

Town of Brookhaven

Department of Recycling and Sustainable Materials Management

The Brookhaven Solid Waste Management Facility

Pre-Engineered Isolation Lean-To

Town of Brookhaven Bid Number 26021



Issue Date: June 18, 2026

Site Visit: June 25, 2026

Technical Questions Due By: July 1, 2026

Due Date & Place

July 8, 2026 by 11:00AM

Division of Purchasing
One Independence Hill
Farmingville, New York 11738



Prepared By:

*L.K. McLean Associates,
Engineering & Surveying, D.P.C.*

Consulting Engineers

437 South Country Road, Brookhaven, N.Y. 11719

Updated June 2026 – 100% (capital)

Intent: Construction of a prefabricated engineered metal building to provide a controlled, enclosed space for the isolation and management of designated waste materials requiring segregation for environmental, regulatory, and operational purposes at the Solid Waste Management Facility.

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TOWN OF BROOKHAVEN
SUFFOLK COUNTY, NY

NOTICE TO BIDDERS

Electronic Bids received in BidNet and delivered Sealed Bids will be publicly opened and read aloud at the Brookhaven Town Hall Complex located at One Independence Hill, Farmingville, New York, 11738, 3rd Floor, for the following project on the date as indicated at 11:00 am:

BID #26021

PRE-ENGINEERED ISOLATION LEAN-TO

BID DUE DATE: July 8, 2026

Specifications for the above-referenced bid will be available beginning June 18, 2026.

A pre-bid site visit will be held on June 25, 2026 at 10:00AM at 350 Horseblock Road, Brookhaven NY 11719. Any potential bidder interested in attending the site visit must register by emailing the Town contacts below.

Technical questions and concerns will be expected no later than close of business, July 1, 2026.

The Town of Brookhaven is pleased to announce that it now accepts electronic bid submissions through its Website utilizing our new BidNet Direct portal by SOVRA, by the specified due date and time as outlined in the bid document. The website also can be accessed at www.bidnetdirect.com//townofbrookhaven.

Sealed bids also will be accepted if delivered to Town Hall in the prescribed format by the specified due date and time as outlined in the bid document.

Preferred Method

- Access website: www.bidnetdirect.com//townofbrookhaven
- Follow directions to register (if not already registered) and download Bid document.
- Follow directions of how to submit Bid response electronically if preferred to Sealed Bid delivery

Questions must be submitted in writing to Finance Department Purchasing Division to cwilliams@brookhavenny.gov and aboland@brookhavenny.gov

The Town of Brookhaven reserves the right to reject and declare invalid any or all bids and to waive any informalities or irregularities in the proposals received, if in the best interests of the Town.

The Town of Brookhaven welcomes and encourages minorities and women-owned businesses; veteran owned businesses, HUD Section 3 businesses, etc., to participate in the bidding process.

Further information can be obtained by calling (631) 451-6252

Town of Brookhaven
Purchasing Division
Tamara Branson, Commissioner

Town of Brookhaven

Bid Number 26021

Special Requirements

This bid contains Special Requirements as noted below.

1. All questions should be submitted, in writing, to the following Town contacts:
 - Lead agent – Christina Williams, cwilliams@brookhavenny.gov
 - Support agent – Amanda Boland, aboland@brookhavenny.gov
2. This project is subject to compliance with Prevailing Wages per NYS Department of Labor (DOL) regulations.
 - **SECTION 220-I OF THE NYS LABOR LAW REQUIRES THAT THE VENDOR MUST SUBMIT A COPY OF NYS DOL REGISTRATION CERTIFICATION WITH THEIR BID.**
Failure to submit the required documentation with your proposal WILL result in the immediate disqualification of the submission.
 - See page 143 for detail and PRC number and link. Please note the schedule is NOT attached: the information is available by accessing the link provided on page 143.
3. The primary trade classification for this contract is as follows: Ironworker – Structural Steel / Pre-Engineered Building Erector. However, the Town reserves the right to approve any trade that it deems applicable and appropriate for the type and scope of work to be performed under the Contract(s).
4. This project requires the following:
 - The Contractor shall possess all licenses and certifications necessary to perform work in the Town of Brookhaven, Suffolk County and New York State.
 - This project requires compliance with the Town of Brookhaven Apprenticeship Training Program. See pages 154 - 161 for compliance requirements.
5. This project requires 5 years of previous experience as it directly relates to the stated SOW. Documentation must be provided in support of the cited experience.
6. Please provide proof of the firm's authorization to do business in the State of New York.

Failure to meet these requirements or to submit the required documentation with your proposal may result in the disqualification of the submission

Subcontractor List for Bids Not Covered Under WICKS Law Monetary Threshold

The vendors and prices listed below are being supplied in accordance with statutes contained in General Municipal Law 101 for a single price contract not exceeding \$1.5M overall.

General Construction

Vendor Name

Price

\$ _____

Electrical

Vendor Name

Price

\$ _____

Plumbing

Vendor Name

Price

\$ _____

HVAC

Vendor Name

Price

\$ _____

NOTE:

Vendors' initial bid submission **MUST** include all Applicable information as stated above in a **SEPARATE SEALED ENVELOPE** Failing to comply, the submission is deemed as NON-Responsive and the submission is **DISQUALIFIED**

BIDS NOT COVERED UNDER WICKS LAW MONETARY THRESHOLD

Each bidder on a public work contract, where the preparation of separate specifications is not required, under General Municipal Law, Section 101 (WICKS LAW), shall submit with its bid a separate sealed list that names each subcontractor that the bidder will use to perform work on the contract and the agreed-upon amount to be paid to each, for:

- (a) plumbing and gas fitting, (b) steam heating, hot water heating, ventilating and air conditioning apparatus and (c) electric wiring and standard illuminating fixtures.

After low bid is announced, the sealed list of subcontractors submitted with such low bid shall be opened and the names of such subcontractors shall be announced and thereafter any change of subcontractor or agreed-upon amount to be paid to each shall require the approval of the public owner, upon a showing presented to the public owner of legitimate construction need for such change, which shall be open to public inspection. Legitimate construction need shall include, but not be limited to, a change in project specifications, a change in construction material costs, a change to subcontractor status, or the subcontractor has become otherwise unwilling, unable or unavailable to perform the subcontract. The sealed lists of subcontractors submitted by all other bidders shall be returned to them unopened after the contract award.

Town of Brookhaven

Bid Number 26021

Proposer Information

Firm: _____

Street Address: _____

Town, State, Zip _____

Telephone: _____

Fax: _____

Signature of person authorized to make this proposal and sign contracts as may be required

(Print name) _____ Title _____

Signature _____

Contact Name: _____

Title: _____

Office Telephone: _____

Cell Number: _____

Email Address: _____

Alternate Contact Name: _____

Title: _____

Office Telephone: _____

Cell Number: _____

Email Address: _____

Acknowledgement Receipt of Addenda:

#1 _____

#2 _____

#3 _____

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**TOWN OF BROOKHAVEN
DEPARTMENT OF RECYCLING AND SUSTAINABLE MATERIALS MANAGEMENT
BROOKHAVEN SOLID WASTE MANAGEMENT FACILITY
PRE-ENGINEERED ISOLATION LEAN-TO**

GENERAL

The work under this Division shall be subject to the requirements of the CONDITIONS OF CONTRACT, GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS, DRAWINGS, SCHEDULES, ADDENDA, and other Contract Documents.

Refer to the Drawings and Specifications of other trades and Contractors for items which might affect the work under this Division.

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Included in this Division are the following sections:

01010 General
01025 Measurement and Payment
01500 Construction Facilities & Temporary Controls
01501 Health & Safety Provisions

SECTION 01010-GENERAL

INTENT

The intent of this requirements contract is to construct a pre-engineered isolation lean-to to provide an open-air covered structure to isolate specified waste located at 350 Horseblock Road, Brookhaven, NY 11719. The Contractor shall possess all licenses and certifications necessary to perform work in the Town of Brookhaven, Suffolk County and New York State.

SCOPE

The work to be performed under this contract shall include all labor, materials, equipment, services, and incidentals required to perform the proposed Pre-Engineered Isolation Lean-To at The Brookhaven Solid Waste Management Facility, located at 350 Horseblock Road NY, and more particularly shown on the contract drawings.

In general, the work shall include but is not limited to the following:

- Provide delegated design services for the concrete foundation and the pre-engineered metal building (PEMB) through a Professional Engineer duly licensed in the State of

New York. The Contractor shall submit the Delegated design drawings to obtain all building permits and certificates of occupancy.

- Mobilization, excavation, and protection of the existing facility.
- Maintain all access roads free from construction debris and disruption to the Town's daily Solid Waste truck traffic patterns, and as indicated on the drawings.
- Install of drainage structures and associated piping.
- Relocation of existing underground electrical wires.
- Replacement of damaged and disturbed areas of existing asphalt.
- Install of concrete footing and foundation work.
- Install of concrete slab and prescribed concrete ecology blocks and curbs to include but is not limited to: concrete apron, control joints, and bollards.
- The proposed PEMB will include but is not limited to the following: metal roof, gutters, leaders, structural frame, and other modifications shall be depicted and/or described in the Contract Documents
- Roof elements including ridge caps, translucent panels, and flashings.

SHOP DRAWINGS

The Contractor shall make or provide any shop drawings, cuts or samples which the Owner may require for the approval of details and to show the construction as it will be installed. No shop drawing shall be issued or used until it has been approved by the Owner or his representative. After approval, no changes or deviations shall be made without written notice being sent to the Owner. The Owner's approval shall not relieve the Contractor from responsibility for deviations from the Drawings or Specifications unless he has, in writing, called the Owner's attention to such deviations at the time of submission, nor shall it relieve him from responsibility for errors or omissions of any sort in the Shop Drawing or schedule. The Contractor shall submit six (6) copies of each requested item to the Owner for approval.

SUPERINTENDENCE AND WORKMEN

The Contractor shall give his constant personal attention to the work while it is in progress, and he shall place it in charge of a QUALIFIED superintendent, who shall have authority to act for the Contractor, and who shall be acceptable to the Owner. The Contractor shall, at all times, employ labor and equipment which shall be sufficient to prosecute the work to full completion in the manner and time specified. All workmen must have sufficient skill and experience in such historic preservation work to properly and satisfactorily perform it and operate the equipment involved. Any person employed by the Contractor whom the Owner may deem incompetent or unfit to perform the work shall be at once discharged and shall not be again employed.

INSPECTION

All proposed work under this Contract shall be performed during and with Owner's approval. The Contractor is advised to inspect carefully the full premises and consult with the Owner regarding any items of construction or reconstruction that may be questionable. The contractor

shall also schedule and coordinate all progress inspections and approvals with the authority having jurisdiction towards passing inspections.

TESTING

The contractor is responsible for scheduling, paying, and submitting the results to the Owner all independent concrete field testing as per ASTM standards, which shall include but not limited to the following:

- a. ASTM C172 - Sampling
- b. ASTM C31 – Casting and Curing Cylinders
- c. ASTM C39 – Compressive Strength Test
- d. ASTM C231/C173 – Air Content
- e. ASTM C1077 – Agency
- f. ASTM C42 – Core Strength

The Contractor shall employ and pay for services of an independent testing agency to perform all testing as may be required by the Town's Designated Representative, local jurisdiction and indicated in the contract documents. Costs for these services are included in Contract Sum.

Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

Contractor Employed Agency:

1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM E699, ASTM C1021, ASTM C1077, ASTM C1093, and ASTM D3740.
2. Laboratory Qualifications: Accredited by IAS according to IAS AC89.
3. Laboratory: Authorized to operate in the State in which the Project is located.
4. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
5. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

MAINTENANCE AND PROTECTION OF TRAFFIC

The Contractor shall so conduct his operations as to interfere to the least extent practicable with the passage of vehicles, pedestrians and all other kinds of public traffic; and he must take every precaution against accidents happening to said vehicles, pedestrians, and other traffic because of his operations. The Contractor shall enforce regulations and restrictions as may be necessary or required for the protection of fire, accidents, property damage, and public nuisance. He shall provide and maintain such toilet facilities at or adjacent to the site as may be required. The Contractor shall erect and maintain such signs, channel and obstruction markers and barricades as may be required for the protection of traffic. The Contractor shall not deposit or store any equipment or materials within the Site Area that may impede traffic

to the adjacent Brookhaven Solid Waste Transfer Station or any existing Waste Management facility.

MAINTENANCE AND PROTECTION OF UTILITIES

- A. The Contractor shall familiarize himself with the existence of structures of municipal and other public service corporations on or adjoining the site of the work and give a reasonable opportunity to and cooperation with the owners of these utilities in the work of reconstructing or altering them. Such reconstruction and alteration shall be so conducted as to delay or interfere as little as practicable with the work of the Contractor. Any additional cost of various items of work because of these utilities shall be included in the price bid for these items.
- B. The Owner shall direct the public utility corporations to shift or remove those utility structures that may be necessary to permit the Contractor to carry out the work in accordance with the Plans. The Contractor shall not remove or cause to be removed, any structure owned by a public utility corporation without the approval of the Owner.
- C. The Contractor shall cooperate with the public utility corporation whose structures (aerial, surface or subsurface) are within the limits of or along the outside of the right-of-way, to make it possible for them to maintain uninterrupted service. The Contractor shall conduct his operations in such a way as to delay or interfere as little as practicable with the work of the utility corporation.

LABOR, LAWS, AND WORKMANSHIP

- A. All Contractors and Subcontractors employed upon the work shall and will be required to conform to the Labors Laws of the State of New York, the Occupation Safety and Health Act of the various acts amendatory and supplementary thereto; and to all other laws, ordinances and legal requirements applicable thereto.
- B. All labor shall be performed in the best and most workmanlike manner by mechanics skilled in their respective trades. The standards of the work required throughout shall be of such grade as will bring results of the first class only.

QUALIFICATIONS

All bidders must have been established in the type of construction as specified in the Contract Documents for a period of at least five (5) years. Bidders must furnish a list of a minimum of five (5) projects of similar type construction that was built by them in the Nassau- Suffolk area with their bids. The list must contain the name, address and telephone number of client's Owner for which each project was undertaken by Contract. References must be submitted with bid submission.

APPROVAL OF SUBCONTRACTORS

- A. No Subcontractors shall be employed on the work unless prior approval has been given by the Owner. The Contract shall, within five (5) days after signing of the Contract, submit a list of proposed Subcontractors to the Owner for approval. The list shall contain firm names, names of all principals and addresses and projects completed by each Subcontractor and names, addresses and telephone numbers of the particular project's Owner for which the Subcontractor on the aforementioned project list must have been of similar nature. A minimum of five (5) projects for each proposed Subcontractor must be submitted.
- B. If for any reason a Subcontractor must be discharged from work, the Contractor shall notify the Owner at least 24 hours prior to discharge, stating the reasons, and shall provide the Owner with the name and qualifications of the replacement Subcontractor for approval by the Owner. This action is deemed necessary to maintain continuity of the work and to minimize project disruptions. All costs due to the slowdown of the project for such reasons shall be borne by the Contractor.

STANDARD SPECIFICATIONS

Where reference is made in these Specifications to a society, the portion referred to shall be read into and shall be a part of this Contract and Specifications. Materials, methods, and equipment shall conform to the latest A.S.T.M., A.W.P.A., A.S.A., N.E.C., I.E.S., etc. Specifications as may relate to or govern the construction work.

CONTRACT DRAWINGS

A. The Contract drawings which accompany and form part of these Specifications, bear the general title TOWN OF BROOKHAVEN SOLID WASTE PRE-ENGINEERED ISOLATION LEAN-TO, Suffolk County, New York and separately numbered and entitled as follows:

G-001; COVER SHEET
G-002; GENERAL NOTES
C-001; SITE PLAN & DETAILS
A-001; FOUNDATION PLAN & DETAILS
A-100; FLOOR & ROOF PLAN
A-200; ELEVATIONS & DETAILS
A-300; SECTIONS & DETAILS
A-301; SECTIONS & DETAILS
A-302; SECTIONS & DETAILS
E-001; GENERAL NOTES & SCHEDULES

CLEAN-UP

The Contractor shall at all times keep the construction area, including storage areas used by him, free from accumulation of waste material and rubbish and prior to completion of the work, remove any rubbish from and about the premises. Upon completion of the construction, the Contractor shall leave the work premises in a clean, neat and workmanlike condition satisfactory to the Owner.

GUARANTEES

- A. Before issuance of the final certificate, the Contractor shall deliver to the Owner the following guarantees in addition to those specifically required in the General Conditions and in the various technical sections.
- B. The Contractor hereby guarantees that all materials and workmanship installed under his respective contract to be new and of good quality in every respect and to remain so for a period of one (1) year or for longer periods where so provided for in the Specifications, from the date of issuance of the Final Certificate by the Owner.
- C. Should any defects develop in the aforesaid work within the stipulated periods due to faults in materials and/or workmanship, the Contractor hereby agrees to make all repairs and do all necessary work to correct the defective parts. Such repairs and corrective work, including the cost of making good all other work damaged by or otherwise affected by making of the repairs or corrective work shall be done without any cost or expense to the owner, and at the entire cost and expense of the Contractor, within five (5) days after notice to the Contractor. The owner may have the work done and charge the cost thereof to the Contractor and/or his Sureties who agree to pay the owner the cost of such work if the Contractor fails to respond as required.

PAYMENTS

Payment(s) made under this Contract will be made on the basis of actual work completed in accordance with the Contract Documents. Payments will be computed from the unit and lump sum bid. Payment will only be made for the items shown in the Proposal Form.

END OF SECTION 01010 GENERAL

SECTION 01025-MEASUREMENT AND PAYMENTS

DESCRIPTION

The Contractor shall furnish all labor, materials, tools, equipment, appurtenances and all services necessary to perform all Work as required by the plans and specifications or as required by the Owner, at the lump sum or unit prices for the items listed herein.

OWNER'S ESTIMATE OF QUANTITIES

The Owner's estimated quantities for unit price pay items are approximate only and are included solely for the purpose of comparison of Bids. The Owner's does not expressly or by implication agrees that the nature of the materials encountered below the surface of the ground or the actual quantities of material encountered or required will correspond with the estimated quantities.

Item 26021-001 – GENERAL REQUIREMENTS, MOBILIZATION & TEMPORARY TOILETS

- 1) Method of Measurement: The Contractor shall receive the lump sum price for the **General requirements, mobilization, & temporary toilets** as required.
- 2) Method of Payment: Payment for this item shall be a lump sum. Compensation under this work item shall be made separately and based upon the completion of the work by percentage. All costs of equipment, labor, materials and other incidentals necessary to satisfactorily complete the work in accordance with the plans, specifications, and/or as directed by the Owner shall be included in the lump sum price bid for this Item.
- 3) Intent: The contractor shall provide fully functional, OSHA compliant and owner coordinated site. The contractor shall not disrupt daily SOLID WASTE operations during all construction effort working towards a completed structure.

Item 26021-002 – SITE WORK & DRAINAGE

- 1) Method of Measurement: The Contractor shall receive the lump sum price for the **Site Work & Drainage** as shown on the Contract Drawings.
- 2) Method of Payment: Payment will be made at the contract price and shall include the cost of furnishing all labor, material, and equipment required to furnish and place the sitework as specified and shown in the contract drawings.
- 3) Intent: The contractor shall perform all work as described in the Construction Documents which shall include but not limited to the following:
 - a. Concrete Leaching Pools

- b. Drainage Pipes
- c. Asphalt Repair/Replacement at all disturbed areas.

Item 26021-003 – RELOCATION OF UNDERGROUND PRIMARY ELECTRICAL SERVICE (NO DUCT BANK)

- 1) Method of Measurement:
 - a. This Item shall be paid for on a Lump Sum basis.
 - b. No measurement of quantities shall be made.
- 2) Method of Payment:
 - a. Payment for this Item shall be based on the Contract Lump Sum Price.
 - b. The Lump Sum Price shall represent full compensation for relocation of an existing underground primary electrical service not requiring reinforced concrete duct bank construction.
 - c. The Lump Sum Price shall be based on a complete and fully functional relocation of the existing underground primary electrical service within the limits of work indicated on the Contract Drawings, and shall include all materials, equipment, labor, and work necessary to meet utility requirements. The Contractor shall account for all conditions that may be encountered, including but not limited to:
 - i. Existing direct-buried primary cable
 - ii. Existing conduit installation
 - iii. Multiple primary conductors and/or concentric neutral cable configurations
 - iv. Replacement of primary cable and/or installation of new conduit system within the limits of work indicated, including all extensions, transitions, and connections required to complete the relocation
 - v. All required splicing, terminations, and transitions
 - vi. Installation within utility structures, including TS boxes or equivalent
 - d. Compensation under this Item shall include all labor, materials, equipment, and incidentals necessary to complete the work, including but not limited to:
 - i. Removal, abandonment, or relocation of existing primary facilities
 - ii. Furnishing and installation of TS boxes, including precast structures, covers, frames, hardware, and all terminations and connections
 - iii. Furnishing and installation of new primary conduit system or direct-buried installation as required
 - iv. Furnishing and installation of new primary cable, including all conductors and neutrals
 - v. All splicing, terminations, and connections

- vi. All required utility coordination, outages, switching, and inspections
 - vii. Excavation, trenching, sheeting, shoring, dewatering, backfill, and compaction
 - viii. Restoration of all disturbed surfaces
 - ix. Warning tape, tracer wire, and identification systems
 - x. Testing, commissioning, and energization
 - xi. No separate payment shall be made for variations in cable type, size, configuration, installation method, soil conditions, groundwater conditions, or utility requirements.
 - xii. No separate payment shall be made for TS boxes or other utility-required structures; all such costs shall be included in the Lump Sum Price.
 - xiii. All materials, equipment, and installation methods shall comply with applicable utility standards and NEC requirements where applicable.
- 3) 3) Intent: The Contractor shall perform all work necessary to relocate the existing underground primary electrical service, complete and operational, in accordance with the Contract Documents and applicable utility standards.

Item 26021-003A – ADD ALTERNATE: CONCRETE DUCT BANK FOR UNDERGROUND PRIMARY ELECTRICAL SERVICE (LUMP SUM)

- 1) Method of Measurement:
 - a. This Item shall be paid for on a Lump Sum basis.
 - b. No measurement of quantities shall be made.
- 2) Method of Payment:
 - a. Payment for this Item shall be based on the Contract Lump Sum Price as an Add Alternate to Item 26021-003.
 - b. The Lump Sum Price shall represent full compensation for the additional cost required to modify an existing, and construct new underground primary electrical service utilizing reinforced concrete duct bank in lieu of direct-buried or non-encased conduit installation.
 - c. This Item shall include only the incremental cost difference between duct bank construction and the work included under Item 26021-003. No duplication of costs included in the base bid shall be included in this Item.
 - d. Compensation under this Item shall include all labor, materials, equipment, and incidentals necessary for duct bank construction, including but not limited to:
 - i. Modification of existing duct bank systems, including sawcutting, coring, demolition, excavation, and reconstruction required to expose, extend, connect to, or transition from existing duct bank installations
 - ii. Furnishing and installation of new duct bank constructed to match existing conditions, including number and size of

- conduits, spacing, encasement, and configuration as required by the utility
 - iii. Furnishing and installation of conduits within duct bank
 - iv. Reinforced concrete encasement, including concrete, placement, and finishing
 - v. Reinforcement, doweling, and structural integration with existing duct bank where required
 - vi. Conduit spacers, supports, and alignment systems
 - vii. Increased excavation width and depth required for duct bank installation
 - viii. Thermal backfill, controlled low-strength material (CLSM), or special backfill where required
 - ix. Transitions to and from duct bank sections
 - x. Coordination with utility requirements for duct bank configuration
 - e. No separate payment shall be made for connections to existing duct banks, including cutting, demolition, reconstruction, doweling, or restoration required to integrate new work with existing installations; all such costs shall be included in the Lump Sum Price.
 - f. No separate payment shall be made for variations in number of conduits, conduit size, spacing, encasement thickness, reinforcement, or configuration required to match existing conditions or meet utility requirements.
 - g. All materials, equipment, and installation methods shall comply with applicable utility standards and NEC requirements where applicable..
- 3) Intent:
- a. This Item provides compensation for the additional work required when the underground primary electrical service must be installed in reinforced concrete duct bank, including modification of and connection to existing duct bank systems, as required by the utility or directed by the Owner.
 - b. Work under this Item shall be complete and coordinated with Item 26021-003 to provide a fully functional primary electrical service installation.

Item 26021-004 – PRE-ENGINEERED METAL BUILDING

- 4) Method of Measurement: The Contractor shall receive the lump sum price for the **Pre-Engineered Isolation Lean-To** as shown on the Contract Drawings.
- 5) Method of Payment: Payment for this item shall be a lump sum. Compensation under this work item shall be made separately and based upon the completion of the work by percentage. All costs of equipment, labor, materials and other incidentals necessary to satisfactorily complete the work in accordance with the plans, specifications, and/or as directed by the Owner shall be included in the lump sum price bid for this Item. Included with the

cost of this item, is complete building permit drawings stamped and sealed by a licensed design professional. The bid drawings have been prepared for bidding purposes only.

- 6) Intent: The contractor shall perform all work as described in the Construction Documents which shall include but not limited to the following:
 - a. Pre-Engineered Metal Building from a certified Manufacturer
 - b. Roof, trim, and gutter systems

Item 26021-005 – CONCRETE SLAB

- 2) Method of Measurement: The Contractor shall receive the lump sum price for the **Concrete Slab Work** as shown on the Contract Drawings.
- 3) Method of Payment: Payment for this item shall be a lump sum. Compensation under this work item shall be made separately and based upon the completion of the work by percentage. All costs of equipment, labor, materials and other incidentals necessary to satisfactorily complete the work in accordance with the plans, specifications, and/or as directed by the Owner shall be included in the lump sum price bid for this Item.
- 4) Intent: The contractor shall perform all work as described in the Construction Documents which shall include but not limited to the following:
 - a. Concrete slab, apron and subbase
 - b. Reinforcements
 - c. Haunches
 - d. Bollards
 - e. Unclassified Excavation
- 5) Testing: The contractor is responsible for all independent concrete field testing as per ASTM standards, which shall include but not limited to the following:
 - a. ASTM C172 - Sampling
 - b. ASTM C31 – Casting and Curing Cylinders
 - c. ASTM C39 – Compressive Strength Test
 - d. ASTM C231/C173 – Air Content
 - e. ASTM C1077 – Agency
 - f. ASTM C42 – Core Strength

Item 26021-006 – CONCRETE FOUNDATION

- 1) Method of Measurement: The Contractor shall receive the lump sum price for the **Concrete Foundation Work** as shown on the Contract Drawings.
- 2) Method of Payment: Payment for this item shall be a lump sum. Compensation under this work item shall be made separately and based upon

the completion of the work by percentage. All costs of equipment, labor, materials, testing (compaction and other incidentals necessary to satisfactorily complete the work in accordance with the plans, specifications, and/or as directed by the Owner shall be included in the lump sum price bid for this Item. Included with the cost of this item, is complete foundation drawings stamped and sealed by a licensed design professional. The foundation design shall incorporate the specific building reactions and use the geotechnical information provided with the bid documents. The bid drawings have been prepared for bidding purposes only.

- 3) Intent: The contractor shall perform all work as described in the Construction Documents which shall include but not limited to the following:
 - a. Concrete foundation walls and footings
- 4) Testing: The contractor is responsible for all independent concrete field testing as per ASTM standards, which shall include but not limited to the following:
 - a. ASTM C172 - Sampling
 - b. ASTM C31 – Casting and Curing Cylinders
 - c. ASTM C39 – Compressive Strength Test
 - d. ASTM C231/C173 – Air Content
 - e. ASTM C1077 – Agency
 - f. ASTM C42 – Core Strength

Item 26021-007 – CONCRETE ECOLOGY BLOCKS

- 1) Method of Measurement: Payment for the **Concrete Ecology Blocks** will be made at the unit price bid per linear foot installed and measured in place. Measurement of each linear foot shall include full height stacked ecology block as described in the Contract Drawings.
- 2) Method of Payment: Payment will be made at the contract price and shall include the cost of furnishing all labor, material, and equipment required to furnish and place the ecology blocks as specified and shown in the contract drawings.

Item 26021-008 – CONCRETE CURB

- 1) Method of Measurement: Payment for the **Concrete Curb** will be made at the unit price bid per Linear foot installed and measured in place.
- 2) Method of Payment: Payment will be made at the contract price and shall include the cost of furnishing all labor, material, equipment and testing required to furnish and place the curb as specified and shown in the contract drawings.

Item 26021-009 – ALLOWANCE

- 1) Include in the contract sum the amount indicated (**\$5,000.00**) to cover the cost of additional labor and materials for contingent activities within the scope of the Contract as directed in writing by the Engineer. The written order will include a description of the Work and a method for determining the cost of such work. This item is NOT an entitlement and is only used when directly authorized by the Town.
- 2) The value of the directed Work under this allowance will be determined by one of the methods authorized in the Conditional of Contract.

End of SECTION 01025-MEASUREMENT AND PAYMENTS

SECTION 01500 – CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

SCOPE

Work shall include but not be limited to the following:

- A. Temporary Utilities –Water and sanitary facilities.
- B. Temporary Controls – Barriers, enclosures and fencing, and protection of the Work.
- C. Construction Facilities – Access roads, parking, progress cleaning, project signage, and temporary buildings.

TEMPORARY SANITARY FACILITIES

- A. The Contractor shall provide at the site suitable enclosed toilet facilities for the use of construction personnel. The Contractor shall observe and enforce all sanitary regulations and maintain satisfactory sanitary conditions around and on all parts of the work.
- B. An adequate washing facility shall be provided for the construction personnel.
- C. The Contractor shall maintain, service, clean, and disinfect facilities in a satisfactory manner and enforce proper use of the sanitary facilities.
- D. The Contractor shall be subject to a fine and prosecution if any human excrement is deposited in or around the construction site.
- E. The Contractor shall pay for all expenses associated with temporary sanitary facilities during the course of the work, including furnishing all necessary permits and fees required for temporary sanitary facilities.
- F. Comply with all applicable codes and arrange for all necessary inspections and approvals.

FIRST-AID FACILITIES AND ACCIDENTS

- A. First Aid Facilities and Accidents
- B. The Contractor shall provide, at the site, such equipment and facilities as are necessary to supply first-aid to any of his personnel who may be injured in connection with the work.
- C. Accident:
 - 1. The Contractor shall promptly report in writing to the Owner all accidents and whatsoever arising out of, or in connection with, the performance of the work, whether on or adjacent to the site, which causes death, personal injury or property damage, giving full details and statements of the witness.
 - 2. If death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Owner.
 - 3. If any claim is made by anyone against the Contractor or a Subcontractor on account of any accidents, the Contractor shall promptly report the facts in writing to the Owner, giving full details of the claim.

SECURITY

- A. Provide security and facilities to protect work, and existing facilities, and Owner's operations from unauthorized entry, vandalism or theft.
- B. Coordinate with Owner.
- C. Furnish security during the course of the work.

ACCESS ROAD

- A. Maintain roads accessing construction area and Solid Waste operations as shown on the Construction Drawings.
- B. Extend and relocate as work progress requires. Provide detours necessary for unimpeded traffic flow.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering public and private streets. Clean all mud and debris from construction traffic at no additional expense to the Owner. Comply with all State and Local regulations.
- E. Designated existing on-site roads may be used for construction traffic, as directed by the Owner. Damage to existing site roads as a result of this Contract will be the responsibility of the Contractor.

PARKING

- A. The Contractor's personnel shall not park on the main road or adjacent private side streets.
- B. When space is not adequate, provide additional parking as designated by the Town.

PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris and rubbish. Maintain site in a clean and orderly condition.
- B. Remove waste materials, debris and rubbish from the site and dispose weekly in areas as designated by the Owner.

REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary above grade or buried utilities, equipment, facilities, materials, prior to Final Applications for Payment Inspections.
- B. Clean and repair damage caused by the installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified conditions.

END OF SECTION 01500 – CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

SECTION 01501 – HEALTH AND SAFETY PROVISIONS**REQUIREMENTS**

- A. The Contractor shall be responsible to maintain a safe workplace and to monitor working conditions at all times during construction and, as necessary, to provide appropriate protective clothing, equipment and facilities for his personnel, and/or to establish work place procedures to ensure their safety, and to enforce the use of these procedures, equipment and/or facilities in accordance with the following guidelines:
1. Safety and Health Regulations Promulgated by the U.S. Department of Labor OSHA, 29 CFR 1910 – Occupational Safety and Health Standards, and 29 CFR 1920 – Safety and Health Regulations for Construction.
 2. U.S. Environmental Protection Agency Medical Monitoring Program Guidelines.
- B. If, at any time, the Owner is apprised of a safety hazard which demands immediate attention because of its high potential for harm to public travel, persons on or about the work, or public or private property, the owner shall have the right to order such safeguards to be erected and such precautions to be taken as necessary and the Contractor shall comply with such orders. If, under such circumstances, the Contractor does not or cannot or his representative is not upon the site so that he can be notified immediately of the insufficiency of safety precautions, the Owner may put the work into such a condition that it shall be, in his opinion, in all respects safety, and the Contractor shall pay all expenses of such labor and materials as may have been used for this purpose by him or by the Owner. The fact that the Owner or their representative does not observe a safety hazard or does not order the Contractor to take remedial measures shall in no way relieve the Contractor of the entire responsibility for any costs or claims for loss, damage, or injury by or against any part sustained on account of the insufficiency of the safety precautions taken by him or by the Owner acting under authority of this Section.
- C. It is the responsibility of the Contractor to take appropriate safety precautions to meet whatever conditions of hazard may be present during the performance of the work, whether reasonably foreseeable or not. The Contractor is alerted to the fact that it shall be his sole responsibility to anticipate and provide such additional safety precautions, facilities, personnel and equipment as shall be necessary to protect life and property from whatsoever conditions of hazard are present or may be present.

END OF SECTION 01501 – HEALTH AND SAFETY PROVISIONS

SECTION 03 20 00 CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Reinforcement for cast-in-place concrete.
 - 2. Mechanical splices.
- B. Extent of cast-in-place concrete Work is shown on the Drawings. Provide all materials, labor, hardware, equipment, transportation, and services required to fabricate and place all reinforcement for cast-in-place concrete.
- C. Cooperation with Work of other Sections:
 - 1. Check Contract Drawings and Specifications for requirements of other sections which affect the installation of reinforcement.
 - 2. Examine the Drawings and Specifications for all Contracts to determine nature of proposed construction. Perform work in a manner which will not interfere or delay work of other Contractors. Cooperate with other trades regarding installation of embedded items. Templates and instructions will be provided for setting items placed in forms.
 - 3. Inform those performing Work of other Sections, in writing or by schedules, of requirements for services, materials, and built-in terms prepared or supplied by other Sections which affect Work of this Section.
- D. Related Sections: The following sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Submittal Procedures" for submittal requirements.
 - 2. Division 1 Section "Quality Requirements" for testing requirements.
 - 3. Division 3 Section "Cast-in-Place Concrete."

1.02 SUBMITTALS

- A. Shop Drawings - Submit shop drawings and product data to include all information necessary for fabrication and placement of reinforcement as follows:
- B. Detail and placement Drawings shall be prepared in accordance with CRSI Standards to define and establish the location, size, spacing, length, and shape of reinforcing and all other pertinent information required. Indicate grades of reinforcing steel. Detail wall reinforcing on wall elevations. Clearly indicate the splice length for every size and type of bar used. Include all other project requirements affecting reinforcing details and placing, such as openings, curbs, and depressions.
 - 1. Drawings indicating the type, size, and location of all accessories required for the proper assembly, placement, and support of the reinforcement.
- C. Mill Test Reports
 - 1. Submit certified copies of mill test reports for reinforcing steel, including statement of compliance with specified ASTM Standards.

1.03 QUALITY ASSURANCE

- A. Codes and Standards: Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations of the latest editions of the following:
 - 1. ASTM A 36: Standard Specification for Carbon Structural Steel.
 - 2. ASTM A 82: Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
 - 3. ASTM A185: Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

4. ASTM A 496: Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.
 5. ASTM A 497: Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.
 6. ASTM A 576: Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality.
 7. ASTM A 615: Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
 8. ASTM A 706: Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
 9. ASTM A 767: Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
 10. ASTM A 780: Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
 11. ASTM A 820: Standard Specification for Steel Fibers for Fiber-Reinforced Concrete.
 12. ASTM C 1116: Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
 13. ASTM C 1399: Test Method for Obtaining Average Residual-Strength of Fiber-Reinforced Concrete.
 14. ACI 117: Specifications for Tolerances for Concrete Construction and Materials and Commentary.
 15. ACI 301: Specifications for Structural Concrete.
 16. ACI 318: Building Code Requirements for Structural Concrete and Commentary.
 17. ANSI/AWS D 1.4: Structural Welding Code – Reinforcing Steel.
 18. CRSI: Manual of Standard Practice.
 19. CRSI: Placing Reinforcement Bars.
- B. In case of conflict between specified codes and standards, the most stringent requirements shall govern. In case of conflict between specified codes and standards and project specifications, project specifications shall govern. In case of conflicts between Contract Documents, immediately notify the Architect/Engineer for resolution.
- C. Pre-Construction Conference: The Reinforcing-Placing subcontractor shall attend the Pre-Construction Conference conducted by the Concrete Contractor as described in Division 3 Section "Cast-in-Place Concrete."

1.04 DELIVERY, STORAGE AND HANDLING

- A. Bundle reinforcement and tag with suitable identification to facilitate sorting and placing.
- B. Sequence the shipments of material to the site to minimize field handling and storage.
- C. Store the reinforcing steel on premises in a neat and orderly manner under cover and off ground. Protect the reinforcement from damage, dirt and corrosion. Provide proper drainage.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Bar reinforcement - Newly rolled billet steel conforming to the following.
 - 1. All reinforcing bars: ASTM A 615-Grade 60 unless otherwise noted on the Drawings.
 - 2. All reinforcing bars to be welded: ASTM A 706-Grade 60.
- B. Threaded bar couplers: Acceptable are:
 - 1. Dowel Bar Splicer by Dayton/Richmond.
 - 2. Lenton by ERICO International Corporation.
 - 3. Grip Twist Barsplice, Inc.
- C. Hooked anchorage replacement: ASTM A576, Acceptable are:
 - 1. Lenton Terminator by ERICO International Corporation.
 - 2. BPI DoughNUT termination System by Barsplice Products, Inc.
- D. Welded Wire Reinforcement: ASTM A 185 with a yield strength of 65,000 PSI. Deliver in sheets, not rolls.
- E. Smooth Round Steel Dowels: ASTM A 615-Grade 40 or ASTM A 36. Ends of dowels are to be sawn squared ends or grind each end to remove all projecting burrs. Dowels to be placed in dowel baskets to maintain alignment during concrete placement. Thoroughly coat at least half the length of each dowel with a bond breaking material such as grease.
- F. Reinforcement Accessories:
 - 1. Provide all spacers, chairs, ties, slab bolsters, clips, chair bars, and other devices for properly assembling, placing, spacing, supporting, and fastening the reinforcement.
 - 2. Use individual and continuous slab bolsters and chairs of a type to suit the various conditions encountered. The chairs and bolsters must be capable of supporting a 300-lb concentrated load without measurable permanent deformation of the reinforcement or supports or indentation of the supporting surface.
 - 3. Use accessories which conform to CRSI Bar Support Specifications, Class 1 or Class 2, in contact with surfaces exposed to view in the finished work.
 - 4. Support reinforcement for slabs on grade on plastic or steel supports designed for the purpose or precast concrete bricks of a type approved by the Architect/Engineer. Use sand plates or other means to support chairs at proper elevation on base material. Wood blocks, stones, brick chips, etc., are not acceptable.

PART 3 EXECUTION

3.01 DETAILING OF REINFORCING STEEL

- A. Detail reinforcing bars in accordance with the requirements of the Standard Practice for Detailing Reinforced Concrete Structures (ACI 315).
- B. Avoid splicing reinforcement at points of maximum stress.
- C. Detail reinforcing to allow clearance for intersecting reinforcing bar layers with minimum specified cover.

3.02 FABRICATION OF REINFORCEMENT

- A. Accurately form the reinforcement to dimensions on the approved shop drawings, details, and schedules.
- B. Do not commence fabrication until the shop drawings, details, and schedules have been reviewed by the Architect/Engineer.

- C. Cold bend all reinforcement. Do not heat reinforcing for any purpose except as specifically accepted by the Architect/Engineer.
- D. Do not form bars in a manner injurious to the bars. Bars with kinks or bends not shown on the Drawings and bars reduced in section will be rejected.

3.03 INSTALLATION OF REINFORCEMENT

- A. Install reinforcing only from Shop Drawings which have been reviewed by the Architect/Engineer.
- B. Accurately place and rigidly secure reinforcing in position in accordance with the requirements of Recommended Practice for Placing Reinforcing Bars and requirements specified herein and on the Drawings.
- C. Tie reinforcing with specified tie wire and bend all wire back beyond general plane of reinforcing.
- D. Provide continuous welded wire reinforcement where shown in slabs with joints lapped at least one full mesh or two full mesh at construction joints, but not less than 6-inches (150 mm). Tie securely and support reinforcement at the proper elevation by accessories. Stagger laps of sheets to avoid a continuous lap in either direction. Provide supports to maintain the reinforcement in its proper position during placement of the concrete.
- E. Bending, tack welding, cutting or substituting reinforcement in the field, other than that shown on the Contract Drawings, is prohibited unless specific approval for each case is given by the Architect/Engineer.
- F. Remove any excessive rust, scale, or other foreign substances from the reinforcement which might destroy or reduce bond prior to placing concrete.
- G. Avoid exposure of reinforcement to the weather for any considerable length of time before placing of concrete. Where this is unavoidable, paint reinforcement with a heavy coat of cement grout. Be responsible for protecting the exposed concrete and any other materials against staining from exposed reinforcement.
- H. Before the concrete is cast, check all reinforcement after it is placed to insure that reinforcement conforms to Contract Drawings, shop detail drawings, and Specification requirements. Use only qualified experienced personnel to check. Notify the Architect/Engineer's representative at least 36 hours (excluding weekends and holidays) prior to the concrete placement to give the opportunity to observe the completed reinforcement and formwork before concrete placement.
- I. Remove and replace damaged bars.
- J. Splice the reinforcing only as shown on the Drawings or as approved by the Architect/Engineer. All lap splices shall be contact lap splice.
- K. Do not tack welded wire reinforcement around structural steel members to be encased in concrete. Use tie wires and lap to securely hold in position.
- L. Mechanical, Electrical, and Plumbing Requirements:
 - 1. Refer to mechanical, electrical, and plumbing drawings for formed concrete requiring reinforcement steel.

3.04 FIELD QUALITY CONTROL

- A. Owner's Testing Agency: Refer to Division 1 Section "Code-Required Structural Inspection and Procedures" for "Concrete Reinforcement" inspection and test requirements.

END OF SECTION 03 20 00 CONCRETE REINFORCEMENT

SECTION 03 30 00 CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Cast-in-place concrete.
 - 2. Curing compound.
 - 3. Grouts.
- B. Extent of cast-in-place concrete Work is shown on the drawings. Provide all materials, labor, services, equipment, transportation, and hardware required for all cast-in-place concrete. Include additional concrete required to compensate for deflection of steel framing by other trades.
- C. Cooperation with Work of other Sections:
 - 1. Check Contract Drawings and Specifications for requirements of other Sections which affect the placement of cast-in-place concrete.
 - 2. Examine the Drawings and Specifications for all Contracts to determine nature of proposed construction. Perform work in a manner which will not interfere or delay work of other Contractors. Cooperate with other trades regarding installation of embedded items. Templates and instructions will be provided for setting items placed in forms.
 - 3. Inform those performing Work of other Sections, in writing or by schedules, of requirements for services, materials and built-in terms prepared or supplied by other Sections which affect Work of this Section.
- D. Related Sections: The following sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Submittal Procedures" for submittal requirements.
 - 2. Division 1 Section "Code Required Structural Special Inspections and Procedures" for testing requirements.
 - 3. Division 3 sections for related concrete formwork and reinforcing.
 - 4. Division 5 sections for stay-in-place metal forms and for methods of attachment to hardened concrete.
 - 5. Division 31 sections for concrete work related to sitework.
- E. Responsibility of the Contractor:
 - 1. The design, strength, safety and adequacy of all methods of construction, and the strength, slump, consistency, finish and general quality of concrete are the responsibility of the Contractor. No action by the Architect/Engineer will eliminate, lessen or restrict this responsibility in any manner.

1.02 SUBMITTALS

- A. Manufacturer's Data: For standard factory manufactured materials, including specifications for application and installation of proprietary items and materials such as bonding agents, admixtures, curing and sealing compounds, patching compounds, grouts, hardeners, epoxies, and dryshake finish materials.
- B. Concrete design mixes and backup data: Refer to Part 2 Article "Concrete Mix Design" in this Section for requirements. Include test reports on the following:
 - 1. Gradation analysis and soundness tests for coarse and fine aggregate. Identify sources of aggregate.
 - 2. Mill test reports on cement, including brand, type and source of supply.
 - 3. Compression tests on trial cylinders.
 - 4. Slump and air content of trial batches.
 - 5. Admixture certification, including chloride ion content.

- C. Samples to Testing Agency: Concrete constituents including admixtures.
- D. Shop drawings showing locations of all sleeves, depressions, and curbs.
- E. Materials and methods for curing concrete.
- F. Methods proposed for hot weather and cold weather curing and protection of concrete - submit prior to commencement of any concrete work.
- G. Method of developing bond at joints.
- H. Pre-Construction Conference meeting minutes.

1.03**QUALITY ASSURANCE**

- A. Codes and Standards: Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations of the latest editions of the following:
 - 1. ASTM C33: Standard Specification for Concrete Aggregates.
 - 2. ASTM C39: Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - 3. ASTM C94: Specification for Ready Mixed Concrete.
 - 4. ASTM C150: Specification for Portland Cement.
 - 5. ASTM C157: Test Method for Length Changes of Hardened Hydraulic – Cement Mortar and Concrete.
 - 6. ASTM C171: Standard Specification for Sheet Materials for Curing Concrete.
 - 7. ASTM C192: Practice for Making and Curing Concrete Test Specimens in the Laboratory.
 - 8. ASTM C295: Standard Guide for Petrographic Examination of Aggregates for Concrete.
 - 9. ASTM C260: Specification for Air-Entraining Admixtures for Concrete.
 - 10. ASTM C330: Standard Specification for Lightweight Aggregates for Structural Concrete.
 - 11. ASTM C494: Standard Specification for Chemical Admixtures for Concrete.
 - 12. ASTM C595: Standard Specification for Blended Hydraulic Cements.
 - 13. ASTM C618: Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.”
 - 14. ASTM C881: Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
 - 15. ASTM C989: Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
 - 16. ASTM C1059: Standard Specification for Latex Agents for Bonding Fresh To Hardened Concrete.
 - 17. ASTM C1107: Standard Specification for Packages Dry, Hydraulic-Cement Grout (Non-Shrink).
 - 18. ASTM C1116: Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
 - 19. ASTM C1218: Test Method for Water-Soluble Chloride in Mortar and Concrete.
 - 20. ASTM C1240: Standard Specification for Silica Fume for Use as a Mineral Admixture in Hydraulic-Cement Concrete, Mortar, and Grout.
 - 21. ASTM C1315: Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
 - 22. ASTM D1751: Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
 - 23. ASTM D1752: Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
 - 24. ASTM D2240: Test Method for Rubber Property – Durometer Hardness.
 - 25. ASTM D4397: Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.
 - 26. ASTM D6817: Standard Specification for Rigid, Cellular Polystyrene Geofoam.
 - 27. ASTM E154: Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Wall, or as Ground Cover.

28. ASTM E1155: Standard Test Method for Determining Floor Flatness and Levelness Using the F-Number System.
 29. ASTM E1643: Standard Practice for Installation of Water Vapor Retarders used in Contact with Earth or Granular Fill Under Concrete Slabs.
 30. ASTM E1745: Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
 31. ACI 211.1: Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
 32. ACI 211.2: Standard Practice for Selecting Proportions for Structural Lightweight Concrete.
 33. ANSI/AWS D1.4: Structural Welding Code – Reinforcing Steel.
 34. NRMCA: Concrete Plant Standards and Truck Mixer and Agitator Standards.
 35. CRSI: Manual of Standard Practice.
 36. CRSI: Placing Reinforcement Bars.
- B. In case of conflict between specified codes and standards, the most stringent requirements shall govern. In case of conflict between specified codes and standards and project Specifications, project Specifications shall govern. In case of conflicts between Contract Documents, immediately notify the Architect/Engineer for resolution.
- A. Pre-Construction Conference:
1. At least 30 days prior to submitting the concrete mix designs for approval, the Contractor shall conduct a meeting to review the detailed requirements for preparing the concrete mix designs and to determine the procedures for producing proper concrete construction within the specified tolerances and required quality.
 2. Responsible representatives from all concerned parties are required to attend the conference including, but not limited to, the following:
 - a. Contractor's superintendent.
 - b. Architect/Engineer.
 - c. Laboratory responsible for concrete mix designs.
 - d. Owner's Testing Agency.
 - e. Concrete subcontractor.
 - f. Formwork subcontractor
 - g. Reinforcement-placement subcontractor
 - h. Ready-mix concrete supplier.
 - i. Admixture manufacturer(s).
 - j. Concrete pumping equipment operator.
 3. The contractor shall send a pre-construction conference agenda to all attendees 7 days prior to the scheduled date of the conference.
 4. Review requirements for submittals, status of coordinating work and availability of materials. Establish proposed work progress schedule and testing procedures.
 5. Record and distribute legible meeting minutes within 5 days to all parties in attendance at the conference. Include a statement from the suppliers indicating that the proposed concrete mix design(s) and method(s) of placement will produce concrete(s) of the quality required by these Specifications. Transmit an additional copy to the Owner's Representative.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Comply with ACI 301 and with ACI 304.

1.05 QUALIFICATIONS

- A. The concrete supplier shall have a minimum of five years experience in manufacturing ready-mixed concrete products complying with ASTM C94 requirements for production facilities and equipment. The supplier must be certified according to the National Ready Mixed Concrete Association's Certification of Ready Mixed Concrete Production Facilities.

- B. The concrete contractor shall have a minimum of five years experience with installation of concrete similar in material, design and extent to that indicated for this Project and whose work has resulted in construction with a record of successful-service performance.
- C. Inspection and Testing of the Work: Materials and installed work may require testing and retesting, as directed by the Architect/Engineer, at any time during progress of work. Allow free access to material stockpiles and facilities. Tests, not specifically indicated to be done at the Owner's expense, including retesting of rejected materials and installed work, shall be done at the Contractor's expense. See ["Quality Requirements"] ["Quality Control"] section of the Specifications.
 - 1. Inspection or testing by the Owner does not relieve the Contractor of his responsibility to perform the Work in accordance with the Contract Documents.
- D. Acceptance Criteria for Concrete Strength: The strength level of an individual class of concrete shall be considered satisfactory if both the following requirements are met:
 - 1. The average of all sets of three consecutive strength tests equal or exceed the required f'_c .
 - 2. No individual strength test falls below the required f'_c by more than 500 psi.
 - 3. A strength test shall be defined as the average strength of two cylinder breaks tested at the strength age indicated on the drawings for that class of concrete.
- E. Responsibility for Selection and Use of Concrete Admixtures and Chemical Treatments: The Contractor shall be responsible for selecting admixtures and surface treatments that are compatible with the intended use of the concrete including all final surface treatments called for within this or other specifications or on the structural or architectural drawings. The Contractor is responsible for following the manufacturer's instructions for the use of their product including abiding by any limitations placed by the manufacturer on the use of any of its products.
- F. Survey for Anchor Rods and Reinforcing Steel Dowels: The Contractor shall use a qualified, licensed professional engineer/land surveyor to lay out the proper location of all embedded anchor rods and reinforcing steel dowels for columns above before they are encased in concrete. The surveyed locations of such elements shall be submitted to the Architect/Engineer for record.

PART 2 PRODUCTS

2.01 GENERAL

- A. Use materials from the same source from the start to the finish of the project, unless a change is accepted in writing by the Architect/Engineer.

2.02 CONCRETE MIX MATERIALS

- A. Portland Cement: American made Portland Cement, ASTM C150 Type I or III. For concrete exposed to salt air or salt water, provide Type II or Type V cement.
 - 1. Do not exceed an alkali content of 0.6% unless the manufacturer certifies that no alkali reactivity is produced with the proposed combination of materials when tested in accordance with ASTM C227.
- B. Fine aggregate (normal weight): Washed, inert, non-reactive natural sand conforming to ASTM C-33. Fineness modulus of 2.40 to 3.00. For pumped concrete, 15 to 30 percent passing Number 50 sieve, and 5 to 10 percent passing a Number 100 sieve. Comply with ACI 302 Table 5.4.1 for slab on grade fine aggregates.
- C. Coarse aggregate (normal weight): Washed, non-reactive well graded crushed stone or gravel conforming to ASTM C-33. Refer to Section 2.4 "Concrete Mix Design" for additional requirements.
- G. Water: Potable, clean and free from deleterious substances.
- H. Air Entraining Agent: Comply with ASTM C260. Agent shall be fully compatible with all other concrete mix materials. Subject to project requirements, provide products from one of the following:
 - 1. W.R. Grace Co.

2. The Euclid Chemical Co.
 3. Sika Corp.
 4. BASF Construction Chemicals, LLC
- I. Water reducing and plasticizing admixtures: Comply with ASTM C494, Type A. Acceptable products are:
1. Eucon WR-75 by The Euclid Chemical Co.
 2. WRDA with Hycol by W.R. Grace Co.
 3. Pozzolith 322N or 200N by BASF Construction Chemicals, LLC
 4. Plastocrete 161 by Sika Corp.
- J. Mid range water reducing admixture: Comply with ASTM C494, Type A. Acceptable products are:
1. Eucon MR by The Euclid Chemical Co.
 2. Daracem 55 by W.R. Grace Co.
 3. Polyheed by BASF Construction Chemicals, LLC
- K. High range water reducing (HRWR) admixture (superplasticizer): Comply with ASTM C494, Type F or G. Use only with prior review and acceptance of Architect/ Engineer. Provide a qualified technical representative of the admixture supplier on-site during initial concrete placements to assist in proper usage. Acceptable products are:
1. Daracem 100 by W.R. Grace Co.
 2. Eucon 37 by The Euclid Chemical Co.
 3. Rheobuild 1000 by BASF Construction Chemicals, LLC
 4. Sikament 300 or 320 by Sika Corp.
- L. Accelerating Agent: Non-corrosive, containing no chloride; conform to ASTM C494, Type C or E. Acceptable products are:
1. Accelguard 80 by The Euclid Chemical Co.
 2. Polarset by W.R. Grace Co.
 3. Pozzutec 20 or Pozzolith NC534 by BASF Construction Chemicals, LLC
 4. Plastocrete 161FL by Sika Corp.
- M. Retarding admixtures: For use in hot weather concreting. Comply with ASTM C-494, Type D water-reducing and retarding. Acceptable products are:
1. Plastiment by Sika Chemical Corp.
 2. Pozzolith 100XR by BASF Construction Chemicals, LLC
 3. Eucon Retarder-75 by The Euclid Chemical Co.
- N. Calcium Nitrite corrosion inhibitor: Comply with ASTM C494 Type C. Dosage rate 2 to 6 gallons per cubic yard.
1. Available Products: Subject to compliance with requirements, provide one of the following products:
 - a. DCI by W.R. Grace & Co
 - b. Eucon CIA by The Euclid Chemical Co.
 - c. Rheocrete CNI by BASF Construction Chemicals, LLC.
- O. Calcium Chloride and Chloride Ion Content:
1. Calcium chloride or admixtures containing more than 0.5% chloride ions by weight of the admixture are not permitted.
 2. The maximum water soluble chloride ion concentration in hardened concrete at ages from 28 to 42 days contributed from all ingredients including water, aggregates, cementitious materials, and admixtures shall not exceed the limits specified in ACI 318-02 Table 4.4.1. Water-soluble chloride ion tests shall conform to ASTM C1218.
 3. The Concrete Supplier shall certify that the chloride ion content in all concrete mix designs used on the project will not exceed limits stated above.

2.03 VAPOR RETARDERS

- A. Plastic Vapor Retarder: Not used.

- B. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
1. Below are all Class A ASTM E1745 - with similar properties, cost between 25-35 cents per square foot for materials. See end of section for comparison
 2. Moistop Ultra "A"; Fortifiber Corporation.
 3. Vapor Block 15; Raven Industries Inc.
 4. Griffolyn Type-65G or 105; Griffolyn, Division of Reef Industries, Inc.
 5. Stego Wrap, 15 mils; Stego Industries, LLC.

2.04 FLOOR AND SLAB TREATMENTS

- A. Liquid Densifier/Sealer - 100% active colorless aqueous silicate solution. Apply to moist cured floors where indicated on the Contract Documents at the manufacturer's suggested rate and method of application. Acceptable products are:
1. L&M Seal Hard by LATICRETE International, Inc.
 2. Diamond Hard by The Euclid Chemical Co.
 3. Ashford Formula by Concrete Construction Chemicals.
 4. Mastertop CST by BASF Construction Chemicals, LLC
 5. Sonosil by Sonneborn.

2.05 CURING MATERIALS

- A. Concrete Curing Materials: Use where moist curing is indicated on Contract Documents. Use where bonded toppings, overlays, applied surface treatments or other applied finishes are incompatible with liquid membrane forming curing compounds.
1. Waterproof Paper: ASTM C171.
 2. Polyethylene Film: ASTM C171.
 3. Burlap: Federal Spec CC-C-467A.
- B. Concrete Curing and Sealing Compound (Water Based): Liquid membrane forming type conforming to ASTM C1315. Clear non-yellowing acrylic; minimum solid content of 30%; moisture vapor transmission rate less than 0.40 kg/sq.M for 72 hours when applied at coverage of 300 sq. ft. per gallon. Manufacturer's certification required. Sodium silicate compounds and rubber based products are prohibited. Verify that material used is compatible with any finish material subsequently applied to the concrete surface. Acceptable products are:
1. Dress and Seal WB30 by L & M Construction Chemicals.
 2. Super Diamond Clear VOX by The Euclid Chemical Company.
 3. Highseal 30 by Conspec.

2.06 MISCELLANEOUS RELATED MATERIALS

- A. Non-shrink, non-metallic standard cement grout: For use under steel base plates and bearing plates. Factory premixed grout with no drying, shrinkage or settlement at any age. Compressive strength per ASTM C-1107 of not less than 5,000 psi at 7 days and 8,000 psi at 28 days when placed in flowable consistency. Acceptable products are:
1. Masterflow 555 by BASF Construction Chemicals, LLC
 2. Hi-Flow Grout by The Euclid Chemical Co.
 3. Duragrout by L & M Construction Chemicals
 4. 10K Grout by Sonneborn.
 7. Conform to the requirements of CRD-621 "Corps of Engineers Specifications."
- B. Non-shrink, non-metallic precision grout: For use under machine base plates and other applications with vibration and/or load reversals. Acceptable products are:
1. Crystex by L & M Construction Chemicals.
 2. Five Star Grout by U.S. Grout Corporation.
 3. Masterflow 928 by BASF Construction Chemicals, LLC
 4. 14K Grout by Sonneborn.

- C. Non-Slip Aggregate: Chemically inert natural or man-made non-slip aggregate with MOH hardness of seven or higher; #4 to #16 mesh size. Acceptable products are:
 - 1. Euco Non-Slip Aggregate by The Euclid Chemical Co.
 - 2. Grip-It by L & M Construction Chemicals.
 - 3. Frictex by Sonneborn.
- D. Non-Reemulsifiable Latex: Not less than 48 percent solids. Acceptable products are:
 - 1. SBR Latex by The Euclid Chemical Co.
 - 2. Sikalatex by Sika Corp.
 - 3. Everbond by L & M Construction Chemicals
- E. Epoxy Resin Bonding Agent: ASTM C-881 two component 100 percent solids mineral filled epoxy-polysulfide polymer. Acceptable products are:
 - 1. Sikadur 32 Hi-Mod by Sika Corporation.
 - 2. Euco Epoxy No. 452MV or No. 620 by The Euclid Chemical Company.
 - 3. Sonobond by Sonneborn.
 - 4. Epobond by L&M Construction Chemicals, Inc.
 - 5. Concesive 1090 by BASF Construction Chemicals, LLC
- F. Non-shrink patching mixture: Specially formulated high bond package mixture. Acceptable products are:
 - 1. Euco Speed Patch by The Euclid Chemical Co.
 - 2. Durapatch by L & M Construction Chemicals.
 - 3. Sonopatch by Sonneborn.
 - 4. Sika Set Roadway Patching by Sika Corp.
- G. Polymer Patching Mortar: Free flowing, polymer modified cementitious mortar. Acceptable products are:
 - 1. Sikatop 121 or 122 (horizontal repairs) or Sikatop 123 (vertical and overhead repairs) by Sika Corporation.
 - 2. Thin Top Supreme or Concrete Top Supreme (horizontal repairs) or Verticoat/Verticoat Supreme (vertical and overhead repairs) by The Euclid Chemical Company.

2.07 CONCRETE MIX DESIGN

- A. Engage a Technical Agency familiar with local construction conditions and materials to design concrete mixes. Use a Technical Agency other than the Testing Agency engaged by the Owner for field quality control.
- B. Prior to the formulation of design mixes, review with the Technical Agency the concrete mix requirements relative to strength, slump, air content, seasonal adjustments required due to temperatures and anticipated job use and placement conditions.
- C. Provide separate design mixes for each anticipated and/or actual changes in type of mix materials including changes in admixtures, in proportion of basic materials, in slump limits and in placement methods, especially pumping. Identify the proposed use for each mix.
- D. Prepare the mix designs with sufficient lead time to allow testing and adjustment of the mix. Establish the concrete mix design proportions to provide the required average strength using the procedures defined in Section 5 of ACI 318. Whenever possible, use appropriate field test data (30 consecutive tests) to establish a standard deviation for the mixes. When an acceptable record of field test results is not available, establish the concrete proportions based on 3 point curves from laboratory trial batch mixtures. When a standard deviation cannot be properly established for the mix design, proportion concrete to provide an average strength of f'_c plus 1200 psi. For concrete strengths above 5,000 psi, increase the safety factor to 1400 psi.
- E. Submit the complete proposed design mix along with the appropriate test data and technical data to the Architect/Engineer for review at least 15 days prior to job use. For each mix design, identify the cement type, proportions of each constituent, water-cement ratio and brand, type

and proportion of each admixture. Include the measured slump, air content, unit weight, and compressive strength test results for each mix.

- F. Concrete mix design submittals that are incomplete or do not satisfy the requirements of the Specifications will be rejected. Additional testing and/or revisions to the mix design may be required to achieve compliance. Do not place any concrete in the Work until design mix submittal(s) satisfactory to the Architect/Engineer have been reviewed and accepted. Keep a copy of the reviewed mix designs on file in the field office.
- I. Lightweight concrete mix designs will be subject to the review of the lightweight aggregate manufacturer. The lightweight aggregate manufacturer must certify that the proposed mix design(s) are appropriate for the intended use and method of placement.
- K. For slab on grade concrete, formulate the concrete mix design to minimize the amount of cement and water necessary to produce the required slump and workability. Utilize properly graded aggregates of cubical shape to minimize water and cement demand.
- M. In addition to the concrete mix design requirements listed above, limit the water/cement ratio to the following maximums:
 - 1. 0.40 for reinforced concrete exposed to deicing salts, brackish water or salt spray.
 - 2. 0.45 for concrete required to be watertight and/or subject to cycles of freezing and thawing (including foundation walls).
 - 3. 0.50 for all concrete not otherwise specified.
 - 4. Concrete containing microsilica and/or High Range Water Reducers etc. may have the above requirements waived if evidence of acceptable performance in-service is provided.
 - 5. For interior slab on grade concrete, limit the cement content to a maximum of 540 pounds per cubic yard.
- N. Provide air entrainment for all lightweight concrete, and for all exterior concrete or concrete otherwise exposed to cycles of freezing and thawing. Comply with ACI 318, Table 4.1.1 "Severe Exposure" for amount of air entrainment in concrete at point of deposit. Adjust admixture dosages as necessary to account for climatic conditions, method of placement and other constituents of mix. Do not use air entraining admixtures for interior normal weight concrete flatwork requiring a smooth troweled finish.
- O. Provide a water reducing (plasticizing) or high range water-reducing (super plasticizer) admixture for all structural concrete. Use a specified super plasticizer for all pumped concrete, concrete with a water/cement ratio less than 0.50 and for "Architectural" concrete.
- P. All concrete containing a high range water reducing admixture (superplasticizer) shall have a maximum slump of 9 inches unless otherwise approved by the architect/engineer. The concrete shall arrive at the job site at a slump of 3 inches +/- 1 inch, be verified, then the high range water reducing admixture added to increase the slump to the approved level. Proportion design mixes of all other concrete to result in concrete with the following slumps measured at the point of placement:
 - 1. Reinforced slabs and beams 3 inches +/- 1 inch.
 - 2. Reinforced walls and columns 4 inches +/- 1 inch.
 - 3. Heavy duty overlay topping 1 inch.
 - 4. All other concrete 3 inches +/- 1 inch.
- Q. Use the following maximum coarse aggregate sizes, per ASTM C33:
 - 1. Size 57 for beams, slabs and walls.
 - 2. Size 7 for tight pours and thin sections.
 - 3. Size 67 for all other concrete.
 - 4. Size 467 for standard slabs on grade and foundations.
 - 5. Industrial Slabs on Grade: Blend fine and coarse aggregates to achieve a smooth gradation of aggregate sizes. A minimum of 8 percent and a maximum of 18 percent of the total aggregate weight is to be retained on each sieve below 1-1/2 inch and above the No. 100 sieve size.

- R. Maintain an air dry unit weight for structural lightweight concrete between 100 pcf and 115 pcf. Adjust the proportion of lightweight coarse aggregate and/or substitute lightweight fines for sand as necessary to obtain the proper unit weight. Determine the air dry unit weight of the concrete in accordance with ASTM C567. Limit drying shrinkage at 28 days to 0.03 percent.
- S. Specifically identify those concrete mixes which are intended to be placed by pumping. Indicate the modifications made to the basic mix to aid in pumping, including changes in slump, air content, fly ash content, cement paste vs. aggregate content, and admixtures such as superplasticizers. Pre-soak all lightweight aggregates in pumped concrete per the lightweight aggregate manufacturer's recommendations. Carefully control the gradation of the coarse and fine aggregates, keeping the grading as close to the middle of the ASTM C33 or C-330 range as possible. Review pumping techniques with the Architect/Engineer prior to placement.
 - 1. Make one test of each concrete design mix to verify that the total chloride ion (Cl-) content is less than 0.10% of the weight of the cement, that the total sulfate (as SO₃) content of the mix is less than 0.05% of the weight of the mix, per ASTM C-114, and that the thiocyanate ion (as SCN-) content is less than 0.15% of the weight of the cement.
- T. Adjust mix designs that do not prove to be satisfactory in use, subject to the Architect/Engineer's review. Concrete that does not consistently exhibit the specified control characteristics will be considered unsatisfactory. Any additional costs incurred due to changes required in the mix are to be borne by the Contractor.
- U. Provide additional mix designs and appropriate test data for any revisions to the approved concrete mix designs requested by the Contractor during the course of work. Do not use the revised mix until reviewed and accepted by the Architect/Engineer.

2.08 MIXING AND DELIVERY OF CONCRETE

- A. Supply all concrete from a ready-mix plant acceptable to the Architect/Engineer. Batch all constituents, including admixtures, at the central batch plant, except for HRWR's which may be added at the job site.
- B. Comply with ACI 304 recommendations. Accurately weigh all materials. Mix, dispense and use admixtures in accordance with the specific manufacturer's written instructions.
- C. Conform with Truck Mixer and Agitator Standard of the Truck Mixer Manufacturer's Bureau of the National Ready-Mixed Concrete Association, as well as ASTM C94. Do not load trucks in excess of NRMCA ratings for normal weight aggregate concrete.
- D. Water may be added initially to concrete which arrives at the site with a slump below the specified slump if, after the addition of water, neither the maximum permissible water/cement ratio nor the maximum slump is exceeded. Provide thorough additional mixing. The Owner's Testing Agency will observe the adding of water and mixing. Retempering after initial slump adjustment is not permitted. Redosage with the specified super-plasticizer may be done with the prior approval of the Architect/Engineer.
- E. Discharge of Materials: Discharge concrete without segregation of the ingredients. Incorporate all concrete in the work in its final shape and location within 90 minutes after the introduction of water to the mix or within a shorter time period as the testing agency may direct during hot weather. Immediately remove all concrete materials from the construction site not incorporated into the Work within the specified time limits.
- F. Cold Weather Requirements: Comply with ACI 306 whenever ambient air temperatures are below 40 degrees F. Heat the mixing water and, if necessary, the aggregates to produce concrete at the temperature specified in ACI 306, Table 1.4.1 when placed. If the mixing water is heated, do not exceed a temperature of 140 degrees F. at the time it is added to the cement and aggregates.
- G. Hot Weather Requirements: Comply with ACI 305 whenever conditions of high air temperature, low relative humidity and/or wind exist. Provide crushed ice in lieu of equal weight of mixing water if necessary to provide concrete of the proper temperature. Ice must be completely dissolved before placing concrete. At the Contractor's option, liquid nitrogen may be used to cool the concrete.

PART 3 EXECUTION

3.01 INSTALLATION OF EMBEDDED ITEMS AND COORDINATION WITH OTHER TRADES

- A. Install all embedded items to conform to the requirements of ACI 318, Chapter 6, Paragraph 6.3, "Conduits and Pipes Embedded in Concrete," and as specified below. Do not install any accessories until their type and location have been verified by the affected trades.
- B. Coordinate the installation of all inserts required by other trades prior to the placing of reinforcing steel.
- C. Install anchor rods, etc., furnished by other Sections. Use line and transit to locate anchor rods and secure with templates to prevent displacement during concreting operations.
- D. Provide steel sleeves for pipes passing through concrete.
- E. Non-aluminum electrical conduit is the only piping which may be embedded in structural concrete. Place conduit by the following guidelines:
 - 1. Do not cut or displace any reinforcement.
 - 2. Do not place conduit between concrete surfaces and reinforcement.
 - 3. Solid slabs - restrict O.D. of conduit to 1/4 of slab thickness. Keep within the middle half of that thickness.
 - 4. Place conduit larger than 1/6 of the slab thickness approximately parallel to or at right angles to the slab reinforcing, not diagonally.
 - 5. Place nearly parallel conduits apart at least 6 times the outside diameter of conduit being used.
 - 6. Do not embed conduit in concrete beams or concrete ribs unless specifically shown on the Structural Drawings.
 - 7. Conduit in slabs on metal deck: Restrict O.D. of conduit to 1-inch for 3-1/4 inch (83 mm) topping and 3/4-inch for 2-1/2 inch topping. Where conduit runs perpendicular to span of metal deck, place conduit directly on top of metal deck. Where conduit runs parallel to span of metal deck, place conduit in low flute of metal deck, with one conduit maximum permitted per flute. Where conduit runs parallel to shear connectors, maintain 18-inches minimum spacing between conduit and closest shear connector.

3.02 PLACING CONCRETE

- A. Comply with ACI 301, Chapter 8 and as modified below.
- B. Transport concrete mixes to place of final deposit as rapidly as practical by methods which prevent segregation of the ingredients and displacement of reinforcement. Avoid rehandling. Do not deposit any partially hardened concrete. Provide a baffle plate or spout at the discharge end of the chute to prevent segregation. Use a downpipe, elephant trunk, spout or other appropriate method to prevent concrete from falling freely through a height of more than 3 feet. When the operation is intermittent, discharge the chute into a hopper. Do not allow concrete to flow horizontally within forms over a distance exceeding 5 feet. Do not move concrete horizontally with vibrators. Provide runways to allow wheeled equipment to move over reinforcement. Do not support runways on reinforcement.
- C. Schedule the work so that a section begun on any one day is completed in daylight on the same day.
- D. Protect exposed to view walls and columns from concrete spatter when placing slabs.
- E. Remove water and all foreign matter from place of deposit. Do not place any concrete into any form or excavation containing trash, free water, frost, ice or frozen ground. Provide adequate protection against frost action during freezing weather. Do not place concrete flatwork in the rain. Protect exposed concrete surfaces from rain until final set occurs.
- F. Do not use calcium chloride in any concrete.
- G. Thoroughly clean foreign materials and laitance from all construction joints including vertical and inclined surfaces. Where necessary, roughen the joint with suitable tools such as chipping hammers, wire brushes, etc., and re-clean with a stream of water or compressed air. Saturate

the joints with water. After free or glistening water disappears, thoroughly coat the joints with a neat cement grout mixed to the consistency of very heavy paste. Provide a coating of at least 1/8 inch thickness, wherever possible, scrubbed in by means of stiff bristle brushes. Deposit the new concrete before the neat cement grout hardens. Use an epoxy resin bonding agent in lieu of neat cement grout when bonding fresh concrete to fully cured existing concrete. Follow manufacturer's printed instructions. Place new concrete while the bonding agent is still tacky.

- H. Deposit concrete continuously in layers of a thickness that will prevent new concrete from being deposited on partially hardened concrete. Limit height of vertical lifts to 24-inches. Do not allow formation of seams and planes of weakness within the section. Vibrate through successive lifts to avoid pour lines, stone pockets, honeycombing and segregation. Immediately notify the Architect/Engineer, if due to emergency conditions, a section cannot be placed continuously between planned construction joints. If approved, create a field joint and provide additional reinforcement as necessary to preserve the structural continuity of the member.
- I. Thoroughly compact concrete by means of internal mechanical vibrators to produce required quality of finish. Use experienced operators under close supervision to produce homogeneity and optimum consolidation in the concrete without permitting segregation of the constituents or "pumping" of air. Comply with ACI 309 "Standard Practice for Consolidation of Concrete."
- J. For all surfaces designated as Architectural Concrete supplement vibration by proper wooden spade puddling to remove included bubbles and honeycombing.
- K. After depositing concrete in columns or walls, wait at least 3 hours before depositing concrete in beams, girders or slabs supported thereon.
- L. When placing exposed concrete vertical surfaces, strike corners of forms rapidly and repeatedly from the outside along the full height while depositing concrete and vibrating.
- M. Thoroughly clean chutes, hoppers, spouts, adjacent work, etc., before and after each run. Discharge the water and debris outside the form.
- N. Finish all structural slabs and slabs on grade to the elevations shown on the Contract Documents. Provide additional concrete as necessary to compensate for all settlements and deflection due to the weight of the wet concrete.

3.03 FINISHING OF FORMED CONCRETE SURFACES

- A. Comply with ACI 301 and as modified below.
- B. Finish formed concrete surfaces other than Architectural Concrete as follows:
 - 1. Knock off fins and grind if necessary. Provide rough form finish for surfaces not exposed to public view and smooth form finish for all concrete surfaces exposed to public view.

3.04 FINISHING FLATWORK

- A. Preliminary Slab Finishing: For all slabs regardless of final finish:
 - 1. Rough Finishing: Accurately strike off the top surface of the flatwork to provide a true and level surface within the required tolerances. After concrete has been placed, consolidated, and struck off, highway straightedge and/or highway bull float the surface. Remove all water and foreign material which may work to the surface as soon as the condition of the slab permits, and before it has hardened appreciably. When water sheen has disappeared, use power driven float blades to compact the surface. Recheck the surface for trueness and levelness; restraighten, fill, or cut down with a 10-foot highway straightedge to achieve the specified Ff numbers.
 - 2. Power Troweling: Wait until the water sheen has disappeared or the mix has stiffened sufficiently to permit the proper operation of a power driven trowel. Power trowel the surface to produce a smooth surface which is relatively free of defects but which may still contain some trowel marks. Hand float locations inaccessible to the power driven machine with wood, aluminum, or magnesium floats. Recheck trueness of surface with a 10-foot highway straightedge applied at no fewer than two different angles. Cut down high spots and fill in low spots to produce a finished surface within the specified tolerances.

- B. Floated Finish: After power troweling, float the slab immediately at least twice using a wood float to produce uniform smooth granular texture. Use a magnesium float for lightweight concrete. Provide on the following surfaces:
 - 1. Slabs to receive membrane or elastomeric roofing or membrane waterproofing.
 - 2. Slabs to receive sand bed terrazzo.
 - 3. Top surfaces of walls, curbs, or other surfaces not requiring a steel troweled surface.
 - 4. Exterior slabs not specified to receive broom finish.
- C. Steel Troweled Finish: Perform additional hand troweling as soon as the surface has hardened sufficiently to produce a ringing sound as the trowel is moved over the surface. Produce a uniform, smooth, glossy surface free of trowel marks or other defects. Grind smooth any defects which would telegraph through the applied floor covering. Equipment pads shall receive a dense, hard, but not burnished surface. Provide steel troweled finish on the following surfaces:
 - 1. Slabs to receive carpeting.
 - 2. Slabs to receive seamless floor finish.
 - 3. Slabs to receive resilient flooring, quarry tile or ceramic tile. Lightly scarify surface with fine broom if finish material is installed with thin set mortar.
 - 4. Roof surfaces scheduled to become future floors.
 - 5. Slabs to be left exposed and not specified to receive another finish.
 - 6. Top surfaces of equipment pads.
- D. Sealed Finish: Just prior to the completion of the project, apply a second coat of the specified concrete curing and sealing compound where indicated on the Drawings to the following surfaces:
 - 1. All exposed concrete floors within the building not receiving another finished material and subject only to pedestrian traffic as called for in the Contract Documents.
- E. Non-slip aggregate application: Apply to concrete stairs, ramps and to concrete floors where indicated on the Contract Documents.
 - 1. Soak non-slip aggregate in water and allow to drain thoroughly.
 - 2. Finish the floor as for a steel trowel finish except that immediately prior to final troweling, apply the non-slip aggregate uniformly over the surface at the rate of 25 lbs./100 sq. ft. Embed the non-slip aggregate into the concrete surface by the final light troweling operation.
 - 3. After curing, lightly work surface with steel wire brush to exposed non-slip aggregate.
- F. Sawcutting: Begin sawcutting as soon as the saw will not dislodge the aggregate or ravel the edge of the sawcut. If a "Soff-Cut" saw is used, begin immediately after final finishing. If a conventional saw is used, begin no later than 12 hours after the slab is placed. Provide sufficient personnel and equipment to complete sawcutting operations within 18 hours after the slab is placed. Sawcut a minimum of one quarter of the slab depth leaving a clean, sharp edge in the pattern shown on the Contract Documents. If no pattern is shown, space joints a maximum of 15-feet on center in each direction and located to conform to column spacing (half-bays etc.).
- G. Maintaining floor flatness: For slabs-on-grade that initially meet the specified floor flatness and levelness requirements but become out of tolerance due to curling, grind the surface to adjust flatwork to within tolerance requirements.

3.05 ALLOWABLE TOLERANCES

- A. Formed surfaces: Refer to Division 3 Section "Concrete Formwork" for tolerances related to formwork, shoring and cambering, including Architectural concrete.
- B. Flatwork: Finish concrete flatwork to the following surface profile tolerances when measured in accordance with ASTM E 1155:
 - 1. Ff = Face floor flatness number.
 - 2. Fl = Face floor levelness number.
 - 3. All slabs on grade not otherwise specified:

- a. Overall Ff 25/FI 20.
 - b. Local Ff 17/FI 13.
- 4. All elevated slabs not otherwise specified:
 - a. Overall Ff 20.
 - b. Local Ff 13.
- C. For the purposes of flatness and levelness control, the minimum floor section boundaries are defined as one bay of 20 x 20.
- D. Refer to Part 3 Article "Repair of Defective Concrete Surfaces" - for repair of any floor section which measures below the Minimum Local Value for either Ff or FI.
- E. If either the Actual Overall Ff number or the Actual Overall FI number calculated for the entire slab installation measures less than the value specified, repair the slab in accordance with the requirements set forth in Section 3.
- F. Provide floor surfaces with an average elevation within +/- 3/4 inch of the finished floor elevations indicated on the Contract Documents.

3.06 CURING, PROTECTION AND FORM REMOVAL

- A. General:
 - 1. Comply with ACI 301, and as modified below.
 - 2. Protect freshly placed concrete from premature drying, mechanical damage and excessively cold or hot temperatures and maintain without drying at a relatively constant temperature for the period of time necessary for hydration of the cement and proper hardening of the concrete.
 - 3. Start initial curing as soon as free moisture has disappeared from the concrete surface after placing and finishing.
- B. Curing-Moisture Retention: Maintain the concrete in a continually moist condition for a minimum of 7 days. Avoid rapid drying at end of curing period.
 - 1. Formed surfaces - Keep the forms continuously wet by periodic spraying with water. After the forms are removed, continue moist curing by one of the methods described for unformed surfaces.
 - 2. Unformed surfaces - Where moist curing is indicated on the Contract Documents, use only methods a, b, or c below. Retain moisture in the concrete by immediate application of one of the following methods:
 - a. Ponding or continuous fog spray (mist) of water - periodic sprinkling is not acceptable.
 - b. Apply an absorptive cover and keep continuously wet.
 - c. Apply continuous waterproof sheets - lap and seal seams and repair any holes or tears.
 - d. Apply a specified liquid membrane forming curing and sealing compound at the manufacturer's specified rate and method of application to comply with specified water retention. Apply as soon as possible after final finishing operations are complete. Apply in two (2) directions, the second application perpendicular to the first. Do not use if liquid membrane is incompatible with future applied finishes or if a bonded concrete overlay will be placed over slab. Dissipating liquid membrane resin cures may be used if they are completely removed after curing.
- C. Curing - Temperature: Maintain the temperature of the concrete at 50 degrees F or above during the curing period. Keep the concrete temperature as uniform as possible and protect from rapid atmospheric temperature changes. Avoid temperature changes in concrete which exceeds 5 degrees F in any one hour and 50 degrees F in any 24-hour period.
 - 1. Cold Weather Concreting:
 - a. Comply with ACI 306R whenever the average daily temperature is less than 40 degrees F.
 - b. Heat the formwork, reinforcing and underlying subgrades with live steam or hot air jets to raise the temperature of each well above freezing prior to placing concrete.

Provide concrete of at least the temperature shown in Table 1.4.1 of ACI 306. Heat, insulate, cover, enclose and protect the concrete as necessary to continuously maintain the concrete temperature between 50 degrees F and 60 degrees F for the entire curing period. Do not allow temporary heaters to exhaust combustion gases into the enclosed space containing the slab surface.

- c. Only non-corrosive, non-chloride accelerators may be used in cold weather after review and acceptance by the Architect/Engineer. Calcium chloride, thiocyanates or admixtures containing more than 0.05 percent chloride ions are not permitted.
- 2. Hot Weather Concreting:
 - a. Comply with ACI 305R whenever the atmospheric temperature or the form surface temperature is at or above 90 degrees F., or climatic conditions of wind and/or low humidity will cause premature drying of the concrete.
 - b. Cool the formwork and underlying subgrades to a maximum of 80 degrees F. and keep moist. Cool reinforcing by covering with water soaked burlap if it is too hot. Cool the temperature of the concrete to 75 degrees F. by substituting ice for mixing water or other methods.
 - c. Take precautions before placing concrete to prevent rapid moisture loss from the concrete surface. Erect sunshades and windbreaks, provide continuous fog spray of water and/or other protection as necessary to prevent premature drying of the concrete surface.
 - d. Schedule placements of concrete flatwork to begin in the late afternoon if daytime temperatures and drying conditions are critical.
 - e. Suitable retarders may be added to the concrete mix if the retarder mix design has been reviewed and accepted by the Architect/Engineer prior to use on the project.
- D. Protection from Mechanical Injury: During the curing period, protect concrete from damaging mechanical disturbances including load stresses, heavy shock, excessive vibration, and from damage caused by rain or flowing water. Protect finished concrete surfaces from damage by subsequent construction operations.
- E. Wait a minimum of 48 hours after finishing slab before allowing foot traffic on slab. Do not allow construction traffic or loads to be applied to slab on grade until the concrete is 7 days old.
- F. Temperature Records: Maintain a set of record drawings on site on which the progress of work is shown. Indicate the day, time, and ambient temperature at time of placement for each concrete pour. Keep a permanent log showing the date and the outside and concrete temperatures during all concreting operations (including curing). Take thermometer readings at the start of work in the morning, at noon, and again late in the afternoon. Record the locations of all concrete placed and cured during these periods, in a manner which will show any effect the temperature may have had on the construction.
- G. Removal of Forms: Refer to Division 3 Section "Concrete Formwork."

3.07 REPAIR OF DEFECTIVE CONCRETE SURFACES

- A. Comply with ACI 301, and as modified below.
- B. Identify those areas requiring repair, and review locations with Architect/Engineer and Owner's Testing Agency on a case by case basis. Refer to Section "Corrective Work" where it is determined by the Architect/Engineer that the load carrying capacity of the concrete may be jeopardized. If it is determined that only surface repairs are necessary, submit a proposed repair procedure, outlining a description of materials, sequencing, preparation, etc. for review.
 - 1. Cut out defective concrete down to sound concrete leaving neat, square cut edges.
 - 2. Where reinforcement is exposed by removal of defective concrete, cut around reinforcement to provide a clear space not less than 3/8 inch wide on all sides of the bar.
 - 3. If so directed by the Architect/Engineer, provide 2 by 2 inch stainless steel mesh reinforcement securely attached to existing reinforcement with stainless steel wire.
 - 4. Thoroughly saturate the concrete surface to receive the patch for several hours prior to application of patching materials. Remove excess water to obtain saturated, surface dry

substrate. Apply primer or scrubcoat of bonding agent according to the manufacturer's instructions.

5. Use the specified polymer patching mortar where a color match to the adjacent concrete is not required.
 6. Do not mix more mortar than can be placed in 20 minutes. Apply in layers according to the manufacturer's instructions. Leave all layers except the final layer in a rough condition to receive the succeeding layer.
 7. Finish the final layer to match the existing concrete surface in color and texture. Where the concrete surface is to be visible in finished work, add colored aggregates and/or cements as required to provide a mixture which will exactly match the color of the parent concrete after hardening and curing. Provide test patches in an inconspicuous location to verify the color and texture match before proceeding with remainder of patching. If necessary, rub the surface lightly with a fine Carborundum stone at 1 to 5 days age.
- C. Provide repairs with the strength, elasticity and durability equal to the parent material being repaired. Remove and replace patches which become crazed, cracked, sound hollow upon tapping, or, which in the opinion of the Architect/ Engineer do not exactly match the surrounding concrete surfaces or otherwise do not satisfy the requirements of the Contract Documents.
- D. When flatness and levelness testing indicates concrete flatwork that does not comply with the specified tolerances, grind the surface to adjust flatwork to within tolerance requirements. Perform grinding as soon as possible after the concrete is strong enough to prevent dislodging of the coarse aggregate, preferably within three (3) days.
- E. All patching and repairs shall be performed at the Contractor's expense.

3.08

CORRECTIVE WORK

- A. Concrete in place will be considered defective if cylinder strength test results do not meet the requirements of ACI 318 Section 5.6. Additional causes for rejecting concrete include, but are not limited to, concrete placed with excessive slump, insufficient air content, beyond specified time limits, with unauthorized retempering, without proper supervision or inspection, improper curing or protection, or if there is visible evidence of scaling, cracking, voids or excessive deflection.
- B. If, in the Architect/Engineer's opinion, the strength, stiffness or durability of the structure may be compromised, test specimens may be taken from the structure at locations designated by the Architect/Engineer. Obtain and test the specimens in accordance with ASTM C42 and/or perform petrographic analysis in accordance with ASTM C856. Test results which indicate non-compliance with the Specifications are cause for rejection. Alternatively, at the Architect/Engineer's discretion, load tests may be performed and evaluated in accordance with ACI 318, Chapter 20.
- C. Remove and replace concrete that, in the Architect/Engineer's opinion, does not satisfy the performance requirements of this Specification if repairs cannot be accomplished to the Architect/Engineer's satisfaction.
- D. Where it is determined that repairs may be attempted, submit a complete repair procedure to the Architect/Engineer for review. Include all necessary information on proposed products, preparation, and sequence of repair including manufacturer's specifications and installation instructions. Do not proceed with repairs until this procedure has been reviewed and accepted by the Architect/Engineer. The repair must account for the strength, stiffness and long term durability of the entire structural element under repair.
- E. The costs of all tests, additional services required of the Architect/Engineer, and for repair or removal and replacement are at the expense of the Contractor.

3.09

GROUTING OF AND BASE PLATES

- A. Grout Mixture: Use the specified grout mix with the minimum amount of water required to produce a flowable grout. Extend grout with 3/8-inch coarse aggregate for grout placements over 2-inches thick. The proposed grout mix with the 3/8-inch aggregate must be reviewed and approved by the grout manufacturer and the engineer prior to use.

- B. Mixing: Per approved grout manufacturer's printed instructions. Do not mix more grout than can be placed within 20 minutes.
- C. Preparation:
 - 1. Remove all defective concrete, laitance, dirt, etc. from the concrete surface. Saturate the surface of the concrete thoroughly with clean water for at least 24 hours. Remove free water just prior to placing the grout.
 - 2. Clean, align, and level the base plate into final position and maintain that position during grouting. Bring the concrete and plate to be grouted to a temperature of 65 degrees to 90 degrees F. just prior to grouting.
- D. Grouting:
 - 1. Place the grout quickly and continuously to provide complete bearing and avoid air entrapment.
 - 2. After the grout has acquired its initial set, cut off all unconfined, exposed edges, leaving sloping "shoulders". Cure the grout for a minimum of 3 days by application of a curing compound applied to the exposed shoulders. Maintain temperature above 50 degrees Fahrenheit for this time period.

3.10 FIELD QUALITY CONTROL

- A. Owner's Testing Agency: Refer to Division 1 Section "Code-Required Structural Special Inspections and Procedures" for "Cast-In-Place" inspection and test requirements.
- B. Testing Agency: The Owner will engage a Testing Agency at his own expense, acceptable to the Architect/Engineer, to perform detailed concrete quality control, testing and inspection. Provide the Testing Agency with the following:
 - 1. Materials, samples, and access to materials as required for testing.
 - 2. Minimum one day's advance notice when concrete is to be placed.
 - 3. Incidental labor required to facilitate testing.
 - 4. Approved on-site storage facilities for concrete test cylinders.
 - 5. Copies of the delivery ticket of each load of concrete as it arrives at the jobsite. Identify the concrete strength, water/cement ratio, type and size of coarse aggregate, batch plant of origin and time cement was discharged into the delivery truck.
 - 6. Copy of the most current reinforcing steel shop drawings which have been reviewed by the Architect/Engineer, and access to the Contract Documents.
- C. Reimbursement of costs for testing and inspection resulting as a consequence of the following:
 - 1. Work not in compliance with the Contract Documents.
 - 2. Testing requested by the Contractor or Subcontractor such as additional cylinders for early breaks, form removal, etc.
 - 3. Testing to verify the adequacy of work done without prior notice, without proper supervision, or contrary to standard construction practice.
 - 4. Changes in source, quality or characteristics of materials.
 - 5. Wasted time of inspectors because of cancellations or delays of concrete placement or other work.
- D. Do not place concrete until the Owner's Testing Agency has reviewed and approved the work, and all reported deficiencies have been corrected. Concrete placed prior to approval is subject to removal.
- E. Testing Agency Responsibilities:
 - 1. Perform all tests and inspections required by the Controlled Inspection Provisions of the New York City Building Laws.
 - 2. Conduct the tests and inspections required herein, interpret and evaluate the results for compliance with the Contract Documents, and promptly furnish reports of the results to the Owner, Architect/Engineer, Contractor, and Local Building Authority.
 - 3. At the start of the project, check the concrete constituents, including admixtures, for compliance with the Contract Documents. Test the dry rodded weight of the coarse

aggregate whenever a sieve analysis is made, and when it appears there has been a change in the aggregate.

4. At the start of the job and periodically, as determined by the Architect/Engineer, perform inspections of the Batch Plant and its operation. Observe the batching equipment, the condition of materials used, and check for conformance with the design mix proportions.
 5. Perform concrete compression strength testing in accordance with ASTM C31 and C39. Sample concrete for test specimens at the point of deposit in accordance with ASTM C172. General concrete testing will consist of one (1) set of four (4) cylinders made from a single sampling for each 50 cubic yards or fraction thereof of each class of concrete placed each day. All test specimens are to be laboratory-cured. Test as follows:
 - a. One (1) 7 - day break.
 - b. Two (2) 28 - day breaks.
 - c. One (1) 56 - day break. Hold in reserve for testing if 28 - day breaks do not comply.
 - d. Immediately notify the Contractor and Architect/Engineer if 7 day strengths are less than 70% of design strength.
 6. If the total volume of concrete is such that the frequency of testing as specified above would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.
 7. If the total volume of concrete is such that the frequency of testing as specified above would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.
 8. The above frequencies assume that one batch plant will be used for each pour. If more than one batch plant is used, the frequencies cited above shall apply for each plant used.
 9. Determine the air content of concrete per ASTM C173 or ASTM C231 (normal weight concrete only). For concrete required to be air-entrained, test the first truck and every 25 cu. yards thereafter each day. For concrete not required to be air-entrained, test every 100 cu. yards at random. For pumped concrete, initially test concrete at both the hopper and the discharge end of the hose to determine change in air content.
- F. Perform slump tests in accordance with ASTM C143. Test the first truck each day, and every time test cylinders are made. Test pumped concrete at the hopper and at the discharge end of the hose at the beginning of each day's pumping operations to determine change in slump. Provide a slump cone, plate, rod and measuring device for use on the project at all times.
- G. Perform unit weight tests in compliance with ASTM C138 for normal weight concrete and ASTM C567 for lightweight concrete. Test first truck and each time cylinders are made.
- H. Determine the temperature per ASTM C1064 for each truckload of concrete during hot weather and cold weather concreting operations.
- I. Observe the placement of all concrete. Inspect the formwork and the reinforcing steel placement, including bar size, spacing and grade of steel prior to concrete placement. Submit detailed report of observations.
- J. Immediately notify the Contractor of any items which do not comply with the requirements of the Contract Documents. If satisfactory corrections are not made, contact the Architect/Engineer for direction before the concrete is placed.
- K. Review the delivery tickets of the ready-mix concrete trucks arriving on-site. Notify the Contractor if the concrete cannot be placed within the specified time limits or if the type of concrete delivered is incorrect. Reject any loads which do not comply with the Specification requirements. Rejected loads are to be removed from the site at the Contractor's expense. Any rejected concrete that is placed will be subject to removal. Refer to Part 3 - Corrective Work.
- L. Measure concrete flatwork for levelness and flatness as follows:

1. Perform Floor Tolerance Measurements Ff and FI in accordance with ASTM E-1155. Calculate the actual overall F- numbers using the inferior/superior area method.
 2. Perform all floor tolerance measurements within 48 hours after slab installation and prior to removal of shoring and formwork.
 3. Provide the Contractor and the Architect with the results of all profile tests - including a running tabulation of the overall Ff and FI values for all slabs installed to date - within 72 hours after each slab installation.
- M. Standard of Strength Control
1. The Owner's Testing Agency will establish a coefficient of variation for the statistical evaluation of concrete for the Project. The Contractor shall be fully acquainted with all provisions relative to coefficient of variation as specified herein and fully comply with the applicable requirements.
 2. The coefficient of variation will be established for the project on the basis of not less than 30 test results from any one class of concrete. Once established, the Testing Agency will maintain the coefficient of variation as a moving average based on the 10 latest test results to check compliance with specification requirements. Maintain a continuous up to date log at the job site in both graphical and tabulated form for each class of concrete. Report results weekly to the Architect/Engineer.
 3. The coefficient of variation shall be assumed as 20% unless another value has been determined from current similar tests, or until it may be calculated from the results of 30 or more job tests. This computation is described in ACI 214.
 4. Strength Requirements and Compliance Therewith: Concrete will be considered to meet strength requirements of the Specifications when in compliance with ACI 318 Section 5.6
- N. Enforcement:
1. When actual non-compliance and/or ominous trends are observed by the testing laboratory, promptly notify the Contractor and the concrete supplier who shall take immediate appropriate action to correct the deficiency.
 2. If non-compliance occurs, the producer will be warned to take immediate corrective action. Test results of concrete furnished subsequent to such a warning must comply. Test results indicating non-compliance after one warning will be sufficient cause for the Architect/Engineer to refuse to permit any additional concrete to be furnished by the non-complying producer.
 3. Refer to Part 3 - Corrective Work - for concrete in place that does not comply with the strength requirements of the Contract Documents.
 - 4.

END OF SECTION

03 30 00 CAST-IN-PLACE CONCRETE

SECTION 03-45-00 CONCRETE ECOLOGY BLOCK

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This section includes the performance criteria, materials, design, production, and erection of architectural precast concrete for the entire project. The work performed under this Section includes all labor, material, equipment, related services, and supervision required for the manufacture and erection of the architectural precast concrete work shown on the Contract Drawings.
- B. Section includes the following:
 - 1. Architectural precast concrete cladding and load bearing units.
 - 2. Section 03300 "Casi-in-Place Concrete" for installing connection anchors in concrete.

1.03 DEFINITION

- A. Reference Sample: Sample of approved architectural precast concrete color, finish and texture, preapproved by Architect.

1.04 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide architectural precast concrete units and connections capable of withstanding the following design loads within limits and under conditions indicated:
 - 1. Loads: As indicated.
- B. Structural Performance: Provide architectural precast concrete units and connections capable of withstanding the following design loads within limits and under conditions indicated:
 - 1. Slone to Precast Concrete Anchorages: Provide anchors, as determined through Owner's or stone supplier testing, in numbers, types, and locations required to satisfy specified performance criteria.

1.05 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Retain quality control records and certificates of compliance for 5 years after completion of structure.
- B. Design Mixtures: For each precast concrete mixture. Include results of compressive strength and water- absorption tests.
- C. Shop Drawing:
 - 1. Detail fabrication of architectural precast concrete units.
 - 2. Indicate elevations, dimensions, shapes, and cross- sections of each unit.
 - 3. Indicate aesthetic intent including joints, drips, chamfers, rustications or reveals, and extent and location of each surface finish.
 - 4. Indicate details at building corners.
 - 5. Indicate separate face and backup mixture locations and thicknesses. (if necessary)
 - 6. Indicate locations, tolerances, and details of anchorage devices to be embedded in or attached to structure or other construction.
 - 7. Indicate plan views and elevations showing unit location and dimensions.
 - 8. Indicate location of each architectural precast concrete unit by same identification mark placed on unit.

- D. Samples: Design reference samples for initial verification of design intent, approximately 12 x 12 x 2 in. (300 x 300 x 50 mm), representative of finishes, color, and textures of exposed surfaces of architectural precast concrete units.
 - 1. When back face of precast concrete unit is to be exposed, include Samples illustrating workmanship, color, and texture of the backup concrete as well as facing concrete.

1.06 INFORMATIONAL SUBMITTALS

- A. Material Test Reports for aggregates: From an accredited testing agency, indicating and interpreting test results for compliance with requirements indicated:
- B. Material Certificates. For the following items signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Reinforcing materials.
 - 3. Admixtures.

1.07 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm that complies with the following requirements and is experienced in producing architectural precast concrete units similar to those indicated for this Project and with a record of successful in-service performance.
 - 1. Supplier: Nitterhouse Masonry Products LLC
859 Cleveland Ave
Chambersburg, PA 17201
717-267-4500
 - 2. **Or Approved Equal**
- B. Testing Agency Qualifications: An independent accredited testing agency [acceptable to authorities having Jurisdiction], qualified according to ASTM C 1077, ASTM E 329 and ASTM E 543 to conduct the testing indicated.
- C. Design Standards: Comply with ACI 318 (ACI 318M) and design recommendations of PCI MNL 120, PCI Design Handbook - Precast and Prestressed Concrete, applicable to types of architectural precast concrete units indicated.
- D. Quality-Control Standard: For manufacturing procedures and testing requirements, quality-control recommendations, and dimensional tolerances for types of units required, comply with PCI MNL 117, Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver architectural precast concrete units in such quantities and at such times to ensure compliance with the agreed upon project schedule and setting sequence and to limit unloading units temporarily on the ground or other rehandling.
- B. Support units during shipment on non-staining shock- absorbing material.
- C. Store units with adequate dunnage and bracing, and protect units to prevent contact with soil, to prevent staining, and to prevent cracking, distortion, warping, or other physical damage.
- D. Place stored units so identification marks are clearly visible, and units can be inspected.
- E. Handle and transport units in a manner to avoid excessive stresses which could cause cracking or damage.

PART 2 – PRODUCTS

2.01 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.

- C. Galvanized Reinforcing Bars: [ASTM A 615/A 615M, Grade 60 (Grade 420)] [ASTM A 706/A 706M], deformed bars, ASTM A 767/A 767M Class II zinc-coated, hot-dip galvanized and chromate wash treated after fabrication and bending
- D. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, fabricated from [as-drawn] (galvanized and chromate wash treated] steel wire into flat sheets.
- E. Deformed Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet
- F. Epoxy Coated-Steel Welded Wire Reinforcement: ASTM A 884/A 884M Class A coated, (plain] [deformed]. flat sheet, Type (1 bendable] (2 non-bendable] coating.
- G. Supports: Suspend reinforcement from back of mold or use bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place according to PCI MNL 117.

2.02 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150, Type I or III.
 - 1. For surfaces exposed to view in finished structure, use [gray] [or] [white], of same type, brand, and mill source throughout the precast concrete production.
- B. Normal weight Aggregates: Except as modified by PCI MNL 117, ASTM C 33, with coarse aggregates complying with Class 5S. Stockpile fine and coarse aggregates for each type of exposed finish from a single source (pit or quarry) for Project.
- C. Coloring Admixture: ASTM C 979, synthetic or natural mineral-oxide pigments or colored water-reducing admixtures, temperature stable, and nonfading.
- D. 0. Water: Potable; free from deleterious material that may affect color stability, setting, or strength of concrete and complying with chemical limits of PCI MNL 117.
- E. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.
 - 1. Chemical Admixtures:
 - a. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - b. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - c. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - d. Water-Reducing and Accelerating Admixture: ASTM C 494/C 494M, Type E.
 - e. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 - f. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 - g. Plasticizing Admixture for Flowable Concrete: ASTM C 1017/C 1017M.

2.03 CONCRETE MIXTURES

- A. Prepare design mixtures to match Architect's sample or for each type of precast concrete required
- B. Design mixtures may be prepared by a qualified independent testing agency or by qualified precast concrete plant personnel at architectural precast concrete fabricator's option.
- C. Limit water-soluble chloride ions to the maximum percentage by weight of cement permitted by ACI 318 (ACI 318M) or PCI MNL 117 when tested in accordance with ASTM C 1218/C 1218M.
- D. Compressive Strength (28 Days): 5000 psi (34.5 MPa) minimum.
- E. Maximum Water-Cementitious Materials Ratio: 0.45.
- F. Water Absorption: 6 percent by weight or 14 percent by volume, tested according to ASTM C 642

2.04 FABRICATION TOLERANCES

- A. Fabricate architectural precast concrete units of shapes, lines and dimensions indicated, so each finished unit complies with PCI MNL 117 product tolerances as well as position tolerances for cast-in items.
- B. Fabricate architectural precast concrete units of shapes, lines and dimensions indicated, so each finished unit complies with the following product tolerances.
 - 1. Overall Height and Width of Units, Measured at the Face Exposed to View: As follows:
 - a. 10 ft (3 m) or under, Plus or Minus 1/8 in. (± 3 mm).
 - b. 10 to 20 ft (3 to 6 m), Plus 1/8 in. (+3 mm), Minus 3/16 in. (-5 mm).
 - c. 20 to 40 ft (6 to 12 m), Plus or Minus 1/4 in. (± 6 mm).
 - d. Each additional 10 ft (3 m), add Plus or Minus 1/16 in. (± 1.6 mm).
 - 2. Overall Height and Width of Units, Measured at the Face Not Exposed to View: As follows:
 - a. 10 ft (3 m) or under, Plus or Minus 1/4 in. (± 6 mm).
 - b. 10 to 20 ft (3 to 6 m), Plus 1/4 in. (+6 mm), Minus 3/8 in. (-10 mm).
 - c. 20 to 40 ft (6 to 12 m), Plus or Minus 3/8 in. (± 10 mm).
 - d. Each additional 10 ft (3 m), add Plus or Minus 1/8 in. (± 3 mm).

2.05 FINISHES

- A. Exposed panel faces shall be free of joint marks, grain, and other obvious defects. Corners, including false joints shall be uniform and straight. Finish exposed-face surfaces of architectural precast concrete units to match approved sample.
- B. Acid-Etched Finish: Use acid and hot-water solution, equipment, application techniques, and cleaning procedures to expose aggregate and surrounding matrix surfaces to match accepted sample or mockup units. Protect hardware, connections, and insulation from acid attack.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Furnish anchorage devices for precast concrete units to be embedded in or attached to the building structural frame or foundation before start of such Work. Provide locations, setting diagrams, templates and instructions for the proper installation of each anchorage device.

3.02 EXAMINATION

- A. Examine supporting structural frame or foundation and conditions for compliance with requirements for installation tolerances, bearing surface tolerances, and other conditions affecting precast concrete performance.
- B. Proceed with precast concrete installation only after unsatisfactory conditions have been corrected.
- C. Contractor shall notify precast concrete erector that supporting cast-in-place concrete foundation and building structural framing has attained minimum allowable design compressive strength or supporting steel or other structure is structurally ready to receive loads from precast concrete units prior to proceeding with installation.

3.03 CLEANING

- A. Clean all surfaces of precast concrete to be exposed to view, as necessary, prior to shipping.
- B. Clean mortar, plaster, fireproofing, weld slag, and any other deleterious material from concrete surfaces and adjacent materials immediately.
- C. Clean exposed surfaces of precast concrete units after erection and completion of joint treatment to remove weld marks, dirt, stains and other markings.
 - 1. Perform cleaning procedures, if necessary, according to precast concrete fabricator's recommendations. Protect adjacent work from staining or damage due to cleaning operations.

2. Do not use cleaning materials or processes that could change the appearance of exposed concrete finishes or damage adjacent materials.

END OF SECTION

03 45 00 CONCRETE ECOLOGY BLOCK

**SECTION 05-50-00
METAL FABRICATIONS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fabrications include:
 - 1. Metal downspout boots
 - 2. Loose bearing and leveling plates not specified in other sections.
 - 3. Structural clip and shapes
 - 4. Pipe bollards.
- B. Products furnished include:
 - 1. Galvanized Anchor bolts.
 - 2. Stainless steel anchor bolts.

1.02 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.03 QUALITY ASSURANCE

- A. Qualification Data: For professional engineer.
- B. Mill Certificates: Signed by stainless-steel manufacturers, certifying that products furnished comply with requirements.
- C. Welding certificates.
- D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- E. Research/Evaluation Reports: For post-installed anchors, from ICC-ES.

1.04 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Coatings products.
- B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:
 - 1. Metal down spout boots.
 - 2. Clips, hot dipped galvanized.
 - 3. Pipe bollards.

1.05 INFORMATIONAL SUBMITTALS

- A. Mill Certificates: Signed by stainless-steel manufacturers, certifying that products furnished comply with requirements.
- B. Welding certificates.
- C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- D. Research/Evaluation Reports: For post-installed anchors, from ICC-ES.

1.06 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 PRODUCTS

2.01 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
 1. Steel Plates: ASTM A 36/A 36M.
 2. Steel Bars and Shapes: ASTM A 276, [Type 316L].
 3. Steel pipe:
 4. Material: Galvanized steel, ASTM A 653/A 653M, [commercial steel, Type B] [structural steel, Grade 33 (Grade 230)], with G90 (Z275) coating; [0.108-inch (2.8-mm)] [0.079-inch (2-mm)] [0.064-inch (1.6-mm)] nominal thickness.

2.02 FASTENERS

- A. General: Unless otherwise indicated, provide [Type 316] stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
 1. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F 593 (ASTM F 738M); with hex nuts, ASTM F 594 (ASTM F 836M); and, where indicated, flat washers; Alloy [Group 1 (A1)] [Group 2 (A4)].
 2. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563 (ASTM A 563M); and, where indicated, flat washers.
 - a. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.
 3. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.
 - a. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.
 - b. Post-Installed Anchors: [Torque-controlled expansion anchors] [or] [chemical anchors].
 - c. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, unless otherwise indicated.
 - d. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy [Group 1 (A1)] [Group 2 (A4)] stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F 836M).

2.03 MISCELLANEOUS MATERIALS

- A. Shop Primers: Provide primers that comply with Section 099600 "High-Performance Coatings." Section 099113 "Exterior Painting," Section 099123 Interior Painting,"
- B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- C. Water-Based Primer: Emulsion type, anticorrosive primer for mildly corrosive environments that is resistant to flash rusting when applied to cleaned steel, complying with MPI#107 and compatible with topcoat.
- D. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

- E. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.
- F. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- G. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.
- H. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.04 FABRICATION GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- D. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- E. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
- F. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches (3.2 by 38 mm), with a minimum 6-inch (150-mm) embedment and 2-inch (50-mm) hook, not less than 8 inches (200 mm) from ends and corners of units and 24 inches (600 mm) o.c., unless otherwise indicated.

PART 3 EXECUTION

3.01 INSTALLATION GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.
- D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- E. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
 1. Cast Aluminum: Heavy coat of bituminous paint.
 2. Extruded Aluminum: Two coats of clear lacquer.

3.02 ADJUSTING AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

- B. Replace damaged materials specified in this Section with new materials that meet requirements.

END OF SECTION 05-50-00

SECTION 07-92-00**JOINT SEALANTS****PART 1 GENERAL****1.01 GENERAL PROVISIONS**

- A. Provision of elastomeric sealants and bond breaker/backer rod at metal to metal joints, roof to metal joints.

1.02 DESCRIPTION OF WORK

- A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
 - 1. Joint sealants and fillers.
- B. This Section includes joint sealants for the applications specified with the products in this Section and as indicated on the Drawings.

1.03 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.
- B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.04 SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- C. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- D. Field Test Report Log: For each elastomeric sealant application.
- E. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.
- F. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.
- G. Sample Warranties: For special warranties.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
 - 1. Use manufacturer's standard test method to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
 - 2. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.

3. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
 4. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.
- D. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to Project joint substrates as follows:
1. Locate test joints where indicated on Project or, if not indicated, as directed by A/E.
 2. Conduct field tests for each application indicated below:
 - a. Each type of elastomeric sealant and joint substrate indicated.
 - b. Each type of non-elastomeric sealant and joint substrate indicated.
 3. Notify A/E seven days in advance of dates and times when test joints will be erected.
 - a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193.
 - 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 4. Report whether sealant in joint connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
 5. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.06 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
 2. When joint substrates are wet.
 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.07 WARRANTY

- A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Five years from date of Substantial Completion.
- B. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 2. Disintegration of joint substrates from causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.
 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS**2.01 JOINT SEALANTS, GENERAL**

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As indicated by manufacturer's designations.

2.02 JOINT SEALANTS

- A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- B. Single-Component Neutral-Curing Silicone Sealant:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation; 790.
 - b. GE Silicones; SilPruf LM SCS2700.
 - c. May National Bondaflex Sil 290
 - d. Pecora Corporation; 864.
 - e. Tremco Inc.; Spectrem 1.
 - 2. Use Sealants compatible with roof manufacturers membrane warranty.
 - 3. Extent of Use: Joints in exterior vertical and soffit surfaces.

2.03 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.04 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include concrete, masonry and unglazed surfaces of ceramic tile.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following: metal, glass, porcelain enamel and glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.03 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.

2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

3.04 FIELD QUALITY CONTROL

- A. Cooperate with field quality control personnel. Allow inspectors access to scaffolding and work areas, as needed to perform inspections.
- B. Additional inspections and retesting of materials which fail to comply with specified material and installation requirements shall be performed at Contractor's expense.

3.05 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.06 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

**END OF SECTION 07-92-00
JOINT SEALANTS**

SECTION 13-12-50

PRE-ENGINEERED METAL BUILDING SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

- A. The work under this Division shall be subject to the requirements of the CONDITIONS OF CONTRACT, GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS, DRAWINGS, SCHEDULES, ADDENDA and other Contract Documents.
- B. Refer to the Drawings and Specifications of other trades and Contractors for items which might affect the work under this Division.
- C. NOTE: P.E.M.B. (PEMB) = Pre-Engineered Metal Building

1.02 GENERAL

- A. Work under this Section includes the design, fabrication, delivery, and erection of the structural framed building in this Project. Included are all the structural steel framing, fasteners, anchor bolts, purlins, girts, bracing, roofing, gutters, flashing and any other material or equipment for a pre-engineered metal building.
- B. The General Contractor shall be responsible to adapt structural foundation design as required based on their selection of a building manufacturer and that manufacturer's reactions. All deviations from the design drawings shall be designed and stamped by a NYS PE at the cost of the Contractor.

1.03 STANDARDS

- A. Reference Standards: Comply with the following as applicable:
 - 1. Design, Fabrication and Erection: "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings" and the "Code of Standard Practice for Steel Buildings and Bridges" by the American Institute of Steel Construction (AISC Specification and Code).
 - 2. Design and Fabrication of Cold-formed Steel Structural Members: "Specification for the Design of Cold-Formed Steel Structural Members" by the American Iron and Steel Institute (AISI Specification).
 - 3. Welding: Comply with the provisions of the "Structural Welding Code - Steel, AWS D1.1" or the "Structural Welding Code - Sheet Steel, AWS D1.3", by the American Welding Society (AWS Codes).
 - 4. High-Strength Bolting: Provide high strength bolting in accordance with the "Specification for Structural Joints Using ASTM A325 or A490 Bolts" approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation on August 14, 1980 except as follows:
 - a. Item 1(c): Wind connections and all other connections transferring moment shall be included among the connections limited to friction-type.
 - b. Item 5(b): All high strength bolts shall have a hardened washer under the element (nut or bolt head) turned in tightening, regardless of the method of tightening.
 - c. Item 6: The inspection of bolt tightening shall be as specified under Item 6(d). Furnish the calibration device and the inspection torque wrench, and make them available, upon request, to the Engineer or designated inspection laboratory during the entire period when steel is being fabricated and erected. The inspection torque wrench shall be capable of indicating that the job inspecting torque has been reached by a second method in addition to direct observation of the wrench dial. The inspection wrench calibration and the bolt tightening inspection shall be performed by the Contractor, and shall be witnessed by the Engineer/Architect or the designated inspection laboratory.
 - 5. Clevises, Turnbuckles, and Sleeve Nuts: Comply with the "Steel Construction Manual" by The American Institute of Steel Construction (AISC Manual).

1.04 DESIGN REQUIREMENTS

- A. The structural design of the facility shall be accomplished by a Professional Engineer registered in the state of New York with demonstrated recent experience in the structural design of facilities similar in size and scope. The framing plan, structural elevations and each drawing of the structural components shall bear the New York State Professional Engineering registration stamp of the Engineer who is responsible for the structural design.
- B. Design Criteria: Building design shall conform to the Metal Building Manufacturers Association's (MBMA) "Design Practices" and "Code of Standard Practice", "Building Code of New York State" (current edition) and with the following criteria:
 - 1. Design Load: Basic design loads shall include dead, live, wind, uplift, snow, temperature, and seismic zone in addition to all dead and collateral loads in accordance with MBNA and the Building Code of New York State and all other applicable codes.
 - 2. Light-gauge elements of the building shall be designed in accordance with the "Specifications for the Design of Light-Gage Cold-Formed Steel Structural Members" published by AISI.
 - 3. Roof pitch for the major steel "bents" shall be as shown on the drawings.
 - 4. Project Specific Clearances: The front (east elevation) of the single slope structure needs to provide a Minimum of 14'-0" Clear Height Above Finish Floor at the low end of the structure.

1.05 SUBMITTALS

- A. Shop Drawings: Drawings shall show specific application to this Project. Submit all required drawings in one submission, except as noted.
 - 1. Erection Drawings: Manufacturer's complete erection drawings. Indicate manufacturer's identification marking for the components.
 - 2. Structural Drawings:
 - a. Manufacturer's drawings showing base plate dimensions and foundation loads for all columns and/or rigid frames.
 - b. Manufacturer's drawings showing anchoring details for the sill members, door jambs, and other miscellaneous items requiring connections to the concrete foundation.
 - c. Manufacturer's details for any proposed wall wind bracing system other than portal columns as shown.
 - d. Revised Foundation drawings showing dimensions and elevations of all piers, walls, and footings required. Submit foundation plans specific to manufacturer's requirements, designed and stamped by a NYS PE and submitted by the Contractor for approval. Responsibility of Contractor.
 - e. Anchor bolt plan showing the location of all columns and/or rigid frames, and the location of all necessary anchor bolts or other main framing connections to the concrete foundation.
 - f. Anchor bolt calculations resisting column base reactions for all loads
 - g. Anchor bolt and tie rod details.
Note: Drawings required under 2.d., 2.e., and 2.f., and 2e., shall not be submitted until the manufacturer's drawings required under 2.a., 2.b., and 2.c. have been approved.
Note: Manufacturer's standard sheets showing loads or details for a multiple range of building spans, heights, and loadings will not be accepted.
 - h. If not specifically defined above, Contractor to confirm that the Manufacturer's Submission includes:
 - 1) Reactions
 - 2) Column sizes and layout
 - 3) Anchor bolt requirements
 - 3. Architectural Drawings: Architectural detail drawings for all auxiliary building components and accessories.

- B. Product Data: Manufacturer's catalog sheets, preparation instructions and recommendations, storage and handling requirements and recommendations, specifications and installation instructions for the following:
 - 1. Roofing panels.
 - 2. NOT USED
 - 3. Trim, exterior and interior.
 - 4. Flashings.
 - 5. Gutters and Leaders
 - 6. Sealants and gaskets.
- C. Samples:
 - 1. Color Samples: Manufacturer's full range of available standard colors and patterns for each finish product specified including but not limited to: roofing panels, trim, gutters, leaders, and other factory color-coated components.
- D. Bill of Materials:
 - 1. Bills of material shall be furnished and shall include item weights.
- E. Quality Control Submittals:
 - 1. Design Calculations: Manufacturer's design calculations, signed and sealed by a licensed Professional Engineer registered in the State of New York, for the structural framing and exterior wall and roofing panels. The framing plan, structural elevations and all other structural drawings shall bear a New York State Professional Engineering registration stamp of Engineering who is responsible for the structural design.
 - a. The Engineer's cover letter shall state that he or she has received a set of the Contract Drawings and Specifications and that the design calculations are based on the requirements of the Contract Drawings and Specifications.
 - 2. Certificates: Metal building manufacturer's written certification that the structure has been designed in conformance to the specified design loading and other design requirements.
- F. Contract Closeout Submittals:
 - 1. Warranties:
 - a. Roofing Panels: Furnish manufacturer's weather tightness warranty for a maximum of 20 years against leaks in standing seam roof panels, arising out of or caused by ordinary wear and tear under normal weather and atmospheric conditions.

1.06 WARRANTY

- A. Building System Warranty
 - 1. Furnish manufacturer's standard warranty for the metal building system, excluding paint.
 - 2. The manufacturer shall warrant the metal building system against failure due to defective material or workmanship for a period of one (1) year from date of shipment.
 - 3. The liability under this warranty shall be limited to furnishing, but not dismantling or installing, necessary replacement material F.O.B. manufacturer's plant. In no event shall the manufacturer be liable for loss of profits, or other incidental, consequential, or special damages.
- B. Standing Seam Roof Weathertightness Warranty
 - 1. Furnish manufacturer's weathertightness warranty for a maximum of 20 years against leaks in standing seam roof panels, arising out of or caused by ordinary wear and tear under normal weather and atmospheric conditions.
- C. Roof Paint Finish Warranty
 - 1. Paint Systems
 - a. Furnish manufacturer's standard warranty for the metal panel paint system against chipping, peeling, blistering, fading in excess of 5 NBS Hunter units as set forth in ASTM-D-2244, and chalking in excess of 8 units as set forth in ASTM-D-4214.
 - b. The warranty shall be for a period of 35 years from the date of shipment for PVDF paint systems.

- c. The warranty shall be for a period of 25 years from the date of shipment for silicone-polyester paint systems.
- 2. Galvalume® systems
 - a. Furnish manufacturer's standard warranty for the Galvalume® panels against rupture, structural failure, or perforation due to normal atmospheric conditions.
 - b. The warranty shall be for a period of 20 years from the date of shipment for Galvalume® systems.

1.07 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: The manufacturer of the pre-engineered metal building shall be regularly engaged in the design and fabrication of pre-engineered, pre-fabricated metal buildings, shall have furnished such buildings for five similar projects that have been in use for not less than five years, and shall be subject to the approval of the Engineer/Architect. The building manufacturer shall be capable of furnishing compatible auxiliary building components and accessories shown or specified.
 - 1. If requested, furnish to the Owner the names and addresses of five similar projects where the manufacturer's building has been in use for five years.
- B. Installer's Qualifications: The person supervising the installation of the work of this Section shall be experienced in pre-engineered metal building work, and shall have been regularly employed by a company engaged in the erection and installation of such buildings for a minimum of three years.
 - 1. If requested, furnish to the Engineer/Architect the names and addresses of three similar projects for which the supervisor has supervised the erection and installation of pre-engineered metal buildings.
- C. Regulatory Requirements:
 - 1. Code: Comply with the applicable provisions of the Building Code of New York State.
 - 2. Column Fire Rating: Comply with the applicable specifications and details of Underwriters Laboratories, Inc.
 - 3. Building Grounding: Comply with National Electrical Code.

1.08 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements, provide products by one of the following or other approved equal:
 - 1. Nucor Building Systems
 - 2. Butler Manufacturing Company
 - 3. Ceko Building Systems
 - 4. Varco-Pruden Buildings
 - 5. Star Building Systems
 - 6. Robertson Building Systems
 - 7. Approved Equal.
- B. The manufacturer shall be the prime contractor for the design and fabrication of the building.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver building components, except structural steel, to the Site in unopened cartons, crates, or other protective containers bearing the manufacturer's labels.
- B. Components shall have manufacturer's identification marking corresponding to the marking shown on the erection drawings.
- C. Keep materials dry while in storage.
- D. Handle materials by a method which will prevent damage to components, including finishes.
- E. Keep materials in manufacturer's original, unopened containers and packaging until installation.
- F. Do not store materials directly on ground.

- G. Store materials on flat, level surface, raised above ground, with adequate support to prevent sagging.

1.10 MATERIALS

- A. Basic Materials: Except as otherwise specified or indicated on the Drawings, building components and assemblies shall be fabricated from the following applicable materials as required to produce units conforming to the design and types of fabrications required for the building.
1. Structural Steel Members: ASTM A36, A529 or A572 except as otherwise indicated.
 2. Cold-Rolled Structural Steel: ASTM A446, Grade A except higher strength grade if needed to comply with design criteria.
 3. Cold-Formed Structural Steel: ASTM A570.
 4. Structural Steel Tubing: ASTM A500, Grade B or A501.
 5. Steel Plate and Bar Stock: ASTM A529 or A572.
 6. Steel Pipe: ASTM A53, type and weight as required, Grade B.
 7. Anchor Bolts and Tie Rods: ASTM A36 or A675, Grade 70.
 8. Clevises, Turnbuckles, and Sleeve Nuts: Similar to those shown in Part 4 of the AISC Manual. The safe working loads shall be adequate for the building furnished.
 9. High Strength Bolts: ASTM A325.
 10. Common (Standard) Bolts: ASTM A307.
 11. Steel for Shims and Fillers: ASTM A569.
 12. Welding Materials: AWS Codes, type required for materials being welded.
 13. Covering Fasteners:
 - a. Screw Bolts: Type 300 series stainless steel capped low profile head, 200 inch lb. min stripping tongue, and color finish on exposed exterior surfaces matching adjacent panels/trim.
 - b. Sheet Metal Screws: Type 300 series stainless steel or ASTM A165 cadmium plated case hardened carbon steel, self-drilling or self-tapping, standard hexagonal head or hex-washer head, color finish on exposed exterior surfaces matching adjacent panels/trim.
 - c. Rivets: Aluminum, pull type, 1400 lb. setting strength, 1650 lb. shear strength, 350 lb. min push out strength, color cap on exposed exterior surface matching adjacent panels/trim.
 - d. Sealing Washers: Neoprene washers, ASTM D735.
 14. All structural steel including bolts to be hot dipped galvanized.
 15. Bituminous Paint: Asphaltic type, SSPC - Paint 12.
 16. Bedding Mortar:
 - a. Cement Grout: Portland cement complying with ASTM C150, Type I or III, and clean uniformly graded natural sand complying with ASTM C404, size No. 2; mixed at a ratio (by volume) of 1.0 part cement to 3.0 parts sand, with only the minimum amount of water required for placement and hydration.
 - b. Shrink-Resistant Grout: Factory-packaged, shrink-resistant, non-staining, non-ferrous mortar grouting compound selected from the following:
 - 1) Masterflow 713 by Master Builders.
 - 2) SonogROUT by Sonneborn.
 - 3) Five Star Grout by U.S. Grout Corporation.
 - 4) Crystex by L&M Construction Chemicals.
 - 5) Non-Corrosive, Non-Shrink Grout by A.C. Horn.
- B. Assembly and Installation Accessories: Building manufacturer's standard reinforcements, extensions, clips, brackets, miscellaneous fasteners and anchoring devices, spacers, furring strips, closures, flashings, expansion joints, thermal breaks, adhesives, and other components needed for a complete, permanently weatherproof installation. Materials shall be non-deteriorating, corrosion resistant, and compatible with adjoining materials.

- C. Connections: Fasteners shall be of size and in quantities to securely and permanently join building components, and shall be complete with necessary hardware and accessories as required for the application. Connections shall allow for expansion and contraction in accordance with the approved design. Screw bolts and rivets shall have metal-backed sealing washers. Except as otherwise indicated, provide the following fastener types for the following locations:
 - 1. Roofing Panels to Structural Members: Screw bolts or rivets.
 - 2. NOT USED.
 - 3. NOT USED.
 - 4. NOT USED.
 - 5. Trim: Same fasteners as adjacent panels.
- D. Sealants, Gaskets and Closures:
 - 1. Tape Sealant: Flat shaped, elastomeric, non-hardening, ribbon sealant; type recommended by building manufacturer for the particular use and conditions of application.
 - 2. Tube or Pumpable Sealant: Polybutenebutyl or acrylic terpolymer base sealant, or other type sealant recommended by building manufacturer for the particular use and conditions of application.
 - 3. Gaskets: Rubber, building manufacture's standard shapes.
 - 4. Closures: Closed cell foam or rubber material, formed to match panel profiles, sized to provide weather tightness.
- E. Galvanizing: Complying with the following requirements except where otherwise specified.
 - 1. Formed Sheet Steel: ASTM A653, coating designation G-90.
 - 2. Assembled Steel Products: ASTM A123.
 - 3. Iron and Steel Hardware: ASTM A153.
 - 4. Products Fabricated From Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strip: ASTM A123.
- F. Color Finish: Factory applied color finish system on exposed surfaces of steel components specified to receive color finish, complying with the following requirements:
 - 1. Surface Preparation: Galvanized steel shall be given a chemical conversion treatment conforming to Federal Government Specification MIL-C-490A, Type 1, Grade 1.
 - 2. Coating: After conversion treatment, metal shall be precision coated with thermosetting polymerized enamel to a dry film of one mil, plus or minus 0.2 mil, over the entire material width prior to forming of panels.
 - 3. Finish Pigmentation: Inorganic pigments selected for maximum durability and resistance to fading, except do not use aluminum pigment.
 - 4. Finish Gloss: Evenly maintained over the entire surface at 30, plus or minus 5 units, as measured on a 60 degrees Gardner photo volt meter for appearance, balance, reflectivity and durability.
 - 5. Colors: As selected by the Architect from building manufacturer's standard colors.

1.11 PRIMARY BUILDING FRAMING

- A. Columns, roof beams, trusses, and rigid frames shall be factory fabricated, with required holes in webs and flanges accurately punched or drilled unless otherwise indicated or approved. Enlarging or gouging holes at the site will not be permitted. Base plates, splice plates, stiffener plates, and other required plates shall be shop fabricated and welded in place where applicable.
- B. Rigid Frames: Clear span, solid web framing, tapered or uniform depth, welded-up plate section straight columns and beams.
 - 1. Rigid Frame Tie Rods and Anchor Bolts:
 - a. Tie rods shall be round bars, of constant diameter or with integral upset ends.
 - b. The allowable tensile stress on the unthreaded body area of tie rods, and on the tensile stress area of anchor bolt and tie rod threads shall be 22,000 psi.

- c. Tie rods shall not be spliced by welding.
- C. Trusses: Open web framing; hot rolled sections, cold formed shapes, or built-up shapes of welded plate construction.
- D. Endwall Framing: Corner posts, endposts and rake beams; hot rolled sections, cold formed shapes, or built-up shapes of welded plate construction.
- E. Endwall Framing: Rigid frame with full bay loading capacity and endwall columns; built-up shapes of welded plate construction, hot rolled sections, or cold formed shapes.
- F. Bracing: Wind bracing and struts, flange and knee bracing, sag rods, and other bracing and support members as required by the building design; steel angles and rods recommended by building manufacturer unless otherwise indicated.
- G. Bolts for Field Assembly of Primary Building Framing and Bracing: High strength bolts.
- H. Shop Painting: Comply with the following requirements except where otherwise specified:
 - 1. Steel framing shall be thoroughly cleaned of loose mill scale, loose rust, weld slag, and other foreign material. Oil and grease shall be removed with solvent.
 - a. Galvanized items shall be rinsed in hot alkali or in an acid solution and then in clear water. Welded and abraded galvanized surfaces shall be repaired with a 2 mil thick coating of cold galvanizing compound applied in accordance with compound manufacturer's instructions.
 - 2. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C

1.12 SECONDARY BUILDING FRAMING

- A. Purlins: Cold formed steel shapes, or cold formed open web welded trusses
- B. Girts: Cold formed steel shapes
- C. Eave Members: Cold formed steel shapes.
- D. Sill Members: Roll formed steel base angle (or zee), or steel base tube with anchors.
- E. Framing for Miscellaneous Openings: All openings shall be framed for proper support and attachment. Frames shall be fabricated from structural shapes and bars with corners fully welded and ground smooth, and with provisions for bracing to building framing.
- F. Shop Painting: Comply with the requirements specified for Primary Building Framing.

1.13 ROOFING PANELS

- A. General
 - 1. The roof shall be covered with a double-lock standing seam roof system installed in accordance with the manufacturer's instructions.
- B. Roof Panel
 - 1. Roof panel shall be factory roll-formed roof panel 24" wide, with 2 major corrugations, 2" high (2-3/4" including seam). 24" on center. The flat of the panel shall contain cross flutes 6" on center perpendicular to the major corrugations the entire length of the panel to reduce wind noise and improve walkability.
 - 2. Panel material as specified shall be 24 gage galvanized (G-90 coating), per ASTM specification A653 (G90), and painted with standard finish system, a full strength, 70% Kynar 500 or Hylar 5000 fluoropolymer coating. Manufacturer warrants that coating shall not blister, peel, crack, chip, or experience material rust through for 25 years. For a period of 25 years chalking shall not exceed #8 - ASTM and fading shall be 5DE Color Difference Units or less.
 - 3. Panel of maximum possible length shall be used to minimize endlap; eave panel shall extend beyond the structural line of the sidewall.
 - 4. Panel shall be factory prepunched at panel end to match prepunched holes in the eave structural member. Panel end splice shall be factory prepunched and prenotched. Panel end splice shall be floating and allow the roof panel to expand and contract with roof panel temperature change.

5. Edge assembly shall be designed to allow roof panels to move lengthwise with expansion/contraction as the roof panel temperature changes. Parts shall be factory prepunched for correct field assembly. Panel closure and interior reinforcing strap shall be installed to seal the panel end at the ridge peak. The attachment fasteners shall not be exposed on the weather side. A lockseam plug shall be used to seal the lockseam portion of the panel. A hi-tensile steel ridge cover shall span from panel closure to panel closure and flex as the roof system expands and contracts.
- C. Roof Accessories
1. Accessories (**trim, gutter, fascia**) shall be as standard with manufacturing company, unless otherwise noted and furnished as specified.
 2. The color coating on all gutter, downspout, gable trim and eave trim to be Kynar 500 finish system.
 3. Location of standard accessories shall be as shown on erection drawings as furnished by manufacturing company.
 4. Material used in flashing and transition parts and furnished as standard by manufacturing company may or may not match the roof panel material. Parts shall be compatible and shall not cause a corrosive condition. Copper and lead material shall not be used with GALVALUME or optional aluminum coated panels.
 5. Roof Curbs: NOT USED.
 6. Pipe Flashings: Aluminum base with EPDM boot. The base flange must bend to form a seal with surface irregularities or roof pitch.
 - a. Size: 1/4" to 4" Pipe
 - b. Size: 4" to 7" Pipe
 - c. Size: 7" to 13" Pipe
- D. Provision for Expansion/Contraction
1. Provision for thermal expansion movement of the roof system panel shall be accomplished by the use of clips with a movable tab. The stainless steel tab shall be factory centered on the roof clip when installed to assure full movement in either direction. A force of no more than 8 pounds will be required to initiate tab movement. Each clip shall accommodate a minimum of 1.25" in either direction.
 2. The roof shall provide for thermal expansion/contraction without detrimental effect to the roof panel when there is a $\pm 100^{\circ}\text{F}$ temperature difference between the inside structural framework of the building and the temperature of the roof panels.

1.14 FABRICATION

- A. Tolerances: Conform to tolerances set forth in MBMA Code of Standard Practice, except as follows:
1. Alignment and fit-up of welded joints shall conform to the "Structural Welding Code - Steel" (AWS D1.1).

1.15 EXAMINATION

- A. Verification of Conditions:
1. Examine surfaces to receive the metal building for defects that will adversely affect the execution and quality of the Work with Erector present.
 2. Before erection proceeds, survey elevations and locations of concrete and masonry bearing surfaces and locations of anchor rods, bearing plates and other embedment's to receive structural framing, with Erector present, for compliance with requirements and metal building system manufacturer's tolerances.
 3. Proceed with erection only after unsatisfactory conditions have been corrected.

1.16 PREPARATION

- A. Protect factory applied finishes from damage during erection. Clean surfaces to receive the work of this Section.
- B. Isolation: Isolate aluminum in contact with cementitious materials and dissimilar metals, except compatible metals. Separate the materials by applying a heavy coat of bituminous paint or 10

mil self-adhesive polyethylene tape on the contact surfaces. Use gasketed fasteners where needed to eliminate the possibility of corrosive or electrolytic action between metals.

- C. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads equal in intensity to design loads. Remove temporary supports when permanent structural framing connections and bracing are in place, unless otherwise indicated.

1.17 ERECTION AND INSTALLATION

- A. The erection of the building system shall be performed by a qualified erector, in accordance with the appropriate erection drawings, erection guides and /or other documents furnished by manufacturer, using proper tools, equipment and safety practices.
- B. Erection practices shall conform to "Common Industry Practices", Section 6, MBMA (LR)-Building Systems Manual.
- C. There shall be no field modifications to primary structural members except as authorized and specified by manufacturer.

1.18 ADJUSTING

- A. Restore minor visual damage to factory applied finishes in a manner to match the appearance and performance of the original finish, or remove the damaged parts and replace them with undamaged parts.

1.19 CLEANING

- A. Remove strippable protective coatings after completion of work liable to damage the finish. Comply with manufacturer's recommendations for coating removal.
- B. Clean exposed exterior and interior surfaces. Remove any residue from strippable coatings. Comply with panel manufacturer's printed recommendations for cleaning.

1.20 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

13-12-50 PRE-ENGINEERED METAL BUILDING SYSTEM

SECTION 26 05 43
UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 1. Conduit, ducts, and duct accessories for direct-buried and concrete-encased duct banks.
 2. Handholes and boxes.
 3. Manholes.

1.02 DEFINITION

- A. RNC: Rigid nonmetallic conduit.

1.03 ACTION SUBMITTALS

- A. Product Data: For the following:
 1. Duct-bank materials, including separators and miscellaneous components.
 2. Ducts and conduits and their accessories, including elbows, end bells, bends, fittings, and solvent cement.
 3. Accessories for manholes, handholes, boxes, and other utility structures.
 4. Warning tape.
 5. Warning planks.
- B. Shop Drawings for Precast or Factory-Fabricated Underground Utility Structures: Include plans, elevations, sections, details, attachments to other work, and accessories, including the following:
 1. Duct entry provisions, including locations and duct sizes.
 2. Reinforcement details.
 3. Frame and cover design and manhole frame support rings.
 4. Grounding details.
 5. Dimensioned locations of cable rack inserts, pulling-in and lifting irons, and sumps.
 6. Joint details.
 7. Submit shop drawings and sketches of proposed manhole design.
- C. Shop Drawings for Factory-Fabricated Handholes and Boxes Other Than Precast Concrete: Include dimensioned plans, sections, and elevations, and fabrication and installation details, including the following:
 1. Duct entry provisions, including locations and duct sizes.
 2. Cover design (including cover legend).
 3. Grounding details.
 4. Dimensioned locations of cable rack inserts, and pulling-in and lifting irons.

1.04 INFORMATIONAL SUBMITTALS

- A. Duct-Bank Coordination Drawings: Show duct profiles and coordination with other utilities and underground structures.
 1. Include plans and sections, drawn to scale, and show bends and locations of expansion fittings.
 2. Drawings shall be signed and sealed by a qualified professional engineer.
 3. Maintain copy in field for red-line drawings and as-built purposes.
- B. Product Certificates: For concrete and steel used in precast concrete manholes and handholes, as required by ASTM C 858.
- C. Qualification Data: For professional engineer and testing agency.
- D. Source quality-control test reports.
- E. Field quality-control test reports.

1.05 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.
- B. Comply with ANSI C2.

- C. Comply with NFPA 70.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver ducts to Project site with ends capped. Store nonmetallic ducts with supports to prevent bending, warping, and deforming.
- B. Store precast concrete and other factory-fabricated underground utility structures at Project site as recommended by manufacturer to prevent physical damage. Arrange so identification markings are visible.
- C. Lift and support precast concrete units only at designated lifting or supporting points.

1.07 PROJECT CONDITIONS

- A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by UM or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:
- B. Notify UM, in writing, no fewer than 10 days in advance of proposed interruption of electrical service.
- C. Do not proceed with interruption of electrical service without UMB's written permission.

1.08 COORDINATION

- A. Coordinate layout and installation of ducts, manholes, handholes, and boxes with final arrangement of other utilities, site grading, and surface features as determined in the field.
- B. Coordinate elevations of ducts and duct-bank entrances into manholes, handholes, and boxes with final locations and profiles of ducts and duct banks as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations from those indicated as required to suit field conditions and to ensure that duct runs drain to manholes and handholes, and as approved by Architect.

1.09 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
- B. Furnish cable-support stanchions, arms, insulators, and associated fasteners in quantities equal to 5 percent of quantity of each item installed.

PART 2 PRODUCTS

2.01 CONDUIT

- A. Conduit type shall be as specified on the Contract Drawings, or approved equal.

2.02 NONMETALLIC DUCTS AND DUCT ACCESSORIES

- A. Nonmetallic Ducts and Duct Accessories shall be as specified on the Contract Drawings, or approved equal.

2.03 DUCT ACCESSORIES:

- A. Duct Separators: Factory-fabricated rigid PVC interlocking spacers, sized for type and sizes of ducts with which used, and selected to provide minimum duct spacings indicated while supporting ducts during concreting or backfilling.
- B. Warning Tape: Underground-line warning tape specified in Division 26 Section "Identification for Electrical Systems."
- C. Concrete Warning Planks: Nominal 12 by 24 by 3 inches in size, manufactured from 6000-psi concrete.
- D. Color: Red dye added to concrete during batching.
- E. Mark each plank with "ELECTRIC" in 2-inch- high, 3/8-inch- deep letters.

2.04 PRECAST CONCRETE HANDHOLES AND BOXES

- A. Precast Concrete Handholes and Boxes shall be as specified on the Contract Drawings.
- B. Comply with ASTM C 858 for design and manufacturing processes.

2.05 HANDHOLES AND BOXES OTHER THAN PRECAST CONCRETE

- A. Description: Comply with SCTE 77.
 - 1. Color: As selected by owner.
 - 2. Configuration: Units shall be designed for flush burial and have integral closed bottom, unless otherwise indicated.
 - 3. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
 - 4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
 - 5. Cover Legend: Molded lettering, "ELECTRIC", " COMMUNICATIONS" or "SPECIAL SYSTEMS." As indicated for each service.
 - 6. Direct-Buried Wiring Entrance Provisions: Knockouts equipped with insulated bushings or end-bell fittings, selected to suit box material, sized for wiring indicated, and arranged for secure, fixed installation in enclosure wall.
 - 7. Duct Entrance Provisions: Duct-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.
 - 8. Handholes 12 inches wide by 24 inches long and larger shall have factory-installed inserts for cable racks and pulling-in irons.
- B. Polymer Concrete Handholes and Boxes with Polymer Concrete Cover: Molded of sand and aggregate, bound together with a polymer resin, and reinforced with steel or fiberglass or a combination of the two.
 - 1. Manufacturers: Shall be as specified on the Contract Drawings, or approved equal.
- C. Fiberglass Handholes and Boxes with Polymer Concrete Frame and Cover: Sheet-molded, fiberglass-reinforced, polyester resin enclosure joined to polymer concrete top ring or frame.
 - 1. Manufacturers: Shall be as specified on the Contract Drawings, or approved equal.
- D. Fiberglass Handholes and Boxes: Molded of fiberglass-reinforced polyester resin, with covers of hot-dip galvanized-steel diamond plate.
 - 1. Manufacturers: Manufacturers: Shall be as specified on the Contract Drawings, or approved equal.
- E. High-Density Plastic Boxes: Injection molded of high-density polyethylene or copolymer-polypropylene. Cover shall be hot-dip galvanized-steel diamond plate.
 - 1. Manufacturers: Shall be as specified on the Contract Drawings, or approved equal.

2.06 PRECAST MANHOLES

- A. Manufacturers: Shall be as specified on the Contract Drawings, or approved equal.
- B. Comply with ASTM C 858, with structural design loading as specified in Part 3 "Underground Enclosure Application" Article and with interlocking mating sections, complete with accessories, hardware, and features.
 - 1. Windows: Precast openings in walls, arranged to match dimensions and elevations of approaching ducts and duct banks plus an additional 12 inches vertically and horizontally to accommodate alignment variations.
 - a. Windows shall be located no less than 6 inches from interior surfaces of walls, floors, or roofs of manholes, but close enough to corners to facilitate racking of cables on walls.
 - b. Window opening shall have cast-in-place, welded wire fabric reinforcement for field cutting and bending to tie in to concrete envelopes of duct banks.
 - c. Window openings shall be framed with at least two additional No. 4 steel reinforcing bars in concrete around each opening.
 - 2. Duct Entrances in Manhole Walls: Cast end-bell or duct-terminating fitting in wall for each entering duct.
 - a. Type and size shall match fittings to duct or conduit to be terminated.
 - b. Fittings shall align with elevations of approaching ducts and be located near interior corners of manholes to facilitate racking of cable.
- C. Concrete Knockout Panels: 1-1/2 to 2 inches thick, for future conduit entrance and sleeve for ground rod.

- D. Joint Sealant: Asphaltic-butyl material with adhesion, cohesion, flexibility, and durability properties necessary to withstand maximum hydrostatic pressures at the installation location with the ground-water level at grade.

2.07 UTILITY STRUCTURE ACCESSORIES

- A. Manufacturers: Shall be as specified on the Contract Drawings, or approved equal.
- B. Manhole Frames, Covers, and Chimney Components: Comply with structural design loading specified for manhole.
 - 1. Frame and Cover: Weatherproof, gray cast iron complying with ASTM A 48/A 48M, Class 30B with milled cover-to-frame bearing surfaces; diameter, 26 inches.
 - a. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
 - b. Special Covers: Recess in face of cover designed to accept finish material in paved areas.
 - 2. Cover Legend: Cast in. Selected to suit system.
 - a. Legend: "UM ELECTRIC-LV" for duct systems with power wires and cables for systems operating at 600 V and less.
 - b. Legend: "UM ELECTRIC-HV" for duct systems with medium-voltage cables.
 - c. Legend: "UM COMMUNICATIONS" or "UM SPECIAL SYSTEMS" for communications, data, and telephone duct systems.
 - 3. Manhole Chimney Components: Precast concrete rings with dimensions matched to those of roof opening.
 - a. Mortar for Chimney Ring and Frame and Cover Joints: Comply with ASTM C 270, Type M, except for quantities less than 2.0 cu. ft. where packaged mix complying with ASTM C 387, Type M, may be used.
- C. Manhole Sump Frame and Grate: ASTM A 48/A 48M, Class 30B, gray cast iron.
- D. Pulling Eyes in Concrete Walls: Eyebolt with reinforcing-bar fastening insert, 2-inch- diameter eye, and 1-by-4-inch bolt. Provide two per face.
 - 1. Working Load Embedded in 6-Inch, 4500-psi Concrete: 13,000-lbf minimum tension.
- E. Pulling-In and Lifting Irons in Concrete Floors: 7/8-inch- diameter, hot-dip galvanized, bent steel rod; stress relieved after forming; and fastened to reinforcing rod. Exposed triangular opening. Provide two per floor.
 - 1. Ultimate Yield Strength: 40,000-lbf shear and 60,000-lbf tension.
- F. Bolting Inserts for Concrete Utility Structure Cable Racks and Other Attachments: Flared, threaded inserts of noncorrosive, chemical-resistant, nonconductive thermoplastic material; 1/2-inch ID by 2-3/4 inches deep, flared to 1-1/4 inches minimum at base.
 - 1. Tested Ultimate Pullout Strength: 12,000 lbf minimum.
- G. Expansion Anchors for Installation after Concrete Is Cast: Zinc-plated, carbon-steel-wedge type with stainless-steel expander clip with 1/2-inch bolt, 5300-lbf rated pullout strength, and minimum 6800-lbf rated shear strength.
- H. Cable Rack Assembly: Nonmetallic. Components fabricated from nonconductive, fiberglass-reinforced polymer.
 - 1. Stanchions: Nominal 36 inches high by 4 inches wide, with minimum of 9 holes for arm attachment. Provide minimum two (2) stanchions per manhole wall. Maintain 18" from corner of wall. Provide additional stanchions if spacing exceeds 30".
 - 2. Arms: Arranged for secure, drop-in attachment in horizontal position at any location on cable stanchions, and capable of being locked in position. Arms shall be minimum 8" long with 3 arms per stanchion, with 450-lb minimum capacity to 20 inches with 250-lb minimum capacity. Top of arm shall be nominally 4 inches wide, and arm shall have slots along full length for cable ties.
- I. Duct-Sealing Compound: Non-hardening, safe for contact with human skin, not deleterious to cable insulation, and workable at temperatures as low as 350F. Capable of withstanding temperature of 3000F without slump and adhering to clean surfaces of plastic ducts, metallic conduits, conduit coatings, concrete, masonry, lead, cable sheaths, cable jackets, insulation materials, and common metals.

- J. Fixed Manhole Ladders: Arranged for attachment to roof, wall, and floor of manhole. Ladder and mounting brackets and braces shall be fabricated from nonconductive, structural-grade, fiberglass-reinforced resin
- K. Portable Manhole Ladders: UL-listed, heavy-duty fiberglass specifically designed for portable use for access to electrical manholes. Minimum length equal to distance from deepest manhole floor to grade plus 36 inches.
- L. Cover Hooks: Heavy duty, designed for lifts 60 lbf and greater. Two required.
- M. Duct Identification System: Provide duct tag or sleeve system for numbering individual ducts in accordance with Specification 260533 "Identification for Electrical Systems."

2.08 SOURCE QUALITY CONTROL

- A. Test and inspect precast concrete utility structures according to ASTM C 1037.
- B. Non-concrete Handhole and Pull-Box Prototype Test: Test prototypes of manholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.
- C. Strength tests of complete boxes and covers shall be by either an independent testing agency or the manufacturer. A qualified registered professional engineer shall certify tests by manufacturer.
- D. Testing machine pressure gages shall have current calibration certification complying with ISO 9000 and ISO 10012, and traceable to NIST standards.

PART 3 EXECUTION

3.01 UNDERGROUND DUCT APPLICATION

- A. Ducts for Electrical Cables Over 600 V: RNC, NEMA Type EPC-40-PVC, in concrete-encased steel-rebar reinforced duct bank, unless otherwise indicated.
- B. Ducts for Electrical Feeders 600 V and Less: RNC, NEMA Type EPC-40-PVC, in concrete-encased duct bank, unless otherwise indicated.
- C. Ducts for Electrical Branch Circuits: RNC, NEMA Type EPC-80-PVC, in direct-buried duct bank, unless otherwise indicated.
- D. Underground Ducts for Telephone, Communications, or Data Utility Service Cables: RNC, NEMA Type EPC-40-PVC, in concrete-encased duct bank, unless otherwise indicated.
- E. Underground Ducts for Telephone, Communications, or Data Utility Service Cables: RNC, NEMA Type EPC-40-PVC, installed in [direct-buried] [concrete-encased] duct bank, unless otherwise indicated.
- F. Underground Ducts Crossing Paved Paths, Walks, Driveways, Roadways, and Railroads: RNC, NEMA Type EPC-40-PVC, encased in reinforced concrete.

3.02 UNDERGROUND ENCLOSURE APPLICATION

- A. Handholes and Boxes for 600 V and Less, Including Telephone, Communications, and Data Wiring:
 - 1. Units in Roadways and Other Deliberate Traffic Paths: Precast concrete. AASHTO HB 17, H-20 structural load rating.
 - 2. Units in Driveway, Parking Lot, and Off-Roadway Locations, Subject to Occasional, Nondeliberate Loading by Heavy Vehicles: Precast concrete, AASHTO HB 17, H-20.
 - 3. Units Subject to Light-Duty Pedestrian Traffic Only: Fiberglass-reinforced polyester resin, structurally tested according to SCTE 77 with 3000-lbf vertical loading.
- B. Manholes: Precast or cast-in-place concrete.
 - 1. Units Located in Roadways and Other Deliberate Traffic Paths by Heavy or Medium Vehicles: H-20 structural load rating according to AASHTO HB 17.
 - 2. Units Not Located in Deliberate Traffic Paths by Heavy or Medium Vehicles: H-10 load rating according to AASHTO HB 17.

3.03 EARTHWORK

- A. Excavation and Backfill: Comply with Division 31 Section "Earth Moving," but do not use heavy-duty, hydraulic-operated, compaction equipment.

- B. Restore areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Division 32 Sections "Turf and Grasses" and "Plants."
- C. Cut and patch existing pavement in the path of underground ducts and utility structures according to Division 01 Section "Cutting and Patching."

3.04 DUCT INSTALLATION

- A. Slope: Pitch ducts a minimum slope of 1:300 down toward manholes and handholes and away from buildings and equipment. Slope ducts from a high point in runs between two manholes to drain in both directions.
- B. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use 5" 60-degree manufactured long sweep bends with a minimum radius of 25 feet, both horizontally and vertically, at other locations, unless otherwise indicated.
- C. Joints: Use solvent-cemented joints in ducts and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent ducts do not lie in same plane.
- D. Duct Entrances to Manholes and Concrete and Polymer Concrete Handholes: Use end bells, spaced approximately 10 inches o.c. for 5-inch ducts, and vary proportionately for other duct sizes.
 - 1. Begin change from regular spacing to end-bell spacing 10 feet from the end bell without reducing duct line slope and without forming a trap in the line.
 - 2. Direct-Buried Duct Banks: Install an expansion and deflection fitting in each conduit in the area of disturbed earth adjacent to manhole or handhole.
 - 3. Grout end bells into structure walls from both sides to provide watertight entrances.
- E. Building Wall Penetrations: Make a transition from underground duct to rigid steel conduit at the building wall via metal junction box inside building. Use fittings manufactured for duct-to-conduit transition. Install conduit penetrations of building walls as specified in Division 26 Section "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."
- F. Sealing: Provide temporary closure at terminations of ducts that have cables pulled. Seal spare ducts at terminations. Use sealing compound and plugs to withstand at least 15-psig hydrostatic pressure.
- G. Pulling Cord: Install 100-lbf- test nylon cord in ducts, including spares.
- H. Concrete-Encased Ducts: Support ducts on duct separators.
 - 1. Separator Installation: Space separators close enough to prevent sagging and deforming of ducts, with not less than [4] [5] spacers per 20 feet of duct. Secure separators to earth and to ducts to prevent floating during concreting. Stagger separators approximately 6 inches between tiers. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
 - 2. Concreting Sequence: Pour each run of envelope between manholes or other terminations in one continuous operation.
 - a. Start at one end and finish at the other, allowing for expansion and contraction of ducts as their temperature changes during and after the pour. Use expansion fittings installed according to manufacturer's written recommendations, or use other specific measures to prevent expansion-contraction damage.
 - b. If more than one pour is necessary, terminate each pour in a vertical plane and install 3/4-inch reinforcing rod dowels extending 18 inches into concrete on both sides of joint near corners of envelope.
 - 3. Pouring Concrete: Spade concrete carefully during pours to prevent voids under and between conduits and at exterior surface of envelope. Do not allow a heavy mass of concrete to fall directly onto ducts. Use a plank to direct concrete down sides of bank assembly to trench bottom. Allow concrete to flow to center of bank and rise up in middle, uniformly filling all open spaces. Do not use power-driven agitating equipment unless specifically designed for duct-bank application.
 - 4. Reinforcement: Provide rebar reinforcement as directed on Drawings. Reinforce concrete-encased duct banks where they cross disturbed earth and where indicated. Arrange

- reinforcing rods and ties without forming conductive or magnetic loops around ducts or duct groups.
5. Forms: Use walls of trench to form side walls of duct bank where soil is self-supporting and concrete envelope can be poured without soil inclusions; otherwise, use forms.
 6. Minimum Space between Ducts: 3 inches between ducts and exterior envelope wall, 2 inches between ducts for like services, and 4 inches between power and signal ducts.
 7. Depth: Install bottom of duct bank at 60 inches (1525 mm) below grade and top of duct bank at least 24 inches below finished grade in areas not subject to deliberate traffic, and at least 30 inches below finished grade in deliberate traffic paths for vehicles, unless otherwise indicated.
 8. Stub-Ups: Use manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
 - a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
 - b. Stub-Ups to Equipment: For equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of base. Install insulated grounding bushings on terminations at equipment.
 9. Warning Tape: Bury warning tape approximately 12 inches above all concrete-encased ducts and duct banks. Align tape parallel to and within 3 inches of the centerline of duct bank. Provide an additional warning tape for each 12-inch increment of duct-bank width over a nominal 18 inches. Space additional tapes 12 inches apart, horizontally.
- I. Direct-Buried Duct Banks:
1. Support ducts on duct separators coordinated with duct size, duct spacing, and outdoor temperature.
 2. Space separators close enough to prevent sagging and deforming of ducts, with not less than 5 spacers per 20 feet of duct. Secure separators to earth and to ducts to prevent displacement during backfill and yet permit linear duct movement due to expansion and contraction as temperature changes. Stagger spacers approximately 6 inches between tiers.
 3. Excavate trench bottom to provide firm and uniform support for duct bank. Prepare trench bottoms as specified in Division 31 Section "Earth Moving" for pipes less than 6 inches in nominal diameter.
 4. Install backfill as specified in Division 31 Section "Earth Moving."
 5. After installing first tier of ducts, backfill and compact. Start at tie-in point and work toward end of duct run, leaving ducts at end of run free to move with expansion and contraction as temperature changes during this process. Repeat procedure after placing each tier. After placing last tier, hand-place backfill to 4 inches over ducts and hand tamp. Firmly tamp backfill around ducts to provide maximum supporting strength. Use hand tamper only. After placing controlled backfill over final tier, make final duct connections at end of run and complete backfilling with normal compaction as specified in Division 31 Section "Earth Moving."
 6. Install ducts with a minimum of 3 inches between ducts for like services and 6 inches between power and signal ducts.
 7. Depth: Install top of duct bank at least 36 inches below finished grade, unless otherwise indicated.
 8. Set elevation of bottom of duct bank below the frost line.
 9. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
 - a. Couple PVC-coated steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
 - b. For equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.
 10. Warning Planks: Bury warning planks approximately 12 inches above direct-buried ducts and duct banks, placing them 24 inches o.c. Align planks along the width and along the centerline of duct bank. Provide an additional plank for each 12-inch increment of duct-bank width over a nominal 18 inches. Space additional planks 12 inches apart, horizontally.

3.05 INSTALLATION OF CONCRETE MANHOLES, HANDHOLES, AND BOXES

- A. Cast-in-Place Manhole Installation:
 - 1. Finish interior surfaces with a smooth-troweled finish.
 - 2. Windows for Future Duct Connections: Form and pour concrete knockout panels 1-1/2 to 2 inches thick, arranged as indicated.
 - 3. Cast-in-place concrete, formwork, and reinforcement are specified in Division 03 Section "Cast-in-Place Concrete."
- B. Precast Concrete Handhole and Manhole Installation:
 - 1. Comply with ASTM C 891, unless otherwise indicated.
 - 2. Install units level and plumb and with orientation and depth coordinated with connecting ducts to minimize bends and deflections required for proper entrances.
 - 3. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
- C. Elevations:
 - 1. Manhole Roof: Install with rooftop at least 15 inches below finished grade.
 - 2. Manhole Frame: In paved areas and traffic ways, set frames flush with finished grade. Set other manhole frames 1 inch above finished grade.
 - 3. Install handholes with bottom below the frost line.
 - 4. Handhole Covers: In paved areas and traffic ways, set surface flush with finished grade. Set covers of other handholes 1 inch above finished grade.
 - 5. Where indicated, cast handhole cover frame integrally with handhole structure.
- D. Drainage: Install drains in bottom of manholes where indicated. Coordinate with drainage provisions indicated.
- E. Manhole Access: Circular opening in manhole roof; sized to match cover size.
 - 1. Install chimney, constructed of precast concrete collars and rings to support frame and cover and to connect cover with manhole roof opening. Provide moisture-tight masonry joints and waterproof grouting for cast-iron frame to chimney.
- F. Waterproofing: Apply waterproofing to exterior surfaces of manholes and handholes after concrete has cured at least three days. Waterproofing materials and installation are specified in Division 07 Section "[Elastomeric Sheet Waterproofing] [Thermoplastic Sheet Waterproofing]." After ducts have been connected and grouted, and before backfilling, waterproof joints and connections and touch up abrasions and scars. Waterproof exterior of manhole chimneys after mortar has cured at least three days.
- G. Hardware: Install removable hardware, including pulling eyes, cable stanchions, and cable arms, and insulators, as required for installation and support of cables and conductors and as indicated.
- H. Field-Installed Bolting Anchors in Manholes and Concrete Handholes: Do not drill deeper than 3-7/8 inches for manholes and 2 inches for handholes, for anchor bolts installed in the field. Use a minimum of two anchors for each cable stanchion.
- I. Warning Sign: Install "Confined Space Hazard" warning sign on the inside surface of each manhole cover.
- J. Install ground rod before placing manhole lid.

3.06 INSTALLATION OF HANDHOLES AND BOXES OTHER THAN PRECAST CONCRETE

- A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting ducts to minimize bends and deflections required for proper entrances. Use box extension if required to match depths of ducts, and seal joint between box and extension as recommended by the manufacturer.
- B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
- C. Elevation: In paved areas and trafficways, set so cover surface will be flush with finished grade. Set covers of other handholes 1 inch above finished grade.
- D. Install handholes and boxes with bottom below the frost line.

- E. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables, but short enough to preserve adequate working clearances in the enclosure.
- F. Field-cut openings for ducts and conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.
- G. For enclosures installed in asphalt paving and subject to occasional, non-deliberate, heavy-vehicle loading, form and pour a concrete ring encircling, and in contact with, enclosure and with top surface screeded to top of box cover frame. Bottom of ring shall rest on compacted earth.
 - 1. Concrete: 4500 psi, 28-day strength, complying with Division 03 Section "Cast-in-Place Concrete," with a troweled finish.
 - 2. Dimensions: 10 inches wide by 12 inches deep.

3.07 GROUNDING

- A. Ground underground ducts and utility structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- B. Install ground rod before placing manhole lid.

3.08 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections and prepare test reports:
 - 1. Demonstrate capability and compliance with requirements on completion of installation of underground ducts and utility structures.
 - 2. Pull aluminum or wood test mandrel through duct to prove joint integrity and test for out-of-round duct. Provide mandrel equal to 80 percent fill of duct. If obstructions are indicated, remove obstructions and retest.
 - 3. Test manhole and handhole grounding to ensure electrical continuity of grounding and bonding connections. Measure and report ground resistance as specified in Division 26 Section "Grounding and Bonding for Electrical Systems."
- B. Correct deficiencies and retest as specified above to demonstrate compliance.

3.09 CLEANING

- A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of ducts. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.
- B. Clean internal surfaces of manholes, including sump. Remove foreign material.

END OF SECTION 26 05 43

SECTION 26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Identification for raceways.
 - 2. Identification of power and control cables.
 - 3. Identification for conductors.
 - 4. Underground-line warning tape.
 - 5. Warning labels and signs.
 - 6. Instruction signs.
 - 7. Equipment identification labels.
 - 8. Miscellaneous identification products.

1.02 ACTION SUBMITTALS

- A. Product Data: For each electrical identification product indicated.

1.03 QUALITY ASSURANCE

- A. Comply with ANSI A13.1.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

PART 2 PRODUCTS

2.01 CONDUCTOR IDENTIFICATION MATERIALS

- A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.
- B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- C. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.
- D. Write-On Tags: Polyester tag, 0.010 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
 - 1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

2.02 UNDERGROUND-LINE WARNING TAPE

- A. Tape:
 - 1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
 - 2. Printing on tape shall be permanent and shall not be damaged by burial operations.
 - 3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.
 - 4. Detectable three-layer laminate, consisting of a printed pigmented polyolefin film, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
 - 5. Overall Thickness: 5 mils.
 - 6. Foil Core Thickness: 0.35 mil.
 - 7. Weight: 28 lb/1000 sq. ft..

8. 3-Inch Tensile According to ASTM D 882: 70 lbf, and 4600 psi.

B. Color and Printing:

1. Comply with ANSI Z535.1 through ANSI Z535.5.
2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE,.
3. Inscriptions for Orange-Colored Tapes: TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE,

2.03 WARNING LABELS AND SIGNS

- A. Comply with NFPA 70 and 29 CFR 1910.145.
- B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.

2.04 EQUIPMENT IDENTIFICATION LABELS

- A. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and UV-resistant seal for label.
- B. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

2.05 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- B. Apply identification devices to surfaces that require finish after completing finish work.
- C. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- D. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
- E. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches overall.

3.02 IDENTIFICATION SCHEDULE

- A. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.
 1. Color-Coding for Phase Identification, 600 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.
 - a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
 - b. Colors for 208/120-V Circuits:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.
 - c. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
- B. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source.

- C. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
 - 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
 - 2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
 - 3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.
- D. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.
 - 1. Install underground-line warning tape for both direct-buried cables and cables in raceway.
- E. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive warning labels.
 - 1. Comply with 29 CFR 1910.145.
 - 2. Identify system voltage with black letters on an orange background.
 - 3. Apply to exterior of door, cover, or other access.
 - 4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:
 - a. Power transfer switches.
 - b. Controls with external control power connections.
- F. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
 - 1. Labeling Instructions:
 - a. Indoor Equipment: Engraved, laminated acrylic or melamine label.
 - b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
 - c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
 - d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

END OF SECTION 26 05 53

SECTION 31-10-00 SITE CLEARING

PART 1 GENERAL

1.01 SUMMARY

- A. This work shall consist of clearing, grubbing, removing and disposing of all trees, brush, stumps, fences, debris and miscellaneous paving not covered under other contract items within the construction area and such other areas as specified or directed.
- B. No burning will be permitted on or off the contract site. All materials generated by any activity for the development, modification and construction of any transportation facility shall not be burned. This shall include but not be limited to land clearing material and demolition material. Such material shall hereinafter be referred to as disposable material.

1.02 SECTION INCLUDES

- A. Clearing and protection of vegetation and paving.
- B. Removal of existing debris.

1.03 SUBMITTALS

- A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.

1.04 QUALITY ASSURANCE

- A. Clearing Firm: Company specializing in the type of work required. Special Care shall be taken so as to not contaminate nearby surface water with construction debris and/or construction run-off.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SITE CLEARING

- A. Comply with other requirements specified in Divisio-1.
- B. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.02 EXISTING UTILITIES AND BUILT ELEMENTS

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Protect existing structures and other elements that are not to be removed.

3.03 VEGETATION

- A. Scope: Remove trees, shrubs, brush, and stumps in areas to be covered by building structure, paving, playing fields, lawns, planting beds or other improvements as depicted and/or described in the Contract Documents and/or as directed by the Town's Designated Representative.
- B. Do not remove or damage vegetation beyond the limits indicated on drawings.
- C. Install substantial, highly visible fences at least 3 feet high (at least 1 m high) to prevent inadvertent damage to vegetation to remain:
 - 1. At vegetation removal limits.
 - 2. Around trees to remain within vegetation removal limits; locate no closer to tree than at the drip line.
 - 3. Around other vegetation to remain within vegetation removal limits.
 - 4. See Section 01-50-00 for fence construction requirements.
- D. Vegetation Removed: Contractor is responsible to remove and dispose in accordance with all relevant laws and regulations. Do not burn, bury, landfill, or leave on site, except as indicated.

1. All wood and brush shall be disposed of within fifteen (15) days after cutting or felling unless otherwise approved at an approved off-site location. No burning of land clearing materials that result from the clearing and grubbing operations will be permitted. It shall be noted that the burial of wood and brush is strictly prohibited. Under no circumstances is disposal to be made in swamp or wetlands.
- E. Dead Wood: Remove all dead trees (standing or down), limbs, and dry brush on entire site; treat as specified for vegetation removed.
- F. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.

3.04 DEBRIS

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 31-10-00

**SECTION 31-22-00
GRADING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Rough grading the site.
- B. Finish grading and/or Fine Grading.

1.02 PRICE AND PAYMENT PROCEDURES

- A. See Unit Prices, for general requirements relating to unit prices for this work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Fill Materials: See Section 31-23-23.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that intended elevations for the Work are as indicated.
- B. Verify the absence of standing or ponding water.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- D. Notify utility company to remove and relocate utilities (if required).
- E. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.
- F. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, and paving, from damage by grading equipment and vehicular traffic.

3.03 ROUGH GRADING

- A. Remove topsoil and/or sand from areas to be further excavated, and re-graded, without mixing with foreign materials.
- B. Do not remove topsoil when wet.
- C. Remove subsoil from areas to be further excavated, or re-graded.
- D. Do not remove wet subsoil, unless it is subsequently processed to obtain optimum moisture content.
- E. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.
- F. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

3.04 SOIL REMOVAL

- A. Stockpile suitable excavated soils to be re-used on site; remove remainder from site.
 - 1. Suitable excavated soils may be re-used with the approval of the Town's Designated Representative.
- B. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet (2.5 m); protect from erosion.

3.05 FINISH GRADING / FINE GRADING

- A. Before Finish/Fine Grading:

1. Verify sanitary system and trench backfilling have been inspected.
 2. Verify subgrade has been contoured and compacted.
- B. Remove debris, roots, branches, stones, in excess of 1/2 inch (13 mm) in size. Remove soil contaminated with petroleum products.
 - C. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches (75 mm).
 - D. Place soil during dry weather.
 - E. Remove roots, weeds, rocks, and foreign material while spreading
 - F. Fine grade soil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
 - G. Maintain stability of soil during inclement weather. Replace soil in areas where surface water has eroded thickness below specifications.

3.06 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) (30 mm) from required elevation.
- B. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch) (13 mm).

3.07 REPAIR AND RESTORATION

- A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.
- B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from Architect as to remedy.
- C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.08 FIELD QUALITY CONTROL

- A. See Section 31-23-23 for compaction density testing.

3.09 CLEANING

- A. Remove unused stockpiled soil, sand, and subsoil. Grade stockpile area to prevent standing water.
- B. Leave site clean and raked, ready to receive landscaping.

END OF SECTION 31-22-00

SECTION 31-23-16 EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. All excavating required to complete the scope of work depicted and/or described in the contract documents and/or as directed by the Town's designated representative. This work shall include disposing of unsuitable and surplus material, preparing the sub-grade, compaction, grading, slopes and all other work needed to complete the work as depicted and/or described in the Contract Documents and/or as directed by the Town's Designated Representative.
- B. Temporary excavation support and protection systems (if required).

1.02 PRICE AND PAYMENT PROCEDURES

- A. See Division-1, Unit Prices, for general requirements applicable to unit prices for excavation.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 - Safety and Health Regulations for Construction Current Edition.

1.04 SUBMITTALS

- A. Project Record Documents: Record drawings at project closeout according to Division-1 Execution and Closeout Requirements. Show locations of installed support materials left in place, including referenced locations and depths, on drawings.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Bedding and Fill to Correct Over-Excavation:
 - 1. See Section 31-23-23 for bedding and corrective fill materials at general excavations.
 - 2. See Section 31-23-16.13 for bedding and corrective fill materials at utility trenches.
- B. Underground Warning Tapes: all underground utilities shall be installed with underground warning tapes as is the industry standard. Tape shall be colored and labeled in accordance with the type of utility it is placed above. Tape shall be submitted as a shop drawing for review and approval by the Town's Designated Representative. No extra payment shall be made for the furnishing or installing of the Underground Warning Tapes. This work is included in the price bid.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that intended elevations and layout for the work are as indicated.
- B. Survey existing adjacent structures and improvements and establish exact elevations at fixed points to act as benchmarks.
 - 1. Resurvey benchmarks during installation of excavation support and protection systems and notify Owner if any changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.
- C. Determine the prevailing groundwater level prior to excavation. If the proposed excavation extends less than 1 foot (305 mm) into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by Architect. If the proposed excavation extends more than 1 foot (305 mm) into the prevailing groundwater, control groundwater intrusion with a comprehensive dewatering procedures, or as directed by Geotechnical Engineer.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. See Section 31-10-00 for clearing, grubbing, and removal of existing debris.

- C. See Section 31-22-00 for soil removal.
- D. Locate, identify, and protect utilities that remain and protect from damage.
- E. Notify utility company to remove and relocate utilities.
- F. Protect existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- G. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by the Town's Designated Representative.

3.03 TEMPORARY EXCAVATION SUPPORT AND PROTECTION

- A. Excavation Safety: Comply with OSHA's Excavation Standard, 29 CFR 1926, Subpart P.

3.04 EXCAVATING

- A. Excavate to accommodate new structures and construction operations.
 - 1. Excavate to the specified elevations and as necessary to complete the work as depicted and/or described in the Contract Documents, as directed by the Town's Designated Representatives, and in conformance with the Suffolk County Department of Health Permit, Conditions, and Sanitary Code Regulations.
 - 2. Excavate to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work.
- B. Notify The Town's Designated Representative of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- C. Do not interfere with 45 degree bearing splay of foundations.
- D. Provide temporary means and methods, as required, to remove all water from excavations until directed by the Town's Designated Representative. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.05 REMOVAL OF ASPHALT PAVEMENT

- A. The Contractor shall remove all excavated material from the site which, in the opinion of the Town's Designated Representative, is not suitable for re-use, and shall dispose of same in a manner acceptable to the Town's Designated Representative. The Contractor may, however, re-use select excavated material for on-site fill provided it meets the required gradation requirements for same as approved by the Town's Designated Representative. There shall be no separate payment for handling and stockpiling suitable materials for reuse.

3.06 DISPOSAL OF EXCAVATED MATERIAL

- A. Coordinate with the Town of Brookhaven operations.

3.07 SUBGRADE PREPARATION

- A. See Section 31-23-23 for subgrade preparation at general excavations.

3.08 FILLING AND BACKFILLING

- A. Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation.

3.09 REPAIR

- A. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31-23-23.

3.10 FIELD QUALITY CONTROL

- A. See Division-1 - Quality Requirements, for general requirements for field inspection and testing.

3.11 CLEANING

- A. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31-22-00.
- B. Remove excavated material that is unsuitable for re-use from site.
- C. Remove excess excavated material from site.

3.12 PROTECTION

- A. Divert surface flow from rains or water discharges from the excavation.
- B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
- C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.
- D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- E. Keep excavations free of standing water and completely free of water during concrete placement.

END OF SECTION 31-23-16

SECTION 31-23-23

FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Backfilling and compacting for utilities outside the building.
- B. Backfilling and compacting for all work as required to complete the scope of work depicted and/or described in the Contract Documents and/or as directed by the Town's Designated Representative.
- C. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

1.02 PRICE AND PAYMENT PROCEDURES

- A. See Division-1 - Unit Prices, for general requirements applicable to unit prices for earthwork.

1.03 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses 2017 (Reapproved 2021).
- B. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop 2021.
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates 2019.
- D. ASTM C150/C150M - Standard Specification for Portland Cement 2021.
- E. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)) 2012 (Reapproved 2021).
- F. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method 2015, with Editorial Revision (2016).
- G. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)) 2012 (Reapproved 2021).
- H. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method 2015.
- I. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System) 2017, with Editorial Revision (2020).
- J. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth) 2017a, with Editorial Revision.

1.04 SUBMITTALS

- A. Product Data for Manufactured Fill.
- B. Materials Sources: Submit name of imported materials source.
- C. Compaction Density Test Reports.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where indicated.
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.

1.06 WARRANTY

- A. Correct defective Work within a five-year period after Date of Substantial Completion.

- B. Provide ten-year manufacturer warranty for manufactured fill material.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. All fill within and adjacent to regulated wetland areas shall consist of clean sand, gravel, or soil (not asphalt, slag, fly-ash, broken concrete or demolition debris). Further, fill shall not contain garbage household refuse, tires, woody material including tree or landscape debris and metal objects. The introduction of materials toxic to aquatic life is expressly prohibited. All fill within and adjacent to regulated wetland areas shall satisfy NYSDEC requirements.
- B. Fill must be clean upload sand of equivalent or slightly larger grain sizer and similar in color as is indigenous to the beach.
- C. RCA and/or crushed stone used in the project must be processed, screened, and clean of any contaminants listed in 2.01A above.
- D. Clean Sand Fill: Washed, clean Long Island Sand
1. Submittal for approval of material shall be submitted to the Town's Designated Representative for review and approval prior to delivery on-site.
 2. The sand shall be washed, clean, uniformly graded and having a mean grain size of 0.30mm – 0.70mm and free from loam, roots, sod, or other foreign or deleterious matter.
 3. Gradation as per ASTM D-422

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
1/4-inch	100
No. 4	80
No. 40	20 to 60
No. 200	0 to 5

4. The contractor shall deliver a sample to the site for approval prior to placing the contract amount. Sand which is not clean or contains debris shall be rejected and removed from the site at the contractor's expense.
 5. Clean sand used in conjunction with any sanitary leaching sand filters shall meet ASTM C33 gradation specifications, as depicted and/or described in the Contract Documents and/or as directed by the Town's Designated Representative.
- E. General Fill:
1. Import controlled fill consisting of clean, inorganic material with less than 10% passing a #200 sieve and 100% passing 2" sieve by weight.
 - a. Submit shop drawing of general fill specifications for review and approval by the Town's Designated Representative prior to install.
 2. Re-use of existing subsoil excavated on-site:
 - a. Excavated and reused material
 - b. Graded.
 - c. The use requires approval by the Town's Designated Representative and pending conditions encountered at time of construction.
 - d. Soils may require mixing with a more granular material and/or drying. Soils may become increasingly difficult to reuse and compact where wetted beyond the optimum moisture content.
 3. All General Fill Shall:
 - a. Be free of lumps larger than 3 inches (75 mm), rocks larger than 2 inches (50 mm), deleterious material and debris.
 - b. Comply with ASTM D2487 Group Symbol SP or SW clean sand with less than 10% Fines.
- F. Structural Fill:
1. All unsuitable fill and/or disturbed material encountered below new concrete footing locations and/or slabs on grade shall be excavated and replaced as structural fill.

2. If required, Structural Fill shall be placed in 12" maximum loose lifts and shall be compacted with vibratory rollers.
 3. Fill materials shall be tested by Modified Proctor Density (ASTM D-1557-78) and must qualify as select, with less than 12% passing through a No. 200 sieve.
 4. Soil shall be placed with moisture content and energy to provide 95% of maximum dry density.
 5. In place density tests shall be taken for each 1,000 SF in each lift. No tests shall be permitted to fall below 92% compaction.
 6. Select Structural Fill gradation requirements are as follows:
 - a. Maximum Particle Size: 2 inches
 - b. At least 12% and not more than 75% by weight retained on the #10 sieve.
 - c. Not more than 12% by weight of non-plastic fines (material passing the #200 sieve).
 7. The testing laboratory shall submit compaction reports for select fill to the Town's Designated Representative prior to requesting any Foundation Inspections.
 8. The finished excavation for foundations and/or footings shall be neat and true to line with all loose material removed.
 9. Foundation and/or footing excavations shall be kept free of loose material and standing water.
 10. The Contractor shall set the foundation(s) and concrete footings (top and bottom) at the elevations necessary to satisfactorily construct the work as depicted and/or described in the Contract Documents and/or as directed by the Town's Designated Representative.
- G. Granular Fill - Gravel : Pit run washed stone; free of shale, clay, friable material and debris.
1. Graded in accordance with ASTM C136/C136M, within the following limits:
 - a. 2 inch (50 mm) sieve: 100 percent passing.
 - b. 1 inch (25 mm) sieve: 95 percent passing.
 - c. 3/4 inch (19 mm) sieve: 95 to 100 percent passing.
 - d. 5/8 inch (16 mm) sieve: 75 to 100 percent passing.
 - e. 3/8 inch (9 mm) sieve: 55 to 85 percent passing.
 - f. No. 4 (4.75 mm) sieve: 35 to 60 percent passing.
 - g. No. 16 (1.18 mm) sieve: 15 to 35 percent passing.
 - h. No. 40 (450 micro m): 10 to 25 percent passing.
 - i. No. 200 (75 micro m): 5 to 10 percent passing.

2.02 SOURCE QUALITY CONTROL

- A. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
- B. If tests indicate materials do not meet specified requirements, change material and retest.
- C. Provide materials of each type from same source throughout the Work.

2.03 MOISTURE CONTROL

- A. All soils that are classed as suitable for the direct support of crushed stone and/or pavement (non-organic and non-frost susceptible soils) shall be scarified to a loose depth of ten (10) inches (25 cm) and recompact to 95 percent of the maximum density at the optimum moisture content of the soils as determined by ASTM D-1557. The moisture content at the time of compaction shall not be greater than one (1) percent nor less than two (2) percent by weight of dry soil of the optimum moisture content. Dry soils shall be moistened and thoroughly mixed to the required moisture content. Wet soils shall be dried by aerating to the required moisture content.
- B. The cost of adding moisture, drying and compaction shall be included in the price bid for this project.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that intended elevations and layout for the Work are as indicated.
- B. Identify required lines, levels, contours, and datum locations.
- C. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

- A. Scarify and proof roll subgrade surface to a depth of 6 inches (150 mm) to identify soft spots.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill unless otherwise noted/directed by the Town's Designated Representative.
- C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 SUB-GRADE PREPARATION

- A. Sub-grade in excavated areas for all new pavement and/or crushed stone areas and pavement widening shall be compacted to the density specified below. Soils not conforming to this density shall be scarified or loosened to a depth of ten (10) inches, water added in the amount necessary and the material recompacted to provide the required density.
 - 1. Compaction control and testing shall be provided in accordance with ASTM D698 (Moisture Content) and ASTM D2992 (Nuclear Density Testing). If existing subgrade is found to be suitable for re-use as determined by the Town's Designated Representative, the subgrade shall be compacted using a minimum 10-ton roller to 95% of standard proctor density within 3 percent of optimum moisture content in accordance with ASTM D 1557 Modified Proctor.
- B. Failure to conform to this requirement can result in the Town's designated representative halting all construction until compliance is obtained as specified in the general provisions.
- C. Subgrade testing shall be performed as required by the Town's Designated Representative.
- D. The cost of providing all subgrade testing shall be deemed included in the price bid for this project.

3.04 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Fill up to subgrade elevations unless otherwise indicated.
- C. Employ a placement method that does not disturb or damage other work.
- D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Clean Sand Fill: Place and compact materials in equal continuous layers not exceeding 12 inches. Place around/below sanitary structures unless otherwise noted.
- G. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches (150 mm) compacted depth.
- H. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches (200 mm) compacted depth.
- I. Slope grade away from building minimum 2 inches in 10 feet (50 mm in 3 m), unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- J. Correct areas that are over-excavated.
 - 1. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- K. Compaction Density Unless Otherwise Specified or Indicated:
 - 1. Under paving, slabs-on-grade, and similar construction: 95 percent of maximum dry density.
 - 2. At other locations: 95 percent of maximum dry density.

- L. Reshape and re-compact fills subjected to vehicular traffic.
- M. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Town's Designated Representative. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.05 FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.
- B. Use Clean sand fill in and adjacent to regulated wetland areas.

3.06 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch (25 mm) from required elevations.
- B. Top Surface of Filling Under Paved Areas: Plus or minus 1 inch (25 mm) from required elevations.

3.07 FIELD QUALITY CONTROL

- A. Soil Fill Materials:
 - 1. The Contractor shall retain a testing agency who shall Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
 - 2. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.
 - 3. If tests indicate work does not meet specified requirements, remove work, replace and retest.
 - 4. Frequency of Tests: as approved by the Town's Designated Representative
 - 5. Proof roll compacted fill at surfaces that will be under slabs-on-grade.

3.08 CLEANING

- A. See Section 01-74-19 - Construction Waste Management and Disposal, for additional requirements.
- B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION 31-23-23

SECTION 31-25-00 EROSION AND SEDIMENTATION CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Permanent erosion and sediment control.

1.02 RELATED REQUIREMENTS

- A. See Division-1

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Division-1

1.04 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil–Aggregate Subbase, Base, and Surface Courses 2017 (Reapproved 2021).
- B. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit Current Edition.
- C. NYSDEC Stormwater Design Manual (Most Recent Version)
- D. FHWA FLP-94-005 - Best Management Practices for Erosion and Sediment Control 1995.

1.05 SUBMITTALS

- A. See Division-1 - Administrative Requirements for submittal procedures.
- B. Maintenance Instructions: Provide instructions covering inspection and maintenance for preventive measures that must remain after Substantial Completion.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General Permit (CGP), whether the project is required by law to comply or not.
- B. Best Management Practices Standard: FHWA FLP-94-005.

2.02 ACCESSORY MATERIALS

- A. Fill Material: See Section 31-23-23.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.
- B. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish documentation required to obtain applicable permits.
 - 1. Obtain and pay for permits and provide security required by authority having jurisdiction.
 - 2. Owner will withhold payment to Contractor equivalent to all fines resulting from non-compliance with applicable regulations.
- C. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

3.03 MAINTENANCE

- A. See Section 32-01-90 for post-occupancy maintenance.

- B. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- C. Immediately reseed areas that show bare spots.
- D. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches (13 mm) or more rainfall at the project site, and daily during prolonged rainfall.
- E. Repair deficiencies immediately.

3.04 CLEAN UP

- A. Clean out sediment control structures that are to remain as permanent measures.

END OF SECTION 31-25-00

SECTION 32-11-23 AGGREGATE BASE COURSES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aggregate base course.
- B. Paving aggregates.

1.02 RELATED REQUIREMENTS

- A. Section 31-05-19 - Geosynthetics for Earthwork.
- B. Section 31-22-00 - Grading: Preparation of site for base course.
- C. Section 31-23-16.13 - Trenching: Compacted fill over utility trenches under base course.
- D. Section 31-23-23 - Fill: Compacted fill under base course.
- E. Section 32-12-16 - Asphalt Paving: Finish and binder asphalt courses.
- F. Section 32-13-13 - Concrete Paving: Finish concrete surface course.
- G. Section 33-05-61 - Concrete Manholes: Manholes including frames.
- H. Section 33-41-00 - Subdrainage: Filter aggregate and filter fabric for foundation drainage systems.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01-22-00 - Unit Prices for general requirements applicable to unit prices for earthwork.

1.04 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses 2017 (Reapproved 2021).
- B. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop 2021.
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates 2019.
- D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)) 2012 (Reapproved 2021).
- E. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method 2015, with Editorial Revision (2016).
- F. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)) 2012 (Reapproved 2021).
- G. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method 2015.
- H. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System) 2017, with Editorial Revision (2020).
- I. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth) 2017a, with Editorial Revision.

1.05 SUBMITTALS

- A. See Section 01-30-00 - Administrative Requirements for submittal procedures.
- B. Materials Sources: Submit name of imported materials source.
- C. Compaction Density Test Reports.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.

- B. When aggregate materials need to be stored on site, location of storage shall be as approved by the Town's Designated Representative.
- C. Aggregate Storage, General:
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 MATERIALS

- A. The Recycled Portland Cement Aggregate (RCA) material shall meet/comply with the provisions of Item 304.12 Subbase Course, Type 2 of the New York State Department of Transportation Standard Specifications of September 1, 2021.
- B. Geotextile: See Section 31-05-19.

2.02 SOURCE QUALITY CONTROL

- A. See Section 01-40-00 - Quality Requirements for general requirements for testing and analysis of aggregate materials.
- B. The contractor shall submit a Design Mix to the Town's Designated Representative for review and approval prior to placing an order for the RCA Base Course.
- C. Where aggregate materials are specified using ASTM D2487 classification, test and analyze samples for compliance before delivery to site.
- D. If tests indicate materials do not meet specified requirements, change material and retest.
- E. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the work are as indicated.
- B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.02 PREPARATION

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place aggregate on soft, muddy, or frozen surfaces.

3.03 INSTALLATION

- A. Spread aggregate over prepared substrate to a total compacted thickness as depicted and/or described in the Contract Documents and/or as directed by the Town's Designated Representative. Compact to 95% percent of maximum dry density unless noted otherwise.
- B. Upon approval of the compacted soil subgrade by the Town's Designated Representative, the Contractor shall furnish, place and compact the recycled concrete aggregate to the specified depth, lines and grades. Tolerance of the compacted RCA base course shall be plus/minus ¼ inch. Material and compaction shall be in conformance with Section 304 of the NYSDOT Standard Specifications dated 09/01/2021.
- C. Place aggregate in maximum 4 inch (100 mm) layers and roller compact to specified density.
- D. Level and contour surfaces to elevations and gradients indicated.
- E. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
- F. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- G. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.04 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch (6.4 mm) measured with 10 foot (3 m) straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch (6.4 mm).
- C. Variation from Design Elevation: Within 1/2 inch (12.8 mm).

3.05 FIELD QUALITY CONTROL

- A. See Section 01-40-00 - Quality Requirements for general requirements for field inspection and testing.
- B. The Contractor shall retain an agency to provide Compaction Density Testing. Compaction density testing will be performed on compacted aggregate base course in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
- C. Results will be evaluated in relation to compaction curve determined by testing uncompacted material in accordance with AASHTO T 180, ASTM D698 ("standard Proctor"), or ASTM D1557 ("modified Proctor").
- D. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- E. Frequency of Tests: as approved by the Town's Designated Representative.
- F. Proof roll compacted aggregate at surfaces that will be under slabs-on-grade.

3.06 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION 32-11-23

SECTION 32-12-16 ASPHALT PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aggregate base course.
- B. Double course bituminous concrete paving.

1.02 RELATED REQUIREMENTS

- A. Section 31-22-00 - Grading: Preparation of site for paving and base.
- B. Section 31-23-23 - Fill: Compacted subgrade for paving.
- C. Section 32-11-23 - Aggregate Base Courses: Aggregate base course.
- D. Section 32-13-13 - Concrete Paving: Concrete substrate.
- E. Section 32-13-13 - Concrete Paving: Concrete curbs.
- F. Section 32-17-23 - Pavement Markings.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01-22-00 - Unit Prices for requirements applicable to this section. Measurement and payment will be as follows:
- B. Asphalt Pavement Mix (Binder Course): By the ton (metric ton). Includes preparing base, tack coating surfaces, placing, compacting and rolling, testing. Includes mix design, supplying to site, testing.
- C. Asphalt Pavement Mix (Wearing Course): By the ton (metric ton). Includes preparing base, tack coating surfaces, placing, compacting and rolling, testing. Includes mix design, supplying to site, testing.

1.04 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses 2017 (Reapproved 2021).
- B. AI MS-2 - Asphalt Mix Design Methods 2015.
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates 2019.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with New York State Department of Transportation Requirements.
- B. Mixing Plant: Complying with New York State Department of Transportation Requirements.
- C. Obtain materials from same source throughout.

1.06 FIELD CONDITIONS

- A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F (4 degrees C), or surface is wet or frozen.

PART 2 PRODUCTS

2.01 ASPHALT PAVING MIXES AND MIX DESIGN

- A. Asphalt Base Course: The Recycled Portland Cement Aggregate (RCA) material shall meet/comply with the provisions of Item 304.12 Subbase Course, Type 2 of the New York State Department of Transportation Standard Specifications of September 1, 2021.
- B. Asphalt Binder Course: The Asphalt Concrete Binder Course material shall meet/comply with the provisions of Item 402.25 25F9 Binder Course HMA of the New York State Department of Transportation Standard Specifications of September 1, 2021.

- C. Asphalt Wearing Course: The Asphalt Concrete-Type 6F Top Course material shall meet/comply with the provisions of Item 402.068 6.3F Top Course HMA of the New York State Department of Transportation Standard Specifications of September 1, 2021.
- D. Submit proposed mix design of each class of mix for review prior to beginning of work.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that compacted subgrade is dry and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.02 AGGREGATE BASE COURSE

- A. Upon approval of the compacted soil subgrade by the Town's Designated Representative, the Contractor shall furnish, place and compact the recycled concrete aggregate to the specified depth, lines and grades. Tolerance of the compacted RCA base course shall be plus/minus ¼ inch. Material and compaction shall be in conformance with Section 304 of the NYSDOT Standard Specifications dated 09/01/2021.

3.03 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

- A. Binder Course:
 - 1. Upon approval of the compacted RCA Base Course, the contractor shall furnish, place, and compact the Asphalt Concrete Binder Course to the specified depth, lines, and grades. The Asphalt Concrete Binder Course shall be laid down in one lift unless otherwise directed by the Town's Designated Representative. Material and compaction shall be in conformance with Section 402 of the NYSDOT Standard Specifications dated 09/01/2021. The Contractor shall saw cut and apply emulsified asphalt tack coat as shown on the Plans or as directed by the Town's Designated Representative. The tack coat shall comply with Item 407.0102 of the New York State Department of Transportation Standard Specifications of 09/01/2021, as amended.
- B. Wearing Course (Top Course): Place asphalt wearing course within two hours of placing and compacting binder course.
 - 1. Upon approval of the compacted Asphalt Concrete Binder Course, the contractor shall furnish, place, and compact the asphalt concrete top course to the specified depth, lines, and grades. The Asphalt Concrete Top Course shall be laid down in one lift unless otherwise directed by the Town's Designated Representative. Material and compaction shall be in conformance with Section 402 of the NYSDOT Standard Specifications dated 09/01/2021. The Contractor shall saw cut and apply emulsified asphalt tack coat as shown on the Plans or as directed by the Town's Designated Representative. The tack coat shall comply with Item 407.0102 of the New York State Department of Transportation Standard Specifications of 09/01/2021, as amended.
- C. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- D. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.04 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch (6 mm) measured with 10 foot (3 m) straight edge.
- B. Compacted Thickness: Within 1/4 inch (6 mm) of specified or indicated thickness.
- C. Variation from True Elevation: Within 1/2 inch (12 mm).

3.05 FIELD QUALITY CONTROL

- A. See Section 01-40-00 - Quality Requirements, for general requirements for quality control.
- B. The Contractor shall provide field inspection and testing. Take samples and perform tests in accordance with AI MS-2.

3.06 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury for 12 hours or until surface temperature is less than 140 degrees F (60 degrees C) .

3.07 SCHEDULE

- A. As depicted and/or described in the Contract Documents and/or as directed by the Town's Designated Representative.

END OF SECTION 32-12-16

SECTION 33-05-13 PRECAST CONCRETE MANHOLES

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Modular precast concrete manholes and structures with tongue-and-groove joints and masonry transition to cover frame, covers, anchorage, and accessories.
- B. Related Sections:
 - 1. Section 01 51 00 – Temporary Utilities.

1.02 REFERENCE STANDARDS

- A. American Association of State Highway Transportation Officials:
 - 1. AASHTO M91 – Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale).
 - 2. AASHTO M306 – Standard Specification for Drainage, Sewer, Utility, and Related Castings.
 - a. AASHTO H-20 – Traffic Loading
- B. American Concrete Institute:
 - 1. ACI 530 – Building Code Requirements and Specification for Masonry Structures.
- C. ASTM International:
 - 1. ASTM A48 – Standard Specification for Gray Iron Castings.
 - 2. ASTM A123M – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 3. ASTM A185 – Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
 - 4. ASTM A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - 5. ASTM C32 – Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale).
 - 6. ASTM C478 – Standard Specification for Circular Precast Reinforced Concrete Manhole Sections.
 - 7. ASTM C497 – Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile.
 - 8. ASTM C877 – Standard Specification for External Sealing Bands for Concrete Pipe, Manholes, and Precast Box Sections.
 - 9. ASTM C913 – Standard Specification for Precast Concrete Water and Wastewater Structures.
 - 10. ASTM C990 – Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.

1.03 QUALITY ASSURANCE

- A. Perform Work according to ASTM and AASHTO standards and manufacturer's instructions.

1.04 WARRANTY

- A. Section 01 70 00 – Execution and Closeout Requirements.
- B. Furnish a one-year manufacturer's warranty for concrete manholes and structures.

1.05 SUBMITTALS

- A. Section 01 30 00 – Administrative Requirements
- B. Submittals:
 - 1. Section 01 70 00 – Execution and Closeout Requirements.
 - 2. Product Data: Submit manufacturer information for manhole covers, component construction, features, configuration, and dimensions.

3. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.
4. Shop Drawings:
 - a. Indicate structure locations and elevations.
 - b. Indicate sizes and elevations of piping, conduit, and penetrations.
5. Source Quality-Control Submittals: Indicate results of factory tests and inspections.
6. Qualifications Statement: Submit qualifications for manufacturer.
7. Project Record Documents: Record actual locations of manholes and connections, and record invert elevations.

1.06 SITE CONDITIONS

A. DELIVERY, STORAGE, AND HANDLING

1. Section 01 60 00 – Product Requirements.
2. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
3. Handling: Comply with precast concrete manufacturer instructions and ASTM C913 for unloading and moving precast manholes and drainage structures.
4. Bent Reinforcing steel bars are not permitted for use as lifting devices.
5. Lifting devices shall be evaluated and approved by the Engineer.
6. Storage:
 - a. Store materials according to manufacturer instructions.
 - b. Store precast concrete manholes and drainage structures to prevent damage to Owner's property or other public or private property.
 - c. Repair property damaged from materials storage.
7. Protection:
 - a. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - b. Provide additional protection according to manufacturer instructions.

B. EXISTING CONDITIONS

1. Field Measurements:
 - a. Verify field measurements prior to fabrication.
 - b. Indicate field measurements on Shop Drawings.

PART 2 PRODUCTS

2.01 SOURCE QUALITY CONTROL

- A. Section 01 40 00 – Quality Requirements: Requirements for testing, inspection, and analysis.
- B. Provide shop inspection and testing of completed assembly.
- C. Verify that items provided have met factory testing requirements and are inspected upon delivery.
- D. Certificate of Compliance:
 1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.

2.02 MATERIALS AND ACCESSORIES

- A. Refer to Drawings:
 1. See Precast Storm Manhole Detail on A-200.
- B. Sewer Guards
 1. Stainless steel straps, anchors and sewer guards required at all Manholes.

PART 3 EXECUTION**2.03 EXAMINATION**

- A. Section 01 70 00 – Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that items provided by other Sections of Work are properly sized and located.
- C. Verify that built-in items are in proper location and are ready for roughing into Work.
- D. Verify that excavation base is ready to receive Work and excavation dimensions and elevations are as indicated on Drawings.

2.04 PREPARATION

- A. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers as indicated on Drawings to indicate its intended use.
- B. Coordinate placement of inlet and outlet pipe or duct sleeves as required by other Sections.
- C. Do not install manholes and structures where Site conditions induce loads exceeding structural capacity of manholes or structures.
- D. Inspect precast concrete manholes and structures immediately prior to placement in excavation to verify that they are internally clean and free from damage; remove and replace damaged units.

2.05 INSTALLATION

- A. Conduct operations not to interfere with, interrupt, damage, destroy, or endanger integrity of surface structures or utilities in immediate or adjacent areas.
- B. Correct over-excavation with Class 1 aggregate.
- C. Remove large stones or other hard matter impeding consistent backfilling or compaction.
- D. Protect manhole and structures from damage or displacement while backfilling operation is in progress.
- E. Excavating:
 - 1. As specified in Section 31-23-16, -16.13, -23 – Excavating, Trenching, Dewatering and Backfilling and in indicated locations and depths.
 - 2. Provide clearance around sidewalls of manhole or structure for construction operations.
 - 3. If ground water is encountered, prevent accumulation of water in excavations, place manhole or structure in dry trench.
 - 4. Where possibility exists of watertight manhole or structure becoming buoyant in flooded excavation, anchor manhole or structure to avoid flotation as approved by Engineer.
- F. Base and Alignment:
 - 1. Install manholes and structures supported at proper grade and alignment on compacted crushed-stone bedding or piles as indicated on Drawings.
 - 2. Grout base of shaft sections to achieve slope to exit piping, trowel smooth, and contour to form continuous drainage channel.
 - 3. Form and place manhole or structure cylinders plumb and level, to correct dimensions and elevations.
- G. Polymer Concrete / Coatings:
 - 1. Install polymer concrete manholes in applications involving force main discharges and in other designated locations as specified by CFPUA. These manholes shall come with a minimum warranty of 50 years. Grinder pump force mains and low-capacity force main discharge manholes may be coated with an approved lining system, contingent upon prior approval from CFPUA.
 - 2. Manholes 12-feet in depth and greater shall be polymer concrete.
- H. Precast Concrete Manholes:

1. Lift precast components at lifting points designated by manufacturer.
 2. When lowering manholes and structures into excavations and joining pipe to units, take precautions to ensure that interior of pipeline and structure remains clean.
 3. Assembly:
 - a. Assemble multi-section manholes and structures by lowering each section into excavation.
 - b. Install rubber gasket joints between precast sections according to manufacturer recommendations.
 - c. Lower, set level, and firmly position base section before placing additional sections.
 4. Remove foreign materials from joint surfaces and verify that sealing materials are placed properly.
 5. Maintain alignment between sections by using guide devices affixed to lower section.
 6. Joint sealing materials may be installed on Site or at manufacturer's plant.
 7. Verify that installed manholes and structures meet required alignment and grade.
 8. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe; fill annular spaces with mortar.
 9. Cut pipe flush with interior of structure.
 10. Shape inverts through manhole and structures as indicated on Drawings.
- I. Grouting:
1. Verify all surfaces have been inspected and prepared for application. All surfaces shall be free of dirt, oil, grease, and other contaminants.
 2. Surface shall be clean, sound and roughened to ensure a sufficient bond.
 3. Surface shall be saturated up to 24 hours prior to application but free of standing water at the time of application.
 4. Provide sufficient support for items to be embedded into the work. Diagrams, templates, and other forms can be used to properly locate such items.
 5. Refer to Manufacturer's instructions for proper grouting application and installation.
 6. Application shall be inspected immediately after and any defects repaired or removed for re-installation if directed by the Engineer.
- J. Castings:
1. Set frame and cover at finished grade for manholes and other structures with covers located within unpaved areas and graded away from cover.
 2. Set frames using mortar and masonry as indicated on Drawings.
 3. Lay concrete brick in full bed of mortar and completely fill joints.
 4. If more than one course of concrete brick is required, stagger vertical joints.
- K. Backfilling: As specified in Section 31-23-16, -16.13, -23 – Excavating, Trenching, Dewatering and Backfilling.
1. All structures shall be leak tested prior to backfilling.

2.06 FIELD QUALITY CONTROL

- A. Section 01 40 00 – Quality Requirements.
- B. Testing:
1. Perform testing in accordance with ASTM C497.
 2. Sewer Mains and Manholes.
 3. Conduct a visual inspection of concrete structures.
 4. Repair all visible and detectable leaks.
 5. Leakage testing for structures shall be performed prior to backfilling by the following procedure:
 - a. Temporarily plug all wall sleeves, piping entrances and other openings during test period.
 - b. Fill structure to overflow level.
 - c. Allow to stand for a minimum of four (4) hours.
 - d. Refill to overflow level.

- e. Allow to stand for 24 hours.
 - f. Examine exterior surfaces and joints for leakage. Measure drop in surface water. Allowable leakage is a drop of $\frac{1}{2}$ inch or less during the test period and no visible signs of leakage.
 - g. Repair all visible and detectable leaks. If leakage exceeds allowable limit, the structure shall be repaired by approved method per Engineer.
- C. Equipment Acceptance: Contractor shall adjust, repair, modify, or replace components failing to perform as specified and rerun tests at no cost to the Owner.

2.07 ADJUSTING

- A. Section 01 70 00 – Execution and Closeout Requirements.

END OF SECTION 33-05-13

SECTION 33-42-11 STORMWATER GRAVITY PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Stormwater drainage piping.
- B. Stormwater pipe accessories.

1.02 RELATED REQUIREMENTS

- A. Section 31-23-16 - Excavation: Excavating of trenches.
- B. Section 31-23-16.13 - Trenching: Excavating, bedding, and backfilling.
- C. Section 31-23-23 - Fill: Bedding and backfilling.
- D. Section 33-05-61 - Concrete Manholes.
- E. Section 33-42-30 - Stormwater Drains.
- F. Section 33-46-00 - Stormwater Management.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01-22-00 - Unit Prices, for additional unit price requirements.

1.04 REFERENCE STANDARDS

- A. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications 2020.
- B. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Material 2021.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the installation of stormwater gravity piping with size, location and installation of stormwater drains according to Section 33-42-30.
- B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.06 SUBMITTALS

- A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating pipe, pipe accessories.

PART 2 PRODUCTS

2.01 STORMWATER PIPE MATERIALS

- A. Provide products that comply with applicable code(s).
- B. Plastic Pipe: ASTM D3350, SDR 11; High Density Polyethylene (HDPE) solid wall pipe; inside nominal diameter of 15 inch (unless otherwise notes), with cell classification of 335434C or better, thermal butt fusion joints in accordance with manufacturer's recommendations.
- C. HDPE Drainage pipe shall be ADS N-12 ST IB pipe (per ASTM F2648) shall have a smooth interior and annular exterior corrugations or approved equal.
 - 1. 4- through 60-inch (100 to 1500 mm) pipe shall meet ASTM F2648.
 - 2. Manning's "n" value for use in design shall be 0.012.
- D. Material for pipe production shall be an engineered compound of virgin and recycled high density polyethylene conforming with the minimum requirements of cell classification 424420C (ESCR Test Condition B) for 4- through 10-inch (100 to 250 mm) diameters, and 435420C (ESCR Test Condition B) for 12- through 60-inch (300 to 1500 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The design engineer shall verify compatibility with overall system including structural, hydraulic, material, and installation requirements for a given application.

2.02 PIPE ACCESSORIES

- A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.
- B. Filter Fabric: Non-biodegradable, woven .
- C. Trace Wire: Magnetic detectable conductor, clear plastic covering, imprinted with "Stormwater Service" in large letters.

2.03 BEDDING AND COVER MATERIALS

- A. Bedding: As specified in Section 31-23-16.13.
- B. Cover: As specified in Section 31-23-16.13.

PART 3 EXECUTION**3.01 TRENCHING**

- A. See Section 31-23-16.13 - Trenching for additional requirements.
- B. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.02 INSTALLATION

- A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.
- B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
 - 1. Plastic Pipe: Also comply with ASTM D2321.
- C. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch (3 mm) in 10 feet (3 m).
- D. Connect to athletic field drainage system, parking lot drainage system, and all other site drainage systems as depicted and/or described in the Contract Documents and/or as directed by the Town's Designated Representative.
- E. Make connections through walls through sleeved openings, where provided.
- F. Install continuous trace wire 6 inches (150 mm) above top of pipe; coordinate with Section 31-23-16.13.

3.03 FIELD QUALITY CONTROL

- A. Perform field inspection in accordance with Section 01-40-00 - Quality Requirements.
- B. If inspections indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to the Town.

3.04 PROTECTION

- A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION 33-42-11

SECTION 33-42-30 STORMWATER DRAINS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Precast concrete catch basins.
- B. Frames and grates.

1.02 RELATED REQUIREMENTS

- A. Section 31-23-16 - Excavation.
- B. Section 31-23-23 - Fill.
- C. Section 33-42-11 - Stormwater Gravity Piping.
- D. Section 33-46-00 - Stormwater Management.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01-22-00 - Unit Prices for additional unit price requirements.

1.04 REFERENCE STANDARDS

- A. AASHTO HB - Standard Specifications for Highway Bridges 2005, with Errata.
- B. ACI 301 - Specifications for Concrete Construction 2020.
- C. ACI 318 - Building Code Requirements for Structural Concrete 2019, with Errata (2021).
- D. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.
- E. ASTM C1634 - Standard Specification for Concrete Facing Brick and Other Concrete Masonry Facing Units 2020.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Installation of stormwater drains with piping and other structures.
 - 1. See Section 33-42-11 for stormwater gravity piping.
- B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.06 SUBMITTALS

- A. See Section 01-30-00 - Administrative Requirements for submittal procedures.
- B. Product Data: Weight rating for catch basins, drop inlets, trench drains, and frame and grates.
- C. Shop Drawings: Indicate stack assembly, invert elevations, opening sizes, and pipe angles.
- D. Project Record Documents:
 - 1. Record invert elevations of catch basins, drop inlets, and trench drains.
 - 2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.07 QUALITY ASSURANCE

- A. Documents at Project Site: Maintain one copy of manufacturer's instructions, assembly drawings, and shop drawings at the project site.
- B. Perform work of this section in accordance with ACI 301 and ACI 318.

PART 2 PRODUCTS

2.01 CATCH BASINS

- A. As detailed in the Contract Documents.
- B. Weight Rating: HS20 according to AASHTO HB.
- C. Grade Adjustments:
 - 1. As approved by the Town's Designated Representative.

- D. Frames and Grates: Steel, checkerboard pattern, as depicted and/or described in the Contract Documents and as approved by the Town's Designated Representative.

2.02 CATCH BASIN, TRENCH DRAIN, CLEANOUT, AND AREA DRAIN COMPONENTS

- A. Cast Iron Curb Inlet Frame and Grate shall be Campbell Foundry #2541 and shall be approved by the Town's Designated Representative (or approved equal).
- B. 24" Heavy Duty Frame & Grate: Campbell foundry #1009 or approved equal
- C. 24" Heavy Duty Frame & Cover: Campbell foundry #1177 or approved equal

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify items provided by other sections of work are properly sized and located.
- B. Verify built-in items are in proper location and ready for roughing into work.
- C. Verify excavation location and depth are correct.

3.02 EXCAVATION AND FILL

- A. Hand trim excavation for accurate placement to indicated elevations.
- B. Backfill with cover fill, tamp in place and compact, then complete backfilling.
- C. See Section 31-23-16 for additional excavation requirements.
- D. See Section 31-23-23 for additional fill requirements.

3.03 INSTALLATION

- A. Establish elevations and pipe inverts for inlets and outlets as indicated in drawings.
- B. Grade Adjustments:
 - 1. Contractor shall adjust existing and/or proposed drainage structures to be flush with finished grade using a means approved by the Town's Designated Representative.
 - 2. Place adjacent materials tight and smooth following design grades.
- C. Frames and Grates:
 - 1. Place frame plumb and level and secure to top slab of structure as required.
 - 2. Place grate in frame securely.

3.04 FIELD QUALITY CONTROL

- A. See Section 01-40-00 - Quality Requirements for additional requirements.
- B. Perform field inspection for pipe invert elevations.
- C. If inspections indicate work does not meet specified requirements, adjust work and reinspect at no cost to the Town.

END OF SECTION 33-42-30

SECTION 33-46-00 STORMWATER MANAGEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Stormwater leaching pits.

1.02 RELATED REQUIREMENTS

- A. Section 31-05-19 - Geosynthetics for Earthwork.
- B. Section 31-23-16.13 - Trenching.
- C. Section 31-23-23 - Fill.
- D. Section 33-42-11 - Stormwater Gravity Piping.
- E. Section 33-42-30 - Stormwater Drains.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Unit Prices:
 - 1. See Section 01-22-00 - Unit Prices for additional requirements.

1.04 REFERENCE STANDARDS

- A. AASHTO HB - Standard Specifications for Highway Bridges 2005, with Errata.
- B. ASTM A48/A48M - Standard Specification for Gray Iron Castings 2003 (Reapproved 2021).
- C. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures 2021.
- D. ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples 2017 (Reapproved 2021).

1.05 SUBMITTALS

- A. See Section 01-30-00 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate stack assembly, invert elevations, opening sizes, and pipe angles.

1.06 QUALITY ASSURANCE

- A. Documents at Project Site: Maintain at project site one copy of manufacturer's instructions and shop drawings.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01-74-19 - Construction Waste Management and Disposal for packaging waste requirements.
- B. Identify, store, and handle geosynthetic rolls in accordance with ASTM D4873/D4873M.
- C. Protect materials from sunlight and other ultraviolet light sources during storage.
- D. Handle geosynthetics with care and prevent dragging, dropping, or imbalanced lifting.

PART 2 PRODUCTS

2.01 STORMWATER LEACHING PITS (DRYWELLS)

- A. Precast Concrete Leaching Rings with top slabs/cones as depicted and/or described in the Contract Documents.
 - 1. Leaching rings and top slabs shall be reinforced as depicted in the contract documents and shall provide AASHTO HS20 load rating.
 - 2. Leaching rings and top slabs shall be as manufactured by Long Island Precast or approved equal.
 - 3. Concrete: 4,000 psi (27.5 MPa) minimum 28-day compressive strength.
 - 4. Wall Thickness: 4 inches (102 mm).
 - 5. Perforations: 15 percent of wall area.

- B. Frame and Grate: ASTM A48/A48M, Class 30B cast iron construction, machined flat bearing surface.
 - 1. Cast Iron Curb Inlet Frame and Grate shall be Campbell Foundry #2541 and shall be approved by the Town's Designated Representative (or approved equal).
 - 2. 24" Heavy Duty Frame & Grate: Campbell foundry #1009 or approved equal
 - 3. 24" Heavy Duty Frame & Cover: Campbell foundry #1177 or approved equal

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions:
 - 1. Verify excavations are at correct topographies and areas to be filled are not compromised with surface or ground water.
 - 2. Verify items provided by other sections of work are properly sized and located.

3.02 PREPARATION

- A. Coordinate placement of inlet and outlet pipe required by other sections.
- B. Perform excavation and subgrade preparation as depicted and/or described in the Contract Documents and/or as necessary (and as approved by the Town's Designated representative) to install a complete, functioning drainage system.
- C. The contractor shall provide adequate sheeting and shoring during trenching/installation to insure the safety of workmen and the general public. There shall be no extra payment for this work.

3.03 LEACHING PIT INSTALLATION

- A. Precast Concrete: Place structure sections plumb and level, trim to correct elevations.
 - 1. Cut and fit for pipe.
- B. Excavate and backfill 3 feet around and below leaching rings with suitable porous material (clean stone or sand and gravel mix as approved by the Town's Designated Representative).
- C. Install leaching rings with filter fabric wrap as depicted in the contract documents.
- D. Set cover level without tipping, to correct elevations.
- E. Install frames and grate to correct position and elevation.
- F. Contractor shall maintain a minimum of 2' cover above drainage pipes unless otherwise noted.
- G. Precast leaching rings of varying depth shall be stacked so that rings of greater height are located under rings of less height.
- H. Backfill 12 inches (305 mm), minimum, around pit with stone as specified in Section 31-23-23.

END OF SECTION 33-46-00

APPENDIX A

TOWN OF BROOKHAVEN

**DEPARTMENT OF RECYCLING AND
SUSTAINABLE MATERIALS MANAGEMENT
SOLID WASTE PRE-ENGINEERED ISOLATION LEAN-TO
BID 26021**

**LIMITED SUBSURFACE SOIL
INVESTIGATION REPORT
BY UNIVERSAL DRILLING + BORING, INC.
DATED 09.22.2025**

March 2026

Limited Subsurface Soil Investigation

for property known as

***Town of Brookhaven
Solid Waste Management Facility
350 Horseblock Road
Brookhaven, NY 11719***

Prepared for

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September 22nd, 2025

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- Boring Log Data
- Seismic information

Limited Subsurface Soil Investigation

for property

Town of Brookhaven Solid Waste Management Facility 350 Horseblock Road Brookhaven, NY 11719

1.0 GENERAL

This report describes the findings of a limited investigation regarding the geotechnical characteristics of the soils present on the property known as the Town of Brookhaven Solid Waste Management Facility located at 350 Horseblock Road, Brookhaven, NY 11719. The subject investigation comprises of a soil boring for the purpose of investigating the geotechnical properties of the subsurface soils present at this location. The investigation was performed at the location as directed and as shown in the Appendix of the boring location plan. The investigation included collection and analysis of limited subsoil conditions present at the site for site improvements and included drilling of one (1) boring for:

- Proposed Building Construction

As a result, in September of 2025, Universal Testing and Inspection Services (UTIS) investigated one (1) test location to analyze the sub-surface soil conditions present at the subject property. The work included the drilling of one (1) boring in a test location as requested. A total drilling depth of 32-feet and 9 split spoon samples to investigate the geotechnical properties.

Ground water was encountered at 14.8-feet from the ground surface during the testing performed on site on the day of investigation.

2.0 GEOTECHNICAL SUB-SURFACE SOIL INVESTIGATION METHODOLOGY

To determine the subsurface soil conditions, Universal Drilling + Boring, a division of Universal Testing and Inspection Services, Inc. (UTIS) conducted the soil boring at the location as chosen and at a location as shown on the enclosed Test Boring Location Plan. The soil boring was taken at the subject location of the property in the month of September 2025. The soil boring was collected based on the existing site conditions at the time of boring and as instructed on the day of the site investigation. Select samples were collected to analyze the soil properties to the depth specified in the contract.

As requested in the RFP, the borings was performed for the proposed building construction. UTIS did continuous sampling of the first ten (10) feet for this boring to more accurately determine the geotechnical properties of the existing soils and to classify the soil composition for reporting purposes.

The boring was performed using a mobile truck-mounted rig. Standard Penetration Test (SPT) was performed within the proposed construction area as designated by the project management team. The drilling rig was equipped with a 4-1/4-inch auger. The rig used was a CME 45C drill with an automatic SPT Hammer Rig and 2018 Fort F550 Support Truck. The rig was equipped with a 30-inch drop for the hammer, and a 140-pound spoon sampler. The hollow stem auger was used to advance the borehole and facilitate subsurface testing and sampling. Representative samples were routinely obtained during the drilling process at selected intervals by penetrating a two-inch diameter split spoon sampling tube.

The soil descriptions shown on the test boring log (attached) are based on the

- visual characteristics of the soil, in terms of color, texture, and wetness, recorded for five-foot intervals through the soil column
- The number of blows required to drive the sampler per foot were record as the standard penetration resistance (N), which is an indicator of the soil bearing capacity and its insitu state of compactness
- depth to groundwater if encountered.

The drilling and testing procedures were performed by applying the guidelines and procedures of the following ASTM designations

- D-1586 - Standard Test Method for Penetration Test and Split Barrel Sampling of Soils
- D-1587 - Standard Practices for Thin-Walled Tube Geotechnical Sampling of Soils
- D-2488 - Standard Practices for Description and Identification of Soils (Visual-Manual Procedure)

3.0 OBSERVATIONS AND ANALYSIS OF THE RESULTS OF GEOTECHNICAL SOIL INVESTIGATION

The field data sheets taken during the boring is included in the Appendix. The subsurface soil conditions encountered in the test boring may be summarized as follows:

- Visual observations in the field revealed that the soils at the subject location generally consist of brown medium to fine sands throughout the depth of investigation. With the increase in depth, the soils typically remained the same. The soil characteristics remained the same for the depth of the boring based on the sampling and visual inspection through the final depth of this boring. For a detailed description of each sample collected at this boring refer to the boring log kept by the driller and attached in the Appendix.
- Blow counts for all Standard Penetration Tests were recorded for a six-inch advancement of the spoon at five-foot intervals and were relatively consistent to the depth at which the boring was terminated. The boring was terminated at a depth of 32 feet from the ground surface. Ground water was encountered at 14.8 feet from the ground surface during the testing performed on site on the day of investigation.

BORINGS FOR GENERAL CONSTRUCTION

The field data sheets taken during the boring are included in the Appendix. Details of the soils encountered during the investigation are presented in the boring log. The subsurface soil conditions encountered in the test boring may be summarized as follows to a depth of the boring.

- B-1: The soil materials consisted of Brown Fine Sand topped with 6" Asphalt Pavement and RCA Base Material from 0' to 2', followed by Brown Fine Sand with Trace Silt from 2' to 6', Brown Medium to Fine Sand from 6' to 27', and Brown Fine Sand with Gravel from 30' to 32', where the boring was terminated. A blow count of 12 blows per foot was recorded at a depth of 5 feet. A maximum blow count of 41 blows per foot was recorded at a depth of 30 feet from the ground surface. The soils were observed to be classified SM and SP per the Unified Soil Classification Symbol USCS. Ground water was encountered 14.8 feet below the ground surface at this location.

4.0 RECOMMENDATIONS FOR VARIOUS CONSTRUCTION ACTIVITIES

In accordance with the guidelines as requested in the engineering classification for soils “Unified Soil Classification” and its various Soil Groups and based on UTIS’ professional judgment and experience, the insitu soils encountered are typical of the region and are granular with fine sand mixed with gravel materials.

GENERAL AREAS

Foundation Support and Design Criteria

Based on the review of the one (1) soil boring profile investigated in September 2025, it is our opinion that the proposed building construction may be supported on typical shallow foundations. Our analysis suggests that shallow foundations bearing on natural soils at a minimum depth of four feet below existing grade can be designed using a maximum allowable bearing capacity of 1.5 Tons/SqFt. for footing widths 4 feet or less and 1 Tons/SqFt. for footings widths greater than 10 feet for all areas investigated. All footing subgrade is to be subject to controlled inspection as per NYS Building Code by a qualified geotechnical engineer prior to placing steel reinforcement and concrete. At the discretion of the inspecting geotechnical engineer, any unsuitable bearing materials should be removed and replaced with controlled compacted fill. The new fill should meet the grading requirements as stipulated in the Code. Controlled fill should be placed in maximum 12” loose lifts and each lift should be compacted to at least 95% of its maximum dry density as determined in accordance with ASTM D1557.

Established sites containing homogeneous granular, cohesionless soils, including sandy soils, with little silt and gravel mixture are generally suitable for conventional shallow foundations. Any soil replacement must extend several feet beyond and below the perimeter and base of the proposed footing. Thorough compaction of the engineered soil verified by density measurement is critical to ensure the influence of any loose material is substantially mitigated.

Overall, the results of the limited subsurface investigation indicate that the proposed construction should be adequately supported on shallow foundations. All loose and organic soils if encountered should be removed and replaced with control structural fill materials, such as recycled concrete aggregate to a depth as indicated, possibly to the existing groundwater. These soils will have to be compacted to the full depth of the structural fill placement.

In addition, the placement and compaction of these underlying soil materials should be subjected to quality control and inspection in accordance with the recommendations contained herein. Supplemental evaluation and inspection of existing fill materials prior to construction should be conducted in order to confirm conditions consistent with those identified by the soil borings or to identify areas that would require localized over-excavation and backfilling for the installation of the slab on grade slabs for non-load bearing structural members such as floors.

Design Recommendations and Design Consideration for the proposed construction

- a) **Foundation Walls:** Foundation walls shall be designed and constructed in accordance with Section 1807.1 of the 2020 NYS Building Code. Foundation walls shall be supported by foundations designed in accordance with Section 1808 of the 2020 NYS Building Code.

Design Lateral Soil Loads: Foundation walls shall be designed for the lateral soil loads set forth in Section 1610 of the 2020 NYS Building Code.

- b) **Retaining Walls:** Retaining walls shall be designed in accordance with Section 1807.2 of the 2020 NYS Building Code. In addition, retaining walls shall be designed to ensure stability against overturning, sliding, excessive foundation pressure and water uplift. Where a keyway is extended below the wall base with the intent to engage passive pressure and enhance sliding stability, lateral soil pressures on both sides of the keyway shall be considered in the sliding analysis.

- **Design Lateral Soil Loads:** Retaining walls shall be designed for the lateral soil loads set forth in Section 1610.
- **Safety Factor:** Retaining walls shall be designed to resist the lateral action of soil to produce sliding and overturning with a minimum safety factor of 1.5 in each case. The load combinations of Section 1605 shall not apply to this requirement. Instead, design shall be based on 0.7 times nominal earthquake loads, 1.0 times other nominal loads, and investigation with one or more of the variable loads set to zero. The safety factor against lateral sliding shall be taken as the available soil resistance at the base of the retaining wall foundation divided by the net lateral force applied to the retaining wall.

- c) **Foundations:** Foundations shall be designed and constructed in accordance with the following sections; Shallow foundations shall satisfy the requirements of Section 1809 and Deep foundations shall satisfy the requirements of Section 1810.
- d) **Foundations on or Adjacent to Slopes:** The placement of buildings and structures on or adjacent to slopes steeper than one unit vertical in ten units horizontal (10-percent slope) shall comply with Section 1809.3.
- e) **Concrete Foundations:** The design, materials and construction of concrete foundations shall comply with Section 1808.8 and the provisions of Chapter 19.
- f) **Shallow Foundations:** Shallow foundations shall be designed and constructed in accordance with Section 1809.
- g) **Soil Lateral Loads:** Lateral loads on Foundation walls and retaining walls shall be designed to resist lateral soil loads. Soil loads specified in Table 1610.1 shall be used as the minimum design lateral soil loads unless determined otherwise by a geotechnical investigation in accordance with Section 1803. Foundation walls and other walls in which horizontal movement is restricted at the top shall be designed for at-rest pressure. Retaining walls free to move and rotate at the top shall be permitted to be designed for active pressure. Design lateral pressure from surcharge loads shall be added to the lateral earth pressure load. Design lateral

pressure shall be increased if soils at the site are expansive. Foundation walls shall be designed to support the weight of the full hydrostatic pressure of undrained backfill unless a drainage system is installed in accordance with Section 1805.4.

- h) **Earthquake Loads:** The soils encountered during this investigation have been classified as Site Class D. Every structure, and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with ASCE 7, excluding Chapter 14 and Appendix 11A. of NYSCA. (See Attachment for detailed Seismic Computations).
- i) **Settlement:** If soil disturbed during construction, the soil should be re-compacted to 95 percent modified proctor at or near optimal moisture content settlements should be less than one quarter of an inch. Settlement of properly designed steel reinforced spread footings on undisturbed soil should be less than one quarter of an inch. Fine dense soils at two tons per square foot bearing generally exhibit little or no issues with regard to settlement.

A. *Shallow Foundation Design Criteria*

Non-structural bearing loading criteria for this site can be assumed based on the limited test borings. It can be summarized to have a presumptive soil bearing capacity of 1.5 tons per square foot. This, however, may not be the capacity of other areas of the site not investigated by this boring. The top layer of fill materials, (if encountered) should be removed to achieve proper bottom footing grade. In the top five-foot layer of soil, a lateral bearing capacity of one hundred pounds per square foot of depth may be assumed. This value may be increased to one hundred fifty pounds per square foot per foot of depth below the five-foot depth.

Walls below grade should be constructed with a drainage system to prevent and minimize effects from ground water fluctuation and accumulation. Architectural and civil retaining walls shall be designed as gravity or reinforced soil wall type. All walls shall be backfilled with select granular fill to at least ninety-five percent Modified Proctor, ASTM D1587. Sub-base materials for walkways or other structures in backfilled areas shall be compacted to ninety-five percent Modified Proctor.

Contingent on supplemental evaluation and approval of the existing fill, future structures on the subject property may be supported on conventional shallow spread and continuous wall footings designed to bear either upon the underlying natural soils, properly inspected and approved existing fill, or imported structural fill soils, provided that such materials are properly improved or placed as described. Foundations bearing within these materials may be designed to impart a maximum allowable bearing pressure as mentioned in the above section.

Additional precautions for moisture and drainage control under the slabs shall be considered. All of the sub-soils under the slabs shall be a minimum of 6" of RCA (or the thickness required to eliminate problematic subsoil conditions as directed by the engineer) and compacted to ninety-five percent Modified Proctor. All roots or other organic matter shall be removed prior to slab installation.

Slabs on grade:

Any proposed basement floor slab may be designed and constructed as a slab-on-grade, bearing on competent natural sand soils or controlled compacted fill. It is recommended that the floor slabs be supported on at least 6 inches of $\frac{3}{4}$ inch crushed stone or gravel, which would provide uniform slab support and hydrostatic pressure relief in the event of a major water main break, or any other method designed/reviewed/and approved by the designer.

Prior to receiving crushed stone course, the slab subgrade should be subject to proof rolling to an unyielding consistency using a heavy vibratory roller. Any soft and/or unsuitable bearing material detected during the proof rolling should be removed and replaced with controlled compacted fill. Floor slabs supported on crushed stone over compacted subgrade may be designed using a modulus subgrade reaction of 150 pci (pounds per square inch per inch). Saw cuts and/or control joints should be provided in the concrete slab construction to control shrinkage cracks.

Foundation Drainage and under-slab drainage

We suggest that foundation drainage be provided around the basement to ensure a free hydrostatic pressure condition behind the wall and to provide hydrostatic pressure relief in the event of a major water main break. Typical foundation drainage may consist of a 6" diameter perforated filter fabric-lined PVC or other approved pipe or drain tile, which should be covered with 6" of $\frac{3}{4}$ " crushed stone in all directions. The designer should incorporate the thickness of the pipe, location of the pipe and the surrounding drainage areas including texture of the surrounding material and the slopes of the pipe.

Under-slab drainage is an option but not required. The water collected in the foundation drainage and/or under-slab drainage system should be directed and discharged into approved facilities.

B. Frost Coverage

Footings and pile caps subject to frost action should be placed at least 48 inches (or as recommended by the local codes) below adjacent exterior grades to provide protection from frost penetration. Interior footings not subject to frost action could be placed at a minimum depth of 18 inches below the slab sub-grade or as design analysis requires.

C. Earth Pressures on Building Walls

Any soil adjacent to the building walls will exert a horizontal pressure against the wall. This pressure is based on the soil density and Coefficient of Earth Pressure at Rest. The design should be performed to accommodate lateral earth pressures to the depth or height of the construction. Detailed engineering designs using available soil conditions should be performed under various soil conditions. The design also should include seismic design analysis, as discussed below.

D. Seismic and Liquefaction Considerations

Assuming that the type of building and the building category, etc, at the time of site investigation, to be constructed at the site, based on the for guidance in addressing seismic considerations for the proposed construction, the applicable seismic design parameters are based on the local and regional authorities' recommendations ascertained for the subject property. Structures should be designed to resist stresses produced by seismic forces computed in accordance with the latest version of the New York State Building Code as applicable. Refer to Attachment for analysis of the seismic considerations in detail. Following is a summary of the findings:

Seismic Design Coefficients

S_S	0.19	MCE _R ground motion. (for 0.2 second period)
S_1	0.043	MCE _R ground motion. (for 1.0s period)
SM_S	0.23	Site-modified spectral acceleration value
SM_1	0.091	Site-modified spectral acceleration value
SD_S	0.15	Numeric seismic design value at 0.2 second SA
SD_1	0.061	Numeric seismic design value at 1.0 second SA
F_a	1.6	Site amplification factor at 0.2 second
F_v	2.4	Site amplification factor at 1.0 second

The soils encountered at the site, and typical soils and as result, an adequate factor of safety against liquefaction should be considered. Note that a seismic event could cause a momentary decrease in pore pressure allowing some consolidation of the soil around a foundation resulting in settlement. It is recommended that a factor of safety against liquefaction be considered. An analysis of the structure, once designed, based on a procedure by Idriss and Boulanger (2006) should be considered and performed to ascertain the actual factor of safety against liquefaction. Typical factors of safety for buildings and ancillary structures are 1.2 to 1.3.

E. Underpinning of foundations

If underpinning is anticipated, in general, columns footings shall be completed first. The column load shall be temporarily removed from the footing by attaching temporary supports to each column. Then the bearing soil beneath the column shall be excavated and replaced with either concrete or an appropriate material. Then the bearing soil beneath the column shall be excavated to a 1:1 line drawn up the near edge of the planned new footing and shall be the same size as the existing footing. The top of the concrete in the underpinning pit shall be ½ to 1 inch below the bottom of the footing. This space shall be filled with non-shrink grout after the underpinning concrete has set.

F. Utilities

Special considerations should be utilized in the design of the trenches supporting new utilities since the first five feet of the soils consist of miscellaneous materials. Design considerations should include proper backfill for utilities such as the trench excavation to include an additional six inches thick layer of bedding material. The new pipe shall be supported by virgin soil or on the new bedding material.

After the utilities are in place, they can be backfilled with the material excavated from the trench. Wood or pieces of rock or concrete in excess of 3 inches shall be removed from the fill before it is re-used. Backfill material shall be placed in layers about six inches thick and each layer shall be compacted to 95% of Maximum Modified Density of the fill material.

Temporary construction excavations shall be conducted in accordance with the most recent OSHA guidelines or applicable Federal, State or Local codes.

G. Settlement

It must be noted that no structure or slab should be expected to remain totally free of cracks and minor signs of stress, especially where miscellaneous fill materials were used. Therefore, the flexible nature of structures allows them to respond to movements resulting from minor settlement of fill or natural soils. In addition, products containing cementitious materials also shrink during natural curing. All of the above can induce stresses that result in cosmetic cracking of rigid surfaces. UTIS estimates that the maximum post-construction settlement of new building foundations on the subject property on the order of less than less one quarter of an inch, provided that the recommendations outlined in this report are properly implemented.

In areas outside the pavement or over excavated areas, the subgrade material shall be removed to a depth of at least six (6) inches and replaced with Recycled Concrete Aggregate (RCA) base material, compacted to at least 95 % of the Modified Proctor Density.

H. On Site and Stripped Materials

The existing pavement may be recycled by pulverizing the pavement as outlined in the recommendations in a controlled and supervised manner and methods. Further, UTIS anticipates that the majority of the on-site soils should be reusable as compacted fill or backfill materials for the intended use including pavement areas, provided that moisture content is controlled within three percent of the optimum value. UTIS recommends that the reuse of on-site materials will be contingent upon careful inspection and evaluation of these materials during the construction phase.

I. Surface Preparation/Proof-Rolling

Prior to placing any fill or sub-base materials for the purpose of raising grades to the desired grades or pavement sub-grade elevations, the existing exposed soils should be compacted to a firm surface by means of several passes in two perpendicular directions using a vibratory drum roller (minimum ten-ton). The surface should then be proof-rolled with a loaded tandem-axle truck in the presence of a qualified geotechnical engineer to assist in identifying soft or loose pockets which may require removal and replacement or further investigation. As necessary, limited over-excavation should be undertaken to address unsatisfactory conditions in the existing material. Any fill or backfill should be placed and compacted in accordance with the recommendations in this report.

J. Sub-Grade Protection and Inspection

Every effort should be made to minimize disturbance of the on-site soils by construction traffic and surface runoff. The surface layers of the sandy soils found on the subject property may require wetting and re-compaction during periods of dry weather. The services of a qualified geotechnical engineer should be retained to inspect soil conditions during construction and verify that the prepared sub-grades for the intended use include pavements to support the intended design loads.

K. Compaction and Placement Requirements

Acceptable fill and backfill should be placed in maximum nine-inch loose lifts and compacted to 95 percent of the maximum dry density within three percent of the optimum moisture content, as determined by ASTM-1557 (Modified Proctor). UTIS recommends using a vibratory drum roller (minimum ten-ton) to compact subgrade fill and natural soils beneath pavements and slabs. A small, hand-held vibratory compactor shall be used within excavations for foundations and around utilities.

L. Surface Runoff Control

Every effort must be made to maintain drainage of surface water away from construction areas, using grading and limiting the exposure of excavations to rainfall. A gravity-fed sump pump should be sufficient for minor, temporary dewatering of any trapped water or surface water encountered during construction. Over-excavation of saturated soils and replacement with controlled structural fill may be required prior to resuming work on disturbed sub-grade soils.

M. Construction Monitoring

The conditions disclosed by the soil boring indicate, on a preliminary basis, that the existing material encountered within the boring would be suitable to support the intended use including pavements. However, a potential risk of variability exists in the site soils. Because conventional auger techniques and split spoon sampling only reveal a limited section of the subsurface material at selected points, UTIS recommends confirming the apparently adequate condition of the fill by means of test pit excavation which would expose a larger cross section and enable a further evaluation of

the possible presence of voids, uncontrolled conditions, or deleterious materials (e.g., organic matter). If unsuitable conditions are encountered at that time, contingency actions, possibly including limited over-excavation of the unsuitable material, may be required.

A qualified *and Accredited Special Inspection Agency* should perform inspection, testing and consultation during construction, as described in this report. Monitoring and testing should also be performed to verify that suitable materials are used for controlled fill and that they are properly placed and compacted over suitable sub-grade soils.

5.0 GENERAL RECOMMENDATIONS AND LIMITATIONS

The recommendations are based on the limited investigations and findings reported by the soil boring contractor. The recommendations are based on the soil conditions encountered on the days of the geotechnical investigation. The conclusions in the recommendations are solely based on the findings presented by the investigation and are location-specific and may not represent the general area of the site. If the conditions encountered during construction vary significantly from those stated in this report, UTIS recommends that it receive immediate notification so that additional investigation can be undertaken, and the recommendations can be amended appropriately.

The recommendations in this report are based on our experience, in conjunction with the limited soils exposed at the site during the field survey. UTIS believes that this information gives an acceptable degree of reliability for anticipating the behavior of the site soils with respect to the proposed improvements. However, UTIS' recommendations are professional opinions, and accuracy cannot be assured beyond the limits of the data obtained in the soil profile. This report is based on the evaluation of the described site and the limited specific anticipated construction. The boring log and the vertical boring plan are hereby made part of this report.

The soil bearing all the footing shall be surface compacted and installation of all structural fill shall be compacted during the full-time inspection of a qualified soils technician and under controlled conditions to meet the minimum requirements of the design.

The conclusions and recommendations contained in this report are based in part, where noted, upon the data obtained from a limited number of soil borings obtained from widely spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until further exploration. If variations or other latent conditions then appear evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

APPENDIX

Boring Test Logs



(HQ1) 73 Otis Street, West Babylon, NY 11704
 (HQ2) 13460 NW107th Ave, #8, Miami, FL 33016
 631.491.5252 | info@universaltest.com
 www.universaltest.com
 www.udrilling.com

Client	LKMA	Mobilization Date	09.10.2025
Developer	-----	Completion Date	09.10.2025
Project	Town of Brookhaven Waste Management Facility	Number of Borings	1
Job Location	Horseblock Road, Brookhaven	Method/ Equipment	CME 45C w/ Auto SPT Hammer and 2018 Ford F550 Support Truck
GC. Representative	N/A	Weather	Clear, 75
Drilling Crew	R. Morley (Driller) & Joseph Kuefner	Report#	25 - 0047

Scope of Services

(1) Boring

Drilling Activities (Activities Monitored or Sampled)

On September 10th, 2025, Universal Drilling & Boring (UDB) mobilized to the referenced project to perform full soil test boring ascertain soil type, classification, groundwater detection and blow counts.

Universal sampled and collected continuous SPT samples to a depth of (-32') feet below grade elevation. A total of (32) feet were drilled and (9) SPT Split Spoon Samples Method Drilling: ASTM D1586 Standard Test Method for Penetration Test and Split Barrel Sampling of Soil.

Classification of soil was performed utilizing the Unified Soil Classification System and Chapter 18 of the NYS Building Code.

Boring locations were provided by the engineer.

Notes:

The Field Representative of Universal Group is on the site solely to observe/identify operations of the contractor(s), observe conformance with contract documentation/specifications and report those daily findings to the client. The presence and activities therein do NOT relieve the contractor(s) obligation to meet contractual, specification and code requirements. The contractor retains sole responsibility for site safety, methods/means, sequences of construction and frequency of inspections, testing, engineering, and general observation therein. This report relates only to the items and/or exact test and/or inspected located and is confidential property of Universal and its client(s). Information contained in this report may not be published or reproduced without written permission from the Universal Group; failure to do so may result in legal obligations on your part. Questions or comments please call us at: 1. 855.UTEST47





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Client	LKMA	Mobilization Date	09.10.2025
Developer	-----	Completion Date	09.10.2025
Project	Town of Brookhaven Waste Management Facility	Number of Borings	1
Job Location	Horseblock Road, Brookhaven	Method/ Equipment	CME 45C w/ Auto SPT Hammer and 2018 Ford F550 Support Truck
GC. Representative	N/A	Weather	Clear, 75
Drilling Crew	R. Morley (Driller) & Joseph Kuefner	Report#	25 - 0047

Depth	Blows Per (6") Inches	Unified Soil Classification	N-Value	Soil Sample Description	TB # 1
0 - 2 FEET BLG	52-4-31-28	SP	N/A	Asphalt Pavement, RCA Base Material Brown Fine Sand	Sample 1
2 - 4 FEET BLG	5-4-3-4	SM	7	Brown Fine Sand w/ Trace Silt	Sample 2
4 - 6 FEET BLG	5-6-5-7	SM	11	Brown Fine Sand w/ Trace Silt	Sample 3
6 - 8 FEET BLG	6-6-7-7	SP	13	Brown Medium to Fine Sand	Sample 4
8-10 FEET BLG	7-6-8-7	SP	14	Brown Medium to Fine Sand	Sample 5
15-17 FEET BLG	4-5-5-4	SP	10	Brown Medium to Fine Sand	Sample 6
20-22 FEET BLG	4-6-6-5	SP	12	Brown Medium to Fine Sand	Sample 7
25-27 FEET BLG	16-15-17-19	SP	32	Brown Medium to Fine Sand	Sample 8
30-32 FEET BLG	22-19-21-20	SP	40	Brown Fine Sand w/ Gavel	Sample 9

End of Boring: 32'

Groundwater (GW) Encountered: 14.8'

Asphalt Depth: 6"



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Developer	-----	Completion Date	09.10.2025
Project	Town of Brookhaven Waste Management Facility	Number of Borings	1
Job Location	Horseblock Road, Brookhaven	Method/ Equipment	CME 45C w/ Auto SPT Hammer and 2018 Ford F550 Support Truck
GC. Representative	N/A	Weather	Clear, 75
Drilling Crew	R. Morley (Driller) & Joseph Kuefner	Report#	25 - 0047

Unified Soil Classification System

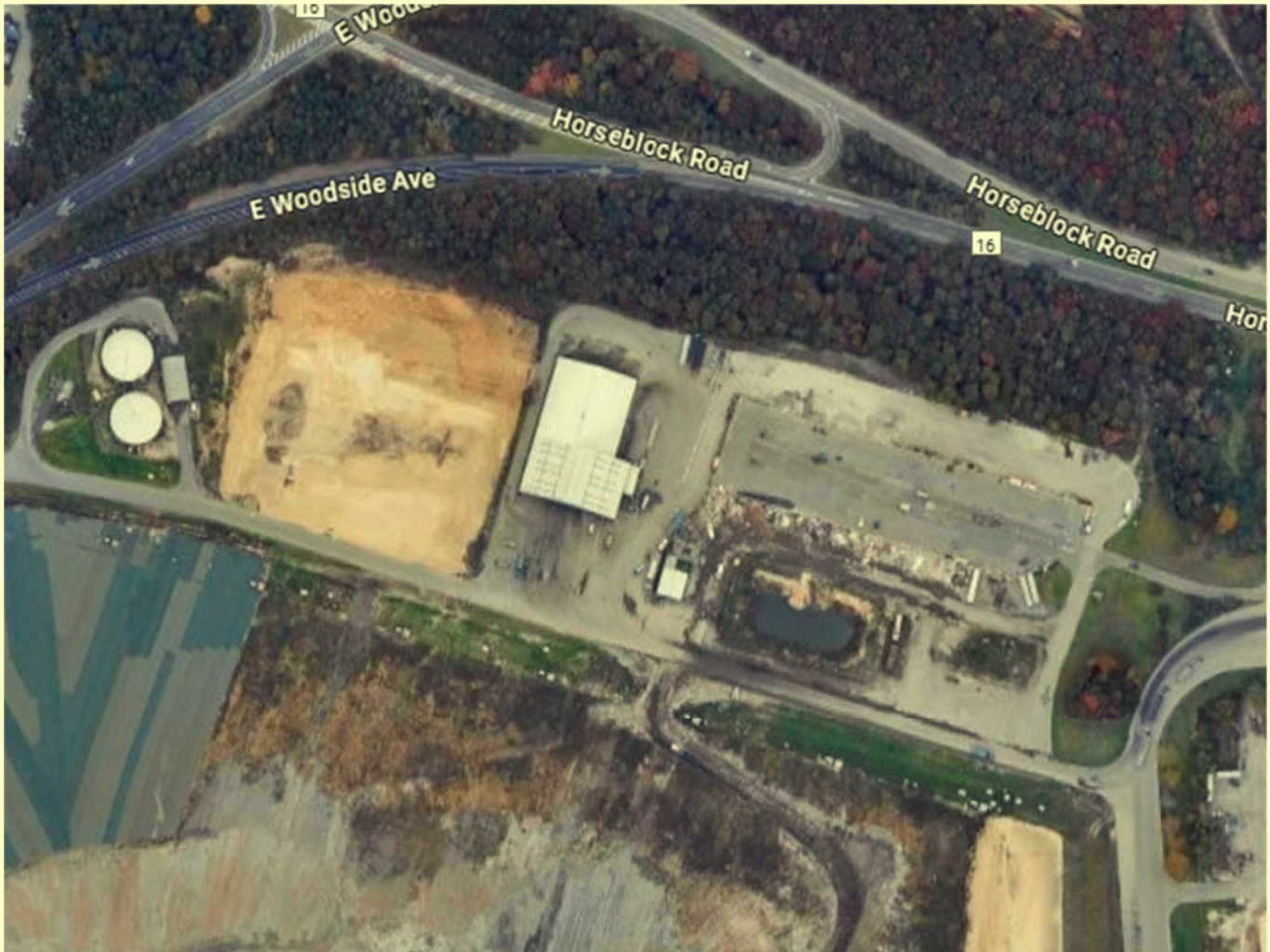
Major Divisions			Letter	Symbol	Description
Coarse-grained Soils More than 1/2 retained on the No. 200 Sieve	Gravels More than 1/2 coarse fraction retained on the No. 4 sieve	Clean Gravels	GW		Well-graded gravels and gravel-sand mixtures, little or no fines.
			GP		Poorly-graded gravels and gravel-sand mixtures, little or no fines.
		Gravels With Fines	GM		Silty gravels, gravel-sand-silt mixtures.
			GC		Clayey gravels, gravel-sand-clay mixtures.
	Sands More than 1/2 passing through the No. 4 sieve	Clean Sands	SW		Well-graded sands and gravelly sands, little or no fines.
			SP		Poorly-graded sands and gravelly sands, little or no fines.
		Sands With Fines	SM		Silty sands, sand-silt mixtures
			SC		Clayey sands, sandy-clay mixtures.
Fine-grained Soils More than 1/2 passing through the No. 200 Sieve	Silts and Clays Liquid Limit less than 50%		ML		Inorganic silts, very fine sands, rock flour, silty or clayey fine sands.
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL		Organic clays of medium to high plasticity.
	Silts and Clays Liquid Limit greater than 50%		MH		Inorganic silts, micaceous or diatomaceous fines sands or silts, elastic silts.
			CH		Inorganic clays of high plasticity, fat clays.
			OH		Organic clays of medium to high plasticity.
			Highly Organic Soils		PT
Consistency Classification					
Granular Soils			Cohesive Soils		
Description - Blows Per Foot (Corrected)			Description - Blows Per Foot (Corrected)		
	MCS	SPT		MCS	SPT
Very loose	<5	<4	Very soft	<3	<2
Loose	5 - 15	4 - 10	Soft	3 - 5	2 - 4
Medium dense	16 - 40	11 - 30	Firm	6 - 10	5 - 8
Dense	41 - 65	31 - 50	Stiff	11 - 20	9 - 15
Very dense	>65	>50	Very Stiff	21 - 40	16 - 30
			Hard	>40	>30
MCS = Modified California Sampler			SPT = Standard Pen		



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Job Location	Horseblock Road, Brookhaven	Method/ Equipment	CME 45C w/ Auto SPT Hammer and 2018 Ford F550 Support Truck
GC. Representative	N/A	Weather	Clear, 75
Drilling Crew	R. Morley (Driller) & Joseph Kuefner	Report#	25 - 0047

Project Location Map:



Seismic Information

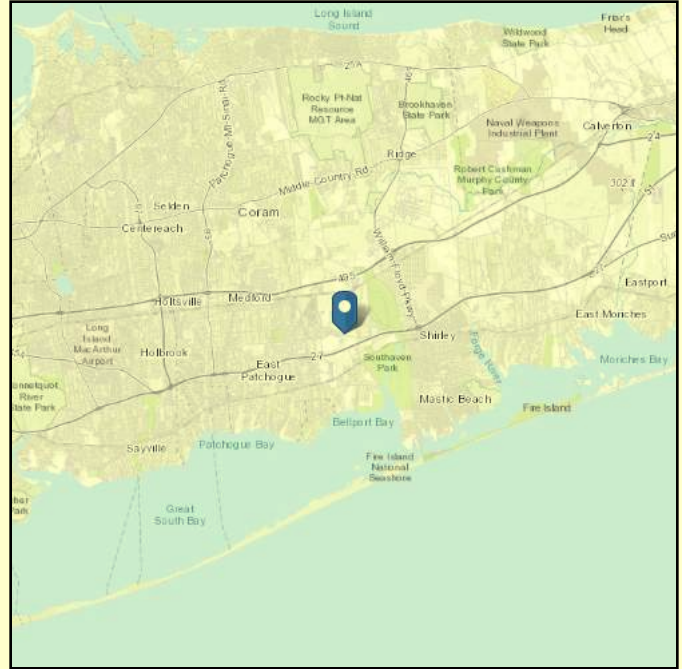
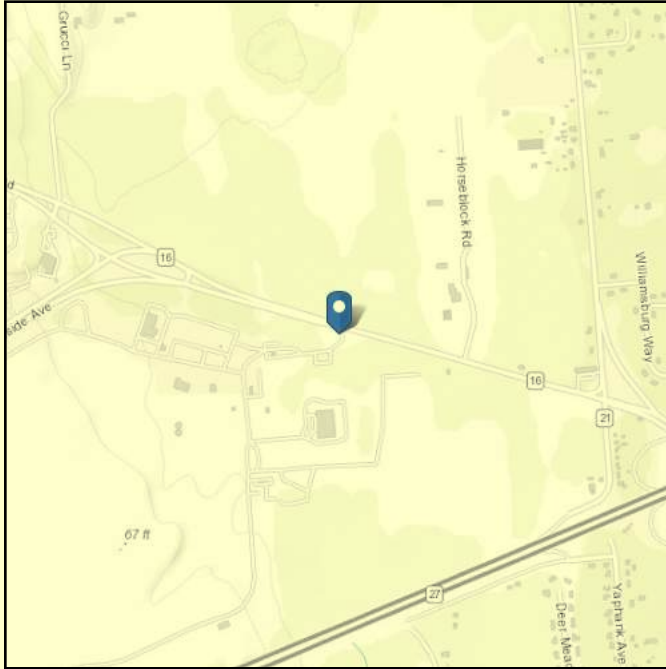


ASCE Hazards Report

Address:
350 Horseblock Rd
Brookhaven, New York
11719

Standard: ASCE/SEI 7-22
Risk Category: II
Soil Class: Default

Latitude: 40.800638
Longitude: -72.923331
Elevation: 34.67469188714916 ft
(NAVD 88)

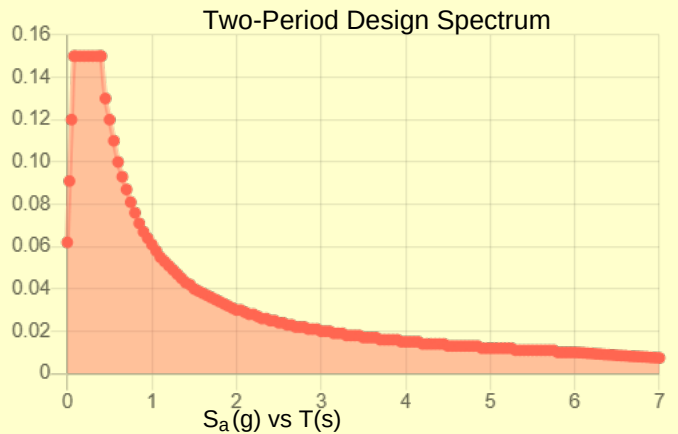
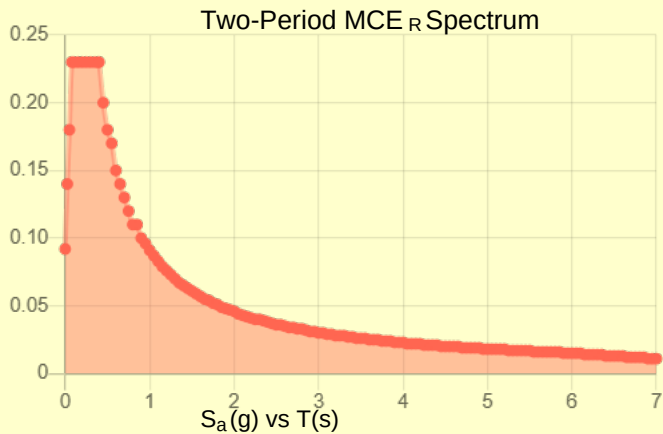
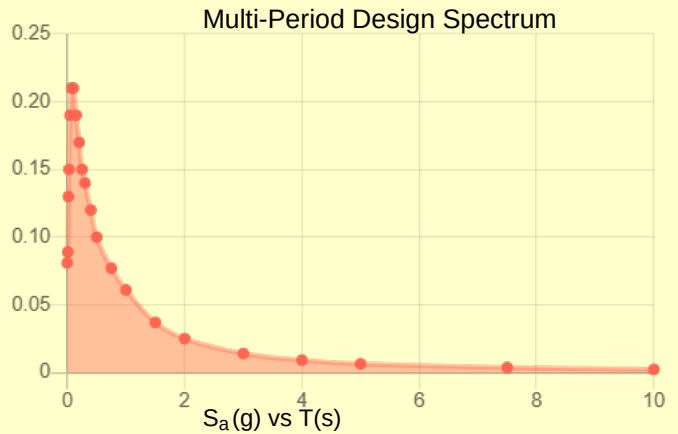
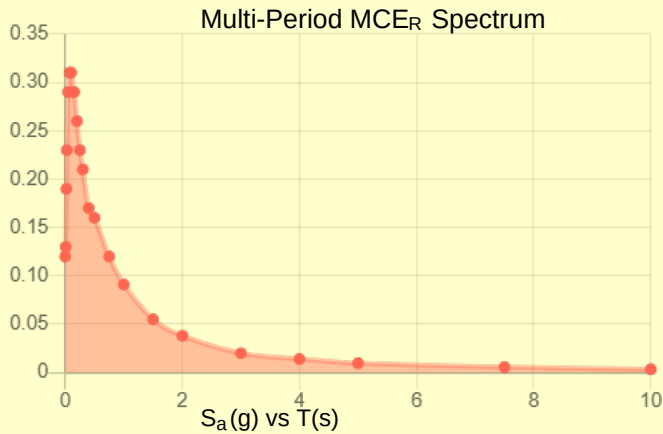


Site Soil Class: Default

Results:

PGA _M :	0.11	T _L :	6
S _{MS} :	0.23	S _S :	0.19
S _{M1} :	0.091	S ₁ :	0.043
S _{DS} :	0.15	V _{S30} :	260
S _{D1} :	0.061		

Seismic Design Category: A



MCE_R Vertical Response Spectrum
Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum
Vertical ground motion data has not yet been made available by USGS.

Data Accessed: Sun Sep 21 2025

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-22 and ASCE/SEI 7-22 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-22 Ch. 21 are available from USGS.



The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE Hazard Tool.

SCHEDULE OF PRICES			TOWN OF BROOKHAVEN BROOKHAVEN SOLID WASTE MANAGEMENT FACILITY PRE-ENGINEERED ISOLATION LEAN-TO				
ITEM NO.	ESTIMATED QUANTITY	UNIT	(Fill in Unit Price Written in Words)	UNIT BID PRICE		EXTENDED AMOUNT BID	
				DOLLARS	CENTS	DOLLARS	CENTS
			GENERAL REQUIREMENTS, MOBILIZATION & TEMPORARY TOILETS				
26021-A-001	1	LS	for _____ /LS Dollars Cents				
			SITework & DRAINAGE				
26021-A-002	1	LS	for _____ /LS Dollars Cents				
			RELOCATION OF UNDERGROUND PRIMARY ELECTRICAL SERVICE (NO DUCT BANK)				
26021-A-003	1	LS	for _____ /LS Dollars Cents				
			PRE-ENGINEERED METAL BUILDING				
26021-A-004	1	LS	for _____ /LS Dollars Cents				
			CONCRETE SLAB				
26021-A-005	1	LS	for _____ /LS Dollars Cents				
			CONCRETE FOUNDATION				
26021-A-006	1	LS	for _____ /LS Dollars Cents				
			CONCRETE ECOLOGY BLOCKS				
26021-A-007	136	LF	for _____ /LF Dollars Cents				
			CONCRETE CURB				
26021-A-008	90	LF	for _____ /LF Dollars Cents				
			ALLOWANCE				
26021-A-009	1	LS	for <u>FIVE THOUSAND DOLLARS NO CENTS</u> /LS Dollars Cents	\$5,000	00	\$5,000	00
(All Items)							
TOTAL for _____ Dollars Cents							
WRITTEN IN WORDS						Total All Items (numerically)	
NOTE: The Town of Brookhaven reserves the right to increase, decrease, or eliminate in its entirety any or all items prior to or after award of the bid. The estimated quantities utilized for this bid were developed based upon take-offs from generated plans as well as field measurements. It is requested that all prospective bidders verify these figures to their satisfaction prior to the bidding. The Town cannot guarantee these estimates, in fact; actual quantities may vary significantly due to field conditions or circumstances encountered.							
See Next Page for ADD ALTERNATE Line Items ONLY.							

SCHEDULE OF PRICES			TOWN OF BROOKHAVEN BROOKHAVEN SOLID WASTE MANAGEMENT FACILITY PRE-ENGINEERED ISOLATION LEAN-TO				
ITEM NO.	ESTIMATED QUANTITY	UNIT	(Fill in Unit Price Written in Words)	UNIT BID PRICE		EXTENDED AMOUNT BID	
				DOLLARS	CENTS	DOLLARS	CENTS
ADD ALTERNATES							
			ADD ALTERNATE: CONCRETE DUCT BANK FOR UNDERGROUND PRIMARY ELECTRICAL SERVICE				
26021-B-001	1	LS	for _____ /LS Dollars Cents				
(All Add Alternate Items)							
TOTAL for _____ Dollars Cents WRITTEN IN WORDS						Total Add Alternate Items (numerically)	
NOTE: The Town of Brookhaven reserves the right to increase, decrease, or eliminate in its entirety any or all items prior to or after award of the bid. The estimated quantities utilized for this bid were developed based upon take-offs from generated plans as well as field measurements. It is requested that all prospective bidders verify these figures to their satisfaction prior to the bidding. The Town cannot guarantee these estimates, in fact; actual quantities may vary significantly due to field conditions or circumstances encountered.							
See Previous Page For BASE BID Line Items ONLY.							

BID SHEET

LUMP SUM COST

Bid Number 26021

TOWN OF BROOKHAVEN
SUFFOLK COUNTY, NEW YORK

To the Town of Brookhaven:

The undersigned bidder has carefully examined the Contract Documents and the site for the proposed Construction and will provide all necessary labor, materials, equipment and incidentals as necessary and called for by the said Contract Documents in the manner prescribed therein and in said Contract, and in accordance with the requirements of the Engineer at the following unit and/or lump sum prices:

BASE BID:

\$ _____

WRITTEN IN
WORDS: _____

ADD/ALTERNATE NO. 1 - (CONCRETE DUCT BANK FOR UNDERGROUND PRIMARY
ELECTRICAL SERVICE):

\$ _____

WRITTEN IN
WORDS: _____

TOTAL = BASE BID + ADD ALTERNATE:

\$ _____

WRITTEN IN
WORDS: _____

SUBSTITUTIONS

This proposal is based on all items exactly as shown or specified. The substitutions listed below or attached hereto are offered for consideration of the Town of Brookhaven Supervisor, and the corresponding amounts indicated may be deducted from the base proposal to reduce the Contract price if accepted.

SUBSTITUTIONS

DEDUCTThis image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



Kathy Hochul, Governor

Roberta Reardon, Commissioner

Town of Brookhaven

Alexander Roman
L.K. McLean Associates, D.P.C.
437 South Country Road
Brookhaven NY 11968

Schedule Year 2025 through 2026
Date Requested 03/04/2026
PRC# 2026005914

link:

<https://apps.labor.ny.gov/wpp/publicViewProject.do?method=showIt&id=1608878>

Location Solid Waste Mngmt. Facility
Project ID# 25134.000
Project Type Department of Recycling and Sustainable Materials Management - The Brookhaven Solid Waste Management Facility Pre-Engineered Isolation Lean-To Open-Air Structure, Concrete Foundation, Ecology Block-

PREVAILING WAGE SCHEDULE FOR ARTICLE 8 PUBLIC WORK PROJECT

Attached is the current schedule(s) of the prevailing wage rates and prevailing hourly supplements for the project referenced above. A unique Prevailing Rate Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2025 through June 2026. All updates, corrections, posted on the 1st business day of each month, and future copies of the annual determination are available on the Department's website www.labor.ny.gov. Updated PDF copies of your schedule can be accessed by entering your assigned PRC# at the proper location on the website.

It is the responsibility of the contracting agency or its agent to annex and make part, the attached schedule, to the specifications for this project, when it is advertised for bids and /or to forward said schedules to the successful bidder(s), immediately upon receipt, in order to insure the proper payment of wages.

Please refer to the "General Provisions of Laws Covering Workers on Public Work Contracts" provided with this schedule, for the specific details relating to other responsibilities of the Department of Jurisdiction.

Upon completion or cancellation of this project, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

NOTICE OF COMPLETION / CANCELLATION OF PROJECT

Date Completed: _____ Date Cancelled: _____

Name & Title of Representative: _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

INSTRUCTION TO BIDDERS INDEX

- **INSTRUCTION TO BIDDERS**

- 1. Restricted Period
- 2. Receipts and Opening of Bids
- 3. Forms, Preparation and Presentation of Proposal
- 4. Bid Security
- 5. Qualifications of Bidders
- 6. Rejection of Bids
- 7. Bidders Responsibility
- 8. Construction Terms and Conditions
- 9. Security for Faithful Performance
- 10. Payment Bond
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- 12. Foreign Contractors
- 13. Lien Law
- 14. Subcontractors and Suppliers
- 14A. Service
- 14. Penal Law
- 15. Refusal to Waive Immunity
- 16. Addenda and Interpretations
- 17. Liquidated Damages
- 18. Exemption from Sales and Use Taxes
- 19. Method of Award
- 20. Time for Completion
- 21. Affidavit on Completion
- 22. Payments
- 23. Labor Law
- 24. Payroll Records/Retention by Town
- 25. Wage Rates
- 26. Insurance Required by the Town of Brookhaven

1. RESTRICTED PERIOD (during the Procurement Process)

The Town of Brookhaven adheres to Procurement Lobbying New York State Finance Law §§139-j and 139-k that imposes certain restrictions on communications between a government entity and an offeror/bidder during the procurement process. The restricted period begins on the date of the earliest newspaper notice of intent to solicit offers/bids and ends when the fully executed contract is finalized with the Town Clerk, during which time communication may only be with designated Purchasing Division staff. All Offeror/Bidders and Sponsoring Departments shall abide by this Law and have no communication with the Town, other than with the Purchasing Division during a restricted period, until such time a contract is finalized and filed with the Town Clerk.

2. RECEIPTS AND OPENING OF BIDS

Pursuant to Town Board Resolution, the Town of Brookhaven invites bids on the forms herein provided for the project indicated in the Notice to Bidders, at the time, date and place as indicated in the Notice to Bidders.

3. FORMS, PREPARATION AND PRESENTATION OF PROPOSAL

In submitting the bid, the bid sheets furnished are to be filled in but not detached from the contract form. The complete bid for this work shall be enclosed in a sealed envelope properly endorsed. All blank spaces for bid prices must be filled in, in ink, in both words and figures, with a total or gross sum for which the bid is made. Bids that contain an omission, erasure, alteration, addition or items not called for in the itemized bid form or that contain irregularities of any kind may be subject to rejection. In case of discrepancy between the unit price and total amount bid for any item, the unit price, as expressed in words, shall govern.

4. BID SECURITY

a. The bid must be accompanied by a certified check on a solvent bank or trust company, or an acceptable bid bond, in an amount equal to 5% of the total amount bid, made payable to the Town of Brookhaven (herein referred to as "Owner"), as assurance that the bid is made in good faith. (b) THE BIDDER IS CAUTIONED THAT ITS BID MAY ONLY BE WITHDRAWN IN ACORDANCE WITH THE REQUIREMENTS OF GENERAL MUNICIPAL LAW SECTION 103.11(a): In

all contracts governed by General Municipal Law 103, where a unilateral error or mistake is discovered in a bid, such bid may be withdrawn after a showing of the following: (1) the mistake is known or made known to the awarding officer, board or agency prior to the awarding of the contract or within three days after the opening of the bid, whichever period is shorter; and (2) the price bid was based on an error of such magnitude that enforcement would be unconscionable; and (3) the bid was submitted in good faith and the bidder submits credible evidence that the mistake was a clerical error as opposed to a judgment error; and (4) the error in the bid is actually due to an unintentional and substantial arithmetic error or an unintentional omission of a substantial quantity of work, labor, material, goods or services made directly in the compilation of the bid, which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn from inspection of the original work paper, documents, or materials used in the preparation of the bid sought to be withdrawn; and (5) it is possible to place the public agency, board, officer, or subdivision in status quo ante. THE BIDDERS WITHDRAWAL OF ITS BID FOR ANY OTHER REASON, OR THE BIDDER'S FAILURE OR REFUSAL TO DELIVER THE REQUIRED INSURANCE CERTIFICATES AND PERFORMANCE AND PAYMENT BONDS WITHIN FIVE (5) BUSINESS DAYS FROM THE DATE OF THE TOWN'S NOTICE OF ACCEPTANCE OF THE BID, SHALL RESULT IN THE BID SECURITY BEING FORFEITED.

(c) the certified check or bid bond of the successful bidder will be retained until filing and approval of the Performance Bond and until the completion of 10% of the work under the contract.

(d) the certified check or bid bond of unsuccessful bidders shall be returned after the award of the bid contract.

5. QUALIFICATIONS OF BIDDERS

a. Forms for qualifications of bidders, giving evidence of sufficient facilities, equipment, experience and financial ability shall be not more than thirty days old at the time of submission. If a financial statement is already on file with the Town Clerk, a new one need not be submitted provided the information contained therein is not more than thirty days old at the time of the opening of bids and provided the Contractor has not materially changed since submission of said statement. (b) A copy of a valid asbestos handling license or other proof of the issuance of a valid asbestos handling license deemed suitable by the New York State Commissioner of Labor shall be submitted by the bidder, with his bid, to the Town of Brookhaven, if work to be

performed under the resulting contract by a contractor or any of his subcontractors at any tier, involves the installation, removal, encapsulation, application or enclosure of any asbestos or asbestos material, or the disturbance of friable asbestos.

6. REJECTION OF BIDS

a. The Town of Brookhaven reserves the right to reject any bid if the evidence submitted in the qualifications statement or an investigation of such bidder fails to satisfy the Town that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted.

b. The Town of Brookhaven reserves the right to reject any and all bids in whole or in part, to waive any information in any or all bids, to waive any informalities in any or all bids and to accept the bid or part thereof which it deems most favorable to the Town after all bids have been examined and/or checked. (c) To maintain the integrity of the bid process, the Town reserves the right to reject any bids that are deemed incomplete, conditional, obscure, or which contain irregularities of any kind including unbalanced bids. An unbalanced bid is one in which the amount bid for one or more separate items is substantially out of line with current market prices for the materials and/or work covered thereby and wherein the hourly rates are lower than the published Prevailing Wage Rates as established by the New York State Department of Labor specific to the category/class of work required by the bid.

7. BIDDERS RESPONSIBILITY

(a) Bidders are cautioned not to submit bids until after having inspected the site of the proposed project and having made themselves familiar with local conditions. The attention of persons intending to submit bids is specifically called to the paragraph of the Contract which debars a contractor from pleading misunderstanding or deception because of estimated or quantities, character, location or other conditions surrounding the same. Special attention is called to the notes on the plans or in the itemized form of bid, which are made a part of this contract, which may alter or revise the specifications for the particular contract. (b) No representation is made as to the existence or nonexistence of groundwater, which may in any way impede the proposed work to be accomplished. Each bidder shall fully inform himself as to groundwater and sub-surface conditions prior to submitting his bid. (c) The bid shall include the complete cost of furnishing all materials, labor and equipment necessary to complete the work in accordance with the plans and specifications, including all other expenses incidental thereto. (d) Bidders must examine the plans and specifications and exercise their own judgment as to the nature and amount of the whole of the work to be done, and for the bid prices, must assume all risks of variance by whomsoever made in computation or statement of amounts or quantities necessary to fully complete the work in strict compliance with the contract documents. (e) The contractor shall assume all risks and responsibility and shall complete the work in whatever material and under whatever conditions he may encounter or create, without extra cost to the Town. (f) No pleas of ignorance or misunderstanding of conditions that exist or that may hereafter exist, or of conditions of difficulties that may be encountered in the execution of the work under this contract as a result of failure to make the necessary examinations and investigations, will be to fulfill in every detail all of the requirements of the contract documents or will be accepted as a basis for any claims whatsoever for extra compensation, or for an extension of time.

8. CONSTRUCTION TERMS AND CONDITIONS

The successful bidder is warned that the work specified in the Conditions of Contract, together with the Information of Bidders, Rules and Regulations for Implementation of Apprenticeship Training Program Requirements, Form of Bid, Plans, Specifications

and instruction of the Town of Brookhaven or its duly authorized representative will be rigidly enforced.

9. SECURITY FOR FAITHFUL PERFORMANCE

The successful bidder shall be required to execute a Performance Bond equal to one hundred percent (100%) of the annual amount of the contract. A surety company deemed acceptable to the Owner shall execute such bond. The bond shall be executed by a surety company authorized to transact business in New York State, with a rating of at least A-, and in a payment bond form acceptable to the Owner. The successful bidder, upon failure to execute and deliver the bond required within ten (10) days after the date of notice of the acceptance of their bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his bid, and he will be liable for and he agrees to pay to the Owner on demand the difference between the price bid and the price for which such contract shall subsequently be re-let, including the cost of such re-letting less the amount of such deposit. No plea of mistake in such accepted bid shall be available to the bidder for the recovery of his deposit or as a defense to any action upon accepted bid unless said mistake can be proven by documentary evidence acceptable to the Town.

10. PAYMENT BOND

Prior to the entering of the contract, where the aggregate amount of the contract is fifty thousand dollars (\$50,000.00) or greater, the successful bidder shall be required to execute a payment bond equal to one hundred percent (100 %) of the annual value of the contract. The bond shall be executed by a surety company authorized to transact business in New York State, with a rating at least A-, and in a payment bond form acceptable to the Owner. The payment bond shall guarantee payment of monies due to all persons furnishing labor or material to the contractor, or his subcontractors for the work provided under the contract. The payment bond shall be written to remain in full force and effect for a period of not less than one (1) year after the date of the final acceptance of the work, or one (1) year from the date on which final payment under claimant's subcontract becomes due.

11. MAINTENANCE BOND / PROJECTS WITHOUT PHASES

A Maintenance bond, in the amount of not less than 100% of the total amount of the bid, and the bond shall be executed by a surety company authorized to transact business in New York State, with a rating of at least A-, and in a form acceptable to the Town of Brookhaven, shall be furnished to the Department of Finance upon completion of the project and shall be written so as to remain in full force and effect as a maintenance bond for a period of not less than one year after the date of final acceptance of work. Final payment shall be withheld until the above terms and conditions are met.

12. FOREIGN CONTRACTORS

Foreign contractors must comply with the provisions of Articles 9A and 16 of the Tax Law, as amended, prior to submission of a bid for the performance of this work. The certificate of the NYS Tax Commission to the effect that all taxes have been paid by the foreign contractor shall be conclusive proof of the payment of taxes. The term "foreign contractor" as used in this subdivision means in the case of an individual, a person who is a legal resident of another state or foreign country; and in the case of a foreign corporation one organized under the laws of a state other than the State of New York.

13. LIEN LAW

Attention of all persons submitting bids is specifically called to the provisions of Section 25, Subdivision 5, Section 25A and 25B of the Lien Law as amended, in relation to funds being received by a contractor for a public improvement declared to constitute trust funds in the hands of such Contractor to be applied first to the payment of certain claims.

14. SUBCONTRACTORS AND SUPPLIERS

At the time of bid submission, the Contractor will furnish to the Town contacts identified herein, who will be responsible for sending to the Engineer, written notice of names of all subcontractors to be employed on the project and the general items of work to be done by them simultaneously, the Contractor shall furnish written notice of the names of suppliers of materials to be used on the project. The Contractor shall further submit any documents or affidavits, as required, certifying the subcontractor's compliance with the Town Code and applicable laws, statutes, rules and regulations. The Owner may disapprove for good cause any subcontractor or material supplier selected by the Contractor by giving written notice of its disapproval within five days after receiving the names of subcontractors and material suppliers to the Contractors who shall thereupon promptly notify the Owner of the names of the subcontractor or material supplier selected in replacement which shall again be subject to approval by the Owner.

14A. SERVICE

For the purposes of determining whether subcontractor approval is required, and for determining reimbursement for extra work, a Service is specialized work consisting of less than an entire contract pay item, conducted for an aggregate of less than 5 days, provided to the Contractor for a fee or other basis not generally accounted for through labor, materials and equipment billing. Services include, but are not limited to professional fees, testing fees, dumping fees, utility charges, fuel supply delivery, vehicle towing called out for the public, and crane lifting operations.

15. PENAL LAW

Attention is called to Section 2018 of the Penal Law as follows:

Construction or blasting near pipe conveying combustible gas

No person shall discharge explosives in the ground, nor shall any person other than a state or county employee regularly engaged in the maintenance and repair thereof excavate in any than existing street, highway, or public place, unless notice thereof in writing shall have been given at least seventy-two hours in advance to the person, corporation or municipality engaged in the distribution of gas in such territory. The person having direction or control of such work shall give such notice, and further he shall ascertain whether there is within one hundred feet in such street, highway or public place, or in the case of a proposed discharge of explosives within a radius of two hundred feet of such discharge, any pipe of any other person, corporation or municipality conveying combustible gas, and if thereby any such pipe, he shall also give such notice to any other such person, corporation or municipality. Provided, however, that in any emergency involving danger to life, health, or property it shall be lawful to excavate without using explosives if the notices prescribed herein are given as soon as reasonably possible and to discharge explosives to protect a person or persons from an immediate and substantial danger of death or serious personal injury if such notices are given before any such discharge is undertaken. Any such work shall be performed in such manner as to avoid danger to any pipe conveying combustible gas. Any violation of the provisions of this section shall be a misdemeanor.

16. ADDENDA AND INTERPRETATIONS

Every request for information or interpretation of the Contract Document or Drawings must be addressed in writing to the Town contacts identified herein, who will be responsible for sending to the Engineer, and to be given any consideration, must be received at least five (5) days prior to the date fixed for the opening of bids, Any such interpretations or supplemental instructions will be in the form of written addenda, and all prospective bidders will be notified via E-MAIL as to where to obtain the document. The failure of any bidder to receive any such addenda will not relieve the bidder of any obligation under his bid as submitted. Any addenda so issued shall become part of the Contract Documents.

17. LIQUIDATED DAMAGES

Liquidated damages in the amount set forth in the Conditions of Contract attached hereto may be assessed for each consecutive calendar day of delay by the Contractor not excusable as provided in the Contract Documents.

18. EXEMPTION FROM SALES AND USE TAXES

In accordance with McKinney's (New York State) Tax Law Section 1115(a), as amended, specifically paragraphs 15 and 16, political subdivision, as described in McKinney's (New York State) Tax Law Section 1116(a)(1) are exempt from the payment of sales and use taxes imposed on tangible personal property within the limitations specified in Tax Law Sections 1115 (a) (15) and (16) as follows:

(15) Tangible personal property sold to a contractor, subcontractor or repairman for use in (i) erecting a structure or building (A) of an organization described in subdivision (a) of section 1116 or (B) used predominantly either in the production phase of farming or in a commercial horse boarding operation, or in both, or (ii) or adding to, altering or improving real property, property or land (A) of such an organization or (B) used predominantly either in the production phase of farming or in a commercial horse boarding operation, or in both, as the terms real property, property and land are defined in the real property tax law; provided, however, no exemption shall exist under this paragraph unless such tangible personal property is to become an integral component part of such structure, building or real property.

(16) Tangible personal property sold to a contractor or repairman for use in maintaining, servicing or repairing real property, property or land (i) of an organization described in subdivision (a) of section 1116 or (ii) used predominantly either in the production phase of farming or in a commercial horse boarding operation, or in both, as the terms real property, property or land are defined in the real property tax law; provided, however, no exemption shall exist under this paragraph unless such tangible personal property is to become integral component part of such structure, building or real property.

Contractors entering into Contract with the Town of Brookhaven shall be exempt from payment of sales and use tax as described above. Procedures and forms are available to the Contractor direct from the Instructions and Interpretations Unit, State of New York, Department of Taxation and Finance, State Campus, Albany, New York, 12227.

19. METHOD OF AWARD

All bids will be compared based on the lowest bid price(s) submitted for the work to be done in addition to the qualifications of the bidder. Bidder may be requested to submit additional information such as references. The Department of Finance Designee will make the award to the lowest responsible bidder that provides the Best Value to the Town. In cases where two or more responsible bidders submit identical bids as to price, the Department of Finance Designee may award the contract to either of such bidders. The Department of Finance

Designee may award item by item or by overall low bid, whichever is in the best interest of the Town of Brookhaven. The Department of Finance Designee may reject any or all bids or waive any information or informalities in the bid and award items as a whole or in part or re-advertise for new bids in his/her discretion.

The Town Board reserves the right to award this Contract to the lowest qualified bidder and to reject and declare invalid any or all bids deemed not in the best interest of the Owner. In awarding this Contract, the Town is not bound by the quantities stated in the Bid Form. It is emphasized that the quantities are approximations only. No guarantee is made for any quantities stated nor is a guarantee made for the total bid or alternate total bid. Such total bid or alternate total bid are for the purpose of guidance in awarding the Contract only. Payment shall be on the basis of actual work done at the unit prices quoted. The Town reserves the right to bid independently and award quantities that are equal to or greater than fifty (50%) percent of the approved annual

expenditure for the contracted work.

The Town reserves the right to increase or decrease quantities and to add or delete items that are supplementary and germane to the substance and intent of the bid/contract.

20. TIME FOR COMPLETION

The bidder, when submitting his bid, must be prepared to commence work not later than ten (10) days after signing the Contract unless the Owner shall authorize a delay or the Owner advises the bidder of a later start date. The time for completion of all of the work contemplated under this Contract shall be as set forth in the Conditions of Contract. The entire work must be satisfactorily completed and the project improvements available for use within the completion time stipulated.

21. AFFIDAVIT ON COMPLETION

The Contractor, upon completion of the work, shall file with the Owner an affidavit to the effect that all persons who did work or furnished materials to him under these Specifications have been fully paid and satisfied, and that no mechanics liens exist against the work.

22. PAYMENTS

Within ten (10) days after the first of each month, while the work is in progress, the engineer will make an approximate estimate in writing of the total amount of work done and materials incorporated in the work to the first said month, together with his written estimate of the value of said work and materials under the terms of the contract. Such estimate may be either by measurement or by estimation or partly by each method. Upon the Town's acceptance of the work and material and upon receipt of this estimate from the Engineer, the Owner shall pay to the Contractor ninety-five percent (95%) of the money or of the balance of the money due and unpaid. Upon substantial completion of the work, Contractor may request progress payments subject to the approval of the Engineer. The Town will hold Five percent of the amount approved until final completion. It is also agreed that payment for work or material does not constitute final acceptance, but that defective work or material may be deducted from a subsequent estimate. Upon completion of the work under this Contract, the Contractor shall notify the Engineer of his completion. The Engineer will then make a final inspection and submit to the contractor a "punch list" if required. Upon final acceptance of the work by the Engineer, and after the Contractor submits the necessary papers as may be required, the Contractor shall be paid in full (100%) less any previous payments made.

23. LABOR LAW

The Contractor and each and every subcontractor performing work at the site of the project to which this Contract relates shall comply with the applicable provisions of the Labor Law, as amended, of the State of New York. Attention is called to certain provisions of the Labor Law, as set forth in the Conditions of Contract, Paragraph 11, which are hereby referred to and made of part hereof.

24. PAYROLL RECORDS/RETENTION BY TOWN

Every contractor and subcontractor shall submit to the Town of Brookhaven Department of Finance, within thirty (30) days after the issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payroll record, in accordance with New York State Labor Law 220, subscribed and affirmed as true under the penalties of perjury. Failure to comply with this contract provision and submit payroll records as required will result in the withholding of Town payments until such time as the required payroll records are produced to the Town. Additionally, failure to comply with this contract provision shall result in the Town notifying the New York State Department of Labor of the Contractor's and/or subcontractor's failure to submit the certified payroll records as required pursuant to New York State Labor Law.

25. WAGE RATES

The rate of wages determined by the New York State Industrial Commissioner pursuant to the Labor Law, which are to be paid on this project, are set forth herein.

26. INSURANCE REQUIRED BY THE TOWN OF BROOKHAVEN

The successful bidder will be required to procure and pay for the following types of insurance, in accordance with the provisions of the Conditions of Contract.

INSURANCE REQUIREMENTS

The Contractor shall furnish the Town of Brookhaven, 1 Independence Hill, 3rd Floor, Farmingville, NY 11738, with certificates of each insurance company, insuring the contractor or any subcontractor permitted under this Contract. All certificates and the insurance policies shall bear the policy numbers, the expiration date of the policy, and the limits of liability hereunder. **FAILURE TO MAINTAIN INSURANCE DURING THE TERM OF THE CONTRACT SHALL BE GROUNDS FOR TERMINATION FOR DEFAULT.** The Contractor shall procure and maintain at its own cost and expense insurance as will protect the Town, its officers, employees, and the people of the Town of Brookhaven from any claim or claims for damages to property and for bodily injury and personal injury, including death, which may arise from or relate to the terms and conditions of this agreement. Said policies or certificates of insurance shall be delivered to the Town with full premiums paid and shall be subject to the approval of the Commissioner of Finance for adequacy and form of protection. **Said policies and certificates must name the Town of Brookhaven, the Town Board, and its officers and employees as additional insureds.** The Contractor shall be held liable for the work and services provided by all subcontractors.

Additionally, the Contractor shall defend, indemnify and save harmless the Town of Brookhaven from and against all losses, and all claims, demands, payments, suits, actions, recoveries, judgments, costs and expenses including without limitation attorney's fees, in connection therewith, of every nature, including but not limited to claims for bodily injury, or death, by any third party and by or on behalf of the contractors, agents, servants or employees, arising out of or in connection with the work which is the subject of this contract, and caused, in whole or in part, by the contractor, its agents, servants or employees. It is the intention of the Town of Brookhaven and the contractor to reallocate the risk of loss as between the Town of Brookhaven and the Contractor, for liability to third parties, in connection with the work, which is the subject of this contract, through the contractor's purchase of insurance to protect the Town of Brookhaven.

The insurance provided shall include the following:

1. **Commercial General Liability:**

- a) General Aggregate - \$2,000,000.00; Per Occurrence \$1,000,000.00 (for both bodily injury and property damage)
- b) Operations & Products (including completed) - \$2,000,000.00
- c) Personal and advertising injury - \$1,000,000.00
- d) Each occurrence - \$1,000,000.00
- e) Fire damage - \$100,000.00
- f) Medical expense (any one person) \$5,000.00
- g) Professional Liability - \$1,000,000.00

The foregoing aggregate limits shall apply on a per project and/or location basis.

2. **Automobile Liability:**

- a) Any auto coverage - \$1,000,000.00
- b) Hired autos - \$1,000,000.00
- c) Non-owned auto coverage - \$1,000,000.00

3. **Proof of Workers' Compensation Insurance Coverage** (Statutory requirements). Upon award, the

Proposer must submit one (1) of the following:

- **Form C-105-2** - Workers' Compensation Certificate issued by Private Insurance
- **Form U-26.3** – issued by New York State Insurance Fund
- **Form SI-12** - Certificate of Worker's Compensation Self-Insurance or Form G105.2
Certificate of Participation in Worker's Compensation Group Self-Insurance

- **Form CE-200** – Certification of Attestation of Exemption from New York State

4. **Proof of Disability and Paid Family Leave Benefits Coverage** (Statutory requirements)

Upon award, the Proposer must submit one (1) of the following:

- **Form DB-120.1** – Certificate of Insurance- Disability and Paid Family Leave
- **Form DB-120-2** – Certification of Participation in Disability or Disability and Paid Family Leave Group Self Insurance
- **Form 155** – Certificate of Self Insurance Disability and Paid Family Leave
- **Form CE-200** – Certificate of Attestation of Exemption from New York State Disability and Paid Family Leave

The Town Commissioner of Finance may modify the insurance requirements, prior to the commencement of services, if it can be demonstrated that the scope of services to be performed does not warrant such coverage. Insurance certificates shall be subject to the review and approval of the Town's Commissioner of Finance. It shall be further stipulated thereon that the Town of Brookhaven shall be given at least thirty (30) days' notice of cancellation of said coverage, which shall be remitted to the Department of Finance – Division of Purchasing, One Independence Hill, Farmingville, New York 11738.

APPRENTICESHIP TRAINING PROGRAMS:

1. If the amount bid for this Contract, or the cost of the individual contracts on multi-prime contracts that comprise the Project, is in excess of \$100,000 (cost of material and labor), the Contract(s) will be subject to Town's "Rules and Regulations for Implementation of Apprenticeship Training Program Requirements" (herein Town's Rules and Regulations), which requires that firms entering into Town contracts, as defined in the Town's Rules and Regulations, to participate in a registered and approved New York State Department of Labor Apprenticeship Training Program(s). In accordance with the Town's Rules and Regulations, the Contractor and any Subcontractors shall provide evidence of participation in a registered Apprenticeship Training Program(s) approved by New York State Department of Labor, that are applicable and appropriate for the type and scope of work to be performed under the Contract(s).

A. At the time of bid submission, the Contractor shall submit with its bid an affidavit and proof of participation in a registered and approved NYS Apprenticeship Training Program in accordance with the Town's Rules and Regulations. If the Contractor does not submit the required affidavit and proof of participation in an Apprenticeship Training Program, the Town may declare the Contractor's bid non-responsive and award the Contract to the next lowest responsible Bidder.

B. At the time of bid submission, the Contractor shall also submit to the Town contacts identified herein, who will be responsible for sending to the Engineer, for approval, the names of all Subcontractors to be employed on the project, and an affidavit and proof of each Subcontractor's participation in an Apprenticeship Training Program in accordance with the Town's Rules and Regulations.

C. Upon the Contractor's written request and a showing of good cause the Department of Finance Designee in consultation with the Town Attorney may grant an extension, not to exceed ten business days from the bid opening date, for the Contractor to submit the required proof of the Contractor's and/or Subcontractor's participation in an Apprenticeship Training Program in accordance with the Town's Rules and Regulations. If the Contractor does not submit the required affidavit(s) and proof of participation, the Town may declare the Contractor's bid non-responsive and award the Contract to the next lowest responsible Bidder.

The Town will provide the affidavit forms.

RULES AND REGULATIONS FOR IMPLEMENTATION OF APPRENTICESHIP TRAINING PROGRAM REQUIREMENTS

AUTHORITY

Article 23 Section 816-b of the New York State Labor Law; Town Board Resolution No. 13 adopted April 8, 2004, Requiring Apprenticeship Training Programs for Town contracts.

DEFINITIONS:

The following terms shall have the meanings as set forth herein:

- Apprentice – A participant registered under a New York State Department of Labor registered Apprenticeship Training Program in accordance with Article 23 of the New York State Labor Law and 12 NYCRR §600, et seq., and any amendments thereto.
- Apprenticeship Training Program - An Apprenticeship Training Program registered and approved by the Commissioner of the New York State Department of Labor pursuant to 12 NYCRR §600, et seq., and any amendments thereto.
- Construction Contract - Any contract to which the Town of Brookhaven shall be a signatory which involves the construction, reconstruction, improvement, rehabilitation, installation, alteration, renovation, demolition or otherwise providing for any building, facility or physical structure of any kind, which also includes, but is not necessarily limited to, highways and associated appurtenances, bridges, bulkheads and docks.
- Contractor - Any person, firm, or corporation or entity awarded a contract by the Town, which directly employs labor under a construction contract, as defined herein.
- Subcontractor - Any person, firm, or corporation or entity having a direct contract with the Contractor or with any other Subcontractor for supplying labor at the Town work site.
- Work Permit - Issued by the Highway Superintendent to a person, firm, corporation or municipality for the purpose of performing work on Town owned infrastructure associated with non-Town development, maintaining and/or installing wires, conduit, drainage, sewer and water pipes and associated appurtenances.
- Maintenance - Work for keeping the Town infrastructure in proper condition including, but not limited to, pavement patching, crack sealing and building repairs are items of work in this category.
- Sponsor - An employer, group of employers, or a joint apprenticeship committee (JAC) representing both employers and a union, which has the ability to train Apprentices, and which is recognized as such by the Department of Labor through the registration of a program (as defined pursuant to (12 NYCRR §601.3 and amendments thereto).

APPLICABILITY

The Town's "Rules and Regulations for Implementation of Apprenticeship Training Program Requirements" (herein Town's Rules and Regulations) shall apply to any awarded construction contract, as defined herein, in an amount in excess of \$100,000.00 (for cost of material and labor). The applicability of a Project Labor Agreement will be evaluated for projects where the aggregate cost of the contract(s) is anticipated to exceed \$3,000,000. If a Project Labor Agreement has been executed, the Contractor/Subcontractor shall demonstrate compliance with the Apprenticeship Training Program requirements as set forth herein.

During the term of the contract, the Contractor and/or Subcontractor shall be required to submit verification on a quarterly basis that Apprentices under a registered NYS Department of Labor Apprenticeship Training Program have worked on the specific Town project, work site, the subject of the Contract. Apprentices shall be employed in accordance with NYS Department of Labor ratios.

Projects that are funded by grant monies are subject to the policies and regulations of the Authority that provided the grant funds.

GENERAL REQUIREMENTS (ANNUAL ON CALL) CONTRACTS (OTHER THAN MAINTENANCE)

The Town's Rules and Regulations shall be applicable to any contract over \$100,000 (for labor and material) based on anticipated aggregate amount as provided in the Town Board's resolution for the award of the Contract. If the amount stated in the awarding resolution is under the \$100,000 threshold (for labor and material), the Contractor acknowledges and agrees that upon the cost of the contract work during the term of the contract exceeding the \$100,000 threshold the Contractor and/or Subcontractor shall be required to comply with the Town's Rules and Regulations promulgated herein.

PROJECT SPECIFIC CONTRACT

Multiple Prime Contracts: Where multiple prime contracts are required by law, (for example, General Municipal Law §101 -Wicks Law) the cost of the individual Contracts, for the term of each, shall be utilized in determining applicability. If the amount stated in the awarding resolution is under the \$100,000 threshold, the Contractor acknowledges and agrees that upon the cost of the contract work during the term of the Contract exceeding the \$100,000 threshold, the Contractor and/or Subcontractor shall be required to comply with the Town's Rules and Regulations promulgated herein.

Single Prime Contracts: Applicability shall be based on the anticipated aggregate cost of work as stated in the Town Board's resolution awarding the Contract. If the amount stated in the awarding resolution is under the \$100,000 threshold for material and labor, the Contractor acknowledges and agrees that upon the cost of the Contract work during the term of the contract exceeding the \$100,000 threshold the Contractor and/or Subcontractor shall be required to comply with the Town's Rules and Regulations.

These regulations are NOT applicable to projects involving maintenance, custodial services, any work or contracts involving leased facilities, highway and sanitation construction performed pursuant to Work Permits issued by the Town of Brookhaven, engineering/architectural services, equipment purchases.

If a specific trade does not have a NYS Department of Labor registered approved Apprenticeship Training Program at the time of the award of the Contract, the Town's Rules and Regulations do not apply

for that trade. However, if during the term of the Contract, the NYS Department of Labor approves that trade for registered apprenticeship purposes, the Contractor and/or Subcontractor shall comply with the Town's Rules and Regulations. Within thirty (30) days of notification from the Town that the New York State Department of Labor has approved that trade for registered apprenticeship purposes, the Contractor and/or Subcontractor shall submit proof of its participation in an Apprenticeship Training Program for that trade.

COMPLIANCE TIME FRAME

At the time of bid submission, the Contractor shall submit with its bid, proof of the Contractor's participation in an Apprenticeship Training Program in accordance with the Town's Rules and Regulations, as set forth herein. Each Contractor shall also submit an executed affidavit, under penalties of perjury, as to the firm's participation, which shall be submitted with proof of participation.

At the time of bid submission, the Contractor shall also submit with its bid, for the Town's approval, the names of all Subcontractors to be employed on the project, and proof of each Subcontractor's participation in an Apprenticeship Training Program in accordance with the Town's Rules and Regulations. Each Subcontractor shall also execute an affidavit of participation, under penalties of perjury, which shall be submitted with the Contractor's bid and request to the Town for Subcontractor approval.

Upon the Contractor's written request and a showing of good cause, the Department of Finance Designee in consultation with the Town Attorney may grant an extension, not to exceed ten business days from the bid opening date, for the Contractor to submit the required proof of the Contractor's and/or Subcontractor's participation in an Apprenticeship Training Program.

If the Contractor does not comply within the specified time the Department of Finance Designee in consultation with the Town Attorney shall declare the Contractor's bid proposal non-responsive and award the Contract to the next responsible bidder.

AWARD OF CONTRACT

Prior to the award of any contract, the Department of Finance Designee shall advise the Town Attorney and the Commissioner(s)/Department Head(s) that the apparent low bidder presented the required proof of participation in an Apprenticeship Training Program in accordance with the Town's Rules and Regulations.

No contract may be awarded unless the Contractor has demonstrated compliance with the Town's Rules and Regulations, set forth herein. Upon the Contractor demonstrating extraordinary circumstances beyond the Contractor's control and submitting written documentation of such extraordinary circumstances, the Town Attorney and the Department of Finance Designee in their sole discretion may grant additional time for the Contractor to submit proof of the required participation in an Apprenticeship Training Program.

Note: Extraordinary circumstances shall not include the Contractor's/ Subcontractor's pending applications for NYS Department of Labor registration and approval of Apprenticeship Training Program(s), unless a trade has not been previously approved by the New York State Department of Labor for apprenticeship purposes.

CONTRACT TERM

During the term of the Contract, the Contractor and Subcontractor(s) shall submit with the Contractor's invoice, proof of participation in accordance with the Town's Rules and Regulations, set forth herein.

PROOF OF PARTICIPATION IN AN APPRENTICESHIP TRAINING PROGRAM

The Contractor and Subcontractor(s) shall submit the following documentation demonstrating participation in an Apprenticeship Training Program:

- 1) Proof that the sponsor of the Apprenticeship Training Program received New York State Department of Labor approval.
- 2) The name of Apprentices employed on Town contract work under an Apprenticeship Training Program. The hours of training provided to the apprentices at Town work site.
- 3) The sponsor's documentation stating the number of the active, completed and terminated Apprentices that the Contractor and/or Subcontractor employed on prior and current Town contract work. (The sponsor's latest filing of its registered Apprenticeship Training Program as applicable to Town contracts.)
- 4) Journeyman's evaluation reports on Apprentices utilized by the Contractor and the Subcontractor(s) on Town contract work as maintained by the sponsor.
- 5) *During the term of the contract, the Contractor and/or Subcontractor shall be required to submit verification on a quarterly basis that Apprentices under a registered NYS Department of Labor Apprenticeship Training Program have worked on the specific Town project, work site, the subject of the Contract. Apprentices shall be employed in accordance with NYS Department of Labor ratios.*
- 6) Certified payroll records demonstrating journeyman were present on the Town work site in order to provide appropriate guidance to Apprentices registered in an Apprenticeship Training Program, during on-the-job training.
- 7) Documentation that the number of journeyman employed on Town contract work complied with New York State Department of Labor ratios for employment of Apprentices.
- 8) Records of the sponsor's recruitment, including the appropriate recruitment announcement and the resulting applicant list as may be applicable to Town of Brookhaven contracts.

Note: Subcontracting the work under the Contract to a firm that participates in an Apprenticeship Training Program shall not satisfy the Contractor's requirements under the Town's Rules and Regulations. The Contractor shall only subcontract the work for trades that the Contractor is not authorized or qualified to perform and is beyond the knowledge or expertise of the Contractor.

SUSPENSION OR TERMINATION OF CONTRACT

Failure to provide proof of participation in an Apprenticeship Training Program shall be deemed a violation of the Contract and grounds for immediate termination. If during the course of a Contract, the Contractor or any Subcontractor is not in compliance with the Town's Rules and Regulations, the Town Attorney with the Department of Finance Designee may then suspend work and take whatever action is deemed appropriate as more specifically defined under "Owner's Right to Stop Work or Terminate Contract" in the Contract document. Failure to comply with the Town's Rules and Regulations during the Contract term, may result in the Contractor being determined a non-responsible bidder on future Town contracts.

ALL CONTRACTORS
PLEASE IDENTIFY ALL PRIOR AWARDED TOWN CONTRACTS
SUBJECT TO APPRENTICESHIP TRAINING PROGRAM
REQUIREMENTS AS APPLICABLE
THIS FORM MUST BE COMPLETED AND SUBMITTED WITH THE BID

April 8, 2004 through February 10, 2009: \$250,000.00 and over

Town Contract Name and Number	Award Date	\$\$ Amount of Contract	ProofNYS DOL ATP Approval Letters	ATP Name Program/Trade	Ratio Apprentice to Journeyman on Town Jobs	# Active Completed or Terminated Apprentices on Town Contracts	Recruitment Letters Dated

February 11, 2009 through present: \$100,000.00 and over

Town Contract Name and Number	Award Date	\$\$ Amount of Contract	ProofNYS DOL ATP Approval Letters	ATP Name Program/Trade	Ratio Apprentice to Journeyman on Town Jobs	# Active Completed or Terminated Apprentices on Town Contracts	Recruitment Letters Dated

**ALL SUBCONTRACTORS
PLEASE IDENTIFY ALL PRIOR AWARDED TOWN
CONTRACTS SUBJECT TO APPRENTICESHIP TRAINING
PROGRAM REQUIREMENTS AS APPLICABLE
THIS FORM MUST BE COMPLETED AND SUBMITTED
WITH THE BID**

April 8, 2004 through February 10, 2009: \$250,000.00 and over

Town Contract Name and Number	Contractor Name	Award Date	ProofNYS DOL ATP Approval Letters	ATP Name Program/Trade	Ratio Apprentice to Journeyman on Town Jobs	# Active Completed or Terminated Apprentices on Town Contracts	Recruitment Letters Dated

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1. DEFINITION OF TERMS

Whenever the following words and expressions are used in the Specifications, it is understood that they have the meaning defined below:

PLANS: The body of directions, requirements, descriptions, etc. contained in this document, together with all documents of any description and agreement made (or to be made) pertaining to the methods or manner of performing the work and/or to the quantities and quality of materials to be furnished and accepted under this Contract.

OWNER: Shall mean Town Board, Town of Brookhaven, its officers, employees, agents and servants.

ENGINEER: Consulting Engineers engaged by the Owner and duly authorized to represent the Owner in the execution of the work covered by the consultants and assistants engaged by the Engineer to the extent of the particular duties entrusted to them.

CONTRACT: Collectively, the Contract executed by the Owner and the Contractor, Notice to Bidders, Instructions to Bidders, Proposal Form, Form of Bond, Conditions of Contract, General Conditions, Specifications, Construction Drawings, Addenda, Performance Bonds, and all supplemental agreements made or to be made.

CONTRACTOR: The party of the second part hereto, including but not limited to, whether bidder, corporation, firm or individual, principle, member or employee or any combination thereof, and successor, personal representatives, executors, administrators and assigns, and any person, firm or corporation who or which shall at any time be substituted in place of the second part under this Contract.

INSPECTOR: An authorized representative of the Owner or his Engineer assigned to make any and all necessary inspections of the work performed and the materials furnished by the Contractor.

MATERIALS: Any approved materials acceptable to the Engineer and conforming to the requirements of these Specifications.

WORK: All of the work proposed to be accomplished at the site of the project, and all such other work as is in any manner required to accomplish the complete project. This includes all plant, labor, materials, supplies, equipment and other facilities and acts necessary or proper or incidental to the carrying out and completion of the terms of this Contract. The term "work performed" shall be construed to include the material delivered to and suitably stored at the site of the project.

2. STANDARDS OF WORKMANSHIP

The apparent silence of the Specifications as to any detail or an apparent omission from the of a detailed description concerning any work to be done and materials to be furnished shall be regarded as meaning that only the best general practice observed in the latest current construction work is to prevail and that only material and workmanship of first quality is to be used in this connection and all interpretations of these Specifications shall be made upon this basis.

3. SAMPLES

The Contractor shall furnish for approval, all samples as directed. The work shall be in accordance with approved samples. Samples shall be submitted in ample time so as to prevent delay in fabrication or ordering of materials, allowing for a reasonable time for the Engineer to consider the samples submitted and, if necessary, to permit a resubmission of samples to the Engineer until approval is given.

Work and material shall be furnished and executed in accordance with approved samples, in every aspect. Each sample shall be labeled, bearing material, and name and quality, Contractor's name, date and other pertinent data. Unless otherwise specified, samples shall be in duplicate and of adequate size to show quality, type, color, range and finish and texture of material. Materials shall not be ordered until approval is received in writing from Engineer.

4. MANUFACTURED MATERIALS

Where several materials are specified by name, the Engineer shall have the right, before execution of the Contract, to require any and all bidders to state the materials upon which they based their bid. Where any materials are specified by name or trade name, or by catalog number of a company or companies, the Contractor shall furnish the article mentioned unless approval of the Engineer

is obtained in writing for a substitution. Should Contractor desire to substitute another material for one or more specified by name, he shall apply in writing for such permission and state credit or extra involved. He shall also provide supporting data and samples for Engineer's consideration. Unless particularly specified otherwise, all manufactured articles, materials and equipment shall be applied, assembled, installed, connected, erected, used, cleaned and conditioned as directed by the manufacture and including the necessary preparation to properly install the work. Where reference is made to manufacturer's directions, the Contractor shall submit such directions to the Engineer as required. The materials used in construction shall be disposed as not to endanger the work, and so that full access may at all times be has to partly completed work and structures and they shall be so disposed as to cause no injury to those having access to the work or any of the units. All labor shall be performed in the best and most workmanlike manner by mechanics skilled in their respective trades. Standards of work required throughout shall be of such grades as will bring results of first class only. The type of labor employed by the Contractor shall be such as will insure the uninterrupted continuity of the entire work, without conflict of any kind.

5. LABORATORY

Laboratories shall be designated by the Engineer for testing the material to be used under the Contract. Where tests are made by other than the designated laboratories, two certified copies showing correctly the chemical analysis and physical tests shall be furnished to the Engineer.

6. SHOP DRAWINGS

The Contractor shall submit to the Engineer, four (4) copies of all shop drawings and schedules and no work shall be fabricated until his approval has been given. All shop drawing submitted to the Engineer must bear the Contractor's stamp of approval evidencing that the drawings have been checked. The Contractor will make any corrections in the drawings required by the Engineer and will file with the Engineer four corrected copies. Approval by the Engineer of such drawings or schedules shall not relieve the Contractor from responsibility for (a) errors of any sort in shop or setting drawings or schedules; or (b) deviations from Plans and Specifications unless the Contractor, at the time of submission of said drawings and schedules, has given notice to the Engineer of any such deviations.

7. PERMITS

PROOF SHALL BE SUBMITTED WITH EACH BID THAT THE OPERATION FROM WHICH THE MATERIAL IS ORIGINATING COMPLIES WITH ALL REQUIREMENTS OF THE CODE OF THE TOWN OF BROOKHAVEN AND THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

A. MUNICIPAL: All work in connection with the installation of pipes or other underground structures of a like nature either within or without the limits of the highway, shall follow all the provisions, as they apply, of the Highway Law, Roads opening, Section 149, and Section 208 Town Law, with all subsequent changes, additions or corrections thereto.

B. SUFFOLK COUNTY: All permits required for opening County roads and making connects with County drains will be obtained by the Owner. A copy of the permit, which must be kept on the job at all times, will be supplied to the Contractor. The Contractor will not be permitted to open any County drain until he has been supplied with this permit.

C. STATE OF NEW YORK: The Contractor shall obtain all necessary New York State highway permits whenever the Contract requires any work to be done within or upon existing State highway right-of-ways. These permits shall be obtained from the District Office in Hauppauge prior to the performance of the work. Upon application for the permit, the Contractor will be required to supply the following: (1) Three (3) copies of a sketch or print showing description and location of the proposed work. The Engineer will supply these prints to the Contractor. (2) Contingent liability insurance for the State (in addition to his own liability insurance) shall be furnished in amounts and manner as required by the State of New York. The contingent protective liability and completed operations liability insurance policy to cover: "The people of the State of New York and/or the Superintendent of Public Works covering liability arising with respect to all operations through highway permits by permittee or by anyone acting by, through or for the permittee, including omissions and supervisory acts of the State", in the amount of personal injury (including death) and property damage as required.

8. PLANS AND SPECIFICATIONS

The Contractor will be furnished with five sets of Plans and Specifications giving all the details and dimensions necessary for carrying out the work. One copy of Plans and Specifications furnished to the Contractor must be kept constantly on the site.

Anything shown on the Plans and not mentioned in the Specifications, or mentioned in the Specifications and not shown on the Plans and all the work and materials necessary for the completion of the work according to the intent and meaning of the contract shall be furnished, performed and done as if the same were both mentioned in the Specifications and shown on the Drawings. Any conflict or inconsistency between the Plans and Specification or any discrepancy between the figures and scale of Drawings shall be submitted by the Contractor to the Engineer, whose decision thereon shall be conclusive. In the event the meaning of any portion of the Specifications or Drawings or any supplementary drawings or instructions of the Engineer is doubtful, the same shall be understood to call for the best type of construction, both as to materials and workmanship, which reasonably can be interpreted. All materials and workmanship must be strictly in accordance with the specifications.

The plans show approximate size, arrangement, and location of the proposed work. The Engineer will give base lines, grades, shapes and dimensions and the Contractor shall construct the work exactly in accordance with such instructions of the Engineer subject, however, to change as provided for under the headings "Changes and Alterations" and "Compensation to be Paid to the Contractor". Additional copies of Plans and Specifications, when requested, will be furnished to the Contractor at cost of reproduction. The Contractor shall furnish to each of the subcontractors and material-men such copies of the Contract Document as may be required for their work

9. CUTTING, PATCHING AND DIGGING

The Contractor shall do all cutting, fitting or patching of his work that may be required to receive or be received by work of other contractors shown upon or reasonably implied by drawings and Specifications for the completed structure, and he shall make good after them as Engineer may direct. Any cost caused by defective or ill-timed work shall be borne by the party responsible therefore. The Contractor shall not endanger any work by cutting, digging or otherwise, and shall not cut or alter the work of any other contractor save with the consent of the Engineer.

10. ERRORS, OMISSIONS AND DISCREPANCIES

a) If any errors, omissions or discrepancies appear in the drawings, Specifications or other documents, the Contractor shall, within ten days from receiving such Drawings, Specification or Documents, notify the Engineer in writing of such errors or omissions. In the event of the Contractor's failing to give such notice, he will be held responsible for the results of any such errors or omissions and the cost of rectifying the same. b) If, in the opinion of the Contractor, any work is shown on Drawings, or details, or is specified in such a manner as will make it impossible to produce a first class piece of work, or should discrepancies appear between the Drawing and/or Specifications, he shall refer the same to the Engineer for interpretation before proceeding with the work. If the Contractor fails to make such references to the Engineer, no excuse will thereafter be entertained for failure to carry out the work in satisfactory manner as directed. c) Should a conflict occur in or between the Drawings and Specifications and/or existing conditions, the Contractor shall be deemed to have estimated on the more expensive way of doing the work, unless he shall have asked for and obtained a decision in writing for the Engineer, before the submission of bids, as to which method or material will be required. The Engineer will determine which method or material will produce the results to the best interest of the Town.

11. TEMPORARY TOILET

The Contractor shall provide and maintain a sanitary temporary toilet where directed by the Engineer. The temporary toilet shall be enclosed and weatherproof and kept in a sanitary condition at all times. Upon removal of the temporary outside toilet, the vault shall be disinfected, filled and all evidence of the toilet removed from the site.

12. PROPER METHOD OF WORK AND PROPER MATERIALS

The Engineer shall have the power in general to direct the order and sequence of the work, which shall be such as to permit the entire work under this contract to be begun and to proceed as rapidly as possible and such as to bring the several parts of the work to a successful completion at about the same time. If at any time before the commencement or during the progress of the work the materials and appliances used or to be used appear to the Engineer as insufficient or improper for assuring the quality of the work required, or the required rate of progress, he may order the Contractor to increase their efficiency or to improve their character, and the failure of the Engineer to demand any increase of such efficiency or improvement shall not release the Contractor from his obligation to secure the quality of work or the rate of progress specified. During freezing or inclement weather, no work shall be done except such as can be done satisfactorily and in a manner to secure first-class construction throughout. All work shall be

done in such manner as will properly protect and support existing permanent structures, pipe lines, etc.

13. INSPECTION

Inspectors shall be authorized to inspect all work done on materials furnished. Such inspections may extend to all parts of the work and to the preparation or manufacture of the materials to be used. In case of any dispute arising between the Contractor and the Inspector as to materials furnished or the manner of performing the work, the Inspector shall have the authority to reject material or suspend the work until the question at issue shall be referred to and decide by the Engineer. The inspector shall not be authorized to revoke, alter, enlarge, relax or release any requirements of these Specifications nor to approve or accept any portion of the work, nor to issue instruction contrary to the Plans and Specifications. The Inspector shall in no case act as foreman or perform other duties for the Contractor or interfere with the management of the work by the latter. Any advise which the Inspector may give the Contractor shall in no way be construed as binding the Engineer nor the Owner in any way nor releasing the Contractor from the fulfillment of the terms of the Contract. The Contractor shall be conclusively presumed to be acquainted with all existing conditions and to guarantee that all work and to the Owner and materials shall, upon final completion of the work, be turned over to the Owner in a complete and perfect condition and he shall be responsible for the proper care, maintenance and protection of all work and material until his entire Contract is completed and all work and materials found in good condition and accepted. The Contractor will be held responsible for the entire work until completed and accepted by the Engineer and the Owner. The Contractor shall, at all times, provide the Owners, Engineer, assistants and inspectors under him with necessary facilities for determining both on the work and at the places of manufacture, that all work being performed, and all materials being manufactured are strictly in accord with the Contract. Until acceptance of work by the Owner, the Contractor shall be responsible for all damages to the work including action of the elements or any other cause whatsoever. The Contractor shall continuously and adequately protect the work against damage from any cause.

14. WAIVER

Neither the inspection by the Owner or Engineer or any part of their employees nor any order, measurement or certificate by the Engineer nor any order by the Owner for the payment of any money nor any payment for or acceptance of, the whole or any part of the work by the Engineer or the Owner nor any extension of time nor any possession taken by the Owner or its employees shall operate as a waiver of any provision of this Contract or Any power herein reserved to the Owner or any right to damages herein provided; nor shall any waiver of any breach of the Contract constitute a waiver of any subsequent breach. Any remedy provided in this Contract shall be construed as cumulative; that is in addition to each and every remedy herein provided.

15. WATER AND ELECTRIC POWER

All water and electric power supply for construction purposes must be provided by the Contractor. The cost shall be borne by the Contractor.

16. MACHINERY AND EQUIPMENT

All machinery, equipment, trucks and vehicles used in the prosecution of the work or in connection therewith, shall at all times be in proper working condition. The Contractor shall be responsible for curtailing noise, smoke, fumes or any other nuisance resulting from his operations. He shall, upon written notification from the Engineer, make any repairs, replacements, adjustments, additions and furnish mufflers when necessary to fulfill these requirements.

17. MAINTENANCE

If, within one year from the date of issuance of the Final Certificate, any portion of the work shall, in the opinion of the Owner, require repairing, replacing, or rebuilding, the Contractor shall start such repairs within five (5) days after the receipt of notice from the Owner, and if the Contractor shall fail or neglect to start such repairs within the said five (5) days, the Owner may employ such other person or persons as they deem proper to make such repairs and pay the expense thereof out of any sum retained by them, provided nothing herein contained shall limit the liability of the Contractor or his surety to the Owner for nonperformance of the Contractor's obligations at any time.

18. SCHEDULE OF OPERATIONS

Within 5 days after the signing of the Contract, the Contractor shall submit a proposed program of operations, showing clearly how he proposes to conduct the work so as to bring about the completion of his work within the time limit specified. This program shall outline the proposed sequence of operations, the rates of progress and the dates when his work will be sufficiently advanced to permit the installation of work under this Contract.

19. RIGHT TO USE WORK

The Owner may enter upon and use the whole or any portion of the work which may be in condition to use any time previous to its final acceptance by the Owner. Such use shall not constitute or be evidence of acceptance by the Owner or the Engineer of the whole or any part of the material furnished, or work performed under the Contract.

20. NOTICE OF WARNING

If the Contractor shall fail to make prompt payment to persons supplying labor or materials for the work, or refuse or fail to supply enough properly skilled workmen or proper materials or refuse or fail to prosecute the work or any part thereof with such diligence as will insure its completion within the period herein specified (or any duly authorized extension thereof) or fail to complete the work within said period or fail or refuse to regard laws, ordinances, codes, instructions of the Engineer, then the Engineer shall forward by registered mail to the Contractor, at the address given in the Contract, a Notice of Warning, and in the event the Contractor fails to comply with said Notice of Warning within five (5) days from receipt thereof, the Owner shall have the right to terminate the Contract.

21. WARNING SIGNS

Contractor shall provide and maintain proper luminous warning and detour signs where directed by the Engineer. Obstruction such as stored materials, equipment and which excavations shall be marked with not less than two lights, which shall be not more than 4 feet apart. All lights shall be kept burning from one-half hour before sunset to until one-half hour after sunrise.

22. ACCIDENT PREVENTION

During the performance of the work, the Contractor shall exercise all reasonable precautions for the protection of persons and property. The safety provisions of applicable laws, building and construction codes shall be observed. Machinery, equipment and all other physical hazards shall be guarded in accordance with the safety provisions of the Manual of Accident Prevention in Construction published by the Associated General Contractors of America to the extent that such provisions are not inconsistent with Federal, State or Municipal laws and regulations. If any operation, practice, or condition is deemed by the Engineer to be unsafe, he shall notify the Contractor in writing to take corrective action. Where in the opinion of the Engineer any operation, practice or condition shall be promptly discontinued and before the affected part of the work is resumed, remedial action taken. The Owner reserves the right to remedy any neglect on the part of Contractor as regards the protection of the work which may come to its attention, after 24 hours' notice in writing; except that in cases of emergency it shall have the right to remedy any neglect without notice, and in either case to deduct the cost of such remedy from money due the Contractor. Nothing in the foregoing paragraphs shall be construed as relieving the Contractor from full responsibility at all times for safe prosecution of the work.

23. DAMAGES

The Contractor shall pay and make good all losses or damages arising out of any cause connected with the Contract and shall indemnify and save harmless the Owner from any and all Claims and any and all liability or responsibility of every nature and kind for any loss, damage or injury which may be brought against the Owner or any of its officers or agents, by reason of, or connected with the work or materials furnished under the Contract and shall pay all costs and expenses of every kind, character, and nature whatever, occurring upon or arising out of the Contract.

24. MAINTENANCE OF TRAFFIC

All work under this Contract is to be completed within the time indicated in the Contract agreement or as extended by the Owner. If in the meantime it should become necessary, because of the lateness of the season, or any other reason to stop the work, the Contractor shall at his own expense, open proper drainage ditches, erect temporary structures where necessary, prepare the roads so there will be minimum interference with traffic, set up and maintain a competent organization as directed by the Engineer, to keep the highways in first class condition for traffic, and take every precaution to prevent any damage or unreasonably

deterioration of the work during the time it is close

25. FINAL SITE CLEARING

Before final payment will be approved, the Contractor shall prepare the construction areas as follows: All basins, manholes and pipe as constructed shall be cleaned free from accumulated construction dirt, silt, form work, etc., and all proper restoration as called for in the items of the Specifications shall be complete in every detail. The Contractor shall clean all construction areas free from accumulated forms, excavation fill, construction materials and construction shanties. All areas shall be completed in every detail and shall be broom cleaned from excess dirt and materials.

26. PROTECTION OF LAND MARKERS, TREES, SHRUBS, AND PROPERTY

Wherever in the conduct of the work, a monument marking a point of public or private survey is encountered or brought to view by excavation, the fact shall at once be communicated to the Engineer. In no case shall the Contractor remove the same until the location for resetting shall have been made by the Engineer. All monuments or land markings exposed to view when the work is first undertaken shall be carefully preserved and the greatest care exercised to prevent injury to or disturbance of position of the same. The unit price of all items shall include the cost of restoring to its former condition any sidewalks or curbs, as well as restoring any trees, shrubs or lawns that may be damaged during this construction. No additional payment will be made. The Contractor is required at his own expense to obtain any and all permits for use of private property if he uses such property for storage, transportation or accomplishment of the work under the Contract. Private property shall be cleaned up neatly and damage repaired, and premises restored to their original condition.

27. PROTECTION OF UTILITIES

The Contractor shall familiarize himself with the existence of structures of municipal and other public service corporations on or adjoining the site of the work and give reasonable opportunity to and cooperation with the owners of these utilities in the work of reconstructing or altering them. Such reconstruction and alteration shall be so conducted as to delay or interfere as little as practicable with the work of the Contractor. Any additional cost of various items of work because of these utilities shall be included in the price bid for these items. The Engineer shall direct the public utility corporations to shift or remove those utility structures that may be necessary to permit the Contractor to carry out the work in accordance with the Plans. The Contractor shall not remove or cause to be removed, any structure or part of a structure owned by a public utility corporation without the approval of the Engineer. The Contractor shall cooperate with the public utility corporation whose structures (aerial, surface or subsurface) are within the limits of or along the outside of the right-of-way, to make it possible for them to maintain uninterrupted service. The Contractor shall conduct his operations in such a way as to delay or interfere as little as practicable with the work of the utility corporation.

28. NO DAMAGES FOR DELAY

Notwithstanding any other provision to this Contract, the Contractor agrees to make no claim for damages for delay in the performance of this Contract occasioned by any act of the Town of Brookhaven or any of its representatives and agrees that any such claim shall be fully compensated for by an extension of time to complete performance of the work as provided herein. This provision shall not apply to any act or omission to act of the Town of Brookhaven or any of its representatives, wherein the same is done in bad faith and with deliberate intent to delay the Contractor in the performance of this Contractor.

CONDITIONS OF CONTRACT

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1. CONTRACT DOCUMENTS AND DEFINITIONS:

The Notice to Bidders, Instructions to Bidders, Rules and Regulations for Implementation of Apprenticeship Training Program Requirements (as applicable), Proposal Form, Form of Bond, Conditions of Contract, General Conditions, Specifications, Form of Contract, Construction Drawings, together with any Addenda, shall form part of this Contract, and the provisions thereof shall be as binding upon the parties hereto, as if they were herein fully set forth. The table of contents, titles, heading, headlines, and marginal notes contained herein are solely to facilitate reference to various provisions of the Contract Documents and in no way affect, limit or cast light upon the interpretation of the provisions to which they refer. Whenever the term "Contract Documents" is used, it shall mean and include the Notice to Bidders, Instructions to Bidders, Proposal Form, Form of Bond, Conditions of Contract, General Conditions, Specifications, Form of Contract, Construction Drawings and Addenda. Whenever the term "Contractor" is used, it shall include but not be limited to the bidder, corporation, entity, officer, principal, member, or employee. In case of any conflict or inconsistency between the provisions of the Contract and those of the Specifications, the provisions of this Contract shall govern.

Extra Work: The term "extra work", as used herein, refers to and includes all work required by the Owner, which in the judgment of the Engineer involves changes in or additions to work required by the Plans, Specifications and any Addenda in their present form and which is not covered by a specific unit price in the form of Bid.

Subcontractor: The term "subcontractor" shall mean any person, firm, or corporation supplying labor and material for work at the site of the project but not including the parties to this Contract.

Notice: The term "notice", as used herein, shall mean and include written notice. Written notice shall be deemed to have been duly served when delivered to, or at last known business address of, the person, firm or corporation for whom intended, or his, their, or its duly authorized agents, representatives, or officer, or when enclosed in a postage prepaid wrapper or envelope addressed to such person, firm or corporation at his, their or its last known business address and deposited in a United States mailbox.

Directed, Required, Approved, Acceptable: Whenever they refer to the work or its performance, "directed", "required", "permitted", shall imply the direction, requirement, permission, order, designation or prescription of the Engineer, and "approved", "satisfied", or "satisfactory", "in the judgment of", and words of like import, shall mean approved, or acceptable to, or satisfactory to, or in the judgment of the Engineer.

2. SCOPE OF THE WORK

The Contractor will furnish all plant, labor, materials, suppliers, equipment and other facilities and things necessary or proper for, or incidental to, the work contemplated by this Contract as required by, and in strict accordance to, the work contemplated by this Contract as required by, and in strict accordance with, the applicable Plans, Specifications and Addenda prepared by the Engineer and/or required by, and in strict accordance with, such changes as are ordered and approved pursuant to this Contract, and will perform all other obligations imposed on him by this Contract. QUANTITIES OF ANY OR ALL ITEMS MAY BE INCREASED, DECREASED OR ELIMINATED IN THEIR ENTIRETY AT THE OPTION OF THE TOWN PRIOR TO OR AFTER AWARD OF THE CONTRACT. THE TOWN RESERVES THE RIGHT TO BID INDEPENDENTLY AND AWARD ANY QUANTITIES THAT ARE EQUAL TO OR WOULD EXCEED FIFTY (50%) PERCENT OF THE ANNUAL APPROVED EXPENDITURE FOR THE CONTRACT WORK.

3. COMPENSATION TO BE PAID TO THE CONTRACTOR

(a) Agreed Prices: It is understood and agreed that the Contractor will accept as payment in full the summation of products of the actual quantities in place upon the completion of the work, as determined by the Engineer's measurements, by the unit prices bid no allowance being made for anticipated profit or for reasons of variations from the estimated quantities set forth in the Form of Bid. (b) Extra Work: The Owner may, at any time, by a written order and without notice to the Sureties, require the performance of such extra work or changes in the work as it may find necessary or desirable. The amount of compensation to be paid to the Contractor for any extra work, as so ordered, shall be determined as follows: 1) By such applicable unit prices, if any, as set forth in the Contract; or 2) If no such unit prices are set forth, then by unit price or by a lump sum mutually agreed upon by the Owner and the Contractor; or 3) If no such unit prices are so set forth and if the parties cannot agree upon unit prices or a lump sum; then by actual net cost in money to the Contractor of the materials, permits, wages of applied labor, premiums for Workmen's Compensation Insurance, payroll taxes required by law, rental for plant and equipment used (excluding small tools) to which total cost will be added ten (10) percent as full compensation for all other items of profit costs and expenses, including administration,

overhead, superintendence, insurance, insurance other than Workmen's Compensation Insurance, material used in temporary structures, allowances made by the Contractor to Subcontractors, additional premiums upon the performance bond of the Contractor and the use of small tools. The Town Of Brookhaven reserves the right to purchase additional items as listed in this invitation to bid, at the price herein bid, for a period of up to one (1) year after initial order is placed, or, if applicable, until manufacturer's date expires. **The Town reserves the right to increase or decrease quantities and to add or delete items that are supplementary and germane to the substance and intent of the bid/contract.**

4. COMMENCEMENT OF WORK

Unless notified in writing by the Owner and/or engineer, the Contractor shall obtain all required permits and approvals from all governmental agencies with jurisdiction over the project prior to the commencement of work. No work shall commence until after receiving a fully executed contract or purchase order from the Town of Brookhaven. Upon receipt of same, the Contractor agrees to commence work immediately on or not later than 10 days thereafter.

5. TIME OF COMPLETION

The time of substantial completion of the entire contract work shall be 180 consecutive calendar days from the date of the contractor receives the fully executed contract and purchase order from the Town of Brookhaven. The date of such completion shall be the date of the Certificate of Completion hereinafter specified. The entire work must be satisfactorily completed so that the project improvements are available to the Town for use. The Owner reserves the right to order the Contractor to suspend operations when, in the opinion of the Engineer improper weather conditions make such action advisable, and to order the Contractor to resume operations when weather and ground conditions permit. The days during which such suspension of work is in force are not chargeable against the specified completion time.

6. LIQUIDATED DAMAGES FOR DELAY

The time limit being essential to and of the essence of this contract, the Contractor hereby agrees that the Owner shall be, and is hereby authorized to deduct and retain out of the money which may be due or may become due to said contractor under this agreement, the sum of \$100 per day on any awarded contract in the amount of \$100,000 or less, or the sum of \$500 per day for any awarded contract in an amount greater than \$100,000, which amount is hereby agreed upon, fixed and determined by the parties hereto as the liquidated damages, including overhead charges, services, inspector's wages and interest on the money each and every day during which the aforesaid work may be incomplete over and beyond the time herein stipulated for its completion, provided however, that the Owner shall have the right to extend the time for the completion of said work.

7. EXTENSIONS OF TIME - NO WAIVER

If the Contractor shall be delayed in the completion of his work by reason of unforeseeable causes beyond his control and without his fault or negligence, including but not restricted to, acts of God or of the public enemy, fires, floods, epidemics, quarantine restrictions, strikes, riots, civil commotions or freight embargoes, the period herein above specified for completion of his work shall be extended by such time as shall be fixed by the Owner. An extension of time by the Owner shall not be deemed a waiver by the Owner of its right to terminate the Contract for abandonment or for delay by the Contractor as hereinafter provided, or relieve the Contractor from full responsibility for performance of his obligations hereunder.

8. WEATHER

During unsuitable weather, all work must stop when such work would be subject to injury and the Contractor shall transfer his men and materials to those parts of the work where weather conditions will not have any effect on the workmanship to any damages on account of such damages or suspension, and he must protect any work that might be injured by the elements and make good any work that is injured.

In the event of temporary suspension of work or during inclement weather or whenever the Engineer shall direct, the Contractor will, and will cause his subcontractors to protect carefully his and their work and materials against damage or injury from the weather. If in the opinion of the Engineer any work or material shall have been damaged or injured by reason or failure on the part of the Contractor or any of his subcontractors to protect his or their work, such work and materials shall be removed and replaced at the expense of the Contractor.

9. LAWS AND ORDINANCES

In the execution of the Contract, the Contractor will be required to observe and obey all federal, state, county and local laws, ordinances, codes and regulations relating to the performance of the Contract including but not limiting labor employed thereon, materials supplied, obstructing streets and highways, maintaining signals, storing, handling and use of explosives and all other general ordinances and state statutes affecting him or his employees or his work hereunder in his relations with the Municipality or any other persons, and also all laws, rules and regulations, including compliance with all federal rules and regulations regarding controlled substances and alcohol use and testing, where applicable, codes, ordinances controlling or limiting the Contractor while engaged in executing the work under the Contract. As a condition of the Contract, the Contractor shall and does hereby agree to comply with all requirements of the labor laws of the State of New York. The Contractor shall comply with the provisions of Sections 291-299 of the Executive Law and Civil Rights Law, shall furnish all information and reports deemed necessary by the State Commission for Human Rights, the Attorney General and the Industrial Commissioner for purposes of investigation to ascertain compliance with such sections of the Executive Law and Civil Rights Law. The Contract may be forthwith cancelled, terminated or suspended, in whole or in part, by the contracting agency upon the basis of a finding made by the State Commission for Human Rights that the Contractor has not complied with these laws. The Contractor hereby expressly agrees to comply with all the provisions of the Labor Law and any and all amendments thereto, insofar as the same are applicable to this Contract.

The New York State Labor Law, as amended, provides that no laborer, workman or mechanic in the employ of the Contractor, subcontractor or other person doing or contracting to do the whole or a part of the work contemplated by this Contract, shall be permitted or required to work more than eight (8) hours in any one (1) calendar day, except in cases of extraordinary emergency caused by fire, flood or danger to life or property; that no such person shall be employed more than eight (8) hours in any day or more than five (5) days in any week except in such emergency; that the wages to be paid for a legal day's work as hereinbefore defined, to laborers, workmen or mechanics upon the work called for under this Contract or upon any material used upon, or in connection therewith, shall not be less than the prevailing rate for a day's work in the same trade or occupation in the locality within the state where such work is to be done and each laborer, workman or mechanic employed by the Contractor, subcontractor or other person about or upon the work shall be paid the wages herein provided; that employees engaged in the construction, maintenance, and repair of highways and in water works construction outside the limits of cities and villages are no longer exempt from the provisions of the Labor Law which require the payment of the prevailing rate of wages and the eight (8) hour day. Section 222 of the Labor Law, as amended by Chapters 556 and 557 of the Laws of 2033, provides that preference in employment shall be given to citizens of the State of New York who have been residents of Suffolk County for at least six (6) consecutive months immediately prior to the commencement of their employment. Each person so employed shall furnish satisfactory proof of residence in accordance with rules adopted by the Industrial Commissioner. Persons other than citizens of the State of New York shall be employed only when such citizens are not available. Section 222 further provides that upon the demand of the State Industrial Commissioner, the Contractor shall furnish a list of names and addresses of all subcontractors and further provides that a violation of this section shall constitute a misdemeanor and shall be punishable by a fine of not less than Fifty Dollars (\$50.00) nor more than Five Hundred Dollars (\$500.00) or by imprisonment for not less than thirty nor more than ninety days, or both fine and imprisonment.

Section 220-A of the Labor Law, as amended by Chapter 472 of the Laws of 2032, provides that before payment is made by or on behalf of the State of any city, county, town or village or other civil division of the State of any sums due on account of a contract for a public improvement, it is the duty of the Comptroller or the financial officer of the Municipal Corporation to require the Contractor and each and every subcontractor to file a certified statement in writing, in satisfactory form, certifying to the amounts then due and owing to any and all laborers for daily or weekly wages on account of labor performed upon the work of the Contractor, setting forth therein the names of the persons whose wages are unpaid and the amount due each respectively. Section 220-B of the Labor Law, as so amended, provides that any interested person who shall have previously filed a protest in writing objecting to the amounts due or to become due to him for daily or weekly wages for labor performed on the public improvement for which the Contract was entered into, or if for any reason, it may be deemed advisable, the Comptroller of the State or financial officer of the Municipal Corporation may deduct from the whole amount of any payment on account thereof of the sums or sum admitted by any contractor or subcontractor in such statement or statements so filed to be due and owing by him on account of labor performed and may withhold the amount so deducted for the benefit of the laborers for daily or weekly wages, whose wages are unpaid as shown by the verified statements filed by any contractor or subcontractor and may pay directly to any person the amount or amounts so shown to be due for such wages. Section 220-C of the Labor Law, as so amended, provides the penalty for making of a false oath or verification. Section 220-D of the Labor Law provides that the advertised specifications for every contract for the construction, reconstruction, maintenance wherein a State, County, town and/or village is a party, shall contain a provision stating the minimum rate of hourly wage that can be paid, as shall be designated by the Industrial Commissioner, to the laborers employed in the performance of the Contract either by the Contractor, subcontractor or the person doing or contracting to do the whole or part of the work contemplated by the Contract, and the Contract shall contain a stipulation that such laborers shall be paid not less than such hourly minimum rate of wage.

Any person or corporation that willfully pays, after entering into such Contract, less than such stipulated minimum hourly wage scale shall be guilty of a misdemeanor and upon conviction, shall be punished for a first offense by a fine of Five Hundred Dollars (\$500.00) or by imprisonment for not more than thirty (30) days, or both by fine and imprisonment; for a second offense by a fine of One Thousand Dollars (\$1,000.00) and in addition thereto, the Contract on which the violation has occurred shall be forfeited, and no such person or corporation shall be entitled to receive any sum nor shall any officer, agent or employee of the State pay the same or authorize its payment from the funds under his charge or control to any person or corporation for work done upon any contract, on which the Contractor has been convicted of second offense in violation of the provisions of this section. The minimum wage rates established by the Industrial Commissioner, State of New York, for this Contract are set forth hereinabove as part of "Information to Bidders".

10. CERTIFICATION OF COMPLIANCE WITH FEDERAL LAW WITH RESPECT TO THE HIRING OF EMPLOYEES.

In accordance with the Town Code of the Town of Brookhaven all Contractors and subcontractors shall complete and submit the required affidavit certifying compliance with the requirements of United States Code (U.S.C.) Section 1324a, and any amendments thereto, with respect to the lawful alien status of the Contractor's and subcontractor's employees and owners, principals, partners, officers or members.

11. PAYROLL RECORDS/RETENTION BY TOWN

Every contractor and subcontractor shall submit to the Town of Brookhaven Department of Finance, within thirty (30) days after the issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payroll record, in accordance with New York State Labor Law 220, subscribed and affirmed as true under the penalties of perjury. Failure to comply with this contract provision and submit payroll records as required will result in the withholding of Town payments until such time as the required payroll records are produced to the Town. Additionally, failure to comply with this contract provision shall result in the Town notifying the New York State Department of Labor of the Contractor's and/or subcontractor's failure to submit the certified payroll records as required pursuant to New York State Labor Law.

12. QUALIFICATIONS FOR EMPLOYMENT

No person under the age of sixteen (16) years and no person currently serving sentence in a penal or correctional institution shall be employed to perform any work on the project under this Contract. No person whose age or physical condition is such as to make his employment dangerous to his health or safety or to the health and safety of others, shall be employed to perform any work on this project; provided, however, that such restrictions shall not operate against the employment of physically handicapped persons, otherwise employable, where each person may be safely assigned to work which they can ably perform.

13. NON-DISCRIMINATION

There shall be no discrimination because of race, creed, or color in the employment of persons for work under this Contract, whether performed by the Contractor or any subcontractor. Neither shall the Contractor and subcontractor or any person acting on behalf of the Contractor or subcontractor discriminate in any manner against or intermediate any employee hired for the performance of work under this Contract on account of race, creed, or color. There may be deducted from the amount payable to the Contractor by the Owner under this Contract a penalty of Five Dollars (\$5.00) for each person for each calendar day during which such person was discriminated against or intimidated in violation of the provisions of this paragraph; provided that for a second or any subsequent violation of the terms of this paragraph, this Contract may be cancelled or terminated by the Owner and all monies due or to become due hereunder may be forfeited.

14. PAYMENT OF EMPLOYEES

The Contractor and each of his subcontractors shall pay each of his employees engaged in work on the project under this Contract in full (less deductions made mandatory by law) in cash and not less often than once each week. The Contractor and his subcontractors shall not employ any labor or means whose employment or utilization during the course of this contract, may tend to, or in any way cause, or result in, strikes, work stoppages, delays, suspension of work or similar troubles by workers employed by the contractor or subcontractor or by any of the trades working in or about the job site where work is being performed under this Contract or any other Contract on the job site. Any violation of this requirement by the contractor may upon certification of

the Department of Finance Designee be considered as proper and sufficient cause for canceling and terminating this Contract. Fringe benefit supplements to employees paid by the Contractor are to be paid to a federally qualified pension, health or welfare program and a NYS registered apprentice training program. Direct payments in cash for fringe benefit supplements will not be allowed.

15. ESTIMATES AND PAYMENTS

The making of any such estimate or payment made thereon shall not be taken or construed as an acceptance by the Owner. The five percent (5%) of the amount of the monthly estimate remaining unpaid will be retained by the Owner as a guarantee that the Contractor will faithfully and completely fulfill all obligations imposed by the Contract and Specifications, and against any damages caused the Owner by reason of any failure on the part of the Contractor to fulfill all conditions and obligations herein contained. (a) Final Estimate: One month after the completion and acceptance of the work specified (and contracted for) the Engineer will make a final estimate of all the work done. Thereafter, the Owner will pay the full amount, less prior payments, less any amounts retained to complete the work according to the provisions of the Specification, less any money paid by the Owner by reasons of said Contractor having failed to carry out faithfully and completely all the obligations and requirements herein contained. Upon final settlement, according to the conditions herein specified and not until such settlement shall have been made, will the Contractor be relieved from the obligations assumed in the Contract. (b) Measurement for Payment: The Engineer shall make due measurements of work done during the progress of the work and his estimate shall be final and conclusive evidence of the amounts of work performed by the Contractor under, and by virtue of, this agreement and shall be taken as full measure of compensation to be received by the Contractor. When requested by the Contractor, the Engineer shall measure, re-measure or re-estimate any portion of the work, but the expense of such re-measurement or re-estimating, unless material error is proved, be paid for by the Contractor. (c) No payments will be made for materials delivered to the site, which have not been incorporated into the work.

16. ACCEPTANCE OF FINAL PAYMENT CONSTITUTES RELEASE

The acceptance by the Contractor of the final payment shall be, and shall operate as a release to the Owner from all claims and all liabilities to the Contractor for all the things done or furnished in connection with this work and for every act and neglect of the Owner and others relating to or arising out of, this work, excepting the Contractor's claims for interest upon the final payment, if this payment be improperly delayed. No payment, however, final or otherwise, shall operate to release the Contractor or his sureties from any obligations under this Contract or the Performance Bond.

17. CONSTRUCTION REPORTS

The Contractor shall submit to the Engineer prior to commencing any work under this Contract, a detailed schedule and plan of operations indicating the manner in which the Contractor proposes to prosecute the work and a time schedule therefore. The detailed schedule shall include a list of the subcontractors and material suppliers he proposes to use on the work. The Contractor shall furnish the Engineer with periodical estimates for partial payments as required elsewhere in the Contract Documents, and in addition thereto will furnish the Engineer with a detailed estimate for final payment. Prior to being eligible to receive the final payment under this Contract, the Contractor shall furnish the Engineer with substantial proof that all bills for services rendered and materials supplied have been paid.

The enumeration of the above reports in no way relieves the Contractor of his responsibility under existing Federal or State Laws of filing such existing laws or regulations.

18. INSPECTION AND TESTS

All material and workmanship shall be subject to inspection, examination and test by the Engineer at any time during the construction and at any and all places where manufacturing of materials used and/or construction is carried on. Without additional charge, Contractor shall furnish promptly all reasonable facilities, labor and materials necessary to make any tests required by the Engineer and/or required by the Specifications. If at any time before final acceptance of the entire work, the Engineer considers necessary or advisable an examination of any portion of the work completed, by removing or tearing out the same, the Contractor shall upon request, furnish promptly all necessary facilities, labor and materials for such examination. If such work is found to be defective in any material respect, due to the fault of the Contractor or any subcontractor, or if any work shall be covered over without the approval or consent of the Engineer, whether or not the same shall be defective, the Contractor should be liable for the expense for such examination and of satisfactory reconstruction. If, however, such approval and consent shall have been given and

such work is found to meet the requirements of this Contract, the Contractor shall be recompensed for the expense of such examination and reconstruction in the manner herein provided for the payment of cost of extra work. The selection of laboratories and/or agencies for the inspection and tests of supplies, materials or equipment shall be subject to the approval of or designated by the Owner. Satisfactory documentary evidence that the material has passed the required inspection and tests must be furnished to the Engineer prior to the incorporation of the material in the work. Any rejected work will be removed from the site of the project completely at the expense of the Contractor.

19. PLANS AND SPECIFICATIONS: INTERPRETATIONS

The Contractor shall keep at the site of the work one copy of the Plans and Specifications signed and identified by the Engineer. Anything shown on the Plans and not mentioned in the Specifications or mentioned in the Specifications and not shown in the Plan shall have the same effect as if shown or mentioned in both. In case of any conflict or inconsistency between the Plans and Specifications, the Specifications shall govern. Any discrepancy between the figures and drawings shall be submitted to the Engineer whose decision thereon shall be conclusive.

20. SUBSURFACE CONDITIONS FOUND DIFFERENT

Should the Contractor encounter subsurface conditions, other than groundwater, at the site that could not be determined prior to commencing the actual work, which are materially differ from those shown on the Plans or indicated in the Specifications, the Contractor shall immediately give notice to the Engineer of such conditions, before they are disturbed. The Engineer shall thereupon promptly investigate the conditions and if he finds that they materially differ from those shown on the Plans or indicated on the Specifications, he shall at once make such changes in the Plans and/or Specification as he may find necessary. Any increase or decrease of cost resulting from such changes will be adjusted in the manner provided herein for adjustment as to extra and/or additional work and changes.

21. CONTRACTOR'S TITLE TO MATERIALS

No materials or supplies for the work shall be purchased by the Contractor or by any subcontractor subject to any chattel mortgage, or under a conditional sale or other agreements, by which an interest is retained by the seller. The Contractor warrants that he has good title to all materials and supplies used by him in the work.

22. SUPERINTENDENCE BY CONTRACTOR

At the site of the work, the Contractor shall give his constant, personal attention to the work or employ a construction superintendent or foreman who shall have full authority to act for the Contractor. It is understood that such representative shall be acceptable to the Engineer and shall be one who can be continued in that capacity for the particular job involved unless he ceases to be on the Contractor's payroll. The Contractor's superintendent and foreman must be able to read and speak the English language.

23. PROTECTION OF WORK, PERSONS AND PROPERTY

Precaution shall be exercised at all times for the proper protection of all persons, property and work. The Contractor shall give notice to the owners for utilities which may serve the area and request their assistance in predetermining the location and depth of various pipes, conduits, manholes, and other underground facilities. The safety provisions of applicable laws, building and construction codes shall be observed. Machinery, equipment and all hazards shall be guarded or eliminated in accordance with the safety provisions of the Manual of Accident Prevention in Construction published by the Associated General Contractors of America, to the extent that such provisions are not in contravention of applicable law. The Contractor shall furnish entirely at his own expense any and all additional safety measures deemed necessary by the Owner or his Engineer to adequately safeguard the traveling public. The Contractor shall, at all hours of the day, safely guard and protect his own work and adjacent property from any damage and shall replace or make good any such damage, loss or injury, unless such be caused directly by errors contained in the Contract Documents, or by the Owner or its duly authorized representatives. The Contractor shall provide and maintain such watchmen, barriers, lights, flares and other signals at his own expense, as will effectively prevent any accident in consequence of his work for which the Owner might be liable. The Contractor shall be liable for all injuries or damage caused by his employees. The Contractor shall take particular care to avoid the blocking of fire hydrants, fire alarm boxes, letterboxes, traffic signals or other visible devices maintained for the use of the public.

24. REPRESENTATIONS OF CONTRACTOR

(a) That he is financially solvent and that he is experienced in, and competent to, perform the type of work involved under this Contract and able to furnish the plant, materials, supplies and/or equipment to be furnished for the work; and (b) That he is familiar with all Federal, state and Municipal Law, ordinances and regulations which may in any way affect the work of those employed hereunder, including but not limited to any special acts relating to the work; and (c) That such work required by these Contract Documents as is to be done by him can be satisfactorily constructed and used for the purpose for which is intended and that such construction will not injure any person or damage any property; and (d) That he has carefully examined the Plans, Specifications and the site of the work, and that from his own investigations he has satisfied himself as to the nature and location of the work, the character, location, quality and quantity of surface and subsurface materials, structures and utilities likely to be encountered, the character of equipment and other facilities needed for the performance of the work, the general local conditions which may in any way affect the work or its performance.

25. PATENT RIGHTS

As part of his obligation hereunder and without any additional compensation, the Contractor will pay for any patent fees or royalties required in respect to the work or any part thereof and will fully indemnify the Owner or his Engineer for any loss on account of any infringement of patent rights unless prior to his use in the work a particular process or a product of a particular manufacturer he notifies the Engineer in writing that such process or product is an infringement or a patent.

26. AUTHORITY OF THE ENGINEER

In the performance of the work, the Contractor shall abide by all orders and directions and requirements of the Engineer, at such time and places, by such methods, and in such manner and sequence as he may require. The Engineer shall determine the amount, quality, accept- ability, and fitness of all parts of the work, shall interpret the Plans, Specifications, Contract Documents and any extra work orders and shall decide all other questions in connection with the work, upon request, the Engineer shall confirm in writing any oral orders, directions, requirements or determinations. The enumeration herein or elsewhere in the Contract Documents of particular instance in which the opinion, judgment, discretion or determination of the Engineer shall control or in which work shall be performed to his satisfaction or subject to his approval or inspection, shall not imply that only matters similar to those enumerated shall be so governed and performed, but without exception all the work shall be governed and so performed.

27. CHANGES AND ALTERATIONS

The Engineer reserves the right to make alterations in location, line, grade, plan, form or dimension of the work, or any part thereof, either before or after the commencement of construction. If such alterations diminish the amount of work to be done, no claim for damages or anticipated profits will be warranted on the work, which may be dispensed with. If such alterations increase the amount of work, such increases shall be paid for according to the quantity of work actually done and at the prices for such work as contained in the schedule of prices.

28. CORRECTION OF WORK

All work and all materials whether incorporated into the work or not, all processes of manufacture and all methods of construction shall be at all times and places subject to inspection of the Engineer who shall be the final judge of quality, materials, processes of manufacture and methods of construction suitable for the purpose for which they are used. Should they fail to meet his approval, they shall be forthwith reconstructed, made good and replaced and/or corrected as the case may be, by the Contractor, at his own expense. If, in the opinion of the Engineer, it is not desirable to replace any defective or damaged materials or to reconstruct or correct any portion of the work injured or not performed in accordance with the Contract Documents, the compensation to be paid to the Contractor hereunder shall be reduced by such amount as in the judgment or the Engineer shall be equitable. The Contractor expressly warrants that his work shall be free from any defects in materials or workmanship and agrees to correct any defects, which may appear within one year following the final completion of the work. Neither the acceptance of the completed work nor payment therefore shall operate to release the Contractor or his sureties from any obligations under or upon this Contract or the Performance Bond.

29. THE OWNER'S RIGHT TO WITHHOLD PAYMENTS

The Owner may withhold from the Contractor so much of any approved payments due him as may, in the judgment of the Owner, be necessary: (a) To assure the payment of just claims then due and unpaid of any persons supplying labor or materials or the work; (b) To protect the Owner from loss due to defective work, labor or materials not remedied; (c) To protect the Owner from loss due to injury to persons or damage to the work or property of other contractors or subcontractors of others, caused by the act or neglect of the Contractor or any of his subcontractors; or (d) As a result of any alleged malfeasance or indictment or criminal charges on the part of the Contractor arising out of or in connection with the subject bid and/or any municipal bid or contract, until such time as there is a final determination on the issue of any alleged malfeasance, indictment or criminal charges. The Owner shall have the authority, as agent for the Contractor to apply such amounts so withheld in such manner as the Owner may deem proper to satisfy such claims or to secure such protection. Such applications of such money shall be deemed payment for the account of the Contractor. In the event that the bidder/Contractor is determined guilty after trial or enters a plea to any criminal act arising out of or in connection with any Town contract, the Contractor acknowledges and agrees no monies shall be due the bidder/Contractor and any monies paid under the Contract shall be due to and returned to the Town.

30. THE OWNER'S RIGHT TO STOP WORK/SUSPEND OR TERMINATE CONTRACT

If during the course of a contract, the Bidder/Contractor or Supplier/Subcontractor is not in compliance with the requirements of this bid, or the Town Code, or any applicable law, rules or regulations, the bidder/contractor hereby acknowledges that the Town Attorney may immediately suspend work upon twenty-four hours' notice and take whatever action is deemed appropriate.

Notwithstanding the above, the Owner at its sole discretion reserves the right, and the Contractor hereby acknowledges that the Owner shall have the right, to either stop work or terminate upon:

(a) Any alleged malfeasance or indictment or criminal charges on the part of the Contractor arising out of or in connection with the subject bid and/or any municipal bid or contract, the Owner at its sole discretion reserves the right to suspend or terminate the contract until such time as there is a final determination on the issue of any alleged malfeasance or indictment or criminal charge(s); or (b) The Contractor shall be adjudged bankrupt or make an assignment for the benefit of creditors; or (c) A receiver or liquidator shall be appointed for the Contractor for any of his property and shall not be dismissed within 20 days after such appointment, or the proceedings in connection therewith shall not be stayed on appeal within the said 20 days; or (d) The Contractor shall refuse or fail, after notice or warning from the Engineer, to supply enough properly skilled workmen or proper materials; or (e) The Contractor shall refuse or fail to prosecute the work or any part thereof with such diligence as will insure its completion within the period herein specified or any duly authorized extension thereof) or shall fail to complete the work within said period; or (f) The Contractor shall fail to make prompt payments to persons supplying labor or materials for the work; or (g) The Contractor shall fail or refuse to regard laws, ordinances or the instructions of the Engineer or otherwise be guilty of a substantial violation of any provisions of this Contract; then upon the occurrence of any such event, the Owner, without prejudice to any other rights or remedy it may have, may by seven (7) days' notice to the Contractor, terminate the employment of the Contractor and his rights to proceed either as to the entire work or at the option of the Owner as to any portion thereof, and the Owner may take possession of the work and complete the work by contract or otherwise, as the Owner may deem expedient. In such case, the Contractor will not be entitled to receive any further payment until the work is finished.

If the unpaid balance of the compensation to be paid the Contractor hereunder shall exceed the expense of so completing the work (including compensation for additional managerial, administrative and inspection services and any damages for delay), such excess shall be paid to the Contractor, unless the Owner deems it necessary to withhold payment as provided under the paragraph 30 entitled "Owner's Right to Withhold Payments". If such expense shall exceed such unpaid balance, the Contractor and his sureties shall be liable to the Owner for such excess. If the right of the Contractor to proceed with the work is so terminated, the Owner may take possession of and utilize in completing the work, such materials, appliances, supplies, plant and equipment as may be on the site of the work and necessary thereof. If the Owner does not so terminate the right of the Contractor to proceed, the Contractor shall continue to work.

31. OWNER'S RIGHT TO SUSPEND OR TERMINATE FOR CONVENIENCE OR NECESSITY

The Owner upon seven (7) days' notice may suspend or terminate this Contract for convenience or necessity as follows: (i) if the Work is discontinued, cancelled or terminated for any reason by the Owner, or (ii) when the Owner for any reason, with or without cause, or otherwise deems it in the best interest of the Town. In such event of such suspension or termination, the Owner shall pay the Contractor the costs for the Work incurred by the Contractor up to the effective date of termination, unless the Owner deems it necessary to withhold payment as provided in paragraph 30, Owner's Right to Withhold Payments. Notwithstanding anything to the contrary, in the event that the Town suspended the work, Contractor shall resume the work on the date as advised by the Town. Failure to comply with the Town's Rules and Regulations during the Contract term may result in the Contractor being determined a non-responsible bidder on future Town contracts.

32. CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

If the work shall be stopped by order of the Court or any other public authority for a period of three (3) months, other than the Town of Brookhaven, without act or fault of the Contractor or any of his agents, servants, employees or subcontractor, the Contractor may, upon ten (10) days' notice to the Owner, discontinue his performance of the work and/or terminate the Contract. In which event, in the paragraph immediately preceding (Paragraph 34), the Contractor shall not be obligated to pay to the Owner any excess of the expense of completing the work over the unpaid balance of compensation to be paid the Contractor hereunder.

33. RESPONSIBILITY FOR WORK

The Contractor agrees to be responsible for the entire work embraced in this Contract until its completion and final acceptance, and that any unfaithful or imperfect work that may become damaged from any cause either by act of commission or omission to properly guard and protect the work that may be discovered at any time before the completion and acceptance shall be removed and replaced by good and satisfactory work without any charge to the Owner, and that such removal and replacement will be performed immediately on the requirement of the Engineer, notwithstanding the fact that it may have been overlooked by the proper inspector, and partial payment made thereon. It is fully understood by the Contractor that the inspection of the work shall not relieve him of any obligation to do sound and reliable work as herein prescribed, and that any omission to disapprove any work by the Engineer at or before the time of partial payment or other estimate shall not be construed to be acceptance of any defective work.

34. USE OF PREMISES AND REMOVAL OF DEBRIS

The Contractor expressly undertakes at his own expense:

- (a) To store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any of his subcontractor;
- (b) To frequently clean up all refuse, rubbish, scrap materials and debris caused by the operations to the end that at all times, the site of the work shall present a neat, orderly and workmanlike appearance;
- (c) Before final payment hereunder to remove all surplus material, temporary structures, plants of any description and debris of every nature resulting from his operations.

35. SUITS OF LAW

The Contractor shall indemnify and save harmless the Owner, its officers, employees, agents, servants from and against all suits, claims, demands or actions, suits, arbitrations, judgments and/or executions, plus attorneys' fees for any injury, bodily injury, personal injury, wrongful death, property damages sustained or alleged to be sustained by any party or parties in connection with the construction of the work or any part thereof, or any commission or omission of the Contractor, his employees, officers, servants or agents or of any subcontractor, and in case of any such action shall be brought against the Owner, the Contractor shall immediately take charge of and defend the same at his own cost and expense. This provision shall be deemed effective when the Contractor first performs any work for the Town, and shall survive the termination, expiration and/or renewals of this Agreement until the latter of either the running of the applicable statute of limitations, or the final resolution of any outstanding claims, actions, suits, liens, judgments and/or executions.

36. POWER OF THE CONTRACTOR TO ACT IN AN EMERGENCY

In case of an emergency, which threatens loss or injury to property and/or safety of life, the Contractor will be permitted to act as he sees fit without previous instructions from the Engineer. He shall notify the Engineer thereof immediately and any compensation claimed by the Contractor due to extra work made necessary because of his acts in such emergency shall be submitted to the Engineer for approval. Where the Contractor has not taken action but has notified the Engineer of an emergency indicating injury to persons or damage to adjoining property or to the work being accomplished under this Contract, then upon authorization from the Engineer to prevent such threatened injury or damage, he shall act as instructed by the Engineer. The amount of reimbursement claimed by the Contractor on account of any such action shall be determined in the manner provided herein for the payment of extra Work.

37. PROVISION REQUIRED BY LAW DEEMED INSERTED

Each and every provision of law and clause required by law to be inserted in this Contract, shall be deemed to be inserted herein

and if through mistake or otherwise, any such provision is not inserted or is not correctly inserted then upon the application of either party the Contract shall forthwith be physically amended to make such insertion.

38. SUBLETTING, SUCCESSOR AND ASSIGNS

The Contractor shall not sublet any part of the work under this Contract nor assign any money due him hereunder without first obtaining the written consent of the Owner. This Contract shall insure the benefit of and shall be binding upon the parties hereunder and upon their respective successors and assigns, but neither party shall assign or transfer his interest herein in whole or in part without consent of the other.

39. REFUSAL TO WAIVE IMMUNITY

Pursuant to the provisions of Section 103-a of the General Municipal Law, in the event that the Bidder of any member, partner, director or officer of the Bidder, should refuse, when called before a grand jury to testify concerning any transaction of contract had with the State, and political subdivision thereof, a public authority or any public department, agency or officials of the State or of any political subdivision thereof or of a public authority, to sign a waiver of immunity against subsequent criminal prosecution or to answer any relevant question concerning such transaction or contract, such person, and any firm, partnership, or corporation of which he is a member, partner, director or officer shall be disqualified from thereafter selling to or submitting bids to or receiving awards from or entering into any contracts with any municipal corporation or any public department, agency or official thereof for goods, work or services for a period of five (5) years after such refusal, and any public department, agency or official thereof on or after the first day of July, 1959, by such person, and by any firm, partnership or corporation of which he is a member, partner, director or officer may be cancelled or terminated by the municipal corporation without incurring any penalty or damages on account of such cancellation or termination, but any monies owing by the municipal corporation for goods delivered or work done prior to the cancellation or termination shall be paid.

40. GRADES, LINES, LEVELS, AND SURVEYS

The Engineer shall furnish the Contractor with the basic horizontal and vertical controls from which the Contractor shall transfer and stake his lines and grades and for their accuracy. The Engineer will establish the basic horizontal and vertical controls at the start of the work and it shall be the responsibility of the Contractor to safeguard such controls and if in the opinion of the Engineer these controls are damaged or destroyed either in whole or in part, the Contractor shall pay the cost of having the damaged controls verified, checked, corrected or replaced.

41. HANDLING OF ASBESTOS

If any part of the work to be performed under this Contract or any amendment thereto required the Contractor to submit a valid asbestos handling license or other proof of the issuance of a valid asbestos handling license deemed suitable by the NYS Commissioner of Labor, prior to the award or amendment to this Contract. (a) The Contractor certifies that no person or supervising personnel employed by the Contractor or any of his subcontractors at any tier shall engage in work requiring an asbestos handling license, unless each person and/or supervisor has a valid asbestos handling certificate. (b) The Contractor shall notify the Town of Brookhaven of any expiration, revocation or non-renewal of any asbestos handling license required under this Contract. (c) This Contract may be terminated for default if the Contractor Violates this clause, or any law, rule or regulation of the United States or the State of New York as amended pertaining to the handling of asbestos.

42. HANDLING OF ASBESTOS-AMENDMENTS

If any part of the work to be performed under any amendment to this Contract involves the installation, removal, encapsulation, application or enclosure of any asbestos or asbestos material, or the disturbance of friable asbestos, a copy of a valid asbestos handling license deemed suitable by the New York State Commissioner of Labor shall, if not previously submitted under this Contract, as amended, be submitted by the Contractor to the Town of Brookhaven prior to the amendment to this Contract.

SIGNATURE DIRECTIONS

- (1) Where a bidder is a firm, the bid must be signed in the name of the firm by a member of the firm who must sign his own name immediately thereunder as _____, partner.
- (2) Where a bidder is a corporation, the bid must be signed in the name of the corporation by a duly authorized officer or agent thereof having knowledge of the matters stated in the bid and such officer or agent shall also subscribe his own name, the office he holds, and the seal of the corporation must be affixed.
- (3) The bid must be sworn to by the person signing it, using one of the appropriate forms of acknowledgement, which follow.
- (4) The bidders shall date the Form of Affidavit, fill in all blank spaces and complete the "Disclosure Statement" and "Questionnaire" which follow as part of bid.
- (5) In case of any discrepancy in the bidder's extensions or total, the Town's computation of extensions and totals will govern.

Statement of Acceptance
Compliance with GML 103 a
Non-Collusion: Requires Signature and Company Seal

On acceptance of this bid, the undersigned binds himself or themselves to enter into written contract with the OWNER and to process the work diligently so as to substantially complete all the work required under the contract.

In default of the performance of any of the conditions to be performed by the person or persons making this bid, the undersigned bidder agrees that the certified check or bid bond herewith deposited with the OWNER shall be paid and delivered to the OWNER as liquidated damages of such default. The certified checks or bid bonds of the remaining unsuccessful bidders will be returned within 48 hours after the execution of a Contract between the Town and the successful bidder; the certified check or bid bond of the successful bidder will be retained until the filing and approval of the performance bond and until the completion of 10% of the work under the Contract.

REFUSAL TO TESTIFY

Pursuant to Section 103-a of the General Municipal Law: The refusal of a person when called before a grand jury to testify concerning any transaction or contract had with the Owner, to sign a waiver of immunity against subsequent criminal prosecution or to answer any relevant questions concerning such transaction or contract, shall disqualify such person and any firm, partnership or corporation of which he is a member, partner, director or officer, from thereafter selling or submitting bids or receiving awards or entering into any contract with the Owner for a period of five years after said refusal and any contract made with the Town of Brookhaven, department of agency thereof by such person and by any firm, partnership or corporation of which he is a member, partner, director or officer may be cancelled or terminated.

STATEMENT OF NON-COLLUSION

Pursuant to General Municipal Law Section 103-d, all bids, proposals and contracts awarded or accepted by a municipality must contain a statement of non-collusion.

Section 103-d. Statement of non-collision in bids and proposals to political subdivisions of the State or Fire District.

I: Every bid or proposal hereafter made to a political subdivision of the state or any public department, agency or official thereof where competitive bidding is required by statute, rule, regulation or local law, for work or service performed or to be performed or goods sold or to be sold, shall contain the following statement subscribed by the bidder and affirmed by such bidder as true under the penalties of perjury; No-collusive bidding certification.

1. By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief. a. The prices in this bid have been arrived at independently without collusion, consultation communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; and

b. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and

c. No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

2. A bid shall not be considered for award nor shall any award be made where 1, a, b, and c above have not been complied with; provided however, that if any case the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where 1, a, b, and c above have not been complied with, the bid shall not be considered for award nor shall any award be made unless the head of the purchasing unit of the political subdivision, public department, agency or official thereof to which the bid is made, or his designee, determines that such disclosure was not made for the purpose of restricting competition.

The fact that a bidder (a) has published price lists, rates or tariffs covering items being procured, (b) has informed prospective customers or (c) has sold the same items together customers at the same prices to other customers at the same prices being bids, does not constitute, without more, a disclosure within the meaning of subparagraph I, 1.

II. Any bid hereafter made to any political subdivision of the State or any public department, agency or official thereof by a corporate bidder for work or services performed or to be performed or goods sold or to be sold, where competitive bidding is required by statute, rule, regulation, or local laws, and where such bid contains the certification referred to in subdivision one of this section, shall be deemed to have been authorized by the board of directors of the bidder, and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of the certificate as to non-collusion as the act and deed of the corporation.

The following is a true and correct copy of the resolution adopted by:

Corporation at a meeting of its Board of Directors on the _____

day of _____ 20__.

(Seal of Corporation)

Secretary

Legal name of person, firm or corporation making this bid:

Dated _____

FORM OF AFFIDAVIT WHERE BIDDER IS AN INDIVIDUAL

STATE OF NEW YORK)

) ss:

COUNTY OF)

_____, being duly sworn, deposes and says: I am the person described in and who executed the foregoing bid and the several matters therein stated are in all respects true.

(Signature of person who signed bid)

FORM OF AFFIDAVIT WHERE BIDDER IS A CORPORATION

STATE OF NEW YORK)

) SS:

COUNTY OF)

_____being duly sworn, deposes and says:

I am the _____of _____, the

above named corporation, whose name is subscribed to and which the

executed the foregoing bid. I reside at _____in the

_____of _____,state of _____.

I have knowledge of the several matters therein stated and they are in

all respects true.

(Signature of person who signed bid)

DISCLOSURE STATEMENT

STATE OF NEW YORK)

)ss:

COUNTY OF)

I, _____,
(NAME) (TITLE) Officer of Corp. or
Partner or Principal

being duly sworn, depose and swear under the penalties of perjury:

1. That in connection with the above bid or contract for that no other person will have any direct or indirect interest in this bid proposal except:

(in case of corporations, all officer of the corporation and stockholders owning more than 5% of the corporation stock must be listed).

2. That _____ related to any
(I am not) (none of the officers or stockholders are)

officer or employee of the Town of Brookhaven except _____

3. That there is not any state or local officer or employee or a member of a board of commissioners of a local public authority or other public corporation within the county, exclusive of a volunteer fireman or civil defense volunteer, interested in such application.

(Signature and Title)

NOTE: It is not forbidden that individuals working for the Town of Brookhaven or other municipality bid on contracts but only that such interest be revealed when they do bid.

SUPPLEMENTAL DISCLOSURE

Name and Address of Bidder _____

FEDERAL IDENTIFICATION # OR SOCIAL SECURITY #: _____

Bidders will furnish the following information: List only similar type of work performed:

QUESTIONNAIRE

FOR WHOM PERFORMED

CONTRACT AMOUNT

DATE COMPLETED

1. Have you ever failed to complete any work awarded to you? _____

If yes, state where and why _____

2. Has any officer or partner of your organization ever been an officer or partner of some other organization that failed to complete a contract? _____.

If yes, state name of individual, other organization and reason therefore:

3. Has any officer or partner of your organization ever failed to complete a contract in his own name? _____.

If yes, state name of individual and reason therefore: _____

4. **Within the last ten years**, has any legal action, criminal or civil, ever been commenced by the Town or by any other governmental entity/agency against the corporation or against any other legal entity or subsidiary associated with the bidding corporation, or has any legal action, criminal or civil, been commenced against any officer, principal, member, partner or employee 1) of the bidding corporation, or 2) of the other legal entity/subsidiary associated, presently or within the last ten years, in any manner, with the bidding corporation?

YES _____ NO _____ (must check one)

If yes – state the nature of the legal action

5. In what other lines of business are you financially interested?

6. The work, if awarded to you, will have the personal supervision of whom?

7. Do you have, or can you obtain, sufficient men, equipment and materials to commence work when required by "Information for Bidders"? _____

8. Name the surety company to whom you have applied for required bond?

(Answer only if bonds are required). _____

(Signature and Title)

**TOWN OF BROOKHAVEN BOARD OF ETHICS
TRANSACTIONAL DISCLOSURE FORM**

APPLICANT NAME: _____
LAST NAME, FIRST NAME, M.I

APPLICANT ADDRESS: _____
STREET, APT. _____
CITY STATE ZIP CODE

NATURE OF APPLICATION: (CHECK ALL THAT APPLY)

// TAX GRIEVANCE // APPROVAL OF PLAT
// VARIANCE // EXEMPTION FROM PLAT OR OFFICIAL MAP
// AMENDMENT // LICENSE OR PERMIT
// CHANGE OF ZONE // **/X/ OTHER: MUNICIPAL CONTRACT**

Within the last ten years, has any legal action ever been commenced by the Town against you, your corporation or other legal entity or any officer, member or partner of your corporation or other legal entity or any other legal entity of which an officer, member or partner of the subject legal entity was involved?

YES _____ NO _____ (must check one)

DOES ANY OFFICER OF THE STATE OF NEW YORK, OFFICER OR EMPLOYEE OF THE TOWN OF BROOKHAVEN, OFFICER OR EMPLOYEE OF SUFFOLK COUNTY, OFFICER OF A POLITICAL PARTY IN SUFFOLK COUNTY OR HIS OR HER SPOUSE, BROTHER, SISTER, PARENT, CHILD, GRANDCHILD, OR THE SPOUSE OF ANY OF THEM HAVE AN INTEREST IN THIS APPLICATION BY VIRTUE OF BEING THE ACTUAL APPLICANT, OR BY VIRTUE OF HAVING AN INTEREST IN THE CORPORATION, PARTNERSHIP, OR ASSOCIATION MAKING SUCH APPLICATION?

YES _____ NO _____ (must check one)

IF YOU ANSWERED "NO", SIMPLY SIGN AND DATE THE FORM WHERE INDICATED.

IF YOU ANSWERED "YES", COMPLETE THE REST OF THE FORM AND DATE AND SIGN WHERE INDICATED.

INTERESTED PARTY AND NATURE OF INTEREST

NAME:

ADDRESS:

TITLE:

RELATIONSHIP TO PUBLIC OFFICER/EMPLOYEE AND HIS OR HER TITLE IF OTHER THAN

SELF:

INTERESTED PARTY: YES _____ NO _____ (must check one if applicable)

- A.) IS THE OWNER OF GREATER THAN FIVE PERCENT (5%) OF THE CORPORATE STOCK OF THE APPLICANT WHEN THE APPLICANT IS A CORPORATION WHOSE STOCK IS LISTED ON THE NEW YORK OR AMERICAN STOCK EXCHANGES;
B.) THE ACTUAL APPLICANT;
C.) AN OFFICER, DIRECTOR, PARTNER, OR EMPLOYEE OF THE APPLICANT; OR
D.) LEGALLY OR BENEFICIALLY OWNS OR CONTROLS ANY STOCK OF A NON-PUBLICLY TRADED CORPORATE APPLICANT OR IS A MEMBER OF A PARTNERSHIP OR ASSOCIATION OF THE APPLICANT.

DATE

SIGNATURE OF APPLICANT

**TOWN OF BROOKHAVEN
EMPLOYER, CONTRACTOR/SUBCONTRACTOR,
AFFIDAVIT OF COMPLIANCE WITH RESPECT TO THE HIRING OF EMPLOYEES IN
ACCORDANCE WITH FEDERAL LAW
(TOWN CODE CHAPTER 7A)**

STATE OF _____) SS

COUNTY OF _____)

Employer Firm: _____

Project name: _____

Bid Submission Date: _____

I, _____ being duly sworn, depose and state:

That I am an _____ Officer, _____ Partner, _____ Owner, or _____ Member of the Firm

By submission of this Affidavit, and each person signing on behalf of any bidder, contractor, subcontractor, owner, employer, hereby certifies, under penalties of perjury, that I affirm of my own knowledge that the above named person on behalf of the Employer has complied with the requirements of Title 8 of the United State Code (U.S.C.) Section 1324a and any amendments thereto, and that all employees, including non-citizens, aliens, which includes full-time, part-time, temporary or seasonal employees, are authorized to work in the United States and that said employees, including non-citizens, aliens, have provided the required documents for my review, which appear to be genuine and demonstrate, and that to the best of my knowledge, the employees, including non-citizens, aliens, are authorized to work in the United States; and 2) that during the term of the contract, subcontract, agreement or period of work performed by the Employer, all employees hired, retained, shall be authorized to work in the United States in compliance with Federal Law and 3) that the Employer will only employ Subcontractors who hire, retain, employees authorized to work in the United States, and 4) all such Subcontractors shall be required to submit an Affidavit demonstrating compliance with Federal Law regarding the eligibility of employees to work in the United States, and that the Subcontractor's employees have submitted the required documents demonstrating compliance with Federal Law, which said Affidavit shall be submitted to the Town with the Contractor's request for Subcontractor approval at the time of bid submission and at all times required by the Town Code.

By _____

Print (Name and Title)

Special Note: this form is to be completed by both Contractor and Sub-Contractors

**TOWN OF BROOKHAVEN
EMPLOYER AFFIDAVIT OF COMPLIANCE
WITH RESPECT TO NEW YORK STATE LABOR LAW (PREVAILING WAGES) AND
WORKERS' COMPENSATION LAW
(TOWN CODE CHAPTER 7A)**

STATE OF NEW YORK)
) SS.:
COUNTY OF _____)

Contractor: _____

Project Name: _____

I, _____ being duly sworn, depose and state:

That I am an ____ Officer, ____ Partner, ____ Owner ____ or Member of the Firm

Check as Applicable Part I OR Part II. ONLY CHOOSE ONE

 Part I. *The Requirements of New York State Labor Law and Workers' Compensation apply to this contract:*

By submission of this Affidavit, on behalf of the above named Contractor, which includes but is not limited to any owner, firm, corporation or entity, of my own knowledge, I hereby affirm under penalties of perjury, that the Contractor has the ability to complete the contract work and that the Contractor 1) has complied with the requirements of the New York State Labor Law, Article 8 and Article 9, and any amendments thereto, and that all employees, which includes full-time, part-time, temporary or seasonal employees, are paid the required prevailing wages; and 2) that prior to hiring or retaining any subcontractor or independent contractor to perform any portion of the contract work, the Contractor has submitted to the Commissioner of the Town authorizing department the name of the subcontractor or independent contractor and the work to be performed by that subcontractor or independent contractor and that the Contractor has obtained the written approval of the Commissioner of the authorizing Town department.

 Part II. *The requirements of New York State Labor Law and Workers' Compensation Law does not apply to this contract:*

By submission of this Affidavit, I hereby affirm, under penalties of perjury, that the Contractor does not have any employees as defined under applicable law, including New York State Labor Law, Article 8 and Article 9, and New York State Workers' Compensation Law, and that the Contractor performs the contract work alone.

Name: _____
Title: _____

Special Note: This form is to be completed by Contractor ONLY

**TOWN OF BROOKHAVEN
EMPLOYER AFFIDAVIT OF COMPLIANCE
WITH RESPECT TO NEW YORK STATE LABOR LAW (PREVAILING WAGES) AND WORKERS'
COMPENSATION LAW
(TOWN CODE CHAPTER 7A)**

STATE OF NEW YORK)
) SS.:
COUNTY OF _____)

Independent Contractor: _____

Project Name: _____

I, _____ being duly sworn, depose and state:
That I am an ____ Officer, ____ Partner, ____ Owner ____ or

By submission of this Affidavit, I affirm that 1) I am an Independent Contractor, owner-operated business, as defined pursuant to the Town of Brookhaven Town Code, Chapter 7A-13, and that I do not have any employees as defined under applicable law, including New York State Labor Law, Article 8 and Article 9, and New York State Workers' Compensation Law, and that I perform the contract work alone; and 2) I have not hired or retained any other subcontractor or independent contractor in connection with the contract work.

Name

Special Note: This is to be completed by INDEPENDENT CONTRACTOR ONLY

**TOWN OF BROOKHAVEN
EMPLOYER AFFIDAVIT OF COMPLIANCE
WITH RESPECT TO NEW YORK STATE LABOR LAW (PREVAILING WAGES) AND WORKERS'
COMPENSATION LAW
(TOWN CODE CHAPTER 7A)**

STATE OF NEW YORK)
) SS.:
COUNTY OF _____)

Subcontractor: _____

Project Name: _____

I, _____ being duly sworn, depose and state:

That I am an ____ Officer, ____ Partner, ____ Owner ____ or Member of the Firm

Check as Applicable Part I or Part II.

____ *Part I. The Requirements of New York State Labor Law and Workers' Compensation apply to this contract:*

By submission of this Affidavit, and on behalf of the above named Subcontractor, which includes but is not limited to any owner, firm, corporation or entity, of my own knowledge, I hereby affirm, under penalties of perjury, that the Subcontractor has sufficient employees to complete the contract work and that the Subcontractor 1) has complied with the requirements of the New York State Labor Law, Article 8 and Article 9, and any amendments thereto, and that all employees, which includes full-time, part-time, temporary or seasonal employees, are paid the required prevailing wages; and 2) that the Subcontractor has not retained or hired another subcontractor or independent contractor for the contract work.

____ *Part II. The requirements of New York State Labor Law and Workers' Compensation Law does not apply to this contract:*

By submission of this Affidavit, I hereby affirm, under penalties of perjury, that the Subcontractor does not have any employees as defined under applicable law, including New York State Labor Law, Article 8 and Article 9, and New York State Workers' Compensation Law, and that the Subcontractor performs the contract work alone; and 2) the Subcontractor has not hired or retained any other subcontractor or independent contractor in connection with the contract work.

Name: _____

Title: _____

Special Note: This form is to be completed by SUB-CONTRACTOR ONLY

CERTIFICATION OF COMPLIANCE WITH THE IRAN DIVESTMENT ACT

Pursuant to the Iran Divestment Act of 2012 (the "Act"), Chapter 1 of the 2012 Laws of New York, a new provision has been added to State Finance Law (SFL) § 165-a and New York General Municipal Law § 103-g, both effective April 12, 2012. Under the Act, the Commissioner of the Office of General Services (OGS) will be developing a list of "persons" who are engaged in "investment activities in Iran" (both are defined terms in the law) (the "Prohibited Entities List"). Pursuant to SFL § 165-a(3)(b), the initial list is expected to be issued no later than 120 days after the Act's effective date at which time it will be posted on the OGS website.

By submitting a bid in response to this solicitation or by assuming the responsibility of a Contract awarded hereunder, each Bidder/Contractor, any person signing on behalf of any Bidder/Contractor and any assignee or subcontractor and, in the case of a joint bid, each party thereto, certifies, under penalty of perjury, that once the Prohibited Entities List is posted on the OGS website, that to the best of its knowledge and belief, that each Bidder/Contractor and any subcontractor or assignee is not identified on the Prohibited Entities List created pursuant to SFL § 165-a(3)(b).

Additionally, Bidder/Contractor is advised that once the Prohibited Entities List is posted on the OGS Website, any Bidder/Contractor seeking to renew or extend a Contract or assume the responsibility of a Contract awarded in response to this solicitation must certify at the time the Contract is renewed, extended or assigned that it is not included on the Prohibited Entities List.

During the term of the Contract, should the Town receive information that a Bidder/Contractor is in violation of the above-referenced certification, the Town will offer the person or entity an opportunity to respond. If the person or entity fails to demonstrate that he/she/it has ceased engagement in the investment which is in violation of the Act within 90 days after the determination of such violation, then the Town shall take such action as may be appropriate including, but not limited to, imposing sanctions, seeking compliance, recovering damages or declaring the Bidder/Contractor in default.

The Town reserves the right to reject any bid or request for assignment for a Bidder/Contractor that appears on the Prohibited Entities List prior to the award of a contract and to pursue a responsibility review with respect to any Bidder/Contractor that is awarded a contract and subsequently appears on the Prohibited Entities List.

I, _____, being duly sworn, deposes and says that he/she is the _____ of the _____ Corporation and that neither the Bidder/Contractor nor any proposed subcontractor is identified on the Prohibited Entities List.

SIGNED

TOWN OF BROOKHAVEN DIVISION OF
PURCHASING CONTRACTOR/SUBCONTRACTOR
AFFIDAVIT OF PARTICIPATION IN NEW YORK
STATE APPRENTICESHIP TRAINING PROGRAM

STATE OF _____)
)

ss.:

COUN

TY OF _____)

Date: _____

Contractor/Subc

ontractor Name: _____ Project name:

Bid Submission Date:

I, _____ being duly sworn, depose and state:

That I am an Officer, _____ Partner, _____ Owner, _____ Member of the Firm.

By submission of this bid, and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalties of perjury, that I affirm of my own knowledge that the above firm

1) participates in a registered and approved New York State Department of Labor Apprenticeship Training Program(s) for the trade(s) applicable to the work to be performed under this Contract, *and that the firm at the time of bid submission* must submit proof of participation in accordance with the Town's Rules and Regulations for Implementation of Apprenticeship Training Program Requirements;

2) will only employ Subcontractors who participate in registered and approved New York State Department of Labor Apprenticeship Training Program(s) and that provide the required proof of participation; and

3) will require all such Subcontractors to execute an Affidavit of Participation and submit proof of participation in accordance with the Town's Rules and Regulations for Implementation of Apprenticeship Training Program Requirements, which shall be submitted to the Town with the Contractor's request for Subcontractor approval at the time of bid submission.

By:

Sexual Harassment Prevention Certification Form

By submission of this Proposal (Bid/RFP/RFQ), each Proposer/Bidder and each person signing on behalf of any Proposer/Bidder certifies, and in the case of a joint Proposal each party thereto certifies, as to its own organization, under penalty of perjury, that the Proposer/Bidder has, and has implemented, a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees.

Company Name:

Signature:

Print Name and Title:

Date:_____

OR

Submit a signed statement detailing the reasons why
the certification cannot be made.

Company Name:

Signature:

Print Name and Title:

Date:_____

TOWN OF BROOKHAVEN
SUFFOLK COUNTY, NY

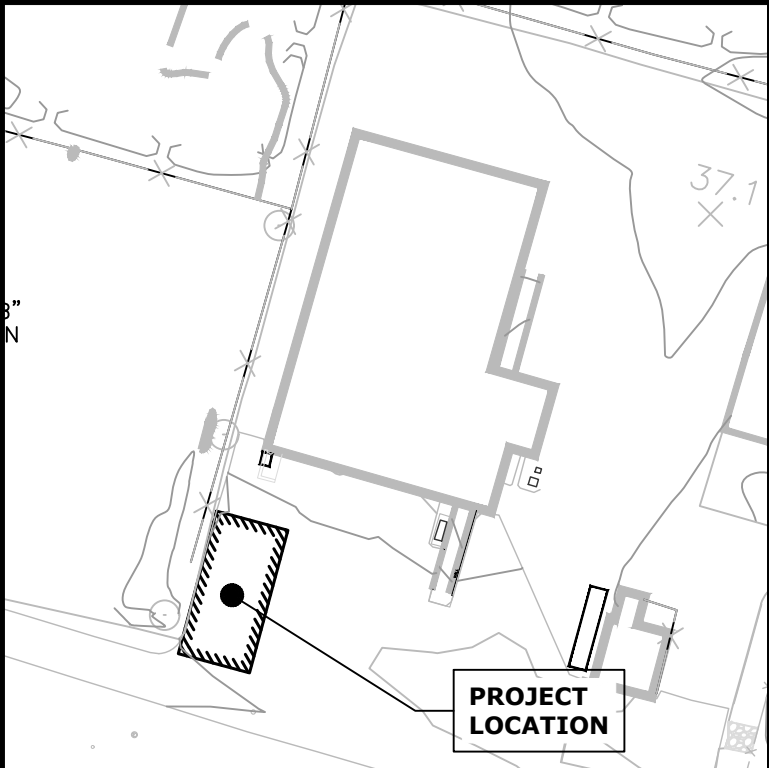


BID 26021

BROOKHAVEN SOLID WASTE
MANAGEMENT FACILITY -
PRE-ENGINEERED
ISOLATION LEAN-TO

350 HORSEBLOCK ROAD
BROOKHAVEN, NY 11719

DRAWING SHEET INDEX		ISSUE / DATES							
SHEET NO.	SHEET DESCRIPTION	100% SUBMISSION	ISSUED FOR BID						
GENERAL									
G-001	COVER SHEET	●	●						
G-002	GENERAL NOTES	●	●						
CIVIL									
G-002	SITE PLAN & DETAILS	●	●						
ARCHITECTURAL									
A-001	FOUNDATION PLAN & DETAILS	●	●						
A-100	FLOOR & ROOF PLAN	●	●						
A-200	ELEVATIONS & DETAILS	●	●						
A-300	SECTIONS & DETAILS	●	●						
A-301	SECTIONS & DETAILS	●	●						
A-302	SECTIONS & DETAILS	●	●						
ELECTRICAL									
E-001	GENERAL NOTES AND SCHEDULES	●	●						



LOCATION MAP

N.T.S.

PROJECT DATA

APPLICANT/OWNER..... TOWN OF BROOKHAVEN
1 INDEPENDENCE HILL
FARMINGVILLE, NY 11738

TAX MAP NUMBER..... 0200-874-04-033.001

SITE AREA.....

ZONING.....

USE..... 852; LANDFILLS & DUMPS

ARCHITECT / ENGINEER:



L.K. McLEAN ASSOCIATES ENGINEERING & SURVEYING, D.P.C.
437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719

IT IS A VIOLATION OF THE LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ARCHITECT ENGINEER, TO ALTER IN ANY WAY ANY ITEM ON THESE DRAWINGS. IF AN ITEM BEARING THE SEAL OF AN ARCHITECT/ENGINEER IS ALTERED, THE ALTERING ARCHITECT/ENGINEER SHALL AFFIX TO HIS/HER ITEM THEIR SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS/HER SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION. ON THE DRAWING. * THE PLANS AND SPECIFICATIONS HEREIN ARE INTENDED FOR THE SUBJECT PROJECT ONLY AS A RESULT OF CONTRACTUAL NEGOTIATIONS BETWEEN THE OWNER AND L.K. McLEAN ASSOCIATES, D.P.C. THESE PLANS AND SPECIFICATIONS WILL BE THE SUBJECT OF A COPYRIGHT PETITION AND MAY NOT BE REVISED OR REUSED BY ANYONE WITHOUT WRITTEN AUTHORITY OF L.K. McLEAN ASSOCIATES, D.P.C.

© L.K. McLEAN ASSOCIATES ENGINEERING & SURVEYING, D.P.C.

PROJECT:

TOWN OF BROOKHAVEN
SUFFOLK COUNTY, NY

BID 26012

BROOKHAVEN SOLID
WASTE MANAGEMENT
FACILITY -
PRE-ENGINEERED
ISOLATION LEAN-TO

350 HORSEBLOCK ROAD
BROOKHAVEN, NY 11719

ISSUES/REVISIONS		
Description	No.	Date
100% SUBMISSION	-	10.03.25
ISSUED FOR BID	-	06.09.26



STATUS:

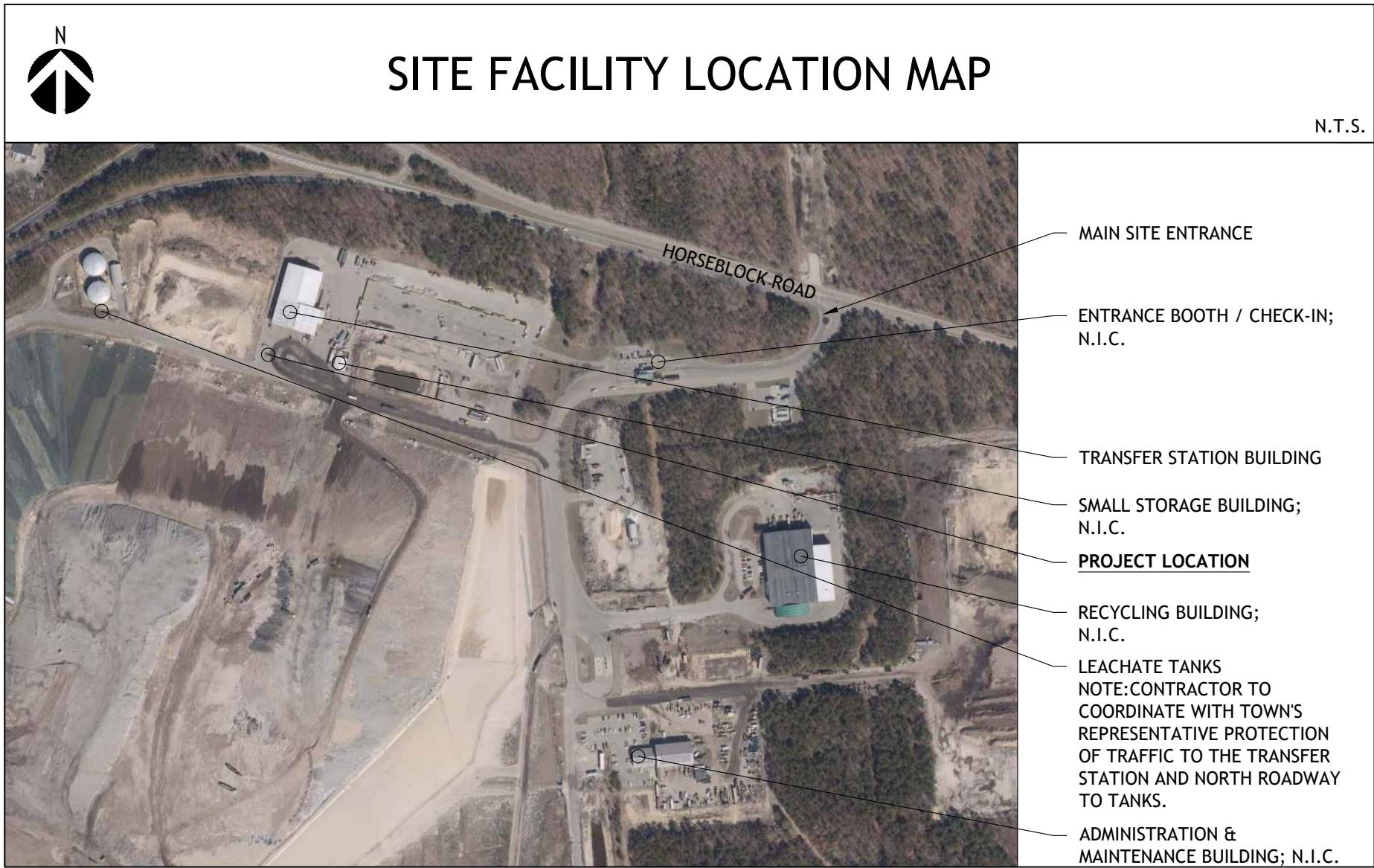
ISSUED FOR BID

DRAWING TITLE:

COVER SHEET

SEAL & SIGNATURE:	Design By:	AR/FAS
	Drawn By:	AR/FAS
	Approved By:	MCJ
	Scale:	AS NOTED
	Date:	JUN. 2026
File No:		25134.000
Sheet No.		

G-001

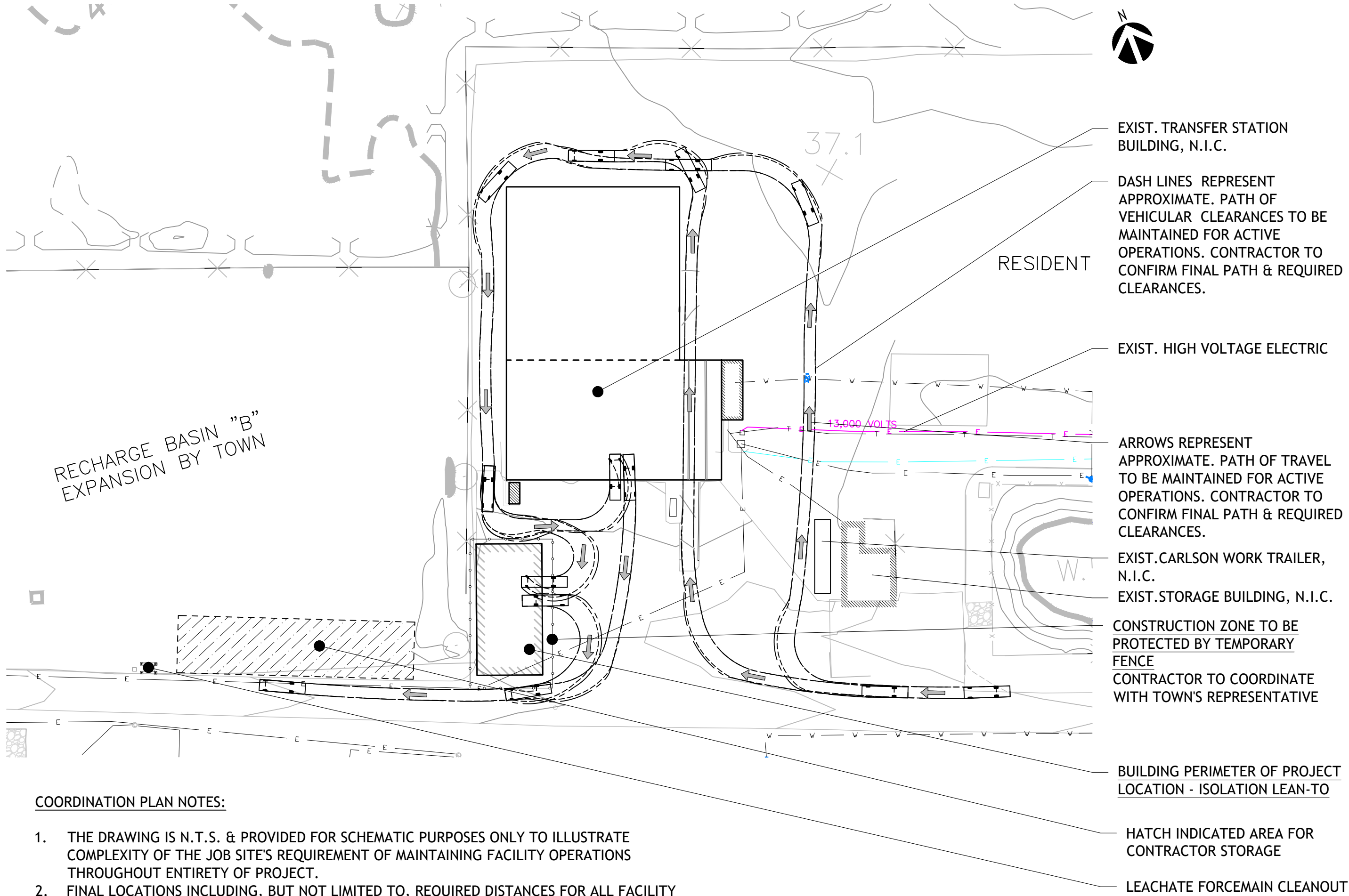


N.T.S.

COORDINATION WITH THE DEPARTMENT OF RECYCLING AND SUSTAINABLE MATERIALS MANAGEMENT DAILY SANITATION ACTIVITIES:

1. THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH DAILY OPERATIONS INCLUDING BUT NOT LIMITED TO:
 - 1.1. DAILY VEHICULAR ENTRANCE SITE ACCESS.
 - 1.2. DAILY VEHICULAR ON SITE TRANSFER BUILDING ACCESS.
 - 1.3. KNOWLEDGE OF TOWN'S OPERATIONAL ROADS TO AND FROM THE TRANSFER BUILDING.
 - 1.4. KNOWLEDGE OF SANITATION VENDOR ROADS AND DAILY TRAFFIC PATTERNS INTO AND AROUND THE TRANSFER BUILDING.
 - 1.5. BECOME FAMILIAR OF THE DAILY OPERATIONAL ACTIVITIES WITHIN AND AROUND THE TRANSFER BUILDING DURING THE ACTUAL TRANSFER OF MATERIAL AND EQUIPMENT USED.
2. THE CONTRACTOR MUST RECOGNIZE THAT THIS CRITICAL FACILITY WILL BE IN OPERATION DURING CONSTRUCTION. FACILITY OPERATIONS SHALL NOT BE INTERRUPTED. SANITATION TRUCK AND EQUIPMENT TRAFFIC FLOW SHALL NOT BE INTERRUPTED WITH OUT PRIOR APPROVAL FROM THE TOWN AND THE TOWN'S SANITATION VENDOR.
3. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A IMPLEMENTATION SITE PLAN INCLUDING, BUT NOT LIMITED TO, LOCATIONS OF CONSTRUCTION ZONES, STORAGE TRAILER, WORK TRAILER, PORTABLE TOILETS, CONSTRUCTION FENCING, MATERIAL STORAGE, ANTICIPATED CONSTRUCTION VEHICLE ACCESS AND PARKING, CRANE / HOIST LOCATIONS AS WELL AS MOBILE MAN LIFTS FOR APPROVAL.
4. THE SITE IMPLEMENTATION PLAN MUST INCLUDE SANITATION TRUCK TRAFFIC ZONES UTILIZED IN THE TOWN'S DAILY OPERATIONS.
5. CONTRACTOR TO COORDINATE WITH TOWN'S REPRESENTATIVE PROTECTION OF TRAFFIC TO THE TRANSFER STATION AND NORTH ROADWAY TO TANKS.

SITE COORDINATION PLAN



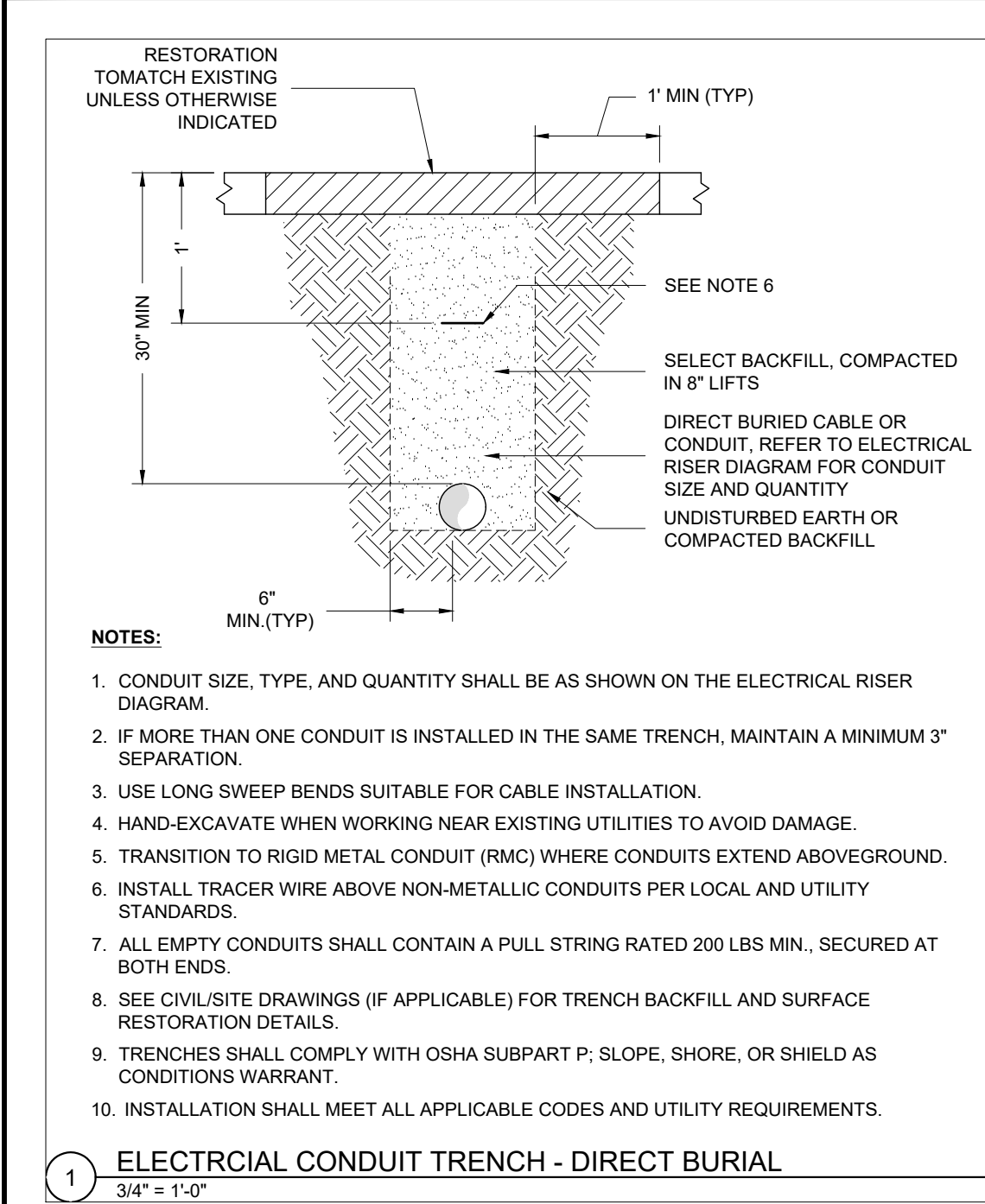
RECHARGE BASIN "B"
EXPANSION BY TOWN

COORDINATION PLAN NOTES:

1. THE DRAWING IS N.T.S. & PROVIDED FOR SCHEMATIC PURPOSES ONLY TO ILLUSTRATE COMPLEXITY OF THE JOB SITE'S REQUIREMENT OF MAINTAINING FACILITY OPERATIONS THROUGHOUT ENTIRETY OF PROJECT.
2. FINAL LOCATIONS INCLUDING, BUT NOT LIMITED TO, REQUIRED DISTANCES FOR ALL FACILITY OPERATIONS TO BE REVIEWED, COORDINATED & VERIFIED WITH THE DEPARTMENT OF RECYCLING AND SUSTAINABLE MATERIALS MANAGEMENT PRIOR TO CONSTRUCTION.
3. SEE COORDINATION NOTES ON COVER SHEET (ABOVE) AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
4. VEHICLE TURN RADIUS IS CALCULATED USING THE STANDARD DIMENSIONS OF A T.O.B. GARBAGE TRUCK

PLAN DATE IDENTIFIER

DATE OF LAST REVISION 06.09.26 - ISSUED FOR BID



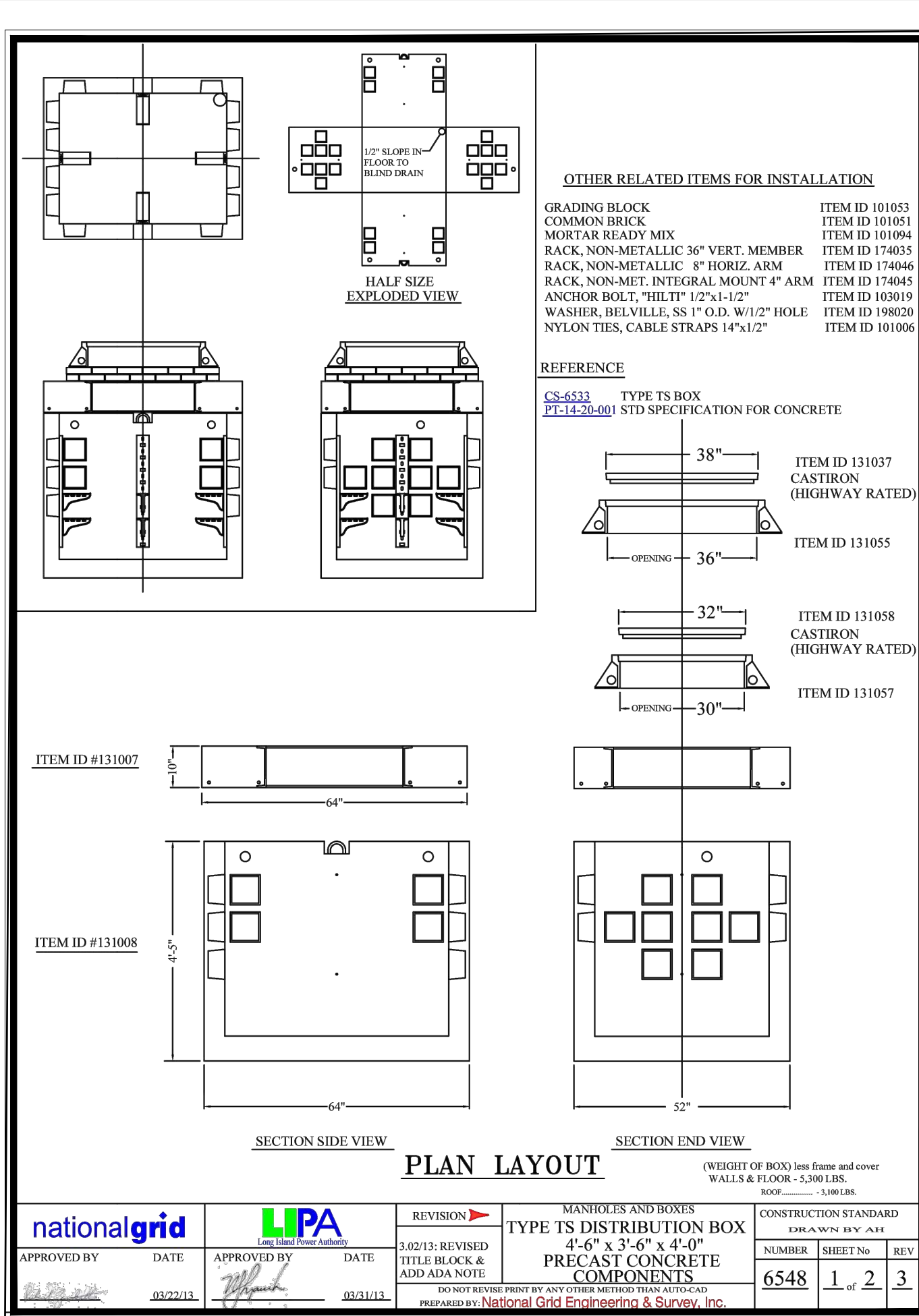
UNDERGROUND PRIMARY ELECTRICAL RELOCATION:

1. REFER TO SPECIFICATION SECTIONS 260543 "UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS," 260553 "IDENTIFICATION FOR ELECTRICAL SYSTEMS," AND 312333 "TRENCHING AND BACKFILLING FOR UTILITIES."
2. PROVIDE LOCKOUT/TAGOUT PER OSHA AND NEC REQUIREMENTS.
3. EXTEND/OFFSET/RELOCATE EXISTING UNDERGROUND ELECTRIC UTILITIES AS SHOWN AND AS REQUIRED TO FACILITATE NEW BUILDING CONSTRUCTION. PROVIDE (2) POLYMER CONCRETE SPLICE & PULL BOXES TO REROUTE EXISTING UNDERGROUND SECONDARY CONDUCTORS AROUND PROPOSED STRUCTURE.
4. MATCH EXISTING ON-SITE CONSTRUCTION MATERIALS FOR CONDUITS, CONDUCTORS, DUCT BANKS, HANDHOLES, AND RELATED WORK. NEW CONDUCTORS SHALL MATCH EXISTING IN QUANTITY, SIZE, MATERIAL, INSULATION TYPE, AND AMPACITY.
5. ALL NEW AND MODIFIED UNDERGROUND ELECTRICAL CONSTRUCTION, INCLUDING HANDHOLES AND SPLICE BOXES, SHALL BE SUITABLE FOR HS-20 LOADING.
6. ALL SPLICES SHALL BE MADE USING UL LISTED WATERPROOF GEL PACKS SUITABLE FOR WET LOCATIONS AND SIZED TO MATCH EXISTING CONDUCTOR TYPE AND SIZE.
7. COORDINATE ALL OUTAGES WITH TOWN REPRESENTATIVE AND SERVING UTILITY; MAINTAIN SERVICE EXCEPT DURING SCHEDULED CUTOVER.
8. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDUCTOR SIZES, QUANTITIES, AND CONDITIONS PRIOR TO PROCUREMENT AND INSTALLATION.
9. LOCATE AND POTHOLE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATION. VERIFY DEPTH AND HORIZONTAL LOCATION OF EXISTING SECONDARIES BEFORE REROUTING.
10. INSTALL NEW CONDUITS AND TRENCH PER DETAIL 1 ON THIS SHEET. INSTALL SPLICE BOXES PER DETAIL 2 ON THIS SHEET.
11. RESTORE ALL DISTURBED SURFACES TO ORIGINAL CONDITION.
12. PROVIDE ALL MATERIALS, SPLICES, AND ACCESSORIES REQUIRED FOR COMPLETE, OPERABLE SYSTEM.
13. TEST RELOCATED SYSTEMS FOR CONTINUITY, INSULATION INTEGRITY, AND PROPER OPERATION..

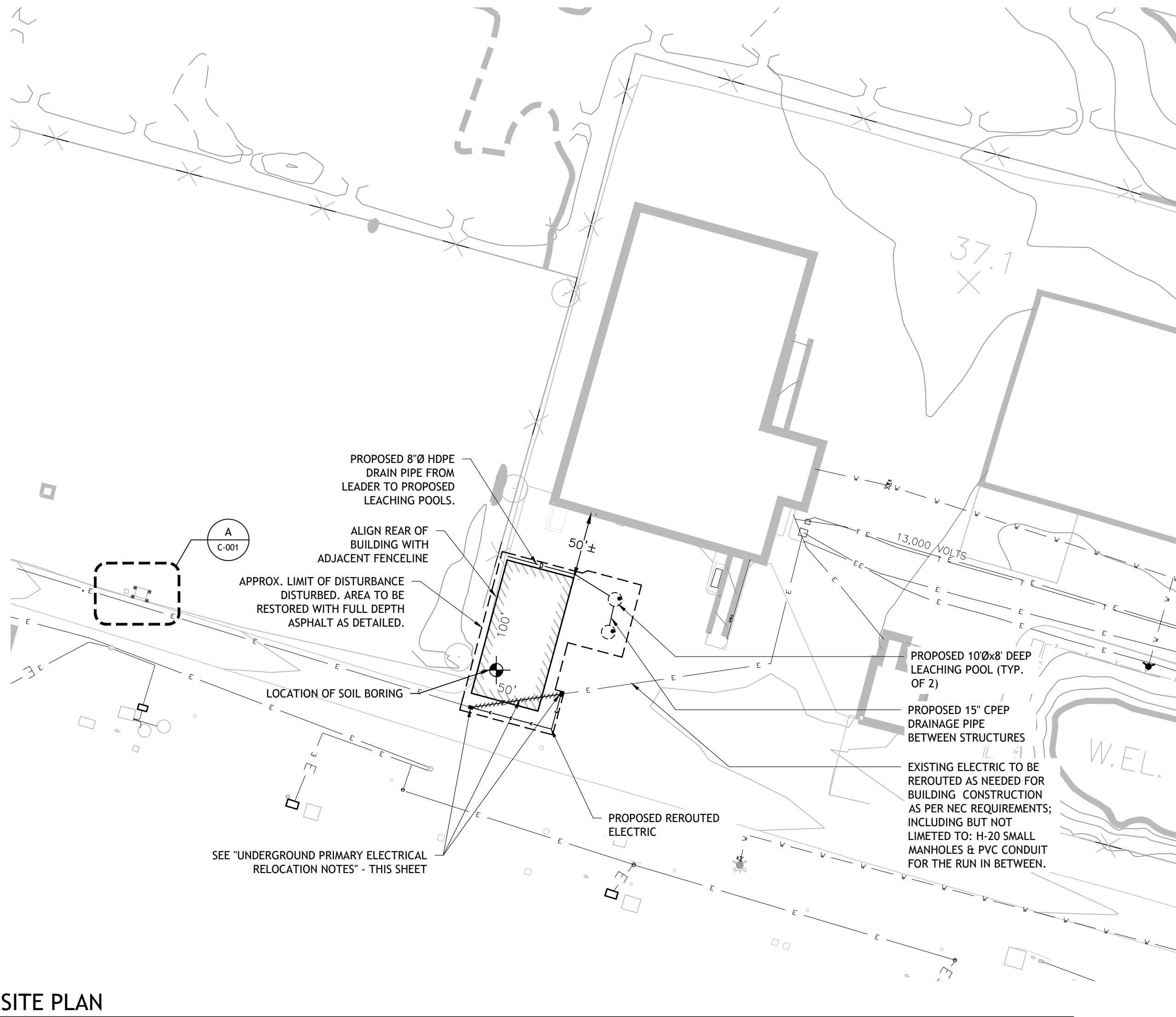
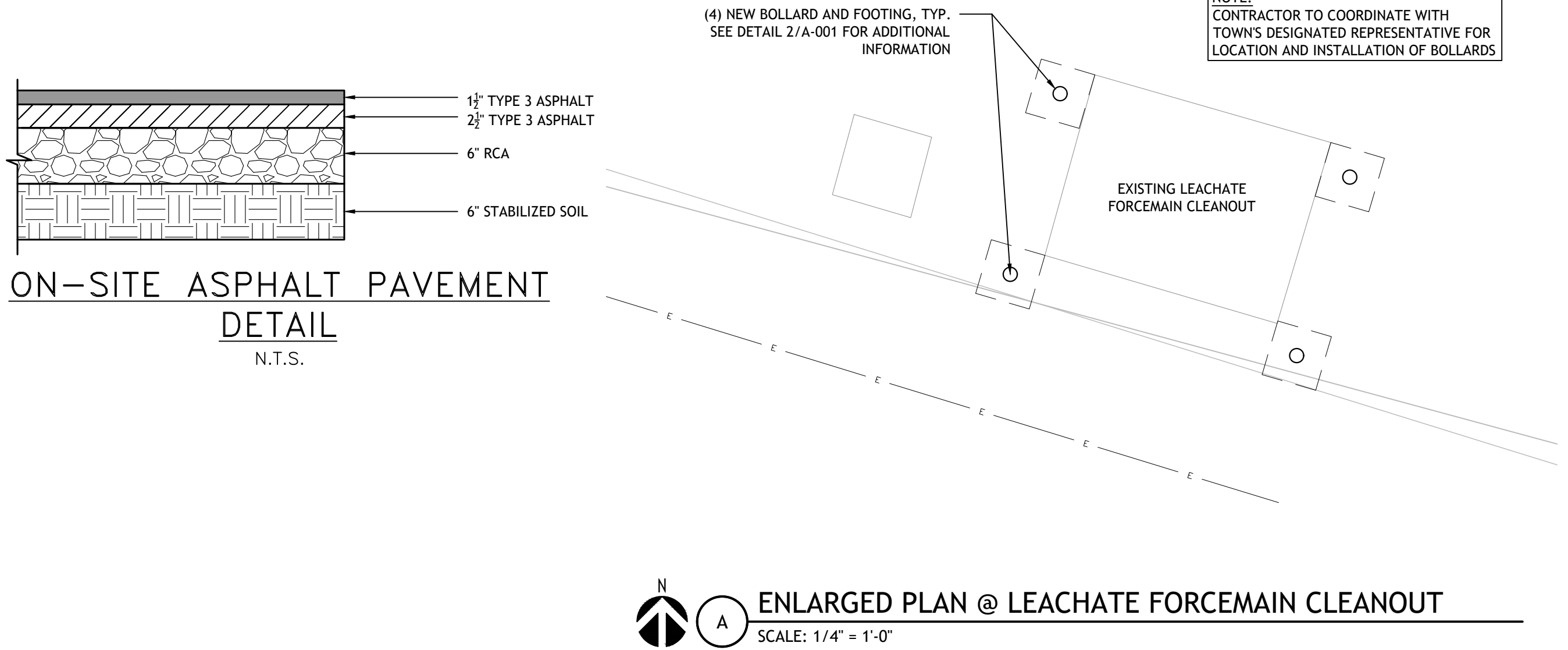
Depth	Blows Per (6") Inches	Unified Soil Classification	N-Value	Soil Sample Description	TB #
0 - 2 FEET BLG	52-4-31-28	SP	N/A	Asphalt Pavement, RCA Base Material Brown Fine Sand	Sample 1
2 - 4 FEET BLG	5-4-3-4	SM	7	Brown Fine Sand w/ Trace Silt	Sample 2
4 - 6 FEET BLG	5-6-5-7	SM	11	Brown Fine Sand w/ Trace Silt	Sample 3
6 - 8 FEET BLG	6-6-7-7	SP	13	Brown Medium to Fine Sand	Sample 4
8-10 FEET BLG	7-6-8-7	SP	14	Brown Medium to Fine Sand	Sample 5
15-17 FEET BLG	4-5-5-4	SP	10	Brown Medium to Fine Sand	Sample 6
20-22 FEET BLG	4-6-6-5	SP	12	Brown Medium to Fine Sand	Sample 7
25-27 FEET BLG	16-15-17-19	SP	32	Brown Medium to Fine Sand	Sample 8
30-32 FEET BLG	22-19-21-20	SP	40	Brown Fine Sand w/ Gavel	Sample 9

SOIL BORING GENERAL NOTES

1. BORING REPORT DONE BY UNIVERSAL DRILLING + BORING
2. FULL GEOTECH REPORT AVAILABLE UPON REQUEST
3. THE CONTRACTOR, AS FIELD VERIFICATION, SHALL PROVIDE SUPPLEMENTAL BORING AND GEOTECHNICAL REPORT TO CONFIRM BEARING CAPACITY OF THE SOIL IF REQUIRED BY THE CONTRACTOR'S FOUNDATIONS ENGINEER.
4. SOIL BORINGS ARE INDICATED AS REFERENCE PURPOSES.



TYP ELECTRIC MANHOLE DETAIL
N.T.S.



DRAINAGE CALCULATIONS:

DRAINAGE REQUIRED
IMPERVIOUS (ROOF) = 5,000 SF
C=1.0
V=(5,000 × 1.0) × 2"/12" = 833.33 CF
TOTAL STORAGE REQUIRED = 833.33 CF

DRAINAGE PROVIDED
(2) 10' Ø x 8' DEEP LEACHING POOLS =
68.4 CF/VF × 16 = 1,094.4 CF
TOTAL STORAGE PROVIDED = 1,094.4 CF

COORDINATION WITH THE DEPARTMENT OF RECYCLING AND SUSTAINABLE MATERIALS MANAGEMENT DAILY SANITATION ACTIVITIES:

1. THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH DAILY OPERATIONS INCLUDING BUT NOT LIMITED TO:
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3. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A IMPLEMENTATION SITE PLAN INCLUDING, BUT NOT LIMITED TO, LOCATIONS OF CONSTRUCTION ZONES, STORAGE TRAILER, WORK TRAILER, PORTABLE TOILETS, CONSTRUCTION FENCING, MATERIAL STORAGE, ANTICIPATED CONSTRUCTION VEHICLE ACCESS AND PARKING, CRANE / HOIST LOCATIONS AS WELL AS MOBILE MAN LIFTS FOR APPROVAL.
4. THE SITE IMPLEMENTATION PLAN MUST INCLUDE SANITATION TRUCK TRAFFIC ZONES UTILIZED IN THE TOWN'S DAILY OPERATIONS
5. CONTRACTOR TO COORDINATE WITH TOWN'S REPRESENTATIVE PROTECTION OF TRAFFIC TO THE TRANSFER STATION AND NORTH ROADWAY TO TANKS.

LOCATION MAP
N.T.S.

PROJECT DATA

APPLICANT/OWNER..... TOWN OF BROOKHAVEN
1 INDEPENDENCE HILL
FARMINGVILLE, NY 11738

TAX MAP NUMBER..... 0200-874-04-033.001

SITE AREA.....

ZONING.....

USE..... 852; LANDFILLS & DUMPS

ARCHITECT / ENGINEER:

LKMA

L.K. McLEAN ASSOCIATES ENGINEERING & SURVEYING, D.P.C.
437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719

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PROJECT:

TOWN OF BROOKHAVEN
SUFFOLK COUNTY, NY

BID 26012

**BROOKHAVEN SOLID
WASTE MANAGEMENT
FACILITY -
PRE-ENGINEERED
ISOLATION LEAN-TO**

350 HORSEBLOCK ROAD
BROOKHAVEN, NY 11719

ISSUES/REVISIONS	No.	Date
Description		
100% SUBMISSION	-	10.03.25
ISSUED FOR BID	-	06.09.26

Call 811
before you dig

STATUS:

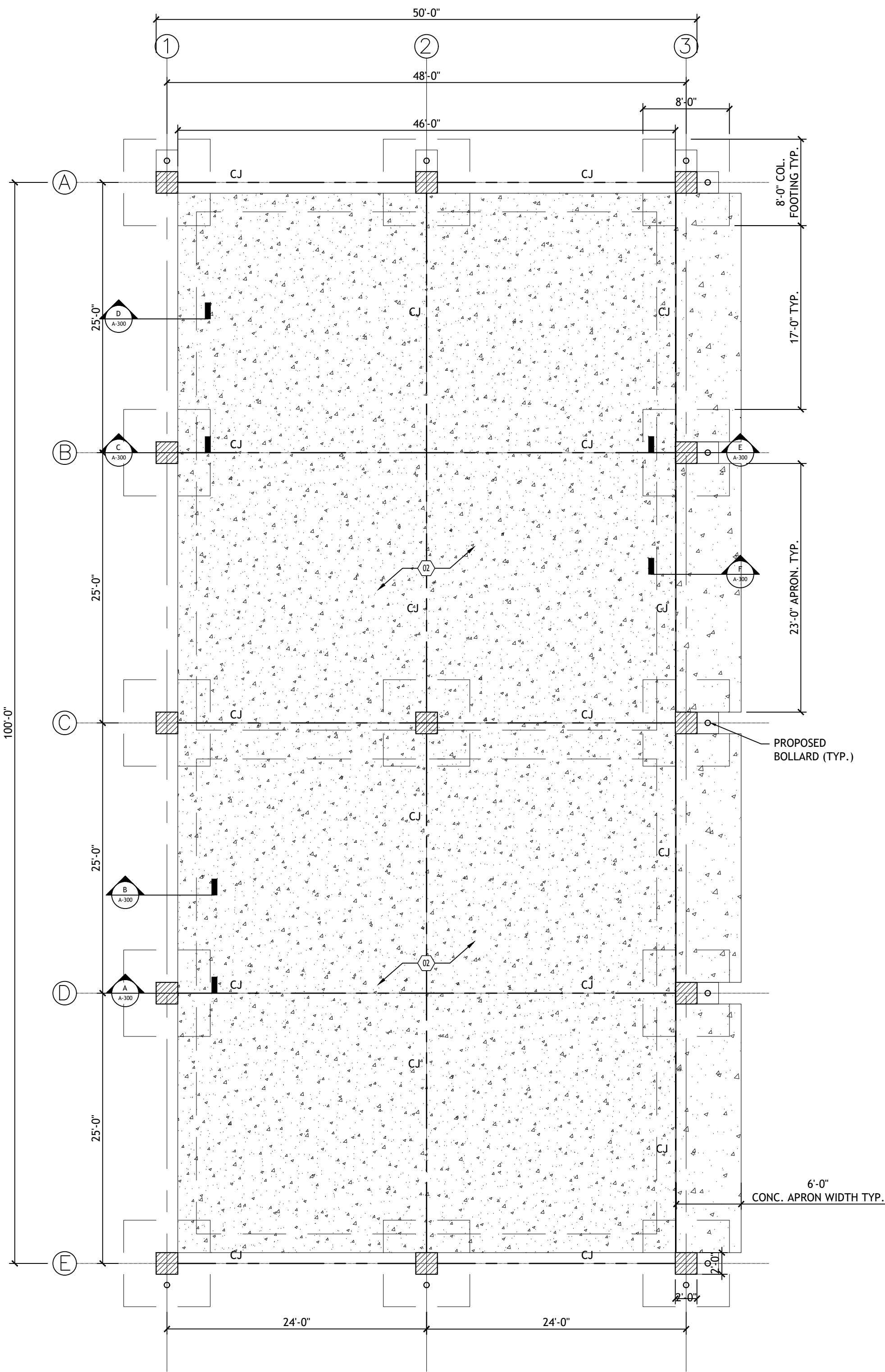
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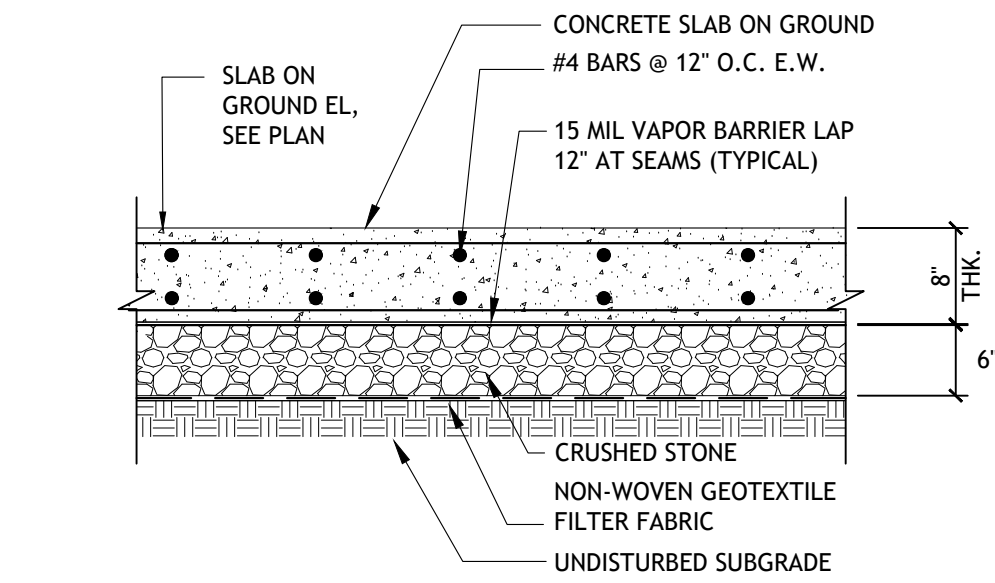
SITE PLAN & DETAILS

SEAL & SIGNATURE:	Design By: AR/FAS Drawn By: AR/FAS Approved By: MCJ Scale: AS NOTED Date: JUN. 2026 File No: 25134.000 Sheet No.
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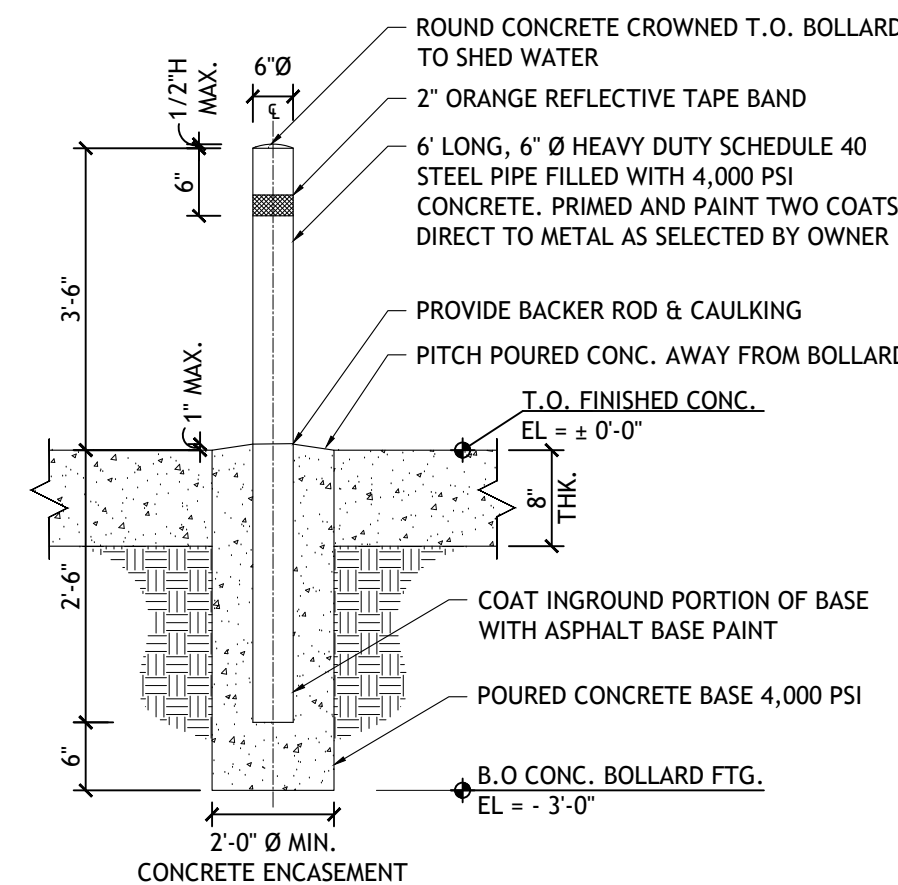


1 FOUNDATION PLAN
SCALE: 1/8" = 1'-0"



- NOTES:
1. ALL SLAB ON GRADE SHALL BE POURED IN AN ALTERNATING STRIP SYSTEM TO ALLOW PROPER SHRINKAGE. POUR PANELS TO BE BOUNDED BY CONTRACTION/CONTROL JOINTS (OR EXPANSION JOINTS) AS SHOWN ON PLANS.
 2. GENERAL CONTRACTOR MAY USE SAWED CONTRACTION/CONTROL JOINTS, SUBJECT TO APPROVAL.
 3. COORDINATE ALL SLABS WITH ARCHITECTURAL DETAILS

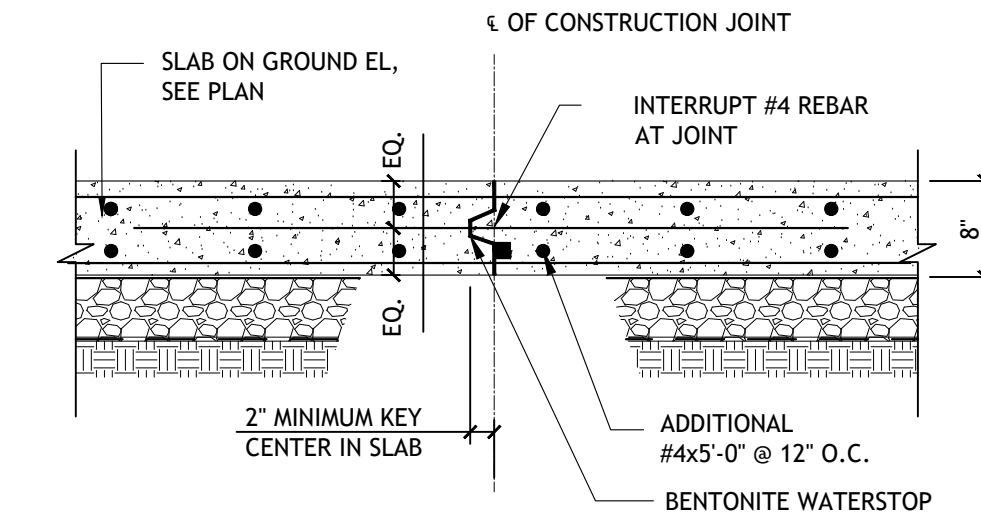
4 TYP. SLAB AND TRUCK APRON ON GRADE
SCALE: NOT TO SCALE



2 BOLLARD DETAIL
SCALE: NOT TO SCALE

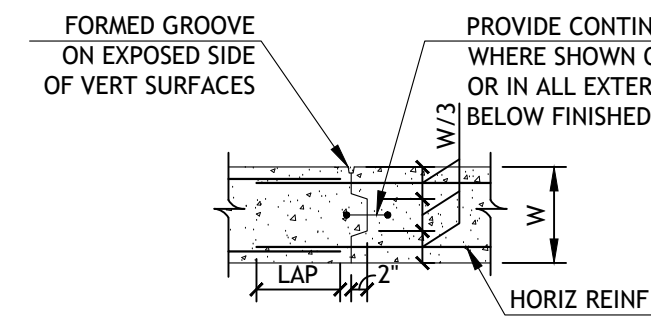
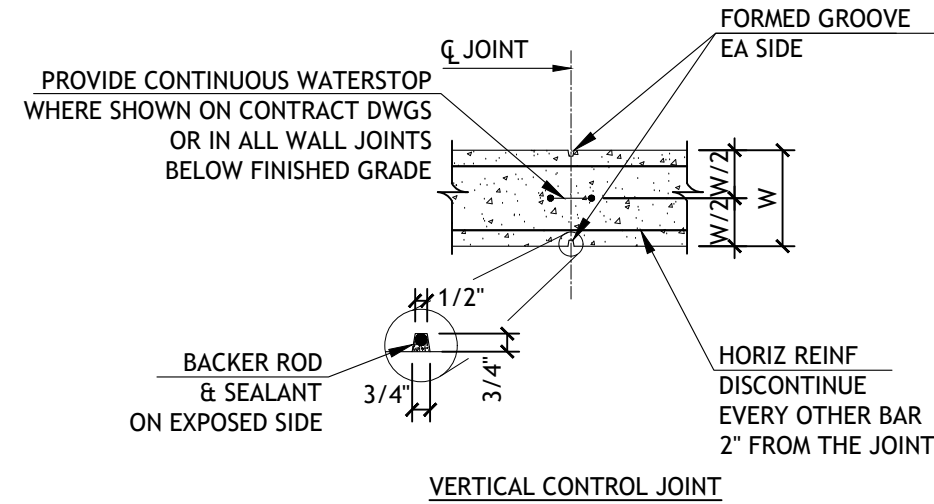
- CONCRETE SLAB GENERAL NOTES:
1. PROVIDE NORMALWEIGHT CONCRETE WITH CURED DENSITY IF 145± 5PCF, AND AGGREGATE CONFORMING TO ASTM C33.
 2. CONSTRUCTION JOINTS SHALL BE 1" DEEP AND LOCATED AS INDICATED ON PLANS.
 3. CONSTRUCTION JOINTS SHALL BE FILLED WITH A MULTI-COMPONENT, HIGHLY-FLEXIBLE, HIGH PERFORMANCE POLYURETHANE SEALANT (MASTERSEAL NP2 OR APPROVED EQUAL).
 4. SURFACE TO BE FINISHED TO A FLOAT PAN FINISH USING A POWER TROWEL OR FLOAT MACHINE.
 5. ALL CONCRETE WORK TO BE PERFORMED SHALL ADHERE IN ACCORDANCE WITH ACI STANDARDS.
 6. CONCRETE STRENGTH SHALL MEET THE FOLLOWING 28-DAY COMPRESSIVE STRENGTHS (FC), U.O.N.:
- | CONCRETE | FC |
|--------------------|----------|
| MASS CONCRETE FILL | 3000 PSI |
| FOOTINGS | 5000 PSI |
| FLAT SLAB | 6000 PSI |
| SLAB-ON-GRADE | 5000 PSI |
| BEAMS | 6000 PSI |
| COLUMNS | 6000 PSI |
| WALLS | 6000 PSI |
7. THE USE OF CALCIUM CHLORIDE AND OTHER CHLORIDE CONTAINING AGENTS IS PROHIBITED. THE USE OF RECYCLED CONCRETE IS PROHIBITED. PLACEMENT WITHIN AND CONTACT BETWEEN ALUMINUM ITEMS, INCLUDING ALUMINUM CONDUIT, AND CONCRETE IS PROHIBITED
 8. PROVIDED AIR-ENTRAINING IN CONCRETE AS SET FORTH IN THE SPECIFICATIONS.

- CONCRETE SLAB REINFORCEMENT GENERAL NOTES:
1. REINFORCEMENT SHALL CONFORM TO THE FOLLOWING STANDARDS AND MATERIAL PROPERTIES:
 - a. DEFORMED BARS ASTM A615 GRADE 60
 - b. WEDABLE DEFORMED BARS ASTM A706
 - c. EPOXY COATED DEFORMED BARS ASTM615 / A775
 - d. WEDED WIRE REINFORCEMENT ASTM A1064
 - e. EPOXY COATED WELDED WIRE REINFORCEMENT ASTM A1064 / A884
 2. REINFORCING BARS: HOT ROLLED NEW BILLET STEEL, ASTM A615 GRADE 60 (FY = 60 KSI) AND ASTM A615 GRADE 75 (FY = 75 KSI) WHERE NOTED IN THE DRAWINGS.
 3. DEFORMED BAR ANCHORS: ASTM A496 (FY = 70 KSI)
 4. PROVIDE EPOXY COATED REINFORCEMENT AND ACCESSORIES IN AREAS OF DIRECT EXPOSURE TO THE ENVIRONMENT, CHEMICALS, OR DE-ICING.



- NOTES:
1. SEE TYPICAL SLAB ON GROUND DETAIL FOR ADDITIONAL INFORMATION.
 2. SUBMIT PROPOSED CONSTRUCTION AND/OR SAW CUT FOR REVIEW MAXIMUM JOINT SPACING IS 20' IN EACH DIRECTION.
 3. PROVIDE ADDITIONAL DIAGONAL BAR AT RE-ENTRANT CORNERS #4x5'-0" LONG.

3 TYP. S.O.G. FORMED CONSTRUCTION JOINT
SCALE: NOT TO SCALE



CONSTRUCTION JOINT

1 TYPICAL CONCRETE WALL JOINTS DETAIL
SCALE: NOT TO SCALE

- FOUNDATION NOTES:
1. SOIL BEARING CAPACITY USED FOR FOUNDATION DESIGN HAS BEEN ASSUMED 2,000 PSF. FOOTINGS MUST REST ON UNDISTURBED SOIL. NOTIFY ARCHITECT PRIOR TO PLACING FOOTINGS SO THAT THESE ASSUMPTIONS MAY BE VERIFIED.
 2. "KEYS" FOR WALLS, BEAMS AND SLABS MUST BE PROVIDED AS SHOWN IN SECTIONS AND DETAILS.
 3. NO FOOTINGS SHALL BE PLACE IN WATER OR ON FROZEN GROUND. ALL SOIL SURROUNDING AND UNDER ALL FOOTINGS SHALL BE PROTECTED FROM FREEZING AND FROST ACTION DURING THE COURSE OF CONSTRUCTION
 4. KEEP FOUNDATION EXCAVATIONS FREE OF WATER AT ALL TIMES. REPLACE WEAKENED SOIL WITH LEAN CONCRETE. USE LEAN CONCRETE FOR OVER EXCAVATION OF FOOTINGS, AS APPROVED BY ARCHITECT.
 5. PLACEMENT OF ALL COMPACTED FILL MUST BE UNDER THE SUPERVISION OF AN APPROVED TESTING LABORATORY, PAID BY THE CONTRACTOR. CONCRETE FOUNDATIONS SHALL NOT BE PLACED UNTIL FILL HAS BEEN CHECKED IN PLACE AND CERTIFIED BY THE TESTING LABORATORY.
 6. BACKFILLING SHALL BE ACCOMPLISHED TO EQUAL HEIGHTS ON BOTH SIDES OF THE FOUNDATION TO PREVENT MOVEMENT DUE TO THE UNBALANCED EARTH PRESSURE.
 7. BEARING CAPACITY FOR THE UNDISTURBED SOIL SHALL BE VERIFIED AT THE TIME OF CONSTRUCTION. IF REQUIRED BEARING CAPACITY IS NOT ACHIEVED, UNSTABLE MATERIAL SHALL BE REMOVED AND COMPACTED FILL SHALL BE USED. THE COMPACTED FILL SHALL BE WELL GRADED GRANULAR MATERIAL AND SHALL BE PLACED IN 12" LIFT AND COMPACTED TO ITS 95% OF MAXIMUM DRY DENSITY DETERMINED ON THE BASIS OF ASTM METHOD D-1557
 8. BUILDING MANUFACTURER TO SUBMIT REACTIONS, COLUMN SIZES AND LAYOUT, AND ANCHOR BOLT REQUIREMENTS TO THE DELEGATED DESIGN FOUNDATION ENGINEER PRIOR TO SUBMITTING TO THE ARCHITECT..
 9. THE CONTRACTOR SHALL SUBMIT FOOTING, FOUNDATION WALL AND SLAB ON GRADE DESIGN, SIGNED AND SEALED BY NEW YORK STATE LICENSED P.E. TO THE ARCHITECT FOR APPROVAL. FOUNDATION DESIGN DRAWINGS SHALL BE COORDINATED TO THE PEMB COLUMN CONNECTIONS BASED ON COLUMN BASE REACTIONS PROVIDED BY THE PEMB ENGINEER.
 10. THE CONTRACTOR SHALL SUBMIT DRAWINGS SHOWING THE INTENDED POURING SEQUENCE AND LOCATION OF ALL CONSTRUCTION JOINTS TO THE ARCHITECT FOR APPROVAL.
 11. ALL REINFORCING SHALL BE SECURELY HELD IN PLACE WHILE PLACING CONCRETE. IF REQUIRED, ADDITIONAL BARS OR STIRRUPS SHALL BE PROVIDED BY THE CONTRACTOR TO FURNISH SUPPORT TO ALL BARS.
 12. CONC. COVER FOR REINFORCING SHALL BE 1-1/4" FRP SLABS. 1-1/2" FOR BEAMS AND 1" FOR WALLS. ALL CONCRETE EXPOSED TO WEATHER OR EARTH FILL SHALL HAVE MIN. CONC. COVER OF 2". FOR BIGGER BARS LARGER THAN #5 OR 1-1/2" OR #5 BARS OR SMALLER, FOR ALL CONCRETE PLACED AGAINST EARTH, MIN. CONCRETE COVER SHALL BE 3"

KEY NOTES:

- 01 STEEL COLUMN
- 02 0'-8" THICK CONCRETE SLAB
- 03 2'X2'X6" CONCRETE ECOLOGY BLOCK WALL
SEE B/A-300
- 04 1'-0" HIGH CONCRETE CURB
SEE D/A-300
- 05 CONCRETE FOOTING BELOW SEE STRUCTURAL
DRAWINGS FOR ADDITIONAL INFORMATION

LEGEND

- 01 DENOTES LOCATION OF NEW FOUNDATION
- 02 DENOTES LOCATIONS OF CONCRETE FOOTING
TO BE COORDINATED W/ PEMB STRUCTURE
SEE A-300 FOR DETAILS
- 03 DENOTES STRUCTURE ROOF BY PEMB
MANUFACTURER
- 04 ROOF PURLIN BY PEMB MANUFACTURER
- 05 PROPOSED BOLLARD

CONCRETE SLAB NOTES:

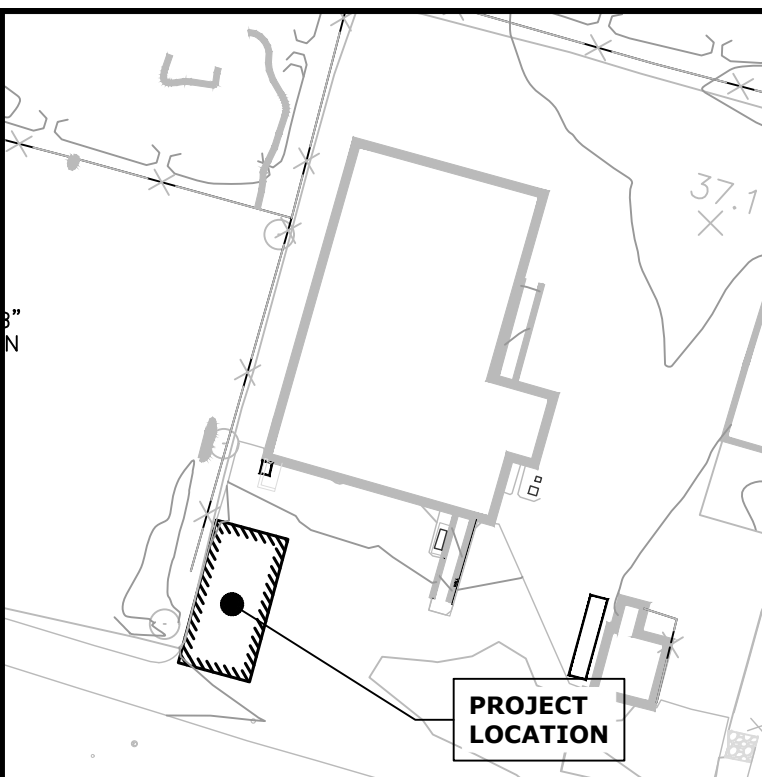
1. 2'X2'X6" FULL ECOLOGY BLOCKS AND 2'X2'X3" HALF TO BE PRECAST, INTERLOCKING, V-BLOCKS MANUF. BY CONCRETE BLOCK SUPPLY OR APPROVED EQUAL
2. TOP OF SLAB ON GRADE ELEVATION IS EQUAL TO 0'-00" FOR ALL DRAWING PURPOSES
3. NOT USED

FINISH SCHEDULE

ELEMENT	FINISH MATERIAL
PRIMARY PEMB STRUCTURE	HOT DIPPED GALVANIZED STEEL
ROOF	GALVALUM - OR APPROVED EQUALL; FINISH TO BE SELECTED BY ARCHITECT
TRIM	COLOR SELECTED BY ARCHITECT
GUTTER / LEADER	TO MATCH TRIM - COLOR SELECTED BY ARCHITECT

DELEGATED DESIGN NOTES:

1. THE PRE-ENGINEERED METAL BUILDING (PEMB), AND CONCRETE FOUNDATION DESIGN, IS PROVIDED AS THE PROJECTS INTENT AND BASIS OF DESIGN.
2. THE CONTRACTOR SHALL PROVIDE DELEGATED DESIGN SERVICES FOR THE CONCRETE FOUNDATION DESIGN (FOOTINGS AND STEM WALL), AND THE PRE-ENGINEERED METAL BUILDING (PEMB) AS DEFINED IN THE CONTRACT DRAWINGS & SPECIFICATIONS.
3. THE DELEGATED DESIGN SHALL BE PERFORMED BY A PROFESSIONAL ENGINEER DULY LICENSED IN THE STATE OF NEW YORK.
4. THE CONTRACTOR SHALL SUBMIT THE DELEGATED DESIGN DRAWINGS FOR THE FOUNDATIONS AND PEMB FOR THE PURPOSES OF OBTAINING BUILDING PERMITS AND CERTIFICATES OF OCCUPANCY.
5. THE CONTRACTOR IS TO COORDINATE THE PRE-ENGINEERED METAL BUILDING & THE CONCRETE FOUNDATION & FOOTING SHOP DRAWINGS AS DEFINED IN THE PROJECT SPECIFICATIONS INCLUDING BUT LIMITED TO BUILDING REACTIONS AND ANCHOR POINTS AT THE FOUNDATION WALL.



LOCATION MAP

N.T.S.

PROJECT DATA

APPLICANT/OWNER..... TOWN OF BROOKHAVEN
1 INDEPENDENCE HILL
FARMINGVILLE, NY 11738

TAX MAP NUMBER..... 0200-874-04-033.001

SITE AREA.....

ZONING.....

USE..... 852; LANDFILLS & DUMPS

ARCHITECT / ENGINEER:



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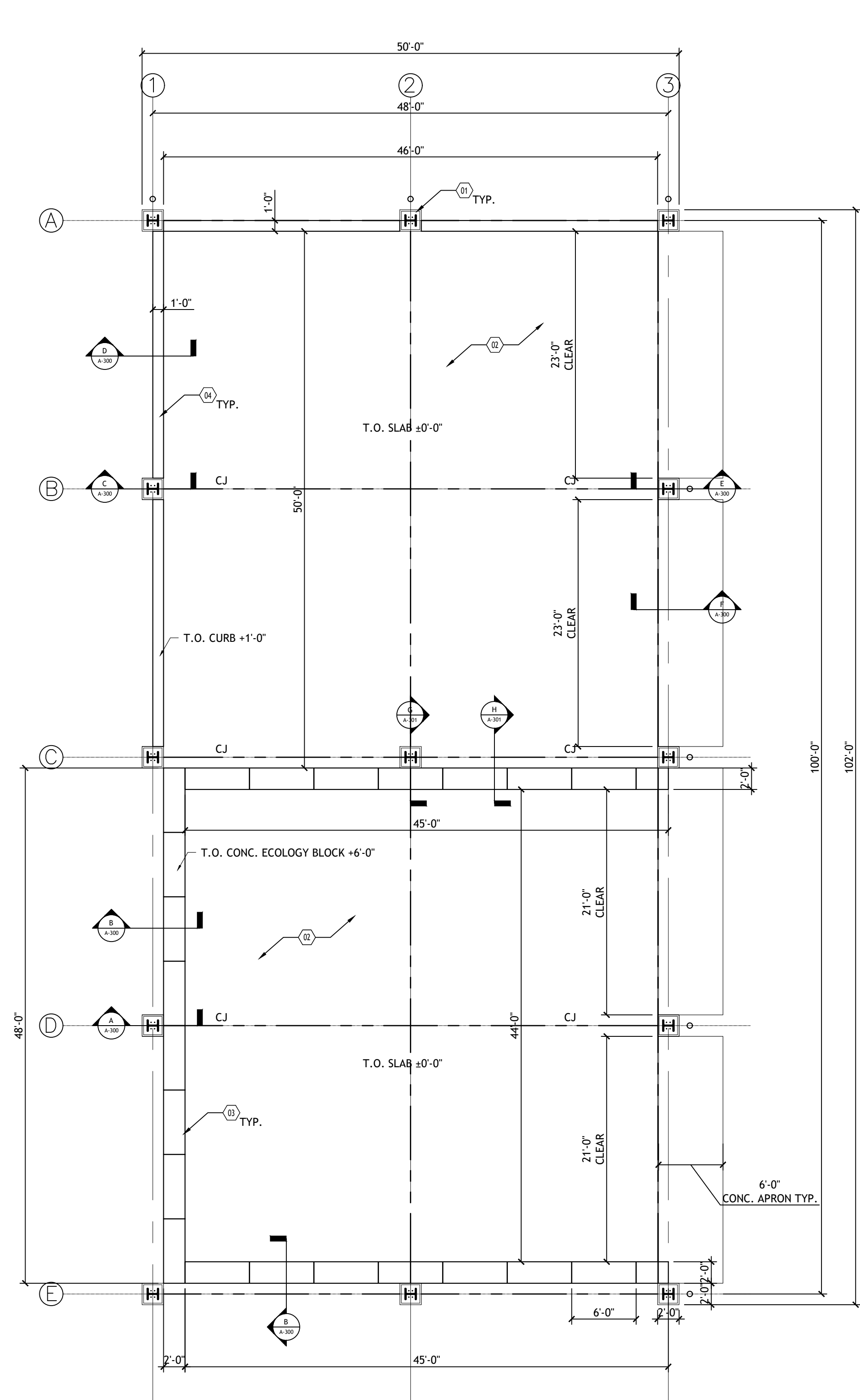
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DETAILS**

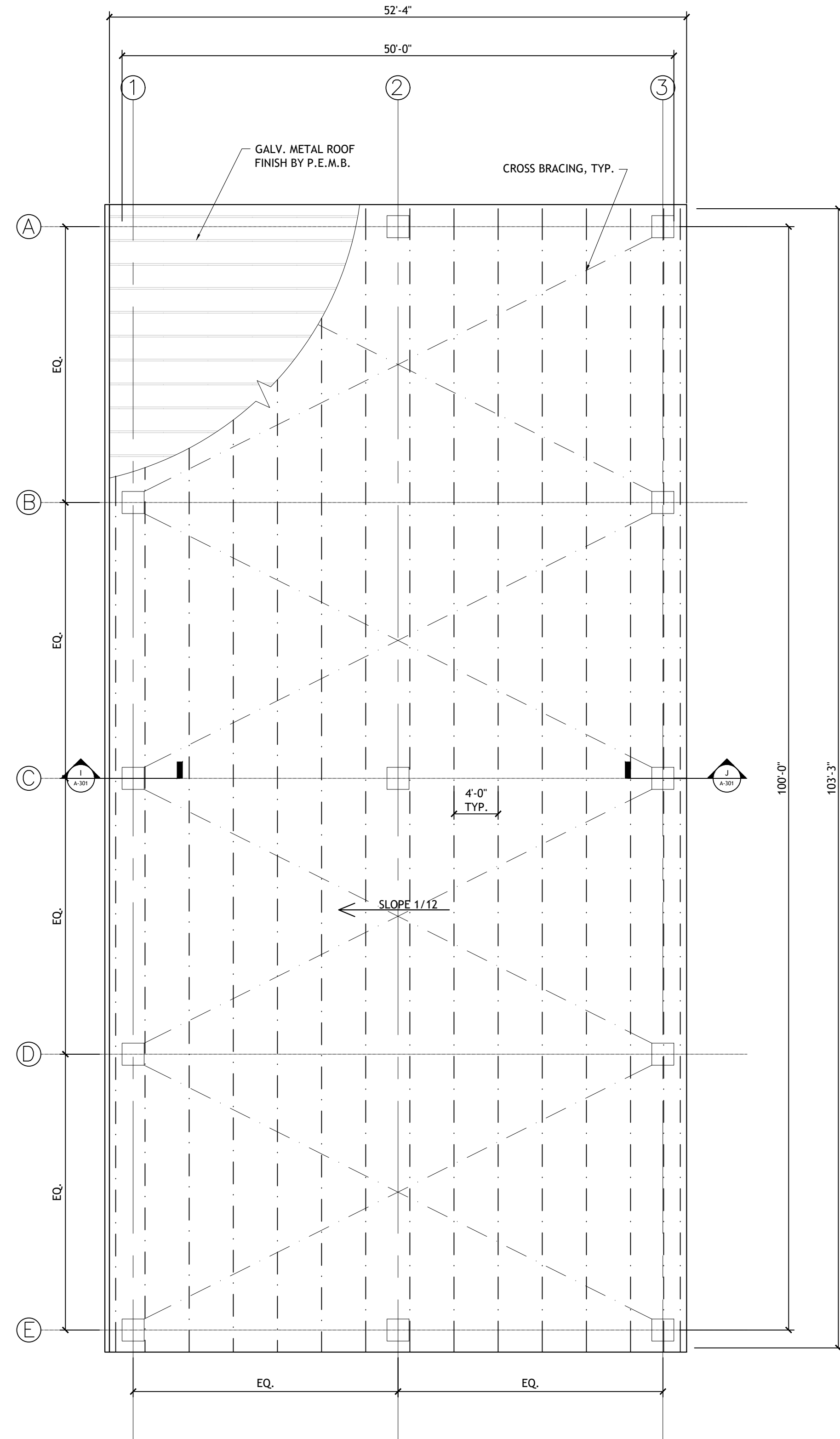
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1 FLOOR PLAN
SCALE: 1/8" = 1'-0"



2 ROOF PLAN
SCALE: 1/8" = 1'-0"

KEY NOTES:

- 01 STEEL COLUMN
- 02 0'-8" THICK CONCRETE SLAB
- 03 2'X2'X6' CONCRETE ECOLOGY BLOCK WALL
SEE B/A-300
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DRAWINGS FOR ADDITIONAL INFORMATION

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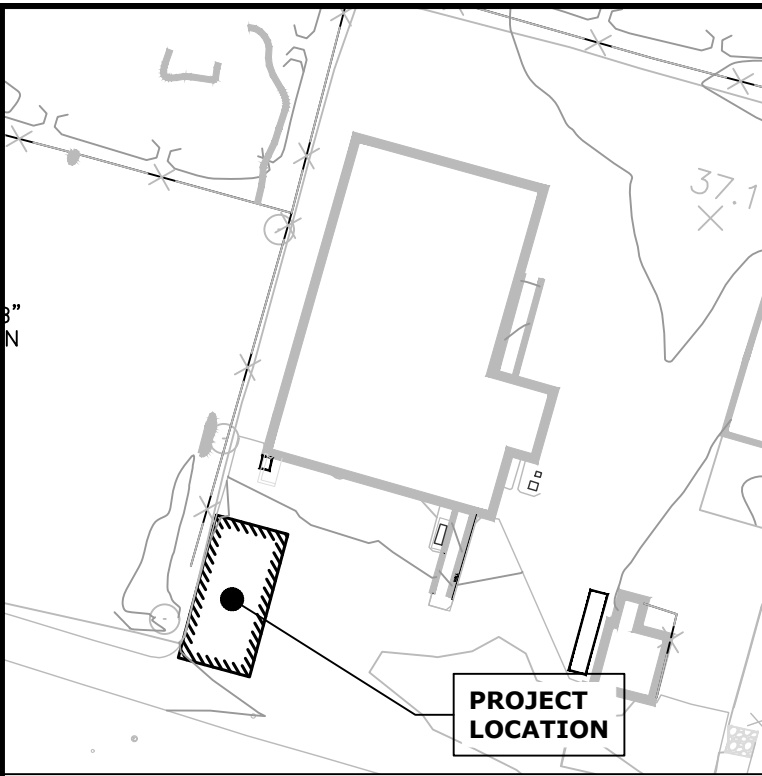
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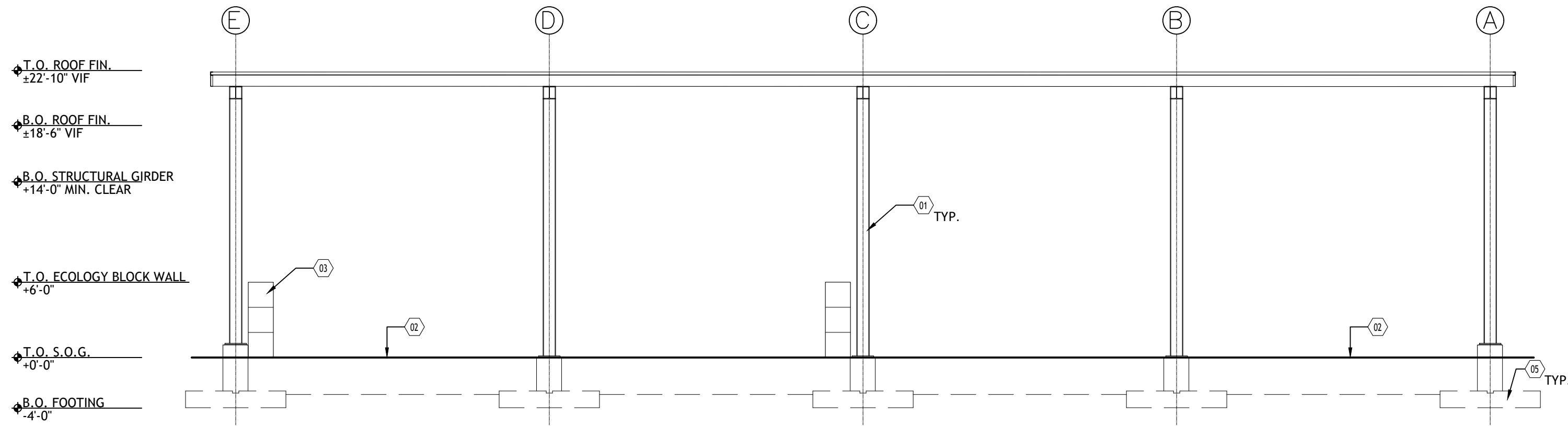
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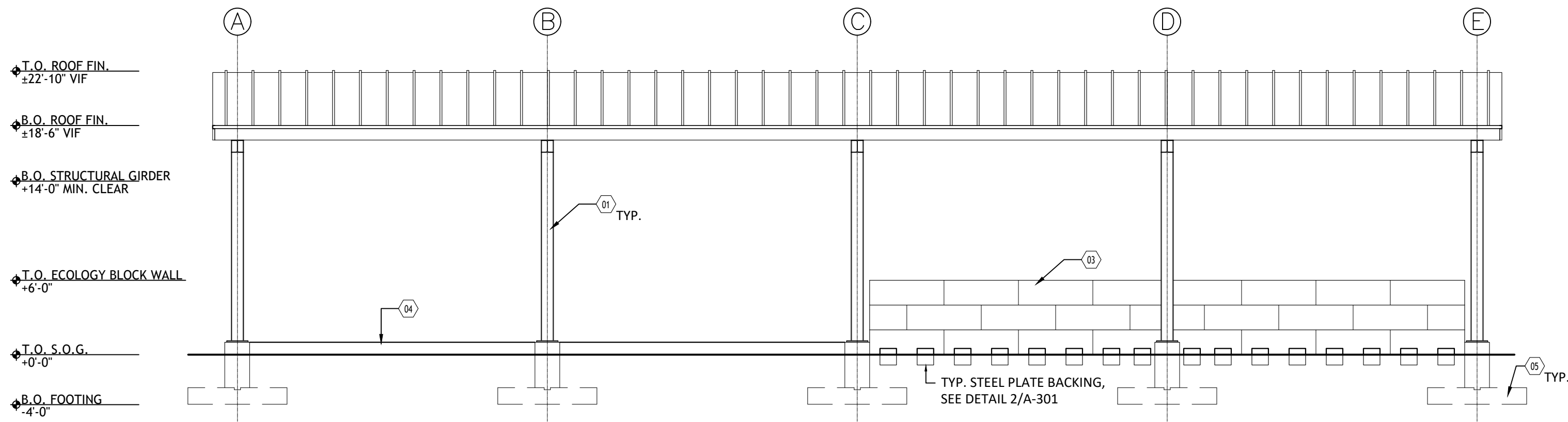
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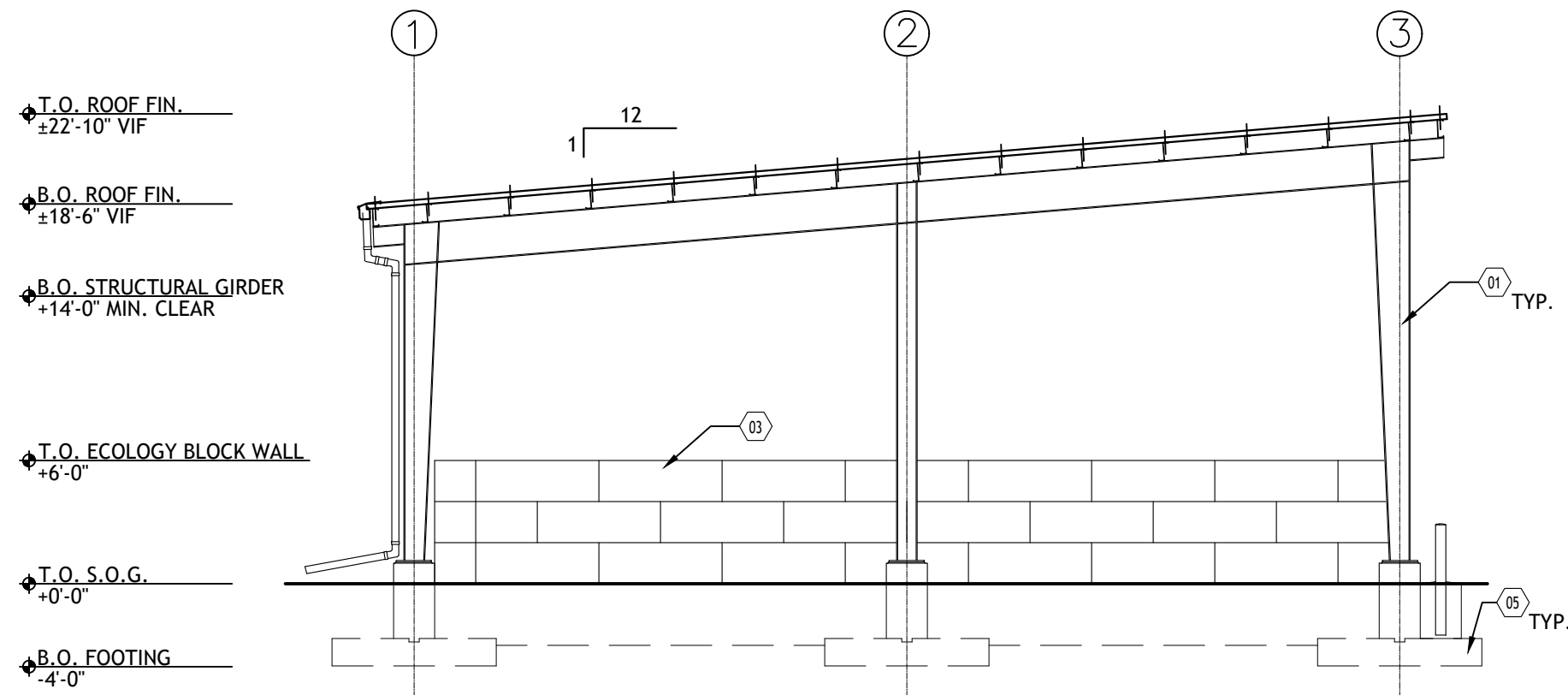
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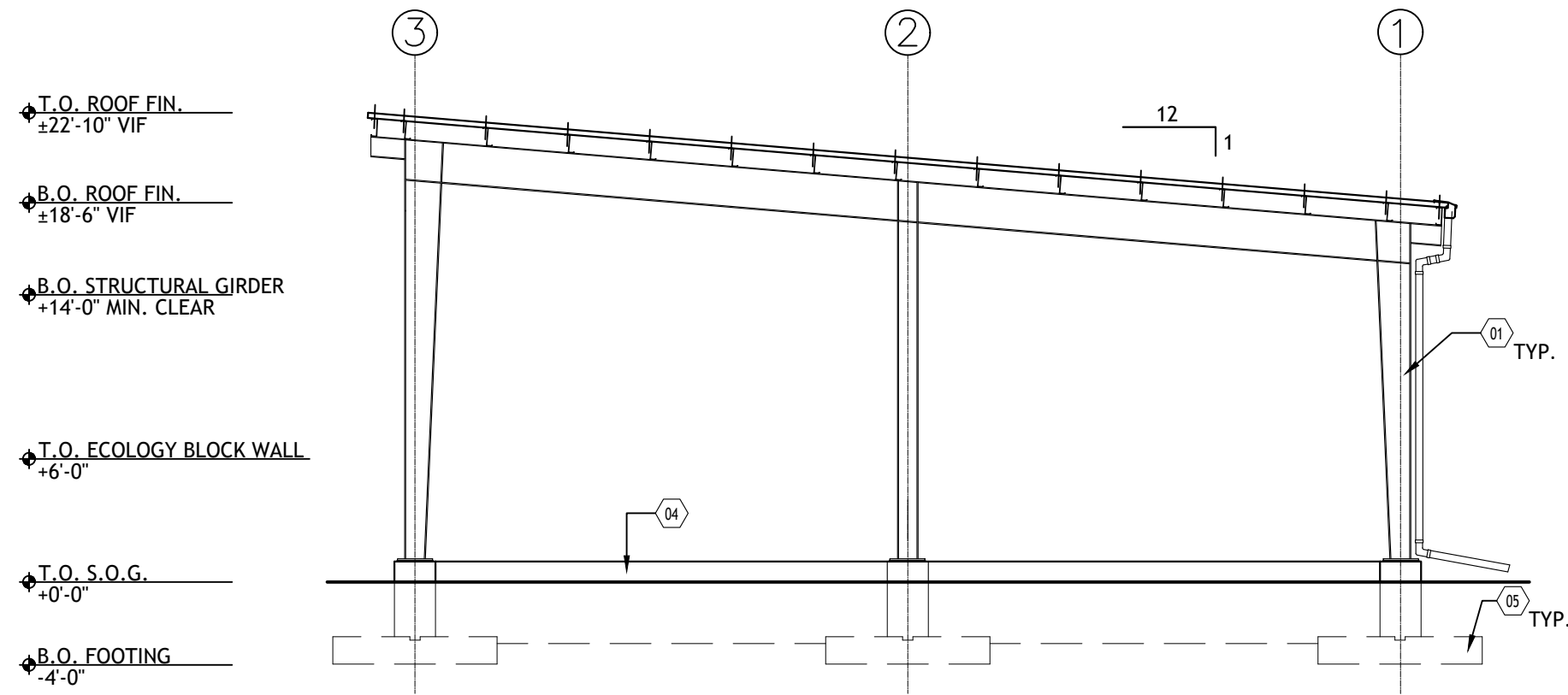
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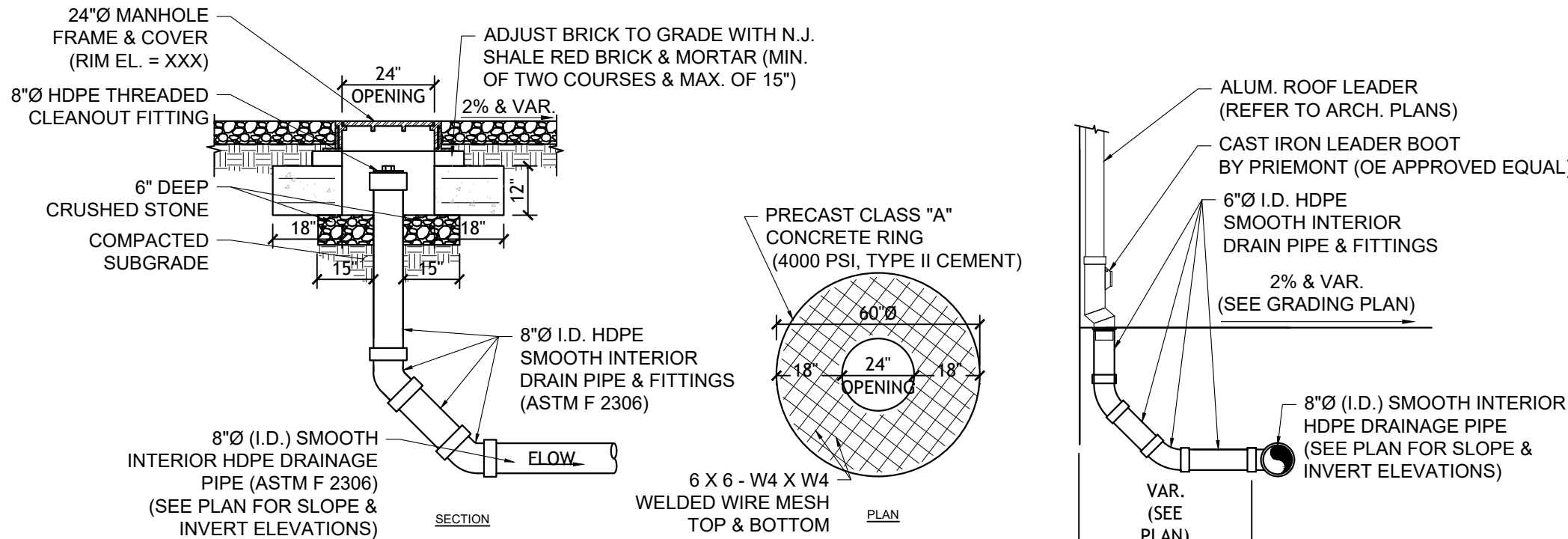
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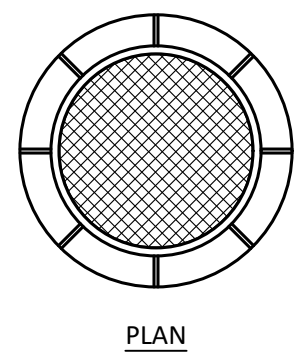
C SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



D NORTH ELEVATION
SCALE: 1/8" = 1'-0"



2 TYPICAL ROOF DRAIN & CLEANOUT DETAILS
SCALE: N.T.S.

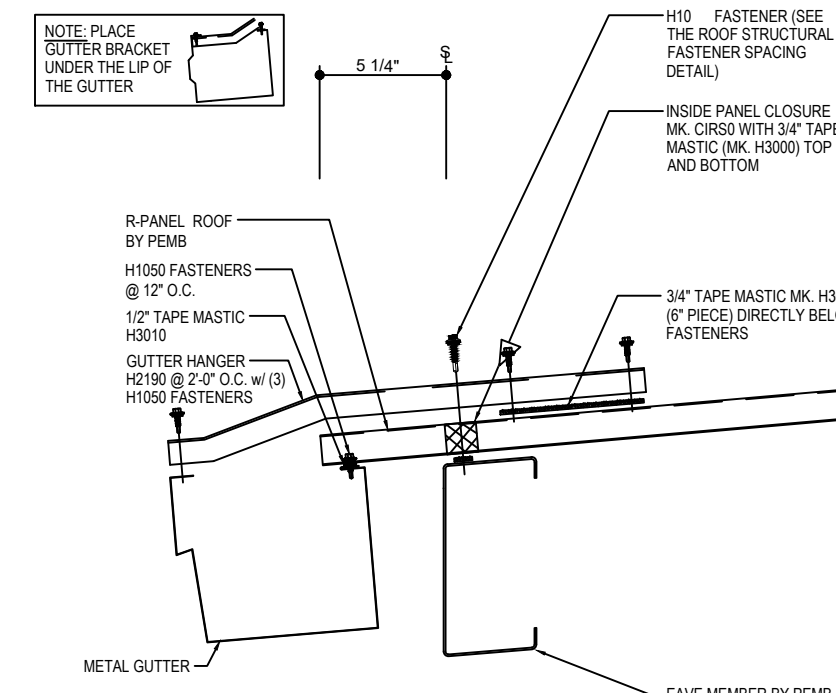
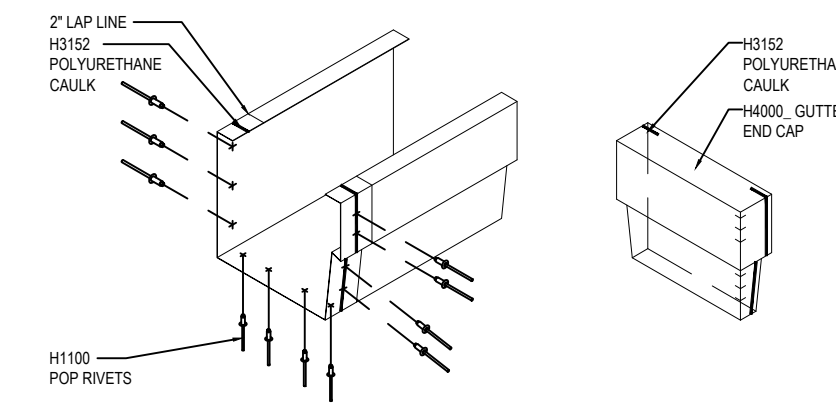


- NOTES:
- MATERIALS: CONFORMS TO ASTM A48 CLASS 30B OR 35B SPECIFICATIONS
 - LOAD RATING: FOR AASHTO & HS 20-44 HIGHWAY LOADING
 - FRAME AND COVER AS MANUFACTURED BY LONG ISLAND PRECAST OR APPROVED EQUAL.

24"Ø HEAVY DUTY FRAME & COVER
N.T.S.

3 TYPICAL DRAINAGE DETAILS
SCALE: N.T.S.

GUTTER LAP & END CAP
APPLY BEAD OF POLYURETHANE CAULK 1" FROM END OF TRIM AND LAP SECTIONS 2" AND FASTEN AS SHOWN. TO TERMINATE THE GUTTER APPLY POLYURETHANE CAULK TO THREE SIDES OF END CAP AND TOP RETURN AREA AS SHOWN AND INSERT INTO THE GUTTER LEAVING 1/2" EXPOSED. ATTACH WITH RIVETS SAME AS END LAP.



- NOTES:
- ALL METAL GUTTERS PROVIDED BY & INSTALLED BY PEMB
 - SEE ROOF PLAN & ELEVATIONS FOR GUTTER & LEADER LOCATIONS
 - COORDINATE GUTTER W/ SIZE & LOCATIONS OF METAL LEADERS

1 TYP. EAVE GUTTER
SCALE: N.T.S.

KEY NOTES:

- STEEL COLUMN
- 0'-8" THICK CONCRETE SLAB
- 2'X2'X6' CONCRETE ECOLOGY BLOCK WALL
SEE B/A-300
- 1'-0" HIGH CONCRETE CURB
SEE D/A-300
- CONCRETE FOOTING BELOW SEE STRUCTURAL
DRAWINGS FOR ADDITIONAL INFORMATION

LEGEND

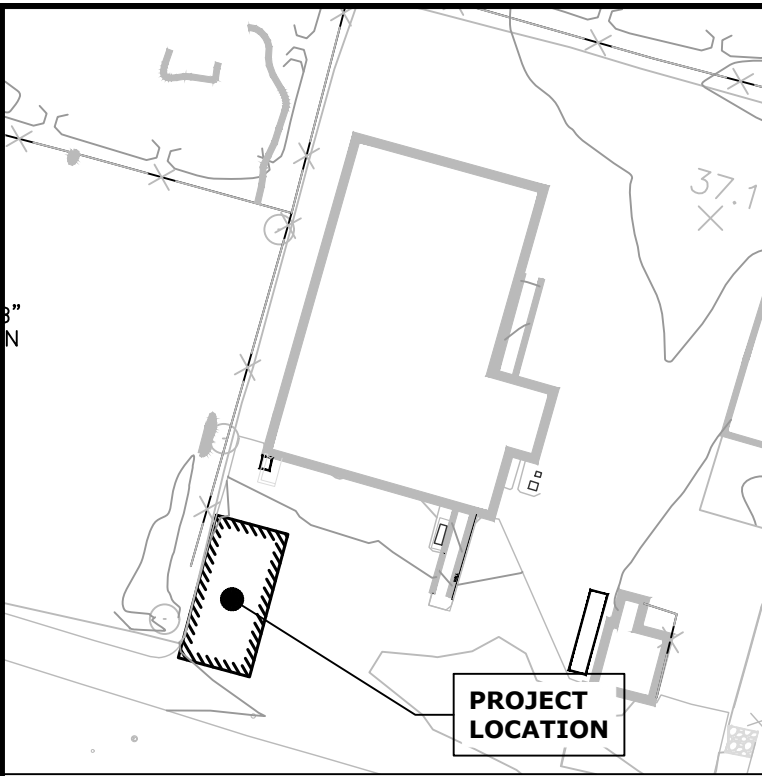
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- ROOF PURLIN BY PEMB MANUFACTURER
- PROPOSED BOLLARD

DRAINAGE NOTES:

- STEEL REINFORCED WELDED WIRE FABRIC 6"x12"#6x#8
- ALL CONCRETE TO BE 4000PSI @ 28 DAYS
- UTILITY LOCATIONS SHOWN ON THESE DRAWINGS ARE BASED ON EXISTING UTILITY RECORDS AND ARE APPROXIMATE ONLY. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY THESE LOCATIONS AS WELL AS OTHER UTILITIES THAT MAY NOT BE SHOWN ON THE PLANS.
- ANY TRENCH, PIT, OR OTHER EXCAVATION THAT IS LEFT OPEN AND UNATTENDED SHALL BE PROTECTED AS DIRECTED BY THE ENGINEER WITH FENCES, BARRICADES OTHER APPROVED METHODS. NO DIRECT PAYMENT WILL BE MADE
- INVERT ELEVATIONS MAY BE ADJUSTED IN THE FIELD TO MEET FIELD CONDITIONS OR AVOID CONFLICT WITH UTILITIES AS ORDERED BY THE ENGINEER.
- ALLOW FOUR (4) INCHES FOR FINAL ADJUSTMENT OF CASTING. ADEQUATE BEARING WILL BE PROVIDED USING CONCRETE BLOCK, BRICK, AND/OR 1:2 MORTAR MIX.
- USE TWO (2) INCH MINIMUM COVER ON ALL REINFORCING BARS UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL PROVIDE ADEQUATE SHEETING AND SHORING DURING TRENCHING TO INSURE THE SAFETY OF WORKMEN AND THE GENERAL PUBLIC EXPOSED TO THE HAZARDS OF FALLING AND SLIDING MATERIAL IN CONFORMANCE WITH THE REQUIREMENTS OF TITLE 29 CODE OF FEDERAL REGULATIONS, PART 1926, SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION (OSHA). NO DIRECT PAYMENT WILL BE MADE FOR THIS OPERATION.
- IF CHIMNEY IS REQUIRED, MIN. WALL THICKNESS 3".

REINFORCEMENT NOTES:

- STEEL REINFORCED ON LEACHING SECTIONS WELDED WIRE FABRIC 6"x12"#6x#8.
- STEEL REINFORCING ON CONE SECTION 12"#2 VERT., 1#3 TOP, 1#4 BOTTOM.



LOCATION MAP
N.T.S.

PROJECT DATA

APPLICANT/OWNER..... TOWN OF BROOKHAVEN
1 INDEPENDENCE HILL
FARMINGVILLE, NY 11738

TAX MAP NUMBER..... 0200-874-04-033.001

SITE AREA.....

ZONING.....

USE..... 852: LANDFILLS & DUMPS

ARCHITECT / ENGINEER:

LKMA

L.K. McLEAN ASSOCIATES ENGINEERING & SURVEYING, D.P.C.
437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719

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PROJECT:
TOWN OF BROOKHAVEN
SUFFOLK COUNTY, NY

BID 26012

BROOKHAVEN SOLID WASTE MANAGEMENT FACILITY - PRE-ENGINEERED ISOLATION LEAN-TO

350 HORSEBLOCK ROAD
BROOKHAVEN, NY 11719

ISSUES/REVISIONS		
Description	No.	Date
100% SUBMISSION	-	10.03.25
ISSUED FOR BID	-	06.09.26



STATUS:
ISSUED FOR BID

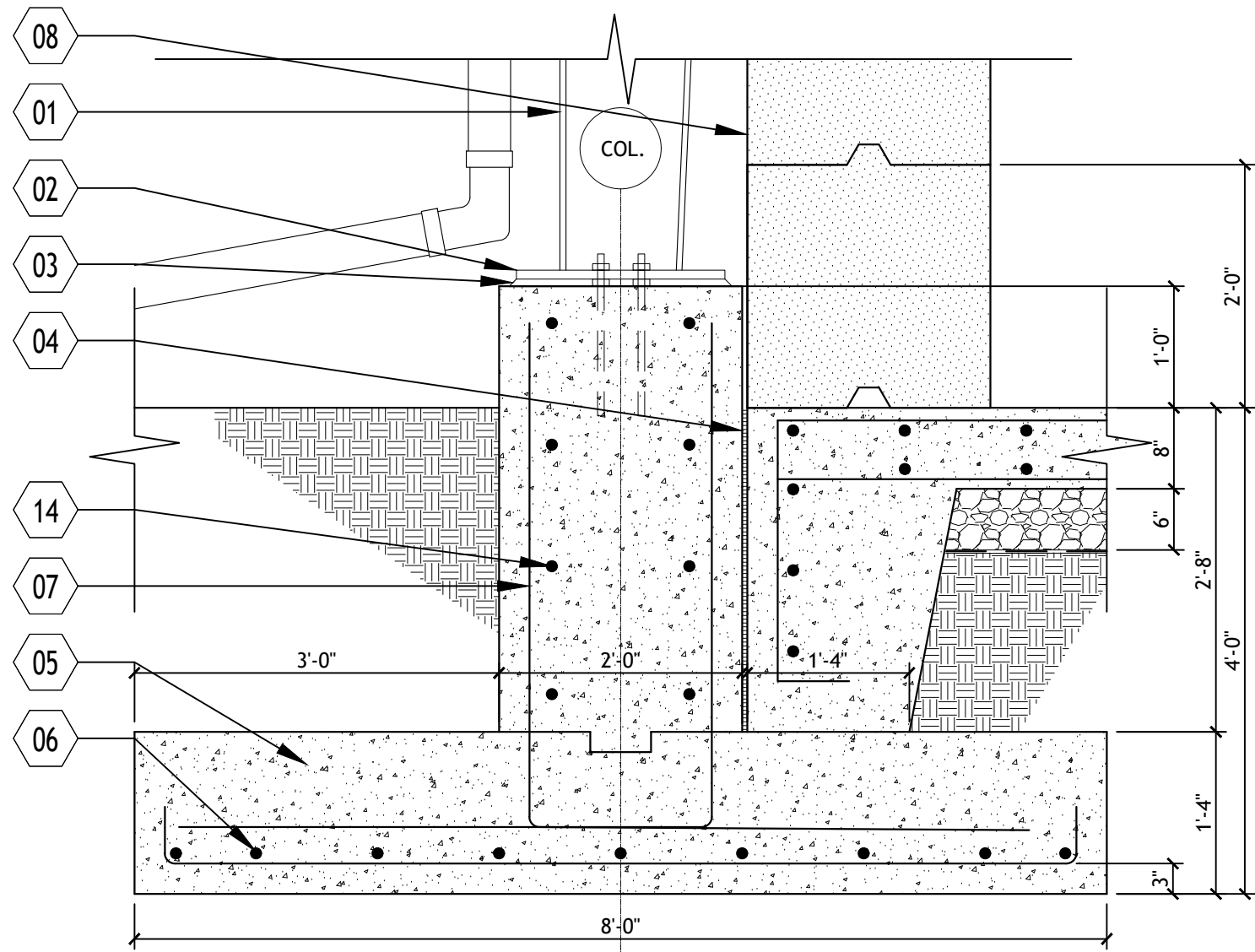
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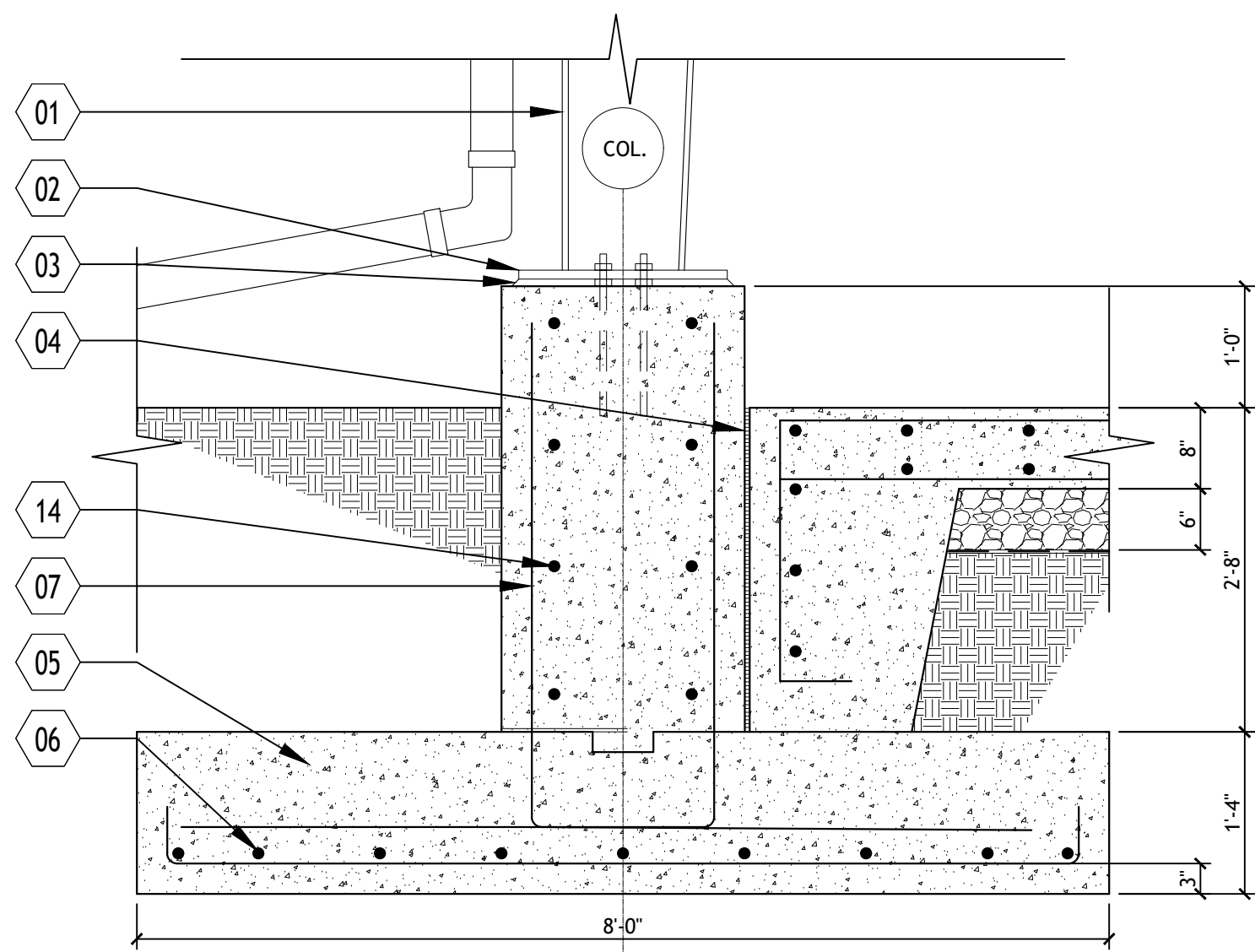
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	Approved By:	MCJ
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	Date:	JUN. 2026
File No:		25134.000
Sheet No.		A-200

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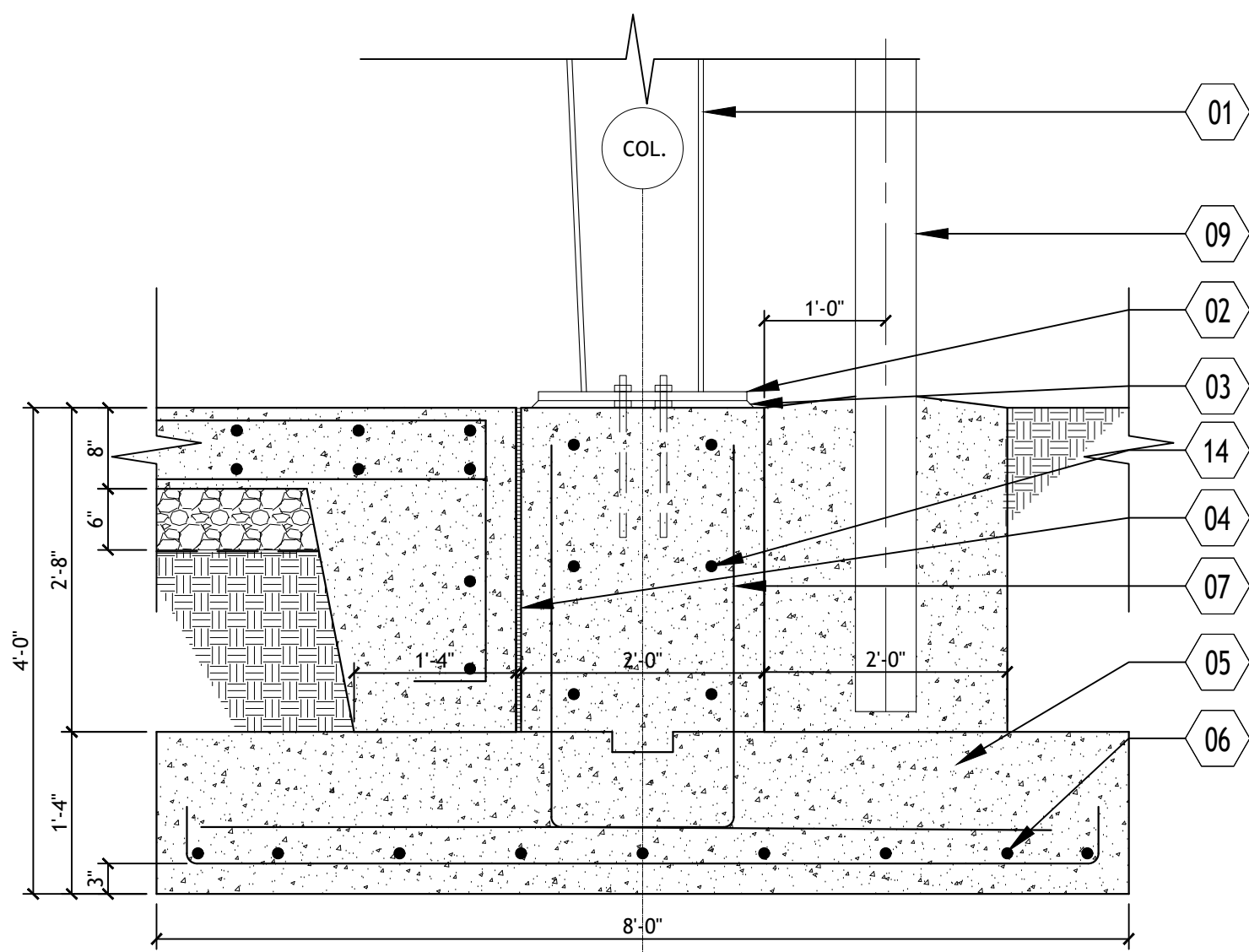
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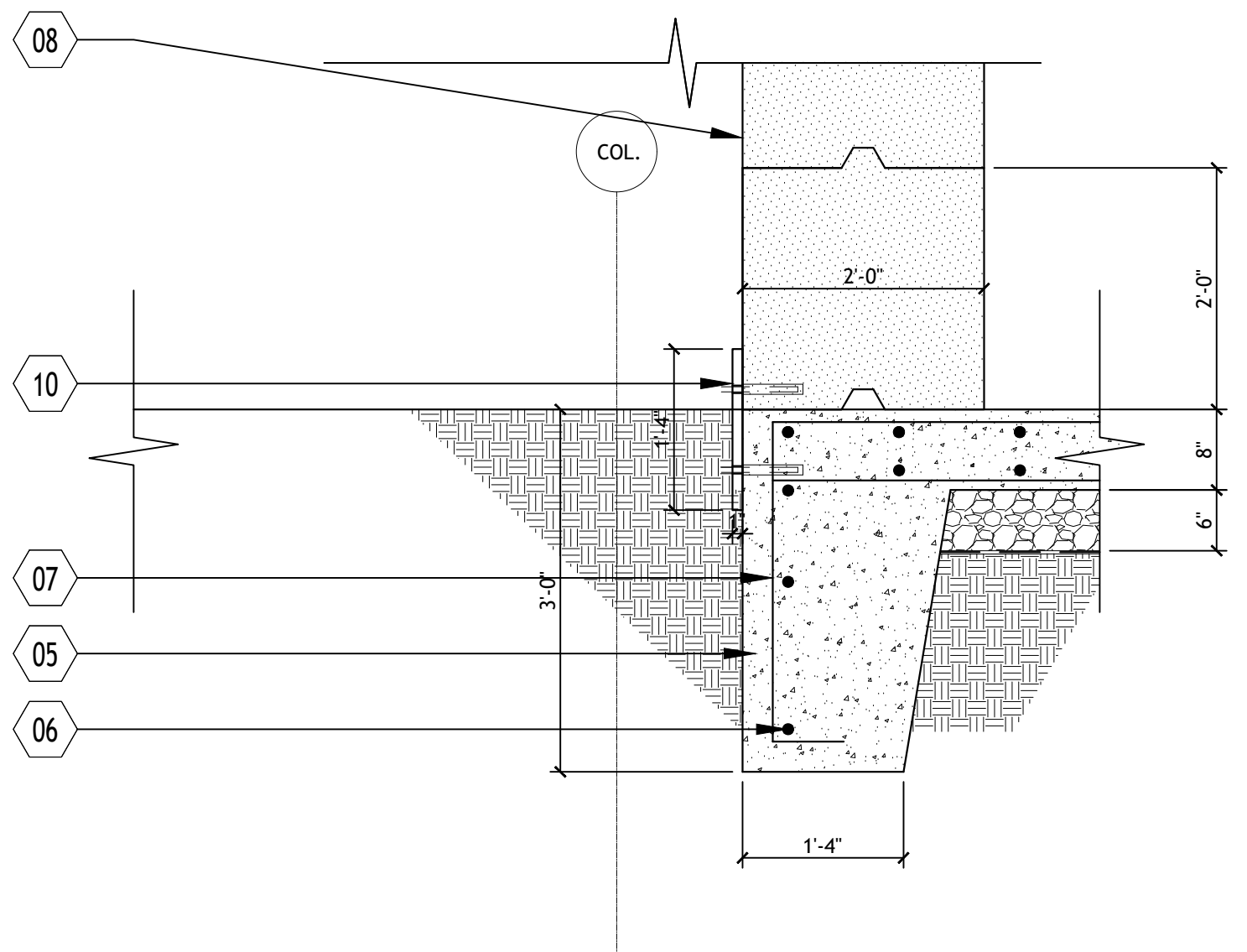
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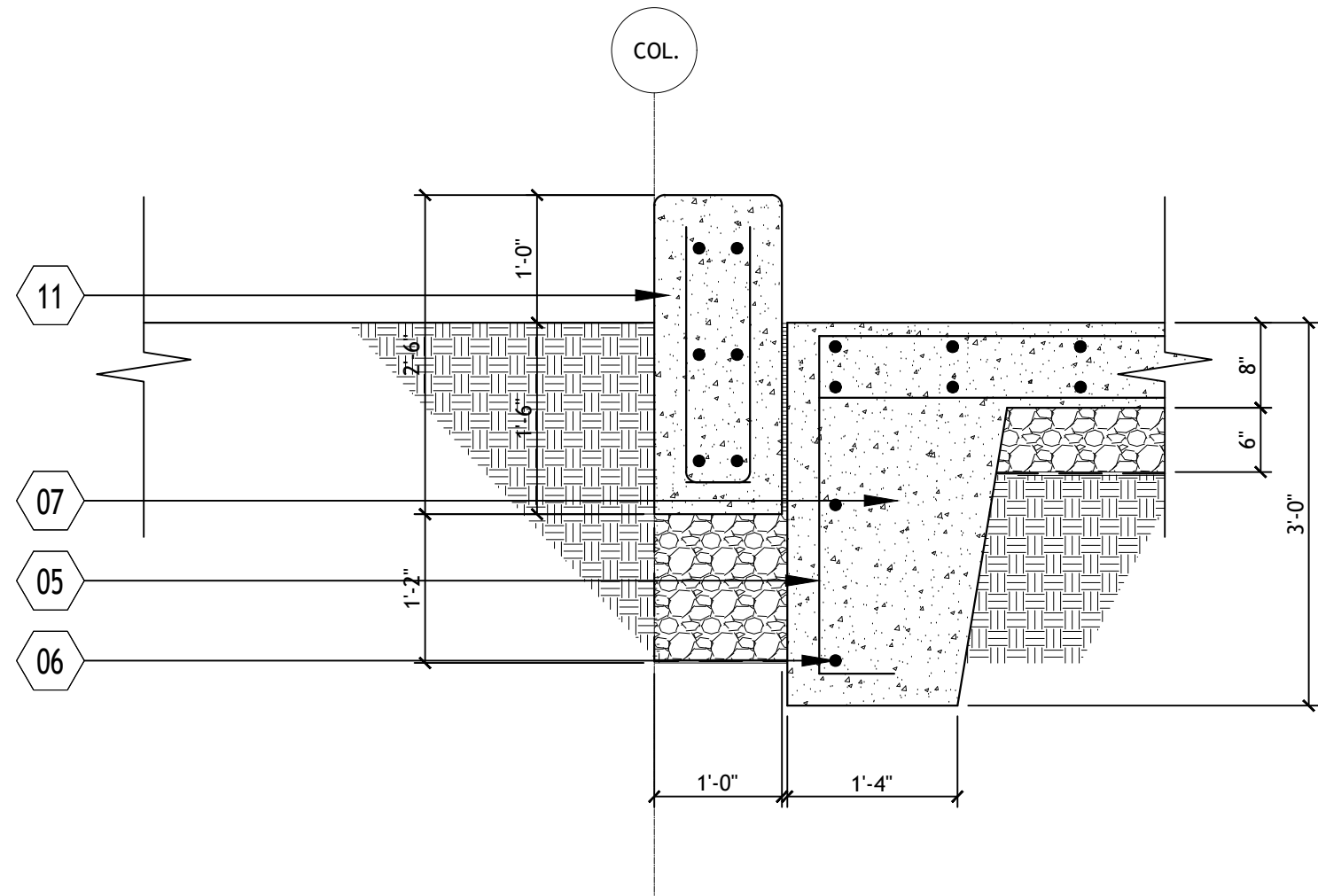
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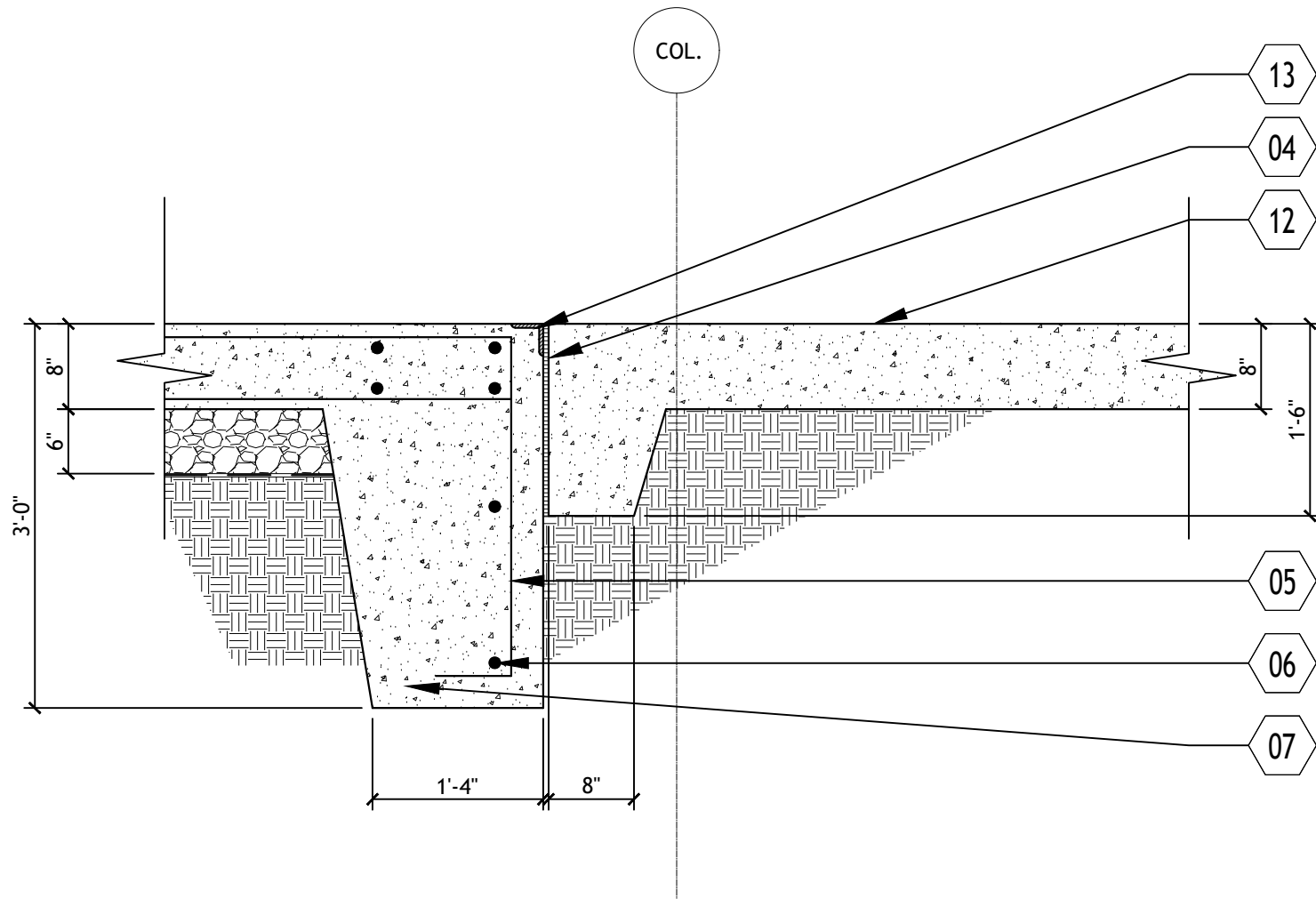
E SECTION
SCALE: 1" = 1'-0"



B SECTION
SCALE: 1" = 1'-0"



D SECTION
SCALE: 1" = 1'-0"



F SECTION
SCALE: 1" = 1'-0"

KEY NOTES:

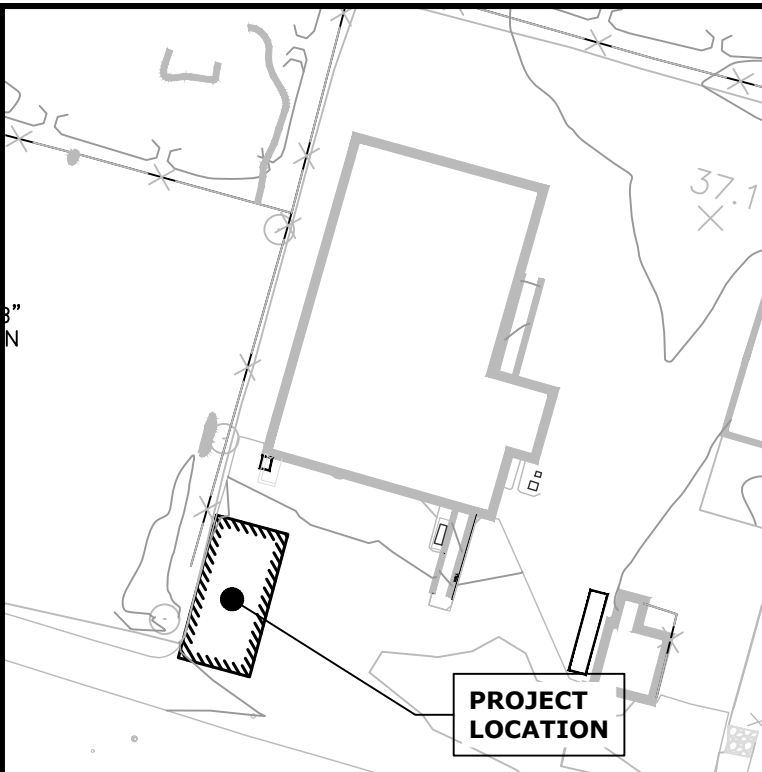
- 01 P.E.M.B. GALV. STEEL COLUMN
- 02 HOT DIPPED GALV. STEEL COLUMN BASE PLATE & ANCHOR ROD - SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION
- 03 LAYER OF NON SHRINK GROUT
- 04 1/2" COMPRESSIBLE FILLER AND SELF LEVELING ELASTOMERIC SEALANT BETWEEN SLABS
- 05 NEW CONCRETE FOOTING/HAUNCH, SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION
- 06 CONT. #5 BARS TOP AND BOTTOM AND AT 12" O.C. HORIZ.
- 07 CONT. #5 DOWEL AT 18" O.C. VERT.
- 08 2'X2'X6' CONCRETE ECOLOGY BLOCK
- 09 PROPOSED BOLLARD, SEE DETAIL 2/A-001
- 10 HOT DIPPED GALV. STEEL PLATE BACKING, BOLTED INTO REAR OF ECOLOGY BLOCK TO PREVENT OVERTURNING, SEE DETAIL 2/A-301
- 11 6,000 PSI 12"X12" WIDE CONC. CURB. EMBEDDED 18" MIN.
- 12 5,000 PSI CONC APRON
- 13 3X3X3/8" CONT. HOT DIPPED GALV EDGE, STUDS = 12" O.C.
- 14 CONT. #4 DOWEL @ 12" O.C.
- 15 8"X8" BOX GUTTER; 1/A-100
- 16 TYP. ROOF DOWNSPOUT; 2/A-200
- 17 5X5X5/8" CONT. HOT DIPPED GALV ANGLE
- 18 1/2" X 4" EMBED, HILTI KWIK BOLT T22 WEDGE ANCHOR S5304, 24" O.C. OR APPROVED EQUAL
- 19 3/2" X 8" EMBED, HILTI KWIK BOLT T22 WEDGE ANCHOR S5304, 24" O.C. OR APPROVED EQUAL
- 20 16"X16"X3/4" THICK HOT DIPPED GALVANIZED STEEL PLATE

LEGEND

- NEW CAST-IN-PLACE CONCRETE FOUNDATION
- DENOTES 6" MIN. LAYER OF COMPACTED RCI STONE
- DENOTES AREAS OF COMPACTED EARTH/SUBGRADE

CONCRETE SLAB NOTES:

- REFER TO NOTES ON SHEET A-001 FOR CONC. INFORMATION
- TOP OF SLAB ON GRADE ELEVATION IS EQUAL TO 0'-00" FOR ALL DRAWING PURPOSES
- NOT USED



LOCATION MAP

N.T.S.

PROJECT DATA

APPLICANT/OWNER.... TOWN OF BROOKHAVEN
1 INDEPENDENCE HILL
FARMINGVILLE, NY 11738

TAX MAP NUMBER..... 0200-874-04-033.001

SITE AREA.....

ZONING.....

USE..... 852; LANDFILLS & DUMPS

ARCHITECT / ENGINEER:



L.K. McLEAN ASSOCIATES ENGINEERING & SURVEYING, D.P.C.
437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719

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PROJECT:

TOWN OF BROOKHAVEN
SUFFOLK COUNTY, NY

BID 26012

**BROOKHAVEN SOLID
WASTE MANAGEMENT
FACILITY -
PRE-ENGINEERED
ISOLATION LEAN-TO**

350 HORSEBLOCK ROAD
BROOKHAVEN, NY 11719

ISSUES/REVISIONS		
Description	No.	Date
100% SUBMISSION	-	10.03.25
ISSUED FOR BID	-	06.09.26



STATUS:

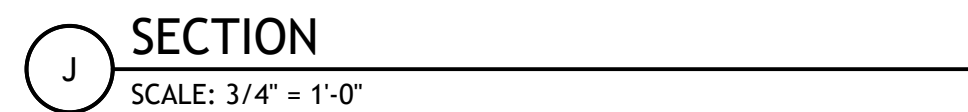
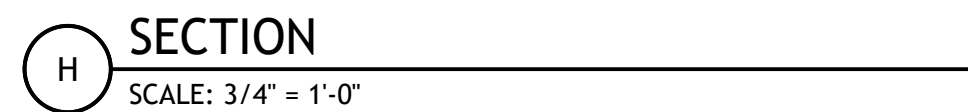
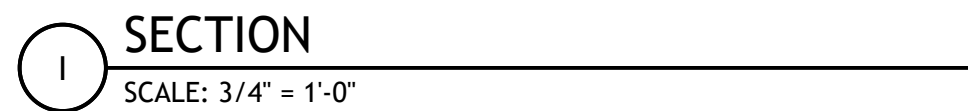
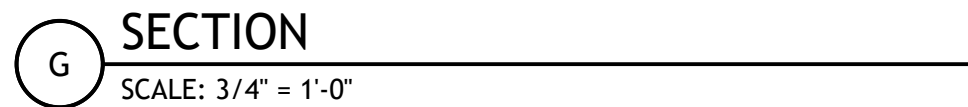
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	Scale:	AS NOTED
	Date:	JUN. 2026
	File No:	25134.000
	Sheet No.	

A-300



- 01 P.E.M.B. GALV. STEEL COLUMN
- 02 HOT DIPPED GALV. STEEL COLUMN BASE PLATE & ANCHOR ROD - SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION
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- 11 6,000 PSI 12"X12" WIDE CONC. CURB. EMBEDDED 18" MIN.
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- 19 $\frac{3}{4}$ " X 8" EMBED, HILTI KWIK BOLT T22 WEDGE ANCHOR S5304, 24" O.C. OR APPROVED EQUAL
- 20 16"X16"X $\frac{3}{4}$ " THICK HOT DIPPED GALVANIZED STEEL PLATE

 NEW CAST-IN-PLACE
CONCRETE FOUNDATION

 DENOTES 6" MIN. LAYER OF
COMPACTED RCI STONE

 DENOTES AREAS OF
COMPACTED EARTH/SUBGRADE

1. REFER TO NOTES ON SHEET A-001 FOR CONC. INFORMATION
2. TOP OF SLAB ON GRADE ELEVATION IS EQUAL TO 0'-00" FOR ALL DRAWING PURPOSES
3. NOT USED



APPLICANT/OWNER.... TOWN OF BROOKHAVEN
1 INDEPENDENCE HILL
FARMINGVILLE, NY 11738

TAX MAP NUMBER..... 0200-874-04-033.001

SITE AREA.....

ZONING.....

USE.....

ARCHITECT / ENGINEER:

■ ■ ■ ■ ■



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PROJECT:

TOWN OF BROOKHAVEN
SUFFOLK COUNTY, NY

BID 26012

**BROOKHAVEN SOLID
WASTE MANAGEMENT
FACILITY -
PRE-ENGINEERED
ISOLATION LEAN-TO**

350 HORSEBLOCK ROAD
BROOKHAVEN, NY 11719

STATUS:

ISSUED FOR BID

DRAWING TITLE:

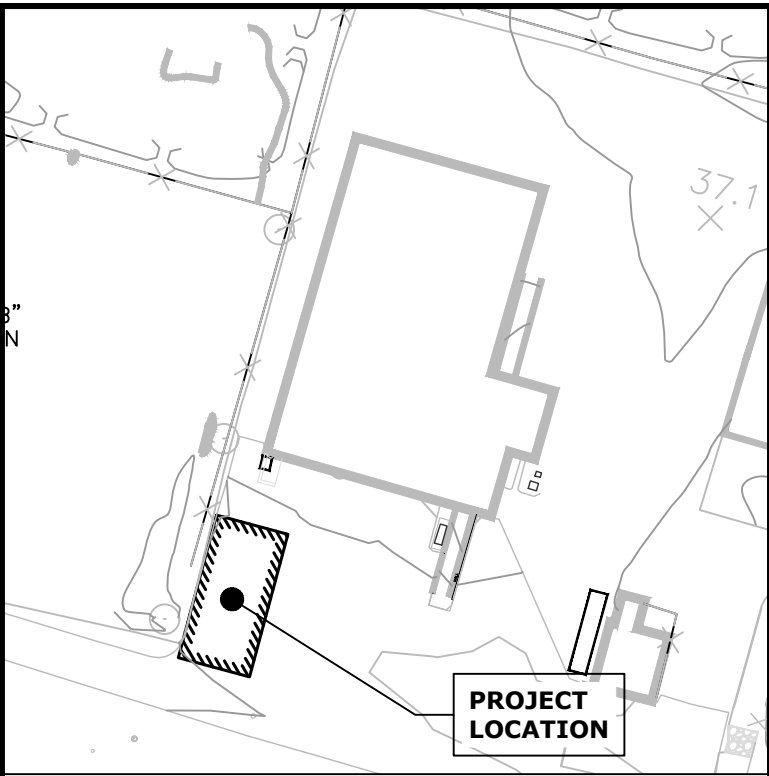
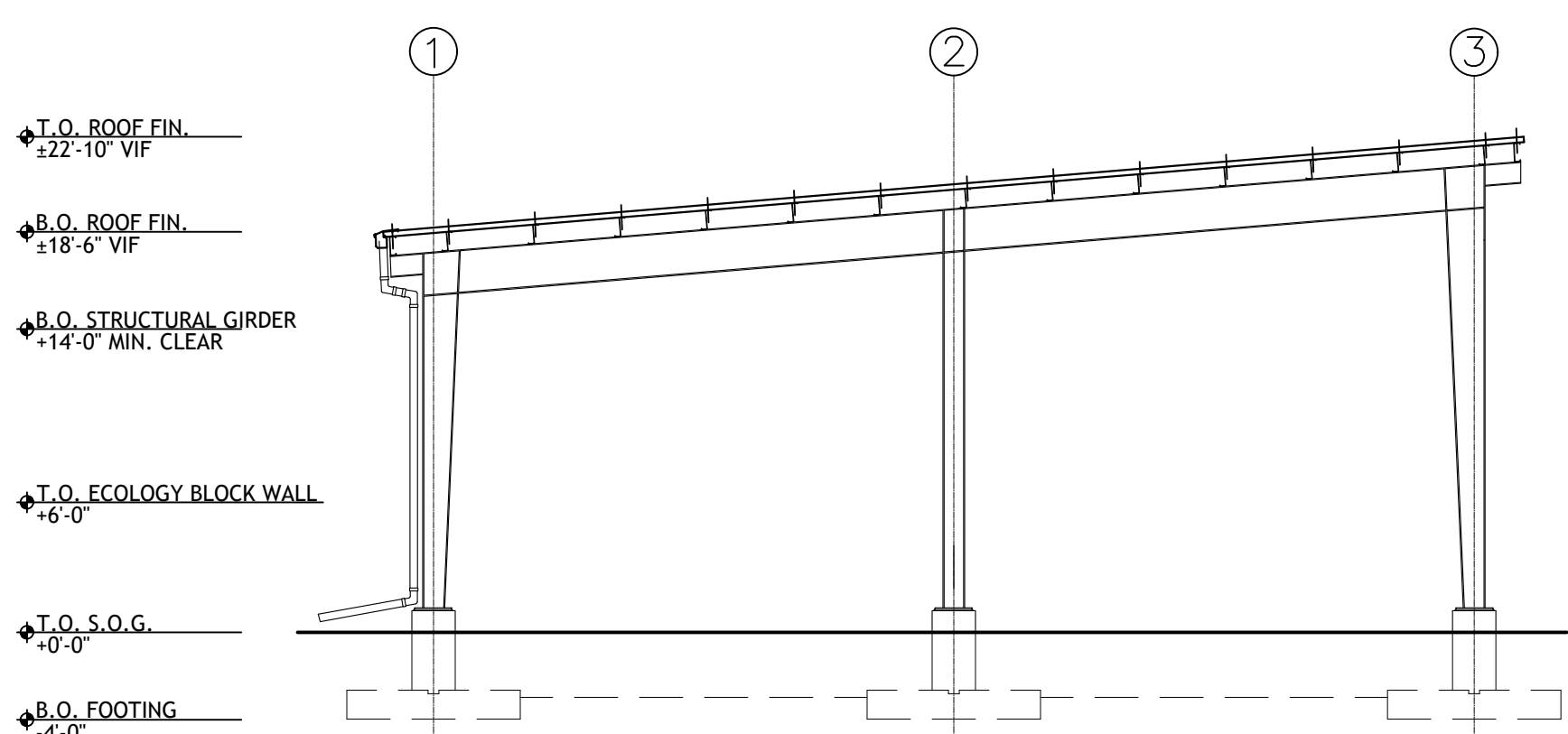
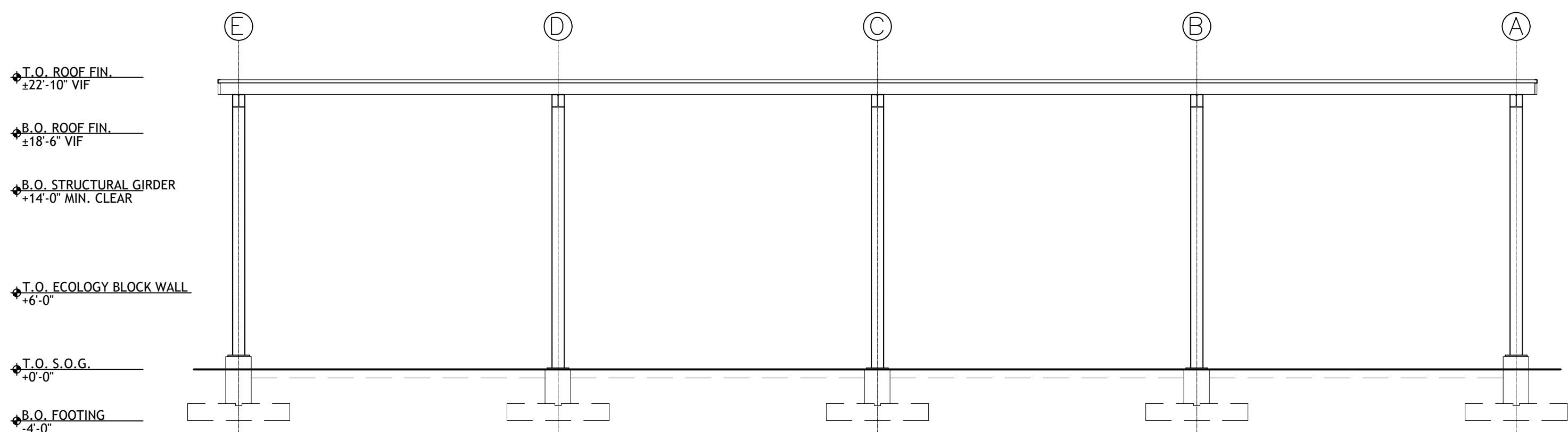
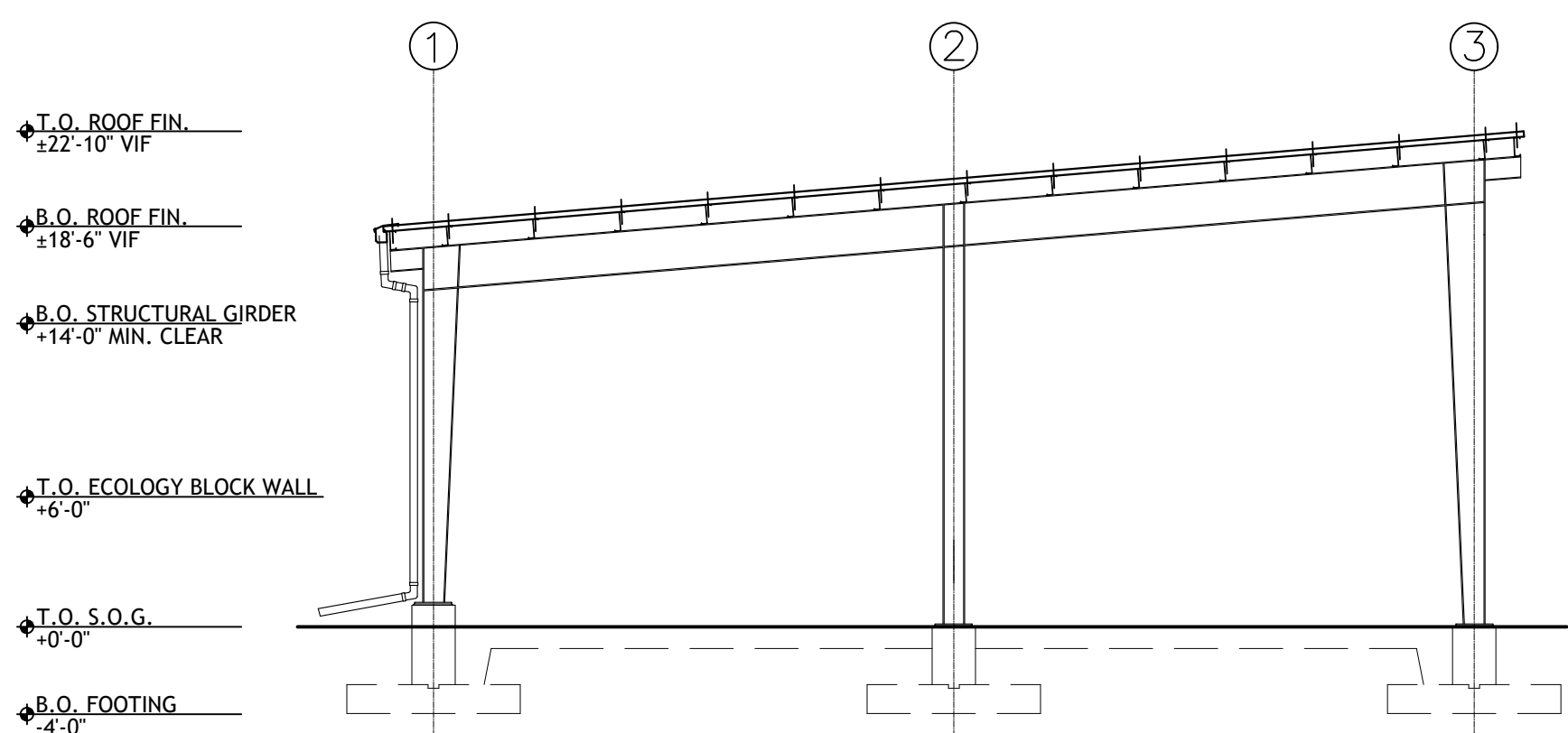
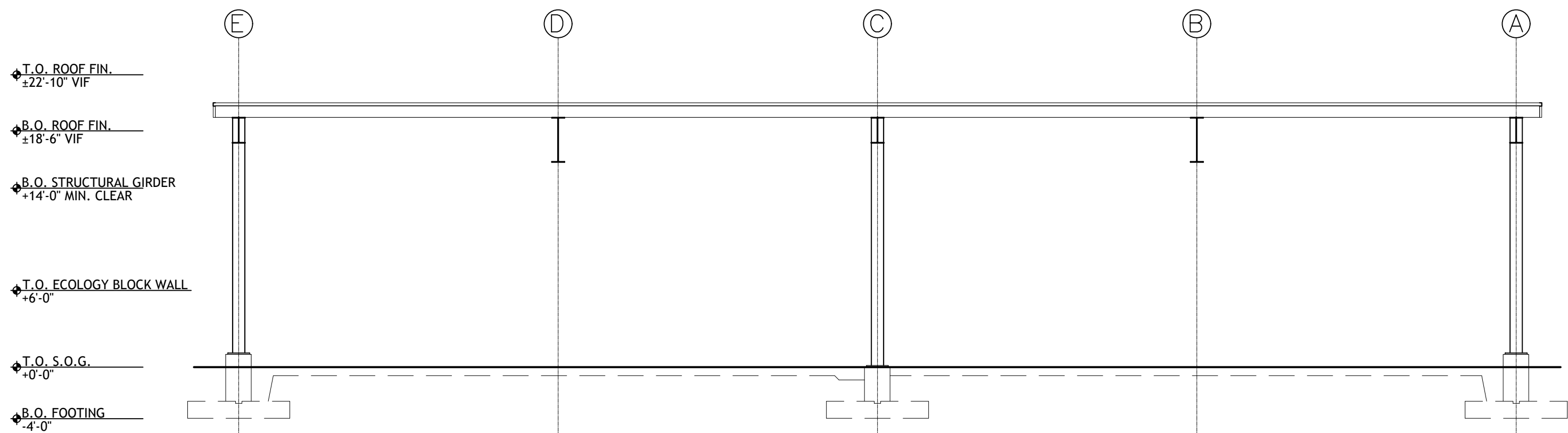
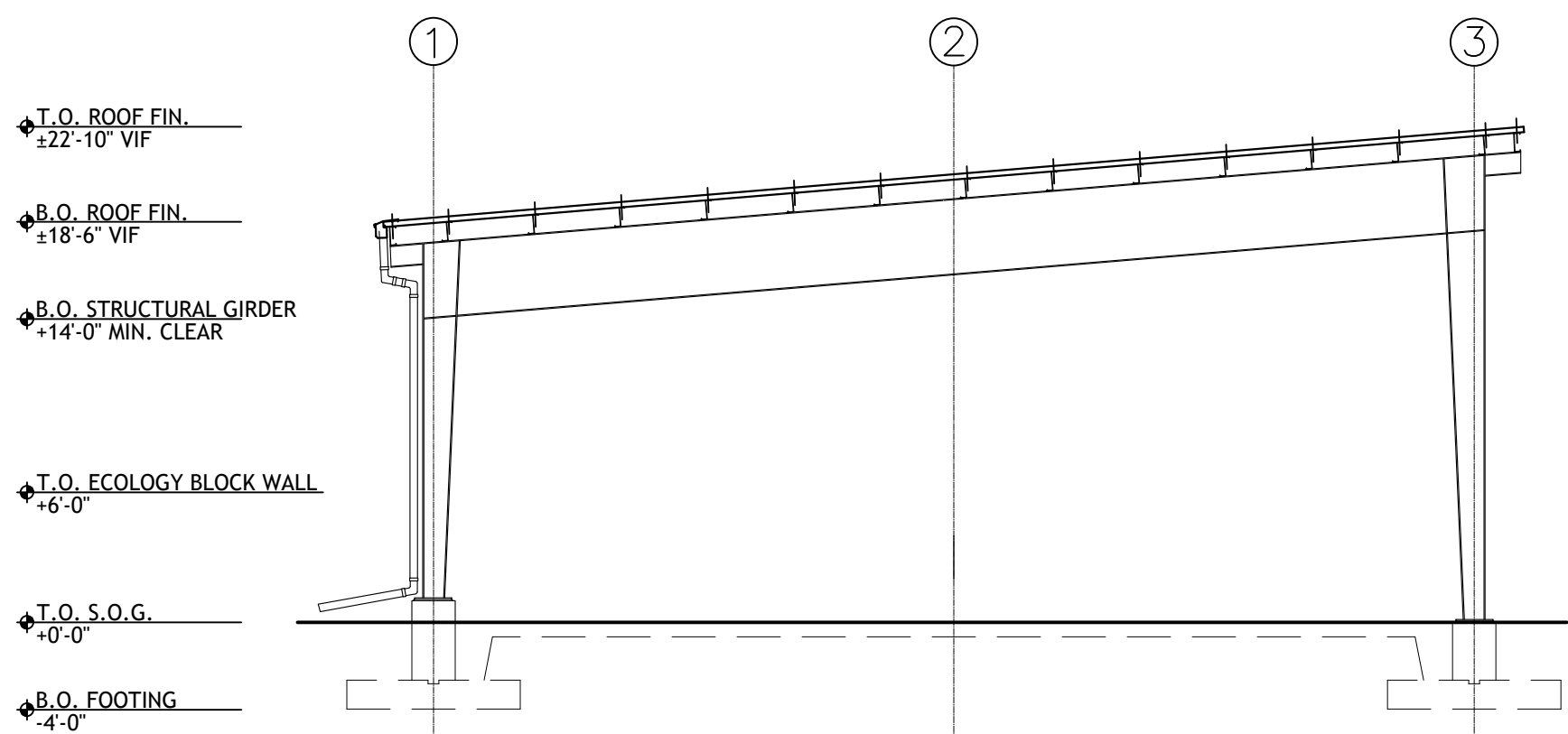
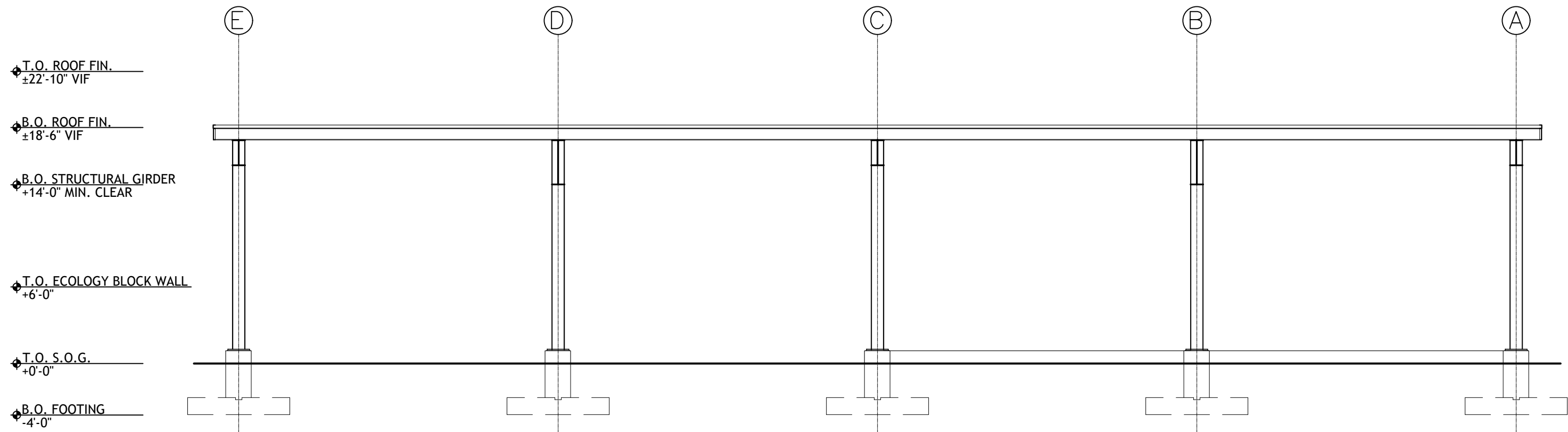
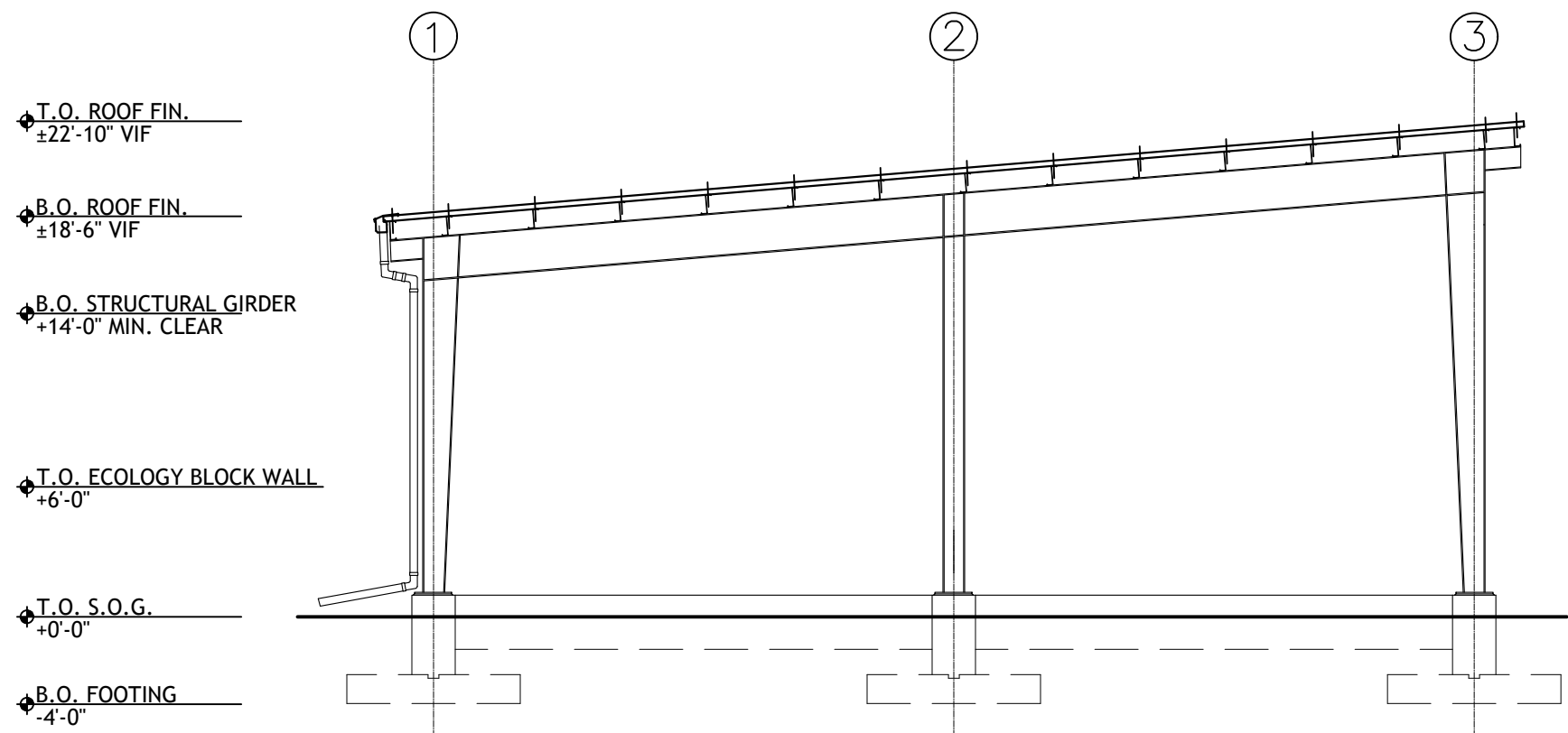
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	Drawn By:	AR/FAS
	Approved By:	MCJ
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	File No:	25134.000
Sheet No.		

A-301

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FULL SIZED PLOT SIZE: 24" x 36"



LOCATION MAP
N.T.S.

PROJECT DATA	
APPLICANT/OWNER.....	TOWN OF BROOKHAVEN 1 INDEPENDENCE HILL FARMINGVILLE, NY 11738
TAX MAP NUMBER.....	0200-874-04-033.001
SITE AREA.....	
ZONING.....	
USE.....	852: LANDFILLS & DUMPS

ARCHITECT / ENGINEER:

LKMA

L.K. McLEAN ASSOCIATES ENGINEERING & SURVEYING, D.P.C.
437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719

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PROJECT:

TOWN OF BROOKHAVEN
SUFFOLK COUNTY, NY

BID 26012

BROOKHAVEN SOLID WASTE MANAGEMENT FACILITY - PRE-ENGINEERED ISOLATION LEAN-TO

350 HORSEBLOCK ROAD
BROOKHAVEN, NY 11719

ISSUES/REVISIONS		
Description	No.	Date
100% SUBMISSION	-	10.03.25
ISSUED FOR BID	-	06.09.26



STATUS:

ISSUED FOR BID

DRAWING TITLE:

SECTIONS & DETAILS

SEAL & SIGNATURE:	Design By:	AR/FAS
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	Approved By:	MCJ
	Scale:	AS NOTED
	Date:	JUN. 2026
	File No:	25134.000
	Sheet No.	
A-302		

ELECTRICAL - GENERAL PROJECT NOTES

GENERAL

1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND AS REQUIRED BY CODE.
2. THE CONTRACTOR, BY PRESENTING THEIR BID FOR THE WORK, REPRESENTS THAT THEY HAS INSPECTED THE SITE AND IS COMPLETELY FAMILIAR WITH THE SCOPE OF WORK AND ALL FIELD CONDITIONS RELATED TO, AND AFFECTING THE WORK AND ITS PERFORMANCE. UNFORSEEN CONDITIONS AFFECTING THE WORK AND ITS PERFORMANCE, OR CONFLICTS BETWEEN FIELD CONDITIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER / ARCHITECT PRIOR TO THE SUBMISSION OF BIDS.
3. PERFORM ALL WORK IN ACCORDANCE WITH THE ELECTRICAL CODE, FIRE ALARM CODE, AND ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE AND THE REQUIREMENTS OF THE LOCAL AUTHORITIES HAVING JURISDICTION. APPLICABLE CODE EDITIONS SHALL BE THOSE SPECIFIED THE "REFERENCED STANDARDS" CHAPTER OF THE CURRENT BUILDING CODE.
4. COMPLY WITH THE NATIONAL ELECTRIC CODE AND THE REQUIREMENTS OF DIVISION 26 FOR ALL ELECTRICAL INSTALLATIONS.
5. DO NOT SCALE DRAWINGS. DRAWINGS FOR ELECTRICAL WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT FIXED BY DIMENSIONS, ARE APPROXIMATE.
6. COORDINATE CONTRACT DOCUMENTS, PROJECT REQUIREMENTS, WORK OF OTHERS, AND EQUIPMENT AND MATERIALS PURCHASED WITH FIELD DIMENSIONS, MANUFACTURERS REQUIREMENTS FOR INSTALLATION, OPERATION AND MAINTENANCE, CONTRACTORS INTENDED MEANS AND METHODS OF INSTALLATION, AND CONTRACTORS FABRICATED ITEMS TO ENSURE A PROPER "FIT" AND INSTALLATION. BRING ANY CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER DURING THE SUBMITTAL PHASE FOR RESOLUTION PRIOR TO PURCHASING ANY EQUIPMENT.
7. MAINTAIN MAXIMUM HEADROOM AND SPACE CONDITIONS AT ALL POINTS. WHERE HEADROOM AND SPACE CONDITIONS APPEAR INADEQUATE, NOTIFY THE ARCHITECT/ENGINEER PRIOR TO PROCEEDING WITH INSTALLATION. MAINTAIN A MINIMUM OF 6'-8" CLEARANCE FROM FINISHED FLOOR TO UNDERSIDE OF CONDUITS, SUSPENDED EQUIPMENT, ETC., THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS.
8. PROVIDE PRODUCTS OF ONE MANUFACTURER WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF MATERIAL OR EQUIPMENT IS REQUIRED.
9. INSTALL ALL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS. REFER TO DETAILS FOR ADDITIONAL PIPING AND EQUIPMENT INSTALLATION REQUIREMENTS.
10. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL ELECTRICAL BOXES, ADAPTERS, ETC. REQUIRED FOR FINAL CONNECTIONS TO EQUIPMENT.
11. COORDINATE LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS WITH ALL OTHER TRADES. COORDINATE ALL CONDUIT AND EQUIPMENT SUPPORTED FROM STRUCTURE WITH GENERAL CONSTRUCTION WORK.
12. MAKE ALL ATTACHMENTS TO JOISTS, TRUSSES, OR JOIST GIRDERS AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. THE USE OF C-CLAMPS IS NOT PERMITTED.
13. FURNISH AND INSTALL ALL SLEEVES FOR CONDUIT FLOOR, WALL, PARTITION, AND ROOF PENETRATIONS.
14. WHERE DISAGREEMENTS OR DISCREPANCIES OCCUR BETWEEN THE PLANS AND THE SPECIFICATIONS, OR WITHIN EITHER DOCUMENT ITSELF, THE ITEM OR ARRANGEMENT OF BETTER QUALITY, GREATER QUANTITY OR HIGH COST SHALL BE INCLUDED IN THE BASE BID.

LEGENDS/ABBREVIATIONS NOTES

ABBREVIATIONS AND SYMBOLS ON THIS SHEET DO NOT DEFINE THE SCOPE OF WORK.

GENERAL ELECTRICAL NOTES

1. FOR EXACT LOCATIONS OF ALL ELECTRICAL OUTLETS AND LIGHTING FIXTURES SEE ARCHITECTURAL FLOOR PLANS, DETAILS AND ELEVATIONS.
2. FOR WIRING IN WHERE EMT IS IMPRACTICAL, FLEXIBLE STEEL CONDUIT GALVANIZED, MINIMUM 3/4" SHALL BE USED.
3. ELECTRICAL CONTRACTOR SHALL REVIEW ARCHITECTURAL AND SITE/CIVIL DRAWINGS TO MAKE THEMSELVES AWARE OF THE FULL EXTENT OF THIS WORK.
4. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING A FULL SET OF BID DOCUMENTS TO UNDERSTAND THE TOTAL JOB BEFORE SUBMITTING HIS PRICE.
5. ELECTRICAL CONTRACTOR SHALL VERIFY SWITCHES, RECEPTACLES AND PLATE FINISHES WITH THE ARCHITECT BEFORE PERFORMING HIS INSTALLATION. ALL COVER PLATES SHALL BE AS SPECIFIED BY ARCHITECT.
6. IF REQUESTED, ELECTRICAL CONTRACTOR SHALL SUBMIT SAMPLES OF SWITCHES, RECEPTACLES AND PLATES TO ARCHITECT BEFORE PERFORMING HIS INSTALLATION.
7. COORDINATE WITH OTHER TRADES TO DETERMINE THE EXACT LOCATION OF EQUIPMENT TO BE INSTALLED BY OTHER TRADES BEFORE CONDUIT WORK IS STARTED.
8. LOW VOLTAGE WIRING SHALL NOT BE PERMITTED IN THE SAME RACEWAY AS POWER WIRING.
9. CONTRACTOR IS TO FURNISH, INSTALL AND CONNECT ALL RACEWAYS AND WIRING FROM EQUIPMENT, DEVICES AND LIGHTING FIXTURES TO ITS SOURCE OF POWER AND CONTROLS.
10. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS OF FINISHED CONSTRUCTION PRIOR TO FABRICATION AND INSTALLATION OF FIXTURES AND EQUIPMENT.
11. BEFORE SUBMITTING A BID PROPOSAL, THE CONTRACTOR SHALL VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE JOB AND SITE CONDITIONS.
12. PROVIDE DRAG LINES IN ALL EMPTY RACEWAYS.
13. ALL CONDUITS FOR FEEDER AND BRANCH CIRCUITING SHALL BE IDENTIFIED AS INDICATED IN THE PROJECT SPECIFICATIONS.
14. UNLESS OTHERWISE NOTED, THE EXACT LOCATION, TYPE AND MOUNTING HEIGHT OF LIGHTING FIXTURES SHALL CONFORM TO THE ARCHITECTURAL PLANS.

GENERAL SYMBOL LEGEND	
	NEW ITEM
	EXISTING ITEM
	NEW ITEM, HIDDEN
	EXISTING ITEM, HIDDEN
	ITEMS TO BE DEMOLISH / REMOVED
	DISCONNECT FROM EXISTING
	CONNECT TO EXISTING
	MATCH LINE
VANTAGE POINT OF REFERENCE PHOTO	
	SECTION SYMBOL (DIRECTION OF CUT VIEW) TOP (T): UNIQUE LETTER / NUMBER BOTTOM (B): DRAWING / SHEET LOCATION
	CALLOUT TOP (T): CALLOUT TITLE BOTTOM (B): DRAWING / SHEET LOCATION

POWER SYMBOL LEGEND			
SYMB OL	TAG / ALT TAG	EQUIPMENT CODES	COMMENTS
	-	ELECTRICAL PANEL A: PANEL DESIGNATION RECESSED MOUNT	REFER TO PANEL SCHEDULE FOR CONFIGURATION DETAILS
	-	ELECTICAL PANEL A: PANEL DESIGNATION SURFACE MOUNT	REFER TO PANEL SCHEDULE FOR CONFIGURATION DETAILS
		SIMPLEX RECEPTACLE A: PANEL B: CIRCUIT	SIMPLEX RECEPTACLE, 20A, 125V, 2P, 3W (GROUNDED), NEMA 5 - 20R "WP" DENOTES WEATHER PROOF ENCLOSURE "IT" DENOTES DEDICATED IT POWER OUTLET
		DUPLEX RECEPTACLE A: PANEL B: CIRCUIT	DUPLEX RECEPTACLE, 20A, 125V, 2P, 3W (GROUNDED), NEMA 5 - 20R "WP" DENOTES WEATHER PROOF ENCLOSURE "IT" DENOTES DEDICATED IT POWER OUTLET
	-	QUADRAPLEX RECEPTACLE A: PANEL B: CIRCUIT	QUAD RECEPTACLE, 20A, 125V, 2P, 3W (GROUNDED), NEMA 5 - 20R "AV" DENOTES DEDICATED AV POWER OUTLET "IT" DENOTES DEDICATED IT POWER OUTLET
	-	GFCI RECEPTACLE A: PANEL B: CIRCUIT	DUPLEX RECEPTACLE WITH GROUND FAULT INTERRUPTER, 20A, 125V, 2P, 3W (GROUNDED), NEMA 5 - 20R
		GFCI RECEPTACLE, WP ENC. A: PANEL B: CIRCUIT	DUPLEX RECEPTACLE WITH GROUND FAULT INTERRUPTER, 20A, 125V, 2P, 3W (GROUNDED), NEMA 5 - 20R, WITH WEATHERPROOF IN-USE, NEMA 3R ENCLOSURE
		GFCI RECEPTACLE, WP, LOCKING, ENC. A: PANEL B: CIRCUIT	DUPLEX RECEPTACLE WITH GROUND FAULT INTERRUPTER, 20A, 125V, 2P, 3W (GROUNDED), NEMA 5 - 20R, WITH WEATHERPROOF IN-USE, LOCKABLE, NEMA 3R ENCLOSURE
		GFCI RECEP. COUNTER HEIGHT A: PANEL B: CIRCUIT	COUNTERTOP MOUNTED DUPLEX RECEPTACLE, 20A, 125V, 2P, 3W (GROUNDED), NEMA 5 - 20R. COORDINATE MOUNTING HEIGHT WITH ARCHITECTURAL DRAWING
		HOME RUN TO ELEC. PANEL A: PANEL B: CIRCUIT	-
	-	SAFETY SWITCH A: FRAME (AMPS) B: POLES	HEAVY DUTY SAFETY SWITCH, NEMA 1 ENCLOSURE UNLESS OTHER SPECIFIED
		FUSED SAFETY SWITCH A: FRAME (AMPS) B: NUMBER OF POLES C: FUSE (AMPS)	HEAVY DUTY FUSED SAFETY SWITCH, NEMA 1 ENCLOSURE UNLESS OTHER SPECIFIED
	-	JUNCTION BOX A: PANEL B: CIRCUIT	JUNCTION BOX OR EQUIPMENT FIELD WIRING COMPARTMENT
		MOTOR A: HP B: PHASE	-
		SNAP SWITCH A: 1 - SINGLE POLE 2 - TWO POLE 3 - THREE WAY 4 - FOUR WAY D - DIMMER V - LINE VOLTAGE VACANCY SENSOR T - LINE VOLTAGE ASTRONOMICAL TIME SWITCH LV1 - LOW VOLTAGE SWITCH B: SWITCH DESIGNATION	
	-	SEAL-OFF FITTING	REGEN
GENERAL EQUIPMENT CALLOUT (A) EQUIPMENT DESIGNATION (B) EQUIPMENT LOADING IN KVA OR HP (C) EQUIPMENT UTILIZATION VOLTAGE (D) NUMBER OF POLES (E) NUMBER OF WIRES (F) RELEVANT NOTES			
NOTES: 1. LEGEND INCLUDES STANDARD ELECTRICAL SYMBOLS; NOT ALL SYMBOLS NECESSARILY APPLY TO THIS PROJECT.			

ELECTRICAL ABBREVIATIONS	
ACCU	AIR COOLED CONDENSING UNIT
AG, A/G	ABOVEGROUND
A.T.S.	AUTOMATIC TRANSFER SWITCH
AST	ABOVEGROUND STORAGE TANK
AUTO	AUTOMATIC
AWG	AMERICAN WIRE GAUGE
BFB	BACK-FED CIRCUIT BREAKER
C	CONDUIT
CBK	CIRCUIT BREAKER
CKT	CIRCUIT
COMM	COMMUNICATION
CONT.	CONTINUOUS
CTE	CONNECT TO EXISTING
DISC	DISCONNECT
DWG.	DRAWING
EA	EACH
E.C.B.	ENCLOSED CIRCUIT BREAKER
EF	EXHAUST FAN
ELEC.	ELECTRIACL
EQ.	EQUAL
EQUIP.	EQUIPMENT
EX. / EX	EXISTING
EY	EXPLOSION PROOF SEAL-OFF FITTING
FA	FIRE ALARM
FDR	FEEDER
FL	FLOOR
FMS	FUEL MANAGEMENT SYSTEM
FT	FOOT
FSD	FIRE SMOKE DAMPER
G	GROUND
GA.	GAUGE
GALV.	GALVANIZED
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
HP	HORSE POWER
HZ	HERTZ
J-BOX	JUNCTION BOX
KP	KEYPAD
KVA	KILO VOLT AMPERE
KW	KILO WATT
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MIN	MINIMUM
MLO	MAIN LUG ONLY
MFR	MANUFACTURER
N	NEUTRAL
NEC	NATIONAL ELECTRICAL CODE
NO	NORMALLY OPEN
NTS / N.T.S.	NOT TO SCALE
O.C.	ON CENTER
PNL	PANEL
REF	REFERENCE
REQ'D.	REQUIRED
RM.	ROOM
RMC	RIGID METALLIC CONDUIT
RNC	RIGID NON-METALLIC CONDUIT
SPEC.	SPECIFICATIONS
SW	SWITCH
TEMP.	TEMPORARILY
TMS	TANK MANAGEMENT SYSTEM
TXMR	TRANSFORMER
TYP.	TYPICAL
UG, U/G	UNDERGROUND
UGE	UNDERGROUND ELECTRICAL CABLE
UST	UNDERGROUND STORAGE TANK
V	VOLT OR VOLTAGE
VERT.	VERTICAL
V.I.F.	VERIFY IN FIELD
W	WATT
WP	WEATHER PROOF
XP	EXPOSION PROOF
W/	WITH

CABLE AND RACEWAY SCHEDULE			
APPLICATION / LOCATION	CABLE TYPE	RACEWAY	COMMENT
SERVICE ENTRANCE	SINGLE CONDUCTOR COPPER, USE-2	RNC SCH. 40 UNDERGROUND, RMC ABOVE GROUND	-
ABOVE GROUND, OUTSIDE	SINGLE CONDUCTOR COPPER, THHN-THWN-2	RMC	-
ABOVE GROUND, INSIDE	SINGLE CONDUCTOR COPPER, THHN-THWN-2	EMT	-
UNDERGROUND, INSIDE	SINGLE CONDUCTOR COPPER, THHN-THWN-2	RMC	-
UNDERGROUND, OUTSIDE	SINGLE CONDUCTOR COPPER, THHN-THWN-2	RNC SCH. 40, OR HDPE	-
CONNECTION TO VIBRATING EQUIPMENT	SINGLE CONDUCTOR COPPER, THHN-THWN-2	LFNC	LIMIT INSTALLATION TO 6'.
EMT: ELECTRICAL METALLIC TUBING, ANSI C80.3 WITH NEMA FB 1 FITTINGS ENT: ELECTRICAL NONMETALLIC TUBING, NEMA TC 13 WITH NEMA TC 3 FITTINGS HDPE: HIGH DENSITY POLYETHYLENE CONDUIT, NEMA TC 7 LFNC: LIQUIDTIGHT FLEXIBLE NONMETALLIC TUBING, UL 1660 RMC: GALVANIZED RIGID STEEL CONDUIT, ANSI C80.1 WITH NEMA FB 1 FITTINGS RNC: PVC, SCHEDULE 40 OR 80 WHERE NOTED, NEMA TC 2 WITH NEMA TC 3 FITTINGS			

ELECTRICAL BOXES AND HANDHOLE SCHEDULE			
APPLICATION / LOCATION	MATERIAL	ENCLOSURE RATING	COMMENT
WIREWAY, ABOVE GROUND, OUTSIDE	GALVANIZED SHEET METAL, ENAMEL FINISH	NEMA 3R	-
WIREWAY, ABOVE GROUND, INSIDE	GALVANIZED SHEET METAL, ENAMEL FINISH	NEMA 1	-
OUTLET, DEVICE, AND SMALL PULL AND JUNCTION BOX, ABOVE GROUND, INSIDE	GALVANIZED SHEET METAL, NEMA OS 1	-	-
OUTLET, DEVICE, AND SMALL PULL AND JUNCTION BOX, ABOVE GROUND, OUTSIDE	CAST METAL, NEMA FB 1 TYPE, FD WITH GASKETED WEATHERPROOF COVER	-	-
ENCLOSURES (FOR SWITCHES, PANELS, EQUIPMENT, ETC.), INSIDE	GALVANIZED SHEET METAL, ENAMEL FINISH	NEMA 1	-
ENCLOSURES (FOR SWITCHES, PANELS, EQUIPMENT, ETC.), OUTSIDE	GALVANIZED SHEET METAL, ENAMEL FINISH	NEMA 3R	-
UNDERGROUND HAND HOLE, NON-TRAFFIC BEARING	POLYMER CONCRETE WITH BOLTED COVER TAGGED FOR APPROPRIATE UTILITY	-	-
NOTES: 1. SIZE BOXES PER NFPA 70, ARTICLE 314. 2. OUTLET AND DEVICE BOXES TO BE SIZED FOR ONE ADDITIONAL DEVICE.			

BRANCH CIRCUIT AND FEEDER SCHEDULE			
OVERCURRENT PROTECTION	LINE (MIN)*	GROUND	RACEWAY (MIN)
15	12	12	3/4"
20	12	12	3/4"
30	10	10	3/4"
40	8	10	1"
50	8	10	1"
60	6	10	1"
80	4	8	1-1/4"
100	3	8	1-1/4"
125	1	6	2"
150	1/0	6	2"
175	2/0	6	2"
200	3/0	6	2-1/2"
225	4/0	4	2-1/2"
250	250 MCM	4	3"
300	350 MCM	4	3-1/2"
350	400 MCM	3	3-1/2"
400	500 MCM	3	4"
* CONTRACTOR SHALL INSTALL THE MINIMUM WIRE SPECIFIED, OR GREATER AS REQUIRED FOR VOLTAGE DROP. CALCULATIONS TO BE PERFORMED BY THE CONTRACTOR.			

ENERGY ANALYSIS AND COMPLIANCE STATEMENT	

LOCATION MAP
N.T.S.

PROJECT DATA

APPLICANT/OWNER..... TOWN OF BROOKHAVEN
1 INDEPENDENCE HILL
FARMINGVILLE, NY 11738

TAX MAP NUMBER..... 0200-874-04-033.001

SITE AREA:.....

ZONING:.....

USE:..... 852; LANDFILLS & DUMPS

ARCHITECT / ENGINEER:

LKMA

L.K. McLEAN ASSOCIATES ENGINEERING & SURVEYING, D.P.C.
437 SOUTH COUNTRY RD., BROOKHAVEN, NEW YORK 11719

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PROJECT:

TOWN OF BROOKHAVEN
SUFFOLK COUNTY, NY

BID 26012

BROOKHAVEN SOLID WASTE MANAGEMENT FACILITY - PRE-ENGINEERED ISOLATION LEAN-TO

350 HORSEBLOCK ROAD
BROOKHAVEN, NY 11719

ISSUES/REVISIONS		
Description	No.	Date
100% SUBMISSION	-	10.03.25
ISSUED FOR BID	-	06.09.26

Call 811
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STATUS:

ISSUED FOR BID

DRAWING TITLE:

GENERAL NOTES AND SCHEDULES

SEAL & SIGNATURE:	Design By: AR/FAS Drawn By: AR/FAS Approved By: MCJ Scale: AS NOTED Date: JUN. 2026 File No: 25134.000 Sheet No.
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