper.
2. Identification: On back of each print, provide an applied label or rubber-stamped impression with the following information:

a. Name of Project.
b. Name and address of photographer.
c. Name of Owner’s Representative.
d. Name of Contractor.
e. Date photograph was taken if not date stamped by camera.
f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
g. Unique sequential identifier.

3. Digital Images: Submit a complete set of digital image electronic files in JPEG format as a Project Record Document on CD-ROM. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as the sensor, uncropped.

B. Video: Submit two (2) copies of each video on DVD in MPEG Format with protective sleeve or case within seven (7) days of recording.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name and address of photographer.
c. Name of Owner's Representative.
d. Name of Contractor.
e. Date videotape was recorded.
f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
g. Weather conditions at time of recording.

1.4 EXTRA PRINTS

A. Extra Prints: Prepare extra prints of photographs if requested by Owner's Representative.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in JPEG format, produced by a digital camera with minimum sensor size of 8.0 megapixels, and at an image resolution of not less than 1024 by 768 pixels.

B. Video Format: Provide high-quality, DVD's of videotape images.

2.2 BINDERS

A. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pocketed inside covers.

1. If two or more binders are necessary to accommodate data of a system, organize photographs sequentially.
2. Identify each binder on front and spine, with printed title "CONSTRUCTION PHOTOGRAPHS", Project title or name, and subject matter of contents. Indicate volume number of multiple-volume sets and dates included in binder.

B. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Provide new tab for each month.

C. Protective Plastic Sleeves: All photographs shall be enclosed in transparent plastic sleeves that are punched for standard 3-ring binder.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

B. Film Images:

1. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.
2. Field Office Prints: Retain one set of prints of progress photographs in the field office at Project site, available at all times for reference. Identify photographs same as for those submitted to Owner's Representative.

C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date and Time: Include date and time in filename for each image.
2. Field Office Images: Maintain one set of images on CD-ROM in the field office at Project site, available at all times for reference. Identify images same as for those submitted to Owner's Representative.

D. Preconstruction Photographs: Before starting construction, take color, digital photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Owner's Representative. All preconstruction photographs shall be reviewed by Owner and Owner's Representative for completeness and clarity. Images determined unacceptable shall be retaken at no additional cost to the Owner.

1. Flag excavation areas and construction limits before taking construction photographs.
2. Take five hundred (200) photographs to show existing conditions adjacent to property before starting the Work.
3. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

E. Periodic Construction Photographs: Take minimum of twenty-five (25) color digital photographs monthly with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

F. Owner's Representative-Directed Construction Photographs: From time to time, Owner's Representative will instruct Contractor about number and frequency of color digital photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.

G. Final Completion Construction Photographs: Take five hundred (200) color photographs after date of Substantial Completion for submission as Project Record Documents. Owner's Representative will direct photographer for desired vantage points.

H. Additional Photographs: Owner's Representative may issue requests for additional photographs, in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum.

1. Take additional photographs within 24 hours of request.
2. Circumstances that could require additional photographs include, but are not limited to, the following:

    a. Special events planned at Project site.
    b. Immediate follow-up when on-site events result in construction damage or losses.
    c. Substantial Completion of a major phase or component of the Work.
    d. Extra record photographs at time of final acceptance.
    e. Owner's request for special publicity photographs.

3.2 PRE-CONSTRUCTION VIDEOS

A. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of construction. Display continuous running time and date. At start of each video, record weather conditions from local newspaper or television and the actual temperature reading at Project site.

B. Narration: Describe scenes on video by audio narration while video is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.

1. Confirm date and time at beginning and end of recording.
2. Begin each videotape with name of Project, Contractor's name, videographer's name, and Project location.
3. Entire area for all construction sites shall be adequately shown in the videotape.

C. Preconstruction Video: Before starting construction, record video of Project site and surrounding properties from different vantage points, as directed by Owner’s Representative. All preconstruction video shall be reviewed by Owner and Owner’s Representative for completeness and clarity. Video determined unacceptable shall be retaken at no additional cost to the Owner.

1. Flag excavation areas and construction limits before recording construction videotapes.
2. Show existing conditions adjacent to Project site before starting the Work.
3. Show protection efforts by Contractor.

END OF SECTION 01323

SECTION 01400 - QUALITY CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Requirements for monitoring the quality of the constructed project.

B. Services of an independent testing laboratory for quality assurance testing. Services of the independent testing laboratory will be included by the Contractor in the price as bid.

1.2 REFERENCES

A. ASTM C1077 - Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.

B. ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

C. ASTM D4561 - Practice for Quality Control Systems for an Inspection and Testing

D. Agency for Bituminous Paving Materials.

E. ASTM E699 - Practice for Criteria for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating Building Components in Accordance with Test Methods Promulgated by ASTM Committee E6.

1.3 QUALITY ASSURANCE - CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or workmanship that is more precise.

C. Perform work by persons qualified to produce workmanship of specified quality.

D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

E. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

1.4 QUALITY ASSURANCE - TESTING LABORATORY

A. In order to establish compliance with the Contract Documents, materials shall be tested,

examined and evaluated before they are incorporated into the work. During and after installations, additional tests, examinations, and evaluations shall be made to determine continued compliance throughout the course of the work.

B. Testing laboratory shall be a reputable, experienced firm that is capable of performing all of the required testing and authorized to operate in the state in which the project is located.

C. Perform all sampling and testing in accordance with specified procedures and use the materials, instruments, apparatus, and equipment required by the codes, regulations and standards. Where specific testing requirements or procedures are not described, perform the testing in accordance with all pertinent codes and regulations and with recognized standards for testing.

D. In the event that samples and test specimens are not properly taken, handled, stored or delivered or if other requirements of this Section are not complied with, Owner's Representative reserves the right to delegate any or all of this work to others, or to take whatever action deemed necessary to ensure that sampling and testing are properly accomplished, for which all costs shall be borne by Contractor.

E. Owner's Representative reserves the right to disapprove the use of a specific testing laboratory, even after prior approval, if the laboratory fails to meet or comply with the requirements of this Section. If this should occur, immediately discharge the testing laboratory and retain the services of a different laboratory acceptable to Owner's Representative.

F. The testing laboratory shall meet the following criteria:

1. Be capable of performing all of the required tests.
2. Be regularly engaged in performing the types of services required.
3. Have adequate facilities, materials, equipment, and personnel to perform the services.
4. Have an adequately trained, experienced and qualified staff.
5. Have at least one registered professional engineer licensed and registered in the state in which the project is located who shall be capable of performing field tests, supervising laboratory testing and interpreting test results. The professional engineer shall be thoroughly knowledgeable in materials, soils, asphalt paving and concrete.
6. Shall be able to be on the Project site within two (2) hours after being notified.

G. Comply with the requirements of ASTM C1077, ASTM D3740, ASTM D4561 and ASTM E699.

H. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy standard traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.5 REFERENCES

A. Conform to reference standards by date that the Project was last bid.

B. Obtain copies of standards when required by Contract Documents.

C. Should specified reference standards conflict with Contract Documents, request clarification from Owner's Representative before proceeding.

D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.6 SUBMITTALS

A. Within fifteen (15) calendar days from the date of the Notice to Proceed, submit documentation from the testing laboratories that clearly indicates experience, location, qualifications of staff, and descriptions of any limitations or restrictions of the firm.

B. Certified copies of each test report shall be mailed directly to the Owner's Representative. Contractor shall arrange with the laboratory to secure copies.

C. Each report shall be in writing and shall include the testing method used, the test results, the specified results, the exact location of where the test specimens were taken, the date taken, Project identification, Contractor's name and other pertinent information required for a complete and meaningful test report.

D. Each report shall be signed and certified by a responsible officer of the testing laboratory.

E. Provide reports directly to Owner's Representative within 24 hours after the sample is taken, except in those instances when tests cannot be immediately performed because of required curing, incubation periods, or lengthy testing procedures.

F. Laboratory shall verbally communicate test results when requested by the Owner's Representative. This does not eliminate nor replace the requirements for a written report.

1.7 SCHEDULING - LABORATORY SERVICES

A. Except where otherwise specified, the Owner's Representative will determine the number of samples to be taken, the date and time samples will be taken and tests made, the number and type of tests to be performed, who will collect the samples, how they will be handled and stored and when laboratory personnel are required on site.

B. Contractor will notify Owner's Representative of his decision to take samples and/or have tests made and provide him with the pertinent information. Contractor is responsible for notifying the testing laboratory and for having the testing performed, on schedule.

C. In addition to the above, Contractor shall make his own arrangements for the sampling and testing of materials he proposes to incorporate into the work. This shall not be paid for out of the cash allowance

D. Notify Owner's Representative at least 72 hours in advance of the times at which scheduled samples or tests will be conducted.

E. If samples and/or tests cannot be taken or performed when required, delay the work until such time that they can be accomplished. Any work that has been installed, but has not been sampled or tested as required, shall be evaluated by the Owner's Representative and possibly tested by other means as determined by the Owner's Representative's evaluation. Upon Owner's Representative's request, uncover any work, which has been buried or covered, and perform special tests designated by Owner's Representative. If the work cannot be tested by

other means, Owner's Representative may declare the work unacceptable. All costs associated with noncompliance and for special testing shall be borne by the Contractor.

F. Should the testing laboratory be scheduled to take or collect samples or to perform tests and finds that it is unable to do so as a result of delays in construction, inclement weather, or any other reason, reschedule the tasks for a date acceptable to the Owner's Representative. Costs associated with times testing laboratory is unable to perform scheduled services shall be borne by the Contractor.

G. Plan all work and operations to allow for the taking and collection of samples and allow adequate time for the performance of tests. Delay the progress of questionable work until the receipt of the certified test reports.

1.8 TESTING REQUIREMENTS

A. Dry Paint Thickness Measurement: Perform dry paint thickness using calibrated SSPC Type 2 fixed probe gages.

B. Compaction Testing – Soil:

1. Testing agency will test compaction of soils in place according to ASTM D 1556, Density and Unit Weight of Soil In Place by the Sand Cone Method or ASTM D 2922, Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
2. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; re-compact and retest until specified compaction is obtained.
3. Perform tests and analysis of fill material in accordance with ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 55-lb. Rammer and 12-inch Drop.

C. CompactionTesting–Asphaltic Concrete Pavement:

1. Perform asphaltic concrete compaction testing in accordance with ASTM D2950 - Standard Test Method of Density of Bituminous Concrete in Place by Nuclear Methods.
2. Calibrate nuclear density measurement equipment based on theoretical maximum specific gravity of asphaltic concrete pavement material.
3. Perform test to determine theoretical maximum specific gravity in accordance with ASTM D2041 Theoretical Maximum Specific Gravity of Bituminous Pavement Mixtures. Perform test on mix at plant prior to delivery. Collect sample at plant in accordance with ASTM D979 - Sampling Bituminous Paving Mixtures and perform test in approved laboratory if plant does not have necessary equipment.

D. ConcreteTesting:

1. Collect samples in accordance with ASTM C172, Practice for Sampling Freshly Mixed Concrete.
2. Make test cylinders in accordance with ASTM C31, Standard Practice for Making and Curing Concrete Test Specimens in the Field.

3. Test concrete cylinders in accordance with ASTM C39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
4. Test slump and air entrainment.
5. Concrete plant inspector to perform the duties listed in Section 3.4(A)(1)(b).

E. AsphaltTesting:

1. Collect samples at point of delivery in accordance with ASTM D979, Standard Practice for Sampling Bituminous Paving Mixtures.
2. Perform extraction test in accordance with ASTM D2172, Standard Test Methods for Quantitative Extraction of Bitumen from Bituminous Paving Mixtures.
3. Perform gradation test in accordance with ASTM C136, Method for Sieve
4. Analysis of Fine and Coarse Aggregates.

1.9 TESTING SCHEDULE

A. DryPaintThicknessMeasurement:

1. Make five (5) separate spot measurements spaced evenly over 100 square feet of area.
2. For structures exceeding 1000 square feet of finished surface, three 100 square feet areas shall be randomly selected by the engineer plus one 100 square foot area for each additional 1000 square feet of finished surface. This requirement shall be subject to change as required by the Owner's Representative.

B. CompactionTestingofSoil:

Tests will be performed at the following locations and frequencies:

1. Concrete Structures: One test per 5 vertical feet (1.5 m) of structure
2. Pavement Subgrade: One test per 500 square feet (50-sq. m) of subgrade immediately prior to placing subbase.
3. Concrete Flatwork: One test per 400 square feet (40-sq. m) of flatwork.
4. Curbing: one test per 100 linear feet (30 m).
5. Piping Installations: Compaction testing at horizontal intervals of 100 feet at the spring-line of the pipe and after each two (2) vertical feet of backfilling thereafter.
6. Precast Concrete Structures: One (1) compaction test per 500 square feet of structure.
7. Paving Aggregate Base Course: One test per 500 sq. feet (50 sq. m.) immediately prior to paving.

C. Concrete Testing: Make six (6) concrete test cylinders for each 50 c.y. or fraction thereof placed each day

1. Test two (2) cylinders at 7 days.
2. Test two (2) cylinders at 28 days.
3. The remaining cylinders shall be tested at a time to be determined by the Owner's Representative. This requirement shall be subject to change as required by the Owner's Representative.

D. AsphaltTesting: As directed by the Owner's Representative.

E. CompactionTestingofPavement: As directed by the Owner's Representative.

1.10 FIELD OBSERVATION OF CONTRACTOR'S WORK

A. The Owner's Representative will provide observation of the Contractor's work in accordance with the General Conditions of the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions. Verify that the existing substrate is capable of structural support or attachment of new Work being applied or attached. Examine and verify specific conditions described in individual specification sections. Verify that utility services are available, of the correct characteristics, and in the correct locations.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance. Seal cracks or openings of substrate prior to applying next material or substance.

B. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.3 FIELD QUALITY CONTROL

A. Allow representatives of the testing laboratory access to the work at all time. Provide all equipment, labor, materials, and facilities required by the laboratory to properly perform its functions. Cooperate with and assist laboratory personnel during the performance of their work.

B. Test specimens and samples shall be taken by the person(s) designated in other Sections, or as directed by Owner's Representative. Conduct field sampling and testing in the presence of Owner's Representative. Provide all materials, equipment, facilities and labor for securing samples and test specimens and for performing all field-testing.

3.4 FIELD INSPECTOR SCOPE OF SERVICES

A. Concrete

1. Concrete Plant Inspector

a. Qualifications: The inspector must be ACI Concrete Field Testing Technician, Grade I and have at least one year of batch plant experience.
b. The duties will include the following:

1) Perform inspection in accordance with NYSDOT Material Method MM 9.1, or as ordered by the Owner's Representative.
2) Verify that the concrete plant is currently approved by the NYSDOT and that the scales have been calibrated within the last 90 days.
3) Verify that only NYSDOT Approved materials are incorporated into the mix.
4) Observe the batching operation to insure that the specified types and amounts of materials conforming to the design mix are batched. Batch weights shall fall within the allowable tolerances.
5) Insure that the concrete delivery trucks have current NYSDOT stickers, are in good operating conditions and are not loaded beyond their capacities.
6) Verify that the resolution counter in the delivery trucks is operational and has been reset to zero.
7) Prepare a delivery ticket for each batch of concrete with the following information:

Name of Batch Plant	Date
Truck Number	Project Designation
Class of Designation of Concrete	Amount of Concrete Batched
Time Batched (Time that sand & cement make contact)	C.Y. Batch Weights

8) Sign the delivery ticket showing that the concrete batching has been inspected.

c. When not witnessing the batching operation, conduct the following tests at least twice daily:

1) Moisture content determination on fine and coarse aggregates (ASTM C566)
2) Aggregate gradations, fine and coarse (ASTM C-136)
3) Report all noted deficiencies immediately (verbally) to the designated authority
4) Provided a daily report to the Owner's Representative, within 48 hours, including all the above data including who was notified of any deficiencies.
5) Price bid shall include the technician's time and all equipment and tests necessary to perform the work as outlined above.

2. Concrete Field Inspector

a. Qualifications: The inspector must be a certified ACI Concrete Field Testing Technician, Grade I and have at least one year of experience as a concrete field inspector.

b. The duties will include the following:

1) Perform inspection in accordance with NYSDOT Material Method MM 9.2, or as ordered by the Owner's Representative.
2) Verify the ambient air temperature is within specifications for concrete placement.
3) Check plant inspection ticket for each concrete truck delivery for proper mixture and information.
4) Verify that the NYSDOT sticker is current for each concrete delivery truck and that it is loaded within the truck mixing capacity.
5) Check if the concrete has been mixed the proper number of revolutions.

c. Perform the following tests on one randomly selected delivery truck each day and each 50 cy/day, or as ordered by the Owner's Representative, at a minimum.

1) Sample the concrete (ASTM C-172)
2) Perform slump tests (ASTM C-143)
3) Check air content of concrete (ASTM C-173 or C-231)
4) Check concrete temperature
5) Cast six each 6" x 12" or 4" x 8" concrete test cylinders (ASTM C-31)
6) Check unit weight of concrete for lightweight concrete (ASTM C-567)
7) Monitor total mixing water (not to exceed specified amount)
8) Assure that test cylinders are being field cured as required (with the structure or in a properly constructed curing box furnished by the Contractor)
9) Check that maximum time for discharging of concrete has not been exceeded.
10) Verify cold or hot weather curing procedures, if required (ACI305R& 306R)
11) Report all noted deficiencies immediately (verbally) to the designated authority
12) Provided a daily report to the Owner, within 48 hours, including all the above data including who was notified of any deficiencies.
13) Price bid shall include the technician's time and all equipment and tests necessary to perform the work as outlined above.

3. Concrete Construction Special Inspector

a. Qualifications: The inspector must be ACI Concrete Construction Special Inspector and have at least one year of experience.
b. The duties will include the following:

1) Inspect formwork erection and removal (ACI 347R & SP-4).
2) Inspect reshoring (ACI 347R).
3) Inspect reinforcing bars (grade, mill test certificates, bends, placement) (ACI 318 and CRSI "Placing Reinforcing Bars" and "Manual of Standard Practice", shop drawings and contract plans).
4) Check for correct anchor bolt size and placement in accordance with shop drawings and/or plans.
5) Check that proper soil bearing capacity has been verified by a licensed P.E. before placing of foundation concrete.
6) Inspect placement of concrete (including vibration) (ACI 304R & 309R).
7) Inspect finishing operations (ACI 302.1R & 301)

8) Inspect curing (ACI308).
9) Verify hot and cold weather procedures, if required (ACI 305R & 306R)
10) Report all noted deficiencies immediately (verbally) to designated authority.
11) Provide a daily report to the Owner, within 48 hours, including all the above data including who was notified of any deficiencies.
12) At the conclusions of all testing provide to the Owner a Final Certification Letter stating that there are no unremediated deficiencies and all work conforms to the above requirements.
13) Price bid shall include the technician's time and all equipment and tests necessary to perform the work as outlined above.

4. Precast Concrete Plant Or Field Inspector (Local And Out- Of-Town)

a. Qualifications: The inspector must be an ACI Concrete Construction Special Inspector, or a certified Precast/Prestressed Concrete Institute (PCI), Plant Quality Personnel Certification Level II, and have at least one year of experience as a precast concrete plant inspector.
b. The duties will include the following:

1) Perform inspection in accordance with NYSDOT Precast/ Prestressed Concrete Construction Manual (PCCM), approved shop drawings and contract plan.
2) Review contractor's (supplier's) quality control program.
3) Review certifications and calibrations of scales, jacks, prestress strands, inserts, concrete mix designs, reinforcing steel, etc.
4) Monitor bed set up for cleanliness of forms, dimensions, skew distances, strand deflection, strand tensioning and elongation, reinforcing steel, plates, blockouts, inserts, and other pertinent items contained within the members.
5) Monitor concrete batching and observe placement. Monitor quality control sampling and testing performed by suppliers.
6) Obtain records of curing times and temperatures.
7) Witness compressive strength test of cylinders prior to detensioning, stripping & shipping, as required.
8) Witness detensioning process and sequence.
9) Check finished product for dimensions, camber, alignment, chamfers, blockouts, studes, inserts, cracks, surface texture, etc.
10) Inspect pieces at time of shipping for finish and patching, strand slippage, cracks and blocking and if found acceptable stamp or stencil date of acceptance.
11) Report all noted deficiencies immediately (verbally) to the designated authority.
12) Provide a daily report to the Owner, within 48 hours, including all the above data including who was notified of any deficiencies.
13) Price bid shall include the technician's time and all equipment and tests necessary to perform the work as outlined above.

B. Asphalt

1. Asphalt Plant Inspector (Not Superpave QA Technician)

a. Qualifications: The technician must be NYSDOT qualified or equal and have at least two years of plant inspection experience.
b. The duties will include the following:

1) Perform inspection in accordance with NYSDOT Materials Manual 5, or as ordered by the Owner's Representative.
2) Verify that the asphalt plant is currently approved by NYSDOT and that the scales have been calibrated within the last 90 days.
3) Verify that only NYSDOT approved materials are incorporated in the mixes.
4) Check to see that the correct aggregate sources and sizes are in the proper cold feed bins.
5) Verify that the proper aggregate and asphalt batch weights, complying with the approved job mix formulas, are programmed into the batching computer.
6) Check to see that the control panel is in the automatic mode and that the aggregate, mineral filler (if used) and asphalt interlocks are turned on.
7) Observe the scales, automatic hatching controls and recorder when production begins and periodically thereafter to see if they are working properly.
8) Check 100% of the batch weight recordation to verify that the weight tolerance interlocks are working and the correct tolerances are being used.
9) Explain any system tolerance overrides.
10) Test trucks at random to make sure mix is being shipped at the correct temperature.
11) Sample asphalt, aggregate and mixes for analysis as required.
12) Perform hot bin analysis or bumoff and check for gradation conformance, as required.
13) Issue an inspection ticket to verify to the field that the asphalt batching has been inspected.
14) Report all noted deficiencies immediately (verbally) to the designated authority.
15) Provide a daily report to the Owner, within 48 hours, including all the above data including who was notified of any deficiencies.
16) Price bid shall include the technicians time and all equipment and tests necessary to perform the work as outlined above

2. Asphalt Plant Inspector (Superpave QA Technician)

a. Qualifications: The technician must be New York Construction Materials Association certified as QC / QA Technician Hot Mix Asphalt, and have at least two years of field inspection experience.
b. The duties will include the following:

1) Perform all duties of sampling and testing of Superpave mixtures as a Quality Assurance (QA) technician as listed in the current edition of NY State Specifications, and Materials Procedure No. 401 "Quality Control and Quality Assurance Procedures for Hot Mix Asphalt (HMA) Production", or as ordered by the Owner's Representative.
2) When NYSDOT Series 50 or 60 compaction of Superpave mixtures is specified; perform tests on cores and loose material, as delivered, according to Materials Procedure MP 402-02 "Hot Mix Asphalt (HMA) Pavement

Density Determination", Section IV: "Determination of Pavement Core % of Mixture Maximum Theoretical Density (%MMTD)" in an approved Laboratory.

3) Report all noted deficiencies immediately (verbally) to the designated authority.
4) Provide a daily report to the Owner, within 48 hours, including all the above data including who was notified of any deficiencies.
5) Price bid shall include the technicians time and all equipment necessary to perform all tests at the asphalt plant. Tests to determine
6) %MMTD per test strip or per lot (4 pavement cores & 4 loose materials samples) shall be priced separately.

3. Asphalt Field Inspector

a. Qualifications: The technician must be New York Construction Materials Association certified as QC / QA Technician Hot Mix Asphalt, and have at least two years of field inspection experience.
b. The duties will include the following:

1) Verify that equipment meets specifications.
2) Check incoming trucks for inspection tickets.
3) Inspect trucks for proper mix temperature.
4) Monitor laydown for proper mat placement and texture.
5) Inspect thickness of mat and yield.
6) Take samples as required.
7) Test for compaction per NYSDOT MP 402-02 or ASTM 02950 using a nuclear density gauge in backscatter mode, or as ordered by the Owner's Representative.
8) Report all noted deficiencies immediately (verbally) to the designated authority.
9) Provide a daily report to the Owner, within 48 hours, including all the above data including who was notified of any deficiencies.
10) Price bid shall include the technician's time and all equipment and tests necessary to perform the work as outlined above.

C. Soils

1. Soil Technician

a. Qualifications: Technician's must be North East Transportation Training & Certification Program (NETTCP), Soil & Aggregate Inspector certified, or equal, and have at least two years of experience.
b. The duties will include the following:

1) Inspect fill / backfill materials to verify they meet specifications. b) Inspect fill / backfill compaction operations and thickness of lifts.
2) Perform tests per ASTM D-6938 using a nuclear density gauge in Direct Transmission mode only.
3) Perform field proctor tests, at least once per day, per type and source of fill / backfill material.

4) Provide a daily report to the Owner, within 48 hours, including all the above data including who was notified of any deficiencies.
5) Price bid shall include the technician's time and all equipment and tests necessary to perform the work as outlined above.

2. Soil Bearing Capacity Inspection For Foundations

a. Qualifications: Licensed Professional Engineer with at least two years of geotechnical/foundation experience.

b. The duties will include the following:

1) Inspect all materials at the final foundation elevation for conformance to the design assumptions.
2) Perform all appropriate tests and record all test results including, quality and quantity of fill/ backfill material placed and number and thickness of lifts.
3) Report all noted deficiencies immediately (verbally) to designated authority.
4) Provide a daily report to the Owner, within 48 hours, including all the above data, including who was notified of any deficiencies.
5) Price bid shall include the technician's time and all equipment and tests necessary to perform the work as outlined above.

END OF SECTION 01400

SECTION 01500 – TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for mobilization/demobilization temporary utilities, support facilities, and security and protection facilities.

B. Related Sections:

1. Division 01 Section "Summary" for work restrictions and limitations on utility interruptions.
2. Division 01 Section "Cleaning" for progress cleaning requirements.

1.3 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities, where applicable, shall be included in the Contractors bid price. Allow other entities to use temporary services and facilities without cost, including, but not limited to Owner's construction forces, Owner's Representative, other Contractors, Engineers, testing agencies, and authorities having jurisdiction.

B. Sanitary Facilities: Pay and provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

C. Water Service: Provide electric water meter at each source utilized. Contractor, Owner and Owner's Representative shall verify meter reading at start and completion of use of water for the Project. Pay water service use charges for water used by all entities for construction operations.

D. Electric Power Service: Provide electric meter at each source utilized. Contractor, Owner and Owner's Representative shall verify meter reading at start and completion of use of electric for the Project. Pay electric power service use charges for electricity used by all entities for construction operations.

E. Telephone/Cell Phone Service: Pay telephone/cell phone service use charges for telephone/cell phone/fax use by all entities for construction operations.

1.4 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel as specified in the Contract Documents. Owner and Owner's Representative to review. Contractor to modify as necessary and as directed by Owner and/or Owner's Representative and at no additional cost to the Owner.

1.5 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

B. Materials and facilities required for mobilization shall conform to the Contract Documents and any pertinent Local or State law, regulation, or code.

C. Mobilization work required to provide all temporary facilities and services for mobilization shall be done in a safe and workmanlike manner and shall conform with any pertinent local and state law, regulation, or code. Good housekeeping, consistent with safety, shall be maintained.

1.7 PROGRESS PAYMENTS

A. All costs under this section shall be prorated over the duration of the Project and paid monthly over the duration of the Project

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

A. Contractor shall prepare a Site Utilization Plan (SUP) showing staging areas, parking areas, stockpile areas, debris container areas, unloading areas, and trailer areas for review by the Owner and Owner's Representative.

B. Evaluate and provide updated site utilization plans monthly, as necessary. Each update shall be submitted to the Owner and Owner's Representative for information purposes and be provided by the last Friday of every month.

C. Contractor must install temporary security fencing around staging areas. Owner and Owner's Representative will not be responsible for any stolen items and access control.

D. Meeting(s) will be held at the site with all concerned parties to assist the Contractor in

developing the criteria for the plan. During these meeting(s), all parties will present their needs and requirements for site utilization. Representatives from the local municipality or utility companies may be attending. The requirements of the local municipality and utility companies shall be incorporated into the SUP.

E. Contractor shall then prepare a draft site plan that attempts to incorporate the needs of all concerned parties. Another meeting will then be held at the site to review and present the plan. The plan shall then be revised at that meeting and adopted for use if it is acceptable to all relevant parties. If all parties cannot agree on an acceptable plan, then the Owner's Representative will establish the Site Utilization Plan without any claims from any contractor.

F. Contractor, by submitting a bid, understands the importance of a workable SUP and also understands that the Owner's Representative may be required to select a plan for the contractor to adopt that is not ideal to the planned construction activities anticipated before the bid was submitted. There shall be no claims for damages associated with site utilization. If the Contractor fails to prepare the SUP as stipulated above, then the Owner reserves the right to back charge the Contractor for the costs associated with having a Site Utilization Plan developed.

G. If a Contractor fails to participate or attend the meetings scheduled to develop the SUP then the Contractor will forfeit any right to comment on the plan that is developed.

H. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

I. Project Field Office: Field Office shall be equipped with anchor/tie down systems for hurricane wind loads, fully skirted and of sufficient size to accommodate the needs of Owner's Representative and construction personnel office activities and to accommodate project meetings specified in other Division 01 Sections. Field office shall be kept clean and orderly by providing minimum bi-weekly garbage removal and cleaning services (including vacuuming and/or mopping of floors) throughout Project duration. Furnish and equip office as follows:

1. Furniture required to accommodate the needs of construction personnel office activities.
2. Conference room of sufficient size to accommodate meetings of ten (10) individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot-square tack and marker boards.
3. Drinking water and private toilet.
4. Coffee machine and supplies.
5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 70°F +/- 5°.
6. Lighting fixtures capable of maintaining average illumination of 100 fc at desk height.
7. Telephone Service including one (1) separate telephone line, one (1) separate fax/modem line, one (1) digital answering machine and one (1) telephone.
8. Combination Fax/Plain Paper Printer/Copy Machine/Scanner/Photo Printer.
9. Fire extinguisher - Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
10. First aid facilities - Contractor shall have at the site of Work an approved First Aid Kit accessible at all time.
11. Internet Service.

12. Cellular Telephones/Two-Way Radios.

J. All facilities, materials and equipment provided under this Section shall be provided and maintained in good working order at all times. Any materials or equipment that malfunctions shall be repaired or replaced at no additional cost to Owner.

K. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.
2. Project materials and supplies that must be stored outside of the elements.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Exact location of temporary field trailers, portable sanitary facilities and temporary utilities shall be determined and agreed to at a meeting with the Contractor, Owner and Owner's Representative.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

C. Contractor shall comply with all noise, vibration, fume, dust, vapor and gas regulations.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Water Service: Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use. Provide backflow prevention device in accordance with Owner's requirements. Provide water meters(s) necessary to measure water usage during construction. Contractor, Owner and Owner's Representative shall verify meter readings for the Project. Usage shall be back charged to the Contractor at rate paid by Owner.

C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

D. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

1. Install electric power service overhead, unless otherwise indicated.
2. Connect temporary service to local utility and as directed by Owner.
3. Contractor shall provide electric meters(s) necessary to measure electric usage during construction. Usage shall be charged to the Contractor by the owning utility.

E. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

F. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install telephone lines for each field office.

1. Provide additional telephone lines for the following:

a. Provide a dedicated telephone line for each facsimile machine in each field office.

2. At each telephone, post a list of important telephone numbers.

a. Police and fire departments.
b. Ambulance service.
c. Contractor's home office.
d. Owner’s Representative's office.
e. Owner's office.
f. Principal subcontractors' field and home offices.
g. Contact information for all contract parties 24/7 (Owner, Owner’s Representation and Contractor).

3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Owner facilities, equipment, personnel, materials, specialty, supplies and conveyances shall not be utilized at anytime by Contractor or his subcontractor(s) or any worker without written permission by Owner. In order to obtain written permission for use of any Owner item, except personnel, it shall be necessary for Contractor to obtain such qualified manufacturer representatives that shall certify in writing that the item requested for use can be accommodated by the item for the intended use. Further, all maintenance on the item to make the item certifiable by the manufacturer’s representative and to keep the item in operating condition shall be paid for by the Contractor intending to use the item for the duration of the construction. The use of the equipment, material, facility, specialty, supply or conveyance shall be back charged at a unit rate to the Contractor for each usage at 4 hour minimum time for each day the item is used.
2. Owner staff, if needed for anything other than plan shutdowns and emergencies, shall be requested in writing at least 96 hours prior to the anticipated need for them. Owner shall be reimbursed for actual costs including benefits and administrative costs with a

multiplier of 3 for all Owner staff work. Regardless of any activity all overtime costs for any Owner employee, shall be reimbursed to the Owner by a back charge to the Contractor that shall be deducted from that month's payment request.

3. Provide construction for temporary offices, shops, and sheds located within construction area.
4. Maintain support facilities until Owner's Representative schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas, as required and adequate for construction operations.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust. Keep dust within the Project site to a minimum at all times.

C. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.
3. Contractor shall be responsibility to maintain traffic access to all Owner facilities on a 24-hour per day, 7-day per week basis. Traffic maintenance shall be maintained by whatever means necessary at all times by the Contractor and at no additional cost to the Owner.

D. Parking: Contractor shall provide temporary parking for construction personnel.

E. Dewatering Facilities and Drains: Dewatering shall require permits and permitted discharge(s). Contractor shall obtain all required permits and provide detailed dewatering plan signed and sealed by a Professional Engineer licensed and registered in the State of New York and with a minimum five (5) years experience in the design and construction of dewatering systems. Contractor shall not discharge groundwater directly into creeks, ponds, lakes or waterways without first obtaining approval(s) and/or proper permit(s) from all applicable regulatory agencies. Before discharge into surface waters, dewatering effluents must be filtered through hay bales or detained settling basins to avoid sedimentation to the receiving waters. If necessary, baffling devices shall be used to prevent the scouring of the bed or banks of any receiving stream.

F. Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations and provide for safe work environment.

G. Project Signs: No signs or advertisements of any nature will be permitted on the Project without prior approval of the Owner's Representative.

1. Provide signs, as required, to clearly direct deliveries to a location by the Contractor trailer for inspection prior to off loading (if found to be acceptable for off loading).

2. Provide traffic signs indicating temporary changes to normal traffic flow on site.
3. Provide temporary, directional signs for construction personnel and visitors.
4. If required, insert a list of necessary signs and add Project-specific provisions such as special graphics and special lighting.
5. Maintain and touchup signs so they are legible at all times.

H. Waste Disposal:

1. Provide waste-collection containers in sizes adequate to handle waste from construction operations.
2. Comply with requirements of authorities having jurisdiction.
3. Comply with Division 01 Section "Cleaning" for progress cleaning requirements.
4. Provide systems for controlling and managing solid waste related to the Work.
5. Prevent solid waste from becoming airborne, and from discharging to surface waters and drainage routes.
6. Properly handle and dispose of solid waste.

I. Lifts and Hoists: Provide facilities necessary for hoisting materials.

J. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

K. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

L. Noise control enclosures may be necessary for dewatering and/or bypass pumping. All efforts shall be made by all parties to avoid the erection/construction of temporary enclosures to reduce noise but, if deemed necessary by the Owner and/or Owner's Representative, Contractor shall erect/construct these temporary facilities at no additional cost to the Owner. Contractor vehicles and equipment shall minimize noise to greatest degree practicable. Noise levels shall conform to Laws and Regulations, including OSHA requirements and local ordinances. Noise levels shall not interfere with the work of Owner or others.

M. Dust Control

1. Control objectionable dust caused by Contractor's operation of vehicles and equipment, clearing, or other actions. To minimize airborne dust, apply water or use other methods subject to acceptance of Owner's Representative and approval of authorities having jurisdiction.
2. Provide necessary labor, materials, equipment, and incidentals to apply sufficient dust suppressants; properly clean all track-out areas to driveways, roadways, and highways, and provide adequate physical stabilizations of soils to comply with accepted dust control plan. Control fugitive dust generation from Contractor's operations including the following areas:

    a. Construction areas.

b. Vehicle and equipment parking areas.
c. Material and equipment storage areas.
d. Site office, trailer, and staging areas.
e. Haul and access roadways.
f. Track-out areas.
g. Other areas where Contractor will work, store materials or equipment, or park vehicles and equipment.

3. Do not cause or allow dust generating operations, earthmoving operations, use of property, or other operations that result in fugitive dust emissions that exceed limits prescribed by authorities having jurisdiction

N. Pollution Control

1. Pollution Control – General:

a. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere caused by discharge of noxious substances from construction operations.
b. Equipment used during construction shall conform to federal, state, and local Laws and Regulations.

2. Spills and Contamination:

a. Provide equipment and personnel to perform emergency measures required to contain spillages, and to remove contaminated soils or liquids.
b. Excavate contaminated earth and legally dispose of off-site and replace with suitable compacted fill and topsoil.

O. Atmospheric Pollutants:

1. Provide systems for controlling atmospheric pollutants related to the Work.
2. Prevent toxic concentrations of chemicals.
3. Prevent harmful dispersal of pollutants into atmosphere.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways in accordance with the New York State (NYS) Standards and Specifications for Erosion and Sediment Controls and NYS Stormwater Design Manual. Measures shall cover temporary facility area and all construction sites.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
2. Inspect, repair, and maintain erosion- and sedimentation-control measures during

construction until permanent vegetation has been established.

3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from the project site during the course of the project.
4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

C. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains. Protect all new work and existing structures from stormwater and flooding. Implement special measures to prevent harmful substances from entering surface waters. Prevent disposal of wastes, effluents, chemicals, or other such substances in or adjacent to surface waters and open drainage routes, in sanitary sewers, or in storm sewers. Control fill, grading, and ditching to direct water away from excavations, pits, tunnels and other construction areas and to direct drainage to proper runoff courses to prevent erosion, damage, or nuisance. Provide, operate, and maintain equipment and facilities of adequate size to control surface water. Dispose of drainage water in manner to prevent flooding, erosion, and other damage to any and all parts of the Site and adjoining areas, and that conforms to Laws and Regulations.

D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

E. Site Enclosure Fence: Before construction operations begin, Contractor shall provide 6" high chain link site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

1. Submittal: Submit drawing identifying plan and details of materials and construction of site enclosure fence.
2. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
3. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish four (4) sets of keys for each lock to Owner**.**

F. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday. Contractor shall be responsible to protect all new work and existing structures.

G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

H. Safety fence shall be four (4) ft. high and made from UV stabilized extruded polypropylene. Color shall be bright orange. Safety fence shall be lightweight, durable, and highly visible. Wood posts shall be hardwood, four (4) inches diameter minimum, embedded minimum three (3) feet in the ground and spaced maximum eight (8) feet.

I. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using

environmentally safe materials. Employ methods and use materials that do not adversely affect conditions at the Site or on adjoining properties.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Termination and Removal: Remove each temporary facility when need for its service has ended, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor.
2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
3. Work areas shall be left clean and in neat condition, temporary items removed, any and all damage repaired, and all refuse removed. All cleaning shall be done in a manner acceptable to the Owner and Owner's Representative.
4. Restore pavements, walks, curbs, lawns, and other exterior surfaces damaged during performance of the Work to match the appearance and performance of existing corresponding surfaces as closely as practicable.
5. Topsoil and seed or sod lawn areas damaged during performance of the Work and new lawn areas inside the limits of the performance of the Work. Contractor shall water as required until physical completion of the Work.
6. Repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section Closeout Procedures.

3.6 CLOSEOUT

A. At the conclusion of the Work, all equipment, tools, temporary structures, and materials belonging to the Contractor shall be promptly taken away; he shall remove and promptly dispose of all debris, rubbish, or any foreign substances.

B. All temporary sanitary facilities shall be removed entirely from the job and the site and all appurtenances restored to as new condition.

END OF SECTION 01500

SECTION 01526 – TRAFFIC MAINTENANCE AND PROTECTION

PART 1 - GENERAL

1.1 SCOPE

A. This section includes provisions for maintaining vehicular and pedestrian traffic and protection for both the public and Contractor's employees and personnel from all damage to person and property within the limits of and for the duration of the Contract. The work shall include watchman services, all temporary fencing, temporary and permanent striping and the furnishing of all labor, materials, tools and equipment necessary to satisfactorily maintain all traffic for the duration of the Contract. A deduction of four-hundred (400) dollars will be made per eight (8) hour shift for the watchmen services not provided. The amount may be deducted from any monies due the Contractor on this Contract.

B. If, in the judgment of the Owner, Owner's Representative, County, Town, and/or Village, traffic is not properly and safely maintained on any part of the Contract on any one (1) day, or the Contractor fails to comply with the approved plans, schedules and/or amendments, no payment for maintenance of traffic will be made for that day. The amount of such daily non-payment will be determined by dividing the schedule of value for this item by the number of calendar days between the date of notice to proceed and the date of completion as designated in the agreement without regard to any extension of time.

C. Should the Contractor fail or refuse to maintain traffic as specified or as ordered by the Owner, Owner's Representative, County, Town, and/or Village, then the Owner shall have the right to perform this work with its own personnel and equipment, and/or personnel and equipment hired from outside sources. The entire cost of the work by such forces, materials and equipment shall be deducted from any monies due the Contractor on this Contract. The cost of this work shall be in addition to the daily non-payment deductions listed above.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and other Division 01 Specification Sections, apply to this Section.

1.3 SUBMITTALS

A. Contractor shall notify local (County, Town, and/or Village) Traffic Departments, Owner and Owner's Representative at least seventy-two (72) hours prior to the closing of any portion of a road necessary to perform the Work and shall adequately describe the detour to be followed.

B. Maintenance of traffic plan and schedule of operations for the maintenance, protection and detouring of traffic shall meet the following minimum requirements and shall be submitted to the appropriate roadway owner:

1. Plans showing all locations and type of barricades, safety devices, signs and temporary striping conforming to the Federal Manual of Uniform Traffic Control Devices (MUTCD) Highway Work Zone Traffic Control, current edition and New York State Department of Transportation (NYSDOT) supplements and to the satisfaction of the road owner, Owner and/or Owner's

Representative.

2. Plans showing in detail the methods, sequences, procedures and facilities Contractor proposes to use for the maintenance and protection of traffic on all roads affected to perform the required Work.
3. Approval of these traffic maintenance plans are intended only as an outline of minimum requirements and the provisions of the Contract Documents do not in any way lessen the Contractor's responsibility to maintain vehicular and pedestrian traffic and to protect the public and his own employees from all damage to person and property. Adjustments in the field may be required, as the County, Town, Village, Owner and/or Owner's Representative deems necessary.
4. If the Contractor proposes any modifications, amendments or changes in location for detours as called for, or proposes new detours, such changes and additions to the maintenance of traffic plan must be approved in writing by the County.
5. For work within County, Town and Village right-of-ways, the Contractor shall submit traffic maintenance drawings for approval. The maintenance of traffic drawings shall be submitted within thirty (30) days after Contract award. These drawings shall be submitted even if maintenance of traffic drawings are included with the Contract Documents. No work will start on any County, Town and/or Village right-of-way prior to the Contractor receiving approval.
6. (NIC) Traffic maintenance details shown in the Contract Documents for work in State right-of-ways are intended to outline a method of maintaining traffic conforming with State requirements. Contractor shall submit traffic maintenance drawings where he intends to deviate from these details and will be required to submit a detailed account of the construction within State right-of-ways showing phases of construction, time schedule, shop drawings, etc., for approval.
7. The maintenance of traffic drawings shall meet the following requirements:
    a. Drawings shall be prepared and signed by a Professional Engineer with a current license and registration in the State of New York.
    b. They shall be presented on twenty-four (24) inch by thirty-six (36) inch sheets to a scale of 1 inch =40 feet or 1 inch =50 feet.
    c. Drawings shall show all locations and type of barricades, safety devices, signs and temporary striping.
8. Contractor shall submit for approval, all persons or service contracts that he intends to use during non-working hours for providing watchmen patrol of the Contract Site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with the requirements of Federal MUTCD and NYSDOT supplements material specifications as they apply to the various materials required for the Work of this Section.

B. Provide sign panels of aluminum, galvanized steel or plywood with faces of reflective sheet material and non-reflective black characters conforming to Federal MUTCD and NYSDOT supplements.

C. Provide delineators, barricades and lighting for construction barricades in accordance with the requirements of Federal MUTCD and NYSDOT supplements. Where reflective materials are required, conform to Federal MUTCD and NYSDOT supplements except where glass or plastic buttons are used as delineators. Barricades, cones and drums may use reflective materials conforming to Federal MUTCD and NYSDOT supplements.

D. Provide pavement delineation of reflective paint or reflective pressure sensitive pavement marking tape. Line segments shall be a minimum of 4 inches wide and 36 inches long applied with the long axis of the segment parallel to the direction of traffic.

E. Unless otherwise specified, all materials and equipment used will remain the property of the Contractor.

PART 3 - EXECUTION

3.1 PREPARATION

A. Contractor shall obtain, supply and pay all required electrical energy, services, permits and certificates.

3.2 GENERAL

A. Remove construction equipment and materials from roadway during non-working hours or provide protection in such a manner that they will not constitute a traffic hazard.

B. Conduct and schedule the Work in a manner that will minimize the time during which the traveling public will be exposed to hazards.

C. Do not park employee personal vehicles within the work area in a manner that they will constitute a traffic hazard.

D. Provide a traveled way suitable for two lanes of moving traffic. Keep traveled way reasonably smooth and hard at all times.

E. Keep the traveled way of all public highways utilized for hauling materials to or from this Project free of foreign objects that may fall or drop from transporting vehicles.

F. Correct dusty conditions resulting from the Work by the use of calcium chloride and/or water. Distribute water uniformly by the use of suitable spray heads or spray bar. The Owner, Owner's Representative, County, Town or Village will determine the need for the application of water for dust control. Apply water at the intervals and locations ordered by the Owner, Owner's Representative, County, Town or Village.

G. Whenever it becomes necessary to maintain traffic on one lane, provide adequate traffic controls on the section of roadway on which vehicle traffic is maintained. Provide competent flag persons or traffic signals at the location which will in the judgment of the Owner, Owner's Representative, County, Town or Village adequately and continuously control one lane traffic.

H. Maintain safe and adequate ingress and egress to and from intersecting highways, residences and commercial establishments.

I. Contractor shall not be responsible for removal of snow and ice from pavements or traveled ways open to public vehicular traffic.

J. Maintain existing and new drainage structures, culverts and ditches to adequately drain the traveled way.

K. Provide, maintain, move and remove delineation and guiding devices to properly delineate a safe and reasonable roadway. Delineate areas on which it is unsafe to travel.

L. Delineate drop-offs less than 6 inches by providing approved delineators at intervals of not more than 200 feet. Where the drop off is between 6 inches and 18 inches, the spacing between delineators shall not be more than 100 feet. Where the drop off is greater than 18 inches, a continuous delineation consisting of 2 inch or wider brightly colored flexible tape shall be used in addition to individual delineators provided they are properly painted and reflectorized in accordance with Federal MUTCD and NYSDOT supplements.

M. Maintain existing highway signs, markers, delineators and their supports. Where necessary, relocate existing signs in conformance with Federal MUTCD and NYSDOT supplements. Replace signs lost or damaged as a result of contract operations.

3.3 PERFORMANCE

A. Before the Contractor shall in any way or manner restrict or interfere with the normal flow of traffic, he must first secure written approval of his proposed plan and obtain any required permit(s).

B. If, in the opinion of the road owner, maintenance and protection of traffic is not adequate, the Owner, Owner's Representative, County, Town and/or Village may order the work done by others and deduct the actual cost from payments due to the Contractor.

C. Traffic shall be maintained over a reasonably smooth traveled way and shall be marked by signs, delineators, guiding devices and/or other acceptable methods so that a person who has no knowledge of the conditions can safely and with minimal discomfort and inconvenience, travel the area under construction. Maintenance of traffic shall be in conformance with the Federal MUTCD and NYSDOT supplements.

D. Adequate advance warning must be provided whenever traffic is interfered with or lanes are closed. All signs, markings, signals, barricades, lighting devices and flagger operations shall conform to the Federal MUTCD and NYSDOT supplements. All necessary traffic control devices shall be in place prior to commencement of the particular construction operation. In case of emergency construction, where there is not sufficient time to prepare a traffic plan, the Contractor shall be responsible for following the guidelines set forth in the Federal MUTCD and NYSDOT supplements.

E. Access for emergency vehicles is of the utmost importance and provision shall be made by the Contractor to provide and maintain such access at all times. Special attention shall also be given to maintenance of a satisfactory travel over weekends, holidays and nights.

F. Contractor shall generally maintain two-way traffic on streets where Work is in progress. At no time shall Contractor work on both sides of the street. Access to driveways and parking lots shall be maintained at all times, unless otherwise approved by the Owner, Owner's Representative, NYSDOT, Town, County and/or Village. Contractor shall devote particular attention to all drainage facilities, keeping them fully operational at all times.

G. For the duration of the Contract, Contractor shall maintain within the contract limits the entire pavement, drainage and sewage facilities and other street elements unless otherwise specified. Foreign objects, sand, rocks, spillage of materials shall immediately be removed and the area cleaned to the satisfaction of the Owner, Owner's Representative, County, Town and/or Village.

Spillage outside the contract limits is the Contractor's responsibility and he shall pay the cost for work necessary to clean the areas affected

H. Traffic delays shall be kept to a minimum. A period of five (5) minutes shall be considered the maximum time allowed for stopping traffic.

I. Signs, barricades and other facilities shall be furnished and erected as required for on the approved Plan and/or as directed by the Owner, Owner's Representative, County, Town and/or Village.

J. Contractor shall be responsible for notifying all interested agencies when construction will interfere with normal traffic flow. These agencies include, but are not necessarily limited to:

1. New York State, Suffolk County and Local Police
2. Local Fire Department(s)
3. School District(s)
4. Suffolk County Unit of Traffic Engineering (for County roads).
5. Local Traffic Departments and Departments of Public Works.
6. Suffolk County Transit.

K. Contractor shall not be permitted to store soil, materials, equipment or supplies that will interfere with sight distances, within thirty (30) feet of an intersection or areas where visibility is critical.

L. Contractor shall construct and maintain, as directed by the Owner, Owner's Representative, County, Town and/or Village, temporary bridges or bridging over excavations, obstructions and newly laid pavements to provide access for pedestrian and vehicular traffic and access to fire hydrants. During construction, Contractor shall take particular care to allow for ingress and egress of emergency vehicles from fire houses, police stations, hospitals, etc.

M. Street signs, route markers and other signs that fall under public jurisdiction (i.e., bus stop, stop signs, parking signs, etc.) shall be protected and maintained.

N. Contractor shall provide protection from damage to persons or properties.

O. All signs, lights, barricades and other materials installed to direct or warn the traveling public shall be maintained, repaired and replaced by the Contractor. Vandalism or theft shall not preclude the Contractor from meeting the specified requirements. Signs, barricades, warnings or devices shall be placed and lighted as to give timely warning and permit the motorist to take the necessary action to traverse the area safely.

P. Special attention shall be given to traffic maintenance during non-working hours, weekends, holidays and other periods or temporary shutdown of work. Adequate provision shall be made for business and commercial establishments, schools, and public buildings. In general, normal traffic flow shall be restored to each road during nonworking hours.

Q. Materials, equipment and workmanship for lighted barricades shall be in strict compliance with the National Electric Code and only licensed electricians may perform the work.

R. Signs or markers lost, damaged or removed without the Owner, Owner's Representative, County, Town and/or Village approval shall be replaced at no cost to the Owner.

S. In the case of traffic being diverted from the accustomed traveled way, onto the road shoulder or

onto an area not immediately affected by the actual construction work, occasioned by the location of materials or equipment, the shoulder or areas outside of the project so affected, shall be restored to a condition equal to the original condition. This shall apply equally as well to those pavements or any detours or designated areas over which traffic was routed.

3.4 FLAGMAN

A. Contractor shall provide a sufficient number of competent flagmen and/or temporary lights operating continuously during the time traffic is so maintained and as requested by the Owner, Owner's Representative, County, Town and/or Village. Flagmen shall have no other function other than to direct traffic. Flagmen shall wear safety vests and shall direct traffic with a red flag as required by the Federal MUTCD and NYSDOT supplements.

B. Contractor shall provide a sufficient number of competent flagmen in areas where traffic is congested, particularly where construction equipment is operating.

3.5 TRAFFIC SIGNAL MAINTENANCE

A. Maintenance of the traffic signals shall be in accordance with Federal MUTCD and NYSDOT supplements and latest Suffolk County Traffic Engineering Department.

B. Contractor shall protect traffic signal equipment and cables from any damage or malfunctioning.

C. County, Town and/or Village traffic signals and electronically operated traffic control devices within the Contract area limits will continue to be maintained by the County, Town and/or Village during construction, except when a traffic signal or electronically operated traffic control device is physically damaged by construction under this Contract. Such conditions as the removal or shoring of the signal support poles, detector removals, or any malfunction or change to the operation of the signals caused by the construction, shall oblige the Contractor to immediately have the signals repaired to enable their continued operation.

D. Suffolk County Traffic Engineering Department shall be immediately notified of any damage, malfunction, or for a final inspection of the traffic signal equipment within the Contract limits.

E. Contractor shall maintain a twenty-four (24) hour a day telephone number within Suffolk County for emergency traffic signal trouble calls. Contractor shall be responsible for informing the local Police Precinct and Suffolk County Department of Traffic Engineering, Traffic Signal Operations of emergency traffic signal troubles.

3.6 CONSTRUCTION SIGNS

A. Provide, maintain, move and remove reflectorized construction signs in accordance with the requirements of Federal MUTCD and NYSDOT supplements.

B. Paint supports and backs of sign panels with two coats of white paint.

C. Mount construction signs a minimum of 5 feet above the surface of the traveled way.

3.7 CONSTRUCTION BARRICADES

A. Provide, maintain, move and remove lighted construction barricades in accordance with the

requirements of Federal MUTCD and NYSDOT supplements.

B. Provide flashing barricade lights conforming to the requirements of Federal MUTCD and NYSDOT supplements.

C. Hours of operation for barricade lights shall be from dusk to dawn.

3.8 PAVEMENT DELINEATION

A. Provide pavement delineation in accordance with Federal MUTCD and NYSDOT supplements on any course of asphalt concrete upon which traffic will be maintained.

B. Apply pavement delineation before the end of the working day.

3.9 OPENING ROADWAY TO TRAFFIC PRIOR TO CONTRACT ACCEPTANCE

A. Maintain and protect traffic on any portion of pavement or structure ordered by the Owner, Owner's Representative, County, Town and/or Village or as shown in the Contract Documents to be opened to traffic prior to contract acceptance.

3.10 REMOVAL OF TRAFFIC CONTROL DEVICES

A. Promptly remove all delineators, signs, barricades and pavement workings when in the opinion of the Owner, Owner's Representative, County, Town and/or Village their presence constitutes a hazard or inconvenience to the traveling public.

B. Remove all remaining traffic control devices upon completion of the Work of this contract unless otherwise ordered by the Owner, Owner's Representative, County, Town and/or Village.

3.11 WATCHMEN SERVICE

A. If ordered by the Owner, Owner's Representative, County, Town and/or Village, Contractor shall provide watchmen service for the continuous patrol of the Contract site during non-working hours or whenever his operations are closed down. Watchmen service shall be provided from the commencement to the completion of actual construction.

B. Watchmen will be responsible for making sure that all temporary fences, signs, barricades, flares and markers are up and in good condition.

C. Watchmen shall maintain daily logs of their patrols. Copies of these logs shall be submitted weekly.

D. In the event that any unusual or emergency condition arises, the watchmen shall immediately notify the Contractor, the Owner's Representative and the appropriate regulatory or emergency agency for assistance.

E. Contractor may apply for suspension of the watchmen service following completion of the active construction but prior to the completion of the project (when punch list items remain).

3.12 MAINTENANCE OF TRAFFIC IN RIGHT-OF-WAYS

A. Contractor shall be required to limit his work schedule to specific times and seasonal periods as specified or as ordered by the roadway Owner. To ensure the orderly flow of travel on roadways where peak traffic is influenced by commuter traffic, Contractor shall proceed with the construction as specified in the Contract Documents. All equipment and stockpiled material shall then be removed from the site and the road opened to traffic for its full width prior to the end of the workday, unless otherwise directed by the roadway Owner and/or Owner's Representative.

B. Unless otherwise shown in the Contract Documents and/or as ordered by the roadway Owner and/or Owner's Representative, Contractor shall protect and maintain a minimum of one (1) lane of traffic in each direction at all times.

3.13 PAVEMENT STRIPING

A. Contractor is responsible for all temporary striping on County, Town and Village roadways where the existing striping has been obliterated by construction or has to be changed for construction. On County, Town and Village roads, temporary striping shall be placed immediately after completion of the temporary and/or base pavement.

B. Upon completion of the final pavement restoration on County, Town and Village roadways, the Contractor shall notify the County, Town and Village for restoration of all County, Town and Village roadway striping obliterated during the course of construction.

C. Contractor shall be responsible for all permanent restriping in County, Town and Village roads to the previously existing pattern and using the materials specified in the Contract Documents.

END OF SECTION 01526

SECTION 01570 – TEMPORARY CONTROLS

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. Contactor shall provide and maintain methods, equipment, and temporary construction as required to control environmental conditions at the Site and adjacent areas.
2. Maintain controls until final completion or if no longer required as determined by Owner and/or Owner's Representative.
3. Upon completion of the Work, remove temporary controls and restore Site to specified condition; if condition is not specified, restore Site to pre-construction condition.

1.2 NOISE CONTROL

A. General:

1. Contactor's vehicles and equipment shall minimize noise to greatest degree practicable.
2. Noise levels shall conform to Laws and Regulations, including OSHA requirements and local ordinances.
3. Noise levels shall not interfere with the public and work of Owner or others.

1.3 DUST CONTROL

A. Control objectionable dust caused by Contactor's operation of vehicles and equipment, clearing, or other actions. To minimize airborne dust, apply water or use other methods subject to acceptance of Owner and/or Owner's Representative and approval of authorities having jurisdiction.

1.4 PEST AND RODENT CONTROL

A. General:

1. Provide rodent and pest control as required to prevent infestation of the Site and storage areas.
2. Employ methods and use materials that do not adversely affect conditions at the Site or on adjoining properties.

1.5 WATER CONTROL

A. General:

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

B. Equipment and Facilities for Water Control: Provide, operate, and maintain equipment and facilities of adequate size to control surface water.

C. Discharge and Disposal: Dispose of drainage water in manner to prevent flooding, erosion, and other damage to any and all parts of the Site and adjoining areas, and that conforms to Laws and Regulations.

1.6 POLLUTION CONTROL

A. General:

1. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere caused by discharge of noxious substances from construction operations.
2. Equipment used during construction shall conform to federal, state, and local Laws and Regulations.

B. Spills and Contamination:

1. Provide equipment and personnel to perform emergency measures required to contain spillages, and to remove contaminated soils or liquids.
2. Excavate contaminated earth and provide for legal offsite transportation and disposal. Replace with suitable compacted fill and topsoil.

C. Protection of Surface Waters: Implement special measures to prevent harmful substances from entering surface waters. Prevent disposal of wastes, effluents, chemicals, or 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.
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.

1.7 EROSION CONTROL

A. General:

1. Plan and execute construction and earthwork by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.
2. Hold to a minimum the areas of bare soil exposed at one time.
3. Provide temporary control measures such as berms, dikes, and drains.
4. Construct fills and waste areas by selective placement to eliminate surface silts or clays that will erode.
5. Periodically inspect earthwork to detect evidence of the start of erosion; apply corrective measures as required to control erosion. Continue inspections and corrective measures until

permanent vegetation has been established

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01570

NO TEXT THIS PAGE

SECTION 01600 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products and special warranties.

B. Related Sections:

1. Division 01 Section "Substitution Procedures" for requests for substitutions.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1.4 ACTION SUBMITTALS

A. Comply with requirements in Division 01 Section “Shop Drawing Procedures.” Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Each Contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Owner’s Representative will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Products shall not be delivered to Site until related Shop Drawings have been approved by Owner's Representative.
3. Make all arrangements for transportation, delivery and handling of equipment and materials required for completion of the Work.
4. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
5. Shipments of materials shall be delivered to the site only during regular working hours. Shipments shall be addressed and consigned to the proper party giving name of Project, street number and city. Shipments shall not be delivered to Owner unless directed by Owner's Representative.
6. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing. All shipments shall contain a parts list and manufacturer's part number in a plastic zippered envelope. Inform the Owner's Representative of all equipment deliveries under this Contract. Partial deliveries of component parts of equipment shall be clearly marked to identify the equipment, to permit easy accumulation of parts and to facilitate assembly.
7. Inspect products on delivery to determine:

    a. Compliance with the Contract Documents and reviewed submittals.
    b. Products are undamaged and properly protected.
    c. Quantities are correct.
    d. Containers and packages are intact, labels are legible.
    e. Products are properly protected and undamaged.

8. Do not deliver materials to job until they can be properly protected and until required storage facilities have been provided. Owner shall not provide storage in any building, structure or facility. Should the Owner agree to allow storage the security and responsibility of the stored item(s) lies solely with the Contractor. Any damage, theft, or other problem with any stored item is the solely the responsibility of the Contractor.
9. Provide equipment and personnel necessary to handle products by methods to prevent soiling or damage to products or packaging.
10. Provide additional protection during handling as necessary to prevent scraping, marring or otherwise damaging products or surrounding surfaces.
11. Handle products by methods to prevent bending or overstressing.
12. Lift heavy components only at designated lifting points.
13. Materials and equipment shall at all times be handled in a safe manner and as recommended by manufacturer or supplier so that no damage will occur to them. Do not drop, roll or skid products off delivery vehicles. Hand carry or use suitable materials handling equipment

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Make every effort to minimize extended storage periods for materials and equipment at the Site by judiciously scheduling deliveries to coincide with construction needs. Do not store unnecessary materials or equipment at the Site and take care to prevent any

structure from being loaded with a weight which will endanger its integrity or the safety of persons. All storage and methods of protection for material and equipment at the Site shall be subject to the prior approval of the Owner's Representative. Any costs associated with the storage and protection of materials and equipment shall be included in the lump sum bid and no additional payment will be made.

3. Store materials in a manner that will not endanger surrounding structures.
4. Materials shall not be placed within ten (10) feet of fire hydrants.
5. Avenues for personnel and vehicular movement, gutters, drainage channels and inlets shall be kept unobstructed at all times.
6. In general, minimum protection for all materials shall include storage above ground, under waterproof cover, with ventilation adequate to prevent condensation.
7. Storage of any mechanical or electrical equipment outdoors at any time is absolutely prohibited regardless of the protection furnished. Storage of mechanical and electrical equipment within structures at the Site owned by the Owner will not be permitted.
8. All mechanical and electrical equipment shall be coated, wrapped and otherwise protected from snow, rain, drippings of any sort, dust, dirt, condensed water vapor, etc. during shipment, storage, and subsequent to installation and until placed in service.
9. All equipment having moved parts such as gears, electric motors, etc. and/or instruments shall be stored in a temperature and humidity controlled building approved by the Owner, until such time as the equipment is to be installed.
10. Should storage of mechanical and electrical equipment become necessary before it can be stored at the Site, the Contractor shall provide storage in a weatherproof warehouse.
11. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
12. Comply with product manufacturer's written instructions for maintenance, temperature, humidity, ventilation, and weather-protection requirements for storage.
13. Protect stored products to prevent damage from moisture, rain, dirt, cold, sunlight, and other harmful influences and liquids from freezing.
14. All costs for equipment protection including warehousing or other work to meet the scheduled completion date shall be included in the Bid and no additional payment will be made.
15. If necessary to move stored materials and equipment during construction, Contractor shall move or cause to be moved materials and equipment without any additional compensation.

D. Material, Services, and Facilities

1. It is understood that except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the work within the specified time.
2. Unless otherwise stated in the Proposal, on the plans, or in the Specifications, it will be understood that only articles or materials manufactured or produced in the United States will be used on the work.
3. After receipt of the Notice of Award, the Contractor shall furnish the Owner's Representative within ten (10) days the names and addresses of all companies from whom he proposes to purchase materials or manufactured products which are to be incorporated into the work. He shall also designate the location of plant or plants to be used for the

mixing or batching of materials. The source of supply of each of the materials specified shall be approved by the Owner's Representative before delivery is started.

4. In those instances where the Owner's Representative deems it necessary to have physical inspections made of materials, products, sources of supply, or of mixing, batching, or manufacturing processes, the Contractor shall give the Owner's Representative not less than ten (10) working days notice plus travel time prior to all out-of-County inspections.
5. Only materials conforming to the requirements of these Specifications and approved by the Owner's Representative shall be used in the work. No material which, after approval, has in any way become unfit for use, shall be used in the work. Acceptance at any time of any material shall not be a bar to its future rejection if subsequently found to be defective or inferior in quality or uniformity in the materials specified. Any material may be rejected if, in the opinion of the Owner's Representative, service records indicate that it is unsound or otherwise unsatisfactory.
6. Manufacturer and/or supplier shall furnish with each delivery of material a sworn statement certifying that the products furnished meet all the requirements of the Specifications, that all the required tests were performed, and that the product meets or exceeds all specified test requirements. Contractor shall transmit these certified statements along with the original forms reporting results from any and al testing to the Owner's Representative within twenty- four (24) hours of delivery of materials.
7. Materials, supplies, or equipment to be incorporated into the work shall not be purchased by the Contractor or the Subcontractor subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.
8. Manufactured articles, materials, and equipment shall be stored, applied, installed, connected, erected, used, cleaned, and conditioned as directed by the manufacturer, and as approved by the Owner's Representative.
9. Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the work. Stored materials and equipment to be incorporated in the work shall be located so as to facilitate prompt inspection.
10. Aggregate stockpiles shall be located at points approved by the Owner's Representative and so arranged that fine and coarse aggregates or coarse aggregates separated by specification requirements, do not become mixed.
11. Contractor shall provide either approved platforms or a prepared base satisfactory to the Owner's Representative; or at least six (6) inches of the base of the stockpile material shall be left undisturbed until the completion of pavement and structures.
12. Materials from different sources of supply shall not be stored in the same stockpile unless approved by the Owner's Representative.
13. Perishable materials shall be placed in waterproof buildings or otherwise protected from the elements.
14. Stored materials, even though approved before storage, may be subject to further inspection prior to their use in the work and shall meet the requirements of the Specifications at the time it is proposed to use them.
15. Pipe stored adjacent to the trench or on the contract site shall be stored according to the following requirements: (1) Pipe that is stock piled shall be properly checked and strapped to the satisfaction of the Owner's Representative in such a position until ready for use; (2) when pipe is stored singularly adjacent to or in the vicinity of the trench, each length of pipe shall be checked for defects prior to its installation.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Owner shall make selection with assistance from the Owner's Representative.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Substitutions for Contractor's convenience will not be considered.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Substitutions for Contractor's convenience will not be considered.
3. Products:

    a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Substitutions for Contractor's convenience will not be considered**,** unless otherwise indicated.
    b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements.

4. Manufacturers:

    a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Substitutions for Contractor's convenience will not be considered, unless otherwise indicated.
    Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01600

NO TEXT THIS PAGE

SECTION 01651 - TRANSPORTATION AND HANDLING OF PRODUCTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. This Section includes the general requirements for transporting and handling of products.
2. Contractor shall make all arrangements for transporting, delivery, and handling of products required for prosecution and completion of the Work.
3. Move products stored, when necessary, without additional compensation or changes to the Contract Times.

1.2 PREPARATION FOR SHIPMENT

A. When practical, factory-assemble products. 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 products to facilitate handling and protect from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate its purchase order number, bill of lading number, contents by name, Owner's contract name and number, Contractor, equipment number, and approximate weight. Include complete packing lists and bills of materials with each shipment.

C. Protect products from exposure to the elements and keep thoroughly dry and dust free at all times. Protect painted surfaces against impact, abrasion, discoloration, or other damage. Lubricate bearings and other items requiring lubrication.

D. Advance Notice of Shipments:

1. Keep Owner's Representative informed of delivery of all products to be incorporated in the Work.

E. Do not have products shipped until:

1. Related Shop Drawings, Samples, and other submittals have been approved or accepted (as applicable) by Owner's Representative.
2. Related factory testing results, when required in individual Specification Sections, have been reviewed and accepted by Owner's Representative.
3. Required storage facilities have been provided.

1.3 DELIVERY

A. Scheduling and Timing of Deliveries:

1. Arrange deliveries of products 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 on-Site storage of products and equipment.
3. Coordinate deliveries to avoid conflicting with the Work and conditions at 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 products.
    d. Owner's use of premises.

4. Deliver products to the Site during regular working hours.

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 Owner's Representative.
3. Provide Contractor's telephone number to shipper; do not provide Owner's telephone number.
4. Arrange for deliveries while Contractor's personnel are on-Site. Contractor shall receive and coordinate shipment upon delivery. Shipments delivered to the Site when Contractor is not present will be refused by Owner, and Contractor shall be responsible for delays and additional costs, if incurred.

C. Containers and Marking:

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

D. Immediately upon delivery, inspect shipment to verify that:

1. Products comply with the Contract Documents and approved or accepted (as applicable) submittals.
2. Quantities are correct.
3. Products are undamaged.
4. Containers and packages are intact and labels are legible.
5. Products are properly protected.

E. Promptly remove damaged products from the Site and expedite delivery of new, undamaged products, and remedy incomplete or lost products to provide that specified, to avoid delaying progress of the Work.

1.4 PRODUCT HANDLING

A. Provide equipment and personnel necessary to handle products, including those provided by Owner, by methods that prevent soiling or damaging products and packaging.

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

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

D. Lift heavy components only at designated lifting points.

E. Handle products in safe manner and as recommended by manufacturer to prevent damage. Do not drop, roll, or skid products off delivery vehicles or at other times during handling. Hand-carry or use suitable materials handling equipment.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01651

NO TEXT THIS PAGE

SECTION 01661 – STORAGE AND PROTECTION OF PRODUCTS

PART 1 – GENERAL

1.1 DESCRIPTION

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

1.2 STORAGE

A. Store and protect materials and equipment in accordance with manufacturer's printed 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 provide easy access for inspection.

C. Store materials and equipment to become property of Owner 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. 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 request, coordinate, and comply with specific temperature and humidity limitations on materials and equipment, including temperatures inside cabinets and components that are stored in warm temperatures.

D. Contractor shall be fully responsible for loss or damage (including theft) to stored materials and equipment.

E. Do not open manufacturer's containers until time of installation, unless recommended by the manufacturer or otherwise specified in the Contract Documents.

F. Do not store materials or equipment in structures being constructed unless approved by Owner's Representative in writing.

G. 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.

1.3 PROTECTION

A. Equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipping, handling, and storage, in accordance with Section 01651, Transportation and Handling of Products.

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 Owner's Representative.

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.

1.4 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. Structural steel.
3. Piping, except polyvinyl chloride (PVC) or chlorinated PVC (CPVC) pipe.
4. Precast concrete materials.
5. Castings.
6. Handrails and railings.
7 Grating.
8. Checker plate.
9. Metal stairs.
10. Metal access hatches.
11. Fiberglass products.
12. Rigid electrical conduit.

1.5 COVERED STORAGE

A. The following materials and equipment may be stored outdoors on supports and completely covered with covering impervious to water:

1. Rough lumber.
2. PVC and CPVC pipe.
3. Filter media.
4. Masonry units.
5. Grout and mortar materials.

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

C. Store loose granular materials, with covering impervious to water, in well-drained area or on solid surfaces to prevent mixing with foreign matter.

1.6 FULLY PROTECTED STORAGE

A. Store all material and equipment not named in Articles 1.4 and 1.5 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.

1.7 HAZARDOUS PRODUCTS

A. Prevent contamination of personnel, storage area, and the Site. Comply with Laws and Regulations, and manufacturer's instructions.

1.8 MAINTENANCE OF STORAGE

A. On scheduled basis, periodically inspect stored materials and equipment to ensure that:

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

B. Mechanical and electrical equipment requiring long-term storage shall have complete manufacturer's instructions for servicing each item, with notice of enclosed instructions shown on exterior of container or package.

1. Comply with manufacturer's instructions on scheduled basis.
2. Space heaters that are part of electrical equipment shall be connected and operated continuously until equipment is placed in service and permanently connected.

1.9 MICROPROCESSORS, PANELS, AND INSTRUMENTATION STORAGE

A. Store panels, microprocessor-based equipment, electronics, and other devices subject to damage or decreased useful life because of temperatures below 40 degrees F or above 100 degrees F, relative humidity above 90 percent, or exposure to rain or exposure to blowing dust in climate-controlled storage space.

B. Requirements:

1. Storage shall be indoors and climate controlled.
2. Owner and Owner's Representative have the right to inspect materials and equipment during normal working hours.
3. Placed inside each panel or device a desiccant, volatile corrosion inhibitor blocks (VCI), moisture indicator, and maximum-minimum indicating thermometer.
4. Check panels and equipment at least once per month. Replace desiccant, VCI, and moisture indicator as often as required, or every six months, whichever occurs first.
5. Certified record of daily maximum and minimum temperature and humidity in storage facility shall be available for inspection by Owner and Owner's Representative. Certified record of monthly inspection, noting maximum and minimum temperature for month, condition of desiccant, VCI, and moisture indicator, shall be available for inspection by Owner and

Owner's Representative.

C. Costs for storing climate-sensitive materials and equipment shall be paid by Contractor. Replace panels and devices damaged during storage, or for which storage temperatures or humidity range has been exceeded, at no additional cost to Owner. Delays resulting from such replacement are causes within Contractor's control.

D. Do not ship panels and equipment to the Site until conditions at the Site are suitable for installation, including slabs and floors, walls, roofs, and environmental controls. Failure to have the Site ready for installation shall not relieve Contractor from complying with the Contract Documents.

1.10 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 01661

SECTION 01710 – RECORD DRAWINGS AND CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for record drawings contract closeout, including, but not limited to, the following:

1. Progress record drawings.
2. Project record drawings.
3. Substantial completion procedures.
4. Final completion procedures.
5. Warranties.
6. Final cleaning.

B. Related Sections:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.
2. Division 01 Section "Photographic Documentation" for submitting final completion construction photographic documentation.
3. Division 01 Section "Temporary Facilities and Controls" for construction waste disposal.
4. Division 01 Section “Cleaning” for progress cleaning of project site.

1.3 RECORD DRAWINGS

A. Record Prints: Maintain one (1) set of blue or black-line white prints of the contract drawings and shop drawings on-site in Contractor’s field trailer.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is installer, Subcontractor, or similar entity, to prepare the marked-up record prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Accurately record information in an understandable drawing technique.
c. Record data shall be updated on a monthly basis. Record and check the mark-up before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to drawings.
b. Locations and depths of underground utilities.
c. Revisions to routing of piping and conduits.
d. Actual equipment locations.
e. Changes made by Change Order.
f. Changes made following Owner’s Representative's written orders.
g. Details not on the original Contract Drawings.
h. Field records for variable and concealed conditions.
i. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
7. Maintain in the Contractor's field office in a clean, dry and legible condition complete sets of the following: Contract drawings, specifications, addenda, approved shop drawings, samples, change orders, modifications to contract, test records, field/change orders, and all other documents pertinent to the Contractor's work.
8. Provide files and racks for proper storage and easy access. File in accordance with filing format of Construction Specification Institute (CSI) unless otherwise approved by Owner’s Representative.

    a. Make documents available at all times for inspection by the Owner and/or Owner’s Representative.
    b. Record documents shall not be used for any other purpose and shall not be removed from the office without the Owner’s Representative approval.

9. Contractor shall submit on a monthly basis two (2) prints of all Record Plans developed or added to so as to reflect that month's construction activity and progress. This submittal by the Contractor shall accompany his monthly requisition for payment and the submittal's accuracy and adequacy must be approved as a prerequisite to processing said requisition. Substantial completion payment or final payment to the Contractor will not be processed until the Record Plans are approved by the Owner.

10. All Record Plans shall have the following data as applicable contained thereon:

    a. The notation "Record Plan" in prominent lettering.
    b. Description of material.
    c. Explanatory notes qualifying the information contained on the Record Plan.
    d. Contractor's name, address, and phone number.

11. Contractor shall be responsible for all costs associated with reproducing Record Plans if they are lost, damaged, or otherwise marred at any time prior to final acceptance of the entire set of Record Plans.

B. Record AutoCAD Drawings: Immediately before inspection for Substantial Completion, review marked-up Record Prints with Owner's Representative. Prepare a full set of corrected AutoCAD Drawings of the Contract Drawings, as follows:

1. Format: Same AutoCAD program, version, and operating system as the original Contract Drawings.
2. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Owner's Representative for resolution.
4. Owner's Representative will furnish Contractor one (1) set of AutoCAD Drawings of the Contract Drawings for use in recording information. Owner's Representative makes no representations as to the accuracy or completeness of AutoCAD Drawings as they relate to the Contract Drawings.

C. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing Record Drawings where Owner's Representative determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.

1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
2. Consult Owner's Representative for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

D. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in two (2)-inch high printed letters, in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets. Prior to final payment, provide up to five (5) paper copies of all record drawings once record drawings have been approved.
2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
3. Record AutoCAD Drawings: Organize AutoCAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each AutoCAD file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Owner's Representative.
    e. Name of Contractor.

5. The additional cost for preparation of record plans resulting from an approved Change Order is considered included in the cost of the Change Order.

E. Project record drawings must be signed and sealed by a licensed and registered New York State Land Surveyor or licensed and registered New York State Professional Engineer and must supply a suitable permanent record of the exact location and elevation of sewer lines, structures, stubs, house connections, wyes and appurtenances,

F. Project record drawings shall be prepared in digital (AutoCAD) format. Plans must be in the following coordinate systems: Horizontal Coordinate System - NAD 1983, State Plane, New York, Long Island Zone, US Survey Feet; Vertical Datum - North American Vertical Datum 1988. All sheets of the as-built drawings shall indicate the Horizontal Coordinate System and Vertical Datum System. Elevations of points of control in differing datum must note the original datum and its corresponding elevation and 1988 (NAVD) datum and elevation on plans.

G. Project record drawings must include, but not be limited to, site plan, operation and maintenance manuals, schematics and elementary drawings of electrical, mechanical and process systems, where applicable. Drawings must be signed and sealed by New York State Licensed and Registered Professional Engineer and prepared in digital (AutoCAD) format. Plans must be in the following coordinate systems: Horizontal Coordinate System - NAD 1983, State Plane, New York, Long Island Zone, US Survey Feet; Vertical Datum: North American Vertical Datum 1988. All sheets of the as-built drawings shall indicate the Horizontal Coordinate System and Vertical Datum System. Elevations of points of control in differing datum must note the original datum and its corresponding elevation and 1988 (NAVD) datum and elevation on plans.

1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Include the following information at the top of each page:

    a. Project name.
    b. Date.
    c. Name of Owner’s Representative.
    d. Name of Contractor.
    e. Page number.

2. Submit list of incomplete items in the following format:

    a. Up to three (3) paper copies of product schedule or list, unless otherwise indicated. Owner’s Representative will return one (1) copy.

1.5 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete with request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.

3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems.
9. Submit test/adjust/balance records.
10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. Within ten (10) days after receipt of such notice, Owner’s Representative shall either proceed with inspection or notify Contractor of unfulfilled requirements. Owner and Owner’s Representative shall generate punch list and any outstanding items preventing substantial completion for transmittal to Contractor.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

C. Follow-up Inspection:

1. At time of completion of guarantee period, Owner's Representative will make arrangements with Contractor for follow-up inspection and send written notice to said parties to inform them of date and time of inspection. After inspection, Owner's Representative will inform the Contractor of any corrections required.

D. Spare Parts and Special Tools: Contractor shall submit a list of spare parts and special tools for each piece of equipment installed for this Project to be turned over to the Owner to the Owner’s Representative. The list shall include all spare parts and special tools mentioned in Contract Documents and those included in the approved O&M Manuals. Each list shall include the name of the part or tool along with the corresponding manufacturer’s reference number shown in the parts list of the O&M Manuals. Each and every spare part, including those in any kit to be turned over, shall be marked with the corresponding spar part number shown on the list. Each kit shall also be marked with the corresponding kit number in addition to each individual part number in the kit. Any discrepancy found at the time of the turnover to the Owner shall be reason to reject the parts, either partial or in total by the Owner at the Owner’s discretion. After two (2) attempts by Contractor to turnover the spare parts without achieving compliance, the

Contractor will be back charged for the time and effort of the Owner's Representative to participate in the review of any and all lists for the parts and tools as well as the time and effort to participate in the turnovers. All spare parts and tools shall be delivered by Contractor to a location designated by Owner once the spare parts and special tools have been accepted, in writing, by Owner.

1.6 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:

1. Submit certified copy of Owner's Representative's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Owner's Representative. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
2. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
3. Train Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems in accordance with Section 01821, Instruction of Operations and Maintenance Personnel, where applicable.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Owner's Representative will either proceed with inspection or notify Contractor of unfulfilled requirements.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

C. When in the opinion of the Owner's Representative the Contractor has fully performed the Work under the Contract, the Owner's Representative will recommend to the Owner the acceptance of the Work so completed. Owner's Representative's recommendation will indicate the value of the work performed and materials and equipment furnished, and exact aggregate amount of the compensation to which the Contractor will become entitled under the terms of the Contract.

1.7 WARRANTIES

A. Warranties shall be provided for all equipment specified in Divisions 02 to 15.

Contractor shall provide a Warranty Certificate from the manufacturer typed on company letterhead and signed by an authorized officer of the manufacturer. The certificate shall be witnessed by a notary public in the state in which the company headquarters is located. The Warranty Certificate shall be submitted, verbatim and without exception, as follows:

"(Name of manufacturer) guarantees all components of the system to be free from defects in design, materials and workmanship for a period of _____ (___) years commencing on the date the system was permanently placed on-line, and the mechanical equipment functions without flaw.

During the guarantee period, if any part or equipment component is defective or fails to perform when operating at design conditions and if the equipment has been installed and is being

operated and maintained in accordance with the written instructions we provided, then we shall repair or exchange such defective part (s).

However, if the (Name of Manufacturer) fails to repair or exchange such defective part(s) within 30 calendar days ("grace period") of receiving either notification of warranty repair/replacement by the Owner or delivery of the defective part to Manufacturer's designated service center, if required, then the guarantee period shall be extended by a period of time equal to the total period of time needed to satisfy the warranty repair or replacement delivered to the site, including the 30 day grace period. The extended guarantee period shall pertain to all of the Manufacturer's equipment placed "out of service" due to the defective part/component. This provision will hold true regardless of the number of times covered equipment requires warranty repair during the warranty period, original or extended.
The replacement or repair of parts normally consumed in service shall include lubrication. Only lubrication shall be considered as part of routine maintenance and up keep and shall not be considered eligible for exchange free of charge under this Warranty.

Agreed upon this _____ day
(date)
by _____ of
(name of authorized agent)
_____, who,
(name of manufacturer)
by signing this document, affirms that he/she is legally authorized to submit this warranty on behalf of the Manufacturer.

_____ _____
AUTHORIZED SIGNATURE DATE

_____
NOTARY"

B. Submittal Time: Submit written warranties on request of Owner's Representative for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated. Original warranty documentation shall be submitted with copies in each O&M manual. Original warranty submittals shall have the beginning and end date of each warranty clearly indicated on the warranty.

C. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor. Occupancy or use of any portion of the Work by Owner before final completion and written acceptance shall not be construed as evidence of final acceptance of the Work.

D. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide table of contents at beginning of document.

E. Provide additional copies of each warranty to include in operation and maintenance manuals.

F. Related Damages and Losses: When correcting warranted work that has failed, removal and replace other work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted work.

G. Reinstatement of Warranty: When work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation as determined by Owner's Representative.

H. Replacement Cost: Upon determination that work covered by a warranty has failed, replace or rebuild the work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective work regardless of whether the Owner has benefited from use of the work through a portion of its anticipated useful service life.

I. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

J. Rejection of Warranties: Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the contract Documents.

K. Owner reserves the right to refuse to accept work for the Project where a special warranty, certification, or similar commitment is required on such work or part of the work, until evidence is presented that entities required to countersign such commitments have done so.

L. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the work that incorporates the products, nor does it relieve suppliers, manufacturers and subcontractors required to countersign special warranties with the Contractor.

M. Unless more stringent requirements are specified in the various specification Sections of Divisions 02 to 15 and the General and Supplementary Conditions, all warranties shall be for a minimum of one (1) year.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

B. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations. Contractor shall maintain cleaning until Project is accepted by the Owner.

C. Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls."

END OF SECTION 01710

NO TEXT THIS PAGE

SECTION 01723 – CUTTING AND PATCHING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Contractor shall perform cutting and coring, and rough and finish patching of holes and openings in existing or new construction, as required.

B. Cutting, coring, and rough patching shall be performed by the subcontractor requiring the opening. Finish patching shall be responsibility of the Contractor and shall be performed by trade associated with application of the particular finish.

D. Provide cutting, coring, fitting and patching, including attendant excavation and backfill, required to complete the Work, and to:

1. remove and replace defective Work;
2. remove samples of installed Work as specified or required for testing;
3. remove construction required to provide for specified alterations or addition to existing or new work;
4. uncover Work for Owner's Representative's observation of covered Work or observation by authorities having jurisdiction;
5. connect to completed Work not performed in proper sequence;
6. remove or relocate existing utilities and pipes that obstruct the Work in locations where connections must be made;
7. make connections or alterations to existing or new facilities.

E. Structural Elements: Do not cut or patch structural elements in manner that would change structural element's load-carrying capacity as load deflection ratio.

F. Operating Elements: Do not cut or patch operating elements in manner that would reduce their capacity to perform as intended. Do not cut or patch operating elements or related components in manner that would increase maintenance requirements or decrease operational life or safety.

1.2 SUBMITTALS

A. Action Submittals: Submit the following:

1. Cutting and Patching Request:

a. Submit written request to Owner's Representative well in advance of executing cutting or alteration affecting:

1) Design function or intent of the Project.
2) Work of Owner or other contractors.
3) Structural value or integrity of an element of the Project.
4) Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.

5) Efficiency, operational life, maintenance, or safety of operational elements.
6) Visual qualities of sight-exposed elements.

b. Request shall include:

1) Identification of Project and contract name and number.
2) Description of affected Work of Contractor and work of others.
3) Necessity for cutting.
4) Effect on work of Owner or other contractors, or on structural or weatherproof integrity of Project.
5) Description of proposed Work, describing: scope of cutting and patching; trades who will be executing the Work; products proposed to be used; extent of refinishing; schedule of operations; alternatives to cutting and patching, if any.
7) Designation of party responsible for cost of cutting and patching, when applicable.
8) Written permission of other contractors whose work will be affected.

2. Should conditions of Work, or schedule, indicate a change of materials or methods, submit written recommendation to Owner's Representative including:

a. Conditions indicating change.
b. Recommendations for alternative materials or methods.
c. Submittals as required for substitutions.

B. Informational Submittals: Submit the following:

1. Submit written notice designating time Work will be uncovered, to provide for observation. Do not begin cutting or patching operations until accepted by Owner's Representative.
2. X-ray Investigations:

a. Proposed method of investigation.
b. Report of X-ray evaluation of floors and walls to be cut or core-drilled.

C. Conform to submittal requirements in Specifications for application and installation of materials used for patching.

1.4 WARRANTY

A. Replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials in manner that does not void required or existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Materials:

1. Use materials in conformance with the Contract Documents.
2. If not shown or indicated in the Contract Documents, use materials and products that are identical to existing materials and products affected by cutting and patching Work.

3. For exposed surfaces, use materials that visually match existing adjacent surfaces to fullest extent possible. If identical materials are unavailable or cannot be used, use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.1 GENERAL

A. Perform cutting and coring in such manner that limits extent of patching.

B. Core drill holes to be cut through concrete and masonry walls, slabs, or arches, unless otherwise accepted by Owner's Representative in writing.

C. Provide seventy-two (72) hours advance notice of cutting or coring through existing concrete or masonry. Owner shall be notified in writing and requested to inspect the location with Contractor to determine if there are any known or identifiable embedded conduits or other items that could adversely affect Owner's operation if damaged by cutting/coring activities. If such items are identified and cannot be de-energized and/or abandoned by Owner, then Contractor shall make adjustment to a nearby location at no additional cost to Owner.

3.2 INSPECTION

A. Examine surfaces to be cut or patched and conditions under which cutting or patching are to be performed before starting cutting or patching Work.

B. Report unsatisfactory or questionable conditions to Owner's Representative in writing. Do not proceed with the Work until unsatisfactory conditions are corrected.

C. In advance of Work that includes cutting into existing floor, slabs, and walls, use X-ray or other non-destructive methods accepted by Owner's Representative to determine location of reinforcing steel, electrical conduits, and other items embedded in floors or walls. Provide to Owner's Representative written report of findings of evaluation. Perform X-ray investigation sufficiently in advance of cutting Work to allow time to identify and implement alternatives if changes to the Work are necessary because of conduit or other features in floor or wall.

3.3 PREPARATION

A. Provide temporary support as required to maintain structural integrity of Project, to protect adjacent Work from damage during cutting, and to support the Work to be cut.

B. Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that will be exposed during cutting and patching operations.

1. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
2. Do not cut existing pipe, conduit, ductwork, or other utilities serving facilities scheduled to be removed or relocated until provisions have been made to bypass them.

3.4 CORING

A. Perform coring with non-impact rotary tool using diamond core drills. Size holes to accommodate pipe, conduit, sleeves, equipment or mechanical seals, as required.

B. Protect existing equipment, utilities and adjacent areas from water and other damage covered by drilling operations.

C. Vacuum or otherwise remove slurry or tailings from the Work area following drilling.

D. Do not core-drill through electrical conduit or other utility lines embedded in walls or floors without approval of Owner's Representative. To extent possible, avoid cutting reinforcing steel in floors and walls. After core-drilling, coat exposed concrete and steel with Sikagard 62 or approved equal, before installing the utility or equipment through the penetration.

3.5 CUTTING

A. Cut existing construction using methods least likely to damage elements retained or adjoining construction, and that will provide proper surfaces to receive installation or repair.

1. In general, use hand or small power tools designed for sawing or grinding, not hammering and chopping.
2. Cut through concrete and masonry using concrete wall saw with diamond saw blades.

a. Provide for control, on both sides of walls, of slurry generated by sawing.

B. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Provide temporary covering over openings where not in use.

C. To avoid marring existing finished surfaces, cut or drill from exposed or finished side into concealed side.

D. Provide adequate bracing of area to be cut prior to start of cutting.

E. Provide equipment of adequate size to remove cut panel.

3.6 PATCHING

A. Patch construction by filling, repairing, refinishing, closing-up and similar operations following performance of other Work. Patch with durable seams that are as inconspicuous as possible. Provide materials and comply with installation requirements specified, in the Specifications.

B. Where feasible, test patched areas to demonstrate integrity of installation.

C. Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

D. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in manner that eliminates evidence of patching and refinishing.

1. For continuous surfaces, refinish to nearest intersection.
2. For an assembly, refinish entire unit.

E. Patch, repair or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.7 CLEANING

A. Clean areas and spaces where cutting, coring and patching are performed. Clean piping, conduit, or similar constructions before applying paint or other finishing materials. Restore damaged coverings of pipe and other utilities to original condition.

END OF SECTION 01723

NO TEXT THIS PAGE

SECTION 01740 - CLEANING

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

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

1.2 REFERENCES

A. Standards referenced in this Section are:

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

1.3 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 (latest edition) for removal of combustible waste materials and debris.
2. Do not hold non-combustible materials at the Site more than three (3) 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. Owner's Right to Clean: Should the Contractor fail, refuse or neglect to remove rubbish and waste materials and temporary work or clean the contract area as required herein, then the Owner may without obligation to do so, remove and dispose of the said rubbish, waste materials and temporary work, clean the contract area and deduct the cost thereof from any money due, or to become due, the Contractor under this Contract.

C. Site:

1. Keep outdoor, dust-generating areas wetted down or otherwise control dust emissions.
2. At least weekly, brush-sweep roadways and paved areas at the Site that are used by construction vehicles or otherwise affected by the Work.

D. Work Areas:

1. Clean areas where Work is in progress to level of cleanliness necessary for proper execution of the Work.
2. Remove liquid spills promptly and immediately report spills to Owner, Owner’s Representative, and authorities having jurisdiction.
3. Where dust would impair proper execution of the Work, broom-clean or vacuum entire area of Work, as appropriate.

4. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

E. Installed Work: Keep installed Work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning agents and methods specifically recommended. If manufacturer does not recommend specific cleaning agents or methods, use cleaning agents and methods that are not hazardous to health or property and that will not damage exposed surfaces.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration until Substantial Completion.

G. Cutting and Patching:

1. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.
2. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

H. 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 federal, state, and local Laws and Regulations regarding disposal of waste.

I. 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.

J. Clean completed construction as frequently as necessary throughout the construction period.

K. All Field Offices shall be cleaned at a minimum of bi-weekly. Cleaning shall include removal of trash and garbage, vacuuming of carpeted surfaces and mopping of other floor surfaces, dusting and washing of sanitary facilities as well as other surfaces and office items, once monthly cleaning of interior and exterior windows and ventilation and heating equipment (including ductwork interiors), as directed. All costs shall be included in Contractor's Bid.

1.4 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, and gutters open and clean.

6. Repair pavement, roads, sod, and all other areas affected by construction operations and restore them to specified condition; if condition is not specified, restore to original condition.
7. Clean exposed exterior and interior hard-surfaced finishes to dirt-free condition.
9. Remove debris from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, and similar spaces.
10. In unoccupied spaces, sweep concrete floors broom-clean.
11. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
12. Remove non-permanent tags and labels.
13. Touch up and otherwise repair and restore chipped, scratched, dented or otherwise marred surfaces to specified finish and match adjacent surfaces.
    a. Do not paint over "UL" or similar labels, including mechanical and electrical nameplates.
14. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint, and mortar droppings, and other foreign substances.
15. Clean plumbing fixtures to sanitary condition, free of stains, including stains resulting from water exposure.
16. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
17. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace temporary lamps provided in permanent fixtures. Replace existing light fixture components that are burned out or noticeably dimmed from use during the Work. Replace defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
18. Leave the Site clean, and in neat, orderly condition, satisfactory to Owner and Owner's Representative.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01740

NO TEXT THIS PAGE

SECTION 02240 – SEDIMENT AND EROSION CONTROL PLAN

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Contractor shall assume responsibility for the control of soil erosion and water pollution from construction activities in accordance with federal, state and local regulations and in accordance with the Plans and Specifications and as directed by the Owner's Representative.

B. Recommended sediment and erosion control measures are shown on the Contract Documents. Contractor is responsible to comply with all applicable regulations.

1.2 RELATED WORK

A. General Conditions.

1.3 SUBMITTALS

A. Contractor shall submit a sediment and erosion control plan in accordance with the New York State Standards and Specifications for Urban Erosion and Sediment Control Manual, latest edition, for review by the Owner's Representative prior to commencing construction activities. A separate coordinated construction operation and sequence plan and dewatering and bypass plan shall be included as part of the sediment and erosion control plan submittal. The construction operation and sequence plan shall identify locations and timing for dewatering and bypass and installation of sediment and erosion control measures.

PART 2 - PRODUCTS – (NOT USED)

PART 3 - EXECUTION

3.1 INSTALLATION

A. Contractor shall install silt fences, hay bales, mulch or other approved methods of sediment and erosion control during construction activities in accordance with installation procedures of the New York State Standards and Specifications for Urban Erosion and Sediment Control Manual, latest edition and as shown on the Drawings or as directed by the Owner's Representative. Location of sediment and erosion control measures shall be coordinated with the approved construction operation and sequence plan and shall protect the water quality of the surface waters including streams, pond, and their receiving waters at all times.

B. Contractor shall take necessary measures to maintain dust. Construction vehicles shall be cleaned, as necessary, prior to using public streets.

C. Any changes to the sediment and erosion control plan shall require the submission of a revised sediment and erosion control plan to the Owner's Representative. The revised plans shall be in accordance with the New York State Standards and Specifications for Urban Erosion and Sediment Control Manual, latest edition.

D. Contractor shall be responsible obtaining all required permits. Discharge of water during bypass

and dewatering operations shall meet any water quality requirements of the New York State Department of Environmental Conservation.

E. All excess excavated material, except for topsoil, shall be removed from the site by the Contractor in accordance with the Contract Documents. Topsoil in excess of quantity required for the finished Project, shall remain property of Owner.

F. All utilities and catch basin inlets must be protected prior to start of construction. Protection of all utilities and catch basin inlets must be maintained throughout the life of the Project.

G. All sediment and erosion control practices shall be left in place and maintained; including silt and sediment removal, until construction is completed, area is stabilized and as directed by the Owner's Representative.

H. All bypass and dewatering operations must discharge directly into a sediment filter area. Sediment filters shall be installed in accordance with the Contract Documents and the details of design and construction shall be prepared and submitted by the Contractor to the Owner's Representative for review and approval.

END OF SECTION 02240

SECTION 02250 - EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes temporary excavation support and protection systems.

B. Related Sections:

1. Section 02315, Excavation and Backfill.

C. Shoring shall be used as required for the safety of employees exposed to the hazard of falling or sliding material from any trench excavation or where protection of adjacent structures and utilities is required in accordance with the Specifications of this Section.

D. All excavations must be shored with the minimal protection of sheeting as listed in the OSHA regulations 29 CFR Part 1926 (Safety and Health Regulations for Construction), Subpart P, - "Excavations, Trenching, and Shoring".

E. Shoring of excavations shall be provided by the use of sheeting boxes, wood sheeting and bracing, steel sheeting and bracing, or other methods that are capable of providing adequate safety and support for excavations as specified herein.

F. Contractor shall be responsible at all times for carrying out all excavation operations in a safe and prudent manner so that the workmen and the public will be protected from any hazard.

G. The type of sheeting used is at the option of the Contractor except where otherwise shown, noted or specified in the Contract Documents.

H. Contractor shall install stabilization fabric in those areas where bog and/or meadow mat is encountered or where directed by the Owner’s Representative.

1.3 PERFORMANCE REQUIREMENTS

A. Design, furnish, install, monitor, and maintain excavation support and protection system capable of supporting excavation sidewalls and of resisting soil and hydrostatic pressure and superimposed and construction loads.

1. Design excavation support and protection system, including comprehensive engineering analysis by a New York State licensed and registered professional engineer, using performance requirements and design criteria indicated.
2. Prevent surface water from entering excavations by grading, dikes, or other means.
3. Install excavation support and protection systems without damaging existing buildings,

structures, and site improvements adjacent to excavation.
4. Monitor vibrations, settlements, and movements.
5. Comply with all OSHA, confined space and all related regulations regarding excavation protection.

1.4 SUBMITTALS

A. Delegated-Design Submittal: For excavation support and protection system indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the licensed and registered New York State professional engineer responsible for their preparation.

B. Other Informational Submittals:

1. Photographs or Videotape: Show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by the absence of, the installation of, or the performance of excavation support and protection systems. Submit before Work begins.

2. Record Drawings: Identifying and locating capped utilities and other subsurface structural, electrical, or mechanical conditions.

1.5 QUALITY ASSURANCE

A. Pre-Installation Conference: Conduct conference at Project site.

1. Review methods and procedures related to excavation support and protection system including, but not limited to, the following:

a. Geotechnical report.
b. Existing utilities and subsurface conditions.
c. Proposed excavations.
d. Proposed equipment.
e. Monitoring of excavation support and protection system.
f. Working area location and stability.
g. Coordination with waterproofing.
h. Abandonment or removal of excavation support and protection system.
i. Dewatering.

B. Adequate sheeting and bracing shall be placed to protect personnel working in the excavation in accordance with applicable requirements. Contractor will, in all instances, be held responsible for the adequacy of the sheeting.

1.6 PROJECT CONDITIONS

A. Interruption of Existing Utilities: Do not interrupt any utility serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility according to requirements indicated:

1. Notify Owner, Owner’s Representative and Owning Utility no fewer than three (3) days in advance of proposed interruption of utility.
2. Do not proceed with interruption of utility without Owner, Owner’s Representative and

Owning Utility written permission.

B. Project-Site Information:

1. Limited site soil boring data, samples and soil reports are available for inspection and are for informational purposes only. Any opinions expressed in these reports are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner shall not be responsible for interpretations or conclusions drawn from this data. Bidders must make their own interpretation of subsurface conditions that may affect methods or the cost of construction of the Work.
2. Contractor shall satisfy itself by actual examination of the site of the Work, as no claim shall be made by the Contractor for additional compensation by reasons of the fact that existing conditions are other than as shown of the Contract Documents.
3. Contractor, at his own expense, shall make test borings or dig test holes to locate and determine the depth to groundwater, including a determination of any seasonal variations concerning same. Any/all expenses for making test borings and/or digging test holes and other investigative work shall be borne by the Contractor.

C. Survey Work: Engage a New York State licensed and registered land surveyor or New York State licensed and registered professional engineer to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

1. During installation of excavation support and protection systems, regularly resurvey benchmarks, maintaining an accurate log of surveyed elevations and positions for comparison with original elevations and positions. Promptly notify Owner's Representative if changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that are either new or in serviceable condition.

B. Structural Steel: ASTM A 36/A 36M, ASTM A 690/A 690M, or ASTM A 992/A 992M.

C. Steel Sheet Piling: ASTM A 328/A 328M, ASTM A 572/A 572M, or ASTM A 690/A 690M; with continuous interlocks.

1. Corners: Site-fabricated mechanical interlock or roll-formed corner shape with continuous interlock.

D. Wood Lagging: Lumber, mixed hardwood, nominal rough thickness of size and strength required for application.

E. Cast-in-Place Concrete: ACI 301, of compressive strength required for application.

F. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

G. Tiebacks: Steel bars, ASTM A 722/A 722M.

H. Tiebacks: Steel strand, ASTM A 416/A 416M.

I. Timber Sheeting: All timber materials used for wood sheeting shall meet the requirements for Douglas Fir Dense Construction Grade or Southern Pine No. 2, Dense S3.

1. Used material shall be in good condition, not damaged or excessively pitted.

J. Filter Fabric

1. The fabric used shall conform to the specifications for Mirafi 140 Fabric, as manufactured by Celanese Fiber Marketing Company, or approved equal. The fabric shall be non-woven nylon/polypropylene fabric and shall meet the following specifications:

Properties	**Specification**
Minimum Weight	140 g/m^2
Average Thickness	30 mils
Grab Strength Wet Retention @ 70° Fahrenheit	120 lbs 100%
Grab Elongation Wet Retention @ 70° Fahrenheit	130% 40%
Trapezoid Tear Strength	65 lbs
Air Permeability	250 cfm/ft^2

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation support and protection system operations.

1. Shore, support, and protect utilities encountered.

B. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

C. Locate excavation support and protection systems clear of permanent construction so that forming and finishing of concrete surfaces are not impeded.

D. Monitor excavation support and protection systems daily during excavation progress and for as long as excavation remains open. Promptly correct bulges, breakage, or other evidence of movement to ensure that excavation support and protection systems remain stable.

E. Promptly repair damages to adjacent facilities caused by installing excavation support and protection systems.

F. Pilot Cut

1. Contractor may, if soil conditions permit, excavate a pilot cut prior to the installation of sheeting. This pilot cut shall not exceed a five (5) foot depth, and shall be performed in accordance with Section 02315 “Excavation and Backfill”. The depth of pilot cuts for sheeting installation adjacent to rigid pavements shall be governed by a forty-five (45) degree angle of repose. Owner’s Representative may direct that there be no pilot cuts deeper than the pavement subgrade.
2. Upon installation of tight sheeting in a pilot cut, Contractor shall immediately and without delay backfill the void behind the sheeting and thoroughly compact the material in accordance with all requirements of Section 02315 “Excavation and Backfill”. No more than twenty-five (25) linear feet of sheeting may be installed in the pilot cut ahead of this backfilling and compaction procedure.

G. Areas with Limited Work Space

1. In areas where the Contractor's working space will be limited by the presence of trees, overhead and underground utilities, structures, etc., Contractor shall review with the Owner’s Representative a plan of the proposed method of construction. The plan shall include details of the method of shoring and type and size of equipment the Contractor proposes to use.
2. The plan will be reviewed by the Owner’s Representative prior to the beginning of construction in these areas. If the Contractor's method of construction will, in the opinion of the Owner’s Representative, present a threat of damage to the adjacent trees, utilities, structures, etc., the Contractor shall, at the direction of the Owner’s Representative, make adjustments in his proposed method of construction.
3. Such adjustments may include, but not be limited to, the use of an alternate sheeting method, the use of double stage sheeting, the use of smaller sheeting boxes, and/or the use of smaller equipment. Contractor will not receive additional compensation for any adjustments in his proposed method of construction ordered by the Owner’s Representative in accordance with these Specifications.

3.2 SOLDIER PILES AND LAGGING

A. Install steel soldier piles before starting excavation. Extend soldier piles below excavation grade level to depths adequate to prevent lateral movement. Space soldier piles at regular intervals not to exceed allowable flexural strength of wood lagging. Accurately align exposed faces of flanges to vary not more than 2 inches from a horizontal line and not more than 1:120 out of vertical alignment.

B. Install wood lagging within flanges of soldier piles as excavation proceeds. Trim excavation as required to install lagging. Fill voids behind lagging with soil, and compact.

3.3 SHEET PILING

A. Before starting excavation, install one-piece sheet piling lengths and tightly interlock to form a continuous barrier. Accurately place the piling, using templates and guide frames unless otherwise recommended in writing by the sheet piling manufacturer. Limit vertical offset of adjacent sheet piling to 60 inches. Accurately align exposed faces of sheet piling to vary not more than 2 inches from a horizontal line and not more than 1:120 out of vertical alignment. Cut tops of sheet piling to uniform elevation at top of excavation.

3.4 TIEBACKS

A. Tiebacks: Drill, install, grout, and tension tiebacks. Test load-carrying capacity of each tieback and replace and retest deficient tiebacks.

1. Test loading shall be observed by a qualified licensed and registered professional engineer responsible for design of excavation support and protection system.
2. Maintain tiebacks in place until permanent construction is able to withstand lateral soil and hydrostatic pressures.

3.5 BRACING

A. Bracing: Locate bracing to clear columns, floor framing construction, and other permanent work. If necessary to move brace, install new bracing before removing original brace.

1. Do not place bracing where it will be cast into or included in permanent concrete work unless otherwise approved by Owner's Representative.
2. Install internal bracing, if required, to prevent spreading or distortion of braced frames.
3. Maintain bracing until structural elements are supported by other bracing or until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.6 REMOVAL AND REPAIRS

A. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and bear soil and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils or damaging structures, pavements, facilities, and utilities.

1. Remove excavation support and protection systems to a minimum depth of 48 inches below overlaying construction and abandon remainder.
2. Fill voids immediately with approved backfill compacted to density specified in Division 02, Section "Excavation and Backfill".
3. Repair or replace, as approved by Owner's Representative, adjacent work damaged or displaced by removing excavation support and protection systems.

3.7 TIGHT SHEETING

A. Tight sheeting will be required where it is necessary to protect structures such as but not limited to, buildings, rigid pavements, drains, sewers, water mains, etc. and where shown in the Contract Documents or wherever directed by the Owner's Representative. Where tight sheeting is required, it shall be placed in such a manner which will adequately prevent the undermining of structures, rigid pavement, drains, and other utilities.

3.8 INSTALLATION AND REMOVAL OF SHEETING

A. In general, when sheeting is used for shoring of excavations it shall be driven in advance of the excavation so as to maintain the lower end of the sheeting at least twelve (12) inches below the excavation. Sheeting shall extend at least six (6) inches below the foundation grade of rigid pipes, structures, cradles or encasements.

B. When sheeting is used to support trenches within which flexible conduits (i.e., PVC sewer piping), the sheeting shall either:

1. Not be driven below an elevation six (6) inches above the crown of the pipe, or if driven below,
2. Be cut off at an elevation a minimum of six (6) inches above the crown of the pipe and be left-in-place. No payment will be made for the sheeting left-in-place.

C. When sheeting boxes are used to support trenches within which sewer pipe or force mains are to be installed, the bottom of the sheeting box shall not be placed below an elevation six (6) inches above the crown of the pipe.

D. Unless otherwise shown in the Contract Documents or as directed by the Owner's Representative, all sheeting shall extend at least four (4) foot above the ground surface. Public shall be protected from all sheeting by adequate fencing and signage.

E. All sheeting shall be framed and fitted and firmly fastened with adequate nails, spikes, bolts, chains, or wires of such sizes and lengths and at such places and in such manner as required for strength and stability. Workmanship shall be in accordance with recognized standard practices and be performed by skilled mechanics.

F. When sheeting is withdrawn, all cavities in or adjoining the trench shall be solidly filled and compacted.

G. The type of sheeting used is at the option of the Contractor except where otherwise noted in the Contract Documents and/or as directed by the Owner's Representative.

H. Contractor shall be prohibited from using vibratory hammer or other impact methods within 50 feet of existing structures.

3.9 WOOD OR STEEL SHEETING ORDERED LEFT-IN-PLACE

A. Sheeting shall be left in place where shown in the Contract Documents and/or as directed by the Owner's Representative. In other locations where soil or other conditions make it necessary that sheeting be left in place, the Owner's Representative will so order the Contractor in writing.

B. Before the backfill is completed, the sheeting to be left-in-place shall be cut off 18 to 48 inches below the final ground surface, unless otherwise directed by the Owner's Representative. All material that is cut off and all struts and wales shall be removed from the trench and legally disposed of.

C. When sheeting is left in place, all cavities behind the sheeting shall be solidly filled and compacted in accordance with all requirements of Division 02, Section "Excavation and Backfill".

END OF SECTION 02250

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SECTION 02315 – EXCAVATION AND BACKFILL

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment and incidentals required to perform all excavating, backfilling, filling and grading, and disposing of earth materials as shown, specified, and required for construction of structures, manholes, vaults, conduits, pipelines, roads, and other facilities required to complete the Work in every respect.
2. All necessary preparation of subgrade for roads, drives, structures, slabs and pavements is included.
3. All temporary means needed to prevent discharge of sediment to water courses from dewatering systems or erosion is included.
4. No classification of excavated materials will be made. Excavation includes all materials regardless of type, character, composition, moisture, or condition thereof. Excavation shall also include stockpiling of materials, which in the opinion of the Owner's Representative, are suitable for backfill and embankment material. The cost of removal, transportation, and disposal of spoil material shall be included in the Contractor Bid.
6. Contractor shall engage the services of a qualified soils laboratory to conduct continuous soils testing during grading operations. The soils laboratory and its work on this Project shall be approved by the Owner's Representative.
7. Contractor shall immediately notify the construction of structures, manholes, vaults, conduits, pipelines, roads, and other facilities required to complete the Work and cease related excavation activities upon the discovery of abandoned graves, wells, fuel tanks and hazardous or non-hazardous waste disposal sites. Excavation, backfill, and compaction for construction of structures, manholes, vaults, conduits, pipelines, roads, and other facilities required to complete the Work shall be to the horizontal alignment and vertical elevations shown in the Contract Documents, as detailed in these Specifications and as required by the construction of structures, manholes, vaults, conduits, pipelines, roads, and other facilities required to complete the Work to meet the requirements of the Work.

B. Related Sections:

1. Section 01400, Quality Control
2. Section 02240, Sediment and Erosion Control Plan
3. Section 02250, Excavation Support and Protection
4. Section 02320, Dewatering
5. Section 02580, Sanitary Manholes, Frames and Covers
6. Section 02920, Site Restoration
7. Section 15051, Buried Pipe Installation

1.2 REFERENCES

A. Standards referenced in this Section are listed below:

1. American Institute of Steel Construction, (AISC):

    a. AISC Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings.

2. American Society for Testing and Materials, (ASTM):

    a. ASTM A 36, Specification for Structural Steel.
    b. ASTM A 328, Specification for Steel Sheet Piling.
    c. ASTM D 422, Method for Particle-Size Analysis of Soils.
    d. ASTM D 427, Test Methods for Shrinkage Factors of Soils by the Mercury Method.
    e. ASTM D 1556, Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
    f. ASTM D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft 16/cu ft) (2,700 KN-m/cum).
    g. ASTM D 2166, Test Method for Unconfined Compressive Strength Of Cohesive Soils.
    h. ASTM D 2922, Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
    i. ASTM D 4318, Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
    j. ASTM D6938, Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

3. Occupational Safety and Health Administration, (OSHA):

    a. OSHA Standard, Title 29, Code of Federal Regulations, Part 1926, Section .650 (Subpart P - Excavations).

4. Uniform Building Code, (UBC).

1.3 QUALITY ASSURANCE

A. Testing Services:

1. General: Testing of materials, testing for moisture content during placement and compaction of fill materials, and of compaction requirements for compliance with technical requirements of these Specifications shall be performed by a testing laboratory as specified in Section 01400, Quality Control. Testing shall conform to: ASTM D422, ASTM D427, ASTM D1556, ASTM D1557, ASTM D2166, ASTM D6938, and ASTM D4318.

2. Testing Agency Scope:

    a. Test Contractor's proposed materials in the laboratory and field for compliance with these Specifications.
    b. Perform field moisture content and density tests to assure that the specified compaction of backfill materials has been obtained.
    c. Report all test results to the Owner's Representative and Contractor.

3. Authority and Duties of Testing Agency: Technicians representing the testing laboratory shall inspect the materials in the field and perform tests and shall report their findings to the Owner's Representative and Contractor. When the materials furnished or the Work performed fails to

fulfill Specification requirements, the technician will direct the attention of the Owner's Representative and Contractor to such failure.

a. The technician shall not act as foreman or perform other duties for Contractor. Work will be checked as it progresses, but failure to detect any defective Work or materials shall not in any way prevent later rejection when such defect is discovered, nor shall it obligate the Owner's Representative for final acceptance. Technicians are not authorized to revoke, alter, relax, enlarge, or release any requirements of the Contract Documents, nor to approve or accept any portion of the Work.

4. Responsibilities and Duties of Contractor Relative to Testing:

a. The use of testing services shall in no way relieve Contractor of the responsibility to furnish materials and construction in full compliance with the Contract Documents.
b. To facilitate testing services, Contractor shall:

1) Secure and deliver to the Owner's Representative or testing agency, without cost, preliminary representative samples of the materials he proposes to use and which are required to be tested.
2) Furnish such labor as is necessary to obtain and handle samples at the Site or at other sources of material.
3) Advise the testing agency at least two days in advance of any backfill operations to allow for completion of quality tests and for the assignment of personnel.

c. Contractor's Testing Service shall inspect and approve subgrades and fill layers before further construction Work is performed thereon.
d. It shall be the responsibility of Contractor to accomplish the specified compaction for backfill, fill, and other earthwork. It shall be the responsibility of Contractor to control his operations by confirmation tests to verify and confirm that Contractor has complied, and is complying at all times, with the requirements of these Specifications concerning compaction, control, and testing.
e. The frequency of Contractor's confirmation tests shall be not less than as follows; each test location for trenches shall include tests for each layer, type, or class of backfill from bedding to finish grade.

1) Trenches for structures, and underground ductbanks:

a) In Open Fields: Two locations every 1,000 linear feet.
b) Along Dirt or Gravel Roads or Off Traveled Right-of-Way: Two locations every 500 linear feet.
c) Crossing Paved Roads: Two locations along each crossing.
d) Under Pavement Cuts or Within Two Feet of Pavement Edges: One location every 400 linear feet.

2) For Structural Backfill: On 30-foot intervals on all sides of the structure for every compacted lift, but no less than one per lift on each side of the structure for structures less than 60 feet long on a side.
3) In Embankment or Fill: One per 1,000 square feet on every compacted lift.
4) Base Material: One per 1,000 square feet on every compacted lift.

f. Copies of the test reports shall be submitted promptly to the Owner's Representative. Contractor's tests shall be performed by a soils testing laboratory acceptable to the Owner's Representative.

g. Contractor shall demonstrate the adequacy of compaction equipment and procedures before exceeding any of the following amounts of earthwork quantities:

1) 100 linear feet of trench backfill.
2) 10 cubic yards of structural backfill.
3) 100 cubic yards of embankment work.
4) 50 cubic yards of base material.

h. Until the specified degree of compaction on the previously specified amounts of earthwork is achieved, no additional earthwork of the same kind shall be performed.

i. Periodic compliance tests may be made by the Owner's Representative to verify that compaction is conforming to the requirements previously specified, at no cost to Owner. Contractor shall remove the overburden above the level at which the Owner's Representative wishes to test and shall backfill and recompact the excavation after the test is complete.

j. If compaction fails to conform to the specified requirements, Contractor shall remove and replace the backfill at proper density or shall bring the density up to specified level by other means acceptable to the Owner's Representative. Subsequent tests required to confirm and verify that the reconstructed backfill has been brought up to specified density shall be paid by Contractor. Contractor's confirmation tests shall be performed in a manner acceptable to the Owner's Representative. Frequency of confirmation tests for remedial Work shall be double that amount specified for initial confirmation tests.

B. Permits and Regulations:

1. Obtain all necessary permits for work in roads, rights-of-way, railroads, and other property where permits are required. Also, obtain permits as required by local, state and federal agencies for discharging water from excavations.
2. Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.
3. Comply with OSHA Standard, Title 29, Code of Federal Regulations, Part 1926, Subpart P – Excavations

1.4 SUBMITTALS

A. Excavation Plan: Prior to start of excavation operations, submit written plan to demonstrate compliance with OSHA Standard 29 CFR Part 1926.650. As a minimum, excavation plan shall include:

1. Name of competent person.
2. Excavation method(s) or protective system(s) to be used.
3. Copies of "manufacturer's data" or other tabulated data if protective system(s) are designed on the basis of such data.

B. Contractor shall prepare and submit shop drawings for the following items, as required and/or as directed by Owner's Representative:

1. Sheeting and bracing, or other protective system(s).
2. Dewatering system(s).
3. Cofferdams.
4. Underpinning.
5. Sediment and Erosion Control.

Shop drawings shall be prepared by a licensed and registered Professional Engineer in the State of New York. Shop drawings shall be submitted to Owner's Representative for record purposes only. Calculations and all other pertinent information shall be submitted. Shop drawing submittals will not be checked and will not imply approval by Owner's Representative of the Work involved. Contractor shall be solely responsible for designing, installing, operating and maintaining whatever system is necessary to satisfactorily accomplish all necessary sheeting, bracing, protection, underpinning and dewatering.

C. Submit description of source, material classification and product description, production method, and application of backfill materials. Submit test results for samples of off-site backfill materials.

D. Test Reports - Borrow, Backfill and Grading:

1. Testing laboratory shall submit copies of the following reports directly to Owner's Representative, with copy to Contractor:

a. Tests on borrow material.
b. Tests on footing subgrade.
c. Field density tests.
d. Optimum moisture - maximum density curve for each soil used for backfill.
e. Tests of actual unconfined compressive strength or bearing tests of each strata.

E. Submit samples of all select fill, gravel and base materials, as required.

1. Deliver samples to Owner's Representative, if requested.

F. Provide delivery ticket which includes source location for each delivery of material that is obtained from offsite sources.

1.5 JOB CONDITIONS

A. Subsurface Information: Limited site soil boring data, samples and soil reports are available for inspection and are for informational purposes only. Any opinions expressed in these reports are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner shall not be responsible for interpretations or conclusions drawn from this data. Contractor must make his own interpretation of subsurface conditions that may affect methods or the cost of construction of the Work.

B. Contractor shall satisfy himself by actual examination of the site of the Work, as no claim shall be made by the Contractor for additional compensation by reasons of the fact that existing conditions are other than as shown in the Contract Documents.

C. Contractor, at his own expense, shall make test borings or dig test holes/pits to locate existing underground facilities prior to excavation. Where possible and without additional cost to the Owner, adjustments shall be made to the location of the proposed work to avoid encountering or interfering with existing underground facilities. All expenses for digging test holes and other investigative work shall be borne by the Contractor.

D. Existing Structures: Contract Documents indicate certain surface and underground structures adjacent to the Work. This information has been obtained from existing records. It is not guaranteed to be correct or complete and is shown for the convenience of Contractor. Contractor shall explore ahead of the required excavation to determine the exact location of all structures. They shall be supported and protected from damage by Contractor. If they are broken or damaged, they shall be restored immediately by Contractor at his expense.

C. Existing Utilities: Locate existing underground utilities in the areas of the Work. If utilities are to remain in place, provide adequate means of support and protection during all operations.

1. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult piping or utility owner and Owner's Representative immediately for directions as to procedure. Cooperate with Owner and utility owner in keeping services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
2. In general and where applicable, service lines to individual houses and businesses are not shown; however, Contractor shall assume that a service exists for each utility to each house or business and shall provide adequate means of support and protection during all operations.
3. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, except when permitted in writing by Owner's Representative and then only after acceptable temporary utility services have been provided.
4. Demolish and completely remove from the Site existing underground utilities indicated to be removed. Coordinate with utility companies for shut-off of services if lines are active.

D. Use of Explosives:

1. The use of explosives will not be permitted.

E. Protection of Persons and Property: Barricade open excavations occurring as part of the Work and post with warning lights. Operate warning lights during hours from dusk to dawn each day and as otherwise required.

1. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.
2. Obtain written permission from property owner before removing, trimming, or disturbing trees, shrubs, plants, fences, rails, walks, structures or other facilities encountered on the line of the excavation.

F. Dust Control: Conduct all operations and maintain areas of activity, including watering of operations, sweeping and sprinkling of roadways, to minimize creation and dispersion of dust.

G. Roadways and Walks: Unless otherwise directed by Owner's Representative, excavated material and materials of construction shall be so deposited, and the Work shall be so conducted, as to leave open and free for pedestrian traffic all crosswalks, and for vehicular traffic a roadway not less than ten (10)

feet in width. All hydrants, valves, fire alarm boxes, letter boxes, and other facilities which may require access during construction shall be kept accessible for use. During the progress of the Work, Contractor shall maintain such crosswalks, sidewalks, and roadways in satisfactory condition and the Work shall at all times be so conducted as to cause a minimum of inconvenience to public travel, and to permit safe and convenient access to private and public property along the line of the Work.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Backfill and Fill:

1. Materials acceptable for use as backfill against walls, foundations, underground ductbanks, and other structures shall be stockpiled native sandy clay or granular soils obtained from onsite excavations and which are uniformly mixed, contain no organic matter, debris, waste, frozen materials, vegetation or other organic matter and other deleterious materials or debris, nor contain rocks or fragments greater than 4-inches in size, nor have greater than 40 percent passing the 200 sieve. The maximum expansion of onsite materials shall be 1.5 percent as performed on a sample remolded to approximately 95 percent of the maximum dry density as determined in accordance with ASTM D 698 at two percent below optimum moisture content under a 100 psf surcharge pressure.
2. Backfill and fill materials from offsite sources shall consist of silty or clayey sand soils that are uniformly mixed, contain no organic matter, debris, waste, frozen materials, vegetation or other organic matter and other deleterious materials or debris and which have a Plasticity Index less than ten. The maximum particle size of imported soils shall be 4-inches or less, if required to satisfy trenching, landscaping, or other requirements. The maximum expansion of offsite materials shall be 1.5 percent as performed on a sample remolded to approximately 95 percent of the maximum dry density as determined in accordance with ASTM D 698 at two percent below optimum moisture content under a 100 psf surcharge pressure.
3. All materials for use as backfill and fill material shall be tested by the laboratory and approved by the Owner's Representative.
4. If onsite material is unsuitable as determined by the Owner's Representative, select backfill shall be used.
5. Fill adjacent to structures is classified as backfill to a distance measured horizontally from the structure that is equal to the depth from the finished grade. Outside these limits the fill is classified as embankments, unless otherwise specified.

B. Select Backfill:

1. Select Backfill for use beneath structures, concrete slabs and asphalt pavements (and where shown or specified below and around structures) shall be crushed aggregate conforming to the requirements below:

Sieve Sizes (Square Openings)	Percentage by Weight Passing Sieve
1¼ inch	100
No. 4	38 to 65
No. 8	25 to 60
No. 30	10 to 40

No. 200	3 to 12

2. Place select fill where shown or specified, and around and under foundations, tanks, pipelines, structures, roads, walks, and other Work.
3. Use well graded granular material or bank-run gravel, free from vegetation or other organic matter, debris, waste, frozen materials, vegetation and other deleterious materials.
4. Gradation: Not more than 70 percent by weight shall pass through a No. 40 sieve; not more than 10 percent by weight shall pass through a No. 200 sieve; and 100 percent shall pass a four-inch square sieve.
5. When required, submit Sample of material.

C. Fill Material for Embankments:

1. Fill materials for use as embankments, and as miscellaneous landscaping materials exterior to plant facilities, shall consist of soils obtained from on-site excavations or off-site sources that are uniformly mixed, shall contain no organic material, debris, waste, frozen materials, vegetation or other organic matter and other deleterious materials or debris and shall be free of rocks or fragments greater than 3-inches in size.
2. All materials for use as described above shall be tested by the laboratory and approved by the Owner's Representative.

D. Drainage Fill:

1. Washed, uniformly graded mixture of crushed stone, or crushed or uncrushed gravel, with 100 percent passing a 1-1/2 inch sieve and not more than five percent passing a No. 4 sieve.

E. Sand:

1. Sand material shall contain no organic material, debris, waste, frozen materials, vegetation or other organic matter and other deleterious materials or debris. Sand shall be nonplastic, when tested in accordance with ASTM D 4318, 100 percent shall pass a 1/2-inch screen and no more than 20 percent shall pass a No. 200 screen.
2. The sand shall be deposited in uniform layers not to exceed 6-inches in uncompacted thickness. The backfill shall be compacted to not less than 95 percent of laboratory maximum density as determined by ASTM D 698.
3. All material for sand must be tested and approved by the Owner's Representative.
4. No sand shall be placed without the approval of the Owner's Representative.

F. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, or natural or crushed sand and containing no organic material, debris, waste, frozen materials, vegetation or other organic matter and other deleterious materials or debris and approved by Owner's Representative.

G. General Backfill and Fill Materials:

1. Provide approved soil materials for backfill and fill, free of clay, rock or gravel larger than 3-inches in any dimension, debris, waste, frozen materials, vegetation and other organic matter and other deleterious materials. Previously excavated onsite materials meeting these requirements may be used for backfill.

2.2 GEOTEXTILES

A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Grab Tensile Strength: 157 lbf; ASTM D 4632.
3. Sewn Seam Strength: 142 lbf; ASTM D 4632.
4. Tear Strength: 56 lbf; ASTM D 4533.
5. Puncture Strength: 56 lbf; ASTM D 4833.
6. Apparent Opening Size: No. 40 sieve, maximum; ASTM D 4751.
7. Permittivity: 0.5 per second, minimum; ASTM D 4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Grab Tensile Strength: 247 lbf; ASTM D 4632.
3. Sewn Seam Strength: 222 lbf; ASTM D 4632.
4. Tear Strength: 90 lbf; ASTM D 4533.
5. Puncture Strength: 90 lbf; ASTM D 4833.
6. Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.
7. Permittivity: 0.02 per second, minimum; ASTM D 4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

2.3 ACCESSORIES

A. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 36 inches deep; colored as follows:

1. Red: Electric, Fire, Cathodic Protection.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Fiber Optics, Telephone and other communications.
4. Blue: Water, Potable Water systems.
5. Green: Sewer, Storm Drain, Force Main systems.

PART 3 -EXECUTION

3.1 INSPECTION

A. Provide Owner’s Representative with sufficient notice and with means to examine the areas and conditions under which excavating, filling, and grading are to be performed. Owner’s Representative will notify Contractor, in writing, if conditions are found that may be detrimental to the proper and

timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in an acceptable manner.

3.2 SITE PREPARATION

A. Clear all areas to be occupied by permanent construction or embankments of all trees, brush, roots, stumps, logs, wood and other deleterious materials and debris. Clean and strip subgrades for fills and embankments of vegetation, sod, topsoil and organic matter. All waste materials shall be removed from the Site and properly disposed of by Contractor. Burning will not be permitted.

3.3 TEST PITS

A. General:

1. Contractor shall excavate and backfill, in advance of the construction, test pits to determine conditions or location of the existing utilities and structures. Contractor shall perform all the Work required in connection with excavating, stockpiling, maintaining, sheeting, shoring, backfilling and replacing pavement for the test pits.

a. Contractor shall be responsible for the definite location of each existing facility involved within the area of excavation for the Work under this Contract. Care shall be exercised during such location work to avoid damaging and/or disrupting the affected facility. Contractor shall be responsible for repairing, at his expense, damage to any structure, piping, or utility caused by his Work.

B. No separate payment will be made for test pits.

3.4 EXCAVATION

A. Perform all excavation required to complete the Work, as shown, specified and as required. Excavations shall include earth, sand, clay, gravel, hardpan, boulders not requiring drilling and blasting for removal, decomposed rock, pavements, rubbish and all other materials within the excavation limits.

B. Excavations for structures and pipelines shall be open excavations. Provide excavation protection system(s) required by ordinances, codes, law and regulations to prevent injury to workmen and to prevent damage to new and existing structures or pipelines. Unless shown or specified otherwise, protection system(s) shall be utilized under the following conditions.

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, shielded, or shored and braced.
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. Excavation protection system(s) shall be installed and maintained in accordance with drawings submitted under Article 1.4 of this Section.

C. Where the structure or pipeline is to be placed below the ground water table, well points, cofferdams or other acceptable methods shall be used to permit construction of said structure or pipeline under

dry conditions. Dry conditions shall prevail until concrete has reached sufficient strength to withstand earth and hydrostatic loads and until the pipelines are properly jointed, tested and backfilled. In addition, protect excavation from flooding until all walls and floor framing up to and including grade level floors are in place and backfilling has begun. Water level shall be maintained below top of backfill at all times.

D. Pumping of water from excavations shall be done in such a manner to prevent the carrying away of unsolidified concrete materials, and to prevent damage to the existing subgrade.

E. The elevation of the bottom of footings shown shall be considered as approximate only and Owner's Representative may direct such changes in dimensions and elevations as may be required to secure a satisfactory footing. All structure excavations shall be hand-trimmed to permit the placing of full widths, and lengths of footings on horizontal beds. Rounded and undercut edges will not be permitted.

F. When excavations are made below the required grades, without the written order of Owner's Representative, they shall be backfilled with compacted gravel or concrete, as directed by Owner's Representative in writing, at the expense of Contractor.

G. Excavations shall be extended sufficiently on each side of structures, footings, etc., to permit setting of forms, installation of shoring or bracing or the safe sloping of banks.

H. Subgrades for roadways, structures and trench bottoms shall be firm, dense, and thoroughly compacted and consolidated; shall be free from mud, muck, and other soft or unsuitable materials; and shall remain firm and intact under all construction operations. Subgrades which are otherwise solid, but which become soft or mucky on top due to construction operations, shall be reinforced with crushed stone or gravel. The finished elevation of stabilized subgrades shall not be above subgrade elevations shown.

I. Pipe Trench Preparation:

1. No more than 100 feet of trench may be opened in advance of pipe laying. Trenches in rock shall be fully opened at least 30 feet in advance of where pipe is being laid.
2. Trench width shall be minimized to greatest extent practical but shall conform to the following:

    a. Sufficient to provide room for installing, jointing and inspecting piping, but in no case wider at top of pipe than pipe barrel OD plus two feet.
    b. Enlargements at pipe joints may be made if required and approved by Owner's Representative.
    c. Sufficient for shoring and bracing or shielding and dewatering.
    d. Sufficient to allow thorough compaction of backfill adjacent to bottom half of pipe.
    e. Do not use excavating equipment which requires the trench to be excavated to excessive width.
    f. Piping four inches in diameter and larger shall be excavated at least six inches below bottom of pipe and backfilled with pipe bedding material, unless otherwise specified on the Contract Drawings.

3. Depth of trench shall be as shown. If required and approved by Owner's Representative, in writing, depths may be revised.

J. Repair effects of settlement of fill and at no additional cost to the Owner.

K. Material Storage: Stockpile satisfactory excavated materials in approved areas, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.

1. Locate and retain soil materials away from edge of excavations.
2. Dispose of excess soil material and waste materials as specified herein.
3. Stockpiled excavated soils for use as subsequent fill shall be classified by laboratory as on-site granular or sandy clay soils. Use and placement of fill shall be performed as specified for each class.
4. Excess soil from excavations shall be legally transported and disposed of offsite. Disposal shall be in accordance with state and local regulatory requirements.
5. If all excavated material cannot be stored in the right-of-way in such manner as to maintain traffic conditions as specified, remove surplus material from the Work area and store. After laying pipe or completing structure being built in trench, bring material back to trench in sufficient quantity of suitable excavated material as necessary for backfilling trench.
6. In built-up work areas and in streets where traffic conditions require, remove material excavated from initial opening of excavation as soon as it is excavated; use suitable material subsequently excavated to backfill trenches in which pipe has been installed or structures built. Do not store excavated material or construction materials on streets or sidewalks.

L. Where Owner's Representative considers the existing material beneath the bedding material unsuitable, Contractor shall remove and replace it with select backfill.

3.5 UNAUTHORIZED EXCAVATION

A. Excavation outside lines and grades shown and that are not approved by Owner's Representative, together with removal and disposal of associated material, shall be made, filled, and restored at Contractor's expense. Unauthorized excavations shall be filled and compacted with select fill or concrete. Claims and damages resulting from Contractor's unauthorized excavation will be Contractor's sole responsibility.

3.6 EROSION CONTROL, DRAINAGE AND DEWATERING

A. Erosion Control:

1. In general, the construction procedures outlined herein shall be implemented to assure minimum damage to the environment during construction. Contractor shall take any and all additional measures required to conform to the requirements of applicable codes and regulations, and the requirements specified in Section 02240, Sediment and Erosion Control Plan.
2. Whenever possible, access and temporary roads shall be located and constructed to avoid environmental damage. Provisions shall be made to regulate drainage, avoid erosion and minimize damage to vegetation.
3. Where areas must be cleared for storage of materials or temporary structures, provisions shall be made for regulating drainage and controlling erosion, subject to the Owner's Representative's approval.
4. Temporary measures shall be applied to control erosion and to minimize the silting of the existing waterways, and natural ponding areas. Such measures shall include, but are not limited to, the use of berms, baled straw silt barriers, gravel or crushed stone, mulch, slope drains and other methods. These temporary measures shall be applied to erodible materials exposed by any activities associated with the construction of this Work.

a. Special care shall be taken to eliminate depressions that could serve as mosquito pools.
b. Temporary measures shall be coordinated with the construction of permanent drainage facilities and other Work to the extent practicable to assure economical, effective, and continuous erosion and silt control.
c. Contractor shall provide special care in areas with steep slopes. Disturbance of vegetation shall be kept to a minimum to maintain stability.

5. Remove only those shrubs and grasses that must be removed for construction. Protect the remainder to preserve their erosion-control value.
6. Install erosion and sediment control practices where shown in the Contract Documents and according to applicable standards, codes and specifications. The practices shall be maintained in effective working condition during construction and until the drainage area has been permanently stabilized.
7. Mulching shall be used for temporary stabilization.

    a. Suitable Materials for Mulching:

        1) Unrotted Straw or Salt Hay: 1-1/2 to 2 tons/acre
        2) Asphalt Emulsion or Cutback Asphalt: 600 to 1,200 gal./acre
        3) Wood-fiber or Paper-fiber (hydroseeding): 1,500 lbs./acre
        4) Mulch netting (paper, jute, excelsior, cotton or plastic)

    b. Straw or salt hay mulches should be immediately anchored using peg and twine netting or mulch anchoring tool or liquid mulch binders.

8. After stabilization, remove and provide for legal transportation and disposal of all straw bale dikes, debris, etc., from the Site.
9. In the event of any temporary Work stoppage, Contractor shall take steps to correct any temporary or environmental damage to the area undergoing construction.
10. In the event Contractor repeatedly fails to satisfactorily control erosion and siltation, the Owner reserves the right to employ outside assistance or to use its own forces to provide the corrective measures indicated. The cost of such work, plus engineering costs, will be deducted from monies due Contractor.
11. Contractor shall prevent blowing and movement of dust from exposed soil surfaces and access roads to reduce on and off-site damage and health hazards. Control may be achieved by irrigation in which the Site shall be sprinkled with water until the surface is moist. The process shall be repeated, as required.

B. Drainage and Dewatering:

1. Contractor shall provide and maintain adequate drainage and dewatering equipment to remove and dispose of all surface water and ground water entering excavations, or other parts of the Work. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the structure to be built, therein is inspected by the Owner's Representative and backfill operations have been completed and approved.

    a. The different working areas on the Site shall be kept free of surface water at all times. Contractor shall install drainage ditches and dikes and shall perform all pumping and other Work necessary to divert or remove rainfall and all other accumulations of surface water from the excavations and fill areas. The diversion and removal of surface water shall be performed in a manner that will prevent the accumulation of water behind temporary

structures or at any other locations within the construction area where it may be detrimental.

b. Water used for working or processing, resulting from dewatering operations, or containing oils or sediments that will reduce the quality of the water downstream of the point of discharge, shall not be directly discharged. Such waters shall be diverted through a settling basin or filter before being discharged.

c. Contractor will be held responsible for the condition of any pipe, conduit or channel used for drainage purposes and all such pipes, conduits or channels shall be left clean and free of sediment.

d. Remove water from excavations as fast as it collects.

2. Contractor shall provide, install and operate sufficient trenches, sumps, pumps, hose, piping, well points, deep wells, etc., necessary to depress and maintain the ground water level below the base of the excavations during all stages of construction operations. The ground water table shall be lowered in advance of excavation, for a sufficient period of time so as to permit dewatering of fine grain soils and maintained two (2) feet below the lowest subgrade excavation made until the structure has sufficient strength and weight to withstand horizontal and vertical soil and water pressures from natural ground water. The system shall be operated on a 24-hour basis and standby pumping facilities and personnel shall be provided to maintain the continued effectiveness of the system. If, in the opinion of the Owner's Representative, the water levels are not being lowered or maintained as required by these Specifications, Contractor shall install additional or alternate dewatering devices as necessary, at no additional cost to the Owner.

a. Elements of the dewatering system shall be located so as to allow a continuous dewatering operation without interfering with the construction of the permanent Work. Where portions of the dewatering system are located in the area of permanent construction, Contractor shall submit details of the methods he proposes to construct the permanent Work in this location for the review by the Owner's Representative. Controls of groundwater shall continue until the permanent construction provides sufficient dead load to withstand the hydrostatic uplift of the normal groundwater, until concrete has attained sufficient strength to withstand earth and hydrostatic loads, and until all waterproofing Work has been completed. Dispose of all water removed from the excavation in such a manner so as not to endanger any portion of the Work under construction or completed. Convey water from the excavations in a closed conduit. Before discontinuing dewatering operations or permanently permitting the rise of the ground water level, computations shall be made to show that any structure affected by the water level rise is protected by backfill or other means to sustain uplift. Use a safety factor of 1.25 when making these computations.

b. Dewatering operations shall not be discontinued without the prior authorization of the Owner's Representative.

c. Design of dewatering system, including both drawings and calculations, shall be performed by a licensed and registered Professional Engineer in the State of New York and shall be employed by the Contractor. Dewatering system shall be designed so as to avoid settlement or damage to existing structures and utilities.

C. Disposal of Water Removed by Dewatering System:

1. Contractor's Dewatering System shall discharge to a location approved by the NYSDEC.
2. Dispose of all water removed from the excavation in such a manner as not to endanger public health, property, or any portion of the Work under construction or completed.

3. Dispose of water in such a manner as to cause no inconvenience to Owner, Owner's Representative, or others involved in Work about the Site.
4. Convey water from the construction Site in a closed conduit. Do not use trench excavations as temporary drainage ditches.

3.7 SHEETING, SHORING AND BRACING

A. General:

1. Used material shall be in good condition, not damaged or excessively pitted. All steel or wood sheeting designated to remain in place shall be new. New or used sheeting may be used for temporary work.
2. All timber used for breast boards (lagging) shall be new or used, meeting the requirements for Douglas Fir Dense Construction grade with a bending strength not less than 1,500 psi or Southern Pine No. 2 Dense.
3. All steel work for sheeting, shoring, bracing, cofferdams etc., shall be designed in accordance with the provisions of the "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings", of the AISC, except that field welding will be permitted.
4. Steel sheet piling shall be manufactured from steel conforming to ASTM A 328. Steel for soldier piles, wales and braces shall be new or used and shall conform to ASTM A 36.
5. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.
6. Unless otherwise shown, specified, or directed, all materials used for temporary construction shall be removed when Work is completed. Such removal shall be made in a manner not injurious to the structure or its appearance or to adjacent Work.
7. Provide permanent steel sheet piling or pressure creosoted timber sheet piling wherever subsequent removal of sheet piling might permit lateral movement of soil under adjacent structures. Cut off tops, as required, and leave permanently in place.
8. The clearances and types of the temporary structures, insofar as they affect the character of the finished Work, and the design of sheeting to be left in place, will be subject to the approval of Owner's Representative; but Contractor shall be responsible for the adequacy of all sheeting, shoring, bracing, coffer-damming and other temporary measures.
9. Safe and satisfactory sheeting, shoring and bracing shall be the entire responsibility of Contractor.
10. All municipal, County, State and Federal ordinances, codes, regulations and laws shall be observed.
11. Unless otherwise shown, specified, or ordered, remove materials used for temporary construction when the Work is complete. Removal shall be made in manner not injurious to the Work.

B. Sheeting Left in Place:

1. Steel sheet piling shown to be left in place shall consist of rolled sections of the continuous interlocking type, unless otherwise approved. The type and design of the sheeting and bracing shall conform to the above Specifications for all steel work for sheeting and bracing. Steel sheeting designated to be left in place shall be new.
2. Steel sheet piling to be left in place shall be driven straight to the lines and grades as shown or directed. The piles shall penetrate into firm materials with secure interlocking throughout the entire length of the pile. Damaged piling having faulty alignment shall be pulled and replaced by new piling.

3. The type of guide structure used and method of driving for steel sheet piling to be left in place shall be subject to the approval of Owner's Representative. Jetting will not be permitted.
4. Cut off piling left in place to the grades shown or directed by Owner's Representative and remove the cut off pilings from the Site.
5. Clean wales, braces and all other items to be embedded in the permanent structure and ensure that the concrete surrounding the embedded element is sound and free from air pockets or harmful inclusions. Provisions shall include the cutting of holes in the webs and flanges of wale and bracing members, and the welding of steel diaphragm waterstops perpendicular to the centerline of brace ends which are to be embedded.
6. Subsequent to removal of the inside face forms, and when removal of bracing is permitted, cut back steel at least 2-inches inside the wall face and patch opening with cement mortar. Concrete shall be thoroughly worked beneath wales and braces, around stiffeners and in any other place where voids may be formed.
7. Portions of sheeting or soldier piles and breast boards which are in contact with the foundation concrete shall be left in place, together with wales and bracing members which are cast into foundation or superstructure concrete.

C. Removal of Sheeting and Bracing:

1. Remove sheeting and bracing from excavations, unless otherwise directed by Owner's Representative, in writing. Removal shall be done so as to not cause injury to the Work. Removal shall be equal on both sides of excavation to ensure no unequal loads on pipe or structure.
2. Defer removal of sheeting and bracing, where removal may cause soil to come into contact with concrete, until the following conditions are satisfied:

    a. Concrete has cured a minimum of seven days.
    b. Wall and floor framing, up to and including, grade level floors are in place.

3.8 TRENCH SHIELDS

A. Excavation of earth material below the bottom of a shield shall not exceed the limits established by ordinances, codes, laws and regulations.

B. When using a shield for pipe installation:

1. Any portion of the shield that extends below the mid-diameter of an installed rigid pipe (e.g., PCCP) shall be raised above this point prior to moving the shield ahead for the installation of the next length of pipe.
2. The bottom of the shield shall not extend below the mid-diameter of installed flexible pipe (e.g., Steel, DI, PVC, etc.) at any time.

C. When using a shield for the installation of structures, the bottom of the shield shall not extend below the top of the bedding for the structures.

D. When a shield is removed or moved ahead, extreme care shall be taken to prevent the movement of pipe or structures or the disturbance of the bedding for pipe or structures. Pipe or structures that are disturbed shall be removed and reinstalled as specified.

3.9 GENERAL REQUIREMENTS FOR BACKFILL AND COMPACTION

A. Furnish, place and compact all select backfill, backfill, fill and other materials required for structures, embankments, pipelines, ductbanks and other requirements and required to provide the finished grades as shown and as described herein shall be furnished, placed and compacted by Contractor.

B. Backfill excavations as promptly as Work permits, but not until completion of the following:

1. Acceptance by the Owner's Representative of construction below finish grade, including dampproofing, waterproofing and perimeter insulation.
2. Inspection, testing, approval, and recording of locations of underground facilities including connections, branches, valves, structures, ductbanks and utilities.
3. Removal of concrete formwork.
4. Removal of shoring and bracing and backfilling of voids with satisfactory materials. Cut off tops of temporary sheet piling driven below bottom of structures and remove in manner to prevent settlement of Underground Facilities or leave in place if required.
5. Removal of trash and debris.
6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.
7. Placement of settlement plates.

C. Fill containing organic materials, debris, waste, frozen materials, vegetation or other organic matter and other deleterious materials or debris or other unacceptable material shall be removed and replaced with approved fill material as specified.

D. Placement of Select Backfill, Backfill and Fill:

1. Select backfill shall be placed to the grades shown. Bring backfill around structures and piping up evenly on all sides. The lift thickness and compaction moisture content range given herein is approximate. These values shall be finally determined from the laboratory test results on the fill materials.
2. All select backfill shall be placed in horizontal loose lifts, not exceeding eight (8) inches in thickness, and shall be mixed and spread in a manner assuring uniform lift thickness after placing. Each lift shall be compacted by not less than two (2) complete coverages of the specified compactor. Compaction in open areas should consist of self-propelled 10-ton vibratory drum rollers. In confined areas, the loose lift thickness should not exceed six (6) inches. Cobbles or boulders having sizes exceeding three (3) inches in size should be removed prior to compaction. Select backfill shall be placed to the underside of all concrete slabs. The fill material shall extend a minimum of two (2) feet outside the face of each structure and be 12-inches below finished grade on all structures. The maximum slope of select backfill to the subgrade shall be one vertical to one horizontal.
3. Backfill and fill around and outside of structures and over select backfill shall be deposited in layers not to exceed 8-inches in uncompacted thickness and mechanically compacted, using platform type tampers. Compaction of structures backfilled by rolling will be permitted provided the desired compaction is obtained and damage to the structure is prevented. Compaction of select backfill and/or backfill by inundation with water will not be permitted. All materials shall be deposited as specified herein and as shown in the Contract Documents.
4. The material shall be placed at a moisture content and density as specified herein. Contractor shall provide equipment capable of adding measured amounts of water to the backfill and/or select backfill material to bring it to a condition within the range of the required moisture content. Contractor shall provide equipment capable of discing, aerating, and mixing the soil to ensure reasonable uniformity of moisture content throughout the fill material and to reduce the moisture content of the borrow material by air drying, if necessary. If the subgrade or lift of

earth material must be moisture conditioned before compaction, the fill material shall be sufficiently mixed or worked on the subgrade to ensure a uniform moisture content throughout the lift of material to be compacted. Materials at moisture content in excess of the specified limit shall be dried by aeration or stockpiled for drying.

5. Keep excavations dry during backfilling operations. No backfill or fill material shall be placed when free water is standing on the surface of the area where the fill is to be placed. No compaction of fill will be permitted with free water on any portion of the fill to be compacted. No fill shall be placed or compacted in a frozen condition or on top of frozen material. Any fill containing organic materials or other unacceptable material previously described shall be removed and replaced with approved fill material prior to compaction.
6. Compaction shall be performed with equipment suitable for the type of fill material being placed. Contractor shall select equipment that is capable of providing the minimum density required as specified herein. Hand operated compacting equipment shall be used within a distance of ten (10) feet from the wall of any completed below grade structure. Equipment shall be provided that is capable of compacting in restricted areas next to structures and around piping. The effectiveness of the equipment selected by Contractor shall be tested at the commencement of compacted fill Work by construction of a small section of fill within the area where fill is to be placed. If tests on this section of fill show that the specified compaction is not obtained, Contractor shall increase the amount of coverages, decrease the lift thicknesses or obtain a different type of compactor.
7. Levels of backfill against concrete walls shall not differ by more than two (2) feet on either side of walls, unless walls are adequately braced or all floor framing is in place up to and including grade level slabs. Particular care shall be taken to compact structure backfill, which will be beneath pipes, roads, or other surface construction or structures. In addition, wherever a trench passes through structure backfill, the structure backfill shall be placed and compacted to an elevation twelve (12) inches above the top of the pipe before the trench is excavated. Compacted areas, in each case, shall be adequate to support the item to be constructed or placed thereon.
8. The compaction requirements specified are predicated on the use of normal materials and compaction equipment. In order to establish criteria for the placement of a controlled fill so that it will have compressibility and strength characteristics compatible with the proposed structural loadings, a series of laboratory compaction and/or compressive strength tests shall be performed on the samples of materials submitted by Contractor. From the results of the laboratory tests, the final values of the required percent compaction, the acceptable compaction moisture content range, and the maximum permissible lift thickness will be established for the fill material and construction equipment proposed.
9. Control the water content of fill material during placement within the range necessary to obtain the compaction specified. In general, the moisture content of the fill shall be within three (3) percent of the optimum moisture content for compaction as determined by laboratory tests. Perform all necessary Work to adjust the water content of the material to within the range necessary to permit the compaction specified. Do not place fill material when free water is standing on the surface of the area where the fill is to be placed. No compaction of fill will be permitted with free water on any portion of the fill to be compacted.
10. Compact fill shall be compacted by at least two (2) coverages of all portions of the surface of each lift by compaction equipment. One (1) coverage is defined as the condition obtained when all portions of the surface of the fill material have been subjected to the direct contact of the compactor.
11. If the specified 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 whatever Work is required to provide the required

densities. This Work shall include complete removal of unacceptable fill areas, and replacement and re-compaction until acceptable fill is provided, at no additional cost to the Owner.

12. Contractor shall repair, at his own expense, any after settlement that occurs. Contractor shall make all repairs and replacements required within 30 days after notice from Owner's Representative or Owner.

E. Backfill in Electrical Ductbank Trenches:

1. Compacted backfill shall be required for the full depth of the trench, below and above the electrical ductbank. Where the trench for one ductbank passes beneath the trench for another pipe or ductbank, select backfill shall be placed to the level of the bottom of the upper trench.
2. Placement and compaction of backfill in electrical ductbank trenches shall conform to the requirements of specified herein.

F. Backfill in Pipe Trenches:

1. Place all backfilling in pipe trenches which are below structures, other pipes, or paved areas, in horizontal layers not exceeding 6-inches in depth and thoroughly compact each before the next layer is placed. In other pipe trenches, compacted layers shall be 6-inches up to the pipe center line and 8-inches thereafter.
2. Where pipe is laid in rock excavation, crushed stone or gravel fill shall be carefully placed and tamped over the rock before the pipe is laid. Depth of crushed stone or gravel shall be at least 6-inches for pipe 24-inches and smaller and 9-inches for pipe 30-inches and larger. After laying pipe, the balance of the backfill shall be placed as described herein.
3. Prior to the installation of pipes which are to be installed in fill sections, place the fill as described herein, until a minimum height of two feet above the soffit of the pipe is reached, unless otherwise required in other Sections. The fill for the trench width shall then be excavated and the pipe installed and backfilled. The remainder of the fill shall then be placed.
4. Pipeline trenches may be backfilled prior to pressure testing, but no structure shall be constructed over any pipeline until it has been tested.
5. Unless otherwise specified, all pipe, except plastic pipe, shall be placed on a minimum 6-inch thick layer of granular embedment material. The granular embedment material shall extend 12-inches above the top of the pipe. Unless otherwise specified, CPVC, PVC, HDPE pipes and FRP ducts shall be placed on a minimum 6-inch layer of sand. Sand shall extend to 12-inches above top of pipe and to the trench walls on each side of the pipe, unless otherwise noted.
6. Embedment materials both below and above the bottom of the pipe, classes of embedment to be used, and placement and compaction of embedment materials shall conform to the following requirements:

    a. Embedment material shall be spread and the surface graded to provide a uniform and continuous support beneath the pipe at all points between bell holes or pipe joints. It will be permissible to slightly disturb the finished subgrade surface by withdrawal of pipe slings or other lifting tackle. After each pipe has been graded, aligned, placed in final position on the bedding material and shoved home, sufficient pipe embedment material shall be deposited and compacted under and around each side of the pipe and back of the bell or end thereof to hold the pipe in proper position and to maintain alignment during subsequent pipe jointing and embedment operations. Embedment material shall be deposited and compacted uniformly and simultaneously on each side of the pipe to prevent lateral displacement. The embedment material shall then be placed and compacted to an elevation 12-inches above the top of pipe.

b. Compacted backfill shall be required for the full depth of the trench above the pipe embedment material. Where the trench for one pipe passes beneath the trench for another pipe or electrical ductbank, the lower trench shall be compacted to the level of the bottom of the upper trench.
c. Each layer of embedment material shall be compacted by at least two complete coverages of all portions of the surface of each lift using approved compaction equipment. One coverage is defined as the conditions reached when all portions of the fill lift have been subjected to the direct contact of the compacting surface of the compactor.
d. The method of compaction and the equipment used shall be appropriate for the material to be compacted and shall not transmit damaging shocks to the pipe.
e. The degree of compaction required for granular embedment is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 698.

G. Crushed Stone Placement:

1. Crushed stone shall be placed where shown to the limits shown.
2. Crushed stone shall be place in hand tamped lifts, not to exceed 6-inches.

H. Sand Placement:

1. Sand shall be placed as an envelope around PVC and CPVC pipes, FRP ducts and all pipe 2-inches and smaller. Place and compact minimum 6-inches of sand all round pipes, in 6-inch lifts, to a level 6-inches above the top of pipe.

I. Compaction Density Requirements:

1. The degree of compaction required for all types of fills shall be as listed below. Material shall be moistened or aerated as necessary to provide the moisture content that will facilitate obtaining the specified compaction.

Material Thick.(in)	Required Minimum Density-Percent Compaction (ASTM D 698)	*Maximum Uncompacted Lift (inches)
Subgrade and Subbase Fill:		
Below concrete slabs on grade	95	8
Below base of footings or mats, structural slabs and tank floors	95	8
Below asphalt concrete paving	95	12
**Backfill:		
More than five feet below final grade	100	8
Less than five feet below grade	95	8
Select Backfill:		
Below concrete slabs or mats	95	8
Below asphalt paving	100	8
Trench Backfill, below and above ductbanks	95	12
Trench Backfill above pipe	95	12
Granular Pipe Embedment Material	95	6
Sand Embedment Material	95	6

* Where applicable.

** Backfill shall not be used for support of facilities which are susceptible to damage from differential settlement of the fill section relative to walls.

All fill must be wetted and thoroughly mixed to achieve optimum moisture content, ±3%, with the following exceptions: On-site clayey soils optimum to +3%. Natural undisturbed soils or compacted soil subsequently disturbed or removed by construction operations shall be replaced with materials compacted as specified above.

2. Contractor's testing service shall perform tests required to provide data for selection of fill material and control of placement water content.
3. Field density tests, to ensure that the specified density is being obtained, shall be performed by Contractor's testing service during each day of compaction Work.
4. If the tests indicate unsatisfactory compaction, Contractor shall provide the additional compaction necessary to obtain the specified degree of compaction. All additional compaction Work shall be performed by Contractor, at no additional cost to the Owner, until the specified compaction is obtained. This Work shall include complete removal of unacceptable (as determined by the Owner's Representative) fill areas and replacement and re-compaction until acceptable fill is provided.

J. Replacement of Unacceptable Excavated Materials: In cases where over-excavation for the replacement of unacceptable soil materials is required, the excavation shall be backfilled to the required subgrade with select backfill material and thoroughly compacted as specified herein. Sides of the excavation shall be sloped in accordance to the maximum inclinations specified for each structure location.

K. Perform backfill around structures using the specified procedures, except that within ten (10) feet of foundations and underground structures, light compaction equipment shall be used, with the gross weight of the equipment not exceeding 7,000 pounds. Provide equipment that is capable of the required compaction within restricted areas next to structures and around piping.

3.10 EMBANKMENTS

A. To the maximum extent available, use excess earth obtained from structure and trench excavations for construction of embankments. Obtain additional material from borrow pits as necessary. After preparation of the embankment area, level and roll the subgrade so that surface materials of the subgrade will be compact and well bonded with the first layer of the embankment. All material deposited in embankments shall be free from rocks or stones, brush, stumps, logs, roots, debris, organic or other objectionable materials, waste, frozen materials or vegetation and other deleterious materials or unacceptable material. Construct embankments in horizontal layers not exceeding 8-inches in uncompacted thickness. Spread and level material deposited by excavating and hauling equipment prior to compaction. Thoroughly compact each layer by rolling or other method acceptable to the Owner's Representative to 95 percent of the maximum density at optimum moisture content as determined by ASTM D 1557. If the material fails to meet the density specified, compaction methods shall be altered. Wherever a trench passes through a fill or embankment, the fill or embankment material shall be placed and compacted to an elevation 24-inches above the top of the pipe before the trench is excavated.

3.11 GRADING

A. General: Uniformly grade areas within limits of grading under this Section, including adjacent transition areas. 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.

B. Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding. Finish surfaces free from irregular surface changes, and as follows:

1. Turfed 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 1-inch above or below the required subgrade elevations.
2. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 1-inch above or below the required subgrade elevation.
3. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 1/2-inch above or below the required subgrade elevation.

C. Grading Surface of Fill Under Building Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 1/2-inch when tested with a ten foot straightedge.

D. Compaction:

1. After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

3.12 PAVEMENT SUBBASE COURSE

A. General: Place subbase material, in layers of specified thickness, over ground surface to support pavement base course.

B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of subbase course.

C. Shoulders: Place shoulders along edges of subbase course to prevent lateral movement. Construct shoulders of acceptable soil materials, placed in such quantity to compact to thickness of each subbase course layer. Compact and roll at least a 12-inch width of shoulder simultaneously with compacting and rolling of each layer of subbase course.

D. Placing: Place subbase course material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting subbase material during placement operations.

1. When a compacted subbase course is shown to be 6-inches thick or less, place material in a single layer. When shown to be more than 6-inches thick, place material in equal layers, except no single layer more than 6-inches or less than 3-inches in thickness when compacted.

3.13 DISPOSAL OF EXCAVATED MATERIALS

A. Material removed from the excavations which does not conform to the requirements for fill or is in excess of that required for backfill shall be removed from the Site by the Contractor and disposed of in compliance with ordinances, codes, laws and regulations, at no additional cost to the Owner.

3.14 RESTORING AND RESURFACING EXISTING ROADWAYS AND FACILITIES

A. Place 2 inches of temporary bituminous pavement immediately after backfilling trenches in paved roadways which are to be retained for permanent use. Maintain the surface of the paved area over the trench in good and safe condition during progress of the entire Work, and promptly fill all depressions over and adjacent to the trench caused by settlement of backfilling. The permanent replacement pavement shall be equal to that of the existing roadways, unless otherwise specified.

B. Pavement, gutters, curbs, sidewalks or roadways disturbed or damaged by Contractor's operations shall be restored by Contractor at his own expense to as good condition as they were previous to the commencement of the Work and in accordance with applicable local and state highway specifications or requirements.

3.15 PRECONSOLIDATION

A. Where shown, pre-consolidate soils prior to construction. These areas shall be brought up to finished grade a minimum of three months prior to the start of construction of the structures situated thereon. If any settlement occurs during this period, the settled area shall be promptly brought up to grade by the placement of additional fill.

B. After the topsoil has been stripped, settlement plates shall be placed where shown and specified.

C. Fill material to be placed over the preconsolidation areas and the method of placement shall be as specified herein. Should removal of 6-inches of topsoil result in a subgrade elevation below the base slab of proposed structures, the remaining topsoil and other unacceptable material shall be removed until suitable subgrade materials are exposed. The subgrade shall then be brought up to the proposed base slab elevation with special compacted fill.

D. Settlement plates for the observation of subsoil consolidation under fill loads shall be installed at the locations and furnished in accordance with the details shown. Contractor shall level the areas occupied by settlement plates so that the base of each plate will be at an elevation approximately equivalent to the average ground surface within a radius of five feet from the plate location. All small depressions in the ground surface at the plate location shall be filled with sand before seating the plate. The installed plate shall include the first five (5) foot pipe section tightly seated in the base coupling with the pipe marked at one foot intervals measured from the base of the plate. All marks on this and subsequent sections shall be painted with high visibility paint. The uppermost mark shall be permanently recorded by cutting a horizontal slot into the pipe with a hacksaw exactly five feet above the base of the plate. The installation of the settlement plate and its marking shall be approved by Owner’s Representative before placement of the 6-inch sand cover to anchor the plate, as shown. Subsequent to approval, Contractor shall establish the elevation of the base of the plate by determining the elevation of the uppermost mark on the pipe section.

E. During the filling operations, Contractor shall add five (5) foot sections of pipe to the settlement plate as required to maintain the top of the pipe above the fill surface at all times. When pipe sections are added, they shall be tightly joined and the additional section marked by painting at one foot intervals and including a hacksaw slot exactly five feet above the hacksaw slot made in the previous pipe section. The addition of all settlement plate extensions shall be approved by the Owner’s Representative before fill placement resumes in the area.

F. Contractor shall provide barricades around the settlement plate extensions to protect them from damage during construction. In the event that a plate is damaged by the construction operations, Contractor shall replace or repair it in a manner satisfactory to Owner's Representative.

G. Contractor shall measure and record the elevation of the settlement plate and the elevation of the fill surface at the plate location once each week after the plates are installed and submit this data to the Owner's Representative.

H. Do not start construction of structures situated on areas to be pre-consolidated until sufficient settlement has occurred. The degree of settlement considered sufficient shall be determined by Owner's Representative from readings of settlement plates.

I. In no case shall construction commence within three (3) months of fill placement.

J. Prior to topsoiling and seeding, the filled area shall be cut back and graded to the proper subgrade, if required.

3.16 TEMPORARY FENCING

A. Furnish and install for the safety and welfare of the general public a temporary fence surrounding excavations and work area. Fence shall have openings only at vehicular, equipment and worker access points.

B. The fence shall be a snow fence type enclosure, 48-inches high. Fence shall be constructed of vertical hardwood slats measuring 1-1/2 by 1/4-inch interwoven with strands of horizontal wire or shall be of equivalent plastic construction. Posts shall be of steel, either U, Y, T or channel section, and shall have corrugations, knobs, notches or studs placed and constructed to engage a substantial number of fence line wire in the proper position. Posts shall have tapered anchors weighing 0.67 pounds or more, each firmly attached by means of welding, riveting or clamping. Posts shall have a nominal weight of 1/3 pound per linear foot exclusive of the anchor. Each post shall be furnished with a sufficient number of galvanized wire fasteners or clamps, of not less than 0.120-inch in diameter for attaching fence wire to the post.

3.17 FIELD QUALITY CONTROL

A. Quality Control Testing During Construction: Testing service must inspect and approve subgrades and fill layers before construction Work is performed thereon. Tests of subgrades and fill layers shall be taken as follows:

1. Footing Subgrade: For each strata of soil on which footings will be placed, conduct at least one test to verify required design bearing capacities. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested strata, when acceptable to Owner's Representative.
2. Paved Areas and Building Slab Subgrade: Make at least one field density test of subgrade for every 2,000 square feet of paved area or building slab, but in no case less than three tests. In each compacted fill layer, make one field density test for every 2,000 square feet of overlaying building slab or paved area, but in no case less than three tests.
3. Foundation Wall Backfill: Take at least two field density tests, at locations and elevations as directed by the Owner's Representative.

B. If testing service reports or inspections show subgrade or fills are below specified density, provide additional compaction and testing at no additional cost to the Owner.

END OF SECTION 02315

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SECTION 02320 – DEWATERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section provides for furnishing all permits, labor, materials, equipment, power and incidentals for performing all operations necessary to dewater, drain and maintain excavations as described herein and as necessary for installation of structures, pipelines and appurtenances. Included are installing, maintaining, operation and removing dewatering systems and other approved devices for the control of surface and groundwater during the construction of structures, pipelines and appurtenances and open cut excavations. Included also are protecting work against rising waters and repair of any resulting damage.

B. Related Sections:

1. Division 02 Sections "Excavation Support and Protection", "Sediment and Erosion Control Plan" and "Excavation and Backfill".

C. Contractor's Responsibility

1. It is the sole responsibility of the Contractor to identify groundwater conditions and to provide any and all labor, material, equipment, techniques and methods to lower, control and handle the groundwater as necessary for his construction methods and to monitor the effectiveness of this installed system and its effect on adjacent facilities.
2. Operate, maintain and modify the system(s) as required to perform the work. Upon completion of the Construction, remove the system(s), unless otherwise directed by Owner's Representative. The development, drilling and abandonment of all wells used in the dewatering system shall comply with regulations of the New York State Department of Environmental Conservation (NYSDEC) and the local municipalities.
3. Assume sole responsibility for dewatering systems and for all loss or damage resulting from partial or complete failure of protective measures and any settlement or resultant damage caused by the dewatering operation.
4. Obtain all permits associated with dewatering operations.
5. Contractor shall submit dewatering permit application to the NYSDEC within fifteen (15) days of the Project Notice to Proceed (NTP).

1.3 PERFORMANCE REQUIREMENTS

A. Design, furnish, install, test, operate, monitor, and maintain dewatering system consisting of equipment, appliances and materials designed or suitable for controlling groundwater in construction work and of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.

1. Design dewatering system, including comprehensive engineering analysis by a qualified Professional Engineer, licensed and registered in the State of New York, using performance requirements and design criteria indicated.
2. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, that excavation does not flood, and that damage to subgrades and permanent structures is prevented.
3. Prevent surface water from entering excavations by grading, dikes, or other means.
4. Accomplish dewatering without damaging existing buildings, structures, and site improvements adjacent to excavation.
5. When the dewatering system is no longer required and if directed by Owner's Representative, Contractor shall dismantle and remove the system in its entirety, including all appurtenances, from the site.

B. The regulatory required and approved dewatering system installed by the Contractor, shall be fully tested prior to Contractor utilization of the system and prior to commencement of any construction activity requiring use of the system.

C. The entire dewatering operation and the apparatus connected therewith must at all reasonable hours be open to inspection and to testing by regulatory agency representatives, as required.

D. Where private wells, used for water supply, have become dry or cease to produce potable water due to the dewatering operation, Contractor shall be responsible for providing the necessary water at no additional cost to the Owner.

E. All well point header and discharge lines must not remain in place beyond the period for which they are required to perform work in their immediate vicinity nor shall they be placed in advance of their use unless otherwise directed by the Owner's Representative. All dewatering systems shall be subject to review by the Owner's Representative. Installations, which fail to meet the criteria as specified herein, shall be removed and re-installed to meet the above criteria at no additional cost to the Owner.

F. All costs shall be the responsibility of the Contractor.

1.4 SUBMITTALS – FOR INFORMATION ONLY

A. Shop Drawings: For dewatering system show arrangement, locations, and details of wells and well points; cofferdams, locations of risers, headers, filters, pumps, power units, and discharge lines; means of discharge, control of sediment, disposal of water and; all pertinent data and appurtenances for a complete and fully operational dewatering system proposed for use and regulatory agency approved.

1. Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.
2. Include a written plan for dewatering operations including control procedures to be adopted if dewatering problems arise.

B. Delegated-Design Submittal: For dewatering system indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the licensed and registered New York State Professional Engineer responsible for their preparation.

C. Qualification Data: For qualified Installer, land surveyor and Professional Engineer.

D. Field quality-control reports.

E. Other Informational Submittals:

1. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by dewatering operations.

F. Contractor shall submit an application to the New York State Department of Environmental Conservation for a "Dewatering and Operating Permit"

G. “Dewatering and Operating Permit” application shall be submitted within fifteen (15) days of the Project Notice to Proceed (NTP), and shall give, at a minimum, the following details in full:

1. Proposed starting date of the dewatering operation
2. Name of the licensed well driller
3. Details of the dewatering system to be installed
4. Size, number, and spacing of the well points
5. Pump capacity, pumping rate, and expected volume of water to be withdrawn
6. Amount of water table drawdown
7. Final disposition of water
8. Expected duration of the operation

H. Before any dewatering operation is to begin, approval of the “Dewatering and Operating Permit” application and all the aforementioned items is required. If any unforeseen emergency construction arises, the Contractor must notify the New York State Department of Environmental Conservation as soon as possible, that dewatering under such circumstances has been started. Notification will be made to the following:

New York State Department of Environmental Conservation
Region 1 Division of Water, Regional Headquarters
Regulatory Affairs, C/O Regional Permit Officer
50 Circle Road
Building No. 40
SUNY at Stony Brook, New York 11790-2356
Telephone: (631) 444-0405

I. Contractor shall submit a copy of the approved permit to the Owner’s Representative prior to start of work.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A licensed well drillers (in accordance with Section 15-1525 of the Environmental Conservation Law) that has specialized in design of dewatering systems and/or dewatering work and has satisfactorily completed work for a minimum of five (5) projects of comparable size within the last five (5) years.

B. Regulatory Requirements: Contractor shall be responsible for obtaining all necessary permit(s) from all applicable regulatory agencies prior to the proposed starting date of the dewatering

operation. The following details shall be provided (at a minimum): Name of the Registered Well Driller, details of the dewatering system to be installed, including size, number and spacing of the well points, pump capacity, pumping rate and expected volume of water to be withdrawn. Also to be included will be the amount of water table drawdown, the final disposition of the water and the expected duration of the operation. Before any dewatering operation is to begin, submittal to, approval and the securing of a permit is required from the NYSDEC Region 1 permit administrator. If any unforeseen emergency construction arises, the Contractor must notify the NYSDEC as soon as possible that dewatering under such circumstances has been started.

C. Contractor shall comply with hauling and disposal regulations of authorities having jurisdiction.

D. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to dewatering including, but not limited to, the following:

a. Inspection and discussion of condition of site to be dewatered including coordination with temporary erosion control measures and temporary controls and protections.
b. Geotechnical report.
c. Proposed site clearing and excavations.
d. Existing utilities and subsurface conditions.
e. Coordination for interruption, shutoff, capping, and continuation of utility services.
f. Construction schedule. Verify availability of Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
g. Testing and monitoring of dewatering system.

E. Any proposed dewatering operation must be carried out by only licensed well drillers in accordance with Section 15-1525 of the Environmental Conservation Law.

F. The entire dewatering operation and the apparatus connected therewith must at all reasonable hours be accessible to inspection and test by duly accredited representatives of the Department of Environmental Conservation.

1.6 PROJECT CONDITIONS

A. Interruption of Existing Utilities: Do not interrupt any utility serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility according to requirements indicated:

1. Notify Owning Utility, Owner’s Representative and Owner no fewer than 3 days in advance of proposed interruption of utility.
2. Do not proceed with interruption of utility without Owning Utility, Owner’s Representative and Owner written permission.

B. Project-Site Information:

1. Limited site soil boring data, samples and soil reports are available for inspection and are for informational purposes only. Any opinions expressed in these reports are those of a Geotechnical Engineer and represent interpretations of subsoil conditions, tests, and

results of analyses conducted by a Geotechnical Engineer. Owner shall not be responsible for interpretations or conclusions drawn from this data. Bidders must make their own interpretation of subsurface conditions that may affect methods or the cost of construction of the Work.

2. Contractor shall satisfy himself by actual examination of the site of the Work, as no claim shall be made by the Contractor for additional compensation by reasons of the fact that existing conditions are other than as shown of the Contract Documents.
3. Contractor, at his own expense, shall make test borings or dig test holes to locate and determine the depth to groundwater, including a determination of any seasonal variations. Any/all expenses for making test borings and/or digging test holes and other investigative work shall be borne by the Contractor.

C. Survey Work: Engage a New York State licensed and registered land surveyor or Professional Engineer to survey adjacent existing buildings, structures, and site improvements, establishing exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

1. During dewatering, regularly resurvey benchmarks, maintaining an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Owner's Representative if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent construction.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations.

1. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding site and surrounding area.
2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.
3. Contractor shall maintain a careful check to detect any settlement in existing adjacent Work or existing structures. Contractor shall notify the Owner's Representative of any signs of settlement. Contractor shall establish settlement point benchmarks and take periodic readings Contractor shall take immediate action to prevent settlement and shall repair any damage caused by settlement at no additional cost.

B. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

C. Provide temporary grading to facilitate dewatering and control of surface water.

D. Monitor dewatering systems continuously.

E. Promptly repair damages to adjacent facilities caused by dewatering.

F. Protect and maintain temporary erosion and sedimentation controls during dewatering operations.

G. Effect of Dewatering on Private Wells

1. Contractor shall take special precautions where the removal of water may affect the production of private wells.
2. Prior to the start of any dewatering operations, Contractor shall notify in writing all owners of water supply wells in areas within or adjacent to the Contract site where his dewatering operations may affect the quality and/or pumping capacity of their wells. In addition, the Contractor shall, prior to and after construction as directed by the Owner's Representative, test the water quality and pumping capacity of each well that may be affected by his dewatering operations. Contractor shall be solely responsible for determining the extent of influence that his operations will have on existing water supply wells and in addition will be solely responsible for contacting in writing all affected well owners. If requested, Owner may assist the Contractor in notifying affected water supply well owners, but it is to be understood that the Contractor shall assume all responsibility for notification and damages and shall indemnify and hold Owner harmless from any claim from either direct or indirect damages resulting from his dewatering operation either directly or indirectly.

3.2 INSTALLATION

A. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.

1. Space well points or wells at intervals required to provide sufficient dewatering.
2. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.

B. Before excavating below groundwater level, place system into operation to lower water to perform work in dry conditions. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed or until dewatering is no longer required.

C. Provide an adequate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Install sufficient dewatering equipment to drain water-bearing strata below bottom of foundations, drains, sewers, and other excavations.

1. Open sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability is not permitted.

D. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.

1. Maintain piezometric water level a minimum of 24 inches below the deepest elevation of any required excavation. The installation shall also be free of vibration during operation.

E. When dewatering systems utilizing central pumping stations are used, these stations will be acoustically shielded from neighboring residences.

1. Contractor shall utilize sound level meters ANSI-Type II specifications for noise regulation enforcement with a measurement tolerance of +2dB.

F. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others. Provide sumps, sedimentation tanks, and other flow-control devices as required by NYSDEC and other authorities having jurisdiction.

G. Contractor shall not be permitted to dump spoil onto those areas designated as wetlands or waterways. Contractor shall not stockpile or store spoil, materials, tools or equipment on wetlands. Contractor shall not discharge groundwater directly into creeks, ponds, lakes or waterways without first obtaining approval(s) and/or proper permit(s) from all applicable regulatory agencies. Before discharge into surface waters, dewatering effluents must be filtered through hay bales or detained settling basins to avoid sedimentation to the receiving waters. If necessary, baffling devices shall be used to prevent the scouring of the bed or banks of any receiving stream.

H. Provide standby equipment on site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, restore damaged structures and foundation soils at no additional expense to Owner.

I. Dewatering will continue until backfilling is completed. Provide adequate weight of backfill to prevent buoyancy of piping and structures prior to starting up equipment.

3.3 FIELD QUALITY CONTROL

A. Observation Wells: Provide, take measurements, and maintain observation wells or piezometers to monitor groundwater level. Additional observation wells may be required by authorities having jurisdiction.

1. Observe and record daily elevation of ground water and piezometric water levels in observation wells.
2. Repair or replace, within 24 hours, observation wells that become inactive, damaged, or destroyed. In areas where observation wells are not functioning properly, suspend construction activities until reliable observations can be made. Add or remove water from observation-well risers to demonstrate that observation wells are functioning properly.

B. Provide continual observation to ensure that subsurface soils are not being removed by the dewatering operation.

3.4 PERFORMANCE

A. Groundwater shall not be discharged directly into creeks, ponds, storm drains, lakes, or waterways without written permission from the proper authorities.

B. All catch basins, storm drains, or recharge basins adversely affected by the accumulation of silt resulting from dewatering operations, shall be restored by the Contractor to their original condition. This work shall be done at no additional cost to the Owner.

C. The use of dewatering system utilizing central pumping stations and header or discharge lines which remain in place at one location for more than six (6) weeks shall not be permitted unless approved in writing by the Owner's Representative. All well point header and discharge lines must not remain in place beyond the period for which they are required to perform work in their immediate vicinity, nor shall they be placed far in advance of their use.

D All dewatering pumps shall be acoustically shielded from neighboring residences. Styrofoam or other sound absorbing material shall be used on the inside of the enclosure surrounding the pump. The installation shall also be free of vibration during operation.

E. Noise levels for dewatering pumps measured at a distance of twenty-five (25) feet or at the property line, whichever is closer, from the pumps shall not exceed sixty (60) decibels.

F. Where private wells, used for water supply, have become dry or cease to produce potable water, the Contractor shall be required to maintain continuous water service to the homes and buildings affected by the dewatering. In order to maintain continuous service, the Contractor may elect to deepen existing wells or install new wells where deepening is not practical. In all cases these wells shall extend to a depth below the drawdown caused by the dewatering operations.

G. Any method of dewatering excavations which does not satisfactorily fulfill and maintain the desired water elevation shall be discontinued and a method of dewatering which will produce the required results shall be substituted. Water shall not be allowed to rise over concrete until it has set and attained sufficient strength, or around pipes or other structures, where it might cause damage to the work.

H. Contractor shall conduct his operations so that drainage from his work will not be directed to or interfere with the construction operations of any other Contractor.

I. At major intersections and where directed by the Owner's Representative, the Contractor shall bury the header and/or discharge pipes.

J. Observation type well points shall be installed and maintained as directed by the Owner's Representative. These observation wells shall be of similar construction as standard well points and shall be fitted with a tee, plug and valve so that water levels can be read. All observation wells shall be properly numbered by contract number and observation point numbers.

K. Contractor shall submit to the Owner's Representative prior to starting his dewatering pumps, a record of each observation well including well number, location, depth of water to existing ground surface and all other information as required by the Owner's Representative. These observation wells shall be left in place until the adjacent sewer line or force main has passed the final leakage test. The observation well points shall be pulled and removed after the Final Leakage Test.

L. Dewatering system shall be designed so as to avoid settlement or damage to existing structures and utilities.

3.5 REPAIR OF DAMAGE

A. Contractor shall assume full responsibility for all loss and damage due to flooding, rising water or seepage resulting from dewatering operations in any part of the Work. Repair any damage to partially completed Work from these or other causes, including the removal of slides, repair of foundation beds and performance of any other work necessitated by lack of adequate dewatering or excessive dewatering.

3.6 REMOVAL

A. When the dewatering system is no longer required and if directed by Owner's Representative, Contractor shall dismantle and remove the system and all appurtenances from the site in accordance with requirement of NYSDEC and Owner's Representative. Plug or fill well holes with sand or cut off and cap wells a minimum of 36 inches below overlying construction.

END OF SECTION 02240

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SECTION 02512 - ASPHALTIC CONCRETE PAVING

PART 1 - GENERAL

1.1 SCOPE

A. Asphaltic concrete paving shall include tack coat, binder and wearing courses and asphalt crack/joint filler as specified herein.

B. Asphalt crack/joint filler shall be utilized to seal the interface between cut existing asphalt and new/permanent asphalt and shall be provided within 5-days following permanent paving restoration.

C. Permanent pavement markings shall be provided within 5-days following permanent paving restoration. Permanent pavement markings shall be thermoplastic reflectorized type conforming to the New York State Department of Transportation, Design and Construction Division, Standard Specifications, Construction and Materials, latest revision and as specified on the Drawings.

1.2 RELATED SECTIONS

A. Section 02721 - Recycled Concrete Aggregate (RCA) Base Course.

1.3 REFERENCES

A. AI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot Mix Types.

B. AI MS-8 - Asphalt Paving Manual.

C. ASTM D242 - Mineral Filler for Bituminous Paving Mixtures.

D. ASTM D546 - Test Method for Sieve Analysis of Mineral Filler for Road and Paving Materials.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Supplier: Submit name of asphalt supplier to be used on the project prior to placement of any asphalt on the project.

C. Design Data: Submit asphalt mix design for each asphalt type to be used.

1.5 QUALITY ASSURANCE

A. Field quality control laboratory testing and coordination with the testing lab shall be the Contractor’s responsibility and be included in the price as bid.

B. Obtain materials from the same supplier throughout the duration of the project.

C. Do not alter from mix design requirements.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle products to the site under provisions of Sections 01651 and 01661.

B. Deliver asphalt in sealed metal containers covered with suitable material to protect the asphalt from the elements.

C. Lightly lubricate the inside surface of the container with a thin oil or soap solution before loading asphalt.

D. All containers must be cleaned of all foreign materials prior to loading.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not place asphalt when base surface temperature is less than 40 degrees F (4 degrees C), or if surface is wet or frozen.

B. Do not place asphalt when precipitation is occurring.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Asphalt Cement: AC-20; homogeneous, and shall not foam when heated to 347º F.

B. Fine Aggregate: Material passing the 1/8 inch sieve; natural sand of hard, strong, durable particles which are free from coatings or injurious amounts of clay, loam or other deleterious substances.

C. Coarse Aggregate: Material retained on the 1/8-inch sieve; crushed stone or gravel; clean, durable, sharp angled fragments of rock of uniform quality.

D. Mineral Filler: ASTM D242, finely ground particles of limestone, hydrated lime or other mineral dust, free of foreign matter; 100 percent shall pass the No. 30 sieve; a minimum of 85 percent shall pass the No. 80 sieve; and a minimum of 65 percent shall pass the No. 200 sieve as measured in accordance with ASTM D546.

E. Asphalt crack/joint filler: A/C Kit Zeco AA-1071 blown asphalt formulated to meet NYSDOT Specification Section 702-0700.

2.2 EQUIPMENT

A. Pavers: Equipped with a vibratory device.

B. Rollers: Minimum weight of 10 tons (89 kN) equipped with lubricating devices for the roller wheels.

2.3 ACCESSORIES

A. Tack Coat: Homogeneous, medium curing, liquid asphalt.

B. Wheel Lubricant: Oil-water mixture containing maximum 10 percent lubricating oil.

2.4 MIXES

A. Use dry material to avoid foaming. Mix uniformly.

B. Binder Course: NYSDOT Type 3; 4.5 to 6.5 percent of asphalt cement by weight in mixture in accordance with the following gradation:

Sieve Size	Percent Passing
1-1/2 inches	100
1 inch	95-100
1/2 inch	70-90
1/4 inch	48-74
1/8 inch	32-62
No. 20	15-39
No. 40	8-27
No. 80	4-16
No. 200	2-8

C. Wearing Course: NYSDOT Type 6F; 5.8 to 7.0 percent of asphalt cement by weight in mixture in accordance with the following gradation:

Sieve Size	Percent Passing
1 inch	100
1/2 inch	90-100
1/4 inch	65-85
1/8 inch	36-65
No. 20	15-39
No. 40	8-27
No. 80	4-16
No. 200	3-6

2.5 SOURCE QUALITY CONTROL

A. Obtain asphalt materials from same source throughout the project.

B. Provide asphalt in accordance with the approved mix design for each type of asphalt.

C. Test samples in accordance with AI MS-2.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing substrate and conditions.

B. Verify that compacted subbase is dry and ready to receive work of this Section.

C. Verify gradients and elevations of base are correct.

D. Verify that all castings are properly installed and are at the correct elevations.

E. Beginning of installation means installer accepts existing conditions.

3.2 PREPARATION

A. Apply tack coat at uniform rate of 0.03 to 0.07 gal/sq yd to contact surfaces of curbs, gutters and any asphalt or concrete material.

B. Do not apply tack coat to wet or frozen surfaces.

C. Coat surfaces of manhole and catch basin frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

3.3 INSTALLATION

A. Install work in accordance with AI MS-8.

B. Maintain asphalt temperature between 250 and 325 degrees F during placement.

C. Place asphalt within 24 hours of applying tack coat.

D. Place asphalt to compacted thickness as identified on plans. If a multiple course pavement is to be used, place top course within 24 hours of placing bottom course. If more than 24 hours elapse, a tack coat will be required to be placed over the entire surface of the bottom course prior to any additional paving.

E. Utilize the vibratory device on the paver at all times.

F. Compact pavement by rolling. Do not displace or extrude pavement from position.

G. Hand compact in areas inaccessible to rolling equipment.

H. Compact pavement to a minimum of 94 percent maximum density.

I. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.4 TOLERANCES

A. Maximum Variation From Flatness: 1/8 inch measured with 10-foot straight edge

B. Maximum Variation From Scheduled Compacted Thickness: 1/8 inch.

C. Maximum Variation from True Elevation: ¼ inch.

3.5 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 01400.

B. Take samples and perform tests in accordance with Section 01400.

C. Testing to include percent compaction, graduation and asphalt content.

D. Field quality control laboratory testing and coordination with the testing lab shall be the Contractor's responsibility and be included in the price as bid.

3.6 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury until date of substantial completion.

3.7 WARRANTY

A. The equipment materials and products furnished under this section shall be guaranteed for a period of one (1) year from the date the equipment was placed into problem free operation against defective materials, designs and workmanship. Upon receipt of notice from Owner of failure of any part of the equipment, material or product during the guarantee period, the affected equipment, material or product shall be replaced or repaired promptly by and at the expense of the Contractor.

END OF SECTION 02512

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