

FOR INFORMATIONAL PURPOSES ONLY-NOT FOR BIDDING PURPOSES

PROPOSAL

TO BE COMPLETED BY CONTRACTOR SUBMITTING
 BID ON WATER QUALITY IMPROVEMENTS AT BAILEY ARBORETUM
 LATTINGTOWN, NASSAU COUNTY, NEW YORK
 CONTRACT NO. S35103-02G

ITEM NO.	APPROXIMATE QUANTITIES	ITEMS WITH UNIT PRICE WRITTEN IN WORDS				
1	ALLOWANCE	Allowance A – Miscellaneous Unforeseen Field Construction (Section 01150). <div style="display: flex; justify-content: space-between;"> Fifty Thousand No </div> <div style="display: flex; justify-content: space-between;"> DOLLARS CENTS </div>	N/A	N/A	\$50,000	00
2	LS	Submittals (Section 01300) <hr/>				
3	LS	Project Meetings and Construction Progress Documentation (Sections 01310 and 01321) <hr/>				
4	LS	Temporary Facilities and Controls (Section 01500) <hr/>				

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ITEM NO.	APPROXIMATE QUANTITIES	ITEMS WITH UNIT PRICE WRITTEN IN WORDS				
5	LS	Maintenance of Facility Operations (Section 01710) <hr/>				
6	LS	Maintenance of Stormwater Flow (Section 01720) <hr/>				
7	LS	Maintenance and Protection of Traffic (Section 01730) <hr/>				
8	LS	Closeout Procedures (Section 01770) <hr/>				

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ITEM NO.	APPROXIMATE QUANTITIES	ITEMS WITH UNIT PRICE WRITTEN IN WORDS				
9	LS	Clearing and Grubbing (Section 02210) <hr/>				
10	LS	Dewatering and Bypass (Section 02225) <hr/>				
11	LS	Sediment and Erosion Control (Section 02230) <hr/>				
12	LS	Energy Dissipation (Dwg. C-200) <hr/>				

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ITEM NO.	APPROXIMATE QUANTITIES	ITEMS WITH UNIT PRICE WRITTEN IN WORDS				
13	LS	Cofferdams (Section 02261) <hr/>				
14	5,000 CUBIC YARDS	Dredging (Pond Material Removal & Legal Off-site T&D) (Section 02325) <hr/>				
15	LS	Geotextile and Erosion Control Blankets (Section 02610) <hr/>				
16	LS	Site Restoration (Section 02920) <hr/>				

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ITEM NO.	APPROXIMATE QUANTITIES	ITEMS WITH UNIT PRICE WRITTEN IN WORDS				
17	3,000 LF	Silt Fence (Section 02934) _____				
18	LS	Demolition and Removal of Existing Weir Structure and Tree (Dwg. S-101) _____				
19	LS	Provide New Reinforced Concrete Weir Structure (Dwgs. S-101 and S-200) _____				
20	4 EA	Remove/Re-install Existing Gabions (Dwg. S-101) _____				

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ITEM NO.	APPROXIMATE QUANTITIES	ITEMS WITH UNIT PRICE WRITTEN IN WORDS				
21	LS	North and South Culvert Wall Repairs, incl. handrail painting, except Energy Dissipation (Dwgs. S-100 and S-201) <hr/>				
22	LS	North and South Spillway Repairs, incl. handrail painting and waterproofing (Dwgs. S-100 and S-202) <hr/>				
23	155 LF	Cap Seal Surface of Concrete Wall w/Sikador 31 (Dwgs. S-100 and S-202) <hr/>				
24	50 SF	Infill Spalled Surface w/Sikador VOH (Dwgs. S-110 and S-202) <hr/>				

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ITEM NO.	APPROXIMATE QUANTITIES	ITEMS WITH UNIT PRICE WRITTEN IN WORDS				
25	215 LF	Pressure Inject Joints and Cracks w/Sikador 35 (Dwgs. S-110 and S-202) <hr/>				
26	50 SF	Infill Voids w/Sikador FNP (Dwgs. S-110 and S-202) <hr/>				
27	LS	Fiberglass Stop Logs (Section 15110) <hr/>				

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ITEM NO.	APPOXIMATE QUANTITIES	ITEMS WITH UNIT PRICE WRITTEN IN WORDS		

IDENTIFY DISPOSAL LOCATION FOR DREDGE SPOILS (i.e., facility name, phone #, address, contact, permit information, etc.): _____

ALLOWANCES: It is expressly understood and agreed that the total Bid presented in this Proposal is the basis for establishing the amount of the Bid Security and includes the following allowances:

1. Bid Item No. 1: An allowance of \$50,000 for costs associated with Unforeseen Field Construction.

All in accordance with the requirements of Division 1, Special Conditions; Section 01100, Summary; Section 01150, Allowances; and Section 01500 - Temporary Facilities and Controls.

Final Contract Payment for allowance items shall be based upon actual payments, and not on the approximate amounts cited herein.

DETERMINATION OF LOW BID: Determination of low Bid will be made by comparing the Total Base Bid which shall include each lump sum price totals, unit price totals and allowances.

MAJOR EQUIPMENT ITEMS: The Bidder shall fill the name and address of the proposed system suppliers for the major equipment items tabulated hereinafter. It is expressly understood that the furnishing of this information will not relieve the Bidder of any requirements of the Contract Documents and failure to fill out properly is grounds for rejection.

<u>Specification Number</u>	<u>Description</u>	<u>Manufacturer and/or Supplier</u>
15110	Fiberglass Stop Logs	

TECHNICAL SPECIFICATIONS

NO TEXT ON THIS PAGE

TECHNICAL SPECIFICATIONS
NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS
WATER QUALITY IMPROVEMENTS
AT
BAILEY ARBORETUM, LATTINGTOWN, NASSAU COUNTY, NEW YORK
GENERAL CONSTRUCTION CONTRACT

Table of Contents

Section **Description**

DIVISION 01 GENERAL REQUIREMENTS

01100	Summary
01150	Allowances
01160	Construction Limitations
01300	Submittals
01310	Project Meetings
01320	Contractor Cost for Owner's Representative Services
01321	Construction Progress Documentation
01400	Quality Requirements
01500	Temporary Facilities and Controls
01600	Materials and Equipment
01630	Substitutions and Product Options
01650	Delivery, Storage and Handling of Materials
01710	Maintenance of Facility Operations
01720	Maintenance of Stormwater Flow
01730	Maintenance and Protection of Traffic
01740	Cleaning
01770	Closeout Procedures

DIVISION 02 SITE CONSTRUCTION

02210	Clearing and Grubbing
02225	Dewatering and Bypass
02230	Sediment and Erosion Control Plan
02235	Rip Rap
02261	Cofferdams
02325	Dredging (Pond Material Removal)
02610	Geotextiles and Erosion Control Blankets
02920	Site Restoration
02934	Silt Fence

DIVISION 03 THRU 14 (NOT USED)

DIVISION 15 MECHANICAL

15110	Fiberglass Stop Logs
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SECTION 01100 — SUMMARY

PART 1 - GENERAL

1.1 SCOPE

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and other Technical Specification Sections, apply to this section.
- B. The Project goal is to restore the existing ponds at the Bailey Arboretum to their historic condition. A considerable amount of fine grained organic sediments have accumulated over time in the two (2) ponds. This sediment accumulation has reduced the pond's ability to: 1) act as stormwater buffers; 2) provide suitable habitat for aquatic wildlife; and 3) provide high aesthetic quality integral to the Arboretum.
- C. A maximum of 5,000 cubic yards will be removed from the ponds. The removal of sediments shall be conducted via hydraulic dredging and dewatering on site using geotubes (to be located adjacent to the ponds in the Bailey Arboretum parking area) and disposal of the dredged materials offsite at an approved disposal facility. Dewatering from the geotubes shall be directed back into the ponds. The existing pond weirs can be utilized to provide flow control in the ponds and to allow suspended solids to settle in the ponds and to not discharge downstream and to the receiving waters.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Project consists of Pond Dredging and Structural Repairs at the Bailey Arboretum.
 - 1. Project Location: 194 Bayville Rd, Locust Valley, NY 11560
 - 2. Owner: Nassau County.
- B. Engineer Identification: Contract Documents were prepared by Cameron Engineering and Associates, LLP, 177 Crossways Park Drive, Woodbury, NY 11797.
- C. Project Coordinator: General Contractor is responsible for coordination of their Subcontractors.
- D. Contractor is responsible for loading and unloading of all equipment related to the project.
- E. The Work under this Contract includes but is not limited to the following:
 - 1. Pond Dredging (Pond Material Removal)
 - a. Contractor shall provide for the re-grading and removal and proper off-site transportation and disposal of pond material at the locations as indicated in the Contract Documents, as specified herein and as directed by the Owner's Representative. Off-site transportation and disposal of pond material shall be outside the limits of the Project site and in accordance with local, state and federal regulations. Contractor shall submit their proposed schedule and means and

methods to conduct same, including their proposed method(s) for removal of pond material and any dewatering and bypassing activities, etc., if required. Contractor may have the option to dispose of excavated material at Town of Brookhaven Landfill in accordance with Section 02325.

2. Sediment and Erosion Control

- a. Contractor shall provide for soil erosion and sediment control (i.e., temporary gravel construction entrance/exit, energy dissipater, straw hay bales, silt fencing, erosion control blankets, etc.), as necessary, as specified herein and as directed by the Owner's Representative and prior to any site disturbances.

3. Structural Repairs

- a. Provide for repairs to existing concrete spillways as indicated in the Contract Documents, as specified herein.

1.3 CONTRACTS

- A. Project will be constructed under a General Construction Contract.

1.4 WORK SEQUENCE

- A. Contractor shall submit work sequence plan to Owner's Representative for approval prior to commencement of construction activities.

1.5 USE OF PREMISES

- A. General: Contractor shall not have full use of premises for construction operations. There is limited space available for equipment and material storage. Staging and storage areas shall be limited to areas indicated on the Contract Drawings and in accordance with the direction of the Owner's Representative.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01100

SECTION 01150 - ALLOWANCES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Allowances involved in this Section shall be included in the Contractor's Total Bid. Any allowance amounts not used during the Project shall be deducted from the final payment.
- B. Owner and Owner's Representative shall determine which items qualify to be paid for as allowance items and which items are to be included in other Bid items as non-allowance work.

1.2 SCHEDULE OF ALLOWANCE

- A. Allowance 01150A - An allowance of fifty thousand dollars (\$50,000) for any miscellaneous work not specified in the scope of the Contract Documents including, but not limited to, unforeseen fill, unforeseen construction, unforeseen soil conditions and unforeseen subsurface structures.

1.3 PAYMENT

- A. Any funds remaining in the allowances at project completion shall be eliminated by the credit Change Order.
- B. Construction Contract:
 - 1. Allowances 01150A - Payment under these allowances shall be paid on the basis of the cost of labor and materials plus overhead and profit, computed in accordance with the General Conditions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for allowances shall be an individual Lump Sum Item as appears on the Bid Sheet.

END OF SECTION 01150

SECTION 01160 — CONSTRUCTION LIMITATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This Section describes the construction limitations throughout the Project. In particular, use of site, access and permit compliance are included in addition to other relevant Contract requirements.
- B. Maintenance of stormwater flow is discussed in Section 01720 – Maintenance of Stormwater Flow.
- C. The area surrounding Bailey Arboretum is residential in nature. Any impacts to the nearby residents shall be mitigated to the fullest extent possible. Construction noise, dust, odors and related construction impacts shall be restricted to the governing codes and regulations. If the construction impacts are excessive, as determined by the Owner's Representative, the Contractor shall provide alternative construction means and methods to conduct and complete the construction.
- D. Construction debris and dredged material shall only be stored in compliance with the permits and project requirements and sediment and erosion control plans.
- E. Bailey Arboretum may be in use by visitors throughout the Project's duration. Contractor shall coordinate construction activities with County and Bailey Arboretum staff to ensure required visitor access is provided. Contractor must temporarily direct pedestrians away from the construction areas and provide pedestrian walkways adjacent to and protected from the construction areas. Contractor may only close sections of the Bailey Arboretum as construction takes place in those areas. Other areas of the Bailey Arboretum shall remain open. All required barricades, fencing and similar measures shall be provided and maintained by Contractor. Bailey Arboretum shall only be closed if entrances are impacted by construction activities.
- F. Prior to commencing any work, equipment, tools, materials, structures and labor shall be onsite. This requirement shall avoid work interruptions due to tools, materials, structures and labor not being delivered and/or present onsite.
- G. Contractor shall provide labor and overtime as necessary to complete the construction of each construction item and test all equipment.
- H. All construction and demolition work shall be coordinated with Owner and Owner's Representative to reduce impacts to the Arboretum to the maximum extent practical.
- I. Contractor shall be responsible for project site safety, method and means of construction. Contractor shall comply with all requirements of OSHA, New York State Labor Law and Industrial Code, and all laws and regulations governing work site safety, method and means of construction and by doing so, shall not be reason to request additional payment or claim extra work. Such regulations address but are not necessarily limited to, sanitation, noise, radiation,

gases, vapor, fumes, mists, dust, illumination, ventilation, protective equipment, fire protection, waste disposal, electrical hazards, scaffolds, ladders, and heavy equipment.

- J. Contractor shall designate a responsible member of his company at the project site whose duty shall be the prevention of accidents and compliance with all applicable requirements of OSHA, New York State Labor Law, and Industrial Code, and all laws and regulations governing work site safety, method and means of construction. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the Owner's Representative.

1.2 CONTRACTOR'S WORKING HOURS

- A. Contractor shall be permitted to schedule working hours as follows: 8:00 AM to 4:00 PM, Monday through Friday. Work on weekends and Owner holidays will not be permitted unless written approval is issued by the Owner. Contractor shall pay all excess costs for inspection services provided by the Owner's Representative for working beyond the times specified.

1.3 SITE ACCESS

- A. Contractor shall access the site only as shown on the Contract Drawings. Areas around the Bailey Arboretum are residential neighborhoods. Contractor shall not close any road for any period of time and shall restrict noise, dust, odors to applicable codes and regulations, except as stipulated herein and on the Contract Documents.

1.4 CONTRACTOR USE OF THE SITE

- A. Contractor shall maintain Bailey Arboretum in a safe condition throughout the construction period. Compliance with OSHA regulations and site safety shall be responsibility of the Contractor as it relates to the work of the Contract.
- B. Contractor shall immediately repair and/or replace damage caused by construction operations, employees or equipment employed by the Contractor. If directed to do so by the Owner's Representative, Contractor shall immediately repair or replace such damaged property. Contractor shall protect physical structures at the Arboretum from damage.
- C. Construction Debris: Contractor shall be responsible for removal and legal offsite transportation and disposal of construction debris associated with the construction activities at the Arboretum.
- D. Trash: Contractor shall provide sufficient and suitable labor as required, for proper housekeeping at the Arboretum to pick up all construction operation trash. Trash shall be removed on daily basis.
- E. Open fires will not be permitted on the site.
- F. Contractor shall not discard or dispose of any solid or liquid waste on-site.
- G. There is limited space available for equipment and/or material storage. Location(s) of staging and/or storage areas have been delineated/defined in the Contract Documents and will be

discussed with Owner and Owner's Representative at the pre-construction meeting. Contractor shall confine his operations to allow for public access and use of the Arboretum.

- H. Contractor shall utilize and maintain erosion control measures to protect wetlands located adjacent to the work as shown on the Drawings and as required by the NYSDEC, NCDPW and other regulatory agencies.
- I. Contractor shall maintain all existing benches, walkways, paths, roads, structures, bridges, and related areas free and clear of materials and equipment. Contractor shall not obstruct the Arboretum with materials and equipment. Contractor shall confine stockpiling of excess excavated material, materials and equipment to areas designated in the Contract Documents and as directed by the Owner and/or Owner's Representative.
- J. Immediately remove all excess excavated material. Do not stockpile excess material on the Bailey Arboretum property, unless otherwise directed by the Owner and/or Owner's Representative.
- K. Spills of soil, liquid, or any other material shall be immediately cleaned and removed. If in the course of importing fill or removing excess material falls to the roadway surface, Contractor shall employ suitable and sufficient labor to remove and otherwise return the roadway surface to clean condition as directed by Owner's Representative.
- L. Owner reserves the right to back charge Contractor for all costs associated with maintaining the Arboretum should the Contractor fail to maintain Bailey Arboretum in a condition acceptable to the Owner.
- M. Lock all automotive vehicles when parked or unattended to prevent unauthorized use. Do not leave vehicles or equipment unattended with the motor running or the ignition key in place.

1.5 CONTRACTOR USE OF PREMISES

- A. Freshwater wetlands exist throughout the Arboretum. Contractor shall install erosion control measures as shown on the Drawings and as specified elsewhere in these Specifications to protect these wetlands in accordance with all regulatory requirements.
- B. Do not unreasonably obstruct the Arboretum with materials and equipment. Do not store material where it will obstruct pedestrians or the public. Store all equipment and materials to allow the public full access to the Arboretum.
- C. Immediately repair or replace damaged facilities to the satisfaction of the Owner and/or Owner's Representative to a condition that that existed before the damage occurred as determined by preconstruction photographs, or if photographs are unavailable, to that deemed by the Owner.

1.6 MAJOR PERMIT CONDITIONS

- A. Special consideration will be given to storing construction debris, construction material and excavated material near/adjacent to the regulated freshwater wetlands. Any such material stored longer than one (1) day shall be properly covered/secured.

- B. All equipment and machinery shall be properly stored landward of regulated water bodies and secured to prevent leakage of oil and gasoline into the water body.
- C. All requirements in the NYSDEC Permit No. 1-2824-00414/00004 shall be met. A copy of the NYSDEC permit is included in Appendix A.

1.7 TEMPORARY HEATING AND VENTILATION

- A. Contractor shall provide temporary heat and ventilation as required for work during cold weather to aid in the curing of materials, to remove humidity, fumes, vapors and to prevent damage to the work of the Contractor. Contractor shall provide all temporary heating and ventilation at no additional cost to the Owner. Provide additional heat and ventilation for any required painting. Additional heat shall be furnished when and as directed by the Owner's Representative at no additional cost to the Owner.

1.8 PROTECTION OF WORK AND MATERIALS

A. Protection Requirements:

1. During the progress of the Work and up to the date of Final Payment, the Contractor shall be solely responsible for the care and protection of all Work and materials covered by the Contract. To prevent damage, injury or loss, actions shall include, but not be limited to, the following:
 - a. Store apparatus, materials, supplies, and equipment in an orderly, safe manner that will not unduly interfere with the progress of the Work, pedestrian, or vehicular traffic or other Bailey Arboretum visitors.
 - b. Provide suitable storage facilities for all materials which are subject to injury by exposure to weather, theft, breakage, or otherwise.
 - c. Place upon the Work or any part thereof only such loads as are consistent with the safety of that portion of the Work.
2. Contractor shall protect the existing Work and material from damage by his workmen and shall be responsible for repairing any such damage at no additional cost to the Owner.
3. Contractor shall protect trees, shrubbery and other natural features or structures from being cut, trimmed or injured in his areas of Work.
4. Provide temporary fencing around all open excavations, stockpiled materials, equipment, etc., or other dangerous conditions as determined by Owner's Representative. Temporary fencing shall be a minimum 6 feet high.
5. Contractor shall be responsible to protect his materials, construction equipment (i.e., trailer), work and all construction activities from vandalism damage.

B. Maintenance of Egress:

1. During the course of Work, the Contractor shall maintain and keep free of debris, materials or equipment, points of required egress in accordance with the requirements of the Local Fire Department and Fire Safety Regulations.

C. Protection of Existing Structures:

1. Underground Structures

- a. Underground structures are defined to include, but not be limited to, underground piping, stormwater pipes, headwalls, utilities, and other existing subsurface work located within or adjacent to the limits of the Work.
- b. Underground utility information is shown for the assistance of the Contractor in accordance with the best information available, but is not guaranteed to be correct or complete.
- c. Contractor shall explore ahead of Work and shall uncover all obstructing underground structures sufficiently to determine their location, to prevent damage to them and to prevent interruption of the services which such utilities provide. If the Contractor damages an underground utility, the Contractor shall restore utilities to its original condition and at no additional cost to the Owner.
- d. Necessary changes in the location of the Work may be acceptable to the Owner's Representative to avoid unanticipated underground structures. All structure relocations shall be at no additional cost to the Owner.
- e. If permanent relocation of an underground structure or other subsurface facility is required and is not otherwise provided for in the Contract Documents, Owner's Representative will direct Contractor in writing to perform the work, which shall be paid for under the Allowance item.
- f. All structures, stormwater pipes, headwalls, and related features shall be protected at all times and the Contractor shall repair any damages caused by the Contractor and at no additional cost to the Owner.
- g. Contractor shall mark out all utilities prior to any excavations.

2. Surface Structures: All existing surface facilities, including but not limited to fences, guardrails, posts, guard cables, signs, poles, structures, markers, curbs, etc. which are temporarily removed to facilitate installation of the Work shall be replaced and restored to their original condition at the Contractor's expense.

D. Protection of Products and Landscaping:

1. Control traffic to prevent damage to equipment, materials, surfaces, and landscaping.
2. Provide covering to protect equipment and materials from damage.
3. Prohibit traffic of any kind across planted lawn and landscaped areas.

E. Protection from Flood

1. Contractor shall not allow any areas of the Work to flood. Contractor shall keep all existing and new facilities within his Work area free from all accumulations of water.
2. Given the nature of the project, Contractor shall be careful to protect work from damage during any storm event. No additional compensation shall be given to Contractor due to stormwater damage.
3. Work areas shall be flooded frequently and Contractor shall take all necessary measures to protect work, materials, plantings and related items from flood damage. No additional compensation shall be given to the Contractor for lost time, equipment, or repair of work that has already been completed or in progress.

1.9 SECURITY

- A. Contractor shall safely guard all Work, materials, plant/seed material, equipment, and property from, loss, theft, damages and vandalism. Contractor's duty to safely guard property shall include the Owner's property and other private property from injury or loss in connection with the performance to of the Contract.
- B. Contractor shall make no claim against the Owner for damage resulting from trespass.
- C. Contractor shall pay for any and all damage to property of Owner and other's arising from failure to provide adequate security.
- D. If existing fencing or barriers are breached or removed for purposes of construction, Contractor shall provide and maintain temporary security fencing in a manner satisfactory to the Owner's Representative and Owner.
- E. Maintain security program throughout construction until the date of Final Completion.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION(NOT USED)

END OF SECTION 01160

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

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

1.2 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Owner's Representative accepted form.
- B. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate.
- C. Apply Contractor's stamp, signed or initialed certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
- D. Schedule submittals to expedite the Project, and deliver to Owner's Representative. Coordinate submission of related items.
- E. For each required submittal for review, allow ten (10) business days, excluding delivery time to and from the Contractor, for Owner's Representative review.
- F. Identify variations from Contract Documents and Product or system limitations.
- G. Provide space for Owner's Representative and Contractor's review stamp.
- H. Revise and resubmit as required. Identify all changes made since previous submission.
- I. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with provisions.
- J. Submittals not requested will not be recognized or processed.

1.3 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedule in duplicate within ten (10) business days after date stated in Notice to Proceed.
- B. Revise and resubmit as required.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D. Submit a computer generated horizontal bar chart with separate line for each section of work, identifying first work day of each week.

- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- F. Indicate estimated percentage of completion for each item of Work at each submission.
- G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner.

1.4 PROPOSED PRODUCTS LIST

- A. Within ten (10) business days after Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.5 SHOP DRAWINGS

- A. Number shop drawing submittals consecutively and show:
 - 1. All working and erection dimensions (all measurements to be verified at the site).
 - 2. Arrangement and sectional views.
 - 3. Necessary details, including information for making connections to other work.
 - 4. Kinds of materials and finishes.
 - 5. Reference to Contract Drawings and Specifications. Quote drawing number(s) and exact specification section and paragraph.
 - 6. Clearly indicate all deviations from Contract Documents.
- B. Shop Drawings shall be dated and shall contain:
 - 1. Name and Contact Number of Project.
 - 2. Description of required equipment, materials and classified item numbers.
 - 3. Locations at which materials or equipment are to be installed in the work.
- C. Submit shop drawings with a letter of transmittal containing the name of the Project, Contractor's name, number of drawings, titles and other pertinent data.
- D. Procedure for Submitting Shop Drawings:
 - 1. Product Data: Submit six (6) copies (minimum) of standard manufactured items, in the form of manufacturer's catalog sheets, showing illustrated cuts of the item to be furnished, scale details, sizes, dimensions, performance characteristics required, operating clearances, capacities, and all other pertinent information. Include manufacturer's Material Data Safety Sheets. Two (2) copies of submissions that have been reviewed will be returned to the Contractor.
 - a. Shop Drawings (including Product Data): Submit six (6) black and white prints for each drawing. On each drawing, provide clear space approximately 4"x10" on the right-hand side for stamps: "Date Received", "No Exception Taken", etc.

- b. Shop Drawing Stamp will indicate:
 - 1) "No Exception Taken"
 - 2) "Make Corrections Noted"
 - 3) "Amend and Resubmit"
 - 4) "Rejected – See Remarks"
 - c. Shop drawings must be resubmitted until stamped "No Exception Taken" or "Make Corrections Noted". The submittal will be reviewed only for general conformance with the design concept and for general compliance with the Contract Documents. The review does not relieve the Contractor from any responsibility for all of the requirements of the Contract Documents, including, but not limited to: job conditions, clearances, physical dimensions, coordination and construction techniques and processes; nor permit any deviation from drawings and specifications-any such deviation requires a specific written order.
 2. All drawings for shop fabricated equipment shall be submitted in the form of one good quality sepia and three good, sharp, direct contract prints of the Seller's original drawing. Original Drawings shall be produced in AUTOCAD 2017 format, as a minimum, or shall be converted to AUTOCAD 2017 format, at no additional cost to the Owner. Electronic data, where applicable, shall be submitted on compact diskette (CD-R and/or CD-RW), formatted for IBM compatible systems.
 3. Subcontractor's drawings shall be checked and stamped by the Prime Contractor before submission to the Owner's Representative.
 4. After completion of checking, the Owner's Representative will return the prints to the Contractor.
 5. For drawings returned "Amend and Resubmit" or "Rejected – See Remarks", correct the original drawings, submit corrected reprints, and resubmit until final "No Exception Taken" or "Make Corrections Noted" is obtained.
 6. If shop drawing item is rejected, Owner will receive a copy of the transmittal returning shop drawings to Contractor. If shop drawing is marked "No Exception Taken" or "Make Corrections Noted", the Owner will receive correspondent shop drawings (two (2) copies minimum) from the Owner's Representative office.
 7. For drawings returned "No Exception Taken" and "Make Corrections Noted" the Contractor shall obtain and issue sufficient prints to communicate to all parties involved in the work.
 8. Do not work as called for by shop drawings until Owner's Representative review has been completed. Contractor may proceed with fabrication if shop drawing is stamped "No Exception Taken" or "Make Corrections Noted".
- E. If shop drawings show variations from Contract requirements because of standard shop practice, or other reasons, Contractor shall make specific mention of such variation in their letter of transmittal.
- F. Approval of shop drawings is general. It does not relieve the Contractor of the responsibility for accuracy of such drawings, nor for the furnishing of materials or work required by the Contract and not shown on the shop drawings.
- G. If the Contractor should alter any information on previously submitted shop drawings besides the notation called for by the Owner's Representative, they must circle this new information to bring it to the attention of the Owner's Representative.
- H. In submitting shop drawings for review, submit all associated drawings relating to a complete assembly at one time so that each may be checked in relation to the entire proposed assembly.

- I. Have copies of all “No Exception Taken” and “Make Corrections Noted” shop drawings on the job at all times and make them available to the Owner’s Representative.
- J. Refer to the relevant specifications sections where shop drawings, product data and samples are required to be submitted.

1.6 MANUFACTURER INSTALLATION INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Owner’s Representative in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.7 MANUFACTURER CERTIFICATES

- A. When specified in individual specification sections, submit two (2) copies of certification by manufacturer to Owner’s Representative.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Owner’s Representative.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for submittals shall be an individual Lump Sum Item as appears on the Bid Sheet. All costs under this section shall be prorated based on the percentage of submittals completed to date over the duration of the Project.

END OF SECTION 01300

SECTION 01310 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 PRE-CONSTRUCTION MEETING

- A. Owner and Owner's Representative shall notify all parties concerned of the time and place for the Pre-Construction meeting. Pre-Construction meeting shall be conducted by the Owner and Owner's Representative and shall establish administrative procedures that shall be followed by all parties concerned for the duration of the Project. Contractor shall provide all required data and be prepared to contribute appropriate items for discussion at the Pre-Construction meeting. Required attendance shall include, at a minimum: Contractors' Site Superintendent, subcontractor(s), Owner and Owner's Representative.

1.2 PRE-INSTALLATION MEETINGS

- A. Pre-installation meetings will be held to review the specifications, drawings and approved submittals in preparation for start of a particular activity.
- B. Meetings shall be attended by the Owner and Owner's Representative and the Contractors' Site Superintendent including installer and representatives of manufacturers & fabricators involved in or affected by the installation and its coordination with other materials/trades.
- C. Owner and Owner's Representative shall schedule meetings prior to the start of the Work with the goal of ensuring the quality of construction and maintaining the project schedule.

1.3 MONTHLY PROGRESS MEETINGS

- A. Unless otherwise directed, progress meetings shall be held every month at a time and place agreed upon by the Owner, Owner's Representative and Contractors' Site Superintendent. Other interested parties may attend when needed (i.e., subcontractors, representatives from suppliers, manufacturer's, public utilities, and local government).
- B. Monthly progress meetings shall be held throughout the Project. Owner, Owner's Representative, Contractor and relevant Subcontractors shall attend.
- C. Contractor shall provide a Construction Progress Summary to all parties on or before noon of the day before the Monthly Progress Meeting. Construction Summary shall include bulleted items regarding:
 - 1. Construction Progress during the last month
 - 2. Projected construction during the next two weeks
 - 3. Projected construction during the next two months
- D. Meetings shall be conducted by the Owner and Owner's Representative for the following purposes:
 - 1. Review minutes for previous meeting.
 - 2. Review submittals and payment requisitions.
 - 3. Discuss field observations and construction issues.
 - 4. Review prior construction.

5. Project future construction.
 6. Review construction progress schedule.
 7. Review critical construction items.
 8. Review job progress, quality of Work, and approval and delivery of materials.
 9. Identify and resolve problems which impede planned progress.
 10. Coordinate the efforts of all concerned so that the project progresses on schedule to on time completion.
 11. Maintain a sound working relationship between the Contractor, Owner and Owner's Representative and a mutual understanding of the project requirements.
 12. Maintain sound working procedures.
- E. Meeting minutes shall be prepared by the Owner's Representative. Minutes shall become an official record of the meeting unless comments are given by the noted time.
- F. All meetings shall be conducted in a civilized manner and all parties shall be allowed to express their opinion. The Owner's Representative reserves the right to order any individual to leave the meeting if they are unable to conduct business in an orderly manner.
- G. At each Monthly Progress Meeting, the Contractor shall provide an updated Construction Schedule and all relevant construction photographs.

1.4 ATTENDANCE

- A. Contractors' Site Superintendent shall be required to attend all meetings scheduled by the Owner and Owner's Representative and shall be a competent supervisor familiar with the Work and have authority to act for the Contractor.
- B. If Contractors' Site Superintendent fails to attend two (2) scheduled meetings without prior approval, Contractor shall be directed to replace the current Contractors' Site Superintendent. Further incidents of non-attendance by the Contractors' Site Superintendent, will form the basis for review of the Contractor's responsible bidder status.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for Project Meetings shall be Project Lump Sum Item as appears on the Bid Sheet. All costs under this section shall be prorated over the duration of the Project and paid monthly over the duration of the Project.

END OF SECTION 01310

SECTION 01320 – CONTRACTOR COST FOR OWNER’S REPRESENTATIVE SERVICES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. In the event that the Owner’s Representative is required to provide additional office or field services as a result of substitution of materials or equipment or changes by the Contractor in dimension, weight, power requirements, etc., of the equipment and accessories provided, or as a result of Contractor’s errors, omissions or failure to conform to the requirements of the Contract Documents or if the Owner’s Representative is required to examine and evaluate any changes proposed by the Contractor and solely for the convenience of the Contractor; then the Owner’s Representative charges in connection with such additional services shall be charged to the Contractor by the Owner.
- B. In the event that the Owner’s Representative is not provided with written notification a minimum 24 business hours in advance regarding the cancellation of scheduled work in accordance with the Contractor’s approved construction schedule and required 2-week “look-ahead” submittals as specified in Section 01321 - Construction Progress Documentation, then the Owner’s Representative charges shall be charged to the Contractor by the Owner.
- C. Contractor shall keep the Owner’s Representative informed of the progress of the Contractor’s Work and particularly when the Contractor intends to cover Work not yet observed by the Owner’s Representative and/or tested by the Contractor. All construction observations by the Owner’s Representative and testing performed by the Contractor shall be completed in such a manner as not to unreasonably delay the Work. Contractor shall be charged for any additional services by the Owner’s Representative when the Work is not ready at the time specified by the Contractor.

1.2 COSTS

- A. Contractor shall respond to required submittals with complete information and accuracy to achieve required approvals within two (2) submissions. All costs to the Owner’s Representative involved with subsequent submissions of Shop Drawings, Samples, RFI’s or other items requiring approval, will be back charged to the Contractor, at the minimum rate of \$1,000 per submittal or the actual cost based upon the number of hours to review the submittal times the Owner’s Representative normal billing rate, whichever is greater. These costs shall be deducted from payments due for Work completed by the Contractor. In the event an approved item is requested by the Contractor to be changed or substituted for, all involved costs in the reviewing and approval process will likewise be back charged to the Contractor unless judged by the Owner’s Representative that the need for such deviation from previously approved data is beyond the control of the Contractor.
- B. Contractor shall provide advanced written notification a minimum 24 business hours regarding cancellation of scheduled work in accordance with the Contractor’s approved construction schedule and required 2-week “look-ahead” submittals as specified in Section 01321- Construction Progress Documentation. All costs involved as a result of the Contractor’s lack of advanced written notification shall be back charged to the Contractor unless judged by the Owner’s Representative that the need for such deviation is beyond the control of the Contractor. The Owner will deduct and retain sufficient sums from the monies due on the Contractor’s Application for Payment to cover the cost of the Owner’s Representative. A minimum of four (4) hours of Owner’s Representative’s time will be back charged to the Contractor at the Owner’s Representative standard hourly billing

rate adjusted by the appropriate premium for overtime, whether time-and-one-half, double time, or otherwise, as applicable, prior to applying the Owner's Representative multiplier.

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

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for Contractor Cost for Owner's Representative Services shall be at Owner's Representative hourly rates.

END OF SECTION 01320

SECTION 01321 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's construction schedule.
 - 2. Daily construction reports.
 - 3. Material location reports.
 - 4. Field condition reports.
 - 5. Special reports.
- B. Related Sections:
 - 1. Section 01300 "Submittals" for submitting schedules and reports.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- C. Event: The starting or ending point of an activity.
- D. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

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

1.4 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. Five (5) (minimum) paper copies.
- B. Contractor's Construction Schedule: Initial schedule and weekly "look-aheads", of size required to display entire schedule for entire construction period and for every two week period for the entire construction period as follows:
 - 1. Submit a working copy of schedule for entire construction period and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date.
 - 2. Submit weekly "look-ahead" schedules for entire construction period and labeled to comply with requirements for submittals.
- C. Daily Construction Reports: Submit at weekly intervals.
- D. Material Location Reports: Submit at weekly intervals.
- E. Field Condition Reports: Submit at time of discovery of differing conditions.
- F. Special Reports: Submit at time of unusual event.
- G. Qualification Data: For scheduling consultant.

1.5 QUALITY ASSURANCE

- A. Prescheduling Conference: Conduct conference at Project site. Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:
 - 1. Review content and format for reports.
 - 2. Verify availability of qualified personnel needed to develop and update schedule.
 - 3. Discuss constraints.
 - 4. Review schedule for work of Owner's separate contracts.
 - 5. Review time required for review of submittals and resubmittals.
 - 6. Review requirements for tests and inspections by independent testing and inspecting agencies.
 - 7. Review time required for completion and startup procedures.
 - 8. Review and finalize list of construction activities to be included in schedule.
 - 9. Review submittal requirements and procedures.
 - 10. Review procedures for updating schedule.

1.6 COORDINATION

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

- B. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each major heading as a separate numbered activity for each principal element of the Work. Comply with the following:
 - 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Owner's Representative.
 - 2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - 3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section 01300 "Submittals" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 - 4. Startup and Testing Time: Include not less than 2 months for startup and testing.
 - 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Owner's Representative's administrative procedures necessary for certification of Substantial Completion.
 - 6. Punch List and Final Completion: Include at least 60 days for punch list and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 - 1. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Uninterruptible services.
 - c. Partial use before Substantial Completion.
 - d. Use of premises restrictions.
 - e. Provisions for future construction.
 - f. Seasonal variations.
 - g. Environmental control.

- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, completion of each segment of construction, the Notice to Proceed, Substantial Completion, and Final Completion.
- E. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
 - 1. Unresolved issues.
 - 2. Unanswered RFIs.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
- G. Recovery Schedule: When periodic update indicates the Work is fourteen (14) or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance and date by which recovery will be accomplished.
- H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
- I. Contractor's Construction Schedule: Prepare and submit weekly "look-aheads" for the entire construction period. Label to comply with requirements for submittals.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's construction schedule within five (5) days after date established for the Notice to Proceed. Base schedule on the start-up construction schedule and additional information received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require three (3) months or longer to complete, indicate an estimated completion percentage in ten percent (10%) increments within time bar.

2.3 REPORTS

- A. Daily Construction Reports: Contractor shall prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. Approximate count of personnel at Project site.
 - 3. Equipment at Project site.
 - 4. Material deliveries.

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

- B. Material Location Reports: At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.
- C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.4 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner's Representative within one (1) day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one (1) week before each regularly scheduled progress meeting.
 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

3. As the Work progresses, indicate final completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Owner's Representative, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
 1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

3.2 MAINTAINING SCHEDULE

- A. Contractor shall perform the Work in accordance with the Project Schedule and provide all resources necessary to maintain progress of the work activities as scheduled, so that no delays are caused to other Contractors engaged in the Work.
- B. Should Contractor fail to maintain progress according to the Project Schedule or cause delay to contractors, Contractor shall provide such additional manpower, equipment, additional shifts, or other measures as directed to bring the operations back on schedule.

3.3 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for Construction Progress Documentation shall be Project Lump Sum Item as appears on the Bid Sheet. All costs under this section shall be prorated over the duration of the Project and paid monthly over the duration of the Project.

END OF SECTION 01321

SECTION 01400 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Item includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. All costs associated with independent testing, independent laboratory results, etc. are the responsibility of the Contractor. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-control services required by Owner's Representative, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include the following:
 - 1. Technical Specifications for specific test and inspection requirements.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Owner's Representative.
- C. Independent Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.4 DELEGATED DESIGN

- A. 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.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Owner's Representative.

1.5 REGULATORY REQUIREMENTS

- A. Copies of Regulations: Obtain copies of the following regulations and retain at Project site to be available for reference by parties who have a reasonable need:
 - 1. NCDPW Standard Specifications.

1.6 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.
- C. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Description of test and inspection.
 - 3. Identification of applicable standards.
 - 4. Identification of test and inspection methods.
 - 5. Number of tests and inspections required.
 - 6. Time schedule or time span for tests and inspections.
 - 7. Entity responsible for performing tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.
- D. Reports: Prepare and submit certified written reports that include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Ambient conditions at time of sample taking and testing and inspecting.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and re-inspecting.
- E. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.7 QUALITY ASSURANCE

- A. 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.
- B. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirement for specialists shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade-union jurisdictional settlements and similar conventions.
- C. 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.
- D. Preconstruction Testing: Testing agency shall perform preconstruction testing for compliance with specified requirements for performance and test methods.
1. Contractor responsibilities include the following:
 - a. Provide test specimens and assemblies representative of proposed materials and construction. Provide sizes and configurations of assemblies to adequately demonstrate capability of product to comply with performance requirements.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Fabricate and install test assemblies using installers who will perform the same tasks for Project.
 - d. When testing is complete, remove assemblies; do not reuse materials on Project.
 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Owner's Representative, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.8 QUALITY CONTROL

- A. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.
1. Engage a qualified testing agency to perform quality-control services.
 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- B. Special Tests and Inspections: Contractor will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction.
1. Testing agency will notify Owner's Representative and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to Owner's Representative with copy to Contractor and to authorities having jurisdiction.
 3. Testing agency will submit a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 5. Testing agency will retest and re-inspect corrected work.
- C. Retesting/Re-inspecting: Provide quality-control services, including retesting and re-inspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with Owner's Representative and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Owner's Representative and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
 5. Do not perform any duties of Contractor.
- E. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.

4. Facilities for storage and field-curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- G. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within five (5) days for the Notice to Proceed.
1. Distribution: Distribute schedule to Owner's Representative, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 ACCEPTABLE TESTING AGENCIES

- A. To be furnished to Owner's Representative for review purposes.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01400

SECTION 01500 – TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements for mobilization/demobilization temporary utilities, support facilities, and security and protection facilities.
- B. Related Sections:
 - 1. Division 01 Section "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities, where applicable, shall be included in the line item Allowance Items. Allow other entities to use temporary services and facilities without cost, including, but not limited to Owner's construction forces, Owner's Representative, other Contractors, Engineers, testing agencies, and authorities having jurisdiction.
- B. Sanitary Facilities: Pay and provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- C. Water Service: Provide electric water meter at each source utilized. Contractor, Owner and Owner's Representative shall verify meter reading at start and completion of use of water for the Project. Pay water service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Provide electric meter at each source utilized. Contractor, Owner and Owner's Representative shall verify meter reading at start and completion of use of electric for the Project. Pay electric power service use charges for electricity used by all entities for construction operations.
- E. Telephone/Cell Phone Service: Pay telephone/cell phone service use charges for telephone/cell phone/fax use by all entities for construction operations.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel as specified in the Contract Documents. Owner and Owner's

Representative to review. Contractor to modify as necessary and as directed by Owner and/or Owner's Representative and at no additional cost to the Owner.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.
- B. Materials and facilities required for mobilization shall conform to the Contract Documents and any pertinent Local or State law, regulation, or code.
- C. The mobilization work required to provide all temporary facilities and services for mobilization shall be done in a safe and workmanlike manner and shall conform with any pertinent local and state law, regulation, or code. Good housekeeping, consistent with safety, shall be maintained.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

- A. Contractor shall prepare a Site Utilization Plan (SUP) showing staging areas, parking areas, stockpile areas, debris container areas, unloading areas, and trailer areas for review by the Owner, Owner's Representative, Engineer, and other contractors.
- B. Evaluate and provide updated site utilization plans monthly, as necessary. Each update shall be submitted to the Owner and Owner's Construction Representative for information purposes and be provided by the last Friday of every month.
- C. Contractor shall install temporary security fencing around staging areas. Owner and Owner's Construction Representative will not be responsible for any stolen items and access control.
- D. Meeting(s) will be held at the site with all concerned parties to assist the Contractor in developing the criteria for the plan. During these meeting(s), all parties will present their needs and requirements for site utilization. Representatives from the local municipality or utility companies may be attending. The requirements of the local municipality and utility companies shall be incorporated into the SUP.
- E. Contractor shall then prepare a draft site plan that attempts to incorporate the needs of all concerned parties. Another meeting will then be held at the site to review and present the plan. The plan shall then be revised at that meeting and adopted for use if it is acceptable to all

relevant parties. If all parties cannot agree on an acceptable plan, then the Owner's Construction Representative will establish the SUP without any claims from any contractor.

- F. Contractor, by submitting a bid, understands the importance of a workable SUP and also understands that the Owner's Construction Representative may be required to select a plan for the Contractor to adopt that is not ideal to the planned construction activities anticipated before the bid was submitted. There shall be no claims for damages associated with site utilization. If the Contractor fails to prepare the SUP as stipulated above, then the Owner reserves the right to back charge the Contractor for the costs associated with having a SUP developed.
- G. If a Contractor fails to participate or attend the meetings scheduled to develop the SUP, then the Contractor will forfeit any right to comment on the plan that is developed.
- H. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- I. Contractor and Owner's Representative-Use Field Office: Field Office shall be an approved weatherproof building or trailer having a minimum of 500 SF (i.e., 10' x 50') of floor space with three (3) rooms (two private offices and a common area), weatherproof windows and weatherproof doors, each equipped with adequate locking devices and a ½ bath (Cassone, Model CA 1050 or approved equal). Each window shall have a minimum area of eight (8) square feet, shall be screened and of type that will open and close to provide adequate ventilation. Field Office shall be equipped with anchor/tie down systems for hurricane wind loads, fully skirted and of sufficient size to accommodate the needs of construction and Owner's Representative personnel office activities and to accommodate project meetings specified in other Division 01 Sections. A private office shall be provided for the Owner's Representative personnel within the Field Office and shall be equipped with a separate entrance from the exterior. Field office shall be kept clean and orderly by providing minimum bi-weekly garbage removal and cleaning services (including vacuuming and/or mopping of floors) throughout Project duration. Furnish and equip office as follows:
 - 1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, bookcases and drafting type tables.
 - 2. Conference area of sufficient size to accommodate meetings of eight (8) to ten (10) individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot-square tack and marker boards.
 - 3. Drinking water - hot and cold water bottle cooler with spigot. Disposable drinking cups and replacement bottles for duration of Contract.
 - 4. Private toilet (1/2 bath).
 - 5. Coffee machine and supplies.
 - 6. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 70°F +/- 5°.
 - 7. Lighting fixtures capable of maintaining average illumination of 100 fc at desk height.
 - 8. Telephone Service including one (1) separate telephone line, one (1) separate fax/modem line, one (1) digital answering machine and one (1) telephone.
 - 9. Combination Fax/Plain Paper Printer/Copy Machine/Scanner/Photo Printer.
 - 10. Fire extinguisher.
 - 11. First aid kit.
 - 12. Cellular Telephones/Two-Way Radios
 - 13. Turbidity meter

14. Refrigerator
15. Supplies – tissues, heavy duty paper towels, toilet tissues, hand soap, pens, paper supplies, paper clips, legal size hanging file folders, rubber bands, ink cartridges, photo printer paper, camera batteries, staples and staplers.
16. Internet Service - broadband modem, router and ISP, equipped with hardware firewall.
17. Digital Camera
18. Microwave oven
19. Wastepaper baskets
20. One (1) notebook/laptop PC for Owner's Representative use only with not less than the following:
 - a. Processor: Intel Core i5 processor or approved equal.
 - b. Memory: 8 gigabyte.
 - c. Disk storage: 1 TB hard disk drive and combination DVD-RW/CD-RW drive.
 - d. Display: 15.6 inches.
 - e. Battery: 12 Cell Lithium Ion and one (1) spare.
 - f. Carrying Case.
 - g. Surge Protector, 6 Outlet with UPS.
 - h. Wall and portable chargers.
 - i. Software:
 - 1) Microsoft Window (latest version), including Word, Excel, and Outlook.
 - 2) Adobe Acrobat Professional, latest edition.
 - 3) WinZip 7.0, latest edition.
 - 4) Roxio Creator, latest edition.
 - 5) Norton Antivirus, latest edition
21. Backup: External hard drive, 1 terabyte, with automated backup software providing daily backups.

- J. No construction shall be started until Field Office is set up, fully equipped and made available to the Contractor and Owner's Representative personal. Maintain Field Office until Owner's Representative schedules Substantial Completion inspection. Remove before Substantial Completion and restore site to satisfactory condition, as approved by the Owner and Owner's Representative
- K. All facilities, materials and equipment provided under this Section shall be provided and maintained in good working order at all times. Any materials or equipment that malfunctions shall be repaired or replaced at no additional cost to Owner.
- L. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
 1. Store combustible materials apart from building.
 2. Project materials and supplies that must be stored outside of the elements.

2.2 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. First Aid Facilities: Contractor shall have at the site of Work an approved First Aid Kit accessible at all times.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
 - 1. Exact location of temporary field trailers, portable sanitary facilities and temporary utilities shall be determined and agreed to at a meeting with the Contractor, Owner and Owner's Representative.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
- C. Contractor shall comply with all noise, vibration, fume, dust, vapor and gas regulations.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Water Service: Clean and maintain water service facilities in a condition acceptable to Owner and/or Owner's Representative. At Substantial Completion, restore these facilities to condition existing before initial use. Provide backflow prevention device in accordance with Owner's Representative's requirements. Provide water meters(s) necessary to measure water usage during construction. Contractor, Owner and Owner's Representative shall verify meter readings for the Project. Usage shall be back charged to the Contractor at rate paid by Owner.
- C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- D. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
 - 1. Install electric power service overhead, unless otherwise indicated.
 - 2. Connect temporary service to local utility and as directed by Owner.
 - 3. Contractor shall provide electric meters(s) necessary to measure electric usage during construction. Usage shall be charged to the Contractor by the owning utility.
- E. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- F. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install telephone lines for each field office.

1. Provide additional telephone lines for the following:
- G. Provide a dedicated telephone line for each facsimile machine in each field office.
1. At each telephone, post a list of important telephone numbers, including, but not necessarily limited to:
 - a. Police and fire departments.
 - b. Ambulance service.
 - c. Contractor's home office.
 - d. Owner's Representative's office.
 - e. Owner's office.
 - f. Principal subcontractors' field and home offices.
 - g. Contact information for all contract parties 24/7 (Owner, Owner's Representation and Contractor).
- H. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
1. Owner facilities, equipment, personnel, materials, specialty, supplies and conveyances shall not be utilized at anytime by Contractor or his subcontractor(s) or any worker without written permission by Owner. In order to obtain written permission for use of any Owner item, except personnel, it shall be necessary for Contractor to obtain such qualified manufacturer representatives that shall certify in writing that the item requested for use can be accommodated by the item for the intended use. Further, all maintenance on the item to make the item certifiable by the manufacturer's representative and to keep the item in operating condition shall be paid for by the Contractor intending to use the item for the duration of the construction. The use of the equipment, material, facility, specialty, supply or conveyance shall be back charged at a unit rate to the Contractor for each usage at 4 hour minimum time for each day the item is used.
 2. Owner staff, if needed for anything other than plan shutdowns and emergencies, shall be requested in writing at least 96 hours prior to the anticipated need for them. Owner shall be reimbursed for actual costs including benefits and administrative costs with a multiplier of 3 for all Owner staff work. Regardless of any activity all overtime costs for any Owner employee, including DPW construction staff, shall be reimbursed to the Owner by a back charge to the Contractor that shall be deducted from that month's payment request.
 3. Provide construction for temporary offices, shops, and sheds located within construction area.
 4. Maintain support facilities until Owner's Representative schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas, as required and adequate for construction operations.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust. Keep dust within the Project site to a minimum at all times.
- C. Traffic Controls: Comply with requirements of authorities having jurisdiction.
1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 2. Maintain access for fire-fighting equipment and access to fire hydrants.
 3. Contractor shall be responsible to maintain traffic access to all Owner facilities on a 24-hour per day, 7-day per week basis. Traffic maintenance shall be maintained by whatever means necessary at all times by the Contractor and at no additional cost to the Owner.
- D. Parking: On-site parking is limited. Contractor shall provide temporary offsite parking areas for construction personnel.
- E. Dewatering Facilities and Drains: Dewatering shall require permits and permitted discharge(s). Contractor shall obtain all required permits and provide detailed dewatering plan signed and sealed by a Professional Engineer licensed and registered in the State of New York and with a minimum five (5) years experience in the design and construction of dewatering systems. Contractor shall not discharge groundwater directly into creeks, ponds, lakes or waterways without first obtaining approval(s) and/or proper permit(s) from all applicable regulatory agencies. Before discharge into surface waters, dewatering effluents must be filtered through hay bales or detained settling basins to avoid sedimentation to the receiving waters. If necessary, baffling devices shall be used to prevent the scouring of the bed or banks of any receiving stream.
- F. Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
 2. Remove snow and ice as required to minimize accumulations and provide for safe work environment.
- G. Project Signs: No signs or advertisements of any nature will be permitted on the Project without prior approval of the Owner's Representative.
1. Provide signs, as required, to clearly direct deliveries to a location by the Contractor trailer for inspection prior to off loading (if found to be acceptable for off loading).
 2. Provide traffic signs indicating temporary changes to normal traffic flow on site.
 3. Provide temporary, directional signs for construction personnel and visitors.
 4. If required, insert a list of necessary signs and add Project-specific provisions such as special graphics and special lighting.
 5. Maintain and touchup signs so they are legible at all times.
- H. Waste Disposal:
1. Provide waste-collection containers in sizes adequate to handle waste from construction operations.
 2. Comply with requirements of authorities having jurisdiction.
 3. Provide systems for controlling and managing solid waste related to the Work.
 4. Prevent solid waste from becoming airborne, and from discharging to surface waters and drainage routes.

5. Properly handle and dispose of solid waste.
- I. Lifts and Hoists: Provide facilities necessary for hoisting materials.
- J. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- K. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
- L. Noise control enclosures may be necessary for dredging, dewatering and/or bypass pumping operations. All efforts shall be made by all parties to avoid the erection/construction of temporary enclosures to reduce noise but, if deemed necessary by the Owner and/or Owner's Representative, Contractor shall erect/construct these temporary facilities at no additional cost to the Owner. Contractor vehicles and equipment shall minimize noise to greatest degree practicable. Noise levels shall conform to Laws and Regulations, including OSHA requirements and local ordinances. Noise levels shall not interfere with the work of Owner or others.
- M. Dust Control
 1. Control objectionable dust caused by Contractor's operation of vehicles and equipment, clearing, or other actions. To minimize airborne dust, apply water or use other methods subject to acceptance of Owner's Representative and approval of authorities having jurisdiction.
- N. Pollution Control
 1. Pollution Control – General:
 - a. Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere caused by discharge of noxious substances from construction operations.
 - b. Equipment used during construction shall conform to federal, state, and local Laws and Regulations.
 2. Spills and Contamination:
 - a. Provide equipment and personnel to perform emergency measures required to contain spillages, and to remove contaminated soils or liquids.
 - b. Excavate contaminated earth and dispose of off-site, and replace with suitable compacted fill and topsoil.
- O. Atmospheric Pollutants:
 1. Provide systems for controlling atmospheric pollutants related to the Work.

2. Prevent toxic concentrations of chemicals.
3. Prevent harmful dispersal of pollutants into atmosphere.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways in accordance with the New York State (NYS) Standards and Specifications for Erosion and Sediment Controls and NYS Stormwater Design Manual. Measures shall cover temporary facility area and all construction sites.
 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from the project site during the course of the project.
 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- C. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains. Protect all new work and existing structures from stormwater and flooding. Implement special measures to prevent harmful substances from entering surface waters. Prevent disposal of wastes, effluents, chemicals, or other such substances in or adjacent to surface waters and open drainage routes, in sanitary sewers, or in storm sewers. Control fill, grading, and ditching to direct water away from excavations, pits, tunnels and other construction areas and to direct drainage to proper runoff courses to prevent erosion, damage, or nuisance. Provide, operate, and maintain equipment and facilities of adequate size to control surface water. Dispose of drainage water in manner to prevent flooding, erosion, and other damage to any and all parts of the Site and adjoining areas, and that conforms to Laws and Regulations.
- D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- E. Site Enclosure Fence: Before construction operations begin, Contractor shall provide 6" high chain link site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
 1. Submittal: Submit drawing identifying plan and details of materials and construction of site enclosure fence.
 2. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
 3. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish four (4) sets of keys for each lock to Owner.

- F. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day. Contractor shall be responsible to protect all new work and existing structures.
- G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- H. Safety fence shall be four (4) ft. high and made from UV stabilized extruded polypropylene. Color shall be bright orange. Safety fence shall be lightweight, durable, and highly visible. Wood posts shall be hardwood, four (4) inches diameter minimum, embedded minimum three (3) feet in the ground and spaced maximum eight (8) feet.
- I. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials. Employ methods and use materials that do not adversely affect conditions at the Site or on adjoining properties.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Termination and Removal: Remove each temporary facility when need for its service has ended, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor.
 - 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 - 3. Work areas shall be left clean and in neat condition, temporary items removed, any and all damage repaired, and all refuse removed. All cleaning shall be done in a manner acceptable to the Owner and Owner's Representative.
 - 4. Restore pavements, walks, curbs, lawns, and other exterior surfaces damaged during performance of the Work to match the appearance and performance of existing corresponding surfaces as closely as practicable.

5. Topsoil and seed or sod lawn areas damaged during performance of the Work and new lawn areas inside the limits of the performance of the Work. Contractor shall water as required until physical completion of the Work.
 6. Repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section Closeout Procedures.
- D. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonable predictable and controllable fire losses. Comply with NFPA 241.
1. Prohibit smoking in construction areas.
 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction. Hot Work permits shall be utilized at all times that open flames, sparks, cutting or welding of metals is performed.
 3. Develop and supervise an overall fire-prevention and –protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.6 REMOVALS

- A. At the conclusion of the work, all equipment, tools, temporary structures, and materials belonging to the Contractor shall be promptly taken away; he shall remove and promptly dispose of all debris, rubbish, or any foreign substances.
- B. All temporary sanitary facilities shall be removed entirely from the job and the site and all appurtenances restored to as new condition.

3.7 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for Temporary Facilities and Controls shall be Project Lump Sum Item as appears on the Bid Sheet. All costs under this section shall be prorated over the duration of the Project and paid monthly over the duration of the Project.

END OF SECTION 01500

SECTION 01600 – MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Minimum requirements and provisions relating to materials and equipment.

1.2 RELATED SECTIONS

- A. Section 01300 – Submittals.
- B. Section 01630 - Substitutions and Product Options.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 STORAGE AND PROTECTION

- A. Protect materials as required to prevent damage from moisture, rain, dirt, cold, sunlight, and other harmful influences.
- B. Do not deliver materials to job until they can be properly protected.
- C. In general, minimum protection for all materials shall include storage above ground, under waterproof cover.
- D. Protect completed work.
- E. Replace work which becomes unfit for use, damaged or unsightly during construction.

3.2 GENERAL WORKMANSHIP STANDARDS

- A. These minimum provisions, standards, and tolerances shall apply to all work under this Contract. More stringent standards and tolerances shall take precedence, where specified.
- B. Provide adequate blocking, bracing, nailers and fastenings, where required, subject to approval of the Owner's Representative. Install items securely.
- C. Build and install items level, plumb, square, and in correct position.
 - 1. No item shall be out of plumb, level, square or correct position so much as to impair its function or that of the Project.
- D. All fasteners used by all trades on the exterior, and where exposed to potential dampness, shall be corrosion resistant.
 - 1. Exposed fasteners used for hardware-finished metals shall match adjacent metals in finish.
 - 2. Fasteners used for exterior surfaces and trim, whether set and puttied or not, shall be stainless steel, unless otherwise noted on the Contract Drawings.

- E. Verify critical dimensions in field, and fabricate accordingly, items which must fit adjoining construction.

END OF SECTION 01600

SECTION 01630 - SUBSTITUTIONS AND PRODUCT OPTIONS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. The following requirements are in addition to those of the General Conditions, which apply to product options and substitutions of materials and equipment.

1.2 RELATED SECTIONS

- A. Section 01300 – Submittals.
- B. General Conditions.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PRODUCT OPTIONS

- A. Products are generally specified by reference standard, and/or manufacturer's name and model number.
 - 1. When specified only by reference standard, any product meeting this standard, by any manufacturer, may be used.
 - 2. When several products or manufacturers are specified as being equally acceptable, any product or manufacturer combination listed may be used.
 - 3. For products specified by naming one or more products, but indicating the option of selecting equivalent products, submit a request, as required for substitution, for any product not specifically named.

3.2 SUBSTITUTIONS

- A. Submit requests for substitutions in duplicate, to the Owner's Representative for approval prior to the award of Contract. Only written requests will be considered.
- B. Enclose the following information with all requests for substitutions:
 - 1. Data on the proposed substitution substantiating compliance with the Contract Documents. Include product identification and description, performance and test data, references and samples where applicable, and other information required by the Owner's Representative.
- C. In making request for substitution, the Contractor represents that:
 - 1. They have personally investigated the proposed substitute and determined that it is equal in all respects to the product specified.
 - 2. The same guarantees will be provided for the substitution as would have been provided for the product specified.
 - 3. The Contractor waives all claims for additional costs related to the substitution, which subsequently become apparent.

4. The Contractor will coordinate installation of the accepted substitute, making whatever changes may be required for the work to be completed in all respects.
 5. In case of a difference in price, the Owner shall receive all benefit of the difference in cost involved, in any substitution, and the Contract altered by a Change Order to credit the Owner with any savings so obligated.
 6. Contractor may be responsible for costs associated with review of substitute submittals that are determined not to be equal to specified items.
- D. Substitutions will not be considered if indicated or implied on shop drawing submissions without written request required above. Substitutions will not be considered if they require substantial revision of the Contract Documents to accommodate their use.

END OF SECTION 01630

SECTION 01650 – DELIVERY, STORAGE AND HANDLING OF MATERIALS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Given the residential nature of the area surrounding the Site, special consideration shall be given to deliveries of construction supplies and equipment. All noise, dust and odor restrictions shall be observed. Deliveries to the Site shall only be made via the access areas shown on the Contract Drawings. Other restrictions shall be communicated by the Owner's Representative.
- B. Contractor shall make all arrangements for transportation, delivery and handling of equipment and materials required for completion of the Work.
- C. Shipments of materials to Contractor or Subcontractors shall be delivered to the site only during regular working hours. Shipments shall be addressed and consigned to the proper party giving name of Project, street number and city. Shipments shall not be delivered to Owner unless special direction is given by Owner's Representative.
- D. Materials and equipment shall be stored at staging areas as designated by the Owner's Representative.
- E. If necessary to move stored materials and equipment during construction, Contractor shall move or cause to be moved materials and equipment without any additional compensation.

1.2 DELIVERY

- A. Products shall not be delivered to Site until related Shop Drawings have been approved by Owner's Representative.
- B. Products shall not be delivered to Site until required storage facilities have been provided.
- C. Deliver products to Site in manufacturer's original, unopened, labeled containers. All shipments shall contain a parts list and manufacturer's part number in a plastic zippered envelope. Inform the Owner's Representative of all equipment deliveries under this Contract.
- D. Partial deliveries of component parts of equipment shall be clearly marked to identify the equipment, to permit easy accumulation of parts and to facilitate assembly.
- E. Each shipment shall include storage, handling and installation instructions.
- F. Immediately on delivery, inspect shipment to assure:
 - 1. Product complies with requirements of Contract Documents and reviewed submittals.
 - 2. Quantities are correct.
 - 3. Containers and packages are intact, labels are legible.
 - 4. Products are properly protected and undamaged.

1.3 MATERIAL STORAGE

- A. The Contractor shall make every effort to minimize extended storage periods for materials and equipment at the Site by judiciously scheduling deliveries to coincide with construction needs. The Contractor shall not store unnecessary materials or equipment at the Site and shall take care to prevent any structure from being loaded with a weight which will endanger its integrity or the safety of persons. All storage and methods of protection for material and equipment at the Site shall be subject to the prior approval of the Owner's Representative. Any costs associated with the storage and protection of materials and equipment shall be included in the lump sum bid and no additional payment will be made.
- B. Materials may be stored outdoors if supported on wood runners above ground surface and protected with approved covers.
- C. Materials shall not be placed within ten (10) feet of fire hydrants.
- D. Avenues for personnel and vehicular movement, gutters, drainage channels and inlets shall be kept unobstructed at all times.
- E. Construction material shall be properly covered, tarped and protected from the elements.
- F. Storage of any mechanical or electrical equipment outdoors at any time is absolutely prohibited regardless of the protection furnished. Storage of mechanical and electrical equipment within structures at the Site owned by the Owner will not be permitted.
- G. All mechanical and electrical equipment shall be coated, wrapped and otherwise protected from snow, rain, drippings of any sort, dust, dirt, condensed water vapor, etc. during shipment, storage, and subsequent to installation and until placed in service.
- H. Should storage of mechanical and electrical equipment become necessary before it can be stored at the Site, the Contractor shall provide storage in a weatherproof warehouse.
- I. All costs for equipment protection including warehousing or other work to meet the scheduled completion date shall be included in the Bid and no additional payment will be made.
- J. All equipment having moved parts such as gears, electric motors, etc. and/or instruments shall be stored in a temperature and humidity controlled building approved by the Owner, until such time as the equipment is to be installed.

1.4 MATERIAL HANDLING

- A. Provide equipment and personnel necessary to handle products by methods to prevent soiling or damage to products or packaging.
- B. Provide additional protection during handling as necessary to prevent scraping, marring or otherwise damaging products or surrounding surfaces.
- C. Handle products by methods to prevent bending or overstressing.
- D. Lift heavy components only at designated lifting points.

- E. Materials and equipment shall at all times be handled in a safe manner and as recommended by manufacturer or supplier so that no damage will occur to them. Do not drop, roll or skid products off delivery vehicles. Hand carry or use suitable materials handling equipment.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

3.1 PAYMENT

- A. Payment will not be made under this Section. The work described is considered incidental to the construction of various items of work that will be measured and paid for under various items on the Bid Sheet.

END OF SECTION 01650

SECTION 01710 — MAINTENANCE OF FACILITY OPERATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Contractor shall perform his Work in such a manner that continuous and uninterrupted services and facilities are maintained operational throughout the construction period until final acceptance by the Owner.
- B. Work shall be scheduled and conducted by the Contractor such that it will not impede or compromise or create potential hazards and/or cause odor or other nuisance. In performing the Work shown and specified, all Contractors shall plan and schedule their Work to meet constraints outlined in this Section.
- C. Contractor shall be completely responsible for the violation of any law or permit, or the creation of any danger to Facility personnel and/or the public health, due to laxity in the maintenance of Facility operations.
- D. Contractor shall be aware that existing valves, gates, and other shutoff devices/appurtenances may not be tight closing and that supplemental pumping and/or other means shall be provided by the Contractor to complete and maintain completely dry conditions, as required and/or as directed by the Owner and/or Owner's Representative and at no additional cost to the Owner.

1.2 CONSTRAINTS

- A. The following constraints shall be applied to all equipment and appurtenant utility systems at the construction site. This list is not to be deemed complete or entirely inclusive of all possible scenarios that may need to be addressed during the construction of the improvements.
 - 1. Existing Facility Operations shall be maintained throughout the performance of the specified Work. Contractor shall maintain any bypassed conditions throughout the performance of the specified Work.
 - 2. Contractor shall be completely responsible for any regulatory violation caused as a direct result of the performance of the specified Work.
 - 3. Contractor shall install temporary flow isolation gates/valves/plugs, as required, to maintain Facility Operations.
 - 4. Contractor shall coordinate all bypassing, draining and dredging activities with Facility personnel.
 - 5. Existing and new underground facilities (i.e., electrical duct banks, pipelines, etc.) in, under and crossing Facility roads have been designed for a maximum wheel load of AASHTO H-20. Contractor shall not exceed this weight limit.
 - 6. Unobstructed traffic routes throughout the Facility must be maintained at all times.
 - 7. Vehicular access to all buildings and facilities must be maintained at all times.
 - 8. Facility personnel must have access to all areas throughout the construction period.
 - 9. Existing potable water system shall be kept in operation at all times. Shutdowns for installations shall be minimal and shall be coordinated and approved by Facility personnel, the Owner and the Owner's Representative.

10. Sanitary facilities in existing structures shall be operational at all times. All other building plumbing systems (i.e., roof and floor drains, etc.) shall be maintained for all structures.
11. Stormwater flow and drainage systems on the site shall be operational at all times.
12. In Contractor's work areas and areas affected by the Contractor's operations, heating and ventilating shall be both provided and maintained by the Contractor, as required. Temperatures shall be maintained to at least 70°F.
13. Electric power, lighting service and communication systems shall be maintained in uninterrupted operation in all areas throughout the construction period.
14. All sump pumps shall be maintained in operating condition with either existing pumps or temporary pumps provided by the Contractor. Interim piping, power and controls shall be provided by Contractor, as required by the construction sequence.
15. Contractor shall provide temporary partitions and enclosures as necessary to maintain dust-free, heated and ventilated spaces in all areas which are adjacent to his Work and which must be kept operational by the Facility.

1.3 SHUTDOWNS

A. General:

1. Shutdown shall be defined to indicate that a portion of the Facilities normal operation has to be suspended or taken out of service in order to perform the specified Work. For each shutdown, Contractor shall compile an inventory of its labor and materials required to perform the tasks, an estimate of the time required and a written description of steps required to complete the tasks. Contingency time shall be provided where existing shut-off devices do not close tight and supplemental pumping and/or other devices are required to maintain dry conditions. The inventory, the estimate and written procedure shall be submitted to the Owner's Representative for review 14 business days prior to the proposed start date of the shutdown. Contractor may request in writing, approval for each shutdown a minimum of 2 business days prior to the proposed date. No shutdown shall be initiated until the list of materials and labor is verified on site at least 2 business days prior to the proposed start date.
2. Work required which may interrupt normal Facility operations shall be accomplished at such times that will be permitted by Facility personnel. Contractor shall note that shutdowns will generally not be permitted during the night time hours.
3. Contractor shall provide a minimum 2 business day advance written notice of shutdowns to Facility personnel.
4. Contractor shall also have on hand, located in close proximity to the Work area, all tools, equipment and materials, both temporary and permanent, necessary to complete each work category, without interruption. Adequate numbers of personnel shall be scheduled for each shutdown, so that the Work may be accomplished within the specified time frame. Prefabrication of all piping, ductwork and other assemblies shall be completed to greatest degree possible, prior to any shutdowns. Owner and Owner's Representative shall be satisfied that Contractor has complied with these requirements, to the fullest extent possible, before shutdowns will be authorized.

1.4 OVERTIME

- #### A.
- Overtime work by Contractor necessary to conform to the requirements of the Contract shall be performed by Contractor and Contractor shall make no claims for extra compensation as a result thereof. In the event that the Contractor requests to perform overtime work, the Owner and Owner's Representative shall review the scope of the operations and determine on a case-by-

case basis the extent of the oversight services that will be required. Contractor shall be backcharged for any additional services provided by the Owner and/or Owner's Representative. Owner shall deduct and retain sufficient sums from the monies due on the payment requisition to cover the cost of the Owner and/or Owner's Representative and such personnel of the Owner and/or Owner's Representative as are assigned to the Work to observe the Work of the trade, or trades, actually performing such overtime work. Owner employee's time shall be charged to Contractor at the rate of one and one-half (1.5) times direct salaries cost. Owner's Representative's employee's time shall be charged to Contractor at Owner's Representative's standard hourly billing rates adjusted by the appropriate premium applicable for overtime, whether time-and-one-half, double time, or otherwise, as applicable, prior to applying the Owner's Representative's multiplier.

1.5 MAINTENANCE OF FACILITY OPERATIONS AND SEQUENCE OF CONSTRUCTION

- A. In order to maintain continuous Facility operations during construction, the Contractor shall submit a written detailed Maintenance of Facility Operations and Sequence of Construction Plan description for review by the Owner's Representative as specified herein.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for Maintenance of Facility Operations shall be Project Lump Sum Item as appears on the Bid Sheet. All costs under this section shall be prorated over the duration of the Project and paid monthly over the duration of the Project.

END OF SECTION 01710

SECTION 01720 — MAINTENANCE OF STORMWATER FLOW

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The Contractor shall include in the lump sum bid all cost requested for labor, material, equipment, appurtenance and any incidental expenses to maintain stormwater flow throughout the construction. Stormwater flow shall be maintained 24/7. Contractor shall perform the work to avoid interrupting any stormwater flow and pond elevations throughout construction. Work areas shall not be impacted by storm flows, and severe flooding from severe thunderstorms.
- B. Prior to commencing any demolition, the new equipment and structures shall be onsite. This requirement shall avoid work interruptions due to equipment not being delivered.
- C. Contractor shall provide labor and overtime as necessary to complete this Item.
- D. All construction and demolition work shall be coordinated with the Owner's Representative to reduce impacts to the Arboretum to the maximum extent practical.
- E. Contractor shall provide and maintain during the life of the Contract, environmental protective measures, as necessary. In addition, Contractor shall provide environmental protective measures as required to correct conditions, such as oil spills or debris that may occur during the pond material removal operations. Contractor shall also comply with all applicable local, state and federal regulations pertaining to soil, water, air, odor, noise, and related pollution.
- F. Contractor shall be responsible for the protection of their materials, tools, equipment, etc. from vandalism, damage, etc.
- G. Contractor shall protect the stability of walkways, bridges, bulkheads, and other structures lying on or adjacent to the site of the Work, insofar as structures may be jeopardized by the pond material removal operations or associated construction. Contractor shall repair damage resulting from the operations, at no cost to the Owner.
- H. Contractor shall be responsible for project site safety, method and means of construction. Contractor shall comply with all requirements of OSHA, the New York State Labor Law and Industrial Code, and all laws and regulations governing work site safety, method and means of construction and by doing so, shall not be reason to demand additional payment or claim extra work. Such regulations address but are not necessarily limited to, sanitation, noise, radiation, gases, vapor, fumes, mists, dust, illumination, ventilation, protective equipment, fire protection, waste disposal, electrical hazards, scaffolds, ladders, and heavy equipment.
- I. Contractor shall designate a responsible member of their company at the project site whose duty shall be the prevention of accidents and compliance with all applicable requirements of OSHA, New York State Labor Law, and Industrial Code, and all laws and regulations governing work site safety, method and means of construction. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the Owner's Representative.

- J. Contractor shall be careful to protect the work from damage during any storm event. No additional compensation shall be given to the Contractor due to stormwater damage.

1.2 SUBMITTALS

- A. Contractor shall submit a proposed schedule, means and methods, including but not necessarily limited to, description of all material, equipment, tools and other appurtenances, as required to conduct the specified Work at the locations as indicated on the Contract Drawings and as specified herein.
- B. Contractor shall submit a separate maintenance of stormwater flow plan for all applicable types of work when stormwater may impact construction.
- C. Provide separate descriptions of construction for all major construction elements to Owner's Representative, for information only.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 DESCRIPTION

- A. Contractor shall perform all construction affecting any stream or channel in dry weather, to the maximum extent feasible. Construction activities shall be closely coordinated with local weather forecasts.
- B. The impact of severe storm flows shall be considered before any construction takes place and adequate mitigated measures shall be provided by the Contractor.
- C. Contractor shall be responsible for any fines, repairs or construction required due to stormwater.

3.2 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for Maintenance of Stormwater Flow shall be an individual Lump Sum Item as appears on the Bid Sheet. All costs under this section shall be prorated over the duration of the Project and paid monthly over the duration of the Project.

END OF SECTION 01720

SECTION 01730 - MAINTENANCE AND PROTECTION OF TRAFFIC

PART 1 GENERAL

1.1 SCOPE

- A. This section includes the provisions of maintaining vehicular and pedestrian traffic and protection for both the public and the Contractor's employees from all damage to person and property within the limits of and for the duration of the Contract.

1.2 SUBMITTALS

- A. Contractor shall notify the Owner's Representative at least seventy-two (72) hours prior to the closing of any portion of a road as might be necessary to perform the work and shall adequately describe the detour to be followed.
- B. The maintenance and protection of traffic plans shall meet the following requirements:
 - 1. Plans shall show all locations and type of barricades, safety devices, signs and temporary striping conforming to the Federal Manual of Uniform Traffic Control Devices (MUTCD) Highway Work Zone Traffic Control, current edition and New York State Department of Transportation (NYSDOT) supplements and to the satisfaction of the road owner, Owner and/or Owner's Representative.
 - 2. Plans shall show in detail the methods, sequences, procedures and facilities that the Contractor proposes to use for the maintenance and protection of traffic on all roads.
 - 3. Review of the traffic maintenance plans are intended only as an outline of minimum requirements and the provisions of these drawings do not in any way lessen the Contractor's responsibility to maintain vehicular and pedestrian traffic and to protect the public and their own employees from all damage to person and property. Adjustments in the field may be required, as the Owner and/or Owner's Representative deems necessary.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Traffic Devices:
 - 1. All temporary signs, delineators, barricades, lighting and other warning and guiding devices shall be as shown in the Federal MUTCD and NYSDOT supplements material specifications as they apply to the various materials required for the Work of this Section.
 - 2. Unless otherwise specified, all materials and equipment used will remain the property of the Contractor.

PART 3 - EXECUTION

3.1 PREPARATION

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

3.2 PERFORMANCE

- A. Traffic shall be maintained over a reasonably smooth traveled way, which shall be marked by signs, delineation's and/or other methods so that a person who has no knowledge of conditions can safely and with a minimum of discomfort and inconvenience travel the area under construction. Maintenance of traffic shall be in conformance with the Federal Manual of Uniform Traffic Control Devices (MUTCD) Highway Work Zone Traffic Control, current edition and New York State Department of Transportation (NYSDOT) supplements and to the satisfaction of the road owner, Owner and/or Owner's Representative.
- B. Adequate advance warning must be provided whenever traffic is interfered with or lanes are closed. All signs, markings, signals, barricades, lighting devices and flagger operations shall conform to the "manual". All necessary traffic control devices shall be in place before the particular construction operations are started. In case of emergency construction where there is not sufficient time to prepare a traffic plan, the Contractor shall be responsible for following the guidelines set forth in the manual.
- C. Access for emergency vehicles are of the utmost importance and provision shall be made by the Contractor to provide and maintain such access at all times.
- D. Contractor shall generally maintain two- (2) way traffic on streets where work is in progress. At no time shall the Contractor work on both sides of the street. Access to driveways and parking lots shall be maintained at all times unless otherwise directed by the Owner and/or Owner's Representative.
- E. For the duration of the Contract, the Contractor shall maintain within the contract limits the entire pavement, drainage and sewage facilities and other street elements unless otherwise specified. Foreign objects, sand, rocks, spillage of materials shall immediately be removed and the area cleaned to the satisfaction of the Owner and/or Owner's Representative. Spillage outside the contract limits is the Contractor's responsibility and he shall pay the cost for work necessary to clean the areas affected.
- F. Traffic delays shall be kept to a minimum. A period of five (5) minutes shall be considered the maximum time allowed for stopping traffic.
- G. Signs, barricades and other facilities shall be furnished and erected as called for on the approved Plan and/or as directed by the Owner's Representative.
- H. Contractor shall be responsible for notifying all interested agencies when construction will interfere with the normal traffic flow. These agencies include, but are not limited to:
 - 1. Nassau County and Local Police Department(s)
 - 2. Local Fire Department(s)
 - 3. New York State Department of Transportation (NYSDOT)
 - 4. School District(s)
 - 5. Nassau County Unit of Traffic Engineering (for County roads).
 - 6. Local Traffic Departments and Departments of Public Works.
- I. Contractor will not be permitted to store soil, materials, equipment or supplies that will interfere with sight distances, within thirty (30) feet of an intersection or areas where visibility is critical.
- J. Contractor shall construct and maintain, as directed by the Owner's Representative temporary bridges or bridging over excavations, obstructions and newly laid pavements to provide access for

pedestrian and vehicular traffic and access to fire hydrants. During construction, Contractor shall take particular care to allow for the ingress and egress of emergency vehicles from fire houses, police stations, hospitals, etc.

- K. Street signs, route markers and other signs that fall under public jurisdiction (i.e., bus stop, stop signs, parking signs, etc.), shall be protected and maintained.
- L. Contractor shall provide protection from damage to persons or properties.
- M. All signs, lights, barricades and other materials installed to direct or warn the travelling public shall be maintained, repaired and replaced by the Contractor. Vandalism or theft shall not preclude the Contractor from meeting the specified requirements. Special attention shall be given to Traffic Maintenance during non-working hours, weekends, holidays and other periods or temporary shutdown of work.
- N. Materials, equipment and workmanship for lighted barricades shall be in strict compliance with the National Electric Code and only licensed electricians may perform the work.
- O. Signs or markers lost, damaged or removed without the Owner's Representative's approval shall be replaced at no cost to the Town.

3.3 FLAGMAN

- A. Competent and sufficient number of flagmen shall be provided by the Contractor when required and/or as directed by the Owner and/or Owner's Representative. These flagmen shall have no function other than the direction of traffic. They shall wear safety vests and shall direct traffic with a red flag as required by the Federal MUTCD and NYSDOT supplements.

3.4 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for Maintenance and Protection of Traffic shall be an individual Lump Sum Item as appears on the Bid Sheet. All costs under this section shall be prorated over the duration of the Project and paid monthly over the duration of the Project .

END OF SECTION 01730

SECTION 01740 - CLEANING

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

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

1.2 REFERENCES

A. Standards referenced in this Section are:

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

1.3 PROGRESS CLEANING

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

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

B. Owner's Right to Clean: Should the Contractor fail, refuse or neglect to remove rubbish and waste materials and temporary work or clean the contract area as required herein, then the Owner may without obligation to do so, remove and dispose of the said rubbish, waste materials and temporary work, clean the contract area and deduct the cost thereof from any money due, or to become due, the Contractor under this Contract.

C. Site:

1. Keep outdoor, dust-generating areas wetted down or otherwise control dust emissions.
2. At least weekly, brush-sweep roadways and paved areas at the Site that are used by construction vehicles or otherwise affected by the Work.

D. Work Areas:

1. Clean areas where Work is in progress to level of cleanliness necessary for proper execution of the Work.
2. Remove liquid spills promptly and immediately report spills to Owner, Owner's Representative, and authorities having jurisdiction.
3. Where dust would impair proper execution of the Work, broom-clean or vacuum entire area of Work, as appropriate.

4. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- E. Installed Work: Keep installed Work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning agents and methods specifically recommended. If manufacturer does not recommend specific cleaning agents or methods, use cleaning agents and methods that are not hazardous to health or property and that will not damage exposed surfaces.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration until Substantial Completion.
- G. Cutting and Patching:
 1. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.
 2. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.
- H. Waste Disposal:
 1. Properly dispose of waste materials, surplus materials, debris and rubbish off the Site.
 2. Do not burn or bury rubbish and waste materials at the Site.
 3. Do not discharge volatile or hazardous substances, such as mineral spirits, oil, or paint thinner, into storm sewers or sanitary sewers.
 4. Do not discharge wastes into surface waters or drainage routes.
 5. Contractor shall be solely responsible for complying with federal, state, and local Laws and Regulations regarding disposal of waste.
- I. During handling and installation of materials and equipment, clean and protect construction in progress and adjoining materials and equipment already in place. Apply protective covering where required for protection from damage or deterioration, until Substantial Completion.
- J. Clean completed construction as frequently as necessary throughout the construction period.
- K. Contractor and Owner and Owner's Representative's Field Offices shall be cleaned at a minimum of bi-weekly. Cleaning shall include removal of trash and garbage, vacuuming of carpeted surfaces and mopping of other floor surfaces, dusting and washing of sanitary facilities as well as other surfaces and office items, once monthly cleaning of interior and exterior windows and ventilation and heating equipment (including ductwork interiors), as directed. All costs shall be included in Contractor's Bid.

1.4 CLOSEOUT CLEANING

- A. Complete the following prior to requesting inspection for Substantial Completion:
 1. Clean and remove from the Site rubbish, waste material, debris, and other foreign substances.
 2. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 3. Hose-clean sidewalks and loading areas.
 4. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 5. Leave surface waterways, drainage routes, and gutters open and clean.

6. Repair pavement, roads, sod, and all other areas affected by construction operations and restore them to specified condition; if condition is not specified, restore to original condition.
7. Clean exposed exterior and interior hard-surfaced finishes to dirt-free condition.
9. Remove debris from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, and similar spaces.
10. In unoccupied spaces, sweep concrete floors broom-clean.
11. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
12. Remove non-permanent tags and labels.
13. Touch up and otherwise repair and restore chipped, scratched, dented or otherwise marred surfaces to specified finish and match adjacent surfaces.
 - a. Do not paint over "UL" or similar labels, including mechanical and electrical nameplates.
14. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint, and mortar droppings, and other foreign substances.
15. Clean plumbing fixtures to sanitary condition, free of stains, including stains resulting from water exposure.
16. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
17. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace temporary lamps provided in permanent fixtures. Replace existing light fixture components that are burned out or noticeably dimmed from use during the Work. Replace defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
18. Leave the Site clean, and in neat, orderly condition, satisfactory to Owner and Owner's Representative.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

3.1 PAYMENT

- A. Payment will not be made under this Section. The work described is considered incidental to the construction of various items of work that will be measured and paid for under various items on the Bid Sheet.

END OF SECTION 01740

SECTION 01770 – CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. The following items are in addition to those of General Conditions which apply to Project Closeout and Final Completion of Work requirements

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. At the completion of the Work, Contractor shall remove all rubbish from and about the site of their work, and all temporary structures, tools, scaffolding, materials, supplies and equipment which they or any of their Subcontractors may have used in the performance of the Work. Contractor shall broom clean paved or floor surfaces.
- B. Contractor shall thoroughly clean all materials, equipment and structures; all marred surfaces shall be touched up to match adjacent surfaces; so as to leave Work in a clean condition.
- C. Remove spatter, grease, stains, fingerprints, dirt, dust, packing materials and other foreign items or substances caused by Work of this Contract.
- D. Contractor shall maintain cleaning until Project is accepted by the Owner.

3.2 INSPECTIONS

- A. At time of completion of all the Work, a final inspection shall be held. Contractor shall also provide all necessary documentation as required and comply with all the requirements of the Contract Documents.
- B. Follow-up Inspection:
 - 1. At the time of the completion of the guarantee period, the Owner's Representative will make arrangements with the Contractor for a follow-up inspection and will send a written notice to said parties to inform them of the date and time of the inspection.
 - 2. After the inspection, the Owner's Representative will inform the Contractor of any corrections required.

3.3 RECORD DRAWINGS

- A. During the progress of the Project, the Contractor shall keep accurate records of all deviations from the Work as shown on the respective Contract Drawings, indicating the actual construction details for the installed work.
- B. Upon Final Completion of the work, the Contractor shall prepare Record Drawings of the finished work. These drawings shall indicate all changes to the system construction, structural, equipment, and all appurtenances, with particular attention to existing items which may have been relocated

due to construction. All Drawings shall bear stamp "Record Drawing of Work as Built" as of (date) and shall be signed by a principal of the Contractor's firm.

- C. Record Drawings shall be produced in AUTOCAD 2017 format, as a minimum, or shall be converted to AUTOCAD 2017 format, at no additional cost to the Owner. Electronic data, where applicable, shall be submitted on compact diskette (CD-R and/or CD-RW) formatted for IBM compatible systems.
- D. After 100% completion, submit two (2) sets of prints to the Owner and one (1) set of prints to the Owner's Representative. The cost of furnishing the above prints and preparing the Record Drawings shall be paid for by the Contractor and shall be included in their proposals. Record Drawings shall be delivered to the Owner and Owner's Representative before requesting approval of final request for payment for the completed Work.

3.4 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for Closeout Procedures shall be an individual Lump Sum Item as appears on the Bid Sheet. Payment under this section shall be made upon Final Completion of the work.

END OF SECTION 01770

SECTION 02210 - CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Removal of surface debris at locations indicated on the Contract Drawings and/or as directed by Owner's Representative.
- B. Clearing site of plant life and grass at locations indicated on the Contract Drawings and/or as directed by Owner's Representative.
- C. Removal of trees and shrubs and their root systems at locations indicated on the Contract Drawings and/or as directed by Owner's Representative.

1.2 REGULATORY REQUIREMENTS

- A. Conform to state and local laws and regulations for disposal of debris.
- B. Coordinate clearing Work with utility companies.
- C. Provide erosion control in accordance with the New York Guidelines for Urban Erosion and Sediment Control.
- D. Notify all utilities before beginning any removals of trees or shrubs.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify that existing plant life designated to remain, is tagged or identified.
- B. Prior to commencement, Owner and Owner's Representative shall review all planned clearing and grubbing activities.

3.2 PROTECTION

- A. Locate, identify, and protect utilities that remain, from damage.
- B. Protect trees, plant growth, and features designated to remain, as final landscaping.
- C. Protect bench marks and existing structures from damage or displacement.

3.3 CLEARING AND GRUBBING

- A. Clear and grub areas required for access to site and execution of Work.

- B. Remove trees and shrubs indicated. Remove stumps, main root ball, root system to a depth of 24 inches.
- C. Clear and grub undergrowth and deadwood, without disturbing subsoil.

3.4 REMOVAL

- A. Remove debris, rock, and extracted plant life from site and dispose of in accordance with state and local laws and regulations.

3.5 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for clearing and grubbing shall be Project Lump Sum Item as appears on the Bid Sheet. Payment under this section shall be based on the percentage of clearing and grubbing completed over the duration of the Project.

END OF SECTION 02210

SECTION 02225 –DEWATERING AND BYPASS

PART 1 - GENERAL

1.1 SCOPE

- A. The Contractor shall furnish all labor, materials, tools, equipment, and accessories, as required, to provide dewatering for all excavations and stream and pond flow bypass affected by construction activities.
- B. The provisions of the General Specifications, in addition to those described herein, apply.
- C. The Contractor shall coordinate with the Owner's Representative to schedule dewatering and stream and pond bypass activities in a manner that will not interfere with normal operations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 GENERAL

- A. The Contractor shall submit a coordinated construction sequence, operation, and dewatering and bypass plan identifying locations and timing for dewatering and bypass operations. The Contractor shall schedule work in a manner which minimizes bypass activities.
- B. The Contractor shall do all work necessary to dewater trenches and excavations where ground or surface water is encountered during installation of structures, and shall continue the dewatering operation until all trenches or excavations have been backfilled.
- C. The Contractor shall provide and maintain pumps, piping, hoses, fuel, lubricants required for dewatering and bypass operation for the duration of the operation. The Owner's workforce will not assist the Contractor in any bypass activities.
- D. The Contractor shall be responsible for obtaining all permits for dewatering and bypassing from the NYSDEC. All costs for permits shall be borne by the Contractor.
- E. Bypass schedule shall be submitted to the Owner's Representative for approval a minimum of forty-eight (48) hours prior to the event.

3.2 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for dewatering and bypass shall be paid on a percentage basis for each dewatering and/or bypassing activity/event. If a balance remains at the end of the Project, payment shall be made on an individual lump sum basis for any outstanding balance at the end of the Project.

END OF SECTION 02225

SECTION 02230 – SEDIMENT AND EROSION CONTROL PLAN

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Contractor shall assume responsibility for the control of soil erosion and water pollution from construction activities in accordance with federal, state and local regulations and in accordance with the Plans and Specifications and as directed by the Owner's Representative. The sediment and erosion control plan shall also apply to any bypass operations of pond flow during construction.

1.2 RELATED WORK

- A. General Conditions.

1.3 SUBMITTALS

- A. Contractor shall submit a sediment and erosion control plan in accordance with the New York State Guidelines for Urban Erosion and Sediment Control Manual for review by the Owner's Representative prior to commencing construction activities. A separate coordinated construction operation and sequence plan shall be included as part of the sediment and erosion control plan submittal. The construction operation and sequence plan shall identify locations and timing for installation of sediment and erosion control measures.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Contractor shall install silt fences, hay bales, mulch or other approved methods of sediment and erosion control during construction activities in accordance with installation procedures of the New York State Guidelines for Urban Erosion and Sediment Control and as shown on the Drawings or as directed by the Owner's Representative. Location of sediment and erosion control measures shall be coordinated with the approved construction operation and sequence plan and shall protect at all times the water quality of the stream, pond, Oyster Bay and the Long Island Sound.
- B. Contractor shall take necessary measures to maintain dust. Construction vehicles shall be cleaned, as necessary, prior to using public streets.
- C. Any changes to the sediment and erosion control plan shall require the submission of a revised sediment and erosion control plan to the Owner's Representative. The revised plans must meet all current State sediment and erosion control practices.
- D. Contractor shall obtain all required permits. Discharge of water during bypass and dewatering operations shall meet any water quality requirements of the New York State Department of Environmental Conservation.
- E. All excess excavated material, except for topsoil, shall be removed from the site by the Contractor

in accordance with the Contract Documents.

- F. All utilities and catch basin inlets must be protected prior to start of construction.
- G. All sediment and erosion control practices shall be left in place and maintained; including silt and sediment removal, until construction is completed, area is stabilized and the Owner's Representative so directs.
- H. All bypass and dewatering operations must discharge directly into a sediment filter area. Sediment filters shall be installed in accordance with the Contract Documents and the details of design and construction shall be prepared and submitted by the Contractor to the Owner's Representative for review.

3.2 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for sediment and erosion control shall be an individual Lump Sum item as appears on the Bid Sheet. All costs under this section shall be prorated over the duration of the Project and paid monthly over the duration of the Project.

END OF SECTION 02230

SECTION 02235 - RIP RAP

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to install rip rap at the locations shown on the Drawings and as specified herein

1.2 RELATED SECTIONS

- A. Section 02610 – Geotextile and Erosion Control Blankets.

1.3 SUBMITTALS

- A. Submit material and gradation specifications in accordance with Section 01300.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Stone for rip-rap shall be hard, durable quarry materials. Stone shall be angular and not subject to breaking down when exposed to water or weathering. Stone specific gravity shall be a minimum of 2.5.
- B. Stone rip-rap shall be a well graded mixture with 50% by weight larger than the specified design size. The diameter of the largest stone size in the mixture shall be 1.5 times the d50 size with smaller sizes grading down to 1 inch. Gradation of rip-rap shall adhere to the following table: Gradation class shall be in accordance with the Drawings.

EFFECTIVE STONE DIAMETER (IN.) AT % FINER BY WEIGHT					
CLASS	LAYER THICKNESS (IN.)	D10	D50	D85	D100
I	18	4	8	10	12
II	18	6	12	15	18
III	24	8	17	21	24
IV	36	12	25	32	36
V	48	16	34	43	49

- C. A geotextile shall be installed between the rip-rap and the underlying soil to prevent soil movement into or through the rip-rap. Suitable filter shall consist of a well-graded gravel or sand-gravel layer or a synthetic filter fabric. The filter blanket is based on the ratio of particle size in the overlying filter material to that of the base material in accordance with the following:

1. Gravel filter blanket shall have the following relationship for stable design:

$$\frac{d_{15} \text{ filter}}{d_{85} \text{ base}} < 5 \quad 5 < \frac{d_{15} \text{ filter}}{d_{50} \text{ base}} \leq 40 \text{ and } \frac{d_{50} \text{ filter}}{d_{50} \text{ base}} \leq 40$$

Each filter layer shall be a minimum of 6 inches thick.

2. Synthetic filter fabric shall have the following relationship for table design:

- a. Filter fabric covering a base containing 50% or less by weight of particles finer than #200 sieve size,

$$\frac{d_{85} \text{ base}}{\text{EOS filter fabric}} > 1 \quad (\text{EOS} = \text{Equivalent Opening Size})$$

Total open area of filter fabric shall not exceed 36%.

- b. Filter fabric covering other soils,

EOS no larger than #70 sieve size.

Total open area of filter fabric shall not exceed 10%.

- c. No filter fabric shall have less than 4% open area or an EOS less than #100 sieve. Permeability of the fabric must be greater than that of the soil.
- d. Filter fabric shall be made of woven monofilament yarns conforming to ASTM D-1682 or ASTM D-177 with a minimum thickness of 20 mils and a minimum grab strength of 90 lbs.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Subgrade Preparation: subgrade for rip-rap shall be prepared to the required grades shown on the Contract Drawings. Subgrade shall be compacted to 95% density. Cut of subgrade shall be made in a manner such that the finished inside dimensions and grade of the rip-rap meet design specifications.
- B. Filter Blanket: filter blanket shall be placed immediately after the subgrade has been prepared and approved by the Owner's Representative.
 1. For gravel or sand filter blankets, spread filter stone in a uniform layer to the specified depth. Where multiple layers are required, spread layers without mixing.
 2. For synthetic filter fabrics, place fabric directly over prepared subgrade. Follow manufacturer's recommendations for slope placement, overlapping requirements, anchor pin placement, and end stabilization.
- B. Stone Placement: rip-rap shall be placed immediately after filter blanket has been placed. Rip-rap shall be placed to form a dense, well-graded mass of stone with minimum voids, in accordance with the Contract Drawings and specifications herein. Rip-rap shall be placed to its full thickness in one operation, without dumping through chutes or using other methods that may cause segregation of

stone sizes.

3.2 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for rip rap shall be included in the lump sum Energy Dissipation Bid Item as it appears on the Bid Sheet.

END OF SECTION 02235

SECTION 02261 - COFFERDAMS

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

- A. Maintenance of Stormwater Flow: Section 01720.
- B. Dewatering and Bypass: Section 02225.
- C. Dredging (Pond Material Removal): Section 02325.
- D. Site Restoration: Section 02920.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cofferdams may be constructed of earth, earth-filled bags, sheet piling or any other materials which the Contractor may elect to use and which will allow the Work to be installed within the cofferdams in an un-watered condition.
- B. Pumping equipment and bracing shall be of adequate quality and capacity and shall be so arranged as to permit their proper functioning in connection with the specified Work.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Place, maintain, and remove cofferdams and pumping equipment at the locations noted in the Contract Documents.
- B. Locate cofferdams so as to cause the least possible interference with water borne traffic. The locations and extent of such cofferdams shall be subject to review by the Owner and Owner's Representative.
- C. Construct cofferdams so as to keep the Work area free from water, ice, or snow and to permit the specified Work to be properly completed as specified. Any and all damage caused by the failure of a cofferdam from any cause whatsoever, shall be the responsibility of the Contractor. It shall be his responsibility also to protect any and all stream banks from erosion by reason of restriction of a channel caused by the erection of cofferdams. All material which erodes from the banks during the time that the cofferdams are in place shall be removed as required and replaced by the Contractor at his own expense.

3.2 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for cofferdams shall be Project Lump Sum Item as appears on the Bid Sheet. Payment under this section shall be

based on the percentage of cofferdams installed and removed over the duration of the Project.

END OF SECTION 02261

SECTION 02325 – DREDGING (POND MATERIAL REMOVAL)

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Contractor shall provide all materials, tools, equipment and appurtenances, as necessary, to remove and provide for proper off-site transportation and disposal of pond material at the locations as indicated in the Contract Documents and as specified herein. Contractor shall be expected to provide for a uniform removal of pond material from each pond bottom.
- B. Contractor shall identify and confirm removal of pond materials is in compliance with the permitted disposal location and his means and methods of pond material removal will be acceptable to the permitted disposal location. Transportation and disposal of materials removed from the pond shall be the responsibility of the Contractor with disposal outside the limits of Project site and in accordance with local, state and federal regulations.

1.2 QUALITY ASSURANCE

- A. Work specified in this Section shall be conducted by a firm experienced in the removal and off-site transportation and disposal of pond sediment. The firm shall have satisfactorily completed such Work for a minimum of five (5) projects of comparable size, scope and technical difficulties. Contractor shall provide all reference information requested by the Owner's Representative, including, but not necessarily limited to names, phone numbers, quantity of materials removed and disposal location(s), contract price, list of equipment owned and utilized, standard operating procedures utilized and any safety violations in the last five (5) years.
- B. If the firm described in Paragraph 1.2A above is a Subcontractor, Contractor shall submit for approval and provide same information as requested in Paragraph 1.2A.

1.3 DEFINITION

- A. Hard material is defined as material requiring removal, including, but not necessarily limited to, boulders or fragments.
- B. Deleterious material is defined as material requiring removal, including, but not necessarily limited to, organics, wood, metal, concrete, tires, wrecks, wreckage, or any other material not defined as hard material.

1.4 SUBMITTALS

- A. Contractor shall submit their proposed schedule and means and methods of sediment removal and proper and legal off-site transportation and disposal, including but not necessarily limited to, description of all materials, equipment, tools and other appurtenances, as required to conduct the specified Work at the locations as indicated on the Contract Drawings and as specified herein.
- B. Contractor shall provide soundings and/or survey before and after the pond material removal activities. Soundings and/or survey shall be signed and sealed by a surveyor registered and

licensed in the State of New York. Soundings and/or survey shall be prepared on a twenty-five (25) foot grid interval with maximum 1 foot contours.

1.5 POND MATERIAL TO BE REMOVED

- A. Pond material to be removed may include, but not necessarily be limited to, sediment, silt, mud, sand, gravel, hard and deleterious materials. It is noted that Owner has no explicit knowledge and/or information of existing hard and/or deleterious materials requiring removal and as to require the use of special or additional equipment for its removal.

1.6 ADDED OR DEDUCTED WORK

- A. Contractor shall not exceed the volume of pond material to be removed as indicated by the numeric units in the Contract Documents. Contractor shall notify Owner's Representative when volume of pond material to be removed approaches quantity indicated. Volume of pond material to be removed shall be measured from the number of cubic yards of material removed from the pond and properly transported and disposed of off-site. Contractor shall provide scale (weigh) tickets from the permitted disposal location/facility for each load of material delivered and disposed of.
- B. If the volume of pond material to be removed is less than or greater than the numeric units of Work indicated in the Contract Documents, the contract sum will be adjusted by a Change Order at time of final payment in accordance with the unit price bid and accepted, only if quantity less than or greater than Contract volume was approved in writing by the Owner.
- C. The foregoing unit prices shall include overhead, profit, permits, material disposal, and all other expenses incidental to the Work. Include in the bid sum all additional costs in connection with quantity changes that are not compensated for at the given unit prices.

1.7 PROJECT CONDITIONS

- A. Existing Conditions: Limited site soil data and samples and soil reports are available for inspection. However, Bidders must make their own interpretation and/or investigation of subsurface conditions, as necessary and that may affect methods or cost of the Work, prior to submitting Bids.
- B. Contractor shall be responsible for other conditions encountered which are not unusual with respect to conditions recognized in ponds as usual in pond material removal activities such as those required under this Contract.

1.8 QUANTITY OF MATERIAL

- A. Total estimated amount of pond material to be removed from within the specified limits, including side slopes, is indicated on the unit Bid. The quantity listed is an estimate only and may be adjusted as specified herein.

1.9 PERMIT(S)

- A. Contractor shall comply with all conditions and requirements of the Owners New York State Department of Environmental Protection (NYSDEC) approved Permit and/or all other local, state or federal permits and regulations, as required.

1.10 ENVIRONMENTAL PROTECTION REQUIREMENTS

- A. Contractor shall provide and maintain during the life of the Contract, environmental protective measures, as necessary. In addition, Contractor shall provide environmental protective measures required to correct conditions, such as oil spills or debris that may occur during the pond material removal operations. Contractor shall also comply with all applicable local, state and federal regulations pertaining to soil, water, air, odor, noise and related pollution.
- B. Contractor shall take measures to protect plant life, aquatic life and related features of the pond. If in the opinion of the Owner, the pond is being impacted by the pond material removal operations, the Contractor shall provide adequate mitigation to protect the pond.
- C. If the Contractor chooses to use polymer as a drying agent, it shall be submitted to the Owner's Representative for approval and shall be safe for freshwater discharge.

1.11 CONTRACTOR'S SAFETY OBLIGATIONS

- A. Contractor shall be responsible for project site safety, method and means of construction. Contractor shall comply with all requirements of OSHA, the New York State Labor Law and Industrial Code, and all laws and regulations governing work site safety, method and means of construction and by doing so, shall not be reason to demand additional payment or claim extra work. Such regulations address, but are not necessarily limited to, sanitation, noise, radiation, gases, vapors, fumes, mists, dust, illumination, ventilation, protective equipment, fire protection, waste disposal, electrical hazards, scaffolds and ladders, floor holes and wall openings, and heavy equipment.
- B. Contractor shall designate a responsible member of his organization at the project site whose duty shall be the prevention of accidents and compliance with all applicable requirements of OSHA, the New York State Labor Law and Industrial Code, and all laws and regulations governing work site safety, method and means of construction. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the Owner's Representative.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 INSPECTION

- A. Contractor shall inspect the Work, keep records of Work performed, and ensure that gauges, targets, ranges, and other markers are in place and usable for the intended purpose. Contractor shall provide, at the request of the Owner's Representative, boats, boatmen, laborers, and all materials and equipment necessary for observing the Work. When required, Contractor shall provide transportation for the Owner's Representative to and from the disposal location and

between the actual location(s) of the Work being conducted and the adjacent points along the pond perimeter.

3.2 CONDUCT OF MATERIAL REMOVAL WORK

- A. Contractor shall be responsible for directing the order of the Work. Owner's Representative reserves the right to change the order of Work at any time.
- B. Contractor shall provide, set and maintain ranges, buoys, markers, etc., as necessary to define the limits of the Work. Contractor shall establish and maintain ranges, buoys, markers, etc. at locations observable from each part of the Work, so that the horizontal and vertical limits of the Work may be determined. Contractor shall suspend operations when the ranges, buoys, markers, etc. cannot be seen or followed. Contractor shall be responsible for providing the necessary survey lines, points, and elevations necessary for the setting of the ranges, buoys, markers, etc.
- C. Contractor shall maintain all materials, tools and associated equipment as necessary to conduct the pond material removal operations and to meet the requirements of the Work as specified in the Contract Documents.
- D. Contractor shall be responsible for the protection of his materials, tools, equipment, etc. from vandalism, damage, etc.

3.3 DISPOSAL OF EXCAVATED MATERIAL

- A. Contractor shall provide for proper and legal off-site transportation and disposal of the materials removed from the pond. Contractor shall provide for disposal at an approved off-site disposal location. The disposal of material removed from the pond at an unauthorized location shall not be permitted. Contractor shall comply with all applicable rules, requirements and/or regulations of the disposal location and its governing authorities (i.e., local, state and federal laws). The name, address, telephone number and contact person for the permitted site to be utilized for disposal of the material removed from the pond shall be provided in the Contractor's Bid.
- B. Contractor shall not remove loaded and ready for off-site transportation and disposal material until the load has been measured by the Contractor and Owner's Representative.
- C. Contractor shall deposit excavated material utilized for fill at a uniform grade and allow for shrinkage. Contractor shall also refer to Section 02300 – Earthwork for additional requirements, as necessary. Contractor shall provide and maintain necessary bulkheads, dikes, ditches, weirs, spillways, and other construction necessary to confine and retain the fill in the fill area.
- D. Contractor may have the option of disposing of excavated material at the Town of Brookhaven Landfill. Applicable conversion rate shall be 1.2 tons/cy and minimum percent solids required shall be obtained.

3.4 SALVAGED MATERIAL

- A. Articles of value, which are discovered during the pond material removal operations shall

remain or become property of the Owner and shall be secured at a location as directed by the Owner and/or Owner's Representative and near the site of the Work. Any artifacts, relics or remnants discovered during the pond material removal operations shall become property of the Owner and shall be secured at a location as directed by the Owner or Owner's Representative.

3.5 SAFETY OF STRUCTURES

- A. Prosecution of the Work shall ensure the stability of piers, bulkheads, and other structures lying on or adjacent to the site of the Work, insofar as structures may be jeopardized by the pond material removal operations. Contractor shall repair damage resulting from the pond material removal operations, insofar as such damage may be caused by variation in locations or depth of removal, or both, from that indicated or permitted under the Contract.

3.6 EQUIPMENT REMOVAL

- A. Upon completion of the Work, Contractor shall promptly remove ranges, buoys, markers or other obstructions from the Project site.

3.7 PAYMENT

- A. Contractor shall provide soundings and/or a survey before and after pond material removal operations.
- B. Material removed from the pond shall be measured by the cubic yards in place, by means of soundings and/or a survey taken before and after the pond material removal operations. The Contract Documents represent existing conditions based on current available information, but shall be verified and corrected, if necessary, by the soundings and/or survey taken before the pond material removal operations in each locality. Soundings and/or survey methods shall be approved by the Owner's Representative with the results utilized for the basis for payment. Areas sounded and/or surveyed more than 30 days prior to the pond material removal operations shall be re-sounded and/or re-surveyed when requested by the Owner's Representative.
- C. Other means, such as truck counts and/or scale (weigh) tickets may also be utilized to support basis of payment for material removed and properly transported and disposed of at an off-site and permitted location/facility.
- D. Contractor shall not exceed quantity indicated by numeric units in the Contract Documents (i.e., unit price bid). Contractor shall notify Owner's Representative when quantity approaches quantity indicated.
- E. If quantity is less than or greater than the numeric units of Work indicated in the Contract Documents, the Contract sum will be adjusted by a Change Order at time of final payment in accordance with the unit price bid and accepted, only if quantity less than or greater than Contract quantity was approved in writing by the Owner.
- F. The foregoing unit process shall include overhead, profit, permits, material disposal, and all other expenses incidental to the Work. Include in the bid sum all additional costs in connection with quantity changes that are not compensated for at the given unit prices.

3.8 FINAL EXAMINATION AND ACCEPTANCE

- A. As soon as practicable after completion of areas, which in the opinion of the Contractor and Owner's Representative, will not be affected by further pond material removal operations, each area shall be examined by the Contractor and Owner's Representative by soundings and/or a survey. Based on the results of the soundings and/or survey, Contractor shall be notified when areas are found to be in a satisfactory condition and the Work therein will be accepted as complete.

END OF SECTION 02325

SECTION 02610 – GEOTEXTILES AND EROSION CONTROL BLANKETS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Contractor shall furnish all labor, materials, equipment and incidentals required to install all geotextiles and erosion control blankets in accordance with the Plans and Specifications and as directed by the Owner's Representative.

1.2 RELATED WORK

- A. Section 02230 – Sediment and Erosion Control Plan.
- B. Section 02235 – Rip Rap.

1.3 SUBMITTALS

- A. Submit manufacturer's data in accordance with Section 01300.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Filter Fabric

Filter fabric shall be non-woven 100% polypropylene geotextile Model US160NW as manufactured by US Fabric, Cincinnati, OH or approved equal. Contractor shall submit vendor's specifications to the Owner's Representative prior to shipping. The non-woven geotextile shall have the following characteristics:

Unit Weight	6 oz/sy	Apparent Opening Size	70 US Sieve
Tensile Strength	160 lbs	Puncture Strength	90 lbs.
Flow Rate	110 gpm/sf	Trapezoidal Tear	60 lbs.
Mullen Burst	305 psi		

B. Ground Anchoring Devices

U-shaped wire anchors, metal geotextile pins, triangular wooden or biodegradable plastic stakes shall be used to anchor erosion control blankets and geotextiles. Wire staples shall be a minimum of 8 gauge. Metal pins shall be at least 3/16" diameter steel with a 1½ inch steel washer at the head of the pin. All anchors shall be between 8 and 18 inches long and have sufficient ground penetration to resist pullout. Longer anchors may be required for loose soils. Heavier metal stakes may be required in rocky soils.

C. Materials List

Contractor shall submit materials list to Owner's Representative with samples prior to ordering project materials.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Preparation

Installation area shall be graded and shaped. All rocks, clods, vegetative or other obstructions shall be removed so that the installed blankets will have direct contact with the soil. Seedbeds shall be prepared by loosening two to three (2-3) inches of topsoil above final grade. Amendments shall be incorporated into the soil according to Specifications, Section 02930 and Section 02935.

B. Seeding

Installation area shall be seeded before blanket installation for erosion control and re-vegetation. When seeding prior to blanket installation, all check slots and other areas disturbed during installation shall be re-seeded.

Where soil filling is specified, the matting and the entire disturbed area shall be seeded after installation and prior to filling the mat with soil.

Seeding shall be performed in accordance with Section 02930.

C. Anchoring

U-shaped wire staples, metal geotextile stake pins, shall be used to anchor mats to the ground surface. Wire staples should be a minimum of 8 gauge. Metal stake pins should be 3/16" diameter steel with a 1½ inch steel washer at the head of the pin. Wire staples and metal stakes should be driven flush to the soil surface. All anchors should be 8-18 inches long and have sufficient ground penetration to resist pullout. Longer anchors may be required for loose soils. Anchors shall be placed down the center and staggered with the staples placed along the edges.

D. Installation on Slopes

1. Begin at the top of the slope and anchor blanket in a 6" x 6" minimum wide trench. Trench shall be backfilled and the earth firmly tamped.
2. Blanket shall be unrolled downslope in the direction of the water flow.
3. Edges of adjacent parallel rolls shall be overlapped 12 inch and shall be stapled every three (3) feet. Overlaps underwater should be a minimum of 3 feet.
4. When blankets must be spliced, blankets shall be placed end over end (shingle style) with a 12-inch overlap. Overlapped area shall be stapled through, approximately twelve (12) inches apart.
5. Blankets shall be laid loosely and maintained in direct contact with the soil – they shall not be stretched.
6. Blankets shall be stapled sufficiently to anchor blanket and maintain contact with soil. Staples shall be placed down the center and staggered with the staples placed along the edges. Steep slopes (1:1 to 2:1) shall require 2 staples per square yard. Moderate slopes (2:1 to 3:1) shall require 1-2 staples per square yard (1 staple at 3' o.c.). Gentle slopes shall require 1 staple per square yard.

E. Armor Placement: Always take care to avoid damaging the geotextile as a result of the installation process. Begin the armor system placement at the toe and proceed up the slope. Avoid stretching and subsequent tearing of the geotextile during armor placement. Do not drop riprap and heavy stone from a height of more than 12". Do not allow stone with a mass of more than 225 lb to roll down the slope. Do not drop smaller sizes of stone from a height exceeding 3' unless it can be demonstrated that the placement procedures will not damage the geotextile. For underwater

applications, place the geotextile and backfill material the same day. Field monitoring should be performed to verify that the armor system placement does not damage the geotextile. Backfill all void spaces in the armor stone with small stone to ensure full coverage. After the placement of the armor stone, avoid any grading that results in movement of the stone directly above the geotextile.

- F. Repair: In lieu of specific project guidelines, overlap the damaged geotextile by a minimum of 36" in all directions with the replacement geotextile.
- G. Storage: Geotextile rolls will arrive wrapped in a UV protective cover. Additionally, the installer should insure they are adequately protected from moisture. If stored outdoors in extreme weather, the geotextile shall be elevated from the ground surface and covered with a tarpaulin or opaque plastic.

3.2 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for Geotextiles and Erosion Control Blankets shall be an individual Lump Sum as it appears on the Bid Sheet. Payment under this section shall be based on the percentage of Geotextiles and Erosion Control Blankets over the duration of the Project.

END OF SECTION 02610

SECTION 02920 - SITE RESTORATION

PART 1 - GENERAL

1.1 SCOPE

- A. Contractor shall provide all labor, materials, tools, and equipment to restore all lawns, and other exterior surfaces disturbed during performance of the Work to match the appearance and performance of existing corresponding surfaces and to fully restore to pre-construction conditions.
- B. Contractor shall provide topsoiling, fertilizing, liming, seeding or sodding, mulching and related work, as required and as directed by the Owner's Representative. Contractor shall prevent nitrogen and phosphate amendments from reaching the receiving waters. Contractor shall water as required until physical completion of the Work.
- C. Contractor shall be responsible for the work areas being left clean and in neat condition, temporary items removed, any and all damage repaired, and all refuse removed. All cleaning shall be done in a manner acceptable to the Owner's Representative.
- D. Site and access clearing shall be confined to approved construction areas. Contractor shall protect existing vegetation wherever possible. Contractor shall be responsible for damages outside approved construction areas.

1.2 RELATED SECTIONS

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

1.3 DELIVERY, STORAGE AND HANDLING

- A. Deliver fertilizer and seed in manufacturer's standard size, unopened bags, cartons or containers, showing weight, analysis, purity, and name of the manufacturer. Store all fertilizer in accordance with the manufacturer's written instructions. Store all seed at the site in a cool dry place in accordance with the manufacturer's written instructions. Replace any seed damaged during storage.

1.4 SUBMITTALS

- A. Product Technical Data Including:
 - 1. Acknowledgement that products submitted meet requirements of standards referenced.
 - 2. Signed copies of vendor's statement for seed mixtures required, stating botanical and common name, place of origin, strain, percentage of purity, percentage of germination, and amount of Pure Live Seed (PLS) per bag.
 - 3. Contractor shall submit certificates of material compliance before delivery of material for the following items:
 - a. Seed
 - b. Sod
 - c. Fertilizer (10-6-4)

- d. Limestone
- e. Superphosphate
- f. Mulch
- g. Insecticide

- B. None of the above items are to be delivered and used at the Site until approval of the samples by the Owner's Representative but such approval does not constitute final acceptance.

1.5 INSPECTION

- A. Source of sod shall be made known to the Owner's Representative at least five (5) days prior to delivery. Sod shall be inspected prior to delivery.

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. Provide topsoil from existing stockpiles stripped from the Project site and as approved by the Owner's Representative. When topsoil to be taken from an offsite source has been approved, Contractor shall secure his entire supply from the same source so as to maintain the same quality and grading throughout the Work. Should it become necessary to change the source or characteristics of the material to be used, this shall only be done following review and approval of same by the Owner's Representative.
- B. Provide topsoil conforming to the following:
 - 1. Original loam topsoil, well drained homogeneous texture and of uniform grade, without the admixture of subsoil material and entirely free of dense material, hardpan, sod, or any other objectionable foreign material.
 - 2. Containing not less than 4 percent and not more than 20 percent organic matter in that portion of a sample passing a 1/4-inch sieve when determined by the wet combustion method on a sample dried at 105 degrees C.
 - 3. Containing a pH value within the range of 5.5 to 7 on that portion of the sample that passes a 1/4-inch sieve.
 - 4. Containing the following gradations:

Sieve Designation	Percent Passing
1 inch	100
1/4-inch	97 - 100
No. 200	20 - 65 (of the 1/4 inch sieve)

2.2 SEED

- A. General
 - 1. Grass seed shall be fresh, recleaned seed of latest crop. Material other than pure live seed shall comprise only non-viable seed, chaff, hulls, harmless inert matter and shall be free from noxious weeds. The mixture shall have less than one-quarter (1/4) of one (1) percent

weed content. Seed shall be mixed before delivery and shall consist of the mixture specified and in conformity with the following proportions by weight and meeting with the following standards of seed content. The percentage of purity shown on the label will be acceptable. The percentage of germination shall not be less than the minimum specified.

B. Mixtures

1. Mixture A to be seeded, in general, on areas not regularly mowed.

<u>MIXTURE A</u>	Mixture Tolerance		Germination	
Tolerance Proportions of Mixture	Minus	Plus	Germination	Minus
50% Kentucky 31 Fescue	3%	5%	90%	6%
25% N.K. 100 Perennial Rye Grass	3%	5%	85%	7%
25% Penn Lawn Fescue	3%	5%	90%	6%

2. Mixture B to be seeded, in general, on areas regularly mowed and well-maintained.

<u>MIXTURE B</u>	Mixture Tolerance		Germination	
Tolerance Proportions of Mixture	Minus	Plus	Germination	Minus
50% Merion Blue Grass	3%	5%	80%	7%
30% Penn Lawn Fescue	3%	5%	90%	6%
20% NK106 Hybrid Rye Grass	3%	5%	85%	7%

3. The following brand name mixtures are approved substitutes: Manhattan, Pennfine, N.K. 200 or Norlea in the proper percentages of mixture or any other current approved brand name mixture.

C. Packaging

1. All grass seed shall be delivered in unopened standard size bags of the vendor showing weight, analysis and name of vendor. It shall be stored in such a manner that its effectiveness will not be impaired.

2.3 SOD

A. General

1. Sod shall be a good grade of sod, free from noxious weeds and broadleaf weeds and cut in fifteen (15) inch by forty-eight (48) inch pieces with a depth of one (1) inch minimum root growth. Sod shall be minimum two (2) years old, nursery grown, free of insects, grubs and fungus and with a minimum pH of 6.5. The sod shall be well irrigated and not cut or transported when dry.

2. Sodds shall be composed of a vigorous dense growth of green turf and root development shall be capable of supporting the sod during handling, transporting and laying.

B. Analysis

1. The species and varieties from which the sod was grown shall consist of the following permanent grasses unless otherwise approved:
 - a. 50% Merion Blue Grass
 - b. 25% Penn Lawn Fescue
 - c. 25% Fylking Kentucky Blue grass

2.4 COMMERCIAL FERTILIZER

A. Composition

1. Commercial granular fertilizer shall have the following composition by weight: Nitrogen, ten (10) percent; Phosphoric Acid, six (6) percent; Potash, four (4) percent.
2. Nitrogen shall be fifty (50) percent organic (from organic sources, e.g. fish meal, dried blood, dried manure, activated sewage sludge, castor pomace, cottonseed meal, etc.) and fifty (50) percent inorganic. The elements shall be available according to the methods adopted by the Association of Official Agricultural Chemists.

B. Packaging

1. Fertilizers shall be packed in the manufacturer's standard containers weighing not over one-hundred (100) pounds each with the name of the material, net weight of contents and the manufacturer's name and guaranteed analysis appearing on each container.

2.5 STAKING AND GUYING

A. Stakes

1. Bracing stakes shall be of white cedar, chestnut, or other approved wood with bark attached. Underground deadmen shall be at least 4 inches by 4 inches by 4 feet long. All stakes shall be free from insects and fungi.
2. The length shall be as specified; the diameter at the middle shall be not less than 2 inches nor more than 2 ¾ inches; the diameter at the top shall be not less than 1 ¾ inches and the diameter at the butt shall not exceed 3 inches. They shall have a maximum allowable deflection of 10 percent. Stakes shall be pointed.

2.6 GROUND LIMESTONE

A. Composition

1. Ground Limestone (Calcium Carbonate) shall have the following analysis: At least fifty (50) percent shall pass a two-hundred (200) mesh sieve; at least seventy (70) percent shall pass a one-hundred (100) mesh sieve; and one-hundred (100) percent shall pass a ten (10) mesh sieve. Total carbonates shall not be less than eighty (80) percent or 44.8 percent calcium oxide equivalent; for purposes of calculation, total carbonates shall be considered as Calcium Carbonate.

B. Packaging

1. Ground limestone packed in the manufacturer's standard containers shall weigh not over one-hundred (100) pounds each, with the name of the material, net weight of contents and the manufacturer's name and guaranteed analysis appearing on each container. Bulk shipments shall be accompanied by a certificate covering the names, weight and analysis as specified herewith for packaged material.

2.7 SUPERPHOSPHATE

A. Composition

1. Superphosphate shall be an approximate 0-20-0 formulation with an acceptable minimum of eighteen (18) percent available phosphoric acid.

B. Packaging

1. Superphosphate packed in the manufacturer's standard containers shall weigh not over one-hundred (100) pounds each, with the name of the material, net weight of contents and the manufacturer's name and guaranteed analysis appearing on each container.
2. Bulk shipments shall be accompanied by a certificate covering the names, weight and analysis as specified for packaged material.

2.8 MULCH-WOOD FIBER

A. General

1. Wood fiber suitable for use as a mulch for seeding shall be processed so that the fibers will remain in uniform suspension in water under agitation and will blend with grass seed, fertilizer, ground limestone and other additives to form a homogeneous slurry. It shall have the characteristics which, upon hydraulic application, shall form a blotter-like ground coating with moisture absorption and percolation properties and the ability to cover and hold grass seed in intimate contact with the soil. Wood fiber shall contain no growth or germination inhibiting factors and shall be dyed green. The wood fiber mulch shall be "Superior Fiber" manufactured by Wolbert Master and Assoc. Inc., "Silva Fiber" as manufactured by Weyerhaeuser or equal.

B. Packaging

1. Wood fibers shall be supplied in the manufacturer's unopened standard containers weighing not over one-hundred (100) pounds each, with the name of the material, net weight of contents, the manufacturer's name and the air dry weight of fiber (equivalent to ten (10) percent moisture) appearing on each container.

2.9 EROSION CONTROL FABRICS

A. General

1. Erosion control fabrics for slope protection shall be knitted synthetic netting and/or jute mesh as follows:

- a. The knitted synthetic netting shall consist of a combination of plastic netting interwoven with strips of paper. Paper fill shall be biodegradable of the type recommended by the manufacturer for the application required. Yarn shall be polypropylene. Knitted synthetic netting shall be furnished in firm rolls in widths of five (5) foot or ten (10) foot as required and in lengths of three-hundred-sixty (360) feet and weighing approximately twenty-eight (28) lbs. and fifty-six (56) lbs. respectively in relation to width. Fabric shall be "Hold Gro" as manufactured by the Gulf States Paper Corporation, or equal.
2. Jute mesh shall be of a uniform open plain weave of undyed and unbleached single jute yarn averaging one-hundred-thirty (130) pounds per spindle of 14,400 yds. The yarn shall be of loosely twisted construction having an average twist of not less than 1.6 turns per inch and shall not vary in thickness by more than one-half (1/2) its normal diameter.
 - a. Jute mesh shall be woven as follows:
 - 1) Approximately sixty (60) warp ends per yard of width.
 - 2) Approximately forty (40) warp ends per linear yards.
 - 3) Weight of jute mesh shall average 0.9 pounds per square yard ∇ (plus or minus) five (5) percent.
 - 4) Jute mesh shall be furnished in approximate lengths of seventy-five (75) yards and a width of forty-eight (48) inches ∇ (plus or minus) one (1) inch or as otherwise approved.
 - 5) Jute mesh shall be "Soil Saver" as manufactured by Ludlow Corporation, or equal.
 - 6) Shipments of erosion control fabric shall include instructions for installation and staples as required for anchoring fabrics as recommended by the manufacturers.

2.10 SOD STAKES

- A. Stakes for pegging sod shall be approximately 1" by 2" and of sufficient length to penetrate the sod, the topsoil and to a minimum depth of two (2) inches of subsoil or shall be of a material and size as approved by the Owner's Representative.

PART 3 - EXECUTION

3.1 GRADING

- A. Rough Grading: Trim and grade lawn areas within the Contract Limits to a level of 4 inches below the finish grades indicated unless otherwise specified herein or where greater depths are indicated. Provide smooth uniform transition to adjacent areas.
- B. Finish Grading: Finish surfaces free from irregular surface changes, and as follows:
 1. Grassed Areas: Finish areas to receive topsoil to within ½ inch above or below the required subgrade surface elevations.

3.2 SPREADING TOPSOIL

- A. Perform topsoil spreading operations only during dry weather.

- B. To insure a proper bond with the topsoil, harrow or otherwise loosen the subgrade to a depth of 3 inches before spreading topsoil.
- C. Spread topsoil directly upon prepared subgrade to a minimum depth measuring 4 inches after natural settlement in areas to be seeded. Smooth out unsightly variations, bumps, ridges, and depressions that will hold water. Remove stones, litter, or other objectionable material. Finished surfaces shall conform to the contour lines and elevations indicated on the drawings or fixed by the Owner's Representative.

3.3 PREPARATION FOR SEEDING

- A. Seed Bed: Scarify soil to a depth of 2 inches in compacted areas. Smooth out unsightly variations, bumps, ridges, and depressions that will hold water. Remove stones, litter, or other objectionable material.

3.4 SEEDING EXECUTION

- A. When permitted by the Owner's Representative, topsoil excavated under other Sections of this Specification shall be reused to provide a six (6) inch layer of topsoil over the top of sewer trenches and other areas required to be seeded and/or sodded. If after backfilling of excavation there are insufficient quantities of top soil conforming to the specified requirements, the Contractor will be required to supply the necessary material to provide a six (6) inch layer of topsoil over the areas to be seeded and/or sodded. Where directed by the Owner's Representative, the surface of the subsoil shall be scarified or tilled to a minimum depth of two (2) inches before topsoil or soil is placed to permit bonding of the upper soil layer with the subsoil.
- B. When delays in seeding and/or sodding operations carry the work beyond the specified seasons or when conditions of high winds, excessive moisture or frost are such that satisfactory results are not likely to be obtained for any stage of the work, the Owner's Representative will stop the work. The work shall be resumed with the Owner's Representative's approval when the desired results are likely to be obtained or when approved corrective measures and procedures are adopted.
- C. In general, all slopes exceeding a gradient of 1 on 3 shall be sodded. At the option of the Contractor, hydro-seeding with wood fiber mulch and/or seeding with erosion control fabrics may be approved by the Owner's Representative, in lieu of sodding, for specific slope areas as designated by the Owner's Representative.
- D. At locations where sod must be installed adjacent to areas to be seeded the sodding shall be done before the seed is sown and equipment used during seeding shall cause no damage to the sodded areas.
- E. Contractor shall be liable for any damage to property caused by seeding and sodding operations and all areas disturbed shall be restored to their original condition to the satisfaction of the Owner's Representative.
- F. One (1) inch of water per week shall be applied on seeded and sodded areas for adequate soil saturation as required by weather conditions and as ordered by the Owner's Representative until final acceptance. Watering shall be continued until final payment. Watering shall be done in a manner which will not cause erosion or other damage to the finished surfaces. Any surfaces which become gullied or otherwise damaged shall be repaired to reestablish the grade and

conditions of the soil prior to seeding and/or sodding. After the repairs have been made, the areas shall be reseeded and/or resodded as specified.

3.5 GRASS SEEDING

A. Time of Seeding

1. Seeding shall be performed from March 1st to April 15th and from August 15th to October 15th unless otherwise approved. The Contractor shall notify the Owner's Representative at least forty-eight (48) hours in advance of the time he intends to begin seeding and shall not proceed with such work until permission has been granted.

B. Preparation of Areas

1. The areas to be seeded shall be cultivated and cleaned of all vegetative growth to a depth of six (6) inches except as otherwise directed by the Owner's Representative on designated areas where topsoil has been furnished and placed to a depth of six (6) inches immediately prior to seeding. All weeds, roots, stumps, large stones and debris shall be removed. All washouts or other surface irregularities shall be repaired and additional topsoil shall be placed over the area as required until the entire area to be seeded is covered with a minimum of six (6) inches compacted layer of topsoil. The area to be seeded shall then be rough-graded to conform to the proper elevations as directed by the Owner's Representative.

C. Final Preparations of Seed Bed

1. The areas to be seeded shall be cultivated with a disc, rototiller or scarifier to a depth of four (4) inches. The areas shall be smoothly graded to the proper elevations, free from all unsightly ridges, depressions or undue irregularities. Areas to be seeded that cannot be cultivated by mechanical means shall be scarified by hand to attain the degree of smoothness and uniformity of adjacent lawn areas. Any soft areas shall be thoroughly compacted with an accepted roller weighing at least two-hundred (200) pounds.
 - a. All topsoil not used is to be removed and disposed of at no additional cost to County.
 - b. Ground limestone shall be evenly distributed at the rate of two-thousand (2,000) pounds per acre and worked into the top three (3) inches of the soil during the cultivation required for the final preparations of seed bed.
2. Commercial fertilizer (10-6-4) as specified shall be evenly distributed at the rate of fifteen-hundred (1,500) pounds per acre using an approved mechanical spreader and shall be worked into the top one (1) inch of the soil.
3. In the event that it rains between the time the soil on any area is prepared and before it is seeded by any specified method, the soil on all areas to be seeded shall be completely pulverized to a depth of one inch as determined, directed, and approved by the Owner's Representative.

D. Sowing Seed

1. Grass seed shall be sown evenly at the rate of one-hundred-fifty (150) pounds per acre. All seeding is to be done on dry or moderately dry soil and at time when the wind does not exceed a velocity of five (5) miles per hour.

2. A mechanical seeder may be used such as a Brillion seeder or equal to distribute the seed. Rolling will not be necessary.
3. If the grass seed is to be sown by hand, the seed shall be evenly distributed and lightly raked into the top one-quarter (1/4) inch of soil. After seeding and raking, the soil surface is to be rolled with an accepted roller weighing at least two-hundred (200) pounds.

E. Hydro-Seeding

1. All requirements of "Grass Seeding" herein before specified shall apply except as modified herein.
2. Areas to be hydro-seeded shall be scarified sufficiently to break up the surface crust immediately before seeding except where the ground is loose and friable as immediately following grading or as otherwise approved.
3. The hydro-seeder slurry shall be a homogeneous mixture of seed, mulch, limestone and fertilizer which shall remain in suspension in water under agitation. The slurry shall be evenly distributed over the area to be seeded and shall be applied in accordance with the following application rates per acre of surface seeded.
 - a. 6,000 gallons of water, 2,000 pounds of wood fiber mulch, 200 pounds of grass seed mixture, 1,200 pounds of ground limestone, 900 pounds of 10-6-4 fertilizer.
 - b. The grass seed mixture used for Hydro-Seeding shall conform to Mixture "A" as specified in this Section.

F. Seeding with Erosion Control Fabrics

1. Erosion control fabrics shall be applied in accordance with the manufacturer's instructions.

3.6 SODDING

A. Time of Sodding

1. Sod may be laid at any time between August 15th and April 15th when the ground is not frozen. No sod shall be laid without the approval of the Owner's Representative.

B. Care of Sod

1. Care shall be exercised at all times to retain the soil on the roots of the sod during the process of transplanting. Dumping from vehicles will not be permitted. The sod shall be planted within twenty-four (24) hours from the time it is harvested unless it is tightly rolled or stored roots-to-roots in a satisfactory manner. All sod in stacks shall be kept moist and shall be protected from exposure to the sun and from freezing. No storage longer than two (2) days will be permitted. Sod which becomes *dried out* or does not meet the Specifications will be *rejected*.

C. Preparation of Area

1. The areas to be sodded shall be cultivated and cleaned of all vegetative growth to a depth of six (6) inches except as otherwise directed by the Owner's Representative or designated areas where topsoil has been furnished and placed to a depth of six (6) inches immediately prior to seeding. All weeds, roots, stumps, large stones and debris shall be removed. All washouts or other surface irregularities shall be repaired and additional topsoil shall be placed over the area as required until the entire area to be sodded is covered with a minimum of six (6) inch compacted layer of topsoil. The areas to be sodded shall then be

rough graded to conform to the proper elevations as directed by the Owner's Representative.

D. Final Preparation of Sod Bed

1. The areas to be sodded shall be cultivated with a disc, rototiller or scarifier to a depth of four (4) inches. The area shall be smoothly graded to the proper elevations, free from ridges, depressions or undue irregularities. Areas to be sodded that cannot be cultivated by mechanical means shall be scarified by hand to attain the degree of smoothness and uniformity of adjacent lawn areas. Any soft areas shall be thoroughly compacted with an accepted roller weighing at least two-hundred (200) pounds.
2. The subgrade of topsoil shall be graded so that after the sod is placed, the finished grade shall meet the existing grade or grades as specified by the Owner's Representative.
3. All topsoil not used is to be removed and disposed of properly.
4. Before the sod is placed, an application of superphosphate shall be applied to the subgraded topsoil at the rate of twenty (20) pounds per one-thousand (1,000) square feet and raked into a depth of one (1) inch.
5. Before installation of new sod, the edges of the existing sod shall be cut to form a true straight line so that new sod can be installed properly adjacent to it.

E. Placing Sod

1. In general, sod shall be placed in strips of 15" by 48" with staggered joints and rolled with at least a two-hundred (200) pound roller. No small pieces or strips of sod shall be laid adjacent to edges of sidewalks, curbs and driveways. After rolling, the finished grade shall conform evenly to the grades on the plan or according to grades given by the Owner's Representative. On slop areas, sod shall be thoroughly tamped as approved by the Owner's Representative.
2. If, in the opinion of the Owner's Representative, the sod joints are not closely laid, open and/or loose joints shall be filled with a mixture of grass seed and screened topsoil at the rate of two (2) pounds of seed to one (1) cubic yard of topsoil. Sod shall be thoroughly tamped to a true even surface at the required finished grade and immediately watered.
3. Insecticide for grub proofing sod as approved by the Owner's Representative shall be applied on sodded areas in accordance with the manufacturer's directions.

F. Pegging Sod

1. Sod shall be held in place by sod stakes on all slopes one (1) or two (2) percent or steeper and elsewhere as directed by the Owner's Representative. Pegging shall be done immediately after tamping. At least one (1) stake shall be driven through each sod to be pegged and the stakes shall not be more than two (2) feet apart. Stakes shall have their flat sides against the slope and shall be driven flush.

3.7 ESTABLISHMENT OF SEEDED AND SODDED AREAS

- A. Contractor shall maintain, mow and protect the seeded areas until a uniform stand of grass approximately two-and-one-half (2-1/2) inches high has been obtained. Any areas which have been damaged or fail to show a uniform stand of grass shall be scarified, refertilized and reseeded with the original seed mixture until all the designated areas are covered with grass.
- B. Contractor shall maintain, mow, water and protect sodded areas until the sod is established. The sod shall be considered satisfactorily established when it is knit into the soil. Should the sod not

knit within a two (2) month period during the growing season (spring thaw to winter frost), the Contractor shall remove and then replace the sod in accordance with these Specifications. Sod so removed and replaced shall be established and maintained for a period of two months after the resodding operations have been completed.

3.8 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for site restoration shall be an individual Lump Sum as it appears on the Bid Sheet. Payment under this section shall be made upon Final Completion of the work.

END OF SECTION 02920

SECTION 02934 - SILT FENCE

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Under this Item, the Contractor shall provide all materials, tools, labor and equipment necessary for establishing and maintaining the installation of silt fencing erosion control fabric as indicated on the Contract Drawings, as specified herein and as directed by the Owner's Representative.

1.2 RELATED WORK

- A. Section 02230 - Sediment and Erosion Control Plan.

1.3 SUBMITTALS

- A. Provide Manufacturer's standard literature for all items furnished under this Section.

PART 2 - PRODUCTS

2.1 POSTS

- A. Posts shall be a minimum of thirty-six (36) inches long driven minimum twelve (12) inches into ground.
- B. Steel posts shall be standard "T" and "U" section weighing not less than 1.00 pound per linear foot.
- C. Wood posts will be of sound quality hardwood with minimum cross sectional area of three (3) square inches.

2.2 SILT FENCE FABRIC

- A. The silt fence fabric shall meet the following specifications unless otherwise approved by the Owner's Engineer or designated on construction plans.

Fabric Property	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs.)	90	ASTM D1682
Elongation at failure (%)	50	ASTM D1682
Mullen burst strength (PSI)	190	ASTM D3786
Puncture strength (lbs.)	40	ASTM D751 (modified)
Slurry flow rate (gal/min/S.F.)	0.3	
Equivalent opening size	40-80	US Std Sieve CW-00215
Ultraviolet radiation stability (%)	90	ASTM G-26

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Silt fences shall be installed as directed by the Owner's Representative, subject to the following conditions:

1. Maximum allowable slope lengths contributing runoff to a silt fence are:

<u>Slope Steepness</u>	<u>Maximum slope length (Ft)</u>
2:1	25
3:1	50
4:1	75
5:1 or flatter	100

2. Maximum drainage area for overland flow to a silt fence shall not exceed ¼ acre per 100 feet of fence.
3. Erosion would occur only in the form of sheet erosion.
4. There is no concentration of water flowing to the barrier.
5. All silt fences shall be placed as close to the area as possible, leaving a minimum of 10 feet away from the base of the slope.
6. Area below the silt fence must be undisturbed or stabilized.
7. When two (2) sections of filter cloth adjoin each other they shall be overlapped by six (6) inches and folded to prevent sediment bypass.

3.2 MAINTENANCE OF FENCING MATERIALS

- A. Maintenance shall be provided as needed by the Contractor at no additional cost to the Owner. Maintenance shall include replacement of damaged silt fences, until completion of the project as certified by the Owner's Representative.
- B. Contractor shall be required to conduct routine maintenance (as per directed by the Owner's Representative throughout the construction period) for apparent "bulges" developing in the silt fence. Accumulated sediment shall be removed before the ½ the storage capacity for sediment is reached.

3.3 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for slit fence shall be on a linear foot basis it appears on the Bid Sheet.

END OF SECTION 02934

SECTION 15110 – FIBERGLASS STOP LOGS

PART 1 - GENERAL

1.1 GENERAL

- A. The general provisions of the contract, including General Conditions and Special Conditions, apply to the work specified in this section.

1.2 SCOPE OF WORK

- A. Provide material, labor, equipment and services necessary to furnish, deliver and install new and unused stop logs and guides at the locations shown on the Contract Drawings and as specified herein.
- B. Stop logs and guides shall be furnished complete with all necessary lifting devices and shall be fabricated, assembled, and placed in proper operating condition in accordance with installation instructions and recommendations of the equipment manufacturer.

1.3 RELATED WORK

- A. Section 02325 - Dredging (Pond Material Removal).

1.4 SUBMITTALS

- A. Shop drawings shall be required for stop logs, guides and all necessary lifting devices and any accessories as specified herein and as directed by the Owner's Representative.
- B. Product Data: Manufacturer's specifications and technical data for stop logs and any accessory and other manufactured product indicated on the Contract Drawings.
 - 1. Submit manufacturer specification and other data as may be required to show compliance with the contract documents.
 - 2. Shop drawing approval will be required before any stop log is installed. Shop drawings and erection drawings shall show patterns, setting, bonding and jointing of all work, together with typical and special anchoring as required. Drawings shall be completely dimensioned and shall indicate all cutting required for all contiguous work of other trades.
 - a. Shop drawings shall show in detail all sizes, dimensions and arrangement of joints. Contractor shall obtain from the Owner's Representative information for, and show the location of any work coming in contact with work in this Section.
 - b. All cutting and setting drawings shall be based on Contractor shop drawings and the contract drawings, modified by measurements taken in the field of related work actually in place.
 - 3. For custom elements, shop drawings shall show complete design fabrication and erection details. Show all sizes, reinforcement, materials, profiles, sections, and elevations.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Stop logs, guides and any accessories shall be delivered in undamaged condition.

- B. Stop logs, guides and any accessories shall be stored off ground, under cover and in a dry location to prevent deterioration or damage due to moisture, temperature changes, contaminants, corrosion and other causes. If stop logs, guides and any accessories become wet, they shall not be installed/placed until they are in an air-dried condition.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Stop logs shall be as manufactured by Plasti-Fab A Division of Ershigs, Inc. or approved equal.
- B. Composition of the stop log laminate shall be in accordance with the recommendations shown in the Quality Assurance Report for Reinforced Thermoset Plastic (RTP) Corrosion Resistant Equipment prepared under the sponsorship of the Society of the Plastics Industry, Inc. (SPI). and the Material Technology Institute (MTI) of the Chemical Process Industry for "Hand Lay-up Laminates," and shall meet the specifications for Type I, Grade 20 laminates shown in Appendix M-1 of said report.
- C. Stop log covers shall be fabricated to totally surround the internal structural matrix and protect it against corrosion from moisture or chemical deterioration. Stop logs shall be designed so that the maximum fiber stress (ultimate or yield, whichever applies) does not exceed 2.5 times the working stress. Stop logs shall be suitably reinforced to withstand the maximum seating head with a deflection less than $L/360$ of the gate width, or 1/4 inch, whichever is less. Stop log covers fabricated from pressed or laminated sheet material and glued to a sub-structure shall not be acceptable.
- D. Stop logs shall be flat and level. Warpage throughout the entire stop log shall not produce a crown of more than 1/16 inch in any direction. Visual inspection for defects shall be made without the aid of magnification. Defects shall be classified as to type and level as shown in Table I of ANSI/ASTM D2563-0, approved 1977, or any subsequent revision. Allowable surface tolerances shall not exceed the following:

<u>Defect</u>	<u>Allowable Tolerance</u>
Cracks, crazing, chips, pits, blisters, dry spots, fish eyes, burned areas, or entrapped air	None
Scratches	None more than 0.002 inches in depth
Exposed glass, exposure to cut edges	None
Wrinkles and solid blisters	Maximum deviation shall be 10% of thickness, but shall not exceed 1/8 inch
Surface porosity (pinholes or pores in the laminate surface)	None
Foreign matter	None

- E. Maximum allowable leakage of stop logs with seating head shall not exceed 0.20 GPM/ft of wetted perimeter.
- F. Stop log guides shall be manufactured of T-316 stainless steel.
- G. Stop logs shall be Fiberglass Reinforced Polyester (FRP) totally encapsulating an internal-reinforcing structure. The copolymer composite shall be ultraviolet stabilized and seamless to

protect inner structural members from corrosion. Structural characteristics for an 1/8 inch glass mat laminate shall meet the following minimum physical properties:

Tensile Strength	14,700 psi
Flexural modulus	800,000 psi
Flexural strength	23,300 psi
Impact strength	9.0 ft-lbs/in.
Water absorption	<0.13% (in 24 hours)

- H. Lifting Pins shall be utilized and shall be manufactured of T-316 stainless steel. Lifting eyes shall not be acceptable.

- I. Stop log and in-channel seals shall be molded of extruded virgin neoprene in accordance with ASTM D-2000. The following physical characteristics shall apply:

Specific gravity	1.25
Hardness	55-65 Shore A Durometer
Tensile strength	1,500 psi
Elongation	300%
Low temperature brittleness	-40°F

- J. A stop log lifting beam with automatic latching hooks shall be provided. The lifting beam shall be built to automatically latch on to the stop logs when lowered into the guide frame. The lifting beam shall have a tag line release mechanism. Hook pins shall be made of T-316 stainless steel. The beam and hooks shall be of galvanized steel.

PART 3 - EXECUTION

3.1 CONSTRUCTION

- A. Stop logs shall be molded individually to the exact dimensions specified and shall be manufactured of reinforced thermoset plastic containing ultraviolet absorbers. The stop log surface shall be resin-rich to a depth of 0.010 inches to 0.020 inches and reinforced with C-glass or polymeric fiber surfacing material. The stop log surface shall be free of exposed reinforcing fibers. The composition of the layers shall be approximately 95% (by weight) resin. The remaining laminate shall be made up of copolymer composite and reinforcing fibers in a form, orientation and position to meet the mechanical requirements.

Structural reinforcing shall be utilized to attain the necessary stiffness to meet deflection requirements, and shall be well encapsulated with a laminate not less than 1/4 inch thick on each side to insure against any permeation by water to the core area. T-316 stainless steel lifting pins shall be bonded to the stop log with sufficient reinforcing to withstand the required lifting force. Lifting eyes shall not be acceptable.

- B. Stop logs shall be equipped and installed with elastomeric top seals to seal between the logs. A special labyrinth seal shall also be fastened to the guide to form a watertight joint with the stop logs.
- C. Guides shall be styled for surface mounting, in channel or embedded sill mounting. Guides shall have a slot suitable for mating with the stop log. Guides shall be mounted by means of T-316 stainless steel anchor bolts.

- D. Guides shall be equipped with a neoprene seal having two raised seating points fastened to the guide with a UHMW clamping bar and stainless steel FHMS. Seals shall be on each side of the guide groove.

3.2 INSTALLATION

- A. Contractor shall use appropriate tools, methods and skilled workers to install all stop logs and guides in accordance with these specifications and consistent with the instructions and recommendations of the manufacturer.

3.3 WARRANTY

- A. Upon completion and acceptance of the work all portions thereof will be in accordance with the work of this section and will be perfect as to materials and workmanship and that the same will so remain for the period of one year.
- B. During the period of the warranty, the Contractor shall make good any defects to the work and all damage caused to property of the Owner by such defects or by the work required to remedy such defects.

3.4 PAYMENT

- A. Payment for all labor, materials, tools, equipment, and accessories for Fiberglass Stop Logs shall be an individual Lump Sum Item as appears on the Bid Sheet.

END OF SECTION 15110

**ATTACHMENT A -
NYSDEC PERMIT**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 1

SUNY @ Stony Brook, 50 Circle Road, Stony Brook, NY 11790

P: (631) 444-0365 | F: (631) 444-0360

www.dec.ny.gov

April 9, 2020

Nassau County DPW
1194 Prospect Ave
Westbury, NY 11590
Attn: Commissioner Sheila Shah-Gavnoudias

Re: Permit No. 1-2824-00414/00004

Dear Permittee:

In conformance with the requirements of the State Uniform Procedures Act (Article 70, ECL) and its implementing regulations (6NYCRR, Part 621) we are enclosing your permit for the referenced activity. Please carefully read all permit conditions and special permit conditions contained in the permit to ensure compliance during the term of the permit. If you are unable to comply with any conditions, please contact us at the above address.

Also enclosed is a permit sign which is to be conspicuously posted at the project site and protected from the weather and a Notice of Commencement/Completion of Construction. Please note, the permit sign and Notice of Commencement/Completion of Construction form are sent to either the permittee or the facility application contact, not both.

Sincerely,



Mary MacKinnon
Environmental Analyst

cc: Bay Environmental Consulting LLC, BoEH, DMM, File





PERMIT
Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
NASSAU COUNTY
1 WEST ST
MINEOLA, NY 11501

Facility:
NASSAU COUNTY BAILEY ARBORETUM
BAYVILLE RD
LOCUST VALLEY, NY 11560

Facility Application Contact:
BAY ENVIRONMENTAL CONSULTING LLC
123 BAY AVE
BAYPORT, NY 11705

Facility Location: in OYSTER BAY in NASSAU COUNTY

Facility Principal Reference Point: NYTM-E: 619.211 NYTM-N: 4527.4497
Latitude: 40°53'22.1" Longitude: 73°35'05.7"

Project Location: 194 Bayville Rd., Locust Valley NCTM# 29-J-101 FWW# BV-1

Authorized Activity: Maintenance dredge areas to hard bottom in the two ponds at Nassau County Bailey Arboretum removing accumulated silts and sediments, yielding approximately 5,500 cubic yards of spoil. Dredged material will be hydraulically removed and placed in geotubes adjacent to ponds for dewatering. Erosion control/turbidity control will be installed to prevent any visible turbidity downstream of the Northeast pond. Once dewatering complete, the material will be disposed of at a Long Island landfill. In addition, a cofferdam will be installed while repairing the culvert and outfall walls. All work must be done in accordance with the 13 page plan prepared by Cameron Engineering & Associates LLP dated July 2019 and stamped NYSDEC approved 4/9/2020.

Permit Authorizations

Freshwater Wetlands - Under Article 24

Permit ID 1-2824-00414/00004

New Permit

Effective Date: 4/9/2020

Expiration Date: 4/8/2025



NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: SHERRI L AICHER, Deputy Permit Administrator
Address: NYSDEC Region 1 Headquarters
SUNY @ Stony Brook 50 Circle Rd
Stony Brook, NY 11790 -3409

Authorized Signature:

Sherril L. Aicher

Date 4/9/2020

Distribution List

BAY ENVIRONMENTAL CONSULTING LLC
Habitat
Materials Management
File

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: FRESHWATER WETLANDS

1. Post Permit Sign The permit sign enclosed with this permit shall be posted in a conspicuous location on the worksite and adequately protected from the weather.

2. Notice of Commencement At least 48 hours prior to commencement of the project, the permittee and contractor shall sign and return the top portion of the enclosed notification form certifying that they are fully aware of and understand all terms and conditions of this permit. Within 30 days of completion of project, the bottom portion of the form must also be signed and returned, along with photographs of the completed work.



3. Conformance With Plans All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Cameron Engineering & Associates, LLC last dated July 2019 and stamped NYSDEC approved 4/9/2020.

4. Minimum % Vegetative Cover Suitable vegetative cover is defined as a minimum of 85 % area vegetative cover with contiguous unvegetated areas no larger than 1 square foot in size.

5. Temporary Mulch, Final Seeding If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth but not more than six months after project completion.

6. Seed, Mulch Disturbed Areas All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass, and mulched with straw immediately upon completion of the project, within two days of final grading, or by the expiration of the permit, whichever is first.

7. Equipment Storage 100' from Wetland, Water Body All equipment and machinery shall be stored and safely contained greater than 100 feet landward of the regulated wetland or water body at the end of each work day. This will serve to avoid the inadvertent leakage of deleterious substances into the regulated area.

8. Clean Fill Only All fill shall consist of clean soil, sand and/or gravel that is free of the following substances: asphalt, slag, flyash, broken concrete, demolition debris, garbage, household refuse, tires, woody materials including tree or landscape debris, and metal objects. The introduction of materials toxic to aquatic life is expressly prohibited.

9. Area Limits The limits of clearing, grading and ground disturbance line is equal to the following five locations: Those two areas shown and labeled as LCGD on the approved plans, the edges of the two existing ponds, 10 feet around the edges of the existing culverts between the SW and NE ponds, the top of slope on the stream side of the dam structure of the NE pond and 2 feet around the proposed riprap within the stream at the base of the outflow structure.

10. Work Area Limits Any work, disturbance, and or storage of construction materials shall be confined to within the limit of clearing, grading and ground disturbance as described above.

11. Dredged Material Disposal Final disposal location of all dredged material must be greater than 100 feet from the freshwater wetland boundary at a Long Island Landfill as approved by the DEC's Division of Materials Management.



12. Water Movement Restrictions Any water pumped out of the “work in the dry” work areas defined by the cofferdams must be pumped back to the SW pond. Other surface to surface water pumping may take place from between the SW pond and NE pond if water elevations in either pond become too high. If water levels in the NE pond become too high and there is no room to pump that water back to the SW pond, that excess water may be pumped to the stream. However, the discharge point must be located within the existing spillway, so as to dissipate the energy. Erosion / turbidity control must be used in the spill way. No turbidity is permitted within the stream. Any water discharge must be located so as to avoid suspending any muck sediments designated to remain within the ponds or within the stream.

13. Pumping Rates Requirements Surface to surface pumping, with a trash pump or similar, does not require any approvals from the DEC’s Division of Water (DoW). Pumping out the water within the cofferdams by trash pump (or similar) may require additional permits. Pumping where the volume withdrawn is less than an average of 100,000 gallons per day in any consecutive 30-day period (three million gallons during a 30 day period) does not require additional permits from DoW. No well points are permitted without further permit review.

14. NE Dredge Spoil Dewatering Site Restrictions Clearing to install the dewatering tubes in the NE portion of the project must be limited to within the LCGD shown on the approved plans. Within that same area no live trees may be cut or removed. Dead trees and English ivy may be removed. All base material, installed to support the dewatering operation, must be removed at the end of the project and the site returned to its original grade. All disturbed areas must be seeded with a native perennial seed mix. That seed mix should be a mix of wet tolerant and uplands seeds. Seeding must be completed within 6 months of completion of dredging activities or within 2 years of the submission of the Notice of Commencement, whichever comes first.

15. Planting Required at SW Access Point All that area cleared to access the SW pond must be planted with either 12 native wet tolerant shrubs or 8 native wet tolerant shrubs and two native wet tolerant trees. All trees and shrubs must be a minimum of 3 gallon stock. Planting must be completed within 6 months of completion of dredging activities or within 2 years of the submission of the Notice of Commencement, whichever comes first.

16. Dredging Requirements In any area where permit holder dredges, dredging must be to hard bottom. All muck material must be removed from those areas. No disturbance to the muck sediment may take place in any location where permit holder decides not to dredge. All areas not dredge must be undisturbed so as to not liberate any remaining chemical contaminants. All water discharge points must be oriented so as to not disturb muck sediments designated to remain.

17. Additional Downstream Riprap Placement Requirements No additional clearing of vegetation for access to the riprap area within the stream at the base of the outflow structure, beyond the LCGD described above, is approved. Any disturbed areas around the riprap work must be seeded with a native wet tolerant seed mix. Seeding must be completed within 2 months of the placement of the riprap.



18. Dam Stabilization Requirements Any woody vegetation, removed within the LCGD described above and located on either of the two earthen dams, should not be replaced. Any woody vegetation less than 4 inches in diameter should be cut to grade. For any woody vegetation 4 inches or larger in diameter, the majority of the root mass should be excavated from the dam. That hole should be backfilled with soil matching the soil within the dam. That fill must then be compacted. After compaction to preexisting grade all that area of disturbance must be seeded with a perennial seed mix. Seeding must be completed within 1 months of the placement of the fill. Excavation, back fill, compaction must be completed within 6 months of shrub / tree removal.

19. Additional Clearing Restrictions for Installation of Cofferdams No woody vegetation, outside of the LCGD areas described above, may be cut or removed, even for access to install the cofferdams. Minor trimming of woody vegetation for access to install the cofferdams is permissible. Any excessive trimming that leads to mortality of shrubs or trees would be a violation of this permit. Permit holder must obtain a modification to this permit if additional clearing is required.

20. Additional Erosion Control Required Permit holder must install erosion control / turbidity control, as needed, to prevent any visible turbidity downstream of the NE pond. No downstream turbidity is permitted.

21. Survival Of Plantings Requirement All plantings noted on the approved plans and as required by the conditions above must survive for a minimum of two growing seasons. Within that 2 year period, if mortality exceeds ten percent, or bare areas occur, dead plants must be replaced.

22. State Not Liable for Damage The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

23. Precautions Against Contamination of Waters All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

24. State May Require Site Restoration If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.



25. State May Order Removal or Alteration of Work If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. Facility Inspection by The Department The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. Relationship of this Permit to Other Department Orders and Determinations Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. Applications For Permit Renewals, Modifications or Transfers The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 1 Headquarters
SUNY @ Stony Brook|50 Circle Rd
Stony Brook, NY11790 -3409



4. Submission of Renewal Application The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Freshwater Wetlands.

5. Permit Modifications, Suspensions and Revocations by the Department The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

- a. materially false or inaccurate statements in the permit application or supporting papers;
- b. failure by the permittee to comply with any terms or conditions of the permit;
- c. exceeding the scope of the project as described in the permit application;
- d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;
- e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. Permit Transfer Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.



NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification

The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit

The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits

The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights

This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

ATTACHMENT B -
SEDIMENT SAMPLING REPORT

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***Bailey Arboretum:
NYSDEC Sediment Sampling Report***



**BAY ENVIRONMENTAL
CONSULTING**

Prepared for:
CAMERON ENGINEERING & ASSOCIATES, LLP

Prepared by:
BAY ENVIRONMENTAL CONSULTING LLC

Science • Planning • Compliance

123 Bay Avenue, Bayport, New York 11705 - (631) 235-9806
www.bayenviro.com

June 2018

I. Summary

This report details the analytical results from the sediment sampling conducted by Bay Environmental Consulting (BEC). The results show that the pond has limited contamination with only three Class B threshold exceedances; two exceedances for lead and one for copper. The sediment sampling was conducted in accordance with the NYSDEC-approved sediment sampling dated January 2018. The permit application number for this project is: 1-2824-00414/00004.

The purpose of the Bailey Arboretum Dredging Project is to restore the ponds to their historic condition by dredging to remove sediments. A considerable amount of fine grained organic sediments has accumulated over time in the two ponds. This sediment accumulation has reduced the pond's ability to act as a stormwater buffer, provide suitable habitat for fish and other aquatic wildlife and its aesthetic aspects integral to the parkland.

It is proposed that the dredging will be conducted utilizing hydraulic dredging. The dredge material will be collected in geotubes that will be located adjacent to the ponds in the Bailey Arboretum parking lot. The stormwater generated from the dewatering of geotubes will be directed to and collected within the ponds. The existing weirs will be utilized to dam the ponds to allow suspended solids to settle and prevent them from traveling downstream. All dredge material will be disposed of off-site at an approved disposal facility.

II. Sediment Sampling Results

The sediment sampling was conducted in accordance with the Bailey Arboretum Sediment Sampling Plan (January 2018) that was submitted to and approved by the NYSDEC. Appendix A of this report summarizes the analyses, detections and a comparison against the TOGS 5.1.9 thresholds as well as the unrestricted use soil clean up objectives. The raw analytical data can found on the USB flash drive included in this submission. Field notes from the sampling event can be found in Appendix B.

Two samples, 1A and 6A, had Class B threshold exceedances. 1A had a Class B exceedance for Lead and 6A had Class B exceedances for Lead and Copper. Samples from the “C” layer were not analyzed since none of the “B” layer samples exhibited threshold exceedances. Below is a list of the contaminants that exceeded the TOGS 5.1.9 Sediment Quality Threshold Values.

- Sample 1A
 - Lead – 66.5 mg/kg (Class B Threshold is 33 mg/kg)
- Sample 6A
 - Lead – 106 mg/kg (Class B Threshold is 33 mg/kg)
 - Copper 42.8 mg/kg (Class B Threshold is 33 mg/kg)

A

Appendix A. Summary of Analytical Results

Bailey Arboretum Pond Dredging Sediment Sampling Results

Sample ID					1A	1B	1C	2A	2B	2C	3A
		S&HM UnRes	MHP Class B	MHP Class C							
TOC	>5,000 (0.05%)				32200	18500	17100	31300	6810	3030	23100
Grain Size	10% <#200				9.1	21.2	23.6	4.9	6.4	7.5	14.7
VOC	CAS #	mg/kg	mg/kg	mg/kg							
Acetone	67-64-1	0.05									0.0514
Methylene Chloride	75-09-2	0.05				0.0066					0.0057
2-Butanone (MEK)	78-93-3	0.12									
Chloroform	67-66-3	0.37									
Toluene	108-88-3	0.7									0.0039
1,3,5-Trimethylbenzene	108-67-8	8.4									
1,2,4-Trimethylbenzene	95-63-6	3.6									
sec-Butylbenzene	135-98-8	11									
n-Butylbenzene	104-51-8	12									
SVOC											
Phenol	108-95-2	0.33b									
Fluoranthene	206-44-0	100a	0.6	5.1	0.19						
Pyrene	129-00-0	100	0.665	2.6	0.17						
Benzo(a)anthracene	56-55-3	1c	0.261	1.6							
Chrysene	218-01-9	1c	0.384	2.8							
Benzo(b)fluoranthene	205-99-2	1c									
Benzo(a)pyrene	50-32-8	1c	0.43	1.6							
Indeno(1,2,3-cd)pyrene	193-39-5	0.5c									
Benzo(g,h,i)perylene	191-24-2	100									
Total PAH			4	35	0.36						
PEST											
4,4-DDE	72-55-9	0.0033b			0.001	0.0005		0.0007			0.0004
4,4-DDD	72-54-8	0.0033b				0.0007					
4,4-DDT	50-29-3	0.0033b									
ΣDDT, DDD, DDE			0.003	0.03	0.001			0.0007			0.0004
Chlordane	57-74-9		0.003	0.036		0.0005					
alpha-Chlordane	5103-71-9	0.094			0.0011			0.0007			
gamma-Chlordane	5103-74-2										
Dieldrin	60-57-1		0.11	0.48							

Bailey Arboretum Pond Dredging Sediment Sampling Results

Sample ID					3B	3C	4A	4B	4C	5A	5B
		S&HM UnRes	MHP Clsss B	MHP Class C							
TOC	>5,000 (0.05%)				7620	1570	25200	3740	1880	29900	11100
Grain Size	10% <#200				14.8	12.8	15.5	17.1	14.3	31.1	24.8
VOC	CAS #	mg/kg	mg/kg	mg/kg							
Acetone	67-64-1	0.05			0.0118		0.0239	0.0434			
Methylene Chloride	75-09-2	0.05			0.0033			0.0088			
2-Butanone (MEK)	78-93-3	0.12									
Chloroform	67-66-3	0.37									
Toluene	108-88-3	0.7									
1,3,5-Trimethylbenzene	108-67-8	8.4									
1,2,4-Trimethylbenzene	95-63-6	3.6									
sec-Butylbenzene	135-98-8	11									
n-Butylbenzene	104-51-8	12									
SVOC											
Phenol	108-95-2	0.33b									
Fluoranthene	206-44-0	100a	0.6	5.1							
Pyrene	129-00-0	100	0.665	2.6							
Benzo(a)anthracene	56-55-3	1c	0.261	1.6							
Chrysene	218-01-9	1c	0.384	2.8							
Benzo(b)fluoranthene	205-99-2	1c									
Benzo(a)pyrene	50-32-8	1c	0.43	1.6							
Indeno(1,2,3-cd)pyrene	193-39-5	0.5c									
Benzo(g,h,i)perylene	191-24-2	100									
Total PAH			4	35							
PEST											
4,4-DDE	72-55-9	0.0033b					0.0004				
4,4-DDD	72-54-8	0.0033b					0.0007				0.0015
4,4-DDT	50-29-3	0.0033b									
ΣDDT, DDD, DDE			0.003	0.03			0.0011				0.0015
Chlordane	57-74-9		0.003	0.036							
alpha-Chlordane	5103-71-9	0.094									
gamma-Chlordane	5103-74-2										
Dieldrin	60-57-1		0.11	0.48							

Bailey Arboretum Pond Dredging Sediment Sampling Results

Sample ID					5C	6A	6B	6C
		S&HM UnRes	MHP Clsss B	MHP Class C				
TOC	>5,000 (0.05%)				10500	97800	21900	14200
Grain Size	10% <#200				29.5	14.1	15.7	17
VOC	CAS #	mg/kg	mg/kg	mg/kg				
Acetone	67-64-1	0.05						
Methylene Chloride	75-09-2	0.05				0.0079	0.0053	
2-Butanone (MEK)	78-93-3	0.12						
Chloroform	67-66-3	0.37						
Toluene	108-88-3	0.7						
1,3,5-Trimethylbenzene	108-67-8	8.4						
1,2,4-Trimethylbenzene	95-63-6	3.6						
sec-Butylbenzene	135-98-8	11						
n-Butylbenzene	104-51-8	12						
SVOC								
Phenol	108-95-2	0.33b						
Fluoranthene	206-44-0	100a	0.6	5.1				
Pyrene	129-00-0	100	0.665	2.6				
Benzo(a)anthracene	56-55-3	1c	0.261	1.6				
Chrysene	218-01-9	1c	0.384	2.8				
Benzo(b)fluoranthene	205-99-2	1c						
Benzo(a)pyrene	50-32-8	1c	0.43	1.6				
Indeno(1,2,3-cd)pyrene	193-39-5	0.5c						
Benzo(g,h,i)perylene	191-24-2	100						
Total PAH			4	35				
PEST								
4,4-DDE	72-55-9	0.0033b				0.002	0.0006	
4,4-DDD	72-54-8	0.0033b						
4,4-DDT	50-29-3	0.0033b						
ΣDDT, DDD, DDE			0.003	0.03		0.002	0.0006	
Chlordane	57-74-9		0.003	0.036				
alpha-Chlordane	5103-71-9	0.094						
gamma-Chlordane	5103-74-2							
Dieldrin	60-57-1		0.11	0.48				

Bailey Arboretum Pond Dredging Sediment Sampling Results

Sample ID					1A	1B	1C	2A	2B	2C	3A
		S&HM UnRes	MHP Clsss B	MHP Class C							
TOC	>5,000 (0.05%)				32200	18500	17100	31300	6810	3030	23100
Grain Size	10% <#200				9.1	21.2	23.6	4.9	6.4	7.5	14.7
Mirex	2385-85-5		0.0014	0.014							
Silvex	93-72-1	3.8									
Cyanide	57-12-5	27			0.3	0.12		0.16	0.077		0.063
PCB											
METALS											
Aluminum	7429-90-5										
Antimony	7440-36-0										
Arsenic	7440-38-2	13c	14 (8.2)	53	1.97	1.25		0.817	0.643		3.73
Barium	7440-39-3	350c			37.1	21.6		10.3	8.85		27.9
Beryllium	7440-41-7	7.2			0.189	0.26		0.194	0.13		0.161
Cadmium	7440-43-9	2.5c	1.2	9.5	0.337	0.105		0.775	0.083		0.097
Calcium	7440-70-2										
Chromium	7440-47-3		26 (81)	110 (370)	6.92	4.21		2.21	2.19		4.77
Trivalent Chromium	16065-83-1	30			6.92	4.21		2.21	2.19		4.77
Hexavalent Chromium	18540-29-9	1									
Cobalt	7440-48-4										
Copper	7440-50-8	50	33	207 (270)	28	6.05		6.59	1.37		8.14
Iron	7439-89-6										
Lead	7439-92-1	63c	33(47)	166(218)	66.5	20.5		26.3	4.46		15.1
Magnesium	7439-95-4										
Manganese	7439-96-5	1600c	460	1100	28.4	25.8		9.21	9.45		36.3
Mercury	7439-97-6	0.18c	0.17	1.6 (1.0)	0.045	0.023		0.016	0.01		0.038
Nickel	7440-02-0	30	16 (21)	50 (52)	5.07	3.63		2.93	2.05		3.74
Potassium	7440-09-7										
Selenium	7782-49-2	3.9c			0.785	0.266		0.476	0.278		0.337
Silver	7440-22-4	2	1.0	2.2 (3.7)	0.232	0.133		0.215	0.139		0.161
Sodium	7440-23-5										
Thallium	7440-28-0										
Vanadium	7440-62-2										
Zinc	7440-66-6	109c	120 (150)	270 (410)	67.4	32.3		19.4	12.9		19.9

Bailey Arboretum Pond Dredging Sediment Sampling Results

Sample ID					3B	3C	4A	4B	4C	5A	5B
		S&HM UnRes	MHP Clsss B	MHP Class C							
TOC	>5,000 (0.05%)				7620	1570	25200	3740	1880	29900	11100
Grain Size	10% <#200				14.8	12.8	15.5	17.1	14.3	31.1	24.8
Mirex	2385-85-5		0.0014	0.014							
Silvex	93-72-1	3.8									
Cyanide	57-12-5	27			0.051		0.23	0.088		0.41	0.17
PCB											
METALS											
Aluminum	7429-90-5										
Antimony	7440-36-0										
Arsenic	7440-38-2	13c	14 (8.2)	53	1.25		1.37	1.29		2.05	1.26
Barium	7440-39-3	350c			18.9		28.7	22.8		45.2	23.6
Beryllium	7440-41-7	7.2			0.096		0.26	0.2		0.439	0.19
Cadmium	7440-43-9	2.5c	1.2	9.5	0.074		0.116	0.078		0.111	0.064
Calcium	7440-70-2										
Chromium	7440-47-3		26 (81)	110 (370)	3.39		10.9	20.8		27.8	12.6
Trivalent Chromium	16065-83-1	30			3.39		10.9	20.4		27.8	12.6
Hexavalent Chromium	18540-29-9	1						0.392			
Cobalt	7440-48-4										
Copper	7440-50-8	50	33	207 (270)	1.6		27.7	3.34		4.85	3.3
Iron	7439-89-6										
Lead	7439-92-1	63c	33(47)	166(218)	3.42		31.2	5.94		26.7	14.7
Magnesium	7439-95-4										
Manganese	7439-96-5	1600c	460	1100	20		18.8	30.7		34.1	21.9
Mercury	7439-97-6	0.18c	0.17	1.6 (1.0)	0.014		0.043	0.011		0.083	0.022
Nickel	7440-02-0	30	16 (21)	50 (52)	2.46		5.46	6.43		9.14	4.65
Potassium	7440-09-7										
Selenium	7782-49-2	3.9c			0.255		0.582	0.261		0.638	0.266
Silver	7440-22-4	2	1.0	2.2 (3.7)	0.124		0.193	0.131		0.224	0.133
Sodium	7440-23-5										
Thallium	7440-28-0										
Vanadium	7440-62-2										
Zinc	7440-66-6	109c	120 (150)	270 (410)	7.29		15.8	11.6		21.2	13.7

Bailey Arboretum Pond Dredging Sediment Sampling Results

Sample ID					5C	6A	6B	6C
		S&HM UnRes	MHP Clsss B	MHP Class C				
TOC	>5,000 (0.05%)				10500	97800	21900	14200
Grain Size	10% <#200				29.5	14.1	15.7	17
Mirex	2385-85-5		0.0014	0.014				
Silvex	93-72-1	3.8						
Cyanide	57-12-5	27				0.27	0.092	
PCB								
METALS								
Aluminum	7429-90-5							
Antimony	7440-36-0							
Arsenic	7440-38-2	13c	14 (8.2)	53		4.94	3.01	
Barium	7440-39-3	350c				38.8	16.4	
Beryllium	7440-41-7	7.2				0.258	0.145	
Cadmium	7440-43-9	2.5c	1.2	9.5		0.542	0.146	
Calcium	7440-70-2							
Chromium	7440-47-3		26 (81)	110 (370)		11.9	4.45	
Trivalent Chromium	16065-83-1	30				11.9	4.45	
Hexavalent Chromium	18540-29-9	1						
Cobalt	7440-48-4							
Copper	7440-50-8	50	33	207 (270)		42.8	7.64	
Iron	7439-89-6							
Lead	7439-92-1	63c	33(47)	166(218)		106	26.7	
Magnesium	7439-95-4							
Manganese	7439-96-5	1600c	460	1100		40.9	19.5	
Mercury	7439-97-6	0.18c	0.17	1.6 (1.0)		0.11	0.021	
Nickel	7440-02-0	30	16 (21)	50 (52)		8.65	3.22	
Potassium	7440-09-7							
Selenium	7782-49-2	3.9c				1.41	0.285	
Silver	7440-22-4	2	1.0	2.2 (3.7)		0.351	0.143	
Sodium	7440-23-5							
Thallium	7440-28-0							
Vanadium	7440-62-2							
Zinc	7440-66-6	109c	120 (150)	270 (410)		93	26	

B Appendix B. Field Notes

Sediment Sampling Datasheet			
Date: 5/3/2018		Project: Bailey Ponds Dredging	Location: Bailey Arboretum
Weather: 85°F, Sunny, Moderate to Gusty SW Winds		Field Conditions/Comments: Water levels in western pond were similar to previous visits, eastern pond water levers were approximately 1 foot higher than previous visits.	
Samplers: Andrew Thyberg, Christian Cremer, Patrick Hansen			
Sample ID	Time	Collection Method	Comments/Description
BP-1A	2:35 PM	Composited cores and single-use EnCore discrete sampler used for VOC collection prior to homogenization	Mud/Muck/Decaying leaf litter with some sand
BP-1B	2:35 PM		Gray sandy clay
BP-1C	2:35 Pm		Gray sandy clay
BP-2A	3:30 PM	Same as Above	Mud/Muck/Decaying leaf litter
BP-2B	3:30 PM		Yellow sand with gray streaks
BP-2C	3:30 PM		Yellow sand
BP-3A	12:50 PM	Same as above	Mud/Muck/Decaying leaf litter
BP-3B	12:50 PM		Gray sandy clay
BP-3C	12:50 PM		Gray sandy clay
BP-4A	11:45 AM	Same as above	Mud/Muck
BP-4B	11:45 AM		Yellow, pebbly sandy clay
BP-4C	11:45 AM		Yellow, pebbly sandy clay
BP-5A	1:45 PM	Same as above	Thick matt of decaying leaf litter covering muck/mud with some sand
BP-5B	1:45 PM		Gray sandy clay
BP-5C	1:45 PM		Gray sandy clay
BP-6A	4:10 PM	Same as above	Mud/Muck/Decaying lead litter with coarse sand
BP-6B	4:10 PM		Gray sandy clay
BP-6C	4:10 PM		Gray sandy clay



BAY ENVIRONMENTAL
CONSULTING

Andrew Thyberg, Principal
Bay Environmental Consulting LLC
123 Bay Avenue
Bayport, NY 11705
December 7, 2018

Mary A Mackinnon
NYS DEC Region 1
SUNY at Stony Brook
50 Circle Road
Stony Brook, NY 11790-3409

Dear Mary Mackinnon:

This submission is in regard to permit application number: 1-2824-00414/00004.

This submission includes an analytical summary table and the laboratory reports for additional chlordane sample taken in the Bailey Arboretum ponds. These additional samples were analyzed at the request of Christina Knoll due to the original analyses not meeting the minimum detection limits or the Class A threshold for chlordane listed in the TOGS 5.1.9.

Sincerely,

Andrew Thyberg

Additional Chlordane Sampling for Bailey Arboretum Ponds				
Sample Date	Sample ID	Concentration (ug/kg)	Qualifier	MDL (ug/kg)
11/8/2018	1A	3.9	J	2.1
11/8/2018	1B	3.9	J	2.1
11/8/2018	1C	<2.1		2.1
11/8/2018	2A	14.6	J	2.1
11/8/2018	2B	15.4	J	2.1
11/8/2018	2C	<2.1		2.1
11/8/2018	3A	7.1	J	2.1
11/8/2018	3B	<2.1		2.1
11/8/2018	4A	<2.1		2.1
11/8/2018	4B	<2.1		2.1
11/8/2018	5A	<2.1		2.1
11/8/2018	5B	<2.1		2.1
11/8/2018	6A	<2.1		2.1
11/8/2018	6B	<2.1		2.1
Qualifier J: Estimated concentration above the adjusted method detection limit and below the adjusted reporting				

November 28, 2018

Andrew Thyberg
Bay Environmental
123 Bay Avenue
Bayport, NY 11705

RE: Project: BAILEY ARBORETUM 11/8
Pace Project No.: 7071023

Dear Andrew Thyberg:

Enclosed are the analytical results for sample(s) received by the laboratory on November 14, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Nicolette M. Lovari
nicolette.lovari@pacelabs.com
(631)694-3040
Project Manager

Enclosures



Nassau County DPW

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439 of 471

Contract No. S35103-02C Page 1 of 20
Water Quality Improvements-Bailey Arboretum

CERTIFICATIONS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

Long Island Certification IDs

575 Broad Hollow Rd, Melville, NY 11747

New York Certification #: 10478 Primary Accrediting Body

New Jersey Certification #: NY158

Pennsylvania Certification #: 68-00350

Connecticut Certification #: PH-0435

Maryland Certification #: 208

Rhode Island Certification #: LAO00340

Massachusetts Certification #: M-NY026

New Hampshire Certification #: 2987

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ANALYTICAL RESULTS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

Sample: 1A **Lab ID: 7071023001** Collected: 11/08/18 13:00 Received: 11/14/18 14:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides Analytical Method: EPA 8081B Preparation Method: EPA 3546								
Chlordane (Technical)	3.9J	ug/kg	32.8	1	11/16/18 16:15	11/22/18 03:48	57-74-9	
Surrogates								
Tetrachloro-m-xylene (S)	67	%	30-150	1	11/16/18 16:15	11/22/18 03:48	877-09-8	
Decachlorobiphenyl (S)	66	%	30-150	1	11/16/18 16:15	11/22/18 03:48	2051-24-3	
Percent Moisture Analytical Method: ASTM D2216-92M								
Percent Moisture	0.38	%	0.10	1		11/20/18 13:40		

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ANALYTICAL RESULTS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

Sample: 1B **Lab ID: 7071023002** Collected: 11/08/18 13:00 Received: 11/14/18 14:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides Analytical Method: EPA 8081B Preparation Method: EPA 3546								
Chlordane (Technical)	3.9J	ug/kg	33.0	1	11/16/18 16:15	11/22/18 00:52	57-74-9	
Surrogates								
Tetrachloro-m-xylene (S)	74	%	30-150	1	11/16/18 16:15	11/22/18 00:52	877-09-8	
Decachlorobiphenyl (S)	80	%	30-150	1	11/16/18 16:15	11/22/18 00:52	2051-24-3	
Percent Moisture Analytical Method: ASTM D2216-92M								
Percent Moisture	0.14	%	0.10	1		11/20/18 13:40		

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ANALYTICAL RESULTS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

Sample: 2A **Lab ID: 7071023003** Collected: 11/08/18 12:30 Received: 11/14/18 14:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides Analytical Method: EPA 8081B Preparation Method: EPA 3546								
Chlordane (Technical)	14.6J	ug/kg	32.9	1	11/16/18 16:15	11/22/18 01:07	57-74-9	
Surrogates								
Tetrachloro-m-xylene (S)	52	%	30-150	1	11/16/18 16:15	11/22/18 01:07	877-09-8	
Decachlorobiphenyl (S)	86	%	30-150	1	11/16/18 16:15	11/22/18 01:07	2051-24-3	
Percent Moisture Analytical Method: ASTM D2216-92M								
Percent Moisture	0.11	%	0.10	1		11/20/18 13:40		

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Date: 11/28/2018 10:46 AM
Nassau County DPW

11/28/2018

Contract No. S35103-02G Page 5 of 20
Water Quality Improvements-Bailey Arboretum

ANALYTICAL RESULTS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

Sample: 2B **Lab ID: 7071023004** Collected: 11/08/18 12:30 Received: 11/14/18 14:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides								
Analytical Method: EPA 8081B Preparation Method: EPA 3546								
Chlordane (Technical)	15.4J	ug/kg	32.9	1	11/16/18 16:15	11/22/18 00:08	57-74-9	
Surrogates								
Tetrachloro-m-xylene (S)	84	%	30-150	1	11/16/18 16:15	11/22/18 00:08	877-09-8	
Decachlorobiphenyl (S)	102	%	30-150	1	11/16/18 16:15	11/22/18 00:08	2051-24-3	
Percent Moisture								
Analytical Method: ASTM D2216-92M								
Percent Moisture	<0.10	%	0.10	1		11/20/18 13:41		

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ANALYTICAL RESULTS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

Sample: 3A **Lab ID: 7071023005** Collected: 11/08/18 11:45 Received: 11/14/18 14:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides Analytical Method: EPA 8081B Preparation Method: EPA 3546								
Chlordane (Technical)	7.1J	ug/kg	33.0	1	11/16/18 16:15	11/22/18 02:20	57-74-9	
Surrogates								
Tetrachloro-m-xylene (S)	40	%	30-150	1	11/16/18 16:15	11/22/18 02:20	877-09-8	
Decachlorobiphenyl (S)	77	%	30-150	1	11/16/18 16:15	11/22/18 02:20	2051-24-3	
Percent Moisture Analytical Method: ASTM D2216-92M								
Percent Moisture	0.26	%	0.10	1		11/20/18 13:41		

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ANALYTICAL RESULTS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

Sample: 3B **Lab ID: 7071023006** Collected: 11/08/18 11:45 Received: 11/14/18 14:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides Analytical Method: EPA 8081B Preparation Method: EPA 3546								
Chlordane (Technical)	<2.1	ug/kg	32.9	1	11/16/18 16:15	11/22/18 01:22	57-74-9	
Surrogates								
Tetrachloro-m-xylene (S)	40	%	30-150	1	11/16/18 16:15	11/22/18 01:22	877-09-8	
Decachlorobiphenyl (S)	54	%	30-150	1	11/16/18 16:15	11/22/18 01:22	2051-24-3	
Percent Moisture Analytical Method: ASTM D2216-92M								
Percent Moisture	0.29	%	0.10	1		11/20/18 13:41		

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ANALYTICAL RESULTS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

Sample: 4A **Lab ID: 7071023007** Collected: 11/08/18 09:55 Received: 11/14/18 14:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides Analytical Method: EPA 8081B Preparation Method: EPA 3546								
Chlordane (Technical)	<2.1	ug/kg	32.7	1	11/16/18 16:15	11/22/18 02:06	57-74-9	
Surrogates								
Tetrachloro-m-xylene (S)	67	%	30-150	1	11/16/18 16:15	11/22/18 02:06	877-09-8	
Decachlorobiphenyl (S)	60	%	30-150	1	11/16/18 16:15	11/22/18 02:06	2051-24-3	
Percent Moisture Analytical Method: ASTM D2216-92M								
Percent Moisture	0.12	%	0.10	1		11/20/18 13:41		

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ANALYTICAL RESULTS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

Sample: 4B **Lab ID: 7071023008** Collected: 11/08/18 09:55 Received: 11/14/18 14:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides Analytical Method: EPA 8081B Preparation Method: EPA 3546								
Chlordane (Technical)	<2.1	ug/kg	32.8	1	11/16/18 16:15	11/21/18 23:54	57-74-9	
Surrogates								
Tetrachloro-m-xylene (S)	42	%	30-150	1	11/16/18 16:15	11/21/18 23:54	877-09-8	
Decachlorobiphenyl (S)	74	%	30-150	1	11/16/18 16:15	11/21/18 23:54	2051-24-3	
Percent Moisture Analytical Method: ASTM D2216-92M								
Percent Moisture	0.19	%	0.10	1		11/20/18 13:42		

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ANALYTICAL RESULTS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

Sample: 5A **Lab ID: 7071023009** Collected: 11/08/18 09:15 Received: 11/14/18 14:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides Analytical Method: EPA 8081B Preparation Method: EPA 3546								
Chlordane (Technical)	<2.1	ug/kg	32.9	1	11/16/18 16:15	11/22/18 00:23	57-74-9	
Surrogates								
Tetrachloro-m-xylene (S)	66	%	30-150	1	11/16/18 16:15	11/22/18 00:23	877-09-8	
Decachlorobiphenyl (S)	56	%	30-150	1	11/16/18 16:15	11/22/18 00:23	2051-24-3	
Percent Moisture Analytical Method: ASTM D2216-92M								
Percent Moisture	<0.10	%	0.10	1		11/20/18 13:42		

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ANALYTICAL RESULTS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

Sample: 5B **Lab ID: 7071023010** Collected: 11/08/18 09:15 Received: 11/14/18 14:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides Analytical Method: EPA 8081B Preparation Method: EPA 3546								
Chlordane (Technical)	<2.1	ug/kg	32.6	1	11/16/18 16:15	11/21/18 23:24	57-74-9	
Surrogates								
Tetrachloro-m-xylene (S)	20	%	30-150	1	11/16/18 16:15	11/21/18 23:24	877-09-8	S0
Decachlorobiphenyl (S)	25	%	30-150	1	11/16/18 16:15	11/21/18 23:24	2051-24-3	S0
Percent Moisture Analytical Method: ASTM D2216-92M								
Percent Moisture	<0.10	%	0.10	1		11/20/18 13:42		

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ANALYTICAL RESULTS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

Sample: 6A		Lab ID: 7071023011		Collected: 11/08/18 10:50		Received: 11/14/18 14:45		Matrix: Solid	
Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.									
Parameters		Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides		Analytical Method: EPA 8081B Preparation Method: EPA 3546							
Chlordane (Technical)		<2.1	ug/kg	32.9	1	11/16/18 16:15	11/22/18 00:38	57-74-9	
Surrogates									
Tetrachloro-m-xylene (S)		8	%	30-150	1	11/16/18 16:15	11/22/18 00:38	877-09-8	S0
Decachlorobiphenyl (S)		14	%	30-150	1	11/16/18 16:15	11/22/18 00:38	2051-24-3	S0
Percent Moisture		Analytical Method: ASTM D2216-92M							
Percent Moisture		0.44	%	0.10	1		11/20/18 13:42		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

Sample: 6B **Lab ID: 7071023012** Collected: 11/08/18 10:50 Received: 11/14/18 14:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides Analytical Method: EPA 8081B Preparation Method: EPA 3546								
Chlordane (Technical)	<2.1	ug/kg	32.9	1	11/16/18 16:15	11/21/18 23:39	57-74-9	
Surrogates								
Tetrachloro-m-xylene (S)	11	%	30-150	1	11/16/18 16:15	11/21/18 23:39	877-09-8	S0
Decachlorobiphenyl (S)	41	%	30-150	1	11/16/18 16:15	11/21/18 23:39	2051-24-3	
Percent Moisture Analytical Method: ASTM D2216-92M								
Percent Moisture	0.19	%	0.10	1		11/20/18 13:42		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: BAILEY ARBORETUM 11/8
Pace Project No.: 7071023

QC Batch: 91585 Analysis Method: EPA 8081B
QC Batch Method: EPA 3546 Analysis Description: 8081 GCS Pesticides
Associated Lab Samples: 7071023001, 7071023002, 7071023003, 7071023004, 7071023005, 7071023006, 7071023007, 7071023008, 7071023009, 7071023010, 7071023011, 7071023012

METHOD BLANK: 422236 Matrix: Solid
Associated Lab Samples: 7071023001, 7071023002, 7071023003, 7071023004, 7071023005, 7071023006, 7071023007, 7071023008, 7071023009, 7071023010, 7071023011, 7071023012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chlordane (Technical)	ug/kg	<2.1	33.0	11/26/18 22:18	
Decachlorobiphenyl (S)	%	89	30-150	11/26/18 22:18	
Tetrachloro-m-xylene (S)	%	89	30-150	11/26/18 22:18	

LABORATORY CONTROL SAMPLE: 422237

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Decachlorobiphenyl (S)	%			91	30-150	
Tetrachloro-m-xylene (S)	%			86	30-150	

LABORATORY CONTROL SAMPLE: 422238

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Decachlorobiphenyl (S)	%			103	30-150	
Tetrachloro-m-xylene (S)	%			78	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 422239 422240

Parameter	Units	7071023006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Chlordane (Technical)	ug/kg	<2.1			<2.1	<2.1					
Decachlorobiphenyl (S)	%						55	40	30-150		
Tetrachloro-m-xylene (S)	%						43	32	30-150		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

QC Batch:	92026	Analysis Method:	ASTM D2216-92M
QC Batch Method:	ASTM D2216-92M	Analysis Description:	Dry Weight/Percent Moisture
Associated Lab Samples:	7071023001, 7071023002, 7071023003, 7071023004, 7071023005, 7071023006, 7071023007, 7071023008, 7071023009, 7071023010, 7071023011, 7071023012		

SAMPLE DUPLICATE: 424362

Parameter	Units	7070970001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	11.7	11.8	1	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: BAILEY ARBORETUM 11/8
Pace Project No.: 7071023

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above adjusted reporting limit.
TNTC - Too Numerous To Count
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

ANALYTE QUALIFIERS

S0 Surrogate recovery outside laboratory control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7071023

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
7071023001	1A	EPA 3546	91585	EPA 8081B	91883
7071023002	1B	EPA 3546	91585	EPA 8081B	91883
7071023003	2A	EPA 3546	91585	EPA 8081B	91883
7071023004	2B	EPA 3546	91585	EPA 8081B	91883
7071023005	3A	EPA 3546	91585	EPA 8081B	91883
7071023006	3B	EPA 3546	91585	EPA 8081B	91883
7071023007	4A	EPA 3546	91585	EPA 8081B	91883
7071023008	4B	EPA 3546	91585	EPA 8081B	91883
7071023009	5A	EPA 3546	91585	EPA 8081B	91883
7071023010	5B	EPA 3546	91585	EPA 8081B	91883
7071023011	6A	EPA 3546	91585	EPA 8081B	91883
7071023012	6B	EPA 3546	91585	EPA 8081B	91883
7071023001	1A	ASTM D2216-92M	92026		
7071023002	1B	ASTM D2216-92M	92026		
7071023003	2A	ASTM D2216-92M	92026		
7071023004	2B	ASTM D2216-92M	92026		
7071023005	3A	ASTM D2216-92M	92026		
7071023006	3B	ASTM D2216-92M	92026		
7071023007	4A	ASTM D2216-92M	92026		
7071023008	4B	ASTM D2216-92M	92026		
7071023009	5A	ASTM D2216-92M	92026		
7071023010	5B	ASTM D2216-92M	92026		
7071023011	6A	ASTM D2216-92M	92026		
7071023012	6B	ASTM D2216-92M	92026		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be complete

WO#: 7071023



7071023

Section C

Invoice Information:

Attention:

Report To: **Andrew Thyberg**

Copy To:

Company Name:

Address:

Pace Quote Reference:

Pace Project Manager:

Pace Profile #:

Purchase Order No.: **11705**

Project Name:

Project Number:

Requested Due Date/TAT:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER

Site Location

STATE:

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (A-Z, 0-9 /, -)	Matrix Codes MATRIX / CODE	Matrix Code Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Tissue Other	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED	DATE	TIME	DATE	TIME	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
1	1A			G	COMPOSITE START	11/18	13:00													
2	1B			G	COMPOSITE END/GRAB	11/18	13:06													
3	2A			G	COMPOSITE START	11/18	12:30													
4	2B			G	COMPOSITE END/GRAB	11/18	12:30													
5	3A			G	COMPOSITE START	11/18	11:45													
6	3B			G	COMPOSITE END/GRAB	11/18	11:45													
7	4A			G	COMPOSITE START	11/18	9:55													
8	4B			G	COMPOSITE END/GRAB	11/18	9:55													
9	5A			G	COMPOSITE START	11/18	9:15													
10	5B			G	COMPOSITE END/GRAB	11/18	9:15													
11	6A			G	COMPOSITE START	11/18	10:50													
12	6B			G	COMPOSITE END/GRAB	11/18	10:50													

457 of 471

Contract No. S35103-02 Page 19 of 20

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER:

DATE Signed (MM/DD/YYYY):

11/14/18

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007



Sample Condition Upon Receipt

Client Name:

BayEnv

Pro.

WO#: 7071023

PM: NML Due Date: 11/21/18

CLIENT: BAYENV

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace ☐ Other

Tracking #:

Custody Seal on Cooler/Box Present: ☐ Yes ☒ No Seals intact: ☐ Yes ☒ No

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ Ziploc ☐ None ☐ Other

Thermometer Used: TH091

Correction Factor:

0.0

Cooler Temperature (°C):

0.2

Cooler Temperature Corrected (°C):

0.2

Temperature Blank Present: ☐ Yes ☒ No

Type of Ice: Wet Blue None

☐ Samples on ice, cooling process has begun

Date/Time 5035A kits placed in freezer

Temp should be above freezing to 6.0°C

USDA Regulated Soil (☐ N/A, water sample)

Date and Initials of person examining contents: 11/14/18 JP

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check map)? ☐ YES ☒ NO

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-LI-C-010) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Filled Out: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Chain of Custody Relinquished: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.
Sampler Name & Signature on COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
Short Hold Time Analysis (<72hr): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume: (Triple volume provided for MS/MSD) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Correct Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels match COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12.
-Includes date/time/ID/Analysis Matrix <input checked="" type="checkbox"/> SI <input type="checkbox"/> WT <input type="checkbox"/> OIL	
All containers needing preservation have been checked <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
pH paper Lot #	Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl, NaOH>9 Sulfide, NAOH>12 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Initial when completed: Lot # of added preservative: Date/Time preservative added
Exceptions: VOA, Coliform, TOC/DOC, Oil and Grease, DRO/8015 (water). Per Method, VOA pH is checked after analysis	
Samples checked for dechlorination: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
KI starch test strips Lot #	Positive for Res. Chlorine? Y N
Residual chlorine strips Lot #	
Headspace in VOA Vials (>6mm): <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if applicable):	

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted:

Date/Time:

Comments/ Resolution:

December 06, 2018

Andrew Thyberg
Bay Environmental
123 Bay Avenue
Bayport, NY 11705

RE: Project: BAILEY ARBORETUM 11/8
Pace Project No.: 7072399

Dear Andrew Thyberg:

Enclosed are the analytical results for sample(s) received by the laboratory on November 29, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Nicolette M. Lovari
nicolette.lovari@pacelabs.com
(631)694-3040
Project Manager

Enclosures



Nassau County DPW

REPORT OF LABORATORY ANALYSIS

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459 of 471

Contract No. S35103-02C Page 1 of 13
Water Quality Improvements-Bailey Arboretum

CERTIFICATIONS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7072399

Long Island Certification IDs

575 Broad Hollow Rd, Melville, NY 11747

New York Certification #: 10478 Primary Accrediting Body

New Jersey Certification #: NY158

Pennsylvania Certification #: 68-00350

Connecticut Certification #: PH-0435

Maryland Certification #: 208

Rhode Island Certification #: LAO00340

Massachusetts Certification #: M-NY026

New Hampshire Certification #: 2987

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7072399

Date: December 06, 2018

Samples received outside of recommended EPA holding time.

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BAILEY ARBORETUM 11/8
Pace Project No.: 7072399

Method: EPA 8081B
Description: 8081 GCS Pesticides
Client: Bay Environmental
Date: December 06, 2018

General Information:

2 samples were analyzed for EPA 8081B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H3: Sample was received or analysis requested beyond the recognized method holding time.

- 1C (Lab ID: 7072399001)
- 2C (Lab ID: 7072399002)

Sample Preparation:

The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7072399

Sample: 1C **Lab ID: 7072399001** Collected: 11/08/18 13:00 Received: 11/29/18 14:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides Analytical Method: EPA 8081B Preparation Method: EPA 3546								
Chlordane (Technical)	<2.1	ug/kg	33.0	1	11/30/18 12:45	12/06/18 00:52	57-74-9	H3
Surrogates								
Tetrachloro-m-xylene (S)	49	%	30-150	1	11/30/18 12:45	12/06/18 00:52	877-09-8	
Decachlorobiphenyl (S)	48	%	30-150	1	11/30/18 12:45	12/06/18 00:52	2051-24-3	
Percent Moisture Analytical Method: ASTM D2216-92M								
Percent Moisture	<0.10	%	0.10	1		12/03/18 13:12		

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Date: 12/06/2018 05:30 PM
Nassau County DPW

4630471

Contract No. S35103-02C Page 5 of 13
Water Quality Improvements-Bailey Arboretum

ANALYTICAL RESULTS

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7072399

Sample: 2C **Lab ID: 7072399002** Collected: 11/08/18 12:30 Received: 11/29/18 14:45 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides Analytical Method: EPA 8081B Preparation Method: EPA 3546								
Chlordane (Technical)	<2.1	ug/kg	32.8	1	11/30/18 12:45	12/06/18 01:33	57-74-9	H3
Surrogates								
Tetrachloro-m-xylene (S)	65	%	30-150	1	11/30/18 12:45	12/06/18 01:33	877-09-8	
Decachlorobiphenyl (S)	49	%	30-150	1	11/30/18 12:45	12/06/18 01:33	2051-24-3	
Percent Moisture Analytical Method: ASTM D2216-92M								
Percent Moisture	<0.10	%	0.10	1		12/03/18 13:12		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7072399

QC Batch: 93086

Analysis Method: EPA 8081B

QC Batch Method: EPA 3546

Analysis Description: 8081 GCS Pesticides

Associated Lab Samples: 7072399001, 7072399002

METHOD BLANK: 429828

Matrix: Solid

Associated Lab Samples: 7072399001, 7072399002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chlordane (Technical)	ug/kg	<2.1	33.0	12/06/18 00:12	
Decachlorobiphenyl (S)	%	98	30-150	12/06/18 00:12	
Tetrachloro-m-xylene (S)	%	111	30-150	12/06/18 00:12	

LABORATORY CONTROL SAMPLE: 429829

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Decachlorobiphenyl (S)	%			86	30-150	
Tetrachloro-m-xylene (S)	%			91	30-150	

LABORATORY CONTROL SAMPLE: 429830

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Decachlorobiphenyl (S)	%			94	30-150	
Tetrachloro-m-xylene (S)	%			97	30-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 429838 429839

Parameter	Units	7072399001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Chlordane (Technical)	ug/kg	<2.1			<2.1	<2.1					H3
Decachlorobiphenyl (S)	%						47	67	30-150		
Tetrachloro-m-xylene (S)	%						58	71	30-150		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7072399

QC Batch:	93331	Analysis Method:	ASTM D2216-92M
QC Batch Method:	ASTM D2216-92M	Analysis Description:	Dry Weight/Percent Moisture
Associated Lab Samples:	7072399001, 7072399002		

SAMPLE DUPLICATE: 430864

Parameter	Units	7072399001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	<0.10	<0.10		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: BAILEY ARBORETUM 11/8
Pace Project No.: 7072399

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above adjusted reporting limit.
TNTC - Too Numerous To Count
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

WORKORDER QUALIFIERS

WO: 7072399
[1] Samples received outside of recommended EPA holding time.

ANALYTE QUALIFIERS

H3 Sample was received or analysis requested beyond the recognized method holding time.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BAILEY ARBORETUM 11/8

Pace Project No.: 7072399

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
7072399001	1C	EPA 3546	93086	EPA 8081B	93462
7072399002	2C	EPA 3546	93086	EPA 8081B	93462
7072399001	1C	ASTM D2216-92M	93331		
7072399002	2C	ASTM D2216-92M	93331		

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CHAIN-OF-CUSTODY / Analytical Request Doc

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed.

Nassau County DPW

Section A

Required Client Information:

Section B

Required Project Information:

Section C

Invoice Information:

Company: Bay Env. Consulting	Report To: Andrew Thyberg	Attention:
Address: 123 Bay Avenue Bayport, NY 11705	Copy To:	Company Name:
Email To: Andrew.Thyberg@bayenv.com	Purchase Order No.: 62	Address:
Phone: 631-793-2612	Project Name: Bailey Arboretum	Pace Quote Reference:
Fax:	Project Number:	Pace Project Manager:
Requested Due Date/TAT: 5/11		Pace Profile #:
REGULATORY AGENCY <input type="checkbox"/> NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER _____		
Site Location _____ STATE: _____		

Requested Analysis Filtered (Y/N)

[illegible]



Pace Analytical Services, LLC
575 Broad Hollow Road
Melville, NY 11747
Phone: 516 370 6044
Fax: 631 420 8436

Regulated Domestic and Foreign Soils Checklist

Project #: 7072399
Initials: JPP

Time: 18:30
Date: 11/29/18

Origin (Circle One): Domestic Foreign

If "Domestic", State of Origin (Circle One): AL AR AZ CA FL GA ID LA MI MS NC NM NY OK OR SC TN TX WA

If "Foreign", Country of Origin: _____

Note: Soils from Hawaii and Puerto Rico are of Foreign Origin

Sample analysis will take place at (Circle all that apply):

Pace Long Island Subcontract Laboratory

Name of Subcontract Laboratory: _____

	Action	Completed
1) Did "Regulated" sticker get placed on Samples?	Regulated sticker must be placed onto each sample container.	<u>Yes</u> / No
2) If samples were sent to a subcontract laboratory, do they hold a valid Soil Permit and Compliance Agreement from the USDA? If not being subcontracted please circle NA.	Subcontract Laboratories are required to hold a valid Soil Permit and Compliance Agreement before we can send soil samples to them. Verify validity by contacting USDA/APHIS.	Yes / No / <u>NA</u>
3) Were Samples placed in designated container in Walk-In Cooler?	Regulated samples retained in the Long Island Laboratory must be stored in designated containers in the Walk-In Cooler.	<u>Yes</u> / No
4) Were there signs of breakage or leakage? If no please complete 5, circle NA for 6 and move to 7. If yes please circle NA for 5, and move to 6.	Check for broken glass or loose soil in the cooler.	Yes / <u>No</u>
5) Were ice and melt water separated from cooler and disposed of properly? (No signs of breakage or leakage)	Foreign and Domestic Sources: Ice and melt water can be disposed of by dumping down the sink.	<u>Yes</u> / No / NA
6) Were ice and melt water separated from cooler and disposed of properly? (Signs of breakage or leakage)	Foreign and Domestic Sources: Ice and melt water must be baked at 140°C then cooled and dumped down the sink. Soils must be disposed of by baking and then placing in appropriate waste barrel.	Yes / No / <u>NA</u>
7) Was the cooler decontaminated?	Soak cooler for 30 minutes with 1:10 bleach solution, drain in sink, let cooler air dry.	<u>Yes</u> / No

Comments: _____



Sample Condition Upon Receipt

Client Name:

BAYENV Consulting

Project

WO#: 7072399

PM: NML Due Date: 12/06/18

CLIENT: BAYENV

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other

Tracking #:

Custody Seal on Cooler/Box Present: ☐ Yes ☒ No Seals intact: ☐ Yes ☒ No

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ Ziploc ☒ None ☐ Other

Thermometer Used: TH091

Correction Factor: 0.0

☐ Samples on ice, cooling process has begun

Cooler Temperature (°C): 5.8

Cooler Temperature Corrected (°C): 5.8

Date/Time 5035A kits placed in freezer

Temp should be above freezing to 6.0°C

USDA Regulated Soil (☐ N/A, water sample)

Date and Initials of person examining contents: WA 11/28/18

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check map)? ☐ YES ☒ NO

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☒ No

If Yes to either question, fill out a Regulated Soil Checklist (F-LI-C-010) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Filled Out: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Chain of Custody Relinquished: <input type="checkbox"/> Yes <input type="checkbox"/> No	3.
Sampler Name & Signature on COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5. <u>SAMPLES received out of hold</u>
Short Hold Time Analysis (<72hr): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume: (Triple volume provided for MS/MSD) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Correct Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels match COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12.
-Includes date/time/ID/Analysis Matrix <u>SL</u> WT OIL	
All containers needing preservation have been checked <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH <input type="checkbox"/> HCl
pH paper Lot #	Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl, NaOH>9 Sulfide, NAOH>12 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Initial when completed: Lot # of added preservative: Date/Time preservative added
Exceptions: VOA, Coliform, TOC/DOC, Oil and Grease, DRO/8015 (water). Per Method, VOA pH is checked after analysis	
Samples checked for dechlorination: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
KI starch test strips Lot #	Positive for Res. Chlorine? Y N
Residual chlorine strips Lot #	
Headspace in VOA Vials (>6mm): <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if applicable):	

Client Notification/ Resolution:

Field Data Required? ☒ Y ☐ N

Person Contacted: Andrew Thyberg

Date/Time: 11/28/18 19:30

Comments/ Resolution: Client requested to proceed with analysis outside of holding time