

# TECHNICAL SPECIFICATIONS

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## **TOWN of POUND RIDGE** **VILLAGE GREEN**

*August 2021*

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 Pitingaro & Doetsch  
Consulting Engineers

15 Industrial Drive, Suite 2 Middletown, NY 10941  
845.703.8140

*p+d #217803*

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## SECTION 01100 - SUMMARY

### 1.1 GENERAL

- A. Project Identification: Town of Pound Ridge Village Green for the Town of Pound Ridge.
- B. The project tasks include:
  - 1. Coordination with the Town Supervisor, Town Engineer or other assigned representative.
  - 2. Secure any and all Town of Pound Ridge permits.
  - 3. Furnish and install construction/silt fencing and all necessary erosion control measures.
  - 4. Mark out featured areas to map out construction and sequencing.
  - 5. Furnish and install drainage structure, piping, stone, and structural fill.
  - 6. Furnish and install irrigation piping.
  - 7. Furnish and install connection to new electric service and appurtenances including but not limited to:
    - a. Electrical Conduit Underground To Lighting and Receptacle Locations
    - b. All Required Light Bases
    - c. Under Seat or Down Lighting
    - d. Receptacles
    - e. Post Mounted Lighting
  - 8. Furnish and install quarried granite slab stone retaining walls.
  - 9. Furnish and install concrete with appropriate reinforcement and stone veneer for concrete features:
    - a. Stage Step
    - b. Retaining/Sitting Walls
    - c. Planter Wall
    - d. Plaza Steps & Ramp
    - e. Sidewalk With Brick Edge and Ramp
    - f. Bench Landings Along Sidewalk
  - 10. Prepare ground with structural fill, and furnish and install pavers and “unified bluestone dry set with polymer joints” for both the plaza and event stage areas.
  - 11. Furnish and install inner fence along rear perimeter of park and gate entrance/exit to parking area.
  - 12. Furnish and install boulder wall at the rear perimeter of the site behind fencing.
  - 13. Furnish and install featured landscaping, and seed or turf grassed areas.
  - 14. Furnish and install removable/wheeled planters on stage with associated plantings.
  - 15. Furnish and install wood bench seats.
  - 16. Furnish and install the plaza area with table and chair sets.
  - 17. Furnish and install benches along walking path through tree grove at the front of the park.
  - 18. Furnish and install 6-foot-high privacy fence around the rear and sides of the green.

19. The Contractor shall provide all labor, supervision, materials, equipment, tools, utilities, and incidentals necessary to complete the Work as specified in the Technical Specifications and as shown on the Plans.

Project Location: 77 Westchester Avenue, Town of Pound Ridge, New York 10576.

Owner: Town of Pound Ridge, Town House, 179 Westchester Avenue, Pound Ridge, New York, 10576

Engineer Identification: The Contract Documents and Technical Specifications, dated August 2021, were prepared in accordance with Drawings and Specifications prepared by Louis Fusco Landscape Architects, and other Contract Documents prepared by Town Engineer, Pitingaro & Doetsch Consulting Engineers P.C.

- C. Project will be constructed under one (1) contract.
- D. Use of Premises: The Contractor shall have full use of Contractor's Work Area as shown on the drawings for construction operations during construction period. Contractor's use of premises is limited only by Owner's right to perform work or to retain other contractors on portions of Project.
- E. Reference to Standards: All reference to standards such as AWWA, ANSI, OSHA or ASTM, refer to the year of the latest revisions.

1.2 PRODUCTS (Not Used)

1.3 EXECUTION (Not Used)

END OF SECTION 01100

## SECTION 01101 - SCOPE OF WORK: GENERAL & ELECTRICAL

### 1.1 GENERAL

#### A. Summary

1. The project consists of constructing and furnishing the lot with park amenities including but not limited to:
  - a. Preparation of Lawn Area for Seasonal Ice Rink
  - b. 6' Privacy Fence
  - c. Drainage Structures and Piping
  - d. Irrigation Piping
  - e. New Electrical Service
  - f. Stone Slab Retaining Wall
  - g. Concrete Features
  - h. Plaza Patio
  - i. Boulder Wall
  - j. Landscaping and Plantings
  - k. Wooden Benches
2. The electrical service will include furnishing and installing:
  - a. Electrical Conduit Underground To Lighting and Receptacles
  - b. Required Light Post Bases
  - c. Under-Seat or Down Lighting
  - d. Post Mounted Lighting

#### B. Full Site Analysis (must be performed and approved by Engineer before any other work can begin)

1. General Contract
  - a. Perform spectrum analysis and path propagation studies at all sites and, provide Engineer with formal report of results.
  - b. Perform line of sight testing for each site at the intended antenna location, to its desired remote sites, and perform signal strength verification for each site at the intended antenna location, to its desired remote sites.
2. Electrical Contract None

### 1.2 PRODUCTS (Not Used)

### 1.3 EXECUTION (Not Used)

END OF SECTION 01101

## SECTION 01124 - SUMMARY OF CONTRACT

### 1.1 GENERAL

- A. Related Documents: Drawings and General Provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications, apply to this Section.
- B. Summary: This Section includes a summary of work in the contract, including responsibilities for coordination and temporary facilities and controls.
- C. Coordination: The Contractor shall be responsible for coordination between all his subcontractors.
- D. Single Contract: The Contract will be awarded as a single contract, which includes General Site Work. This includes, but is not limited to, the following:
  - 1. Coordination with the Town Supervisor, Town Engineer or other assigned representative.
  - 2. Secure any and all Town of Pound Ridge permits.
  - 3. Furnish and install construction/silt fencing and all necessary erosion control measures.
  - 4. Mark out featured areas to map out construction and sequencing.
  - 5. Furnish and install drainage structure, piping, stone, and structural fill.
  - 6. Furnish and install irrigation piping.
  - 7. Furnish and install connection to new electric service and appurtenances including but not limited to:
    - a. Electrical Conduit Underground To Lighting and Receptacle Locations
    - b. All Required Light Bases
    - c. Under Seat or Down Lighting
    - d. Receptacles
    - e. Post Mounted Lighting
  - 8. Furnish and install quarried granite slab stone retaining walls.
  - 9. Furnish and install concrete with appropriate reinforcement and stone veneer for concrete features:
    - a. Stage Step
    - b. Retaining/Sitting Walls
    - c. Planter Wall
    - d. Plaza Steps & Ramp
    - e. Sidewalk With Brick Edge and Ramp
    - f. Bench Landings Along Sidewalk
  - 10. Prepare ground with structural fill, and furnish and install pavers and “unified bluestone dry set with polymer joints” for both the plaza and event stage areas.
  - 11. Furnish and install inner fence along rear perimeter of park and gate entrance/exit to parking area.
  - 12. Furnish and install boulder wall at the rear perimeter of the site behind fencing.
  - 13. Furnish and install featured landscaping, and seed or turf grassed areas.
  - 14. Furnish and install removable/wheeled planters on stage with associated plantings.

15. Furnish and install wood bench seats.
16. Furnish and install the plaza area with table and chair sets.
17. Furnish and install benches along walking path through tree grove at the front of the park.
18. Furnish and install 6-foot-high privacy fence around the rear and sides of the green.
19. The Contractor shall provide all labor, supervision, materials, equipment, tools, utilities, and incidentals necessary to complete the Work as specified in the Technical Specifications and as shown on the Plans.

1.2 PRODUCTS (Not Used)

1.3 EXECUTION (Not Used)

END OF SECTION 01124



## SECTION 01140 - WORK RESTRICTIONS

### 1.1 GENERAL

- A. Use of Premises: Limit use of premises to Contractor's Work Area in which the work is proposed. Do not disturb portions of the site beyond areas in which the Work is indicated.
  - 1. Owner Occupancy: Allow for Owner occupancy of site.
- B. Use of Existing Site: The project is located in a residential neighborhood and utilizes a shared driveway with an occupied residence. All proposed work, storage of materials, and vehicle parking shall occur within the existing chain link fence onsite. The paved access road shall be kept clear at all times for the residents of the shared driveway and for the employees of the Town Water Department. If the paved access road or any other existing infrastructure is damaged by the Contractor, then the Contractor shall restore the damaged area to the satisfaction of the Owner at no additional cost to the Owner.
  - 1. All proposed work shall remain within the confines of the existing fence. Work times are Monday through Friday, 8 am to 5 pm. Every effort shall be made to minimize noise disturbance at all times.
- C. Full Owner Occupancy: Owner will occupy site during the entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations.

### 1.2 PRODUCTS (Not Used)

### 1.3 EXECUTION (Not Used)

END OF SECTION 01140

## SECTION 01210 - ALLOWANCES

### 1.1 GENERAL

- A. The allowances are established for unforeseen items or conditions, which can be determined only during construction.
- B. Types of allowances include the following:
  - 1. Lump-Sum Allowances
  - 2. Unit-Cost Allowances
- C. Related Sections include the following:
  - 1. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
  - 2. Division 1 Section "Unit Prices" for procedures for using unit prices.
  - 3. Division 1 Section "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.
- D. Submittals: Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
  - 1. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance. The Contractor will be paid on his actual cost basis. No overhead and profit is to be added.

### 1.2 PRODUCTS (Not Used)

### 1.3 EXECUTION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.
- B. Preparation: Coordinate materials and their installation for each allowance with related materials and installations to provide that each allowance item is completely integrated and interfaced with related Work.

END OF SECTION 01210

## SECTION 01250 - CONTRACT MODIFICATION PROCEDURES

### 1.1 GENERAL

- A. Owner-Initiated Proposal Requests: Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time.
  - 1. Proposal Requests are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
  - 2. Within ten (10) days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
- B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change.
  - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
  - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
  - 3. Indicate taxes, delivery charges, equipment rental, and amounts of trade discounts.
  - 4. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- C. Proposal Request Form: For Change Order proposals, use forms provided by Owner.
- D. Allowance Adjustment: Base each Change Order proposal on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place. Allow for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
  - 1. Include installation costs only where indicated as part of the allowance.
  - 2. Prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
  - 3. Submit substantiation of a change in Scope of Work, if any, claimed in Change Orders related to unit-cost allowances. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- E. Submit claims for increased costs because of a change in the allowance described in the Contract Documents, whether for the Purchase Order amount or Contractor's handling, labor, installation, overhead, and profit. Submit claims within twenty-one (21) days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. Owner will reject claims submitted later than twenty-one (21) days after such authorization.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
  2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.
- F. Change Order Procedures: On Owner's approval of a Proposal Request, Engineer will issue a Change Order for signatures of Owner and Contractor.
- G. Construction Change Directive: Engineer may issue a Construction Change Directive. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.
- H. This section supplements what is noted in the General Conditions. If any provision in this section varies from the General Conditions, the General Conditions will prevail.
- 1.2 PRODUCTS (Not Used)
- 1.3 EXECUTION (Not Used)

END OF SECTION 01250

## SECTION 01270 - UNIT PRICES

### 1.1 GENERAL

- A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services. This unit price will be used to add or deduct from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.
- B. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead and profit.

### 1.2 PRODUCTS (Not Used)

### 1.3 EXECUTION

- A. List of Unit Prices. See Bid Form for list of prices. If an item is shown on the plans and/or noted in the specifications, and there is no unit price item listed in the bid sheet, the cost of that item should be included in the unit price for the first item in the bid sheet.
- B. If the quantities of work for a bid item on a unit price bid is increased or decreased by 15%, the Owner may negotiate a revised price, if in the opinion of the Owner, the price should be reduced. The Contractor should not unbalance his bid prices. No increase in price shall be allowed because of the increase or decrease in quantities.

END OF SECTION 01270

## SECTION 01290 - PAYMENT PROCEDURES

### 1.1 GENERAL

#### A. Schedule of Values

1. Submit the Schedule of Values to Engineer at earliest possible date, but no later than seven days before the date scheduled for the commencement of the work.
2. Format and Content: Use the Project Manual table of contents as a guide to establish line items for Schedule of Values.
3. Identification: Include the following Project identification on the Schedule of Values:
  - a. Project Name and Location
  - b. Name of Engineer
  - c. Engineer's Project Number
  - d. Contractor's Name and Address
  - e. Date of Submittal
4. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
  - a. Related Specification Section or Division
  - b. Description of the Work
  - c. Name of Subcontractors
  - d. Name of Manufacturer or Fabricator
  - e. Name of Supplier
  - f. Change Orders (numbers) that Affect Value
  - g. Dollar Value - Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
5. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Contractor may include an item for bond, insurance, temporary facilities and job mobilization. These items will be included for payment at a rate of 25% per month for the first four months of the project.
7. Provide a separate line item for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
8. Allowances: Provide a separate line item for each allowance, where applicable. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

9. Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.
- B. Applications for Payment shall be consistent with previous applications and payments as certified by Engineer 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.
  2. Payment Application Times: The date for each progress payment is the FIRST Thursday of each month. Submit Application for Payment by the 15<sup>th</sup> of the month to be considered complete and eligible to be paid in the next payment schedule.
  3. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets, as form for Applications for Payment.
  4. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Engineer will return incomplete applications without action.
    - a. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
    - b. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
    - c. Include the municipal voucher with all payment applications.
    - d. Include certified payrolls for the payment period in the payment application.
    - e. Include a Waiver of Liens with each payment application.
  5. Transmittal: Submit four signed and notarized original copies of each Application for Payment to Engineer. One copy shall include waivers of lien and similar attachments. Transmit each application with a transmittal form listing attachments and recording appropriate information about application.
  6. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
    - a. List of Subcontractors
    - b. Schedule of Values
    - c. Contractor's Construction Schedule (very important)
    - d. Submittals Schedule (preliminary, if not final)
    - e. List of Contractor's Staff Assignments, with Telephone Numbers
    - f. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
    - g. Certificates of insurance and insurance policies.
  7. 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.

- a. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
8. 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:
  - a. Evidence of completion of Project closeout requirements.
  - b. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  - c. Updated final statement, accounting for final changes to the Contract Sum.
  - d. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
  - e. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
  - f. AIA Document G707, "Consent of Surety to Final Payment."
  - g. Evidence that claims have been settled.
  - h. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
  - i. Record drawings.
9. Four complete copies of all applications for payment shall be submitted to the Engineer.
10. This section supplements the General Conditions. In case of any difference between the two, the General Conditions will prevail.

1.2 PRODUCTS (Not Used)

1.3 EXECUTION (Not Used)

END OF SECTION 01290



## SECTION 01330 - SUBMITTAL PROCEDURES

### 1.1 GENERAL

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
- B. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal.
  - 1. Initial Review: Allow ten (10) days from the time the hard copy is received for initial review of each submittal. Allow additional time, if processing must be delayed to permit coordination with subsequent submittals. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
  - 2. Allow ten (10) days for processing each resubmittal.
- C. Identification: Place a permanent label or title block on each submittal for identification.
  - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
  - 2. **Provide a space approximately 4 by 4 inches on label or beside title block to record Contractor's review and approval markings and action taken by Engineer.**
  - 3. Include the following information on label for processing and recording action taken:
    - a. Project Name
    - b. Date
    - c. Name and Address of Contractor
    - d. Name of Manufacturer
    - e. Number and Title of Appropriate Specification Section
    - f. Drawing Number and Detail References, as appropriate
    - g. Other Necessary Identification
- D. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.
- E. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will return submittals, without review, received from sources other than Contractor.
- F. Use for Construction: Use only final submittals with mark indicating action taken by Engineer in connection with construction.

### 1.2 PRODUCTS

- A. Action Submittals: Prepare and submit Action Submittals required by individual Specification Sections.
  - 1. Number of Copies: Submit four (4) copies of each submittal, unless otherwise indicated. Engineer will return two (2) copies. Mark up and retain one (1) returned copy as a Project Record Document.

Submittals can be transmitted electronically to expedite the process, but they must also be sent by mail on the same day they are transmitted electronically and will not be considered received until the hard copy is received.

2. **Product Data:** Collect information into a single submittal for each element of construction and type of product or equipment. It is the responsibility of the Contractor to supply adequate information to the satisfaction of the Engineer.
  - a. Mark each copy of each submittal to show which products and options are applicable.
  - b. Include the following information, as applicable:
    - 1) Manufacturer's Written Recommendations
    - 2) Manufacturer's Product Specifications
    - 3) Manufacturer's Installation Instructions
    - 4) Manufacturer's Catalog Cuts
    - 5) Wiring Diagrams Showing Factory Installed Wiring
    - 6) Printed Performance Curves
    - 7) Operational Range Diagrams
    - 8) Compliance with Recognized Trade Association Standards
    - 9) Compliance with Recognized Testing Agency Standards
    - 10) Standard Color Charts
3. **Shop Drawings:** Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
  - a. Dimensions
  - b. Identification of Products
  - c. Fabrication and Installation Drawings
  - d. Roughing-In and Setting Diagrams
  - e. Shopwork Manufacturing Instructions
  - f. Templates and Patterns
  - g. Schedules
  - h. Notation of Coordination Requirements
  - i. Notation of Dimensions Established by Field Measurement
  - j. Wiring Diagrams: Differentiate between manufacturer installed and field installed wiring.
  - k. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 40 inches
4. **Samples:** Prepare physical units of materials or products, including the following:
  - a. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.

- b. Number of Samples for Initial Selection: Submit two (2) full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer will return submittal with options selected.
  - c. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
5. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design.

### 1.3 EXECUTION

- A. Contractor's Review: Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.
- B. Engineer's Action: Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.
  - 1. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.
  - 2. The actions described below may be taken by the Engineer:
    - a. Furnish As Submitted: Contractor shall furnish item in accordance with shop drawing submitted.
    - b. Furnish As Corrected: Contractor shall furnish item in accordance with submittal and notations made by Engineer.
    - c. Revise and Resubmit: Contractor shall edit submittal to provide sufficient or appropriate information as requested by the Engineer.
    - d. Rejected: Item submitted for approval is deemed to not conform to the specifications.
- C. Informational Submittals: Engineer will review each submittal and will not return it, or will reject and return it, if it does not comply with requirements. Engineer will forward each submittal to appropriate party. Contractor must submit a list naming all subcontractors that will be working on the project for approval prior to work commencement.
- D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION 01330

## SECTION 01340 - CONSTRUCTION SCHEDULES

### 1.1 GENERAL

- A. Provide construction schedule, which conforms to the requirements below.
- B. Provide Construction Sequence of Events
  - 1. Sequence of Events is critical and an important part of this project.
  - 2. Sequence of Events must be submitted and approved prior to commencing with any work at the project site.
  - 3. Project tasks must be sequenced correctly in order to not interrupt the operation of the treatment plant.
  - 4. Include the various Worksites in the Schedule.
- C. Update schedules every week as directed by Engineer.
- D. Content
  - 1. Shop drawing submittal dates and required approval dates.
  - 2. Product delivery dates. Note down all equipment and critical materials required on this project and provide delivery dates.
  - 3. Factory and field-testing dates for all pumping equipment, which requires factory and/or field-testing.
  - 4. Dates for beginning and completing each phase of the work by activity and by trades.
- E. Format: Type - Horizontal Bar Chart
- F. Submittals
  - 1. Submit initial schedule at least twenty (20) days prior to submitting first application for a progress payment, but no later than ten (10) days after date of execution of Agreement.
  - 2. Submit updated schedules at progress meetings. If a schedule remains unchanged from one period to the next, submit a written notice to that effect. Distribute copies to other Contractors.
  - 3. Payment to the Contractor may be delayed for non-submittal of construction schedules.
  - 4. Unless otherwise specified, submit two (2) copies of each schedule. One (1) copy will be reviewed by the Engineer and returned. The other copy will be retained by the Engineer. Digital copies are acceptable.
  - 5. Attach a letter of transmittal to each submittal and include the following information in the letter.
    - a. A listing of items, which have changed since the last submittal.
    - b. Discussion of problems causing delays, anticipated length of delays, and proposed countermeasures.

### 1.2 PRODUCTS (Not Used)

### 1.3 EXECUTION (Not Used)

## SECTION 01350 - PRECONSTRUCTION CONFERENCE

### 1.1 GENERAL

- A. Date, Time and Location: Conference will be held after execution of the Contract, but before any Work is started on the Site. Engineer will fix the date, time and location of the conference.
- B. Engineer will prepare agenda, preside at the conference, record minutes to include significant proceedings and decisions, and distribute the minutes to all parties in attendance.
- C. Unless previously submitted to Engineer, Contractor shall bring to the conference a preliminary schedule of each of the following:
  - 1. Progress Schedule
  - 2. Equipment Delivery Schedule
  - 3. Shop Drawing and Sample Submittals
  - 4. Schedule of Values
  - 5. Contractor shall provide any other data required, contribute appropriate items for discussion, and be prepared to discuss all items on agenda.
- D. Purpose of the conference is to designate responsible personnel and establish working relationships. Matters requiring coordination will be discussed and procedures for handling such matters will be discussed.
- E. Agenda
  - 1. Status of Contractor's Insurance
  - 2. Designation of Responsible Personnel
  - 3. Subcontractors
  - 4. Coordination with Other Contractors
  - 5. Contractor's Preliminary Schedule
  - 6. Transmittal, Review and Distribution of Contractor's Submittals
  - 7. Processing of Requests for Clarifications, Field Orders, Changer Orders and Applications for Payment
  - 8. Requirements for Copies of Contract Documents
  - 9. Use of Site, Office and Storage Areas, Security, Housekeeping and Owner's Needs
  - 10. Contractor(s) Responsibilities for Safety and First Aid
  - 11. Major Equipment Deliveries and Priorities
  - 12. Critical Work Sequencing
  - 13. Scheduling of Pre-Submittal Conference(s)
  - 14. Maintaining Record Documents, Record Drawings

1.2 PRODUCTS (Not Used)

1.3 EXECUTION (Not Used)

END OF SECTION 01350

## SECTION 01400 - QUALITY REQUIREMENTS

### 1.1 GENERAL

- A. All references to the standards such as AWWA, ASTM, ANSI, etc. refer to the year of the latest revision.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Quality-control services do not include contract enforcement activities performed by Engineer.
  - 2. The site forms and finished sidewalk/ramps shall be surveyed to assure compliance with ADA requirements. An Engineer or Surveyor licensed to practice in the State of New York shall provide a signed and sealed statement assuring that the construction conforms to ADA requirements.
- C. Delegated-Design Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- F. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- G. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.
- H. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.
- I. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.
- J. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.

- K. Manufacturer's Field Services: Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.
- L. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

1.2 PRODUCTS (Not Used)

1.3 EXECUTION

- A. Repair and Protection: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
- B. Submit a written report of all tests performed during the month with the requisition for that month.

END OF SECTION 01400

## SECTION 01491 - RECORD DRAWINGS

### 1.1 GENERAL

#### A. Summary

1. The purpose of the project drawings is to record the actual location of the work in place including but not limited to underground lines, concealed piping within buildings, concealed valves and control equipment and to record changes in the work.
2. At completion of construction and prior to final payment, the Contractor for the general construction work shall provide the Engineer with transparencies of general construction work drawings on which all changes have been made where field construction differs from work indicated on the contract drawings, including but not limited to: All significant changes in plan, sections, elevations and details, such as shifts in location of equipment, walls, doors, windows, stairs and the like made during construction; all significant changes in foundations, columns, beams, openings, concrete reinforcing, lintels, concealed anchorages and "knock-out" panels made during construction.
3. In addition to the sets of contract drawings that are required by the Contractor on the site to perform the work, the Contractor shall maintain at the site one (1) copy of all drawings, specifications and addenda that are part of the Contract as awarded. Each of these documents should be clearly marked "Project Record Copy", maintained in a clean and neat condition, available at all times for review by the Owner and the Engineer and not to be used for any other purpose during the progress of the Work.

#### B. Project Record Requirements

1. The Contractor shall mark up the "Project Record Copy" to show:
  - a. Approved Changes in the Work
  - b. Location of Underground Work and Concealed Work
  - c. Details Not Shown in the Original Contract Documents
  - d. Any Relocation of Work
  - e. All Changes in Dimensions
  - f. Location of All Plumbing, Heating, Ventilating, Air Conditioning or Electrical Assemblies
2. Such information shall include, but shall not be limited to:
  - a. Changes in Equipment Layout
  - b. Any Substitutions
  - c. Designation of All Utilities as to the Size and Use of Such Utilities
  - d. All Centerline Elevations of Pipe
  - e. Any Approved Change Order



3. Record Specifications

Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

- a. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
- b. Record name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
- c. Note related Change Orders, Record Drawings, and Product Data, where applicable.

4. Record Product Data

Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

- a. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
- b. Note related Change Orders, Record Drawings, and Product Data, where applicable.

5. Miscellaneous Record Submittals: Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.2 PRODUCTS (Not Used)

1.3 EXECUTION

- A. Update: The Contractor shall keep the Project Record Documents up to date from day to day as the work progresses. Appropriate documents are to be updated promptly and accurately; no work is to be permanently concealed until all required information has been recorded.
- B. Submittal to Engineer
  1. The Project Record Drawings are to be submitted by the Contractor to the Owner and the Engineer when all the work is completed and is reviewed by the Owner and the Engineer before the Contractor may request final payment.
  2. The Owner will withhold 0.2% of the project cost until the record drawings are submitted.

END OF SECTION 01491

## SECTION 01492 - MANUFACTURER'S DIRECTIONS

### 1.1 GENERAL

- A. All manufactured articles, material and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer, unless specified to the contrary.
- B. Maintenance Manual: Upon completion of the work and request for final payment, each Contractor shall deliver to the Engineer six (6) sets of full and complete directions pertaining to the operation and maintenance of surfaces, materials, equipment and systems installed under his contract. Refer to specifications for pertinent trade for requirements.

### 1.2 PRODUCTS (Not Used)

### 1.3 EXECUTION (Not Used)

END OF SECTION 01492

## SECTION 01493 - ORDER OF PREFERENCE

### 1.1 GENERAL

A. Figured dimensions shall take precedence over scaled drawings. Larger scale drawings shall take precedence over smaller scale drawings. Addenda shall take precedence over previous addenda and earlier dated drawings and specifications.

### B. Conflict Resolution

In case of a discrepancy between any part or parts of the Contract Documents with any other part thereof, preference shall be given in the following order:

1. Addenda (later dates take precedence over earlier dates).
2. Supplemental General Conditions
3. General Conditions
4. Technical Specifications
5. Drawings

Should a conflict occur in or between or among any parts of the Contract Documents that are entitled to equal preference, the more expensive way of doing the Work, the better quality or greater quantity of material shall govern, unless the Engineer otherwise so directs.

C. Reciprocal: Drawings and Specifications are reciprocal. Anything shown on the plans and not mentioned in the Specifications or mentioned in the specifications and not shown on the plans, shall have the same effect as if shown or mentioned on both.

### 1.2 PRODUCTS (Not Used)

### 1.3 EXECUTION (Not Used)

END OF SECTION 01493

## SECTION 01500 - TEMPORARY FACILITIES

### 1.1 GENERAL

- A. Temporary facilities indicated to be provided by a contractor for the use of his subcontractors and/or other contractors, shall mean for their use without payment for such use, unless otherwise specified.
- B. Temporary Light and Power: The Contractor shall provide temporary light and power, labor and materials for his use, if needed, and shall pay for all electricity consumed. Upon completion of the work he shall, at his own expense, remove the temporary power and light arrangements. The Contractor should include the cost of providing temporary light and power, including its removal, in his bid prices.
- C. Temporary Toilet Facilities: The Contractor shall, at his own cost, provide and maintain in a sanitary condition enclosed portable chemical type, weather tight toilets for use of all construction personnel at a location within the Contract limits. Toilet paper shall always be available with the toilet. Include the cost in the bid prices.
- D. Temporary Drainage
  - 1. Temporary drainage as required shall be the responsibility of the Contractor, who shall provide, maintain and operate pumps required to keep the work free of water at all times.
  - 2. The Contractor shall:
    - a. Provide, maintain and operate pumps as required to keep all exterior work free of water at all times.
    - b. Dispose of all water with due care and shall not infringe on the rights of others on the site, of adjacent property owners and/or of the public. All cost in connection with the removal of such water shall be paid by the Contractor.
- E. Temporary Stairs, Ladders and Ramps
  - 1. The Contractor shall provide and maintain temporary stairs and ramps for access to the various levels of construction, as directed by the Engineer, for use of all the contractors.
  - 2. Temporary ladders, scaffold, chutes, etc., required for proper execution of the work shall be provided by Contractor/subcontractor requiring same. Such temporary facilities shall be constructed and maintained as per all applicable Federal, State and Local Codes and Laws.
  - 3. As soon as possible, erect permanent stair framing. Provide same with temporary treads and handrails.
- F. Temporary Fencing: The Contractor shall provide temporary fencing as shown on the plans to contain his construction equipment and the construction area. Fencing shall be orange snow fence and shall be maintained throughout the project.

### 1.2 PRODUCTS (Not Used)

### 1.3 EXECUTION (Not Used)

END OF SECTION 01500

## SECTION 01510 - TRAFFIC MAINTENANCE AND PROTECTION

### 1.1 GENERAL

#### A. Summary

1. The Work of this Section consists of maintaining traffic and protecting the public from damage to persons and property within the limits of and for the duration of this contract.
2. Maintain traffic over a reasonably smooth traveled way marked by signs, delineators, guiding devices and other acceptable methods in conformance with the New York State Manual of Uniform Traffic Control Devices (MUTCD).

B. Applicability: The Work of this Section shall be required in all areas within the project limits that will be open to vehicular traffic.

C. Responsibility: Assume responsibility for conducting operations in a manner to insure the safety and convenience of all travelers and adjoining property owners within the limits of and for the duration of the contract.

### 1.2 PRODUCTS

#### A. Materials

1. Comply with the requirements of Sections 02300 and 02530 as they apply to the various materials required for the Work of this Section.
2. Provide sign panels of aluminum, galvanized steel or plywood with faces of reflective sheet material and non-reflective black characters conforming to DOT Section 730-13.
3. Provide delineators, barricades and lighting for construction barricades in accordance with the requirements of MUTCD. Where reflective materials are required, conform to DOT Section 730-05.02 except where glass or plastic buttons are used as delineators. Barricades, cones and drums may use reflective materials conforming to DOT Section 730-05.01.
4. Provide pavement delineation of reflective paint or reflective pressure sensitive pavement marking tape. Line segments shall be a minimum of 4 inches wide.
5. Method of Payment: Payment for this item shall be included in the Lump Sum bid items.

### 1.3 EXECUTION

#### A. General

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

2. Conduct and schedule the Work in a manner that will minimize the time during which the traveling public will be exposed to hazards.
3. Do not park employee's personal vehicles within the work area in a manner that they will constitute a traffic hazard.
4. Provide a traveled way suitable for two lanes of moving traffic. Keep traveled way reasonably smooth and hard at all times.
5. Keep the traveled way of all roadways and parking areas utilized for hauling materials to or from this project free of foreign objects that may fall or drop from transporting vehicles.
6. 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's Representative will be the sole judge of the need for the application of water for dust control. Apply water at the intervals and locations ordered by the Owner's Representative.
7. 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's Representative adequately and continuously control one lane traffic.
8. Provide a sufficient number of competent flag persons in areas where construction operations are in potential conflict with vehicular traffic. Flag person shall wear orange hats or caps and vests in conformance with MUTCD.
9. Maintain safe and adequate ingress and egress to and from intersecting highways, residences and commercial establishments.
10. The Contractor is not responsible for removal of snow and ice from pavements or traveled ways open to vehicular traffic.
11. Maintain existing and new drainage structures, culverts and ditches to adequately drain the traveled way.
12. 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.
13. Maintain existing signs, markers, delineators and their supports. Where necessary, relocate existing signs in conformance with MUTCD. Replace signs lost or damaged as a result of contract operations.

B. Construction Signs

1. Provide, maintain, move and remove reflectorized construction signs in accordance with the requirements of MUTCD.
2. Paint supports and backs of sign panels with two coats of white paint.
3. Mount construction signs a minimum of 5 feet above the surface of the traveled way.

C. Removal of Traffic Control Devices

1. Promptly remove all delineators, signs, barricades and pavement workings when in the opinion of the Owner's Representative their presence constitutes a hazard or inconvenience to the traveling public.
2. Remove all remaining traffic control devices upon completion of the Work of this contract unless otherwise ordered in writing by the Owner's Representative.

END OF SECTION 01510

## SECTION 01700 - EXECUTION REQUIREMENTS

### 1.1 GENERAL

- A. Each Contractor shall be responsible for executing his own work in a manner acceptable to the Owner.

### 1.2 PRODUCTS (Not Used)

### 1.3 EXECUTION

- A. Prior to Work Commencement: Contractor shall submit with the signed Notice of Award, a list of contacts of responsible people for the Contractor including principal, foreman, and emergency phone number for after hours. The Contractor shall also submit a list of all subcontractors for approval prior to commencing work. The Contractor is responsible for obtaining all permits necessary for the work and any and all costs for said permits including inspection fees.
- B. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work. Photo documentation of all existing conditions must be provided prior to commencing work.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  - 2. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.
- D. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Engineer. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.
  - 1. Establish control points to set lines and levels as needed to locate each element of Project.
  - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
  - 3. Inform installers of lines and levels to which they must comply.



4. Check the location, level and plumb, of every major element as the Work progresses.
- F. Benchmarks: The Engineer will establish a minimum of two benchmarks on Project site.
- G. Installation: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
1. Make vertical work plumb and make horizontal work level.
  2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
  4. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
  5. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
    - a. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Engineer.
  6. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
- H. Progress Cleaning: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
- I. Starting and Adjusting: Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
1. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- J. Protection of Installed Construction: Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- K. Correction of the Work: Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Cutting and Patching."
1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
  2. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

END OF SECTION 01700

## SECTION 01770 - CLOSEOUT PROCEDURES

### 1.1 GENERAL

- A. Functional Completion: Before requesting inspection for determining date of Functional Completion, complete the following. List items below that are incomplete in 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. Include occupancy permits, operating certificates, and similar releases.
  5. Prepare and submit Project Record Documents, operation and maintenance manuals, 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. Functional Completion Inspection: Submit a written request for inspection for Functional Completion. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Functional Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.
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. Final Completion: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
  2. Submit certified copy of Engineer's Functional Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  4. Submit final VOC and total coliform testing.
  5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- D. Final Completion Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will review a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
- E. List of Incomplete Items (Punch List): Submit [**three**] copies of list.
- F. Project Record Documents: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Engineer's reference during normal working hours.
- G. Record Drawings: Maintain and submit one set of blue- or black-line white prints of Contract Drawings and Shop Drawings.
1. 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 cannot be readily identified and recorded later.
  2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
  3. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.
- H. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
- I. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:
1. Operation Data: Include emergency instructions and procedures, system and equipment descriptions, operating procedures, and sequence of operations.
  2. Maintenance Data: Include manufacturer's information, list of spare parts, maintenance procedures, maintenance and service schedules for preventive and routine maintenance, and copies of warranties and bonds.
  3. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.
- J. Warranties: Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Functional Completion is indicated.
1. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
  2. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (115-by-280-mm) paper.

## 1.2 PRODUCTS

- 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.

## 1.3 EXECUTION

- A. Demonstration and Training: Instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
1. Provide instructors experienced in operation and maintenance procedures.
  2. Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.

3. Schedule training with Owner, through Engineer, with at least **seven** days' advance notice.
  4. Coordinate instructors, including providing notification of dates, times, length of instruction, and course content.
  5. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections. For each training module, develop a learning objective and teaching outline. Include instruction for system design and operational philosophy, review of documentation, operations, adjustments, troubleshooting, maintenance, and repair.
- B. Final Cleaning: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
1. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
  2. Complete the following cleaning operations before requesting inspection for certification of Functional Completion for entire Project or for a portion of Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    - f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    - g. Sweep concrete floors broom-clean in unoccupied spaces.
    - h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
    - i. 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. Polish mirrors and glass, taking care not to scratch surfaces.
    - j. Remove labels that are not permanent.

- k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
    - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
  - l. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
  - m. Clean plumbing fixtures to a sanitary condition, free of stains.
  - n. Replace disposable air filters and clean permanent air filters.
  - o. Clean light fixtures, lamps, globes, and reflectors. Replace burned-out bulbs, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01770

## SECTION 01781 - PROJECT RECORD DOCUMENTS

### 1.1 GENERAL

This section supplements Section 01491, Record Drawings.

#### A. Summary

1. The purpose of the project record drawings is to record the actual location of the work in place including but not limited to underground lines, concealed piping within buildings, concealed valves and control equipment and to record changes in the work.
2. Three months after "Notice to Proceed", the Contractor shall submit one copy of marked up prints to the Engineer with his progress payment. The Engineer will review and comment on the completeness and quality of the record drawings for acceptance. The Contractor will be provided with a CD of all drawings on which the Contractor will record the changes.
3. At completion of construction and prior to final payment, the Contractor shall provide the Engineer with paper copies of work drawings on which all changes have been made where field construction differs from work indicated on the contract drawings, including but not limited to: all significant changes in plan, sections, elevations and details, such as shifts in location of equipment, walls, doors, windows, stairs and the like made during construction; all significant changes in foundations, columns, beams, openings, concrete reinforcing, lintels, concealed anchorages and "knock-out" panels made during construction. The Engineer will review this and return to the Contractor for incorporating all the changes on the CD provided for this purpose. The Contractor shall also submit on a CD on which all the changes have been recorded.
4. In addition to the sets of contract drawings that are required by the Contractor on the site to perform the work, the Contractor shall maintain at the site one (1) copy of all drawings, specifications and addenda that are part of the Contract as awarded. Each of these documents should be clearly marked "Project Record Copy", maintained in a clean and neat condition, available at all times for review by the Owner and the Engineer and not to be used for any other purpose during the progress of the Work.

#### B. Project Record Requirements

1. The Contractor shall mark up the "Project Record Copy" to show:
  - a. Approved Changes in the Work
  - b. Location of Underground Work and Concealed Work
  - c. Details Not Shown in the Original Contract Documents
  - d. Any Relocation of Work
  - e. All Changes in Dimensions
  - f. All Access Doors
  - g. Location of All Plumbing, Heating, Ventilating, Air Conditioning or Electrical Assemblies

2. Such information shall include, but shall not be limited to:
  - a. Footing Depth In Relation To Finished Grade Elevations, Changes In Equipment Layout
  - b. Any Change in Floor Elevations
  - c. Any Structural Changes
  - d. Any Substitutions
  - e. Elevations and Locations of All Underground Utilities, Services or Structures Referenced To Permanent Above-Ground Structures or Monuments
  - f. Designation of All Utilities As To Size and Use of Such Utilities
  - g. All Invert Elevations of Manholes
  - h. Location of All Utilities, Services and Appurtenances Concealed In Building Structures That Have Been Installed Different From That Required By Contract
  - i. Any Approved Change Order
3. Record Specifications
  - a. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
    - 1) Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
    - 2) Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
    - 3) Record name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
    - 4) Note related Change Orders, Record Drawings, and Product Data, where applicable.
4. Record Product Data
  - a. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
    - 1) Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
    - 2) Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
    - 3) Note related Change Orders, Record Drawings, and Product Data, where applicable.
5. Miscellaneous Record Submittals: Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

## 1.2 PRODUCTS (Not Used)



1.3 EXECUTION

- A. Update: The Contractor shall keep the Project Record Documents up to date from day to day as the work progresses. Appropriate documents are to be updated promptly and accurately; no work is to be permanently concealed until all required information has been recorded.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Engineer's reference during normal working hours.
- C. Submittal to Engineer
  - 1. The Project Record Drawings are to be submitted by the Contractor to the Owner and the Engineer when all the work is completed and is reviewed by the Owner and the Engineer before the Contractor may request final payment.
  - 2. The Owner will withhold 0.2% of the project cost until the record drawings are submitted.

END OF SECTION 01781

## SECTION 01800 – MISCELLANEOUS GENERAL REQUIREMENTS

### 1.1 GENERAL

#### A. Survey, Benchmark and Levels

1. The drawings accompanying these specifications show the levels, etc., and exact position of the Work.
2. The definite final location of sewer lines and access roads in relationship to the property lines, benchmark, establishing floor lines, etc., shall be located by the Contractor and certified by a licensed surveyor for review by the Engineer.

#### B. Layout Work

1. The Contractor shall have an accurate instrument at the site or readily available at all times and shall check all lines and levels so that no discrepancy will occur during progress of construction.
2. Work incorrectly laid out shall be removed and properly rebuilt at no extra cost to the Owner.
3. All work shall be laid out with regard to the work of other Contractors so that all work shall fit and form good joints.

#### C. Cooperation

1. The Contractor shall carefully examine all drawings and specifications and conduct operations in such manner as shall not interfere with or delay the work of his subcontractor's work.
2. The plans are generally diagrammatic, and each Contractor shall coordinate his work with work of other trades so that interference shall not occur.

D. Equipment shown on the drawings illustrates the space requirements and the Contractor shall install only such equipment as shall not necessitate changes in the job or arrangements. If changes are required due to substitution of other equipment, the Contractor making the substitution shall pay for the necessary changes. No such changes shall be made except with Engineer's written approval.

E. Chases and Recesses and Curbs: All chases, openings and recesses in construction necessary for the installation of all work will be left by the Contractor.

F. Fire Protection Equipment: The Contractor shall provide in his temporary offices and storage sheds approved fire-fighting equipment as required by the National Board of Fire Underwriters, Owner's insurance companies, local or state authorities.

- G. Premises: The Contractors shall at all times keep the premises free from accumulations of waste materials or rubbish caused by his employees or work and at the completion of the work he shall remove all his rubbish from and about the building, and all his tools, scaffolding and surplus materials and shall have the work "broom clean" on leaving, or its equivalent unless more exactly specified. The Contractor shall at all times provide temporary and safe access and exits for the operation of the existing structure during construction. The new construction shall be properly fenced off from the existing activities to provide safety.
- H. OSHA: All Contractors and subcontractors are to conform to the latest Occupational Safety & Health Administration Rules and Safety Regulations governing and shall be held in strict conformance to said Rules and Regulations.
- I. Industrial Code Rules No. 23 and 53
  - 1. Comply with the requirements of Industrial Code Rules 23 and 53.
  - 2. Utility companies request the cooperation of all Contractors in minimizing job delays, property damage and personal injury, which may result from construction, demolition or excavation activities in the vicinity of electric wires and equipment.
  - 3. Industrial Code Rule No. 23 (NYCRR 12, Sec. 23) states: "All power lines and power facilities around or near construction, demolition and excavation sites shall be considered as energized until assurance has been given that they are otherwise by qualified representatives of the owners of such power lines or power facilities". A complete copy of Industrial Code Rule No. 23 is available through the Commissioner of Labor of the State of New York. Contractors shall be held responsible for adhering to this Rule. Copies of Industrial Code Rules 23 and 53 are available at the Engineer's office for review.
- J. Project Close-Out: See Section 01770 for Closeout Procedures.

1.2 PRODUCTS (Not Used)

1.3 EXECUTION (Not Used)

END OF SECTION 01800

## SECTION 01816 - FINAL OBSERVATION PRECEDING ACCEPTANCE

### 1.1 GENERAL

- A. Observations will be made by the Engineer of all phases of construction at the time of construction. At that time, the Engineer will have indicated his acceptance or rejection of the item under observation. If rejected at that time, repair or replacement must be made by the Contractor.
- B. Upon completion of the entire project, the Engineer will review items previously accepted. He will also make a complete detailed observation. Following this observation, a punch list will be provided for the Contractor. If any items still need correction or adjustment, the Contractor shall do those items and advise the Engineer of completion of same. If further observation reveals that said items are complete and according to plan and Specifications, the Engineer will issue a certificate of completion and acceptance to the Owner.

### 1.2 PRODUCTS (Not Used)

### 1.3 EXECUTION (Not Used)

END OF SECTION 01816

## SECTION 01820 - DEMONSTRATION AND TRAINING

### 1.1 GENERAL

- A. The Contractor shall instruct Owner's personnel, including the following:
  - 1. Demonstration of operation of systems, subsystems, and equipment.
  - 2. Training in operation and maintenance of systems, subsystems, and equipment.

### 1.2 PRODUCTS (Not Used)

### 1.3 EXECUTION

- A. Instruction
  - 1. Engage qualified persons to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
  - 2. Scheduling: Provide instruction at mutually agreed on times.
    - a. Schedule training with Owner, through Engineer, with at least seven days advance notice.

END OF SECTION 01820

## SECTION 02210 – SITE WORK

### 1.1 GENERAL

- A. Summary: This section covers all the necessary precautions to be taken at the job site.

### 1.2 PRODUCTS (Not Used)

### 1.3 EXECUTION

#### A. Continuity of Operations

1. The Contractor shall place all his equipment in such a manner that the remaining areas of the site can be accessed at all times.
2. The Owner reserves the right to change the line and grade of the items being constructed, prior to installation, in order to avoid another utility or for any other reason and to pay for the changed work according to the bid prices under this Contract, without being subject to claim for additional compensation and for the loss of anticipated profits, if the total effect is to decrease the cost of the work.

#### B. Grading

1. All areas to be surfaced shall be graded to the elevation required to provide for surfacing material as specified. Lawns and planted areas shall be reasonably smooth, compacted and free from irregular surface changes. All ditches, swales and gutters shall be finished to drain readily. No cut or fill slope shall exceed a grade of two horizontal to one vertical, unless otherwise noted on the plans.
2. After completion of all the work on the tank and appurtenances, driveways within the tank site contract limits, and rough grading of the entire site, all disturbed areas shall be covered with at least 4" of topsoil supplied from off-site sources, final graded, machine raked, smoothed, and seeded as specified herein. Topsoil and other material can be stockpiled on-site.
3. Uniformly grade areas to a smooth surface, free from irregular surface changes. Grade lawns, walks and unpaved subgrades to tolerances of plus or minus 1 inch (25 mm) and pavements and areas within building lines to plus or minus ½ inch (13 mm).

#### C. Site Safety

1. The Contractor is responsible for the removal, relocation and replacement of any above ground objects including, but not limited to trees, shrubs, poles, fences, signs, mailboxes, streetlights, street signs, etc., which may be encountered as work progresses on the project. The Contractor should visit the site and familiarize himself with the requirement for removal and replacement of above ground objects. The Engineer must be notified prior to the removal, relocation or replacement of any of the previously mentioned items. The cost of removal and replacement of above items shall be included in the bid prices.

2. It shall be the responsibility of the Contractor to protect all utilities at all times and to repair or replace at his own expense any structures disturbed because of negligence or lack of care or for any other reason by the Contractor or his representatives.

D. Fencing: Any damaged fence shall be removed and replaced with a new matching fence. The fencing materials shall be galvanized steel. Tubular line posts shall not be spaced not more than 10 feet on centers. The posts shall be embedded in concrete in 9 inch diameter holes for line posts and 12 inch diameter holes for terminal posts, to a depth of at least 36 inches. The concrete shall have a strength of 3,000 psi. The exposed surface of the concrete shall be crowned to shed water.

END OF SECTION 02210

## SECTION 02230 - SITE CLEARING

### 1.1 GENERAL

- A. **Materials Ownership:** Except for materials indicated to be stockpiled or to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from the site.
- B. **Traffic:** Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.

### 1.2 PRODUCTS

- A. **Satisfactory Soil Materials:** Requirements for satisfactory soil materials are specified in Division 2 Section "Earthwork."
  - 1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site. Check with Engineer.

### 1.3 EXECUTION

- A. Locate and clearly flag trees and vegetation to remain or to be relocated.
- B. Protect existing site improvements to remain from damage during construction.
  - 1. Restore damaged improvements to their original condition, as acceptable to Owner.
- C. Erect and maintain a temporary fence around drip line of individual trees or around perimeter drip line of groups of trees to remain. Remove fence when construction is complete.
  - 1. Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.
- D. Do not excavate within drip line of trees, unless otherwise indicated.
- E. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.
- F. **Utilities:** Locate, identify, disconnect, and seal or cap off utilities indicated to be removed. Do not interrupt utilities serving facilities occupied by Owner or others unless permitted. Arrange to provide temporary utility services.
  - 1. Excavate for and remove underground utilities indicated to be removed.
- G. **Clearing and Grubbing:** Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.



1. Fill depressions with satisfactory soil material. Place fill in horizontal layers not exceeding 8-inch (200-mm) loose depth and compact each layer to a density equal to adjacent original ground.
- H. Topsoil Stripping: Remove sod and grass before stripping topsoil. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
1. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
- I. Site Improvements: Remove existing above-and below-grade improvements as indicated and as necessary to facilitate new construction.
- J. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off Owner's property.
- K. Burning on site shall not be done unless approved by authorities having jurisdiction.
- L. Control air pollution caused by dust and dirt and comply with governing regulations.
- M. Soil erosion and control is very important on this Project. The Contractor shall take adequate measures to prevent soil erosion. Strictly follow the Stormwater Management and Control Plan.

END OF SECTION 02230

## SECTION 02240 - DEWATERING

### 1.1 GENERAL

- A. Summary: This Section includes construction dewatering.
- B. Performance Requirements - Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control ground-water flow into excavations and permit construction to proceed on dry, stable subgrades.
- C. Quality Assurance - Regulatory Requirements: Comply with water disposal requirements of authorities having jurisdiction.

### 1.2 PRODUCTS (Not Used)

### 1.3 EXECUTION

- A. Preparation: 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 groundwater 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.
- B. Installation
  - 1. 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 above and below bottom of foundations, drains, sewers, and other excavations.
    - a. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
  - 2. 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 in a manner that avoids inconvenience to others. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.
  - 3. 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.
    - a. Remove dewatering system from Project site on completion of dewatering.
  - 4. Damages: Promptly repair damages to adjacent facilities caused by dewatering operations.
  - 5. Include the cost of dewatering in various items of work. No additional cost will be paid for dewatering.

END OF SECTION 02240

## SECTION 02300 - EARTHWORK

### 1.1 GENERAL

- A. Summary: This Section pertains to the trenching, pipe laying and crushed stone road Work.
- B. Definitions in this Section
  - 1. Backfill: Soil materials used to fill an excavation.
  - 2. Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe.
  - 3. Excavation: Removal of material encountered above subgrade elevations or from trench for installation of utilities.
  - 4. Structures: Retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
  - 5. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
  - 6. Utilities include on-site underground water and sewer pipes, electric conduits, ducts, and cables, as well as underground services within buildings.

### 1.2 PRODUCTS

- A. Backfill and Fill: Satisfactory inorganic soil materials, crushed stone.
- B. Bedding: Naturally or artificially graded mixture of natural or crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch (25 mm) sieve and not more than 8 percent passing a No. 200 (0.075 mm) sieve.
- C. Drainage Fill: Washed, narrowly graded mixture of crushed stone; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch (38 mm) sieve and 0 to 5 percent passing a No. 8 (2.36 mm) sieve.

### 1.3 EXECUTION

- A. Preparation: Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Provide erosion and sedimentation control measures.
- C. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- D. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

- E. The Contractor shall excavate to elevations and dimensions indicated on the plans plus sufficient space to permit erection of forms, shorings, etc, if required.
1. Excavation carried below the depth of the footings and bottom of units shall be backfilled with washed crushed stone, thoroughly compacted by mechanical equipment before the footings and floors are poured. Banks shall slope at a safe angle or shored, if required. The Contractor shall provide pumping facilities to keep the excavation clear of water at all times at no additional cost to the Owner. The Contractor shall do all bracing, sheeting and shoring necessary to perform and protect all excavation as required for safety or to conform to governing laws.
  2. The Contractor shall provide, erect and maintain adequate barricades, warning signs and lights at all excavations near the public highways or other points of danger. Rules and regulations of local authorities regarding safety provision shall be observed.
  3. Include the cost of above in the bid prices, with the exception of rock excavation and disposal, which shall be paid for on the basis of the unit price bid for rock excavation.
- F. Rock encountered in trenches or other excavation shall be removed to a depth of at least 6" below the proposed elevation of the base of the structure and at least 6" beyond the limits of the structure.
1. In blasting rock, care must be taken to eliminate any danger to adjacent property, buildings, pipelines or other utilities. The Contractor must be licensed to do blasting and must have adequate insurance. The area to be blasted must be covered with a blasting mat to prevent fragments of rock from being blown from the area.
  2. Blasting for excavation shall be permitted only after proper precautions are taken for the protection of persons and property. Any damage caused by blasting shall be repaired by the Contractor at his own expense. The blasting procedure, including protection of persons and property, shall be in strict accordance with federal, state and local regulations.
  3. Blasting of rock shall be limited to that material that cannot be removed with a one cubic yard backhoe.
  4. Rock excavation and disposal shall be paid for on the basis of the unit price bid for rock excavation. Boulders over one cubic yard will be paid at half the price of rock excavation and disposal.
- G. Excavate utility trenches to indicated gradients, lines, depths, and invert elevations of uniform widths to provide a working clearance on each side of pipe or conduit.
1. **Call Dig Safely New York two (2) days before you dig at 1-800-962-7962. This is required by law.**
  2. Excavate trenches deeper than bottom of pipe elevation, 6 inches (150 mm) deeper in rock, 4 inches (100 mm) deeper elsewhere, to allow for bedding course. Hand excavate for bell of pipe. Excavation shall be in accordance with ASTM D2321 and to Installation and Construction (of PVC pipe) by the Plastic Pipe Institute.
  3. Excavation and preparation of trenches shall be in accordance with the typical section shown on the detail sheet. The Contractor shall provide all sheeting, shoring and bracing which may be needed and shall keep the trench free of water. Every reasonable effort should be made to keep the width of the trench at a point level with the top of the pipe, no

greater than 24" plus pipe diameter. The trench width in rock or among boulders shall sufficient to leave at least 6" of clearance between the pipe and any rock or boulder. Excavation in plain earth and rock shall be excavated to a depth of at least 6" below the pipe. A pipe bedding, 6 inches deep of crushed stone, shall be used. This material shall be thoroughly compacted and then shaped to fit the pipe.

4. Pavement shall be cut with a saw. Breaking of pavement with a backhoe, etc., shall not be allowed.
  5. Sidewalks shall be cut at the expansion joints
  6. Holes for the bells shall be provided at each joint but shall be no larger than necessary for joint assembly and assurance that the pipe barrel will lie flat on the trench bottom. Push-on type joints require only minimum depressions for bell holes.
  7. Unless trench banks above the top of the pipe are cut back on a stable slope, sheeting and bracing shall be provided to prevent caving or sliding, to provide protection for workmen and the pipe, and to protect adjacent structures and facilities. Sheeting shall not be braced against the pipe. The bracing and sheeting shall be removed only after the pipeline has attained sufficient strength to withstand the loads resulting from such removal. Include the cost of trench sheeting in the unit price of pipe.
  8. Excavation and sheeting operations shall be conducted in conformance with the New York State Department of Labor Rules and Regulations (12 NYCRR Part 23).
- H. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation of bottom, without altering top elevation. Lean concrete fill may be used when approved by the Engineer.
1. Fill unauthorized excavations under other construction or utility pipe as directed by Engineer.
- I. Stockpile borrow materials and satisfactory soil materials, without intermixing, in shaped, graded, drained, and covered stockpiles in the location shown on the Drawings. Stockpile soil materials away from the edge of excavations and outside drip line of remaining trees. Install and maintain soil erosion control while stockpiles are in use.
- J. Water In Excavation
1. Where water is encountered during excavation, suitable pumping equipment shall be provided to keep the water level down so that at no time surface or ground water is allowed to enter the unit of construction.
  2. The Contractor shall, at all times during construction, provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the execution of the work.
  3. Removal of water includes the construction and removal of cofferdams, sheeting and bracing, the furnishing of materials and labor necessary therefore, the excavation and maintenance of ditches and sluice-ways, and the furnishing and operation of pumps, well-points and appliances needed to maintain thorough drainage of the work in a satisfactory manner.

4. Water shall not be allowed to rise over or come in contact with any masonry, concrete or mortar until at least 24 hours after placement, and no stream of water shall be allowed to flow over such work until such time as the Engineer may permit.
5. Where ground water is encountered, it shall be dewatered by lowering and maintaining the ground water beneath such excavations at an elevation not less than 6" below the invert of piping and the bottom of a structure during times when work thereon is in progress, including subgrade preparation and the placing of the structure or pipe thereon.
6. Water pumped or drained from excavations, or any sewers, drains or water courses encountered in the work shall be disposed of in a suitable manner without injury to adjacent property, the work under construction or to pavements, roads, etc. No water shall be discharged to sanitary sewers.
7. Include the cost of dewatering in the bid prices. No additional payment for dewatering will be made.
8. Where water is encountered during excavation for pipe, the bedding of the pipe shall be revised to 3/4" crushed stone.

K. Subsurface Utilities

1. The work will be placed in the vicinity of existing utilities, including but not limited to, water and sewer mains, water and sewer services, storm drainage pipes, telephone and electric and gas lines.
2. It shall be the Contractor's responsibility to locate all existing underground structures and utilities in the vicinity of the proposed blower slab using test holes or other methods approved by the Engineer to determine the position and depth of such underground structures and activities, as may be in the path of his work, prior to starting excavation.

The following procedures will be followed in regard to the subsurface utilities:

- a. The Contractor shall contact the Engineer sufficiently in advance of proceeding with digging the test holes and the excavation. Any water, sewer and drainage pipe damaged by the Contractor will be repaired by the Contractor at his own expense.
- b. In general, the gas, electric, cable and phone lines are not shown on the plans because their exact location is not known to the Engineer. Where these are shown, these are of a general nature and are not exact locations. The exact location should be obtained from the utility company and verified by the Contractor.
- c. The Contractor shall contact the electric utility company and the phone and cable company for location of gas, electric, cable and phone lines. Any gas, electric, cable or phone line damaged by the Contractor, located or unlocated, shall be repaired by the Contractor at his own expense. The Contractor shall be solely responsible for dealing with the gas and/or electric utility company and the phone company. The Contractor should schedule his work in consultation with the utility company. The Owner will not entertain any claim for delay or otherwise, which results from the actions of the utility company. Only those Contractors who have experience in dealing with utility companies for locating, relocating and protection of utilities may bid on this project. The cost of contacting the utility and other related costs should be included in the bid prices.

- d. Where the plans specifically require digging test holes for location of utilities, include the cost of this in the bid prices. The Owner is not obligated to mark the location of the utilities for these locations.
  3. It shall be the responsibility of the Contractor to protect all utilities at all times and to repair or replace at his own expense any structures disturbed because of negligence or lack of care or for any other reason by the Contractor or his representatives.
  4. The Owner reserves the right to change the line and grade of the items being constructed, prior to installation, in order to avoid another utility or for any other reason and to pay for the changed work according to the bid prices under this Contract, without being subject to claim for additional compensation and for the loss of anticipated profits, if the total effect is to decrease the cost of the work.
- L. Above Ground Objects: The Contractor is responsible for the removal, relocation and replacement of any above ground objects including, but not limited to large ornamental boulders, shrubs, poles, fences, signs, mailboxes, streetlights, street signs, etc., which may be encountered as work progresses on the project. The Contractor should visit the site and familiarize himself with the requirement for removal and replacement of above ground objects. The Engineer must be notified prior to the removal, relocation or replacement of any of the previously mentioned items. The cost of removal and replacement or protection of above items shall be included in the bid prices.
- M. Bedding
1. PVC pipe bedding shall be 6 inches deep sand or crushed stone per ASTM D 2321.
  2. When wet or unsuitable material is encountered at the bedding limit shown on the trench details, the bedding shall be revised to 3/4" crushed stone.
  3. In the event unsuitable conditions exist below the lower bedding limit, a 6" minimum layer of 3/4" crushed stone base shall be placed below the bedding of the pipe. This material shall be placed, graded and compacted prior to laying the pipe. Such extra base material will be paid on the basis of the unit price bid for crushed stone base.
- N. Utility Trench Backfill: Place, compact, and shape bedding course to provide continuous support for pipes and conduits over rock and other unyielding bearing surfaces and to fill unauthorized excavations. Trench backfill shall be in accordance with Trench Details shown on the plans. In the absence of a Trench Detail:
1. Place and compact initial backfill of approved crushed stone, free of particles larger than 3/4 inch (19 mm), to a height of 18 inches (300 mm) over the sewer line.
  2. All pipes, connections, intersections, branches, valves and ends of pipes shall remain uncovered until the Engineer has observed, measured and located same and given permission to backfill the trenches. After laying the pipe, each length shall be carefully backfilled by placing backfill material around the pipe. Backfill shall be thoroughly compacted and tamped in 6" layers so as to securely hold the pipe in place, but not tamped to cause movement of the pipe. This careful placing and compacting shall continue until a minimum of 18" of backfill has been placed and tamped over the top of the pipe. No stones larger than 3/4" shall be placed in this portion of the backfill. From 18" above the pipe to the grade shown on the drawings or fixed by the Engineer, the trench shall be backfilled with suitable material that shall contain no stone larger than

3/4" and shall be carefully placed and compacted in 6-inch layers to 95% Standard Proctor to find grade.

- a. Warning Tape: Install warning tape directly above utilities, 12 inches (300 mm) below finished grade, except 6 inches (150 mm) below subgrade under pavements and slabs. The warning tape shall be installed over all pipe, PVC, HDPE and ductile iron

O. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D698:

- 1. Compaction for utility trenches in **6-inch layers at 95 percent** of the maximum density as determined by ASTM D698, Standard Proctor Density.
- 2. Under lawn or unpaved areas, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill material at 90% of the maximum density as determined by ASTM D698, Standard Proctor Density.

P. Grading: Uniformly grade areas to a smooth surface, free from irregular surface changes. Grade lawns, walks, and unpaved subgrades to tolerances of plus or minus 1 inch (25 and pavements and areas within building lines to plus or minus 1/2 inch (13 mm).

Q. Crushed Stone and Sand: Crushed stone specified in the specifications and/or shown on the drawings shall conform to the following gradation by weight:

Sieve Size	Percent of Weight Passing
3/4"	100%
1/2"	90% - 100%
3/8"	40% - 70%
No. 4	0% - 15%
No. 8	0% - 5%

- 1. Sand or coarse sand for backfill where specified; 100% passing through a No. 4 sieve, but not more than 5% passing through a No. 200 sieve.

R. Testing Agency: The Contractor will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.

- 1. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- 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 to depth required; recompact and retest until specified compaction is obtained.

S. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

T. Disposal: Stockpile surplus excavated soil in a location approved by the Engineer and protect it against erosion using tarps and hay bales. Place the stockpile soil on-site in a location directed by the Engineer. Trash and debris shall be legally disposed off the Owner's property in a permitted landfill.

END OF SECTION 02300



## SECTION 02620 - SUBDRAINAGE

### 1.1 GENERAL

- A. Submittals: Product Data for drainage conduit, drainage panels, and geotextile fabrics.
- B. Subdrainage is required for all new structures.
- C. This section covers curtain drains.

### 1.2 PRODUCTS

- A. Drainage Pipes and Fittings
  - 1. Perforated, PE Pipe and Fittings: ASTM F 405, Corrugated, for Coupled Joints
    - a. Couplings: Manufacturer's Standard, Band Type
  - 2. Perforated, PVC Sewer Pipe and Fittings: ASTM D 2729, Bell-And-Spigot Ends, for Loose Joints.
- B. Geotextile Filter Fabrics: Non-woven geotextile filter fabric of PP or polyester fibers. Flow rates range from 110 to 320-gpm sq. ft. (4,480 to 13,440 L/min. sq. m) when tested according to ASTM D 4491. Available styles are flat and sock.

### 1.3 EXECUTION

- A. Subdrainage/Curtain Drain System Applications
  - 1. NPS 4 (DN 100) Piping
    - a. Perforated, PE Pipe and Fittings, Couplings, and Coupled Joints
    - b. Perforated, PVC Sewer Pipe and Fittings for Loose, Bell-and-Spigot Joints
- B. Foundation Drainage Installation
  - 1. Bottom Impervious Fill: Place impervious fill material on subgrade adjacent to bottom of footing after concrete footings have been cured and forms removed. Place and compact impervious fill to dimensions indicated, but not less than 6 inches (150 mm) deep and 12 inches (300 mm) wide.
  - 2. Drainage Fill: Place supporting layer of drainage fill over compacted subgrade to compacted depth of not less than 4 inches (100 mm). After installing drainage piping, add drainage fill to width of at least 6 inches (150 mm) on side away from wall and to top of pipe to perform tests. After satisfactory testing, cover piping to width of at least 6 inches (150 mm) on side away from footing and above top of pipe to within 12 inches (300 mm) of finish grade. Place drainage fill in layers not exceeding 3 inches (75 mm) in loose depth; compact each layer placed.
    - a. Before installing drainage fill, lay flat-style geotextile filter fabric in trench and overlap trench sides. After installing drainage fill, wrap top of drainage fill with flat-style geotextile filter fabric.

- b. Encase pipe with sock-style geotextile filter fabric before installing pipe. Connect sock sections with electrical tape.
  - c. After installing drainage fill, place one layer of **flat-style geotextile filter fabric** over top of drainage fill, overlapping edges at least 4 inches (100 mm).
3. **Fill to Grade:** Place native fill material over **compacted drainage fill**. Place material in loose-depth layers not exceeding 6 inches (150 mm). Thoroughly compact each layer. Fill to finish elevations and slope away from structure.

C. Piping Installation

1. Install piping beginning at low points of system, true to grades and alignment indicated, with unbroken continuity of invert. Bed piping with full bearing in filtering material. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions and other requirements indicated.
  - a. **Foundation Subdrainage:** Install piping pitched down in direction of flow, at a minimum slope of 0.5 percent and with a minimum cover of 36 inches (915 mm), unless otherwise indicated.
2. Use increasers, reducers, and couplings made for different sizes or materials of pipes and fittings being connected. Reduction of pipe size in direction of flow is prohibited.
3. Install PE piping according to ASTM D 2321.
4. Install PVC piping according to ASTM D 2321.

D. Pipe Joint Construction

1. Join perforated, PE pipe and fittings with couplings for soiltight joints according to AASHTO's "Standard Specifications for Highway Bridges," Division II, Section 26.4.2.4, "Joint Properties"; or according to ASTM D 2321.
2. Join perforated, PVC pipe and fittings according to ASTM D 2729, with loose, bell-and-

E. Foundation Subdrainage Cleanout Installation

1. Install cleanouts from subdrainage piping to grade. Locate cleanouts at beginning of piping run and at changes in direction. Install fittings so cleanouts open in direction of flow in piping.
2. Nonvehicular-traffic areas, use NPS 4 (DN 100) PVC pipe and fittings for subdrainage piping branch fittings and riser extensions to cleanout plug. Set cleanout frames and covers in a cast-in-place concrete anchor, 12 by 12 by 4 inches (300 by 300 by 100 mm) in depth. Set top of cleanout plug 1 inch (22 mm) above grade.

F. Connect low elevations of subdrainage system to solid storm drainage system.

G. Clear interior of installed piping and structures of dirt and other superfluous material as work progresses. Maintain swab or drag in piping and pull past each joint as it is completed. Place plugs in ends of uncompleted pipe at end of each day or when work stops.

END OF SECTION 02620

## SECTION 02660 – UNDERDRAIN SYSTEM

### 1.1 GENERAL

- A. **Summary:** The Contractor shall install an underdrain system in the clearwell as shown on the Engineering Drawings. The Contractor shall install an underdrain piping network and fill in and around the piping with pea gravel. The pea gravel shall be placed such that it forms a bed for the proposed liner. A non-woven geotextile shall be placed on top of the pea gravel to form a barrier between the gravel and liner.
- B. **Submittals:** The Contractor shall submit piping, pea gravel and geotextile information to the Engineer for approval.

### 1.2 PRODUCTS

#### A. Underdrain Piping

**Note: Primer and glue are prohibited from this project. Bell and spigot fittings and pipe only.**

1. Smoothwall Sewer and Drain Pipe as manufactured by Hancor or approved equal.
2. 4" perforated pipe with a white high density polyethylene layer around a black polyethylene core conforming to ASTM F810.
3. **Joints:** Bell and spigot; belled ends shall be integrally formed with the pipe and be at least 2" plus or minus ½" in length.
4. **Material Properties:** Pipe material shall be high density polyethylene meeting ASTM D3350-04 minimum cell classification 424420C or E; or ASTM D1248 Type III, class B or C Category 4, Grade P33.
5. **Perforations** shall be two rows of 5/8" diameter holes; **Axial Spacing:** 4" minimum; **Radially Spacing:** 120°.

#### B. Aggregate

1. **Pea Gravel:** An open graded coarse aggregate, produced by washing and screening natural gravel. The particles are sized from ½" to #8 mesh and were formed by the natural disintegration of numerous types and colors of rocks by glacial or riverbed action into primarily round particles.

Sieve Size	Percent of Weight Passing
½"	100%
3/8"	80% - 100%
#4	0% - 15%
#8	0% - 5%

C. Non-Woven Geotextile

1. A non-woven needle-punched geotextile made of 100% polypropylene staple filaments that resists ultraviolet and biological deterioration, rotting, naturally encountered basics and acids. The non-woven geotextile shall be US 250NW as manufactured by US Fabrics or approved equal.
2. The non-woven geotextile shall adhere to the following properties:

<u>PROPERTY</u>	<u>TEST METHOD</u>	<u>RESULTS</u>
Weight-Typical	ASTM D-5261	10 oz/sy
Tensile Strength	ASTM D-4632	250 lbs
Elongation @ Break	ASTM D-4632	50%
Mullen Burst	ASTM D-3786	500 psi
Puncture Strength	ASTM D-4833	155 lbs
CBR Puncture	ASTM D-6241	700 lbs
Trapezoidal Tear	ASTM D-4533	100 lbs
Apparent Opening Site	ASTM D-4751	100 US Sieve
Permittivity	ASTM D-4491	1.20 sec <sup>-1</sup>
Water Flow Rat	ASTM D-4491	80g/min/sf
UV Resistance @ 500 Hours	ASTM D-4355	70%

1.3 EXECUTION

- A. The Contractor shall install underdrain piping on the slab of the clearwell as shown on the Drawings.
- B. The Contractor shall install a minimum of 10 inches of pea gravel over the entire clearwell slab floor around the piping to form a bed for the proposed liner system.
- C. Special care shall be taken when installing the pea gravel. If any damage occurs to the Owner's property, the Contractor shall make repairs at no cost to the Owner.
- D. Contractor shall install non-woven geotextile over the pea gravel.
- E. The Contractor shall refer to the Drawings for the finishing of the sump area outlet piping.

END OF SECTION 02660

## SECTION 02910 - LANDSCAPING

### 1.1 GENERAL

- A. Summary: Provide all landscaping work as indicated on the drawings. Refer to planting plan drawing PL-1 for final plant list and actual scope of work under this contract.
- B. References and industry standards listed in this Section are applicable to the Work.
- C. Inspection
  - 1. Inspection by the Landscape Architect (LA) and Town of Pound Ridge (Owner)
    - a. All plants shall be subject to inspection and approval by the Landscape Architect. Plants required for the work will be inspected and tagged at the or approved by photo before being dug or selected from nursery stock. Inspection and tagging shall not affect the Owner's or LA's right to reject such plants on or after delivery thereof to the site.
    - b. Inspection of plants at the place of growth or upon delivery will be for quality and size; variety, color; all other requirements are the responsibility of the Contractor. Inspection for size of ball or roots, latent defects and for other requirements will be made at the site during progress of the work.
    - c. The Contractor or the Contractor's authorized Representative shall be present during inspections.
  - 2. The Owner reserves the right to reject either on or after delivery to the site, all materials that are not in compliance with the drawings and the Specifications.
- D. Receipt of Materials
  - 1. Furnish a receipt for all bulk deliveries of topsoil and Compost, brought to job each day, prior to unloading.
  - 2. Provide tags on all bags identifying material and weight for all bagged items delivered to job.
  - 3. Material not complying with above requirements will not be accepted.
- E. Guarantee
  - 1. Planting is subject to the two year Guarantee requirements set forth in the Contract for the entire work of this Contract, provided that Landscaping has been completed and accepted at the start of the Contract Guarantee period.
  - 2. At the end of this period all planted material (trees, shrubs and plantings) that is dead or in a dying condition shall be replaced with like material or approved equal value alternative by Owner or LA.
  - 3. Inspect the plant material during the two year guarantee period, in order to ascertain that the material is receiving the proper care by the Owner.

F. Delivery, Storage and Handling

1. Promptly notify the Owner, in advance, when the plant material is to be delivered and the manner of shipment.
2. The itemized list in duplicate of the plant material for each delivery shall include the pertinent data in the form as specified in the list of plants to be furnished.
3. When shipment is made by truck, all plant material shall be packed to provide adequate protection against climatic, seasonal and breakage injuries during transit, loading and unloading.
4. During transit, securely cover tops with tarpaulin or canvas to minimize wind whipping and drying.
5. Employ a suitable method of handling to ensure the careful, workmanlike delivery of heavy balled plants to preclude cracked or "mushroomed" plant balls at the point of delivery.
6. Perform necessary pruning of roots prior to delivery of plant material to the site.
7. Deliver packaged materials in unopened packages or containers, labeled with manufacturer's name, name of product, and other pertinent information.
8. Deliver trees, shrubs, and other plants only after preparations have been made to allow immediate placement.
9. Storage of materials on site shall be in areas approved by the Owner.

1.2 PRODUCTS

A. Topsoil

1. All topsoil shall be from offsite sources.
2. New Topsoil: Natural topsoil of good, rich, uniform quality, free from a mixture of subsoil, weeds, clay lumps, brush, poison ivy roots and other undesirable material harmful to plant growth. Meet the following requirements:
  - a. pH: 5.0 to 7.0 inclusive
  - b. Organic Matter: 7% (loss on ignition)
  - c. Specific Conductance: less than 2,000 microohms/cm
  - d. Texture: Sandy Loam
  - e. Good Internal Rate of Percolation
  - f. Clay Content: 10%-20%
  - g. Sieve Analysis, as follows:

<u>Sieve Size</u>	<u>%Passing</u>
1"	100%
1/2"	97%
#10	60-80%
#40	40-60%
#60	40-60%
#100	10-30%
#200	10-20%

3. Include the following information in soil testing reports:
  - a. Color
  - b. pH
  - c. Specific Conductance: Micro-ohms/cm
  - d. Organic Matter (loss on ignition)
  - e. Texture
  - f. Mechanical Analysis: % passing 1", 1/2", #10, #40, #60, #100 and #200 sieves
  - g. Available Nutrients
  - h. Corrective Recommendations in lbs/AC for nutrients and pH
  
- B. Bone Meal: Commercial raw bone meal shall be finely ground and have a minimum analysis of 4% nitrogen and 20% phosphoric acid. It shall be delivered in standard size bags showing weight, analysis and name of manufacturer. It shall be kept in a weatherproof storage place on the job.
  
- C. Commercial Fertilizer
  1. Organic Plant Fertilizer: Shall be uniform in composition, encapsulated time release (6 month formula), free flowing, and suitable for application. The fertilizer shall be delivered to the site in bags or other convenient containers, each fully labeled, conforming to the application state fertilizer laws, and bearing the name trade, or trademark, and warranty of the producer. Fertilizer for planting shall be Healthy Start 3-4-3 as manufactured by Plant Health Care Inc., or equal.
  2. The Owner reserves the right to reject on, or after delivery any material which does not, in its opinion, meet these specifications.
  3. All Commercial Fertilizer shall be stored in such a manner that its effectiveness will not be impaired.
  
- D. Compost Tea is a liquid produced by extracting beneficial microorganisms (microbes)—bacteria, fungi, protozoa, nematodes, and micro arthropods—from compost using a brewing process. The compost tea shall contain all of the organisms that were present in the compost before brewing. The brewed water extract should also have soluble nutrients from the compost.
  
- E. Compost
  1. Compost shall be a well decomposed, stable, weed free organic matter source.
  2. It shall be derived from: agricultural, food, or industrial residuals; biosolids (treated sewage sludge); yard trimmings; source-separated or mixed solid waste.
  3. The product shall contain no substances toxic to plants and shall be reasonably free (< 1% by dry weight) of man-made foreign matter.
  4. The compost will possess no objectionable odors and shall not resemble the raw material from which it was derived.
  5. New Compost shall meet the following requirements:
    - a. pH: 6.0 to 8.5 inclusive

- b. Organic Matter: 30-65% (dry weight basis)
- c. Soluble Salt Concentration: Max. 10 dS/m
- d. Moisture Content: 30%-60% (wet weight basis)
- e. Sieve Analysis: 98% pass through ¾" screen or smaller

F. Trees and Shrubs

- 1. Plant names shall agree with nomenclature of "Standardized Plant Names" as adopted by the American Joint Committee on Horticultural Nomenclature, and size and grading standards shall conform to those of the American Association of Nurserymen, unless otherwise specified. Substitution will be permitted only if authorized by Landscape Architect and Owner.
- 2. All plant materials shall be true to species or variety shall be sound, healthy, vigorous, acclimated plants free from defects, disfiguring knots, girdled roots, sun-scald injuries, and abrasions of the bark, plant diseases, insect eggs, borers and all other forms of infestations. They shall have normal, well-developed branch systems and vigorous, fibrous root systems. All materials shall be freshly dug, nursery grown stock, and shall have been grown for a period of at least two years prior to the award of this Contract, under the same climatic as at the location of the site.
- 3. A plant shall be dimensioned as it stands in its natural position. Trees under 6" in caliper shall be callipered at a point 1' above the ground. Trees over 6" shall be callipered at a point 2' above the ground. The stock furnished shall be a fair average of the minimum and maximum sizes specified.
- 4. All trees must have straight trunks with single leader intact, unless multi-stem is specified. There shall be no abrasion of the bark and no fresh cuts of limbs over 1 1/4" which have not completely callused over.
- 5. Mark tree orientations at nursery source, for purpose of maintaining the same orientation in new location.

G. Staking and Guying

- 1. Stacks-Trees
  - a. 8' long stacks of white cedar with bark attached and with a maximum allowable declination of 10% (declination shall be outward at top stake).
  - b. Stakes shall have a diameter at the middle of not less than 2" or more than 2-3/4", and a diameter of not less than 1-3/4" at the tip or more than 3" at the butt.
  - c. Drive stakes 30" into the ground and fasten to the trees with double No. 12 gage annealed galvanized steel wire run through a suitable length of new black rubber hose.
  - d. Place stakes about 1' away from the trunk, taking care to clear the roots.
  - e. Installation of stakes on an as needed basis and as determined by the LA or Owner.

- H. Mulch: For planting and trees, shall be double ground hardwood aged hardwood mulch free of extraneous matter, as approved by the Landscape Architect.



- I. Turf Seed/Seed Mix: For lawn areas, seed mix to be spread ay 25lbs / 6,000s.f. Seed blend/mix to be:
  - 1. Dakota Tall Fescue: 40%
  - 2. Taos Tall Fescue: 35%
  - 3. Frontier Perennial Ryegrass: 25%

1.3 EXECUTION

A. Planting Time

Trees -- Shrubs	Spring Planting	Fall Planting
Deciduous	March 1 - May 1	Oct. 15 - Dec. 1
Evergreen	April 1 - May 15	Sept. 1 - Oct. 1
Ground Cover	April 15 - June 15	

\*In the event that planting must occur outside of the optimum spring or fall planting season for project completion. Special care shall take place to assure plant health. Contractor to consult with Landscape Architect and Town of Pound Ridge arborist for recommendations and any special watering or plant care measures.

B. Planting Operations

- 1. In general planting and transplanting shall be done only in periods specified in Section 3.1, unless otherwise directed by the Client or Landscape Architect. Balled plants may be planted at such times as client may direct.
- 2. The roots of balled and burlapped plants shall, if not immediately planted after digging and inspection, be adequately protected by topsoil until planted in their final location. Handle balled plants so that the ball will not be loosened. After the soil has been thoroughly firmed under and around the ball, cut the burlap away from the upper half of the ball and adjust remaining burlap to prevent the formation of air pockets; when directed by the Authority, remove the burlap entirely. Firm the soil at 6" to 8" intervals and thoroughly settle with water.
- 3. In loading, unloading, and handling plants, exercise utmost care to prevent injuries to the branches or to the roots of the plants. Carefully preserve solidity of the ball or balled and plat formed plants. Replace trees with tops broken in transit by a satisfactory substitute.
- 4. Do no plant except in the presence of the Authority's Representative. ( In general, all plants shall stand, after settlement, at the same level at which they have grown.) Exercise care in setting the plants plumb. Remove ropes, stones, and other items used in setting from the hole before backfilling, and all soil for backfilling shall be loose and friable and not frozen.
- 5. All tree root flares to be re-exposed and not covered with topsoil backfill or mulch.

C. Turf Establishment

- 1. Compost shall be uniformly applied over the entire area at an average depth of 1 to 2 inches.
- 2. Topsoil shall be uniformly applied over the entire area at an average depth of 2 inches.
- 3. Incorporate Compost and Topsoil to a depth of 5 to 7 inches (for a 20% to 30% inclusion rate) using a rotary tiller or other appropriate equipment. Higher inclusion rates are necessary for upgrading marginal soils.

4. Pre-plant fertilizer and pH adjusting agents (e.g., lime and sulfur) may be applied before incorporation, as necessary.
5. Rake soil surface smooth prior to seeding, sprigging, sodding, or hydroseeding.
6. The soil surface shall be reasonably free of large clods, roots, stones greater than 2 inches, and other material which will interfere with planting and subsequent site maintenance.
7. Water thoroughly after seeding, sprigging, or sodding.
8. Where necessary, top-dress newly seeded and sprigged turf areas with a 1/4 inch layer of fine compost (3/8 inch screen, minus), then water to protect against hot, dry weather or drying winds.
9. Soil shall be well drained and pitched according to site plan.

D. Mix For Backfilling At Plants

1. Incorporate Compost with topsoil for plant pits at the rate of 1 Compost : 2 topsoil. Soil containing 10% or more of organic matter as determined by the test described in Par. 2.A.1 shall have lesser amounts of Compost added to give a maximum of approximately 15% organic content present. Substitution with peat moss for Compost is prohibited. Add / incorporate time release fertilizer at a rate in compliance with manufacturers' standard specifications.
2. To the topsoil used in backfilling major and minor tree pits, thoroughly incorporate bone meal as follows: 5 lbs. trees 2 1/2"- 3" cal. (or smaller).
3. Where a bed or hedge of shrubs is shown, excavate all fill between shrubs of this bed or hedge before backfilling with topsoil.
4. Water thoroughly during and after planting.

E. Tree Staking

1. Stake and guy trees immediately after planting; guys, wires and stakes shall be maintained until final payment. Trees shall stand plumb after staking and guying.
2. Support major trees over 6' high and less than 3" in caliper with two 8' high stakes.
3. Major trees 3" to 6" in caliper, as well as minor trees and transplanted trees, shall be firmly guyed immediately after planting by 3 galvanized No. 12 gage annealed steel wires attached to 2" x 4" anchor posts 30" long, notched to receive the wires and driven into the ground with their tops below the finished grade. Extend the wires through sections of new, black rubber hose of sufficient length to prevent injury to the tree and secure the free ends of the wire to anchor stakes below the ground surface. Do all staking and guying immediately after planting and/or transplanting. All trees shall stand plumb after staking and guying.
4. Remove stakes and guy wires after one year from date of installation, unless otherwise directed by arborist or LA.

F. Holes For Trees and Shrubs

1. The size of holes for all trees and shrubs with a ball of earth less than 4' in diameter shall be 2 times as wide as the diameter of the ball of earth and 12" deeper than the depth of the ball. In no case shall the distance from the ball to the side of the hole be less than 12".
2. Holes for trees with a ball of earth 4' to 5' in diameter shall be 1.5 times as wide as the diameter of the ball and 9" deeper than the depth of the ball.
3. Holes for trees with a ball of earth over 5' in diameter shall be 1.25 times as wide as the diameter of the ball and 6" deeper than the depth of the ball.
4. In no case shall holes for shrubs and vines be less than 12" deep and 12" in diameter.
5. When the excavation for the tree pits occurs in an area filled with brickbats, ashes, stones, broken concrete or other foreign matter, the holes shall be dug 1/2 wider in diameter and 1/2 deeper than normally required, and the bottom and sides of pits shall be backfilled with fertilized topsoil, thoroughly worked in place.

G. Watering: Thoroughly saturate the soil around each plant with water at the time of planting, and as many times later as seasonable conditions require, until acceptance of the work.

H. Pruning: Remove broken or badly bruised branches with a clean cut. Prune each plant to preserve its natural character and in a manner appropriate to its particular requirements. In general (for deciduous plants only), at least one-third of the wood shall be removed by thinning or shortening branches, but cut no leaders. Use sharp tools for pruning.

I. Mulch is not to be installed on top of root flare. Mulch to be installed over all planting beds to a depth of 2".

J. Acceptance of Work

1. Maintain all landscaping installed until acceptance is granted upon total completion of planting. Maintenance includes all plant operations.
2. Acceptance shall be granted upon a healthy growth and satisfactory foliage condition of all plants.

END OF SECTION 02910

## SECTION 02920 - LAWNS AND GRASSES, LANDSCAPING

### 1.1 GENERAL

- A. Submittals: In addition to Product Data for each type of product indicated, submit a planting schedule indicating anticipated planting dates.
- B. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.
- C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory.
- D. Sod, Where Required: Harvest, deliver, store, and handle sod according to requirements in TPI's "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in its "Guideline Specifications to Turfgrass Sodding."
- E. Lawn Maintenance: Begin maintenance immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:
  - 1. Seeded Lawns: **60** days from date of Substantial Completion.
  - 2. Sodded Lawns: **30** days from date of Substantial Completion.
  - 3. Mow lawn as soon as top growth is tall enough to cut. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings.

### 1.2 PRODUCTS

- A. Seed Species: State-certified seed of grass species, as follows:
  - 1. Sun and Partial Shade: Proportioned by weight as follows:
    - a. 10-30% Annual Rye
    - b. 10-20% Perennial Rye
    - c. 40-50% Kentucky Bluegrass
    - d. 10-20% Chewing Red Fescue
    - e. Total of Above 100%, Discard Wet Moldy Seed
- B. Turfgrass Sod: Approved Number 1 Quality. Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.
- C. Topsoil: ASTM D 5268, pH range of 5.5 to 7, free of stones 1 inch (25 mm) or larger in any dimension and other extraneous materials harmful to plant growth.
- D. Soil Amendments
  - 1. Lime: ASTM C 602, Class T or O, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent.

E. Fertilizer

1. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 20 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
  - a. Composition: 10 percent nitrogen, 5 percent phosphorous, and 5 percent potassium, by weight.

1.3 EXECUTION

A. Loosen subgrade to a minimum depth of 4 inches. Remove stones larger than 1-1/2 inches (38 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1. Apply lime at a rate of 10 pounds per 100 square feet.
2. Apply fertilizer directly to subgrade before loosening.
3. Spread topsoil, apply soil amendments and fertilizer on surface and thoroughly blend planting soil mix.
4. Spread planting soil mix to a depth of 4 inches (100 mm), but not less than required to meet finished grades after light rolling and natural settlement. Do not spread, if planting soil or subgrade is frozen, muddy, or excessively wet.

B. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch (13 mm) of finished elevation.

C. Moisten prepared lawn areas before planting, if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

D. Restore areas, if eroded or otherwise disturbed, after finished grading and before planting.

E. Seeding: Sow seed at the rate of 2 lb/1,000 sq. ft. (0.9 kg/92.9 sq. m).

1. Rake seed lightly into top 1/8 inch (3 mm) of topsoil, roll lightly, and water with fine spray.
2. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre (42 kg/92.9 sq. m) to form a continuous blanket 1-1/2 inches (38 mm) in loose depth over seeded areas. Spread by hand, blower, or other suitable equipment.
3. Protect seeded areas from hot, dry weather or drying winds.
4. Seeding shall be done between April 1<sup>st</sup> and June 15<sup>th</sup> or between August 15<sup>th</sup> and November 1<sup>st</sup>.

F. Sodding: Lay sod within 24 hours of harvesting. Do not lay sod, if dormant or if ground is frozen or muddy.

1. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

2. Lay sod across angle of slopes exceeding 1:3.
  3. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer, but not less than 2 anchors per sod strip to prevent slippage.
  4. Saturate sod with fine water spray within two hours of planting. During first week, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches (38 mm) below sod.
- G. Satisfactory Seeded Lawn: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage **exceeding [90% over any 10 sq. ft. (0.092 sq. m) and bare spots not exceeding 5 by 5 inches (125 by 125 mm)]**.
- H. Satisfactory Sodded Lawn: At end of maintenance period, a healthy, well-rooted, even-colored, viable lawn has been established, free of weeds, open joints, bare areas, and surface irregularities.
- I. Reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

END OF SECTION 02920

## SECTION 02930 – EXISTING WELL

### 1.1 GENERAL

- A. Summary: The Contractor shall leave in place the existing well at the site and make every effort to protect the well and well head during construction.
- B. General Protection Procedure
  - 1. The existing well is to be protected from damage during construction using construction fence at all times during construction.

### 1.2 PRODUCTS (Not Used)

### 1.3 EXECUTION (Not Used)

END OF SECTION 02930

## SECTION 02940 – LIGHTING

### 1.1 GENERAL

- A. Summary: Provide all lighting as indicated on the drawings and as specified herein, including, but not limited to, the following:
1. Post Lights
  2. Wall Lights
  3. Stage Lights
  4. Outlet Box and Pedestal
- B. References
1. Post Lights: Richard Fleig, Moxie Lighting  
1239 Broadway, 2nd Floor, New York, NY 10001  
Phone: (585) 734-9335, [rich@mocielighting.com](mailto:rich@mocielighting.com)
  2. Wall & Stage Lights: Stuart Scheer, High Tech Applications, Inc.  
66 Ford Rd. Suite 124, Denville, NJ 07834  
Phone: 973-784-4944, Fax: 973-784-4949, [stuart@htalighting.com](mailto:stuart@htalighting.com)
  3. Outlet Pedestal: Jim Dobrzynski, Focus Industries inc.  
25301 Commercentre Drive, Lake Forest, CA 92630  
Phone: 888-830-1350, [jimd@focusindustries.com](mailto:jimd@focusindustries.com)
  4. Outlet Box: Legrand, North America  
60 Woodland Street, West Hartford, CT 06110  
Phone: 877-295-3472, [www.legrand.us](http://www.legrand.us)
- C. Delivery, Storage, and Handling: Deliver, store, and handle products as recommended by the Manufacturers, to prevent damage.

### 1.2 PRODUCTS

- A. Post Lights: Sternberg Lighting Heritage Lantern & Barrington Post.
1. Heritage LED Series with 8' high Barrington Series Pole: (6) Fixture & Pole Shall be #PT-6130CLEd-12L30T3-MDL03-CSA-FHC/528FP5-.188/GFI-LPIUC/FH/DBA/BKT
  2. Heritage LED Series with 12' high Barrington Series Pole: (4) Fixture & Pole Shall be #PT-6130CLEd-16L30T3-MDL03-CSA-FHC/5212FP5-.188/GFI-LPIUC/FH/DBA/BKT
- B. Wall Lights: Ligman Lighting USA, Legend 2 Recessed: (14) ULE-40601-11w-A-W30-02-120/277v
- C. Stage Lights: Ligman Lighting USA, Odessa 19 Large Double Side Cluster Column
1. Stage Flood Fixture, UOD-21042: (3) UOD-21042-N-W40-01-120/277v – DIM-A54331
  2. Field Flood Fixture, UOD-21046: (6) UOD-21046-M-W40-01-120/277v – DIM-A54531



3. Round Pole, APD-RSA-5018-20'-5" DIA - .188": (3) APD-RSA-5018-20'-5" DIA - .188" – SC60-01-GFCI

D. Outlet Box and Pedestal

1. Outdoor Ground Box: Legrand, North American
  - XB814C520BK – Exterior Box Cover Assembly 5-20R
  - XB81 – Exterior Box Cover Assembly 5-20R
2. Mounting Pedestal: Focus Industries: FA-26-GFIC-BLT = 120v Commercial Mounting Pedestal, Aluminum Cap with GFIC Receptacle. Black

1.3 EXECUTION

A. Installation - General

1. Installation of Lighting
  - a. Install the lighting, as indicated on the drawings, as recommended by the manufacturer, and as required for a secure, tamper proof installation.
  - b. Set lighting square and plumb, to grade as required.
  - c. Cleanly and neatly finish pavements / pavers around lighting.

B. Submittals

1. Provide Submittals
2. Product Data
  - a. Manufacturer's Standard Product Literature
  - b. Shop Drawings
  - c. Installation Instructions
  - d. Maintenance Instructions
3. Submit powdercoat finish samples for approval.

C. Delivery, Storage and Handling

1. Handle products in accordance with manufacturer's instructions.
2. Store products in manufacturer's original packaging until ready for installation.
3. Protect products from impacts and abrasion during storage.

D. Warranty: Provide manufacturer's standard warranty.

END OF SECTION 02940

## SECTION 02980 - SITE FURNISHINGS

### 1.1 GENERAL

A. Summary: Provide all site furnishings as indicated on the Drawings and as specified herein, including, but not limited to, the following:

1. Seating
2. Tables
3. Bike Racks
4. Trash & Recycling Receptacles for Plaza

B. References

1. Manufacturer Contact: Forms+Surfaces  
30 Pine Street, Pittsburgh, PA 15223  
Phone: (800) 451-0410  
Contact: Jason Bajor, Territory Manager, Outdoor Products  
Email: jason.bajor@forms-surfaces.com  
Direct Phone: (914) 589-6322  
Website: www.forms-surfaces.com

C. Delivery, Storage and Handling

1. Deliver, store, and handle products as recommended by the Manufacturers, to prevent damage.
2. Contractor to coordinate with Town of Pound Ridge representative for a delivery and temporary storage location if project site is not ready to receive site furnishings at time of delivery.

### 1.2 PRODUCTS

A. Site Seating

1. Knight Bench: (3) Custom Layout (see plan)
  - a. Model: Backless bench, custom layout, aluminum frame, recycled 100% teak hardwood slats.
  - b. Benches
    - i. Materials
      - (a) Seat Slats: Recycled 100% Teak Hardwood
      - (b) Bench Frame: Solid Aluminum with Invisible Welds
      - (c) Slat Fasteners: Recessed Stainless Steel
    - ii. Finishes
      - (a) Bench Slats: Wood: Penofin® Hardwood Formula "Transparent Natural.
      - (b) Bench Frame (outer frame edges): Polished Aluminum

- (c) Bench Frame (inner surfaces): Polyester Powdercoat: Standard Gloss from Forms+Surfaces Powdercoat: Bright Silver Gloss
    - (d) Dimensions: Backless Bench, Custom Layout, Surface Mount
      - 1) Overall Dimensions: Custom
      - 2) Seat Dimensions: 19.8" deep x 18" high
  - iii. Mounting: Paver Mount. Provide anchors and stainless steel mounting screws.
- 2. Trio Bench: (5)
  - a. Model: Six-Foot, Backed Benches With Cast Aluminum Frame and FSC 100% Ipé Hardwood Slats
  - b. Backed Benches
    - i. Materials
      - (a) Bench Frames: Cast Aluminum With Integral Armrests
      - (b) Slats, Wood: FSC 100% Ipé Hardwood
      - (c) Fasteners: Stainless Steel
    - ii. Finishes
      - (a) Bench Frames: Polyester Powdercoat: Standard Gloss from Forms+Surfaces Powdercoat: Bright Silver Gloss
      - (b) Slats, Wood: Penetrating Oil Finish. Finish color: Penofin® Hardwood Formula "Transparent Natural"
    - iii. Dimensions: Backed Bench, 6 foot: 75.0" long x 22.7" deep x 33.6" high, Seat Height 17.6", Seat Depth 17.4", Armrest Height 21.6"
    - iv. Mounting: Paver Mount. Provide anchors and stainless steel mounting screws.
- 3. Vista Chair: (28)
  - a. Model: Stacking chairs with stainless steel frames and perforated seats.
  - b. Chairs
    - i. Materials
      - (a) Chair Frames: 7/8" Diameter Heavy Wall Stainless Steel Tubing
      - (b) Perforated Seats: 14 Gauge Stainless Steel Sheet with Overall Pattern of .25" Diameter Perforations
      - (c) Glides: Nylon
    - ii. Finishes: Polyester Powdercoat: Standard Gloss from Forms+Surfaces Powdercoat: Bright Silver
    - iii. Dimensions: Stacking Chair: 20" wide x 22" deep x 32" high, Seat Height 18.5"
    - iv. Installation: Freestanding

B. Site Tables

- 1. Column Table: (7)
  - a. Model: 30" Base, 42" Round Top, Table Height

- b. Tabletops
    - i. Material: Spun Stainless Steel
    - ii. Finish
      - (a) Stainless Steel Finish: Satin
      - (b) With a center hole to receive a 1.5" (38 mm) diameter umbrella pole. When an umbrella hole is specified, a nylon collar and cap are included.
    - iii. Perforation Pattern: Concentric Pattern of ¼" Round Perforations
  - c. Table Bases and Columns
    - i. Materials
      - (a) Vertical Supports: 3" Diameter Stainless Steel Tubing
      - (b) Base Plates: Stainless Steel Plate
    - ii. Finish: Stainless Steel Finish: Satin
    - iii. Dimensions: Table Height: 28.3" high
    - iv. Mounting: Freestanding
- C. Trash / Recycling Receptacles
- 1. Apex Litter & Recycling Receptacle: (3)
    - a. Model: Litter and Recycling Receptacle, 36-Gallons.
    - b. Materials
      - i. Body Frame and Lid: Solid Corrosion-Resistant Aluminum
      - ii. Container Walls: Heavy Corrosion-Resistant Aluminum
      - iii. Container Wall Inset Material: FSC® 100% Cumaru Hardwood Slats (FSC License Code: FSC-C004453)
      - iv. Internal Liner: Black Low-Density Polyethylene (LLDPE) with UL94HB Fire Rating
      - v. Latch: Stainless Steel
      - vi. Hardware: Stainless Steel
      - vii. Rain Cover: Heavy Corrosion-Resistant Aluminum
    - c. Finishes
      - i. Body Frame and Lid: Polyester Powdercoat, Standard Gloss from Forms+Surfaces Powdercoat: Bright Silver Gloss
      - ii. Insets: FSC 100% Cumaru Hardwood Slats.
      - iii. Rain Cover: Polyester Powdercoat To Match Lid
    - d. Latch: Standard Lift Latch
    - e. Dimensions
      - i. Receptacles: 36-gallon, Split-Stream Litter & Recycling Receptacle: 36-gallon, Top Opening, Surface Mount, with Rain Cover: 32.0" wide x 15.0" deep x 41.0" high
      - ii. Lid Openings: Split-Stream Receptacle: 36-gallon, Split-Stream Lid Openings: Two Openings of 12.4" wide x 5" deep
    - f. Installation: Freestanding

D. Bike Racks

1. Trio Bike Rack (6)
  - a. Model: Bike Rack with Cast Aluminum Body
  - b. Bike Racks
  - c. Materials
    - i. Body: Cast Aluminum
    - ii. Hardware: Stainless Steel
  - d. Finishes: Body: Polyester Powdercoat, Standard Gloss from Forms+Surfaces  
Powdercoat: Bright Silver Gloss
  - e. Dimensions: 12" long x 2.75" wide x 33.5" high
  - f. Mounting: Paver Mount. Stainless steel anchors and tamper-resistant stainless steel screws are included.

1.3 EXECUTION

A. Installation – General: Installation of Site Furniture

1. Install the site furniture, as indicated on the drawings, as recommended by the manufacturer, and as required for a secure, tamper proof installation.
2. Set trash/recycling receptacles, benches and bike racks square and plumb, to grade required.
3. Cleanly and neatly finish pavements / pavers around site furniture.
4. Verify that substrates are stable and capable of supporting the weight of items covered under this section.
5. Verify that substrates have been adequately prepared to securely anchor those items that will be surface mounted.

B. Submittals

1. Provide Submittals
2. Product Data
  - a. Manufacturer's Standard Product Literature
  - b. Shop Drawings
  - c. Installation Instructions
  - d. Maintenance Instructions
3. Submit Powdercoat Finish Samples for Approval

C. Quality Assurance: Manufacturer Qualifications

1. Minimum 15 years experience in the manufacture of site seating.
2. Forest Stewardship Council ("FSC") Certified Supplier. Provide Manufacturer's FSC Certification Number.

3. Provide reference list of at least ten major transportation authorities, municipalities, universities, or other high-use public environments currently using site seating fabricated by the manufacturer.

D. Delivery, Storage and Handling

1. Handle products in accordance with manufacturer's instructions.
2. Store products in manufacturer's original packaging until ready for installation.
3. Protect products from impacts and abrasion during storage.

E. Warranty

1. Provide manufacturer's standard warranty.
2. Warranty Terms: one year from date of invoice against defects in materials and workmanship.

END OF SECTION 02980

## SECTION 03100 - CONCRETE FORMWORK FOR SITE WORK CONSTRUCTION

### 1.1 GENERAL

- A. Summary: Cast-in-place concrete required for this work shall include, but is not limited to, exterior flatwork, concrete footings, retaining walls.
1. Work Included
    - a. Furnish all labor, material and equipment necessary to complete the formwork for cast-in-place concrete.
    - b. Cutting required by mechanical and electrical contractors for chases, holes through floors, etc. not requested before concrete was poured, shall be performed by contractor requiring same.
    - c. Furnished elsewhere, but installed under this section: Set all sleeves, anchors, inserts, etc., furnished by other trades, if requested and located before pouring of concrete begins.
  2. Standards: Unless otherwise shown or specified, design, construct, erect, maintain and remove formwork in compliance with the American Concrete Institute Standard ACI 347, "Recommended Practice for Concrete Formwork".
  3. Cooperation: Examine drawings, specifications for all contracts to determine nature of proposed construction, perform work to conform with construction called for in such a manner as not to interfere or delay work of other contractors. Cooperate with other trades regarding installation of embedded items and templates. Instruction will be provided for setting items placed in forms.

### 1.2 PRODUCTS

- A. Forms - General
1. Wood Forms: Exposed Concrete HD Overlay Plyform Class 1 Ext-DFPA. Thickness as required for spans and pressures.
  2. Form Coatings
    - a. Form Release Compound: Approved commercial formulated form release compound that will not bond with, stain, nor adversely affect concrete surfaces and will not impair subsequent treatment of concrete surfaces requiring bond or adhesion, nor impede the wetting of surfaces to be cured with water or curing compound.
    - b. Form Oil: Approved non-staining, rust-preventative form oil.
  3. Form Ties: Approved design, adjustable length, free of devices that will leave holes larger than 7/8" or depression deeper than 7/8" and such that, when forms are removed, no metal is within 1" of finished surface.

### 1.3 EXECUTION

#### A. General

1. The design of the formwork as well as its construction shall be the responsibility of the General Contractor and he/she shall be responsible for the safety of the construction. Forms shall be constructed complete with centering and conform to the shapes, forms, lines and dimensions indicated and required. Forms shall be braced and shored to prevent displacement and deformation during construction operations. Provide temporary openings in forms, where required, to facilitate cleaning and inspection. Make forms removable without hammering or prying against concrete. Forms shall be plumb and straight and sufficiently tight to prevent loss of concrete or water during concrete placing. Construct and set forms for chases, openings, recesses, etc., required by other trades, if requested and located before placing of reinforcing.
2. Form Release Compound: All surfaces of removable forms, in contact with concrete placement, shall be coated with form releasing compound prior to placement of reinforcing. Apply in strict accordance with manufacturer's written specifications.
3. Construction Joints
  - a. Joints not indicated on plans shall be located and constructed so as to least impair strength and appearance of work. The Contractor is to prepare a drawing locating joints for the Engineer's review and approval.
  - b. Construction joints and control joints are to run under partitions whenever practicable.
  - c. All construction joints require the installation of a water stop to prevent any leakage from the containment area.
4. Form Removal: Remove forms to ensure building safety. Do not remove supporting forms or shoring until members have sufficient strength to safely support their weight and related loads. Avoid spalling concrete surface. Remove wood forms throughout. Forms for beam soffits, joints, slabs and other structural elements that support weight of concrete to remain in place until concrete has achieved twenty-eight (28) day strength; continue curing by specified methods after removal of forms.

END OF SECTION 03100



## SECTION 03200 - CONCRETE REINFORCEMENT

### 1.1 GENERAL

- A. Summary: Furnish all labor, materials and equipment necessary to furnish and install all reinforcement and galvanized reinforcement for cast-in-place concrete. All concrete reinforcement for the outdoor concrete pad and the buildup of the channel divider wall shall be galvanized.
- B. Submittals: In accordance with the General Conditions and Supplementary Conditions.
- C. Codes and Standards: All work to be performed in accordance with rules and regulations of authorities having jurisdiction. Type, manufacturer, handling, placing of all reinforcing bars to be in accordance with applicable requirements of the A.C.I. Building Code, A.C.I.318.
- D. Cleaning and Storage: Reinforcing steel to be stored on premises in a neat and orderly manner in suitable racks and kept off the ground. Metal reinforcing to be clean and free from ice, rust scale or other bond reducing coating before being placed.
- E. Cooperation: Examine drawings and specifications for all contracts to determine nature of proposed construction. Perform work to conform with construction called for in such a manner as not to interfere with construction or delay work of other contractors.

### 1.2 PRODUCTS

- A. Materials: High Strength Billet: Conform to ASTM A615-60, Deformation - ASTM.305-56T
- B. Fabrication: Reinforcement to be accurately formed to dimensions indicated on drawings. Stirrups and tie bars to be bent around a pin having a diameter not less than two times minimum thickness of bar. Bends for other bars around a pin having a diameter not less than six times minimum thickness of bar, except bars larger than one inch to be bent around a pin eight times bar diameter.
- C. Accessories: Include all spacers, chairs, ties and other devices necessary for properly placing, spacing, supporting and fastening reinforcement in place. Where concrete surfaces remain exposed, legs of supports in contact with forms shall be hot dipped galvanized or plastic protected.
- D. Galvanizing
  - 1. The bar reinforcement shall be class 1 galvanized after bar fabrication, in accordance with ASTM A767, Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
  - 2. Prior to galvanizing, the material shall have all grease, dirt, mortar, mill scale, injurious rust, or any other foreign substance removed.
  - 3. For the purpose of this specification, the term "injurious rust" shall be interpreted to mean rust which is not firmly bonded to the steel. Rust, which is difficult to remove, even by vigorous scrubbing with a wire brush, shall be considered firmly bonded to the steel.
  - 4. The galvanized threads of nuts and mechanical connectors used for assembly with galvanized bolts and reinforcement shall be tapped oversize prior to coating and need not be retapped afterwards.

5. Material galvanized in accordance with these specifications shall be free from any buildup of unadhered wet storage stains (white rust). These corrosion deposits, if present, shall be removed in a manner satisfactory to the Engineer prior to incorporation of the material in the work. After removal of these deposits, the coating shall have a uniform appearance free from uncoated spots, lumps, blister, gritty areas, acid flux and black spots. Materials with these defects, or not meeting the finish and adherence of coating requirements as defined in the above ASTM specification, will be rejected and immediately removed from the work site. Acceptable material will be provided to replace rejected material at no additional cost to the Owner.
- E. Zinc-Rich Paint used for the field repair of galvanized coatings shall meet the following requirements:
1. One application of the material shall provide a dry coating thickness of at least 2.0 mils.
  2. The applied coating shall provide barrier protection and shall preferably be anodic to steel.
  3. Application of the coating material shall be possible under shop or field conditions.
  4. The dried film shall have a minimum zinc dust content equal to 94% (by weight).
  5. The brand of material used shall be approved by the galvanizer, and shall be compatible with the galvanizing, and inert in concrete.
- F. Mechanical Connectors used for galvanized bar reinforcement shall be galvanized in accordance with the requirements of ASTM A153, Zinc Coating (Hot Dip) on Iron and Steel Hardware prior to installation.
1. The thread shall be tapped oversize prior to being coated.
  2. The assembled connection on the galvanized reinforcing bars shall have no exposed uncoated steel. Any damage to the galvanized coating or uncoated area shall be repaired as indicated in Subsection 1.3.D, Field Repair-Galvanized Coating.

### 1.3 EXECUTION

- A. Placing of Reinforcing: Metal Reinforcement to be accurately positioned and secured against displacement using annealed iron wire ties on suitable clips at intersections supported by concrete or metal supports, spacers, or metal hangers. Where indicated, metal clips or supports shall not be placed in contact with forms. Splices to provide sufficient lap to transfer the stress between bars by bond and shear. Do not splice reinforcing at points of maximum shear. Provide corner bars of same size as horizontal bars at outside face of all corners, 24" minimum lap.
- B. Concrete Protection for Reinforcement
1. Metal Reinforcement to be protected in accordance with ACI 318 as follows:
  2. Concrete deposited against the ground without forms, not less than 3" cover.
  3. Concrete, which after removal of forms exposed to weather or in contact with ground, not less than 2" of cover for bars larger than No. 5 and not less than 1-1/2" cover for No. 5 bars or smaller.

4. Concrete, which after removal of forms, is not exposed to weather or not in contact with ground, 3/4" minimum cover for slabs and walls and 1-1/2" for minimum cover for beams.

C. Reinforcing for Concrete Slabs

1. Provide 6 x 6, W1.4 x W1.4 welded wire mesh in all concrete slabs on grade, unless other size is indicated. Place mesh within slab a distance from the top of the slab equal to 1/3 of the slab thickness.
2. Provide reinforcing bars as shown on plan for all slabs. Provide additional bars at edges of openings in slabs equivalent to size of slab reinforcing with sufficient laps.

D. Field Repair-Galvanized Coating

1. The Contractor shall be required to field repair any damage to the galvanized coating done during shipping and handling, and to replace bars exhibiting severely damaged coatings. Repairable damage is defined as any bare or loose spots or breaks in the coating which affect an area smaller than 4 square inches.
2. Field repair shall be allowed only when the total number of repairable damaged areas in any 10 foot length of bar is less than 6. Any material with a total number of damaged areas greater than the amount specified above, or material with any damaged area greater than 4 square inches, shall be rejected, immediately removed from the work site, and replaced by the Contractor at no cost to the Owner.
3. The galvanized coating is to be repaired with a zinc-rich paint by the following method:
  - a. Clean the damaged area by power disk, wire brushing, sand or grit blasting, or any other suitable method approved by the Engineer to a near-white metal condition in accordance with SSPC-SP10 (1 to 2 mil anchor pattern), as a minimum. The surface shall also be clean, dry and free of oil, grease, flux residue, corrosion products, and any other foreign substance.
  - b. Using a minimum of two coats, and the methods recommended by the manufacturer of the zinc-rich paint, spray or brush apply the zinc-rich paint to the area in a manner to achieve the applicable ASTM adherence and quality requirements of the original coating, and a minimum dry film thickness of 4 mils.

END OF SECTION 03200

## SECTION 03300 - CAST-IN-PLACE CONCRETE

### 1.1 GENERAL

#### A. Summary

1. Furnish material, equipment, labor, services required to provide for cast-in-place concrete. Work includes but is not limited to forms, reinforcing, miscellaneous inserts, sleeves and other items required for:
2. Site Work: lamp post, stone wall footings, concrete base for ramp, bluestone plant wall footing and granite curb footing.
3. Provide expansion joints, score lines, form liners and special finishes as required.

#### B. References

1. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
2. American Society of Testing and Materials (ASTM) Standards, latest editions.
  - A82 Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
  - A185 Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
  - A615 Standard Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
  - C31 Standard Methods of Making and Curing Concrete Test Specimens in Field
  - C33 Standard Specifications for Concrete Aggregates
  - C94 Standard Specification for Ready-Mixed Concrete
  - C143 Standard Test Method for Slump of Portland Cement Concrete
  - C150 Standard Specification for Portland Cement
3. American Concrete Institute (ACI) Standards, latest editions.
  - ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
  - ACI 212.3R Chemical Admixtures for Concrete
  - ACI 214 Recommended Practice for Evaluation of Strength Test Results for Concrete
  - ACI 304R Guide for Measuring, Mixing, Transporting and Placing Concrete
  - ACI 305R Hot Weather Concreting
  - ACI 306R Cold Weather Concreting
  - ACI 308 Standard Practice for Curing Concrete

- ACI 311.4R Guide for Concrete Inspection
  - ACI 315 "Details and Detailing of Concrete Reinforcement"
  - ACI 318 "Building Code Requirements for Reinforced Concrete (RS 10-3 of the NYC Building Code)"
  - ACI 347 Guide to Form work for Concrete
4. "Placing Reinforcing Bars - CRSI-WCRSI Recommended Practices", latest edition. Concrete Reinforcing Steel Institute
  5. "Structural Welding Code - Reinforcing Steel" D1.4 - American Welding Society (AWS)
- C. Environmental Requirements: Adequately protect concrete placed during rain, sleet, or snow, or when the mean daily temperature falls below 40oF or rises above 90oF as provided in Article 3.08.

## 1.2 PRODUCTS

### A. Materials

1. Cement: Shall conform to ASTM C150 and shall be of the non-air entrained types:
  - a. Unless otherwise specified or approved by the SCA Representative, cement shall be Type I or Type II.
  - b. Type II shall be used for exterior pavements.
  - c. Cement shall not contain ingredients which would result in more than two percent air being entrained in the concrete.
2. Admixtures
  - a. General
    - i. The use of admixtures shall comply with the requirements of paragraph 27-608 of the Building Code.
    - ii. The final soluble chloride content in concrete, percent by weight of cement, due to the addition of admixtures and other ingredients shall not exceed 0.10 at 28 days.
  - b. Air-Entraining Admixture shall conform to ASTM C260.
  - c. Water-Reducing Admixture shall conform to ASTM C494, Type A or D, and contain no more chloride ions than found in drinking water.
  - d. High Range, Water-Reducing Admixture (super- plasticizer) shall conform to ASTM C494, Type F or G, and contain no more chloride ions than found in drinking water.
  - e. Water Reducing, Accelerating Admixture shall conform to ASTM, Type C or E, and contain no more chloride ions than found in drinking water.
  - f. Water Reducing, Retarding Admixture shall conform to ASTM C494, Type D, and contain no more chloride ions than found in drinking water.

3. Water: Shall be clean New York City water free of injurious foreign matter conforming to the requirements for water specified in ASTM C94.
4. Aggregates
  - a. Fine and coarse aggregates shall be regarded as separate ingredients. Each size of coarse aggregate, as well as the combination of sizes when two or more are used, shall conform to the appropriate grading requirements of the applicable ASTM specifications. Maximum size of coarse aggregate shall conform to paragraph 3.3.3 of ACI 318.
  - b. Aggregates for normal weight concrete shall conform to ASTM C33 and be of Size No.67 and/or No.8.
5. Curing Compounds
  - a. Curing paper shall conform to ASTM C171.
  - b. Liquid curing compound shall conform to ASTM C309.
  - c. Curing compounds shall be "Super Diamond Clear VOX" by The Euclid Chemical Company, or "Masterkure 100W" by Master Builders.
6. Bonding Agent
  - a. Epoxy/acrylic resin that will not form a vapor barrier with the concrete with the following properties:
    - i. Bond strength of 1800 psi in 2 hours when tested in accordance with ASTM C882.
    - ii. Flexural strength of 2000 psi in 28 days when tested in accordance with ASTM C78.
    - iii. Tensile strength of 800 psi in 28 days when tested in accordance with ASTM C190.
  - b. Bonding agent shall be "CR246 Sto Bonding and Anti-corrosion Agent" by Sto Concrete Restoration Division or Armatex 110 by Sika Corp., or Corr-bond by Euclid.
7. Rough Formwork for Square Footings shall be Commercial Douglas Fir, DFPA, 5/8" thick minimum.
8. Circular Forms for Footings shall be remanufactured fiber (or equal) tube, such as Sonotube, Sonoco Products, Hartsville, S.C. (or equal).
9. Reinforcing Bars (non-coated, where indicated)
  - a. As indicated, reinforcing bars shall be of deformed type of new billet steel conforming to current requirements of ASTM A615. No rail or re-rolled steel will be permitted.
  - b. Grade or yield strength of reinforcing bars are indicated on Drawings.

- 4
10. Welded Steel Wire Fabric
    - a. Wire Fabric shall conform to the requirements of ASTM A185. All WWF shall be epoxy coated unless otherwise indicated.
    - b. Required net area, placement details, and other requirements are indicated on Drawings.
  11. Supports for Reinforcement - Non-Coated Reinforcement
    - a. Supports for reinforcement supported by formwork or deck shall consist of metal bolsters and chairs of adequate strength, size, and number. Provide CRSI Class C supports (plastic tipped) for formed concrete surfaces and Class A (bright basic) for metal deck.
    - b. Supports for reinforcement of slabs supported by ground shall consist of above supports with sand plates or horizontal runners. Support for reinforcement of footings/ pile caps shall consist of the above supports or precast concrete block, 4" square, having a compressive strength equal to that of the concrete being placed.

B. Mixes

1. General: Concrete for all parts of the Work shall be of the specified quality capable of being placed without excessive segregation and, when hardened, of developing all characteristics required by the Specifications and Drawings.
2. Strength of the concrete for each portion of the structure is designated on the Drawings and/or Specifications. Strength requirements are based on 28-day compressive strength, unless high early strength is specified, in which case required strengths are based on 7-day compressive strength.
3. Method of Proportioning: Proportion, batch, and mix concrete in accordance with Method I or Method II of the Building Code.
4. Normal Weight Concrete
  - a. Unless otherwise specified, proportion and produce normal weight concrete to have a maximum slump of 4" or less, prior to addition of any high range water-reducers if used. A tolerance of up to 1" above the indicated maximum shall be allowed for individual batches provided the average for all batches or the most recent 10 batches tested, whichever is fewer, does not exceed the maximum limit. The slump shall be determined by ASTM C143. Concrete containing High Range Water Reducer shall have a slump not exceeding 9", unless otherwise approved by the Engineer of Record. The concrete shall arrive at the job site at a slump of 2" to 3".
  - b. Normal weight concrete shall be air-entrained with an air content for the grading size of coarse aggregate as follows:
    - i. No.8.....7 1/2%
    - ii. No.67.....6%
    - iii. Tolerance on air content as delivered shall be +1.5%.

C. Joint Filler and Sealant

1. Expansion joint sealant shall be SCA type 1A.
2. For horizontal joints: two part self- leveling polyurethane for traffic bearing, ASTM C920, classification Type M, Grade P, Class 250, uses T,M,A, and O (including Pecora Urexpan NR-2000, Harley, PA; or Tremco THC 900/901, Wading River, NJ; or Namco Vulicem 255, Cleveland, OH; or app'd equal.
3. Joint Fillers: closed cell polyurethane or close cell expanded polyurethane joint filler (all cast in place conc), including Sonoborn Sonoflex F or approved equal.
4. Install per manuf. std. Specs. Colors as selected by Architect. Submit samples and product literature for review.

D. Joints and Embedded Items

1. Construction Joints
  - a. Make joints not shown on Drawings at locations that will least impair the strength of the structure. Such location is subject to the approval of the Engineer of Record.
  - b. Continue reinforcement across joints. Provide longitudinal keys at least 1 1/2" deep in walls and provide other keys as required. Drawings indicate keys or roughened surface at interface of walls and footings.
  - c. Thoroughly clean concrete surface of oil, grease, and other contaminants and remove all laitance prior to placement of adjoining concrete. Roughen surface of the concrete in an approved manner that will expose the aggregate uniformly to 1/4" amplitude and will not leave laitance, loosened particles of aggregate, or damaged concrete at the surface. Dampen surface immediately prior to placement.
  - d. Properly install all embedded items where required.
2. Expansion Joints: Do not extend reinforcement or other embedded metal items bonded to concrete continuously through expansion joint. Provide smooth dowels greased on one end at the joints with end cap or insert into PVC sleeve of length greater than the dowel length by .75" minimum.

END OF SECTION 03300



## SECTION 03400 - PAVING

### 1.1 GENERAL

#### A. Paving Types In The Scope of Work

1. Retaining and Sitting Walls
2. Natural Quarried Stone Slabs
3. Patios and Walkways
4. Stone Slab Steps
5. Boulder Walls
6. Planter & Roadway Curb

#### B. References: O&G Industries Masonry Division, Contact Marty Paganini – (860) 480-4637. 105 Breault Road, Beacon Fall, CT 06403

### 1.2 PRODUCTS

#### A. Retaining and Sitting Walls: Even Mix of Natural Stone Material

- 1/3 Montville
- 1/3 Getty Gray
- 1/3 New England Field Stone

#### B. Natural Quarried Slabs: Getty Gray Granite Monolithic Slabs

1. Stone Slabs for Bench Area In Center Plaza
  - a. Spilt faced finish on sides, saw/thermal top finished: 3.64' x 2' x 2'
  - b. Spilt faced finish on sides, saw/thermal top finished: 3.81' x 3' x 3'
  - c. Spilt faced finish on sides, saw/thermal top finished: 4.14' x 4.83' x 4.83'
2. Sitting and Retaining Wall Slabs
  - a. All Sides Split Faced Finish: 18" deep x 18" height x varying lengths (first course)
  - b. All Sides Split Faced Finish: 18" deep x 12" height x varying lengths (second & third course).

#### C. Patios and Walkways: PA Select Equinox Bluestone

1. Dry-Laid Patios Bluestone Pattern 'A': 1.5" thick
  - a. Paving Pattern Breakdown
    - 12" x 12" (6%)
    - 12" x 24" (22%)
    - 24" x 24" (22%)
    - 24" x 36" (50%)

2. 6' wide dry-laid walkways Bluestone Pattern 'B': 1.5" thick
    - a. Staggered joint: 24" x 18" and 24" x 36"
  3. 4' wide dry-laid walkways Bluestone Pattern 'C': 1.5" thick
    - a. Staggered joint: 24" x 24" and 24" x 18"
  4. Ramp on concrete base, Bluestone Pattern 'D': 1.5" thick
    - a. Staggered joint: 24" x 30" and 24" x 15"
- D. Stone Slab Steps: PA Select Equinox Bluestone
1. Dry-laid solid slab bluestone: Varying sizes
    - a. Step Size Breakdown and Quantity
      - 60" x 14" x 7" (2)
      - 40" x 15" x 7" (3)
      - 72" x 14" x 6.5" (1)
      - 36" x 15" x 6.5" (3)
      - 72" x 15" x 6.5" (1)
      - 50" x 15" x 6.5" (1)
- E. Boulder Wall: New England Natural Landscape Boulders; Varying size and heights.
- F. Planter & Roadway Curb: NY DOT Type B Granite Curb
1. Concrete Footing: Varying heights, see plan.
- G. Installation of Materials: All material to be installed per manufacturer's specifications and construction details provided on plan set, Sheet D-1.
- H. Edging
1. Product: Permaloc StructurEdge, 1/8" (3.2mm) x 1-5/8" (41mm) high, extruded aluminum, 6063 alloy, T6 hardness, paver restraint edging for straight-line and curvilinear applications in corrugated L-shaped profile, as manufactured by Permaloc Corporation, Holland MI 49424, telephone (800) 356-9660 or (616) 399-9600. Horizontal base shall have holes spaced 4 inches (102 mm) apart along its length to receive spikes.
  2. Thickness: 1/8 inch (3.2 mm) gage section shall have 0.190 inch (4.83 mm) thick exposed top lip.
  3. Length: 8' (2.44m)
  4. Connection Method: Section ends shall splice together with horizontal 0.060 inch (1.52 mm) thick x 1 inch (25 mm) wide x 4 inches (102 mm) long aluminum sliding connector.
  5. Anchoring: 3/8 inch x 10 inches (9.5 mm x 254 mm) bright spiral steel spike. Use plastic washers if desired. For hardened surfaces (i.e. concrete, masonry, etc.) use 3/16 inch x 1-1/2 inches (4.8 mm x 38 mm) or longer Ardox concrete nail or drive

pin fastener equal to Hilti DX 40 powder actuated pin, Ramset Trakfast Automatic Fastening System pin, or Tapcon.

6. Finish: Black DuraFlex. Paint finish shall comply with AAMA 2603 for electrostatically baked on paint.

#### I. Installation of Paver Restraint Edging

1. Preparation: Ensure that all underground utility lines are located and will not interfere with the proposed edging installation before beginning work.
2. Locate border line of edging with string or other means to assure border straightness and curves as designed.
3. Edging Installation: Install base of edging resting on compacted level base and facing [away from] [towards and under] paver, drive 3/8" x 10" (9.5 mm x 242 mm) bright spiral steel spikes through edging holes in section base of paver restraint edging at spaces for following applications:
  - a. Anchor each section end with spike.
  - b. Patios and Walkways: 12 inches (305 mm) to 24 inches (610 mm) on center.
4. Securely connect sections together in accordance with manufacturer's instructions.
5. Install pavers.

### 1.3 EXECUTION

A. Mock-Up: Provide a mock-up of 10' x 10' size Paving Pattern as indicated on details of bluestone pattern 'A', utilizing different pavers of different sizes to show joint relationships.

#### B. Repair and Restoration of Existing Paving

1. Asphalt Drive or Sidewalk Repair: Provide a neat saw cut line as indicated on drawings. Patch/ repair damaged areas to insure a smooth transition between existing and new pavements.
2. Restoration of Existing Sidewalk: Existing sidewalks, driveways and pedestrian ramps damaged due to trenching or other excavation work shall be restored as per the details for new work, with color to match the existing.

#### C. Warranty

1. Materials are subject to a 5 year warranty from date of final invoice against defects or failure in materials.
2. Workmanship and installation shall have a 2 year warranty from date of final invoice against. At the end of this period all paving installations are not in perfect condition bearing normal wear and tear shall be replaced with like material approved by Owner and Landscape Architect.

END OF SECTION 03400